



COUNTRY PRIVATE SECTOR DIAGNOSTIC

# CREATING MARKETS IN THE DOMINICAN REPUBLIC

Investment opportunities and growth pathways to  
higher value addition, resilience, and inclusion

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# ABBREVIATIONS AND ACRONYMS

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B2B	business-to-business
B2C	business-to-consumer
BCRD	Central Bank of the Dominican Republic
BPO	business process outsourcing
CAGR	compound annual growth rate
CDEEE	Corporación Dominicana de Empresas Eléctricas Estatales
CEM	Country Economic Memorandum
CNE	National Energy Council
CNZFE	Consejo Nacional de las Zonas Francas (National Council of Free Trade Zones)
CO2	carbon dioxide
CPSD	Country Private Sector Diagnostic
DGA	General Directorate of Customs
DR	Dominican Republic
DVX	indirect value added
EDE	Empresas Distribuidoras de Electricidad
EIP	eco-industrial park
E&S	environmental and social
ESG	environmental, social, and governance
EU	European Union
FDI	foreign direct investments
FVA	foreign value added
GDP	gross domestic product
GHG	greenhouse gas
GTR	general tax regime
GVC	global value chain
IBRD	International Bank for Reconstruction and Development
ICT	information and communication technology
IDA	International Development Association
IDB	Inter-American Development Bank
IFC	International Finance Corporation

IMF	International Monetary Fund
IP	industrial park
ITBIS	Tax on the Transfer of Industrialised Goods and Services
KPO	knowledge process outsourcing
LAC	Latin America and the Caribbean
MARENA	Ministry of Environment and Natural Resources
MEM	Ministry of Energy and Mines
MERCADOM	Dominican Wholesale Center for Agricultural Supplies
MESCyT	Ministry of Higher Education, Science, and Technology
MFA	Multi Fiber Agreement
MH	Ministry of Finance
MICM	Ministry of Industry, Commerce, and SMEs
MNC	multinational corporation
MSME	micro, small, and medium enterprise
ND-GAIN	Notre Dame-Global Adaptation Initiative
OECD	Organisation from Economic Co-operation and Development
PA	productive alliances
PPA	power purchase agreement = the normal nomenclature
PPD	public-private dialogue
PPP	public-private partnership
PVRS	photovoltaic rooftop systems
R&D	research and development
REIT	real estate investment trust
SEZ	special economic zone
SME	small and medium enterprise
STEM	science, technology, engineering, and mathematics
TFP	total factor productivity
UNDP	United Nations Development Programme
VAT	value added tax
VUCE	Ventanilla Única de Comercio Exterior (Single Window for Foreign Trade)
WDI	World Development Indicators

# EXECUTIVE SUMMARY

**The Dominican Republic (DR) has long had a strong private sector, which has supported two decades of remarkable growth and poverty reduction.** The country is the Caribbean's largest economy—and the eighth largest in Latin America—with a population of 11.2 million (2022). The Dominican Republic is endowed with productive resources that, together with market-oriented reforms and macroeconomic stability, have positioned the country as an attractive investment destination. Foreign direct investments (FDI) of about 4 percent of GDP, on average, have over the past 20 years fueled tourism, services, manufacturing, construction, and mining (figure 2.12).<sup>1</sup> Supported by domestic demand and favorable external conditions, the DR's economy expanded by 5.8 percent, on average, over 2005–19 (Figure 1.1)<sup>2</sup>, driven primarily by capital accumulation. Private investment reached 24 percent of GDP in 2019, higher than its regional peers such as Jamaica (21 percent) and Guatemala (12.4 percent), and gaining on Panama (31 percent)<sup>3</sup>. Substantial growth also led to reductions in poverty and inequality. The poverty line for the DR, as an upper-middle-income country, is defined as less than US\$6.85 in 2017 purchasing power parity per day. From 2002 to 2004, the DR's poverty rate increased from 40 percent to 57 percent of the population because of the economic shock from the banking crisis, but the rate began a steady decline in 2013 and by 2021 had fallen to 23 percent. The country has also reduced extreme poverty to less than 1 percent as of 2021.<sup>4</sup> Income inequality has also improved as reflected by the Gini coefficient falling from 0.51 to 0.38 over 2000–21.<sup>5</sup>

**Despite strong economic growth and progress in social indicators, labor informality remains high and poverty reduction has been spatially imbalanced.** Average poverty reduction conceals significant gaps: three out of four people moving out of poverty during 2017–19 lived in urban areas, where poverty rates were lower than in rural areas. According to the ongoing World Bank Poverty Assessment, poverty in the two provinces near Haiti is twice as high as in the Santo Domingo metropolitan area (where economic activity is concentrated) and the tourism centers (Cibao Nordeste and Yuma). Moreover, as identified by the World Bank Jobs Diagnostic (2021), the Dominican economy has performed quite well in terms of the number of new jobs generated over the past two decades. The economy's performance has been less successful in generating high-quality jobs.<sup>6</sup> The incidence of informality is high in general and when compared with other countries. In the Dominican Republic, 57.3 percent of workers were informal in 2021, above structural or regional peers like Costa Rica (39.3 percent) and Panama (55.7 percent). These workers tend to work in small firms and have low skills. Informality is often a symptom of low productivity and low wages, but it is also part of a vicious cycle. High informality could reflect low benefits associated with paying taxes or social security contributions. At the same time, high informality reduces the tax base and the viability of social insurance systems, which can result in a lower quantity and quality of public goods and services. These effects are particularly important in the Dominican Republic, where fiscal space is increasingly limited.

**Public sector debt is sustainable, but downside risks persist and remain elevated.** The Dominican Republic's fiscal space has been strained by the policy measures deployed during the pandemic, but preexisting costly fiscal incentives were already eroding revenues and making public finances vulnerable to shocks. The government launched a robust fiscal and monetary policy response to mitigate the COVID-19 crisis, which lessened poverty impacts. The debt of the consolidated public sector grew from 37 percent to 51 percent of GDP over 2010–19 and further to 69 percent by end-2020, before gradually decreasing in 2021 and 2022, closing at 58.6 percent of GDP in 2022 (figure 1.3)<sup>7</sup>. But the fiscal challenges predate the pandemic. Tax collection is 3.2 percentage points of GDP lower than the average for regional peers (Guatemala, Jamaica, Panama) and 4.5 percentage points of GDP lower than structural peers (Costa Rica and Bulgaria), reflecting a narrow base because of tax incentives and exemptions—more than 4 percent of GDP—coupled with relatively low collection efficiency (figure 1.5)<sup>8</sup>. Although public finances are deemed sustainable, the debt ratio can be derailed by external shocks.

**Climate change looms as a fundamental risk to the DR's development trajectory, increasingly threatening the economic contribution of critical sectors, such as tourism and agriculture.** The stability of the growth path is and will continue to be subject to risks from recurrent natural events that hit Caribbean countries, and that are likely to increase in frequency and magnitude with climate change. The country scored 46.5 on the 2020 ND-GAIN Index, with 100 being the highest possible score, ranking 101st out of 182 evaluated countries. This score reflects its limited preparedness to improve resilience against climate-related vulnerabilities. Additionally, the Dominican Republic is the world's 12th-most-affected country by natural disasters over 1998–2017, according to the 2019 Global Climate Risk Index, with hurricanes generating annual economic losses of 0.5 percent of GDP on average since the early 2000s. In this context, diversifying the export and FDI portfolio to greener products—as well as upgrading productive infrastructures, such as industrial parks, to become more resilient to climate effects—can strengthen the sustainability of the country's economic growth and mitigate climate-change-related risks such as to tourism, agriculture, and manufacturing plants.

**Exports and FDI contribute to the DR's economic performance, but their portfolios are undiversified and increasingly dependent on tourism and a small number of goods, exacerbating the exposure to climate change risks.** Exports are heavily concentrated in tourism, agricultural commodities such as cacao and bananas, and gold, although a burgeoning diversification is notable owing to the recent growth in higher-value-added manufacturing exports. In fact, tourism accounts for an impressive 44 percent of total exports (2019).<sup>9</sup> This sectoral concentration is also manifested in FDI, which is largely resource and efficiency-seeking:<sup>10</sup> Tourism captured 25 percent of FDI inflows in 2022, followed by real estate, with 15 percent (figure 2.12)<sup>11</sup>. Considering that tourism is particularly exposed to climate change impacts, adaptation and impact mitigation measures should include not only diversification within tourism (away from beach tourism) but also diversification of both FDI and exports beyond tourism. The DR's participation in global value chains remains, indeed, among the lowest in the world (figure 2.16), adding on average 30 percent of value added to exports since 2000, a rate below global structural peers such as Tunisia (57 percent) and Costa Rica (37 percent).<sup>12</sup>



**Amid a declining share of exports, however, manufacturing activities in special economic zones (SEZs) are contributing to a surge in higher-value-added products and diversification, although with an associated fiscal burden.** Exports of the Dominican Republic peaked at about 34 percent of GDP in 2000–04 and have been on a declining trend since 2004, reaching 24 percent of GDP in 2019 (figure 2.17). The downward trend has been partially mitigated as of 2013 by the surge of gold exports. On the flip side, the growth rate of medical device manufacturing (5.1 percent)—all located in industrial parks benefiting from the SEZ regime—outpaced that of total exports (4.5 percent) in the 2011–20 period. (figure 4.4) Given the SEZ regime’s contributions to export diversification and value addition, but also the cost of the fiscal expenditure it represents, recent analyses by the World Bank and the Inter-American Development Bank have highlighted the need for a robust cost-benefit analysis to help optimize its scope and impacts.

**However, the Dominican economy is characterized by a constraining duality, resulting from the absence of meaningful backward linkages between the small number of formal and export-oriented firms operating under the SEZ regime (774 firms) and the larger group of local firms (5,198 firms) in the manufacturing and related services sector under the general tax regime (GTR)<sup>13</sup>.** This duality manifests in three main dimensions. First, GTR exports are mostly oriented toward the European market and rest of the world, whereas SEZ exports are almost entirely directed to the United States. Second, exports differ in technological content and complexity levels across regimes. Sixty percent of SEZ exports have some level of technology and involve some level of sophistication in their production process, unlike non-SEZ exports, which are predominantly commodities (for example, gold, cocoa, and bananas). Last, non-SEZ exports lack diversification: gold and ferronickel account for half of GTR exports, while the other products have single-digit shares (figure 2.20)<sup>14</sup>. In contrast, SEZ exports are less concentrated, with the highest share (medical devices) reaching 18 percent, with tobacco, electrical equipment, and jewelry also all reaching double-digit shares.<sup>15</sup> In this context, maximizing linkages between SEZ and non-SEZ firms is an important challenge. Pro-business reforms have not always yielded the expected results in terms of linkages, and tax incentives remain the default measure to address market failures. Recent decades did, however, witness an array of economic reforms including the liberalization of foreign exchange transactions, trade agreements, and the elimination of price controls and of restrictions on FDI in almost every sector.

## A ROADMAP FOR THE SHORT TO MEDIUM TERM

Given this country and private sector context, the global reconfiguration of some global value chains (GVCs)—often referred to as “nearshoring”—represents a timely opportunity for the DR to harness and pivot toward a more competitive, inclusive, and resilient economic trajectory. Trade tensions between the United States and China, COVID-19, and Russia’s invasion of Ukraine are leading to the reversal of global economic integration. Firms and policy makers are increasingly considering trusted countries with aligned political preferences to make supply chains less vulnerable to geopolitical tensions. However, the interest to relocate operations is not uniformly distributed across regions, with surveys of multinational companies indicating that only 4 percent of the global reshuffling of FDI is considering Latin America as a destination. The DR’s outlook, however, seems favorable within this global setting. In 2022, total FDI closed 33 percent higher than its pre-pandemic level and surpassed the US\$4 billion threshold for the first time in history, with SEZs’ FDI inflow being 39 percent higher than in 2019 (figure 2.25)<sup>16</sup>. Most importantly, industrial SEZ exports increased 11 percent in real terms between 2019 and 2022, with medical devices and pharmaceuticals contributing to almost half of that growth<sup>17</sup>.

To fully seize this opportunity, the Dominican Republic’s unique selling proposition should be more strongly based on structural and sustainable competitive advantages. Beyond capitalizing on its natural endowments, such as its strategic geographic location, the DR should strengthen its assets in key enabling sectors such as education, logistics, and financial services by harnessing the private sector and leveraging capital markets. For example, the DR could accomplish desired results by prioritizing policy efforts that structurally improve its human capital, industrial infrastructure, and energy mix while also promoting capital market mobilization instruments, such as specialized investment vehicles and green bonds. It could further support public-private partnerships and cross-border private sector investment. The structural reinforcement of its assets and enabling sectors will gradually decrease the country’s dependence on fiscal incentives and widen the range of policy options to level the field across the economy while sustaining and increasing the attractiveness of the DR for investors. In turn, this reinforcement will have the added value of reducing barriers to growth for small and medium enterprises (SMEs) to become suppliers to exporting firms (or start directly exporting) and to boost formal job creation.

To help inform this pivot, this Country Private Sector Diagnostic (CPSD) identifies three cross-cutting policy areas that are critical for a more resilient and inclusive (including on gender aspects) path forward, and also provides sector assessments of three sectors where private capital can be leveraged to contribute to this pivot. The three identified policy challenges are (a) improving the business environment by gradually decreasing complexity and the fragmentation of the institutional context; (b) enhancing education and skills development to reduce the skills mismatch in sectors with strong export potential and to improve linkages with local suppliers; and (c) reforming the electricity sector to reduce the cost of energy, increase the reliability of the grid, and promote the renewable energy sector in line with the country’s decarbonization targets. The three sector assessments focus on one tradable sector (medtech), one domestic sector (real estate with a focus on eco-industrial parks), and one enabling sector (agri-logistics). The sector-assessment sample is meant to merely illustrate the potential of harnessing and accelerating private investment in a three to five years’ horizon, in a way that supports diversification (away from dominant sectors such as tourism and minerals) while promoting a more resilient and inclusive economy.

## A Complex Business Environment and Fragmented Institutional Context

The DR has implemented several reforms to ease constraints in different business regulatory areas, but the prevailing business environment continues to be perceived as opaque and affected by excessive discretion. Measures over the course of recent years include the introduction of the *Formalízate* one-stop shop for business registration; the 2019 amendment of the Law of Commercial Corporations and Limited Liability Companies; the enactment of a new Law on Movable Collaterals in 2020; the introduction of a specialized commercial court division and a mediation-and-conciliation framework; the adoption in 2017 of the Law on the Securities Market; the enactment of the law on Publicly-Offered Securities; and Law No. 167-21 on Regulatory Reform and Simplification of Administrative Procedures. More recently, in 2022 the Portal for Dominican Government Services was launched. This platform centralizes information about different administrative procedures.<sup>18</sup> Reform efforts have resulted in gradual improvements in international rankings, but the country's standing across various indicators remains low. The Transparency International's Corruption Perception Index 2022 ranks the DR at 123rd position out of 180 countries, up from 137th out of 180 countries in 2019.<sup>19</sup> In the World Bank's Worldwide Governance Indicators 2022 update, the DR scored 54.8 out of 100 points in the Government Effectiveness indicator, up from 38.9 in 2019.<sup>20</sup> The DR also ranks 78th out of 141 in the World Economic Forum's overall Global Competitiveness Index 2019, up from 92nd out of 138 countries in 2017.<sup>21</sup>

**Complex business regulations and fragmented institutions play a key role in creating the conditions for an opaque business environment.** The processes of licensing and authorization are unwieldy, mainly as a result of (a) a lack of database and information sharing across agencies; (b) a lack of effective risk-based regulations and systems; and (c) the poor or partial digitalization of licensing and authorization processes. Various policies and lack of action have affected the problem. First, the presidentially championed Zero Bureaucracy initiative aims to streamline and digitalize licensing and procedures for investors, but existing fragmentation hampers reform efforts. Second, an insufficient level of coordination and synergies among the large number of institutions supporting the development of the private sector exacerbates the perception of a fragmented and complex business environment and reduces the effectiveness of private sector support. For example, interviews consistently pointed to weak operational coordination between institutions responsible for investment promotion and aftercare, suggesting that this task remains dependent on the personal initiative of appointees, and that a framework for a clear vision, strategy, and coordination is pending. Third, even though some tax exemptions under the various fiscal regimes have arguably helped attract FDI and diversify exports, others have been found to constrain productivity and backward linkages.

**The assessment recommends specific policy actions that would enhance DR's competitiveness and business climate.** The critical steps to streamlining, modernizing, and digitalizing the regulatory environment for business include (a) creating a fully integrated transactional service delivery platform for the private sector (across all regimes, even if gradually); (b) automating the approval process of firm establishment; (c) digitalizing and streamlining the licensing processes; (d) introducing risk-based approaches for licensing and permitting; (e) providing comprehensive and interactive information on all available incentives on the websites of investment promotion agencies; and (f) strengthening the regulatory and institutional framework for digital governance. Recommendations for improving the coordination and client orientation of private sector support institutions include two measures: (a) mapping and comparing the de jure and de facto mandates and activities of the three FDI promotion and aftercare-related agencies and (b) articulating a results-based framework for client orientation and strategic coordination between the three institutions through an interinstitutional memorandum of understanding or a special purpose vehicle. And finally, for improving FDI attraction and retention, it is recommended that an ex post holistic assessment be made of the impact of incentives in the DR, the corresponding return on investment, and reforms needed, leveraging the International Monetary Fund–provided assessment tools already used by the Ministry of Finance of the Dominican Republic.

### **The Skills Gap and Low-Quality Education**

**Educational outcomes in the Dominican Republic are far below what would be expected for a country at this level of economic development.** Labor productivity is roughly half the level of aspirational peers and 44 percent lower than in structural peers<sup>22</sup>. The resulting skills shortage and mismatch is one of the most important structural obstacles to private sector investment and growth across the economy—but especially so for high-value-added activities. For example, a detailed assessment of the skills, competencies, and professional training for logistics in the Dominican Republic conducted by the World Bank in 2023 revealed that there is increased staffing demand driven by the growth and expansion of the logistics sector, with the biggest share of vacancies at the operative level (50 percent to 60 percent), and at the administrative level (30 percent to 40 percent). The survey found a shortage of candidates with adequate logistics skills in the market, with 85 percent of interviewed companies perceiving a shortage of qualified candidates for operative level positions (especially crane operators) and 78 percent indicating a shortage of qualified staff for administrative level positions. Consequently, most companies recruit personnel without proper knowledge, and then invest in on-the-job training related to the specific technical or operational aspects of the job. The availability of pre-employment education for logistics is limited, with 45 percent of companies indicating limited vocational offerings and 75 percent indicating limited university and college offerings, the provision of which is further exacerbated by weak foundational skills in science, technology, engineering, and mathematics (STEM) fields.

**Progress toward gender parity in education has not been matched by a comparable increase in economic opportunities for women.** The country ranks 112 out of 189 countries worldwide in the 2020 United Nations Development Programme (UNDP) Gender Inequality Index, and the COVID-19 crisis has widened existing gaps, especially among the most vulnerable. Women are more likely than men to experience unemployment and to work fewer hours; they are also likely to earn less than men even when employed in the same sector (on average they earn 85 percent of men's earnings). The wage gap is even larger in the informal sector, where women make only 60 percent of men's earnings on average. Top interventions to close gender gaps include expanding access to affordable and quality child care, facilitating school-to-work transition, attracting more women into STEM fields, and improving the performance of women-owned firms.

**The assessment recommends specific actions by the private sector to close the skills gap across industries in the Dominican Republic,** including (a) leveraging performance-based skills by private sector workers in industrial sectors such as logistics, medtech, or other growing fields, based on successful work placements; (b) increasing labor force proficiency in English through a comprehensive language program; (c) improving awareness of job and career opportunities in these growing sectors and increasing educational enrollment in STEM-related fields; (d) increasing and scaling sector-specific training programs focused on specialization areas, technologies, and capabilities identified by firms in these growing sectors; (e) adapting, scaling, and improving university programs that provide specialized skills relevant for growing sectors through collaboration between industry and academia; and (f) reforming incentives to support FDI investors who provide targeted continued education and upskilling of employees.

## Energy and Electricity

**Poor performance of the Dominican Republic's electricity sector is a major impediment to a sustainable and inclusive economic growth.** The electricity sector is characterized by one of the region's highest prices for the industrial sector, a precarious and economically inefficient supply, frequent outages, a fragmented institutional framework, weak regulatory enforcement, and a financially unsustainable distribution segment that requires large subsidies from the central government. In addition, high reliance on imported fossil fuels for generation (80 percent of total supply)<sup>23</sup> poses a threat to the financial and environmental sustainability of the sector. To enhance climate resilience and sustainability, the government has facilitated the development of renewable energy resources to mitigate the country's dependence on imported fossil fuels and lower the sector's carbon intensity. The Electricity Pact is supporting a least-cost approach to power generation through a recently signed decree establishing competitive auctions for renewable energy with opportunities for local and international project developers. Removing distortions in the energy sector can potentially unlock a 0.09 percentage point increase in the GDP by reducing blackouts that disrupt manufacturing activity.<sup>24</sup>



The assessment recommends specific policy actions to increase the penetration of renewables in line with the country's decarbonization targets. Recommendations include (a) implementing and streamlining competitive tenders to lower tariffs and mitigate the risk of developer concentration; (b) optimizing the stability and integration of renewable energy into the power grid; (c) preemptively addressing environmental and social issues through a standardized approach, including biodiversity and land rights acquisition assessments; (d) enabling the introduction of battery systems in the market; and (e) increasing investment in the transmission sector.

## KEY PRIVATE SECTOR INVESTMENT OPPORTUNITIES TO GROW MARKETS IN A SUSTAINABLE ECONOMY

While cross-cutting constraints are gradually addressed, the CPSD also highlights opportunities in three sectors where private sector capital and investment can be leveraged to diversify and boost exports while helping the economy pivot toward a more resilient and inclusive trajectory. First, the medtech assessment helps showcase how private sector investments and public policy actions can support growth in high-value-added manufacturing sectors (which are also leading employers of women), while helping to develop backward linkages and scale a new growth paradigm that is more inclusive of local SMEs and local talent. Recommendations aim to help seize potential nearshoring opportunities (and manufacturing FDI more broadly) and strengthen the broader set of high-value-added manufacturing sectors in the DR, such as electronics and pharmaceuticals. Second, the industrial real estate sector assessment shows how ripe opportunities for the development of eco-industrial parks (EIPs) can improve access to the next generation of serviced industrial land. A better industrial infrastructure will strengthen the competitive advantage of the DR and reduce the share of fiscal incentives in its unique value proposition. The private sector already plays a leading role in offering serviced industrial land in the DR, but reforms can help better leverage capital markets, increase resilience in the face of disaster risks, decarbonize the growth of manufacturing, improve the circularity of the economy, and position the DR as a leading destination in Latin America for green FDI. Third, the agri-logistics sector assessment identifies investments and reforms that can promote climate-smart agriculture, while also providing a blueprint of how logistics, more broadly, can better leverage the geographic position of the DR to promote higher-value added exports. The rationale for the shortlisting of these three sectors is rooted in many considerations (elaborated upon in the report) that include export and FDI diversification away from dominant sectors like tourism), the wider relevance of the analysis to similar sectors, and the opportunity to showcase how capital markets can be leveraged to achieve developmental objectives, as well as complementarity to recently published diagnostics and reports.

## Medtech Sector

**The DR is an attractive location for efficiency-seeking medtech firms, but addressing persistent challenges could greatly enhance growth and linkages with the local economy.** The Dominican Republic is a politically and economically stable country with proximity to US headquarters of multinational corporations (MNCs) that are major medical device manufacturers. Exports have grown substantially, and since 2009 the medtech sector has rivaled the DR's apparel sector for the highest volume of exports and has become the largest exported group of goods with US\$2.2 billion in 2022 (figure 4.4).<sup>25</sup> Many globally leading medtech firms are now present in the Dominican Republic and their plants supply global value chains of some medical products such as disposables, surgical and medical instruments, and therapeutic devices. The sector has also contributed to increasing the skills premium in the DR labor market and been a leading employer of women (64 percent share of total employment in the sector - figure 4.5).<sup>26</sup>

**Global trends are driving the increased demand in the medtech sector in the Dominican Republic and provide opportunities for private sector investment to transform health care and facilitate earlier disease detection, less invasive procedures, and more effective treatments.** Demographic factors around the world, such as an aging population, mass displacement of people, and income polarization, as well as rapidly increasing spending on health care, are among the trends that are changing the demand for medtech. Technological innovations are helping companies develop new models for health care and facilitating a shift from a treatment-of-the-sick approach (reactive model) to a prevention-and-cure approach (proactive model). Finally, existing high standards of product safety and quality concerns contribute to a high concentration in the global industry, as few firms can sustain the high investment costs required and simultaneously maintain strong global production and marketing. However, medtech firms have struggled to find local suppliers and continue to rely on their global suppliers rather than try to source locally, which presents some challenges.

**Channeling the growing foreign investment in medtech in the Dominican Republic into the local economy requires connecting MNCs with firms located domestically** (local or foreign), because most of the growth comes when the already established MNCs increase their production and add vertically integrated operations. Key constraints and challenges include (a) reducing the technical gap between the local suppliers and the MNCs' requirements, (b) developing technological skills and digital capabilities, and (c) improving the local entrepreneurship ecosystem. Alternatively, it would require attracting foreign firms that can source inputs and complete the supply chain within Dominican territory. All these actions are necessary to build the foundation for the next wave of FDI (including in other sectors), because proximity and competitive labor costs are insufficient to continue attracting investment in the medical devices sector.

**The assessment identifies opportunities to increase the competitiveness of the medtech sector in two identified markets:**

- **Disposable medical devices and therapeutic products for the US market.** Most firms in the Dominican Republic already specialize in producing and exporting low-risk medical devices, which have the lowest barriers to entry and least demanding requirements. The main challenges in this segment are related to the regulatory context and the lack of quality management systems, low technical capabilities for product design and production, information asymmetry between buyers and suppliers, and the lack of an accreditation body for sterilization and lab testing companies. Local suppliers also face long receivables delays and high cost of improvements to meet requirements, as well as low bargaining power in the face of international supply contracts and MNC vertical integration. The CPSD identifies specific private sector investment opportunities for disposables (or Class 1) medical devices, such as (a) providing increased ancillary services to MNCs, including sterilization and lab testing, or local production of main packaging supplies, and (b) increasing local manufacturing of components, such as molded components, extruded plastic tubes, and metal components.
- **Services for health care providers.** The general transition toward preventive health care provides development opportunities for medtech services segments that use medical devices and technologies supported by information and communication technology (ICT). The main constraints, however, include limited human capital to drive higher-value outsourcing services and a low level of English fluency, insufficient experience in existing business process outsourcing (BPO) operations with process definition and execution requiring teams to use different interfaces and automation, and low research and development (R&D) networking and agglomeration spillovers. The CPSD identifies specific private sector investment opportunities in services to health care providers, including investing in local BPO and knowledge process outsourcing (KPO) companies to position the country as a US nearshore hub of outsourced services, such as appointment scheduling, and digitalization including telemedicine, patient portals, and data analytics.

**Finally, the assessment recommends specific policy actions to grow DR medtech markets in three to five years.** These include (a) narrowing the certification and accreditation gap between domestic and international firms; (b) supporting technology and capability adoption by digitalizing firms and providing incentives to upskill domestic firms; (c) establishing an R&D program to strengthen firm capabilities in medtech by improving firm categorization, performing technical audits, piloting collaboration between anchor firms and suppliers, and developing customized training programs; (d) increasing access to invoice factoring to local suppliers to improve their liquidity and increase their investment in competitiveness-enhancing infrastructure, machinery, technology, and capacity building; (e) shifting the FDI strategy toward a proactive approach by adopting a nearshoring strategy that targets high-potential sectors (such as medtech) and reinforcing the value chains and stronger integration in GVCs; (f) simplifying registration processes for the establishment of medtech companies under the regime for SEZs; and (g) incorporating the medtech sector in the priority list when creating a single window centralizing the reception of information and interconnecting agencies and databases. Importantly, the medtech sector should especially benefit from skill development interventions aimed at closing the skills gap, which are outlined in more detail in the section on that cross-cutting constraint, section 3.2.

## Industrial Real Estate and Eco-industrial Parks Sector

**The Dominican Republic has leveraged industrial parks for decades to spur manufacturing-led growth.** As of 2022, 86 of them were dedicated to exports and had enabled the expansion and diversification of the country's export basket, with exports from firms under the SEZ regime (to which all exporting firms in industrial parks belong) increasing from US\$4.2 billion in 2010 to US\$7.8 billion in 2022.<sup>27</sup> Although the share of total exports of goods by these firms had decreased from 62 percent to 57 percent in the same period, the main reason was the emergence of gold exports and ferronickel (accounting for 49 percent of total exports by firms under the GTR in 2022 - figure 2.20).<sup>28</sup> Industrial parks have also attracted US\$2.9 billion in FDI during 2010–22 (figure 2.12). However, exceptional tax treatment and labor regulations have also led to trade-offs and reduced positive spillover effects. Although the fiscal policy layer of the Dominican Republic's industrial parks needs to be further analyzed within the larger macroeconomic and political-economy context, the essential aspect of the industrial parks' value proposition to customers (other than their overall geographic proximity to US markets and integration with efficient logistic corridors to that market) lies in the adequacy of the infrastructure and its business services to hosted industrial activities. Strengthening these aspects can only reduce the weight of fiscal incentives in the overall unique value proposition.

**There has been an acceleration in the demand for serviced industrial land (that is, industrial parks) in the Dominican Republic (figure 4.11).** In 2022, the country had approximately 49 million square feet of industrial shells (that is, actual buildings ready to be rented out), of which 47.5 million square feet were occupied, resulting in a 96 percent occupation rate.<sup>29</sup> Nearshoring estimations suggest that throughout a 5-year horizon, the country could host between US\$1.5 billion and US\$2.7 billion of additional exports, with the baseline growth projections generating a minimum estimated need of 8.3 million square feet for new industrial shell space or a 19 percent increase of total capacity relative to 2021.<sup>30</sup> Recent data show that 5 million square feet have been already built and occupied in 2022, surpassing the one-year growth estimations of industrial shell space based on nearshoring. Data for 2022 are starting to confirm that this demand is materializing, as FDI toward SEZs increased by 28 percent compared with 2021 and was 38 percent higher than its pre-pandemic levels (figure 2.25).<sup>31</sup>

**With global consumer appetite moving toward more sustainable products, industrial real estate with environmental and social indicators in place could help the Dominican Republic increase its export competitiveness in the long term.** Eco-industrial parks provide an alternative to classic industrial land development approaches. Research has shown that EIPs provide a center of excellence for environmental, social, and governance (ESG) compliance, knowing that studies show a positive correlation between ESG-score improvements by firms and their share price. EIPs can also enable the economy to gradually shift its unique selling proposition from one based on special fiscal regimes to one based on the quality of infrastructure and services, stronger resilience to the effects of climate change, and adequate certifications and standards for firms seeking to decarbonize their production process and compete in the emerging global green economy—in addition to equally important assets such as improved skills, business environment processes, and energy reliability and cost.

**Among the various constraints that slow down the development of such a new generation of industrial parks, two stand out: inefficient industrial land markets and limited access to adequate long-term finance.** Industrial land markets are inefficient in the Dominican Republic. The lack of a clear ex ante definition of which lands can respectively be used for residential, industrial, or agricultural purposes creates a lack of visibility on which assets are available on the market, as well as distortions in their pricing. Commercial and residential uses (which are higher in density, often with higher rates of return on investment) can crowd out industrial uses. Taking stock of this, and of the apparent shortage of land dedicated to industrial development, the government launched the Santo Domingo 2050 decree, which incorporates 985 million square feet of public land and dedicates a significant part of it to the creation of an industrial corridor around the Circunvalación de Santo Domingo Avenue (that is, the beltway). Provided adequate territorial and land use plans are elaborated shortly, this policy action can significantly help address the constraint on the short term. Another key constraint relates to the lack of diversity and depth in the financial market to provide adequate access to long-term finance to develop green assets and nudge developers to respond to the demand of industrial land with higher ESG standards. Finally, the report also highlights gaps in the DR's legislation as it relates to industrial parks' sustainability practices and shortcomings hindering the crowding in of private sector capabilities into underutilized public assets.

**The assessment identifies and describes three main market opportunities where the private sector can be leveraged to be part of the solution and contribute to resilient and green industrial growth.** In a three- to five-year horizon, projections of nearshoring opportunities suggest an increase in demand for high-quality industrial land at a higher rate than recent growth trends, yielding an investment need of up to US\$690 million (see investment opportunity section):

- **Establishing special purpose vehicles that tap into capital markets to provide competitive sources of long-term finance to developers of greenfield EIPs.** Total expansion in industrial shell space in the next five years is projected to be between 4.4 million square feet, based merely on past growth performance, and 8.3 million square feet, based on the nearshoring-backed baseline scenario. Access to more suitable long-term finance can increase the interest of the private sector in the development of EIPs—instead of regular Class B industrial parks (IP)—and real estate investment trusts (REITs) and debt funds, based on institutional capital mobilization, could be an option to achieve that goal. EIPs will also help showcase how IPs can evolve beyond fiscal incentive-based competitive advantages to compete on a more substantive unique value proposition.



- **Green retrofitting of existing parks through sustainability-linked long-term finance, including corporate loans, bonds, and project finance.** The energy efficiency of buildings could increase by 27 percent if the roof and exterior walls were better insulated, glass efficiency for windows were increased, and more efficient lighting were installed for internal and external areas. In terms of water efficiency, a typical factory shell can save 9.63 percent by employing lower-flow technologies in restrooms and kitchens.<sup>32</sup> Furthermore, IPs' exposure to 15 hazards was analyzed under four hazard categories of wind, water, fire, and geoseismic risk. A preliminary assessment was conducted of their vulnerability and the adoption of recommended resilience measures to mitigate relevant hazards. The results suggested that industrial park assets in the Dominican Republic could strongly benefit from retrofitting and upgrading to incorporate resilience measures that help avoid economic losses for park operators and tenants. A range of long-term finance vehicles and instruments could facilitate that work.
- **Investments in utility-scale photovoltaic rooftop systems (PVRS) to decarbonize industrial growth.** PVRSs could ease the burden of high electricity bills significantly, thereby reducing occupancy costs for tenants. These systems can be significant in the Dominican Republic where electricity prices are among the highest in the region. Potential installed capacity of existing industrial parks in the DR is approximately 400 megawatts. From the park operator perspective, an alternative use of PVRSs is utility-scale generation, which creates an additional line of business for parks by becoming a renewable energy supplier to the grid through a purchasing power agreement (PPA) with distribution companies. A major industrial park in the country is developing PVRS, which could serve as a scalable precedent for a green market that would benefit from better access to long-term finance.

Finally, the assessment also recommends specific actions to (a) improve access to serviced industrial land (that is, industrial parks) by promoting coherent land use planning that identifies suited lands for sustainable industrial development, and their related infrastructure and connectivity needs; (b) leverage domestic and international capital markets to provide green long-term finance to the development of EIPs through seed public financing and investment trusts strictly focused on developing green industrial parks or EIPs; (c) facilitate access to green finance to existing industrial zones to strengthen their resilience and promote decarbonization; (d) introduce reforms that improve EIP-related regulations, such as the adoption of green certifications and standards for zones and responsible use of resources.

## Agri-logistics Sector

The Dominican Republic's geographic position is an outstanding asset for the development of logistics, yet some challenges in infrastructure and services remain to be addressed. In terms of transportation infrastructure, the main gaps for agri-logistics in the DR are related to the insufficient and inadequate conditions of secondary and tertiary roads. Significant investments have been made in the expansion and modernization of the port and airport infrastructure, but air transportation infrastructure can further benefit from improvements and regulatory upgrading. As for services, authorities have made recent strides toward improving the institutional framework for logistics, but competition and market demand issues in the ground transportation services sector continue to constitute a major drag on the DR's logistics performance. Key challenges include (a) anticompetition practices in the transport market resulting in uncompetitive price setting for shipments, (b) weak contract enforcement with producers, (c) informality, (d) empty returns in shipping trips, and (e) a greatly outdated truck fleet. Weaknesses in cold-chain management (exacerbated by issues related to energy reliability and affordability) and logistic services are among key hindrances for export competitiveness in semi-perishable and perishable Dominican products, such as fruits.

This sector assessment focuses on agri-logistics because of the key role it can play in driving climate-smart agricultural development, and it highlights constraints and investment opportunities in three markets for fruit produce. In particular, the agri-logistics assessment focuses on fruits as a relevant group that offers growth opportunities in local and global markets. The diagnostic includes a description of the main global trends in the agricultural markets and their corresponding implications for agri-logistics agents and processes, which tend to point more strongly toward shortcomings in “soft” logistics—rather than transport and infrastructure per se. The agri-logistics value chain, with its constraints and opportunities, differs depending on the end market.

The first market highlighted in the assessment for furthering competitiveness of the agri-logistics sector is international buyers in export markets, such as the United States and the European Union. High-value-added fresh fruits need a reliable cold chain and traceability with an emphasis on reducing the environmental footprint. Global trends indicate a growth in consumption of healthy foods and environmental responsibility, the emergence of new regional and global competitors in the fresh fruit segment, and an increasing relevance of cold-chain reliability during handling, transport, and storage. Challenges in the agri-logistics value chain for international markets relate to (a) poor post-harvesting and handling due to deterioration of secondary and tertiary road networks, (b) low control of temperature and humidity variables, (c) low cold-chain capacity in warehousing and consolidation centers, (d) inadequate packaging and processing and gaps in the last-mile cold chain, and (e) inadequate customs inspection practices for port and air freight. The CPSD identifies specific private sector investment opportunities in agri-logistics for this international market that would help increase the capacity of cold-chain storage and rural collection centers, the local production of main packaging supplies (such as boxing, strapping, and pallets), and the sophistication of agri-logistics services provided through data analytics and technological solutions.

**The second market is in the local hospitality industry (indirect exports).** The main implications of global trends for agri-logistics actors relate to the need to provide traceability to consumers and hospitality buyers. Hotels also require minimally processed fresh fruits produce, a better shelf life, and high-quality products, and the local agricultural sector already supplies 85 percent of the total fresh primary products required by the tourism industry.<sup>33</sup> Challenges in the agri-logistics value chain for the hospitality industry include (a) the lack of rural accessibility, (b) post-harvest heat removal facilities and temperature-controlled warehouses near farms, (c) the low quality of equipment and noncompliance with delivery times, and (d) the lack of production capacity and technology for IV range products, those fruits and vegetables ready for consumption with minimal processing. The CPSD identifies specific private sector investment opportunities in agri-logistics for the hospitality market that would improve specialized agri-logistics services, such as on-demand planning and daily transport with cold-chain capacity of ready-to-eat small batches of locally sourced products or extension of the services of fruit packaging companies (through skills and technology acquisition) to include ready-to-eat products—for example, peeled fruit, juice, smoothies, and sauces.

**The third is the local wholesale markets and supermarkets, because the per capita consumption of fresh fruit and milk in the Dominican Republic is higher than the world average.** The central implication of global trends for the local agri-logistics supply chain relates to increasing the quality of fruits and food locally sourced by improving times from farm to the table while supporting local producers in planning their crops and harvest. Challenges for local wholesale markets and supermarkets include (a) inconsistent refrigerated transportation from farms to packing houses, (b) uncompetitive transportation services, (c) obsolete packaging equipment and technology, and (d) underdeveloped logistics automation processes. The CPSD identifies specific private sector investment opportunities for the local wholesale market that would improve the quality of services in the chain from farmer to retailer, cold-chain facilities for the wholesale market, and specialized transport from farms to collection centers to supermarkets, wholesale markets, and grocery stores.

**The assessment recommends specific actions in the agribusiness logistics sector.** These include measure to (a) improve last-mile logistics, such as structuring investment projects (by obtaining concessionary loans, blended finance, or equity) to build or upgrade cold-chain capabilities and facilities; (b) improve first-mile logistics and collection capacity by supporting firms (particularly SMEs) through concessional loans or lines of credit to increase cold chain storage and rural collection center capacity, as well as sophistication of services through technological solutions and data analysis; (c) facilitate the export process and reduce storage times in the port/airport by improving awareness of the Single Window for Foreign Trade (VUCE) and implement an integrated simultaneous inspection system at ports/airports; (d) develop a comprehensive intervention program to improve food safety; (e) promote productive alliances and/or value chain-specific public-private dialogues between, on the one hand, supermarkets and fruit producer associations and, on the other hand, agri-logistics agents and tourism operators to address information asymmetries and improve alignment between suppliers and buyers; (f) redefine MERCADOM's strategy to reinforce its role as a supplier to other businesses (business-to-business [B2B]), rather than business-to-consumer (B2C); (g) build skills in areas such as food handling, pre-cooling, cold-chain equipment and facilities operations, and fruit-packaging

management through a specialized training program; and (h) carry out a supplier development program, with a financing component (soft loans or matching grants), for packaging. The agri-logistics sector can also benefit from skills development interventions aimed at closing the skills gap; these are outlined in more detail in section 3.2, where the cross-cutting constraints on skills are addressed.

Table ES.1 summarizes all the policy recommendations in the CPSD.

**TABLE ES.1. SUMMARY OF POLICY RECOMMENDATIONS DETAILED IN THE REPORT**

THEME/SECTOR	POLICY	RECOMMENDATION	TIMELINE		
Regulatory Complexity and Institutional Fragmentation	Streamlining and modernizing the regulatory environment for business	<ul style="list-style-type: none"><li>Automate approval process of firm establishment in SEZs.</li><li>Map and concentrate information on all available incentives on the CNZFE website.</li><li>Digitalize and streamline the licensing processes.</li><li>Introduce risk-based approaches for licensing and permitting.</li></ul>	Short term		
		<ul style="list-style-type: none"><li>Create a fully integrated transactional service delivery platform for firms.</li><li>Strengthen the regulatory and institutional framework of digital governance.</li></ul>	Medium term		
	Improving private sector institutions	<ul style="list-style-type: none"><li>Map and compare the de jure and de facto mandates of the FDI promotion and aftercare-related agencies.</li></ul>	Short term		
		<ul style="list-style-type: none"><li>Articulate a results-based framework through an inter-institutional MOU between the three investment promotion institutions.</li></ul>	Short term		
	Improving FDI fiscal incentives	<ul style="list-style-type: none"><li>Make an evidence-based assessment of all fiscal incentives to quantify their value addition.</li></ul>	Medium term		
	Skills Gap and Low Quality of Education	Closing the skills gap (applies to all sectors covered below)	<ul style="list-style-type: none"><li>Leverage performance-based private sector provision of vocational skills.</li><li>Increase labor force proficiency in English through a comprehensive language program policy.</li><li>Improve public awareness and attractiveness of jobs in growing sectors such as medtech and logistics.</li></ul>	Short term	
<ul style="list-style-type: none"><li>Establish more comprehensive sector-specific specialized training programs for skills in high-demand sectors.</li><li>Scale and improve university programs that provide specialized skills in growing sectors; reform curricula based on industry-academia dialogue.</li><li>Promote FDI investment in continued education and upskilling of employees.</li></ul>			Medium to long term		
Energy and Electricity			Increasing penetration of renewables	<ul style="list-style-type: none"><li>Implement and streamline competitive tenders by establishing standardized project documents.</li><li>Optimize the country's grid renewable energy integration and stability.</li><li>Address E&amp;S issues through a standardized approach.</li><li>Enable the market introduction of battery systems.</li></ul>	Short term
				<ul style="list-style-type: none"><li>Increase investment in the transmission sector.</li></ul>	Medium to long term

Note: CNZFE = Consejo Nacional de las Zonas Francas; E&S = environmental and social; FDI = foreign direct investments; SEZ = special economic zone.

THEME/SECTOR	POLICY	RECOMMENDATION	TIMELINE
<b>Medical Devices</b>	Strengthening certification and accreditation	<ul style="list-style-type: none"> <li>Adopt measures to narrow the certification and accreditation gap between domestic and foreign firms.</li> </ul>	Short to medium term
	Incubating and promoting linkages	<ul style="list-style-type: none"> <li>Support technology and capability adoption through dedicated programs with financial instruments.</li> <li>Establish an R&amp;D program to increase firms' investment in higher-value-added product/service development.</li> </ul>	Medium term
		<ul style="list-style-type: none"> <li>Increase access to invoice factoring to local suppliers to improve liquidity and increase investment.</li> </ul>	Short to medium term
	Orienting FDI promotion to linkages	<ul style="list-style-type: none"> <li>Shift the FDI strategy toward a proactive approach focused on reinforcing the value chains, and targeting critical suppliers in the GVC, to ensure the enabling environment for MNCs to invest in the Dominican Republic.</li> </ul>	Short term
	Closing the skills gap	<ul style="list-style-type: none"> <li>Recommendations are consolidated and outlined under the Skills Gap section.</li> </ul>	Short term
	Reducing bureaucratic hurdles for investment	<ul style="list-style-type: none"> <li>Simplify registration processes for the establishment of medical devices companies under the SEZ regime.</li> <li>Incorporate the medtech sector in the priority list when creating a single window.</li> </ul>	Short to medium term
<b>Eco-industrial Parks</b>	Improving access to serviced industrial land	<ul style="list-style-type: none"> <li>Identify land within Santo Domingo 2050 for EIP development.</li> <li>Map the land available for industrial park development or expansion in existing parks.</li> <li>Consider PPP-based development of industrial land owned or currently managed by ProIndustria.</li> <li>Consider the legal process that would allow ProIndustria to hire private management.</li> </ul>	Short term
		<ul style="list-style-type: none"> <li>Elaborate a comprehensive land use plan for EIP development within Santo Domingo 2050</li> </ul>	Medium term
	Leveraging capital markets and green finance	<ul style="list-style-type: none"> <li>Clarify and codify a regulatory framework of REITs.</li> <li>Modify the mandate of public sector trust to mobilize capital markets.</li> <li>Promote green finance to retrofit brownfield EIPs.</li> <li>Promote the creation of debt funds to facilitate access to long-term finance.</li> </ul>	Short term
		<ul style="list-style-type: none"> <li>Explore the possibility of creating a public-private REIT focused on EIPs.</li> </ul>	Medium term
	Introducing reforms to EIP regulation	<ul style="list-style-type: none"> <li>Develop a national strategy for EIPs with a potential certification scheme.</li> <li>Strengthen institutional support to IP operators.</li> <li>Integrate EIP requirements into the development and operation of public-private developed IPs.</li> </ul>	Short term
		<ul style="list-style-type: none"> <li>Improve building codes associated with green buildings and develop institutional support that promotes green building certification.</li> </ul>	Medium term

Note: EIP = eco-industrial park; FDI = foreign direct investments; GVC = global value chain; IP = industrial park; MNCs = multinational corporations; PPP = public-private partnership; R&D = research and development; REIT = real estate investment trust; SEZ = special economic zone.



THEME/SECTOR	POLICY	RECOMMENDATION	TIMELINE
Agri-logistics	Closing the skills gap	<ul style="list-style-type: none"> <li>Recommendations are consolidated and outlined under the Skills Gap section.</li> </ul>	Short term
	Closing the infrastructure gap	<ul style="list-style-type: none"> <li>Adopt multiple measures related to improving last-mile logistics (such as increasing cold-chain capabilities in ports, airports, and wholesale markets; building cold storage for cargo inspection processes).</li> <li>Adopt multiple measures related to improving first-mile logistics and collection capacity (such as rural collection centers and cold-chain storage).</li> </ul>	Short Term
	Addressing market and governance constraints	<ul style="list-style-type: none"> <li>Adopt multiple measures (such as implementing simultaneous inspection systems in ports/airports); ensure interoperability with the VUCE to facilitate the export process and reduce storage times in the port/airport.</li> <li>Develop and implement a comprehensive intervention program to improve food safety.</li> <li>Promote PA between fruit producers and supermarkets.</li> <li>Promote PA and/or facilitate PPD between agri-logistics agents and tourism operators.</li> <li>Redefine MERCADOM's strategy to be focused on B2B, instead of B2C.</li> <li>Carry out supplier development programs, with a financing component for packaging in the Dominican Republic.</li> <li>Facilitate access to equipment and technology adoption loans.</li> </ul>	Short Term

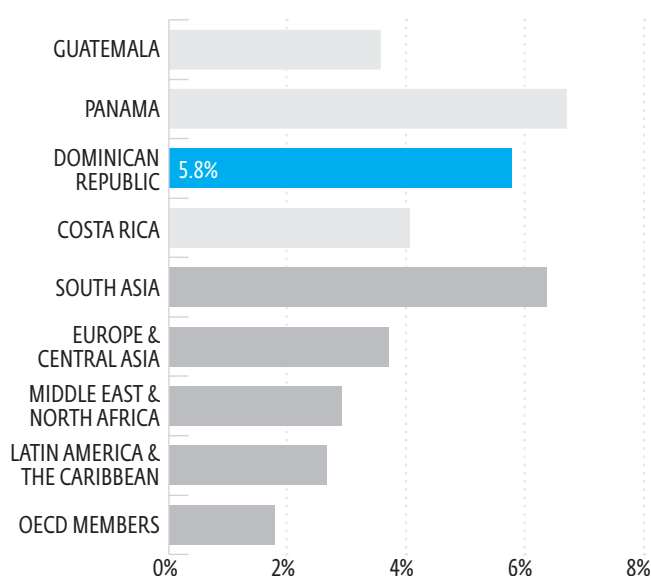
Note: B2B = business-to-business; B2C = business-to-consumer; MERCADOM = Dominican Wholesale Center for Agricultural Supplies; PA = productive alliances; PPD = public-private dialogue; VUCE = Ventanilla Única de Comercio Exterior.

# 1. COUNTRY CONTEXT

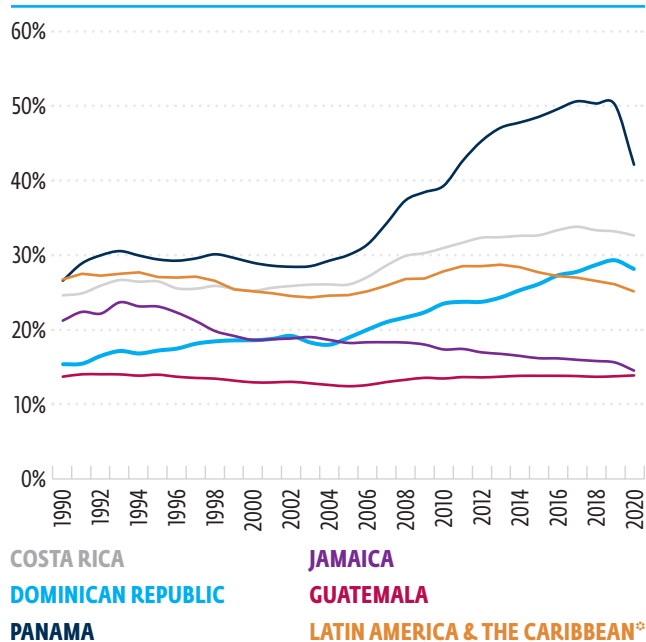
## 1.1 MACROECONOMIC FUNDAMENTALS: STRONG GROWTH BUT SHRINKING FISCAL SPACE AND LAGGING INCLUSION

The Dominican Republic (DR) experienced strong overall economic growth during the past decades. The country has a population of 10.4 million (2020) and is the largest economy of the Caribbean and Central America, and eighth largest in Latin America and the Caribbean (LAC), reaching US\$114 billion in 2022. With growth averaging 5.8 percent per year from 2005 to 2019, the DR outperformed most LAC economies and became one of the top performers among emerging markets (figure 1.1). Two decades of fast economic growth (interrupted only in 2002–03 by a banking crisis and more recently by the COVID-19 pandemic) allowed the country's per capita income to increase almost threefold.<sup>34</sup> As figure 1.2 indicates, there was a catch-up or economic convergence process in the DR. The remarkable growth was underpinned by macroeconomic stability and an array of market-oriented economic reforms. The reforms started in the 1990s and included tax incentives, the liberalization of foreign exchange transactions and trade agreements, and elimination of price controls and of restrictions on foreign direct investment (FDI) in almost every sector.

**FIGURE 1.1. REAL GDP GROWTH, AVERAGE (%) 2005–19**



**FIGURE 1.2. GDP PER CAPITA IN THE DR AND SELECTED PEER COUNTRIES IN PERCENTAGE OF US GDP PER CAPITA, 1990–2020**



Source: CPSD core team based on World Bank World Development Indicators dataset.

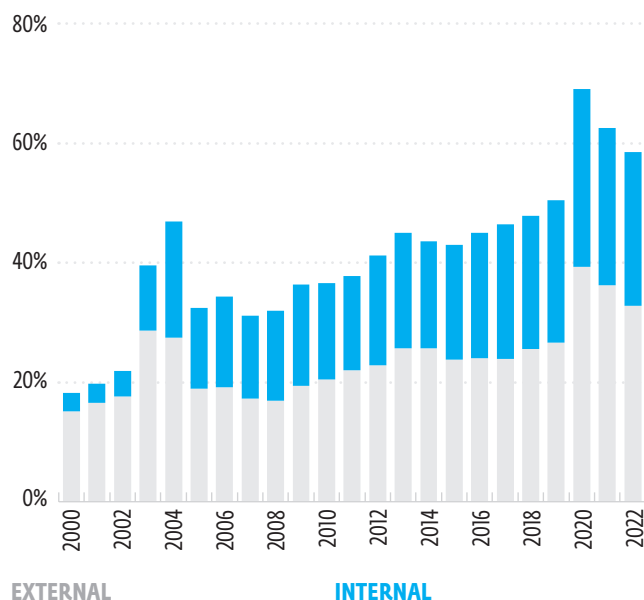
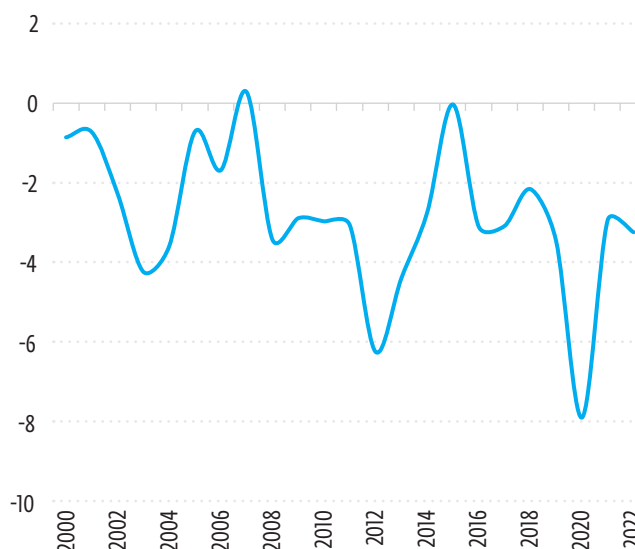
Note: GDP = gross domestic product.

\*IBRD and IDA countries only for regional aggregates. GDP per capita is measured using 2017 constant prices adjusted by purchasing power parity.

**Poverty and inequality have declined consistently since the early 2010s.** While the poverty rate (defined as the population with less than US\$6.85/day, adjusted by purchasing power parity) increased from 41 to 57 percent of the population over 2002–04 because of the economic shock from the banking crisis, since 2013 there has been a steady decline, and by 2021 it had fallen to 23 percent. Similarly, the middle class (incomes between US\$13/day and US\$70/day) expanded from 25 to 42 percent, outnumbering the poor in 2014. Income inequality improved (the Gini coefficient fell from 0.51 to 0.38 over 2000–21), as the per capita income for the poorest 40 percent of the population grew compared to the top 60 percent (3.4 versus 2.9 percent, respectively, during 2004–16 and 6.2 versus 5.8 percent, respectively, during 2017–19).

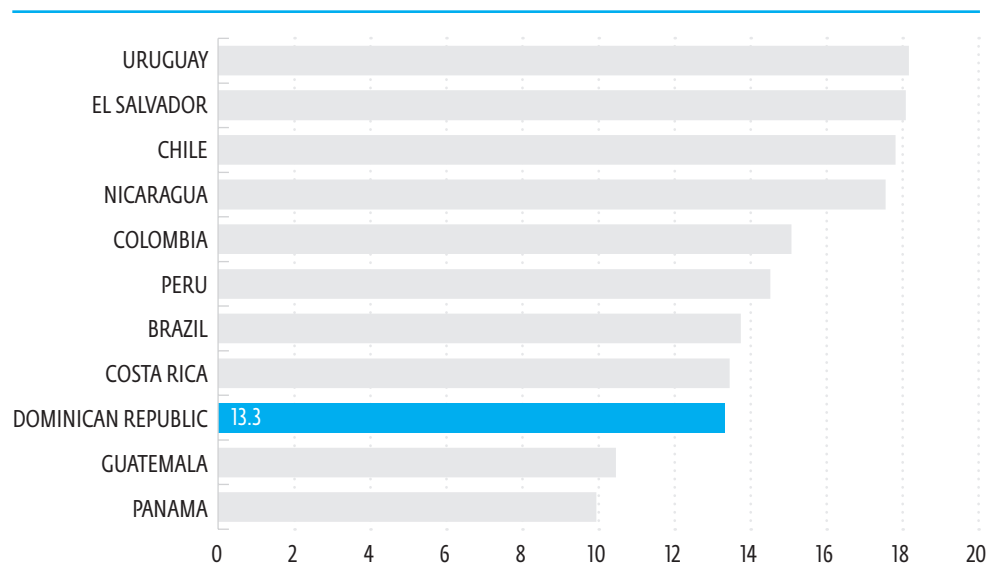
**Despite the country's sustained growth levels and strong economic outcomes, improvements in its social indicators remain below target.** The rates of poverty reduction in the DR are comparable to those achieved by other regional peers, despite the DR's higher economic growth. Persistent inequality is linked to a lack of high-quality job opportunities. Despite robust economic growth, more than half of the jobs in the DR are in the informal sector, mostly concentrated in nonexporting activities. Additionally, the country's performance in reducing monetary poverty has narrowed the gaps between rural and urban areas, but there is room for improvement. Three out of every four people that moved out of poverty between 2017 and 2019 resided in urban areas, where poverty rates were already lower than in rural areas.<sup>35</sup> COVID-19 emergency transfers narrowed the urban-rural gap, but recent simulations suggest that after their removal, the gap could widen again since the crisis did not remove structural inequalities across regions. Finally, since 2005, poverty rates have been consistently higher among women than men, and by 2019 the share of women-headed households living below the poverty line was 25 percent (versus 19 percent for men-headed households).

**According to International Monetary Fund (IMF) and World Bank assessments, the public-debt-to-GDP ratio remains sustainable but has been increasing steadily and significantly since 2005 (figure 1.3), reflecting fiscal weaknesses that were compounded by the COVID-19 pandemic.** In 2020, the central government balance deteriorated sharply (figure 1.4), due largely to emergency spending, resulting in an increase in debt levels—notably external. The 4.2 percent of GDP fiscal stimulus that was adopted in 2020 in response to COVID-19 is slowly being lifted as the recovery gathers pace (COVID-19-related spending amounted to about 3.3 percent of 2020 GDP, while forgone revenue reached 0.9 percent of GDP). Although public debt declined in 2021 as the fiscal position gradually returns to prepandemic levels and growth recovers, weaknesses in the government debt profile expose it to risks from peso depreciation and higher interest rates globally, because external debt accounts for three-fifths of total consolidated debt (figure 1.3).

**FIGURE 1.3. CONSOLIDATED PUBLIC DEBT AS PERCENTAGE OF GDP****FIGURE 1.4. CENTRAL GOVERNMENT FISCAL BALANCE AS PERCENTAGE OF GDP**

Source: CPSD team's calculations based on data from Minister of Finance and Central Bank of the Dominican Republic.

Beyond the impacts of the COVID-19 crisis on public finances, the Dominican Republic has historically been among countries with the lowest levels of revenue as a share of GDP in the region (figure 1.5). Low tax revenues can be partially attributed to high tax expenditures (6.7 percent of GDP in 2016) resulting from numerous value added tax and excise exemptions and other tax incentives provided to firms operating in special tax regimes. Low tax revenues can also be attributed to a relatively high tax threshold (only 14 percent of formal workers pay personal income taxes) and a low tax base because of informality and fiscal expenditures.<sup>36</sup>

**FIGURE 1.5. TAX REVENUE AS PERCENTAGE OF GDP, 2019 OR LATEST**

Source: CPSD team's calculation based on World Bank World Development Indicators dataset.

#### **BOX 1.1. LOWER GROWTH AMID GEOPOLITICAL TENSIONS AND HIGHER INFLATION**

While limited, challenges from the impact of the war in Ukraine and tightening in global financial conditions confront the DR. Supply chains in key commodity markets (especially food, fertilizers, and energy) have been disrupted by the war, affecting volumes and prices of products that are relevant to the DR. According to the IMF, aggregate merchandise trade linkages with the Russian Federation and Ukraine are very limited, at about 0.7 percent of total trade in those countries. But there is some concentration in certain imports, in particular steel and iron—which accounted for about 10 percent of total steel and iron primary imports in 2020—and fertilizer from Russia, about 7 percent of total imports of fertilizer. In this context, inflation reached 7.8 percent at the end of 2022, which also prompted the Central Bank of the Dominican Republic to raise its monetary policy rate aggressively, to 8.5 percent from 3.0 percent in November 2021. While declining—inflation came in at 5.9 percent in March 2023—inflation is projected to remain close to the 5 percent upper bound of the target range toward the end of 2023. In the short term, tighter domestic and global financial conditions will make borrowing more expensive, resulting in a slight deceleration of economic activity—GDP growth is expected to slow down to 4.4 percent in 2023—amid a still-constrained fiscal policy space.

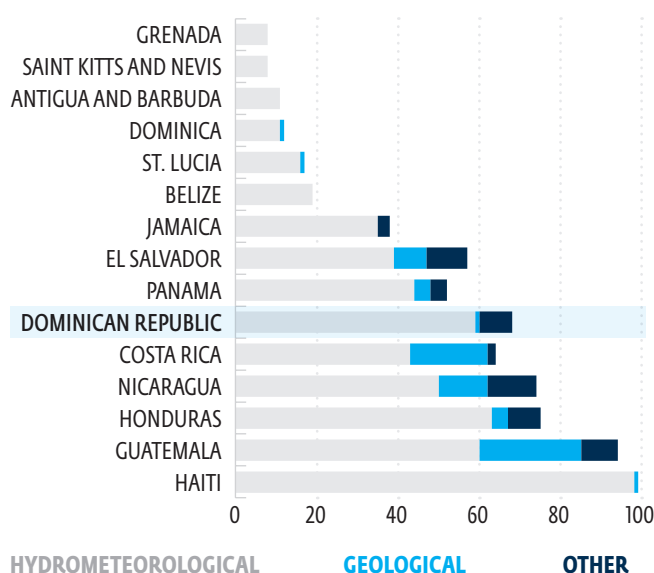


## 1.2 DISASTER AND CLIMATE CHANGE RISKS PRESENT AN INCREASINGLY CRITICAL CHALLENGE

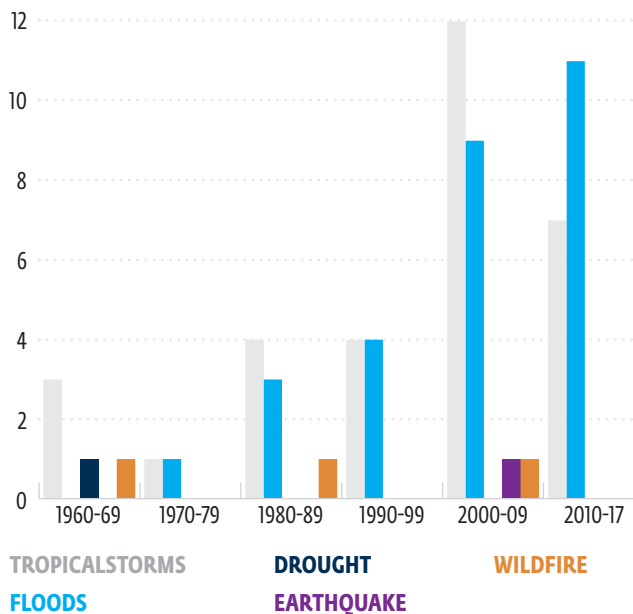
Another structural challenge that could erode socioeconomic gains is the economy's low resilience in the face of climate change impacts. The geographic location of the DR makes it highly exposed to climate change, disasters, and climate-related risks, which are expected to increase in magnitude and frequency (figure 1.6). Over 60 percent of the population is concentrated in continuously expanding urban areas, most of which are in coastal areas or areas at high risk of experiencing extreme weather events.<sup>37</sup> Similarly, the Notre Dame-Global Adaptation Initiative (ND-GAIN) Country Index compares countries based on their vulnerability and readiness toward climate change challenges and ranks the DR 103rd among 182 countries. The evaluation locates the biggest vulnerability issues in (a) food production, especially the change of projected cereal yields; (b) water, especially dam capacity; and (c) infrastructure because of dependency on imported energy. The current way of doing business is not considering the risks climate change poses to the country's economic development, and the DR shows low readiness to address the effects of climate change, according to the ND-GAIN Country Index. The absence of innovation is a key challenge, with the DR's score being very low in the ND-GAIN Index for readiness, which affects the DR's capability to adapt to the consequences of global warming.<sup>38</sup> The budget allocation for climate actions is estimated at 0.7 percent on average for the period 2001–21, equivalent to 0.1 percent of GDP, while similar countries such as Mauritius have allocated 0.6 percent of the GDP.<sup>39</sup>

**FIGURE 1.6. NATURAL DISASTERS IN LAC AND THE DR BY DECADE AND EVENT TYPE**

**Panel A:**  
Number of natural disasters by event type LAC  
(1967–2016)



**Panel B:**  
Number of disasters events in the DR by decade and event type  
(1960–2017)



Source: EM-DAT: The Emergency Events Database.

**The lack of diversification of exports and FDI in the Dominican Republic exacerbates the potential impacts of climate events, as key industries are vulnerable to increasing natural hazards.** The Dominican Republic is vulnerable to climate change impacts, including extreme events such as floods and hurricanes and long-term changes from sea level rise, shifts in rainfall patterns, and increasing temperature (ND-GAIN Index score: 46.4/100). Annual average loss from hurricanes is US\$345 million (approximately 0.5 percent of GDP), and the probable maximum loss for hurricanes is at least US\$11.482 billion (approximately 16 percent of GDP). Industry and tourism assets and value chains are frequently exposed to the impacts of these natural hazards. Tourism (when including both direct and indirect activities) makes up 15.9 percent of the DR's GDP, and 17.2 percent of total employment, while international tourism contributes 38.4 percent of total exports (2019); this concentration exacerbates the exposure of the economy to climate events.<sup>40</sup> In addition, historical data reveal that rising temperatures between 2015 and 2020 were associated with productivity losses of between 2 and 9 percent among manufacturing firms located in the Dominican Republic's poorest regions. Finally, key economic assets including both residential buildings and industrial and commercial buildings are at risk. Hurricane Maria (2017), for instance, resulted in total damage of approximately US\$931 million to industries such as tourism (9 percent of all losses) and agriculture (33 percent).

**Beyond disaster risk management, adaptation to the more gradual effects of climate change is an increasingly key consideration for private sector investment and sustained growth.** Tourism, again, will be one of the main sectors to bear the potential consequences of the projected erosion of up to 30 percent of the DR's beaches,<sup>41</sup> the loss of marine biological diversity, and projected sea level rise, not to mention increases in frequency or severity of storms. Additionally, tourism is increasingly suffering from excessive amounts of sargassum, which are stimulated by warmer ocean water and fertilizer waste and arrive at the most important shores for the industry, such as Punta Cana and Samaná. Destruction of mangroves and coastal ecosystems and the death of coral reefs, together with the overexploitation of fishing grounds, further increase the risks of flooding because of loss of natural protection, resulting in the reduction of biodiversity in the Dominican Republic.<sup>42</sup>

**In this context, water supply and infrastructure, as well as waste and wastewater collection and treatment, are inefficient and underfunded.** Reduced availability of water will have important impacts on various economic sectors, such as agriculture, with changes in rainfall patterns and overexploitation of water resources. The 2014–15 drought in the Dominican Republic was associated with a 10.8 percent reduction in crop production within the country and led to an 8.0 percent rise in staple food prices.<sup>43</sup> By 2050 freshwater resources are expected to decrease up to 25 percent.<sup>44</sup> The most critical challenges for water and sanitation services are (a) the rationing of the water supply due to droughts; (b) the pressure from rapidly growing urban zones; (c) old and obsolete infrastructure; (d) low percentages of invoicing and payment for services of drinking water; and (e) not enough investments in distribution, collection, and treatment systems. Wastewater treatment plants do not operate effectively due to a lack of financing and unwillingness of the wastewater producer to pay for basic services, due to a lack of knowledge of proper operation or water treatment procedure, and due to a dysfunctional governmental audit system.<sup>45</sup> This results in approximately 96 percent of all wastewater, industrial and household, being released untreated into rivers, the sea, or the ground, where it contaminates water reserves, soils, and aquifers. In the region of Santo Domingo, 81 percent of households are not connected to a sewer system. The DR's solid waste management is also lacking organization, financing, and infrastructure, which leads to environmental damage and contributes significantly to the country's greenhouse gas emissions due to open dumping practices.

**Finally, the economy is yet to adopt infrastructure upgrades and production processes that help to mitigate climate change, and timely reforms and investments can accelerate a greener growth model.** The main drivers of greenhouse gas (GHG) emissions in the DR are the high dependency on fossil fuel energy, lack of treatment of waste, and intensive use of fertilizers in agriculture. The DR has recorded a steady increase in overall and per capita GHG emissions since the 1990s, but with 3.9 tonnes of CO<sub>2</sub> equivalent per capita, the country is still below the world's average of 6.45 tonnes per capita (2018 CAIT Climate Watch data). Climate Watch data indicate that 64.0 percent of all emissions come from energy production, 24.0 percent from agriculture, 7.0 percent from waste, and 8.3 from industrial processes. Emissions from industrial processes are now seven times higher than in 1990, with F-gas making up a significant part of the increase and constituting 41 percent of all GHG emissions from industrial processes in 2018.<sup>46</sup> However, distributed generation has increased in the past 10 years, with significant emission reduction potential as consumers decouple from an energy grid heavily driven by fossil fuels. Between 2011 and 2020, 179 megawatts of solar rooftops have been installed in the DR, with a large portion being integrated in special economic zones (SEZs).

### **1.3 THE ROLE OF THE PRIVATE SECTOR IN PIVOTING TOWARD A MORE INCLUSIVE AND RESILIENT ECONOMY**

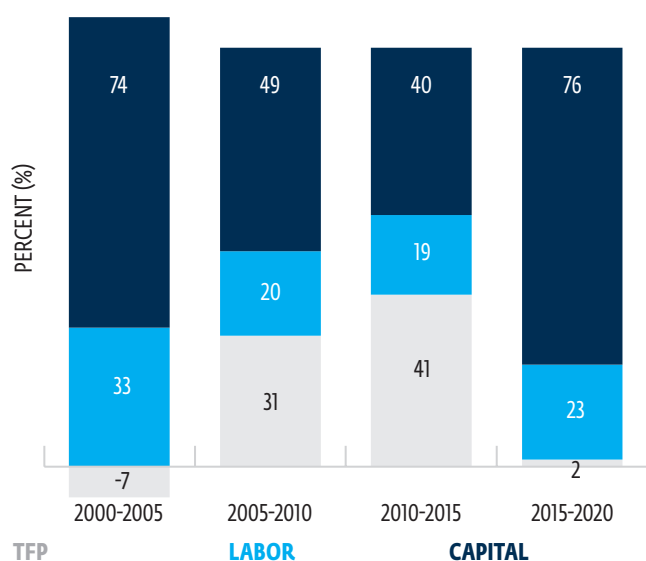
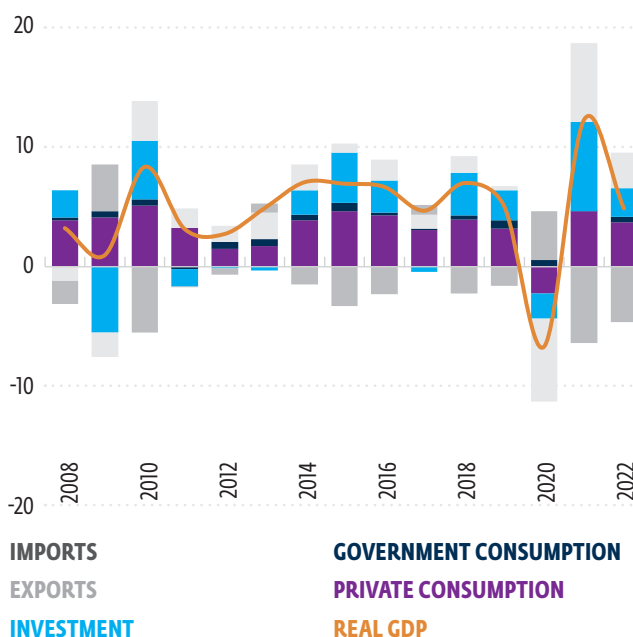
In conclusion, inclusion and resilience are critical country-level challenges for the economy, and policy action can help leverage private sector capital and skills to pivot the economy toward a more competitive, inclusive, and resilient trajectory. As discussed, solid macroeconomic fundamentals have reduced poverty, but inclusion remains a challenge; structural fiscal weaknesses and increasing vulnerability to shocks could weaken economic resilience, which is further eroded by climate change. The private sector can play a pivotal role in supporting the transition to an inclusive, low-carbon, and resilient economy, but reforms will be needed. Furthermore, the development of solutions to address inclusion and climate change challenges will require a large amount of financing. Given existing strong fiscal constraints, mobilizing and catalyzing private climate finance at scale will also be crucial, particularly in areas such as renewable energy, adapted infrastructure and decarbonization of industrial processes, green technologies, and water- and energy-efficient manufacturing.

## 2. PRIVATE SECTOR CONTEXT

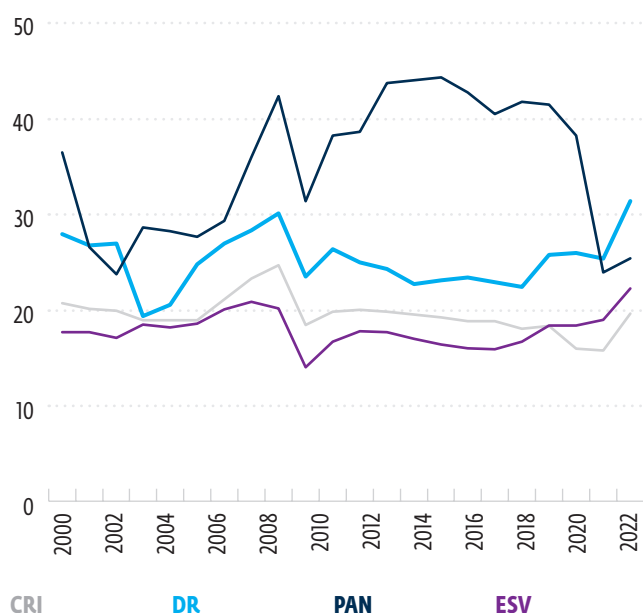
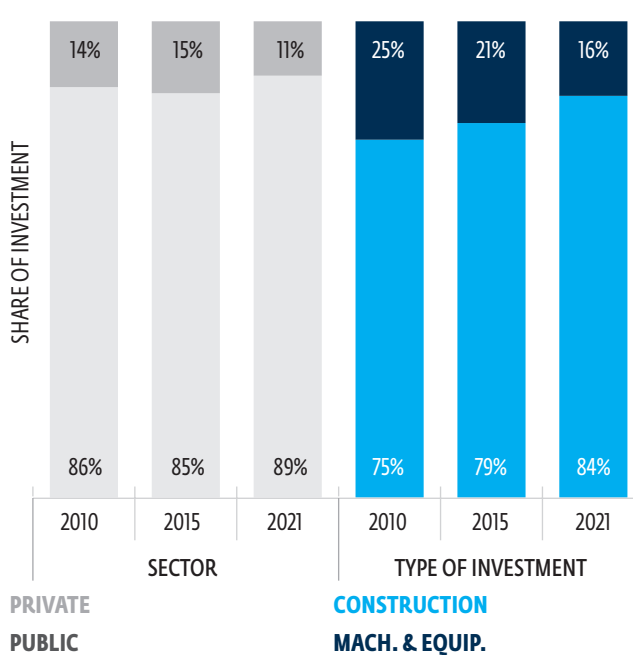
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The Dominican Republic is a US\$114 billion emerging market, primarily driven by the private sector. Although the sectors aggregated under services constitute more than one-half of the economic fabric (including tourism at 6.0 percent—not accounting for indirect jobs—and transport at 8.5 percent), no single sector commands more than a 20.0 percent share of GDP.<sup>47</sup> Construction stands as the largest sector, holding a 15.2 percent share, but it also faces the challenge of having the lowest formality rate of 13.2 percent.<sup>48</sup> Manufacturing is the second largest sector, accounting for 14.9 percent of GDP—local manufacturing (focused on food and beverages, alcohol, and tobacco) comprises 11.6 percent, and SEZ manufacturing (focused on medical devices, electronics, tobacco, and garments) comprises 3.3 percent. The sector faces many challenges in terms of productivity, competitiveness, and links between exporting and local firms (see below). Agriculture stands at 6 percent of GDP, and except for a limited number of products (for example, cocoa and bananas), it has largely been oriented toward the internal market. After the banking crisis of 2003, the contribution of overall total factor productivity (TFP) to GDP growth has been nonnegative, but it has not increased in lockstep with per capita income. To achieve inclusive and resilient growth, the Dominican Republic needs to generate increases in productivity by increasing the quality of investment (including FDI), improving the provision of high-quality public services, deepening the connection and contribution to global value chains (GVCs), and upskilling the labor force.

For the past two decades, the Dominican Republic has offered numerous competitive advantages to promote private sector growth, but real GDP growth has been mainly driven by capital accumulation (figure 2.1). The DR's attractiveness for private investment has been based on structural assets and business environment factors such as political, social, and economic stability; strategic geographical location; access to the world's main markets through various trade agreements; legal certainty; and a tax incentive regime to promote FDI in tourism, manufacturing, and export-oriented services.<sup>49</sup> Factors such as investment and private consumption have been the main engines of growth (figure 2.2). From 2014 to 2019, the construction sector contributed an average of 1.2 percentage points of GDP (18.5 percent of total growth). Investment as a share of GDP was about 25 percent (figure 2.3)—most of which was carried out by the private sector—which was higher than most comparator countries (figure 2.4). However, the potential positive impact of FDI on the country's participation in GVCs and domestic links has not been maximized in recent years, and trade has contributed very little to growth (see below). Contrary to structural and aspirational peer economies such as Costa Rica and Uruguay, the growth of TFP for the DR has been modest, averaging a growth rate of 0.9 percent each year, and has not increased in lockstep with per capita income.<sup>50</sup> As noted by the Country Economic Memorandum (CEM), a 1 percentage point increase in TFP above its historical average would lift GDP growth to nearly 7 percent, increasing the average income of the poorest households by nearly 17 percent by 2030 and substantially reducing the inequality income gap.

**FIGURE 2.1 CONTRIBUTION TO GROWTH OF FACTORS OF PRODUCTION****FIGURE 2.2 DR, CONTRIBUTION TO GDP GROWTH BY COMPONENTS, PERCENTAGE POINTS**

Source: CPSD team calculations based on data from the World Bank World Development Indicators (WDI) using the Growth Accounting Tool and Central Bank of the Dominican Republic (National Accounts).

**FIGURE 2.3 INVESTMENT AS A SHARE OF GDP, DR VERSUS COMPARATOR COUNTRIES****FIGURE 2.4 DR INVESTMENT BY SECTOR AND TYPE**

Source: CPSD team calculations based on data from the WDI and the Central Bank of the DR.

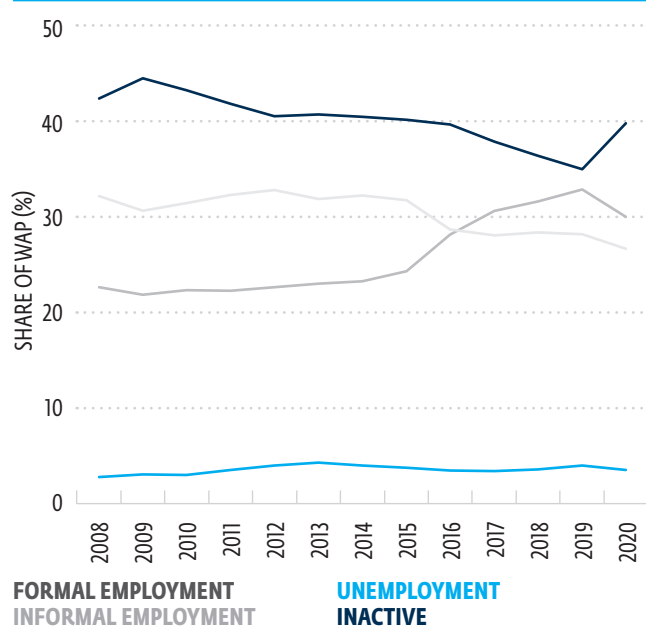
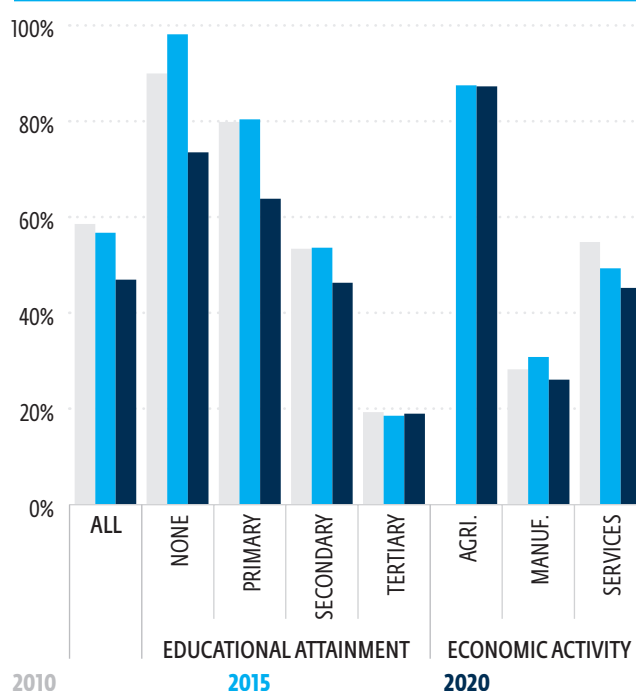
Note: CRI = Costa Rica; ESV = El Salvador; PAN = Panama.



## 2.1 MOST SMEs ARE CHARACTERIZED BY LOW PRODUCTIVITY, HIGH INFORMALITY, AND LOW-QUALITY JOBS

Firms in the Dominican Republic are predominantly small and medium enterprises (SMEs) and they tend to be characterized by limited export activity, high dependency on imports, and low technology adoption and innovation capacity. The nearly 20,000 SMEs (97 percent of all firms) in the Dominican Republic employ more than 2.7 million people (60 percent of the workforce) and generate almost 40 percent of GDP. SMEs are mostly present in sectors such as services and retail. Large firms, on the other hand, are mostly present in mining, manufacturing, and accommodation (tourism). Only 10 percent of formal firms in the Dominican Republic are involved in exports, which is below the percentage of formal and exporting firms in other upper-middle-income countries, while 58 percent of manufacturing firms import from abroad, which is above the comparator's average. Broad-based dependence on imported inputs reflects, among other things, the high cost of production in the Dominican Republic (outside of SEZs), as well as limited innovation. Innovation in the Dominican Republic's private sector is lagging, as measured by the level of technology adoption among micro, small, and medium enterprises (MSMEs). According to the 2019 World Economic Forum's Global Competitiveness Index, the DR is close to the bottom 50 of 141 economies regarding innovation capability (85th out of 141) and information and communication technology (ICT) adoption (79th out of 141).

Despite robust economic growth, more than half of the jobs in the DR are in the informal sector, mostly concentrated in low-productivity and non-exporting activities. Since 2010, formal employment has increased by 4.5 percent, while informal jobs have decreased by 0.1 percent (figure 2.5). But the incidence of informality in the Dominican Republic is high, even when compared with peer countries, and it worsened during the COVID-19 pandemic. In the Dominican Republic, 57.3 percent of workers were informal in 2021, above structural and regional peers like Costa Rica (39.3 percent) and Panama (55.7 percent). Informality is particularly high for low-skilled workers: between 2010 and 2015, more than 80 percent of workers with primary or no education were working in the informal sector, whereas 50 percent of workers with secondary education and less than 20 percent of workers with tertiary education were working in the informal sector. Informal employment rates are particularly high in low-productivity sectors, with 80 percent informality in agriculture, close to 50 percent in services, and less than 25 percent in manufacturing (figure 2.6). The negative correlation of informality with firm productivity is well documented in the literature<sup>51</sup> —because informal firms have incentives to remain small and cannot benefit from economies of scale, workers in informal firms tend to be lower skilled and less productive, and the lower exposure to international trade lowers competitive pressures.

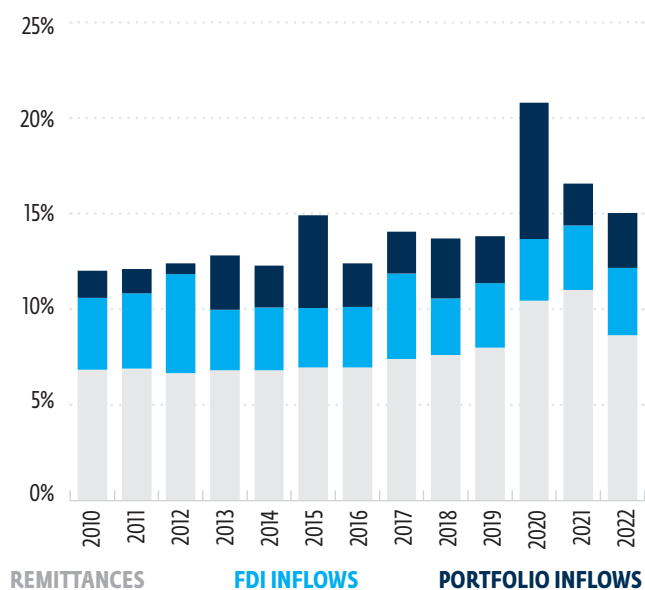
**FIGURE 2.5 EVOLUTION OF LABOR MARKET INDICATORS****FIGURE 2.6 INFORMAL EMPLOYMENT RATE BY EDUCATIONAL ATTAINMENT AND ECONOMIC ACTIVITY**

Source: CPSD team calculations based on data from Oficina Nacional de Estadística.

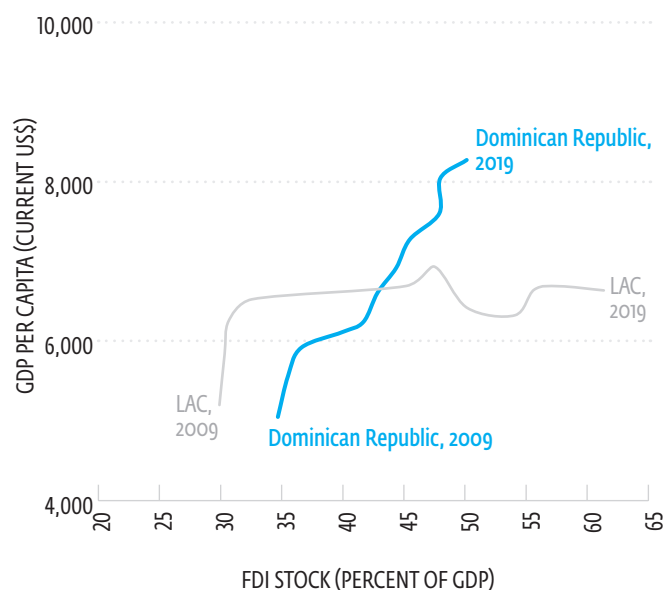
Note: WAP = working age population.

## 2.2 FDI IS CONCENTRATED IN TOURISM AND REAL ESTATE AND HAS NOT SUFFICIENTLY CONTRIBUTED TO GVC INTEGRATION

Foreign direct investment (FDI) significantly contributes to the DR's economic performance. The Dominican Republic performs roughly in line with comparator countries with respect to the inflow of FDI. In the past decade, the inflow of FDI into the DR averaged about 3 percent of GDP and has consistently been a significant source of external finance for the country alongside remittances (figure 2.7). On average, GDP per capita has risen more rapidly in the Dominican Republic than in other Latin America and the Caribbean (LAC) countries, while FDI stock has increased less than the regional average (figure 2.8).

**FIGURE 2.7 DR'S FDI INFLOWS VERSUS OTHER SOURCES OF EXTERNAL FINANCE, 2010–22**

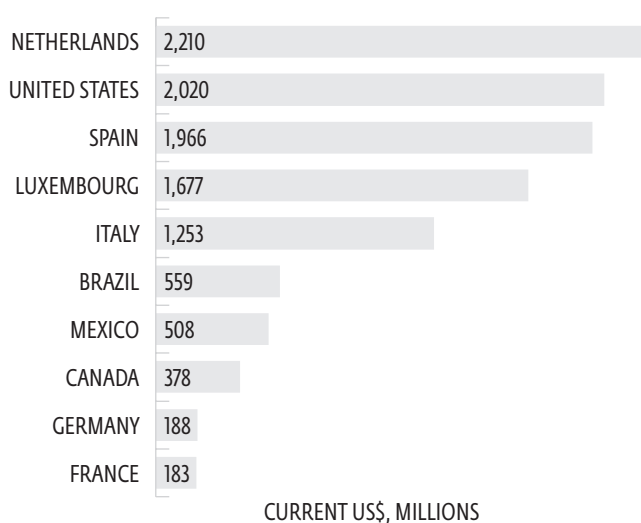
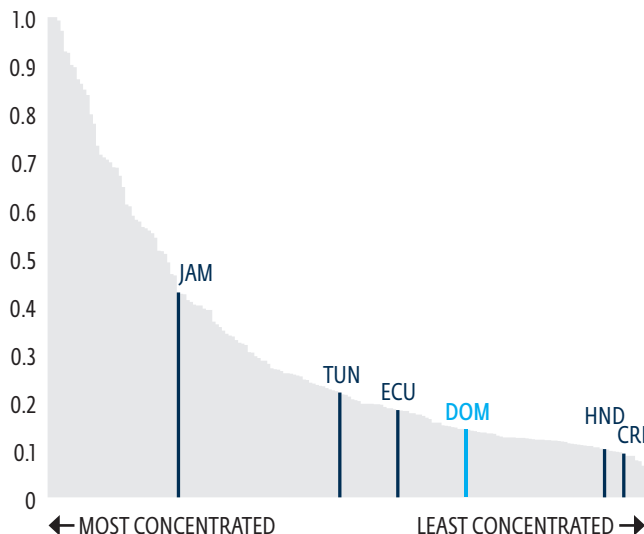
Source: CPSD team calculations using Central Bank of the Dominican Republic information.

**FIGURE 2.8 DR'S INWARD FDI STOCK AND INCOME GROWTH PATH, 2009–19**

Source: UNCTAD (FDI stock) and World Development Indicators (GDP per capita).

Because capital stock was initially low, however, and inflows have been average, DR lags comparator countries with respect to the accumulated stock of FDI (figure 2.11). FDI inflows have generally totaled between 4 and 5 percent of GDP on average across the Latin America and the Caribbean (LAC) region, among upper-middle-income countries, and among emerging and developing countries overall, slightly above the 3 to 5 percent of GDP recorded in the Dominican Republic. FDI stock rose from 35 percent of GDP in 2009 to around 50 percent of GDP in 2019. While the pace of this increase is on par with comparators, the low starting position of the Dominican Republic has resulted in an FDI stock below most comparators in the LAC region as well as below the averages for emerging economies and upper-middle-income countries. The stock of FDI in many comparator countries is well above 50 percent of GDP. It will be critical for the DR to ensure it has an enabling environment and investment climate to maximize its attractiveness as an investment destination in the context of postpandemic economic recovery and growth.

**Advanced economies in Europe and North America are the primary source of inward FDI for the Dominican Republic.** The United States and European countries such as the Netherlands, Luxembourg, and Spain make up the largest sources of inward FDI, with each holding more than US\$1.5 billion of assets in the Dominican Republic (figure 2.9). Italy is also a large contributor of inward FDI, holding over US\$1.2 billion. With a relatively diverse set of investors, the Dominican Republic is among the top third of least concentrated countries across the globe in terms of FDI sources, with Costa Rica and Honduras ranking as less concentrated (figure 2.10).

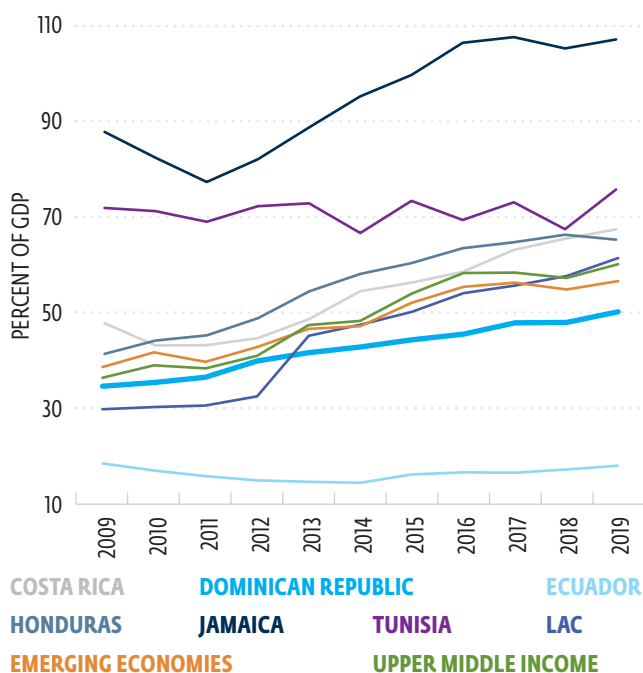
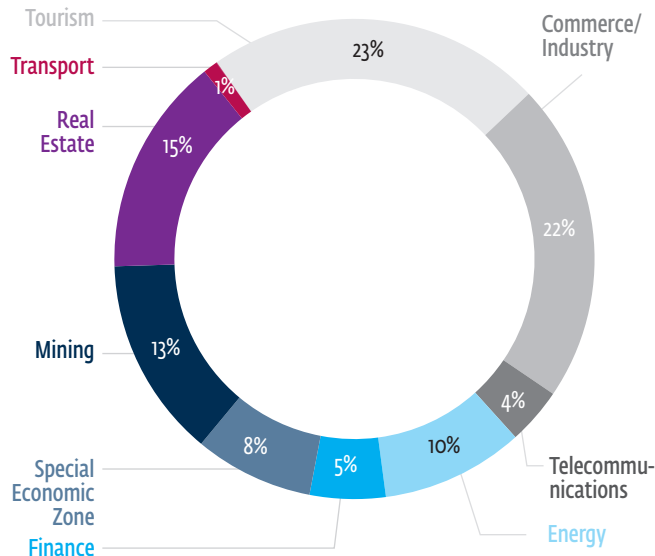
**FIGURE 2.9 DR'S MAIN SOURCES OF INWARD FDI STOCK, 2018****FIGURE 2.10 DEPENDENCY ON FDI SOURCE COUNTRIES (HHI), 2018**

Source: CPSD team compiled from country sources.

Note: For figure 2.9, data shown are the stock of FDI from a given source country as estimated at the given year. Excludes FDI from countries designated as tax havens. For figure 2.10, the Herfindahl-Hirschman Index (HHI) of geographic concentration is defined as the sum of the squares of FDI inward stock from a given country. It would take the value of 1 in a case where all FDI originates from one country and approach zero the more dispersed FDI projects are across source countries. Calculation excludes FDI from countries designated as tax havens. Negative bilateral stocks are treated as zeros.

CRI = Costa Rica; DOM = Dominican Republic; ECU = Ecuador; HND = Honduras; JAM = Jamaica; TUN = Tunisia.

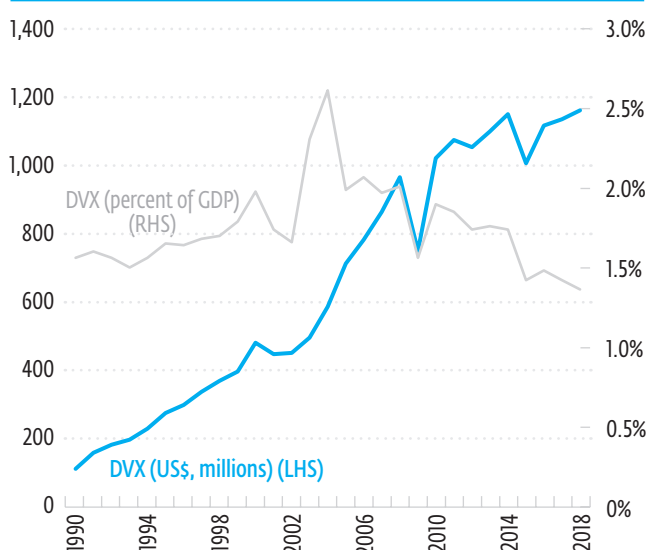
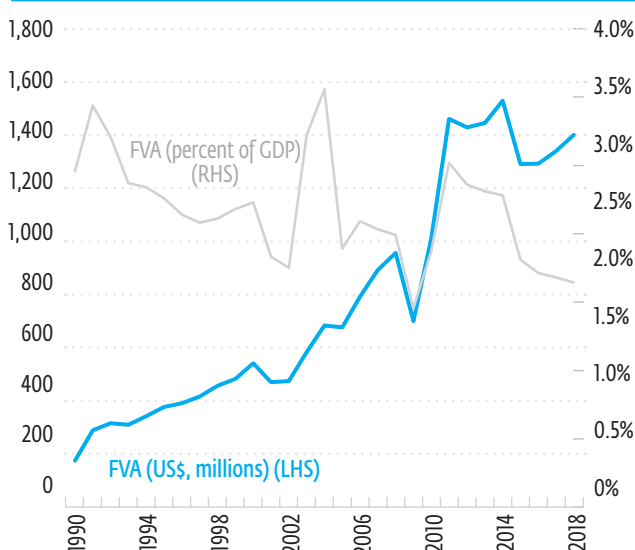
**FDI in the DR has mainly been natural resource-seeking and has become increasingly concentrated in tourism and real estate (construction) during the past decade.** Tourism represented 22.7 percent of FDI stock in 2022, followed by commerce, with 21.6 percent (figure 2.12). There have been 39 new projects or expansions in the hospitality industry since 2009, far outpacing all other industries. Beginning in 2009, projects in the hospitality sector are estimated to create more than 17,000 jobs, almost four times more than the next largest sector. It is noteworthy that tourism is particularly exposed to climate change impacts and that adaptation and impact mitigation measures include diversification within tourism and diversification of exports beyond tourism. There have been 18 projects in the communications sector totaling US\$1.8 billion as well as 13 projects in the utilities sector totaling US\$2.4 billion. Other sectors had varying project counts but totaled less than US\$700 million each. Relative to 2019, FDI increased in the energy sector (by 172 percent), driven by investments in renewables, and in SEZ manufacturing (by 39 percent), accounting for 19 percent and 9 percent, respectively, of total inflows in 2022.<sup>52</sup>

**FIGURE 2.11 INWARD FDI STOCK****FIGURE 2.12 FDI STOCK BY SECTOR, 2022**

Source: Central Bank of the Dominican Republic, Pro Dominicana Data Market, and UNCTAD.

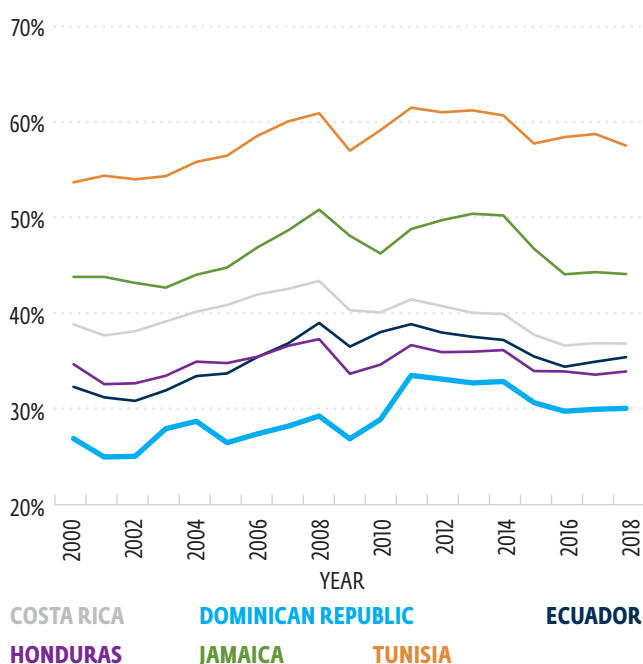
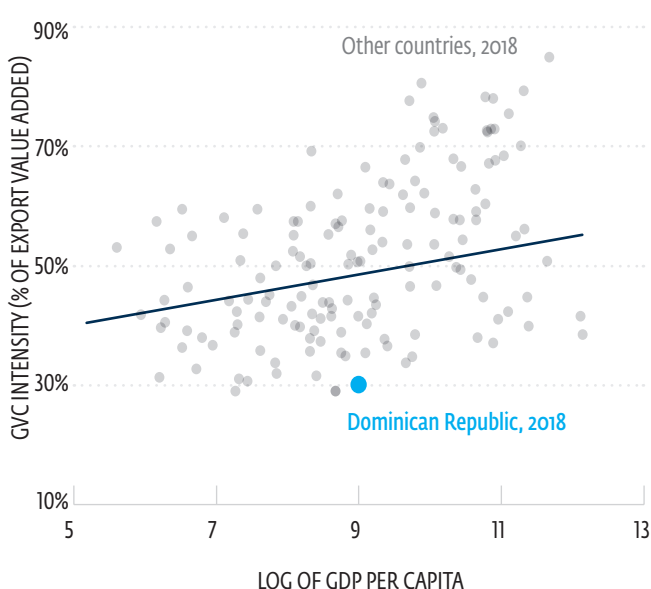
Note: FDI stocks are presented at book value or historical cost. For many economies, FDI stocks are estimated by cumulating FDI flows over a period or adding flows to an FDI stock that has been obtained for a particular year. LAC = Latin America and the Caribbean.

Data on investments received in the DR suggest that efficiency-seeking FDI flows have been limited and have not led yet to high GVC participation by the DR. Analysis of FDI flows also suggests that the DR's participation in GVCs is among the lowest in the world, and declining. DR's indirect value added (DVX) in exports—the value of exports from the Dominican Republic that are used as inputs elsewhere and then exported onward as final goods—peaked in 2004 (figure 2.13). Foreign value added (FVA)—the value of imports to the Dominican Republic that are used as inputs in the production of goods that are subsequently exported to other countries—also peaked in 2004 (figure 2.14). Figures 2.15 and 2.16 show the Dominican Republic's overall GVC intensity, which is the sum of DVX and FVA as a share of the total value of exports. The Dominican Republic's GVC intensity peaked at 34 percent of exports in 2011, and then fell to 30 percent by 2018, well below Tunisia (57 percent), Jamaica (44 percent), Costa Rica (37 percent), Ecuador (35 percent), and Honduras (34 percent). In fact, as shown in figure 2.16, the Dominican Republic's GVC intensity was among the lowest of any country with 2018 data available, and below most countries with similar income levels. These figures underscore not only the impact of past low levels of FDI, especially efficiency-seeking FDI, on the Dominican Republic's integration into global value chains, but also the opportunity that remains for significant deepening of the level of integration.

**FIGURE 2.13 DR'S INDIRECT VALUE ADDED IN EXPORTS (DVX), 1990–2018****FIGURE 2.14 DR'S FOREIGN VALUE ADDED IN EXPORTS (FVA), 1990–2018**

Source: CTAD-EORA database and World Bank WDI.

Note: DVX (indirect value added) is the share of exports that are not consumed in the importing country but are instead reexported by that country to a third country as part of a good or service. FVA (foreign value added) is the share of foreign inputs used in the production of goods and services for export. LHS = left-hand side; RHS = right-hand side.

**FIGURE 2.15 GVC INTENSITY: DR VERSUS COMPARATORS, 1990–2018****FIGURE 2.16 GVC INTENSITY: DR VERSUS WORLD, 2018**

Source: UNCTAD-EORA database and World Bank WDI.

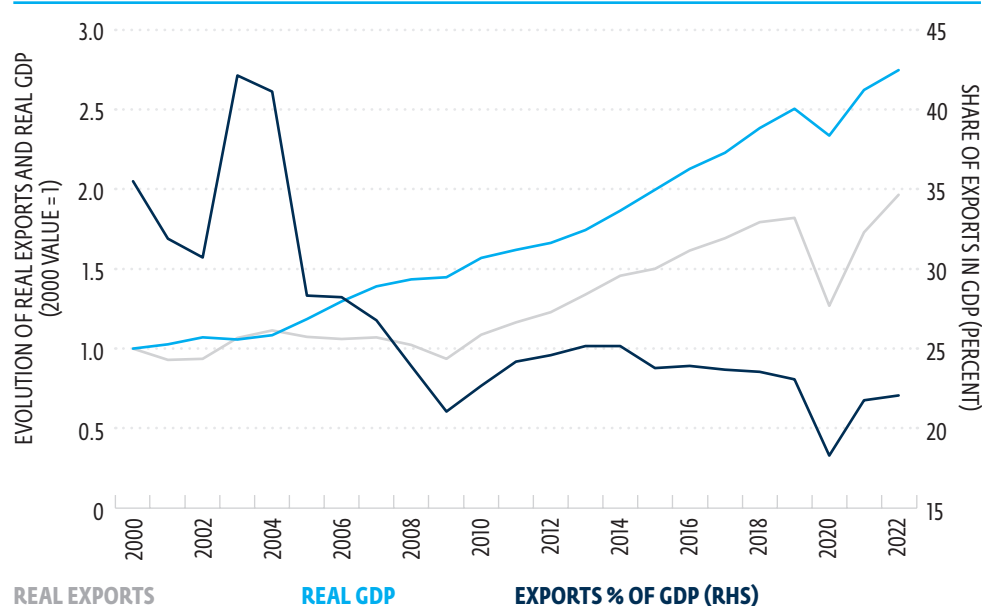
Note: GVC (global value chain) intensity is the sum of DVX and FVA, as a share of total value added of exports.



**Links with the local economy have also decreased over time.** Because FDI flows in SEZs are predominantly export oriented and driven by multinational companies (MNCs) competing in international markets, vertical links have predictably been difficult to achieve, given the scale and technology level of inputs they require. However, the DR also underperforms in horizontal links between MNCs and local firms, even though such linkages are both feasible and desirable as a vehicle for positive spillover effects. Between 2005 and 2018, the share of inputs that were sourced domestically went from 22 to 18 percent. The sectors that rely most heavily on imported inputs are textiles and apparel, medical instruments, pharmaceuticals, and electronics—all industries that are primarily located in SEZs and that need new and more sophisticated inputs that the domestic economy does not produce or where local production does not fulfill the necessary technical, regulatory, or quality standards. Although the system of exemptions granted to export-oriented firms under the SEZ regime has further incentivized these firms to intensify the foreign input content within their tradeable product, there is room to increase domestic value addition by integrating more domestic services and inputs across all broad sectors.<sup>53</sup> This points to an opportunity to deepen the level of integration and increase the inclusion of SMEs in GVCs, which can facilitate productivity increases through technology transfer and the creation of better jobs.

### **2.3 EXPORTS MIRROR THE CONCENTRATION IN FDI AND REVEAL A STRONG DUALITY IN THE DOMINICAN ECONOMY**

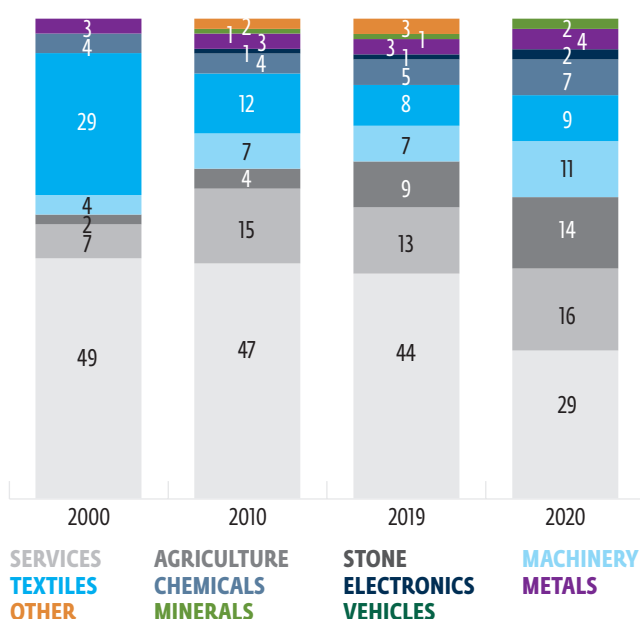
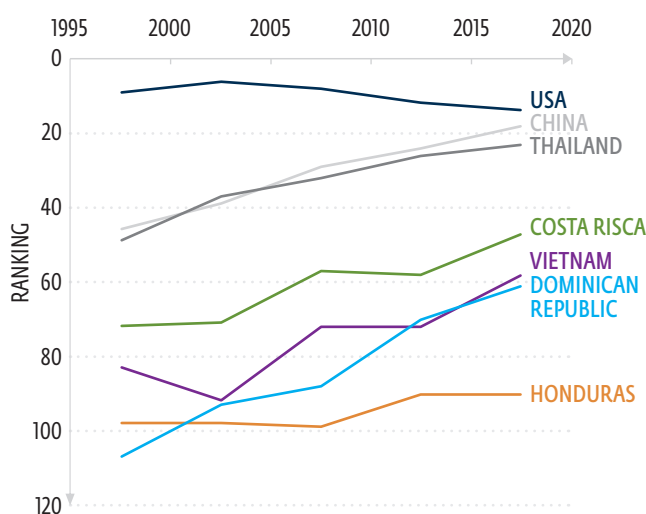
**Trends in the relative share of exports are concerning (figure 2.17).** Even though exports of products grew year to year, except during the global financial crisis in 2009, real exports grew at 3.2 percent annually compared with aggregate economic activity at 5.0 percent, resulting in a contraction of the share of exports in GDP from 32.8 percent in 2000 to 23.9 percent in 2019. DR's export performance also remains low compared with countries with similar levels of income. This points to significant unrealized export potential and correlates with the inability of the economy to create more formal jobs. The literature is broadly consistent on the fact that FDI expands the production set of the economy toward more sophisticated goods or introduces more advanced technology, which increases the demand for skilled labor and leads to a higher skill premium, increased average wages, and higher labor productivity.<sup>54</sup>

**FIGURE 2.17 EVOLUTION OF EXPORTS RELATIVE TO AGGREGATE ECONOMIC ACTIVITY**

Source: CPSD team calculations, WDI data.

Note: LHS == left-hand side RHS == right-hand side.

Exports are generally dominated by tourism and a small number of low-value-added products (figure 2.18). The share of services trade over total trade has been increasing, consolidating the dominance of tourism. Tourism accounted for an impressive 44 percent of total exports in 2019 and has weathered very well the effects of the COVID-19 pandemic. Tourism receipts fell 51 percent in 2020 relative to prepandemic levels, but they quickly rebounded to 87 percent of prepandemic levels in 2021 before reaching the record level of US\$8.4 billion in 2022. The success and challenges of the sector have been extensively covered by the literature, and the Dominican Republic is actively focused on strengthening the sector's competitiveness and diversifying its products (away from beach tourism). In terms of goods, minerals, driven by gold, have contributed the most to export growth between 2015 and 2020, with contribution to export growth reaching 34.3 percent between the two periods.<sup>55</sup> The presence of agriculture, mineral products (for example, gold), and textiles has been driving the country's overall low export complexity (figure 2.19). The elimination of the Multi-Fiber Agreement (MFA) and the signing of Preferential Trade Agreements led to shifts in the composition of exported transformed goods over the past decade, and the role of the textile sectors in the DR's exports decreased after the elimination of export quotas in textiles. While the sector is still in the top five exported products, contributing to 8.6 percent of total DR exports, the average nominal value of textiles and clothing exports decreased from 2.5 billion in 2003–04 to 1.6 billion between 2015 and 2020, reflecting a restructuring of the sector from large-scale sewing to more just-in-time, short series production and full package solutions.<sup>56</sup>

**FIGURE 2.18 EXPORTS OF GOODS AND SERVICES, AS PERCENT OF TOTAL EXPORTS, 2000–20****FIGURE 2.19 EXPORT COMPLEXITY RANKING, CROSS-COUNTRY COMPARISON**

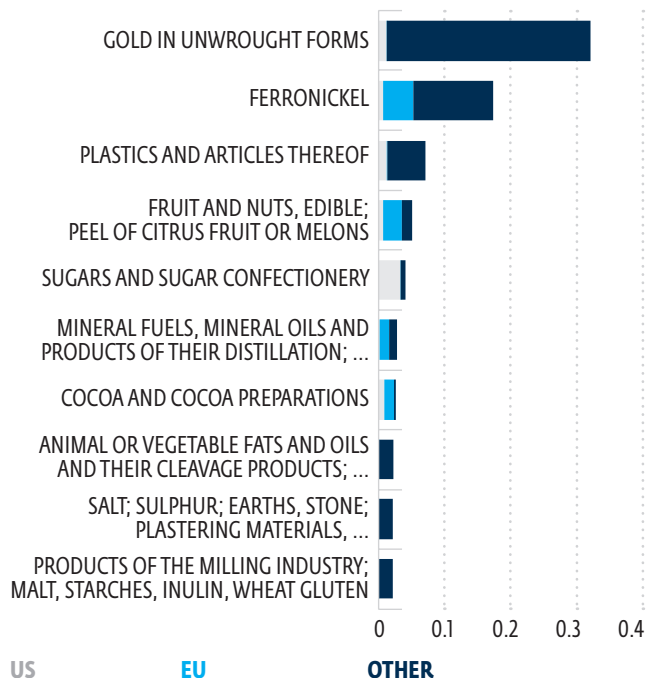
Source: CPSD team calculations based on data from Harvard Growth Lab's Atlas of Economic Complexity data viz tool and the Central Bank of the Dominican Republic.

Within manufacturing, however, firms located in industrial parks and benefiting from the SEZ regime are starting to establish footholds in emerging higher-value-added products. Except for gold, the top five exported products come from firms under the SEZ regime and are manufactured products that require some level of industrial transformation (cigars, automatic circuit breakers, medical devices). Similarly, among the remaining top 10 exported products, four are manufactured by firms in the SEZ regime (T-shirts, jewelry, appliance for ostomy use, and ultraviolet apparatus). Exports of machinery and electronics, for example, have started surging in recent years, with medical devices and ultraviolet apparatus accounting for 7.1 and 2.0 percent, respectively, of total exports in 2020. Similarly, exports of pharmaceutical products also have grown substantially over the past decade (8.6 percent average annual growth rate). This export basket reshuffling has helped the Dominican Republic develop comparative advantages in new sectors. Chemicals, plastic products, and metals are other examples of sectors that gained comparative advantage over the past decade.

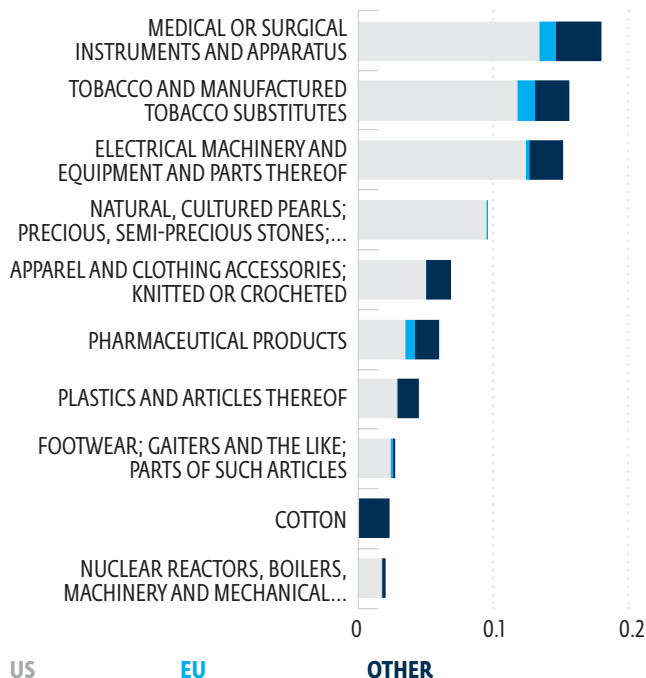
However, this trend is also leading to a stark duality in levels of export complexity between firms benefiting from the SEZ regime and firms outside of that regime. First, general tax regime (GTR) exports are almost entirely oriented toward the European market and rest of the world (87 percent of GTR exports), whereas SEZ exports are mostly directed to the United States (72 percent of SEZ exports).<sup>57</sup> Second, firms operating under the SEZ regime—accounting for approximately 60 percent of the country’s total exports—tend to export goods with some level of technological transformation (for example, medical equipment and electronics), whereas non-SEZ exporters, which account for 40 percent of exports, focus on primary and resource-based products (for example, minerals, tobacco, and agriculture commodities) (figure 2.20). In 2020, almost 70 percent of SEZ exports had some level of technology, compared with less than 30 percent of non-SEZ exports (figure 2.21). The share of high- and medium-technology export products among SEZ firms has been rising, while that of primary products increased more among non-SEZ firms. The share of primary products in non-SEZ exports rose from 7.4 percent in 2006 to 52.5 percent in 2020. This difference in value addition between SEZ and non-SEZ exporters suggests potential barriers that non-SEZ exporters face. More favorable market access conditions do not explain why a given product is exported to one market and not the other. Instead, differences in the specialization of export baskets by destination market (United States versus European Union) can be explained by the presence of big buyer firms and/or high concentration of supply. Last, non-SEZ exports lack diversification—gold and ferronickel account for one-half of GTR exports and the remaining products have single-digit shares. In contrast, SEZ exports are less concentrated, with the highest share (medical devices) reaching 18 percent, while tobacco, electrical equipment, and jewelry have double-digit shares. In this context, maximizing links between SEZ and non-SEZ firms is an important challenge.

**FIGURE 2.20 TOP 10 EXPORT PRODUCTS BY TAX REGIME, 2022**

a. Top 10 export products by non-SEZ firms (percent in total non-SEZ exports)



b. Top 10 export products by SEZ firms (percent in total SEZ exports)

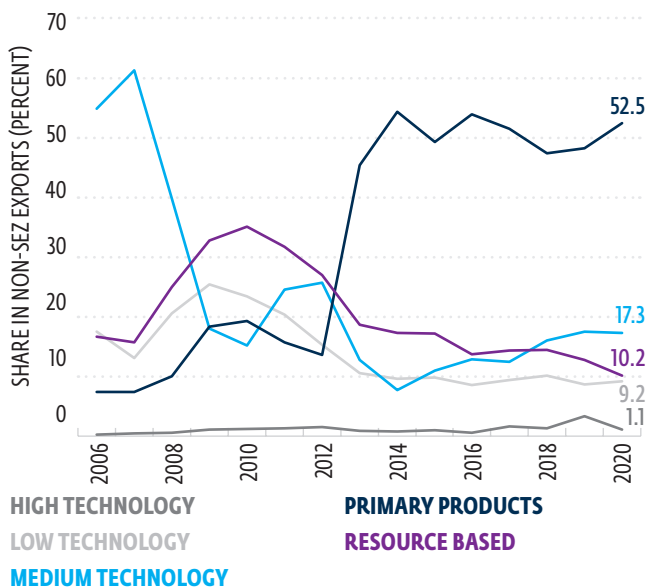


Source: CPSD team calculations using information from the General Directorate of Customs (DGA).

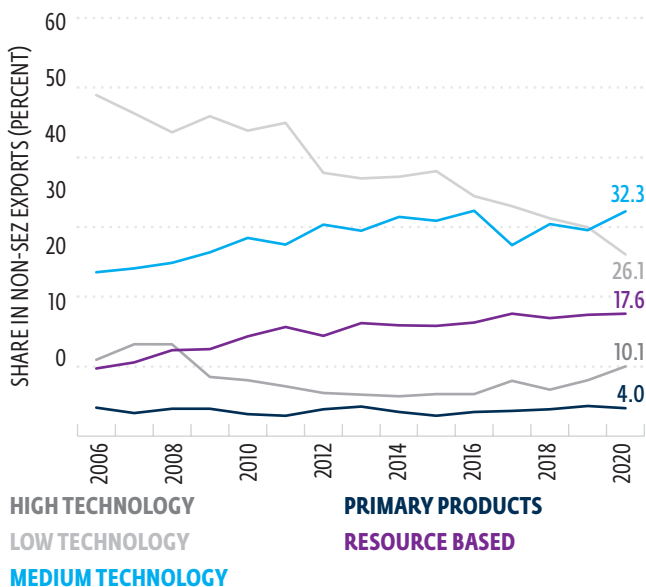
Notes: Figures show top 10 exports from SEZs and non-SEZs by destination.

**FIGURE 2.21 TECHNOLOGICAL COMPOSITION OF EXPORTS BY REGIME, 2006–20**

a. Non-SEZs



b. SEZs



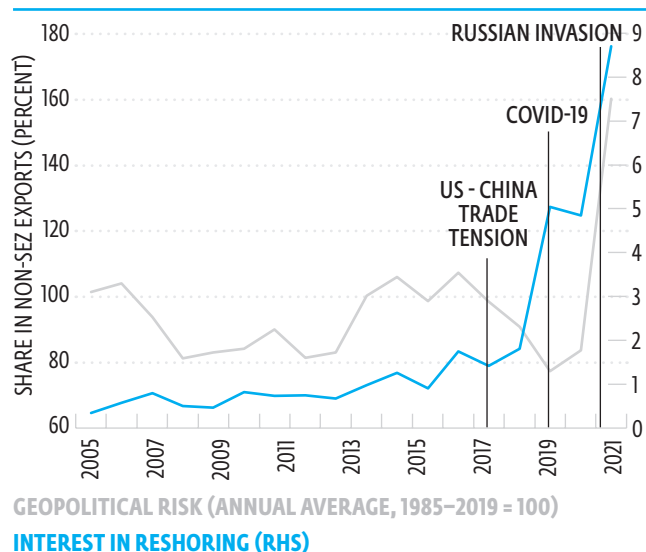
Source: CPSD team calculations using information from the DGA and the classification of product categories by level of technology in S. Lall, "The Technological Structure and Performance of Developing Country Manufactured Exports, 1985–98," Oxford Development Studies 28, no. 3 (2000): 337–69.

Note: Figures show technological content of DR's SEZ and non-SEZ exports.

## 2.4 THE RECONFIGURATION OF GLOBAL VALUE CHAINS (NEARSHORING) IS A WINDOW OF OPPORTUNITY FOR THE DR

The post-COVID-19 global economy is witnessing an acceleration of a series of preexisting trends that are reconfiguring GVCs and the behavior of FDI in the world, which creates opportunities for the DR to improve its economic model. Amid an increasingly unstable global landscape, FDI flows are considering relocating among geopolitically aligned and geographically proximate countries. Trade tensions between the United States and China, COVID-19, and Russia's invasion of Ukraine are leading to the reversal of global economic integration. Firms and policy makers are increasingly considering trusted economic partners to make supply chains less vulnerable to geopolitical tensions. This phenomenon is often referred to as nearshoring. As captured in an IMF text-mining exercise of earnings call reports, firms' interest in reshoring coincides with the increase in geopolitical risk, which measures how geopolitically distant country pairs have become.<sup>58</sup> Most important, the firms expressing interest in relocating their GVCs are on average larger in terms of employees, more profitable, and more knowledge-intensive. Other challenges in the global trade arena are contributing to the nearshoring trends: (a) labor costs and trade tariffs have increased in China; (b) proximity to the end consumer is strategic where speed of new product introduction is key; (c) resilience of supply chains is deteriorating because shocks lasting for a month occur every 2.7 years; and (d) environmental, social, and governance (ESG) considerations and environmental regulations are becoming increasingly stringent.<sup>59</sup> As captured in figure 2.22 based on an IMF text-mining exercise of earnings call reports, firms' interest in reshoring coincides with the increase in geopolitical risk, which measures how geopolitically distant country pairs have become. Most importantly, the firms expressing interest in relocating their GVCs are on average larger in terms of employees, more profitable, and more knowledge intensive (figure 2.23).

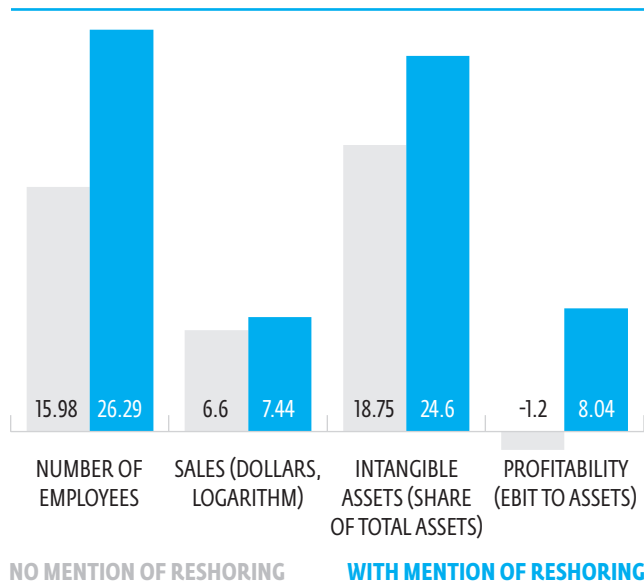
**FIGURE 2.22 RESHORING INTEREST AND GEOPOLITICAL RISK**



Source: IMF, World Economic Outlook, April 2023.

Note: EBIT = earnings before interest and taxes; RHS = right-hand side.

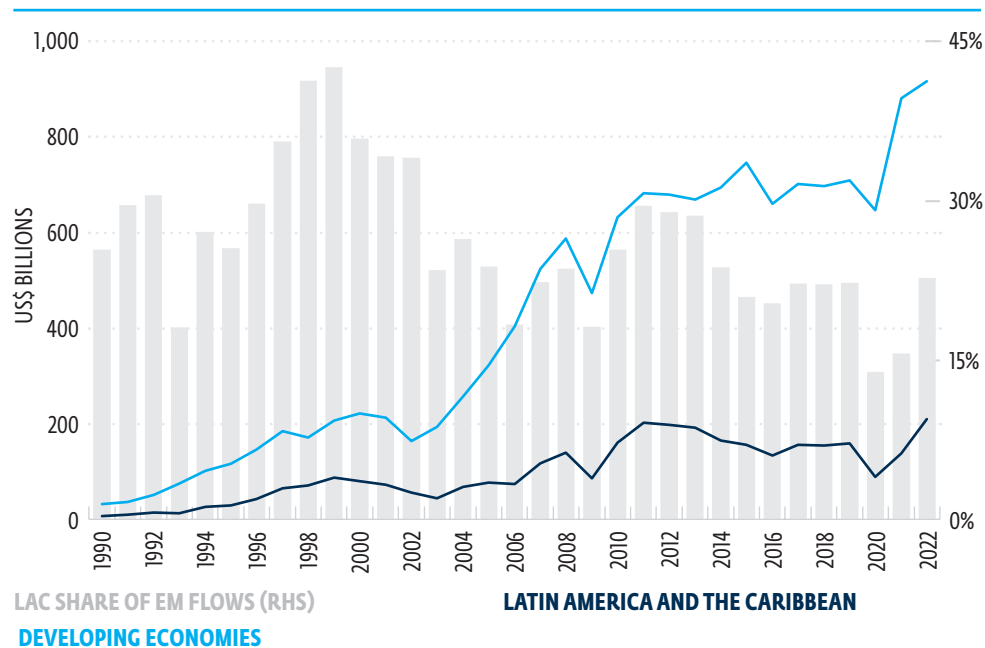
**FIGURE 2.23 FIRM CHARACTERISTICS AND RESHORING INTEREST**





However, the interest in relocating operations is not uniformly distributed across regions. The World Bank global surveys of multinational companies with operations scattered across the world indicatively illustrate the differences in appetite by regions, and they signal which regions are set to become winners of the nearshoring trend. The surveys ask CEOs in which regions they expect to reduce and increase their assets the most. Flows from East Asia are highly touted as the main target for other countries to attract; however, most outflows from East Asia seem to be absorbed by the region itself, hinting toward a recomposition of FDI within the region, while South Asia and Europe and Central Asia seem to be the winners of East Asia's FDI diversions. In fact, analysis of global FDI flows points to a decreasing share of Latin American FDI (figure 2.24). Heightened political volatility among systemically important Latin American countries could be playing a role, especially in markets where the investment climate has deteriorated. Nevertheless, countries like the DR could take advantage of the diversion of investment flows to attract new FDI by undertaking structural reforms, as well as by expanding and improving the quality of infrastructure (box 2.1).

**FIGURE 2.24 FDI FLOWS IN EMERGING MARKETS**



Source: CPSD team calculation using UNCTAD, World Investment Report: Investing in Sustainable Energy for All (UN, 2023).

Note: EM = Emerging markets; RHS = right-hand side.

Despite this general sentiment toward Latin America as a region, FDI and SEZ export data suggest that investors' interest in the Dominican Republic has not subsided, **hinting at an increase in interest.** The country has maintained its status as a rapid-growing and stable economy, with the absence of strong political swings that might jeopardize its long-lasting market-oriented environment. Furthermore, recent data suggest that the Dominican Republic is harnessing some of the diversion of FDI flows. For 2022, overall FDI in the country was 33 percent higher than its prepandemic level and surpassed the US\$4 billion threshold for the first time in history. This surge in FDI was driven by tourism, energy, and firms under the SEZ regime whose inflow was 48 percent higher than their prepandemic level (figure 2.25). While the effect of FDI tends to materialize with some delay, the postpandemic surge in FDI was accompanied by an immediate recovery of real exports within the SEZ sector, which was partly explained by existing firms reinvesting and expanding in the country. Industrial SEZ exports increased 11 percent in real terms between 2019 and 2022, mainly driven by high-value-added sectors, such as medical devices, whose growth contribution was 5 percentage points (figure 2.26).

FIGURE 2.25 SEZ FDI, 2010–22

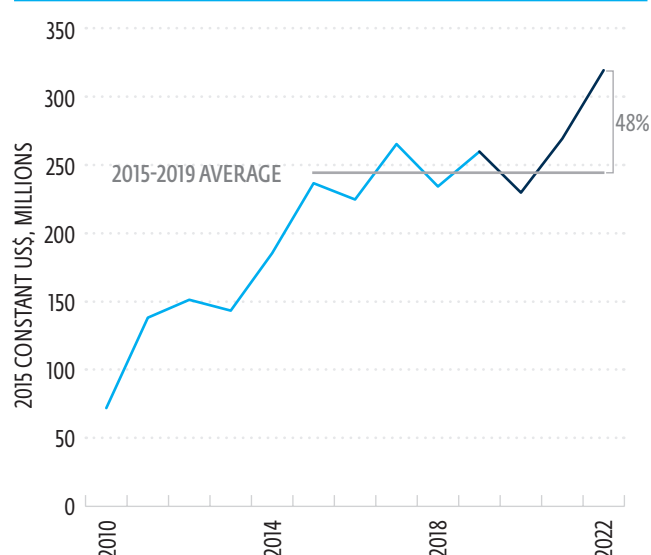
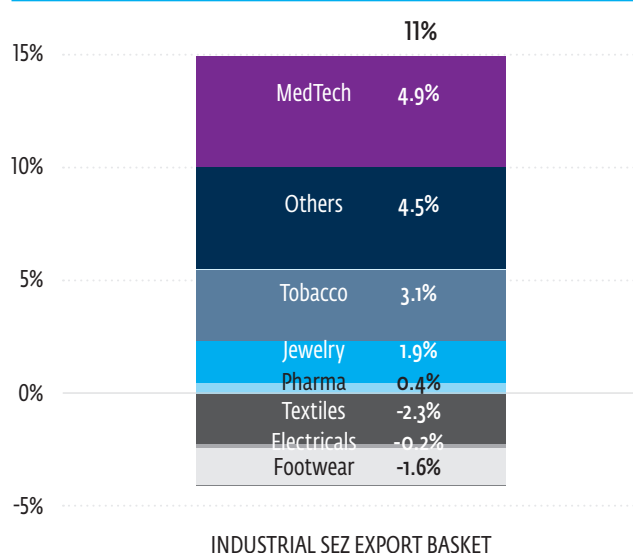


FIGURE 2.26 SEZ GROWTH CONTRIBUTIONS, 2019–22



Source: CPSD team calculations, Central Bank of the Dominican Republic.

Note: Both FDI and SEZ exports data corrected by price effects (using 2015 constant US\$).

**BOX 2.1 THE DR'S STRATEGY TO SEIZE NEARSHORING OPPORTUNITIES**

A recent comparative study on the country's overall performance has sought to determine which manufacturing sectors could present the greatest potential to take advantage of the nearshoring trend. To this end, a sectoral index was constructed by the Ministry of Industry and Commerce (with advice and review provided by the World Bank global FDI team), based on

- an intensive analysis of the Dominican Republic's export basket and revealed comparative advantages, emphasizing the evolution of Dominican exports to the US market;
- analysis of FDI attraction by sector;
- the evolution of US imports from the Dominican Republic and China; and
- several other factors that affect trade flows (Dominican Republic–Central America Free Trade Agreement, freight costs, tariffs).

The index was applied to 14 economic sectors that represent 60 percent of the country's export basket between 2012 and 2020. It yielded the following sector prioritization for nearshoring opportunities:

- The medical devices and pharmaceutical sector obtained the first position in each of the categories analyzed and could be profiled as one of the sectors with the greatest potential to take advantage of the nearshoring phenomenon.
- The electrical and electronic equipment sector was in second position.
- The garment and textile manufacturing industry, which stands out for its high productive specialization, was in third position.
- Finally, the plastic articles sector followed in fourth position, given its strategic importance as a key input that conditions the production processes of different sectors.

The study also identified aspirational sectors that the country could migrate toward in the short term, including chemicals, mechanical equipment, furniture, and metal manufacturing. These sectors represent 51 products and US\$44 billion in US imports, of which China currently sources 35 percent. Several factors particular to China, including a 24.7 percent tariff on these products and sensitivity to shipment costs given that 71 percent of these products enter through the east coast of the United States, could steer attention toward the Dominican Republic as an alternative production location.

To complement the study and deepen the understanding of the barriers that affect the competitiveness of the sectors analyzed, a literature review was conducted and semistructured interviews with representatives of various economic sectors were carried out, leading to the identification of a series of proposals for measures that could promote a greater attraction of FDI and thus strengthen the participation of the Dominican Republic in value chains.

Based on all of the above, policy actions on the following areas were included in the DR Nearshoring Strategy: (a) branding of the DR to generate international recognition of the country's strategic position as an industrial and logistics platform in the region; (b) specialization of human talent to strengthen people's employability in these sectors; (c) simplification of tax permitting and regulation to strengthen the regulatory environment and investment climate; (d) productive linkages and small and medium enterprise capacities reinforcement to strengthen value proposition; and (e) extension and upgrading of industrial infrastructure and land to meet the highest international standards for attracting FDI.

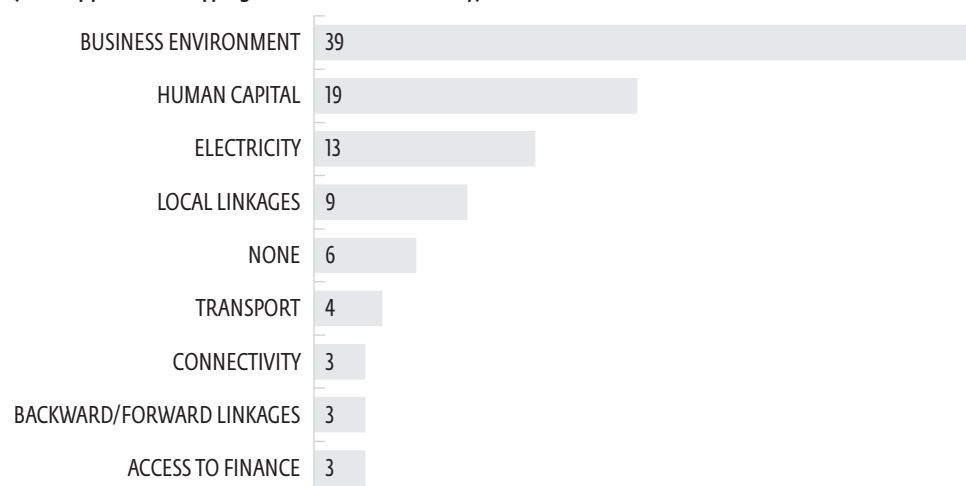
Ultimately, harnessing the potential of nearshoring will depend on the country's ability to improve its investment climate and to shift the country's comparative advantages rapidly and strategically. Although the Dominican Republic's fundamentals broadly allow it to remain an attractive destination for FDI, seizing the window of opportunity emanating from the changing patterns of trade in the current global context and attracting investments in sectors with higher value-addition will require swift and determined policy action. In particular, the Dominican Republic must lay the groundwork to enhance its attractiveness for investors that are mindful of the country's talent pool and are increasingly vigilant about the sustainability and inclusiveness of its production process, factors that are rapidly becoming critical for consumers in destination markets. Fostering a stronger business environment across the economy and firmly rooting the growth of exports within the local economy are crucial steps toward enhancing economic inclusion, resilience, and creation of high-quality jobs.

### 3. KEY CHALLENGES TO PRIVATE SECTOR GROWTH

Multiple cross-cutting challenges hold back private sector growth, especially in sectors that contribute to export diversification and inclusive high-quality jobs; the CPSD report focuses on three: (a) the fragmented institutional and fiscal environment, (b) the structural gaps in skills and education, and (c) the high prices and low reliability of electricity. These challenges are particularly stifling the ability of the private sector to seize emerging opportunities and contribute to a more resilient and inclusive economy. A 2020 World Bank survey of firms located in free zones in the Dominican Republic found that the business environment was perceived to be the main bottleneck for the private sector (39 percent of firms), followed by human capital (19 percent) and electricity (13 percent).<sup>60</sup> (See figure 3.1.) Although these barriers cannot be entirely overcome in a three- to five-year horizon, this report aims to shed light on key components of these barriers and to identify areas where policy action can gradually alleviate the identified constraints and private sector investment can be part of the solution.

**FIGURE 3.1 SEZ MAIN BOTTLENECKS FOR THE PRIVATE SECTOR IN THE DOMINICAN REPUBLIC**

(as % of firms identifying each bottleneck as key)

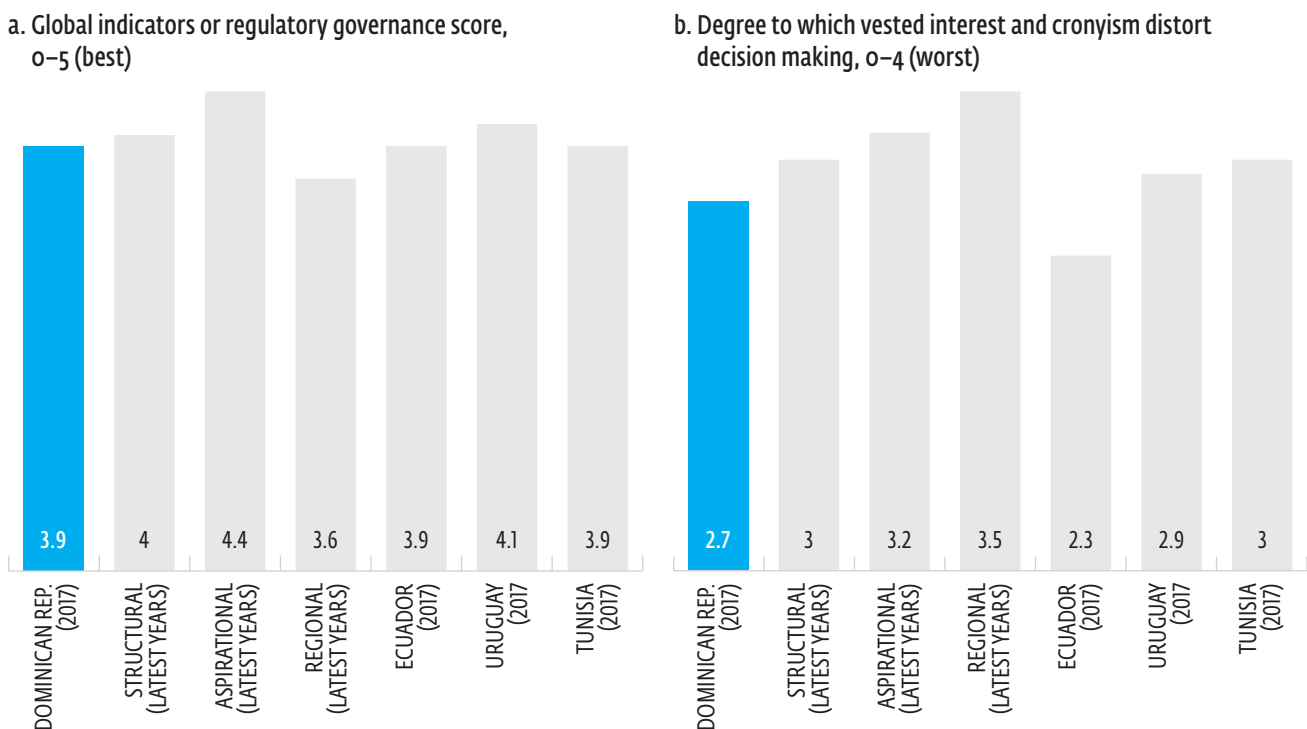


Source: World Bank Survey (2020) conducted among firms located in Zonas Francas in the DR.

### 3.1 REGULATORY COMPLEXITY AND INSTITUTIONAL FRAGMENTATION, LEADING TO AN OPAQUE BUSINESS ENVIRONMENT

During the last decade, the DR has implemented several reforms to ease different business regulatory areas, such as business registration, secured transactions, protections of minority shareholder rights, and insolvency. Measures taken in recent years include the introduction of the Formalízate one-stop shop for business registration and the 2019 amendment to the Law of Commercial Corporations and Limited Liability Companies; the enactment of a new Law on Movable Collaterals in 2020; the introduction of a specialized commercial court division and a mediation and conciliation framework; the adoption in 2017 of the Law on the Securities Market; the enactment of the Law on Publicly Offered Securities, which encourages the placement and trading of private sector securities on the local stock exchange; and the adoption of a law that introduced a reorganization procedure and facilitates continuation of the debtor's business during insolvency proceedings. In August 2021, the government also enacted Law No. 167-21 on Regulatory Reform and Simplification of Administrative Procedures, which entered into force in February 2022. In 2022, the Portal for Dominican Government Services was launched; this platform centralizes information on different administrative procedures.<sup>61</sup>

Despite these efforts, the prevailing business environment and regulatory governance continue to be perceived as opaque and affected by excessive discretion and potential capture, which in turn impacts the private sector's global competitiveness.<sup>62</sup> Surveyed businesses have consistently identified corruption as the biggest obstacle to private sector growth. Reform efforts have resulted in gradual improvements in international rankings, but the country's standing across various indicators remains low. Transparency International's Corruption Perception Index 2022 ranks the DR 123rd out of 180 countries, up from 137th out of 180 countries in 2019.<sup>63</sup> In the Worldwide Governance Indicators 2022 update, the DR scored 54.8 out of 100 points in the Government Effectiveness indicator, up from 38.9 in 2019.<sup>64</sup> Its lowest 2022 score on that indicator is Control of Corruption at 31.2 points, below the average score for LAC and for upper-middle-income countries (49.8 and 44.4 points, respectively). Similarly, the DR ranks 92nd out of 140 economies in the World Justice Project's Rule of Law Index 2022, with its lowest scores in the Absence of Corruption and Regulatory Enforcement factors, with 0.39 and 0.43 points out of 1, respectively. The DR also ranks 78th out of 141 in the World Economic Forum's overall Global Competitiveness Index 2019(GCI), up from 92nd out of 138 countries in 2017.<sup>65</sup> Additionally, DR scores 2.7 out of 7 points in the GCI's subindicator of Burden of government regulation (See figure 3.2.)

**FIGURE 3.2 SELECTED GLOBAL INDICATORS ON HOW THE DR COMPARES TO PEERS IN TERMS OF BUSINESS ENVIRONMENT**

Source: WEF Competitiveness Index.

**Systemic economywide issues, related to private sector regulation and governance, undermine the business environment.** This report focuses on three of them.

Historically, the overall regulatory and institutional context has enabled the actors that are most familiar with the status quo, while depressing the entry of disruptive firms and agents into the economy. Three factors are central to creating the conditions for this opaque business environment:

**First are the unwieldy processes of licensing and authorization.** The problem is mainly due to (a) the lack of database and information sharing across agencies, (b) the lack of effective risk-based regulations and systems, and (c) the poor or partial digitalization of licensing and authorization processes. The Dominican Republic ranks 92nd out of 193 in the United Nations' E-Government Survey 2022, underperforming Costa Rica, Colombia, and Ecuador.<sup>66</sup> Under a presidentially championed Zero Bureaucracy initiative, efforts are ongoing to streamline and digitalize licensing and procedures for investors in the DR. Fragmentation, however, not only increases the bureaucracy and opacity of the existing regulatory environment, it also hinders reform efforts. For example, the government is currently working on at least five “single windows” directed toward investors (in addition to the ones related to citizen services in health or housing): (a) Ventanilla Única de Inversión; (b) Ventanilla de Formalización de Empresas; (c) Ventanilla Única de Comercio Exterior (VUCE); (d) Ventanilla única para impulsar la inversión extranjera en energía renovable; and (e) Ventanilla Única de Construcción, which applies to the construction of manufacturing facilities. The lack of interconnection of databases among agencies risks confusion and increases transaction costs that weigh particularly heavily on smaller firms. A recent analysis



of the administrative procedures needed to establish companies in three special regimes (SEZ, Border Development, and Logistics) shows that medtech firms, for example, face an average 44 weeks wait time to start operations in SEZs—which remains considerably more efficient than the equivalent under the General Tax Regime (GTR)—as they go through 12 administrative procedures, fulfill 96 different requirements, and interact with six different public institutions.<sup>67</sup> Carrying out some procedures in parallel is also not possible given that the overall process has not yet been streamlined based on an ambitious reform strategy that includes all relevant agencies. Addressing the fragmented institutional context is fundamental for the digitalization agenda and the success of the “Burocracia Cero” initiative.

**Second, the level of coordination among the wide range of institutions that provide support to firms and investors is insufficient.** This lack of coordination exacerbates the perception of a fragmented and complex business environment and reduces the effectiveness of support. The investment promotion and after-care policy area is one example, among many, in which remediating action can be taken. ProDominicana is the main investment promotion agency of the Dominican Republic, formally reporting to the Ministry of Industry, Commerce, and SMEs (MICM). But in practice, investment promotion efforts in the manufacturing sector are often led, and significantly affected, by the Consejo Nacional de las Zonas Francas de Exportación (National Council of Free Trade Zones; CNZFE), which also reports to MICM. Although the management boards of both institutions include cross-representation, operational coordination—including on the definition of policy and strategy—remains implicit and dependent on the personal initiative of appointees.<sup>68</sup> The crucial need for a stronger unifying policy framework and institutionalized cooperation is evident in the arm’s-length interactions between Proindustria and MICM (the former reports to the latter), or ProDominicana and the MICM. Proindustria has a separate law outside the tax code for local manufacturing (similar to SEZs) and different implementation protocols; in practice, it operates as an autonomous executing agency that manages industrial zones and channels the government’s policy on industrial real estate destined to local manufacturers. Cross-institutional synergies among these public institutions remain wanting. To increase the effectiveness and efficiency of investment promotion, facilitation, and after-care services in the Dominican Republic, it is critical to (a) coordinate senior management appointments in these institutions, (b) clarify and synergize their institutional mandates in a way that recognizes and addresses overlaps, and (c) set ambitious, measurable, and trackable targets that stimulate cooperation.

**Third, the fiscal context is fragmented and riddled with different regimes.** This creates an uneven playing field and barriers between firms in different regimes (see appendix A). While some of the existing layers of fiscal and regulatory fragmentation are the result of appropriate public sector responses to externalities, others are creating counterproductive market distortions. The development of industrial zones (most often by private sector developers) has aimed to provide spatial solutions to manufacturing needs by encouraging agglomeration and economies of scale (underpinning many of the positive results described in chapter 2). The streamlining of regulations and digitalization of licensing within SEZs have also been largely successful and should be scaled and expanded to all industrial zones (under the other regimes) and the rest of the economy. Tax incentives and exemptions extended to firms within SEZs, on the other hand, have shown a more nuanced impact, attracting FDI and helping diversify exports while also creating distortions that weaken spillover effects on the rest of the economy.

**Economic distortions from special tax regimes increased between 2007 and 2017, generating significant productivity and growth leaks.**<sup>69</sup> SEZ firms do not often or easily buy inputs from domestic suppliers across all sectors<sup>70</sup>—except for low-medium technological manufacturing—and these uneven incentives weaken intersectoral linkages.<sup>71</sup> For example, when conducting business with companies in the local market, SEZ firms have to provide invoices with tax receipts, inclusive of the VAT Tax on the Transfer of Industrialised Goods and Services (ITBIS), and report and pay the ITBIS invoiced on a monthly basis. To be eligible for the upfront ITBIS credit, companies must comply with the regulations established by the Internal Tax Directorate, despite their status as exporters in free trade zones; this process adds an additional layer of bureaucracy with another government agency, which most firms prefer to avoid. Furthermore, market interviews point out the connectivity problems and the administrative barriers from the domestic firm’s perspective: sales from the national territory to the SEZs are considered “exports,” which means local firms must undertake a heavy administrative process at the Customs Directorate.<sup>72</sup> This stifles the development of a “missing middle” of SMEs, which could become suppliers or form clusters around FDI-driven SEZs.

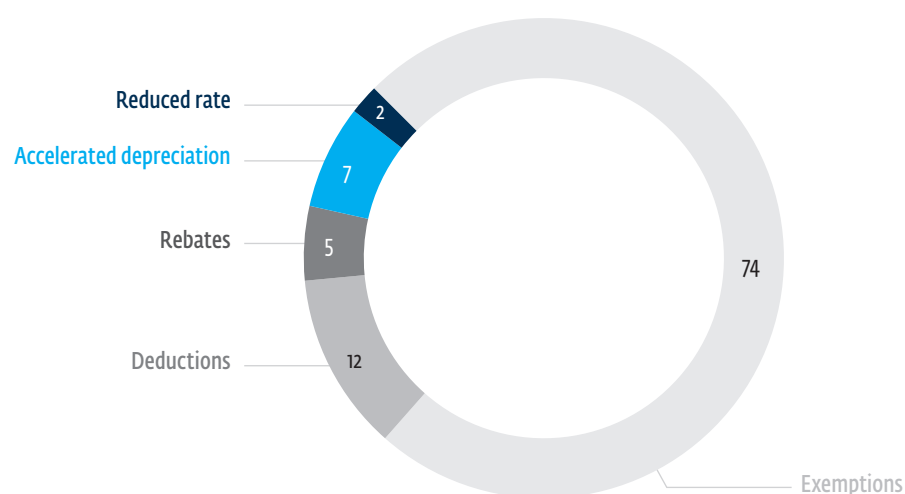
**Recent studies suggest that tax exemptions in the Dominican Republic could constrain productivity due to resource misallocation in low-sophistication manufacturing sectors.** Analyses reveal that formal manufacturing firms in low-tech activities (such as textiles, clothing, and metal products), which benefit from special tax regimes (SEZ regime), are approximately 30 percent less productive than peers operating outside the SEZs under the GTR. Furthermore, firms under the SEZ regime exhibit higher labor and capital demand compared to GTR firms. These findings indicate that lower-performing firms receive more resources (labor and capital), leading to lower aggregate sector productivity in low-tech manufacturing due to allocative inefficiencies. Additionally, firms registered under the SEZ regime remain in the market longer, despite lower productivity levels, with an exit rate of 9 percent under the GTR and 7 percent under the SEZ regime during the 2007–16 period.

**The nuanced impact of the fragmented fiscal context, combined with the increasing fiscal vulnerability resulting from a low tax base and low revenues, suggests that the Dominican Republic’s unique selling proposition should gradually become less dependent on fiscal incentives and more strongly based on substantive and sustainable competitive advantages.** To achieve that end, the DR should capitalize on its natural endowments (such as strategic geographic location) and accumulated assets (such as advanced private sector capability to offer modern and well-serviced industrial land), as well as new assets and reforms in enabling sectors (such as education, logistics, and financial services). This effort will have the added value of reducing barriers to growth for SMEs, allowing them to become suppliers to exporting firms (or to start directly exporting) and boost formal job creation.

**A detailed analysis of investment incentives in the Dominican Republic and comparable countries shows that most—86 percent—come from tax exemptions and reduced rates.** No tax credits are offered, and accelerated depreciation represents only a small proportion (5 percent) of all incentives. The distribution of the types of incentives in the Dominican Republic is similar to that of regional counterparts such as Panama, Costa Rica, and Colombia (see figures 3.3 and 3.4). Costa Rica offers the highest number of incentives for SEZs, in particular (17), followed by the Dominican Republic (12), while Mexico and Colombia offer only 2. Compared to the Dominican Republic,

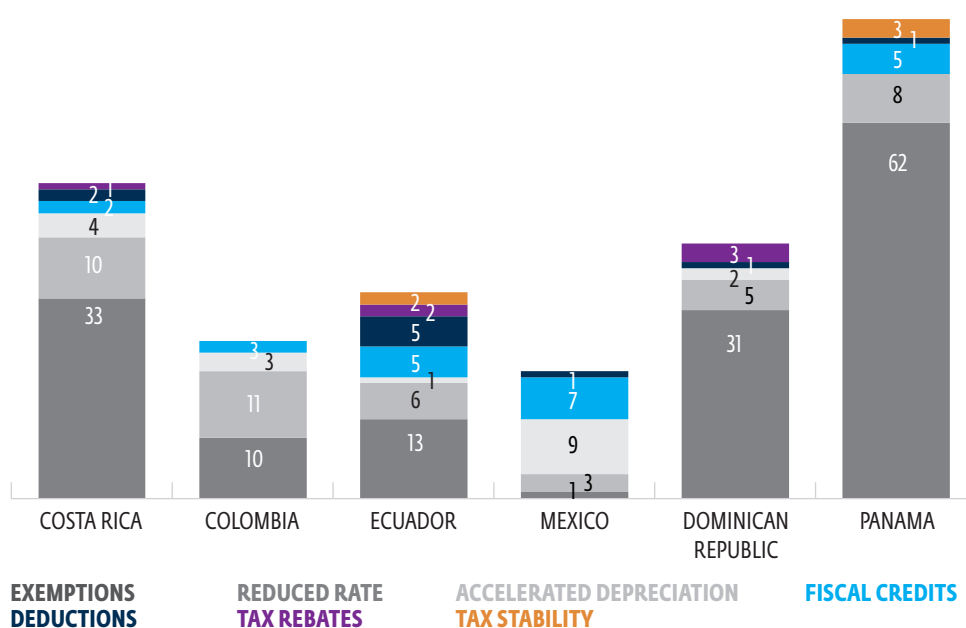
only in Mexico do tax credits and accelerated depreciation represent the majority of incentives offered; in the rest of the countries, exemptions and reduced rates dominate. Also, the most recurrent incentive in the rest of the countries is exemptions—except in Colombia, where the majority are reduced rates. Furthermore, the DR is the only country that offers rebates; Panama and Ecuador are the only ones with tax stability regimes, which can be an important instrument to encourage investment. The study also compares the share of SEZs in the countries' respective GDP (figure 3.5—see also appendix B).

**FIGURE 3.3 FISCAL INCENTIVES IN DR (AS % OF TOTAL FISCAL INCENTIVES)**

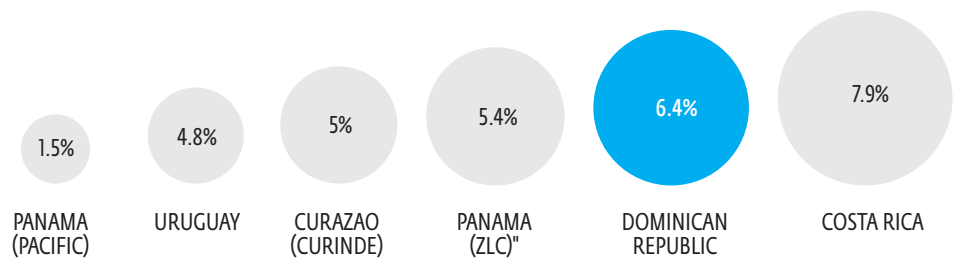


Source: CPSD team.

**FIGURE 3.4 DISTRIBUTION OF FISCAL INCENTIVES (IN QUANTITY)**



Source: CPSD team.

**FIGURE 3.5 SEZS EXPORTS AS A SHARE OF GDP**

Source: Asociación de Zonas Francas de las Américas (AZFA), 2020 compilation.

**The cost-benefit of the incentives framework (that is, the diverse fiscal regimes) deserves a thorough assessment and, based on a dialogue with the private sector, gradual reform to produce more efficient results.** The Ministry of Finance currently uses an IMF cost-benefit assessment tool to assess, ex ante, each application to establish a business in the DR's wide range of regimes. There is benefit to be gained in applying the same approach to assess the overall impact of the fiscal incentives (individually and collectively), ex post and in considering their negative externalities on value chain linkages across regimes. The government could then define new objectives and refine incentive provisions to attract FDI based on transparent ex ante criteria, including (a) the strategic importance of investments to the country and their alignment with national priorities; (b) the cost-benefit ratio of applying the incentive, usually more positive in the case of efficiency-seeking investments; and (c) the effectiveness of the incentives in influencing investor behavior and creating desired economic benefits (such as engaging local suppliers).

Table 3.1 outlines priority actions to tackle the constraint of the DR's opaque business environment.

**TABLE 3.1 MATRIX OF PRIORITY ACTION ON REGULATORY COMPLEXITY AND INSTITUTIONAL FRAGMENTATION**

POLICY	SPECIFIC ACTIONS	TIMELINE	LEAD ACTOR
<b>Streamlining and modernizing (including digitalization) the regulatory environment for business</b>	<ul style="list-style-type: none"> <li>• <b>Automate the approval process of firm establishment in SEZs.</b> Remove the de jure discretionary aspect of the authorization process and convert it to an automated process based on preset, objective eligibility criteria.</li> <li>• <b>Map and concentrate information on all available incentives on the CNZFE website</b> to increase transparency of and access to information for investors.</li> <li>• <b>Digitalize and streamline the licensing processes</b> (for firms investing in SEZs) for sanitary and environmental regulations (especially for low-risk categories). Pilot similar processes in municipalities that have export-oriented industrial zones (including Santo Domingo and Santiago).</li> <li>• <b>Introduce risk-based approaches for licensing and permitting</b>, starting with regulatory areas impacting multiple sectors and facilitating nearshoring (including environmental).</li> </ul>	Short term	CNZFE
	<ul style="list-style-type: none"> <li>• <b>Create a fully integrated transactional service delivery platform for firms</b> with a user-centric interface that facilitates complete transactions rather than individual processes; modernize back-office procedures across agencies to make them fully integrated and digital; and enable direct data-sharing by harmonizing and linking the databases of relevant agencies, eliminating duplications of information requests. The existing public service portal—currently a catalog of procedures—can be leveraged for this purpose.</li> <li>• <b>Strengthen the regulatory and institutional framework of digital governance.</b> To enable agile policy making and provide digital government-to-business services, coherent regulatory and institutional frameworks are essential. This requires reviewing or designing laws and regulations in areas such as protecting citizens' data, cybersecurity, and information and communication technology standards and norms.*</li> </ul>	Medium term	CNC OGTIC M ICM  CNC OGTIC
<b>Improving coordination and client orientation of private sector support institutions</b>	<ul style="list-style-type: none"> <li>• <b>Map and compare the de jure and de facto mandates and activities of FDI promotion and after-care-related agencies</b> (ProDominicana, ProIndustria, and CNZFE) to identify overlaps, consider options for harmonization and consolidation of responsibilities and roles, and develop alignments between resources and mandates.</li> </ul>	Short term	MICM
	<ul style="list-style-type: none"> <li>• <b>Through an inter-institutional memorandum of understanding, articulate a results-based framework for client orientation and strategic coordination between the three investment promotion institutions.</b> Include specific targets and operational performance metrics, so actions are coordinated systemwide and are strategy driven.</li> </ul>	Medium term	
<b>Improving fiscal incentives for FDI</b>	<ul style="list-style-type: none"> <li>• <b>Make an evidence-based assessment of all fiscal incentives</b> to determine their value added. For example, use an adapted version of the IMF cost-benefit assessment tool already used by the Ministry of Finance for ex post analyses.</li> </ul>	Short term	MH MICM

Note: CNC = National Competitiveness Council; CNZFE = National Council of Free Trade Zones; MAP: Ministry of Public Administration; MARENA = Ministry of Environment and Natural Resources; MH = Ministry of Finance; MICM = Ministry of Industry, Commerce, and SMEs; OGTIC = Government Office of Information Technology and Communication.

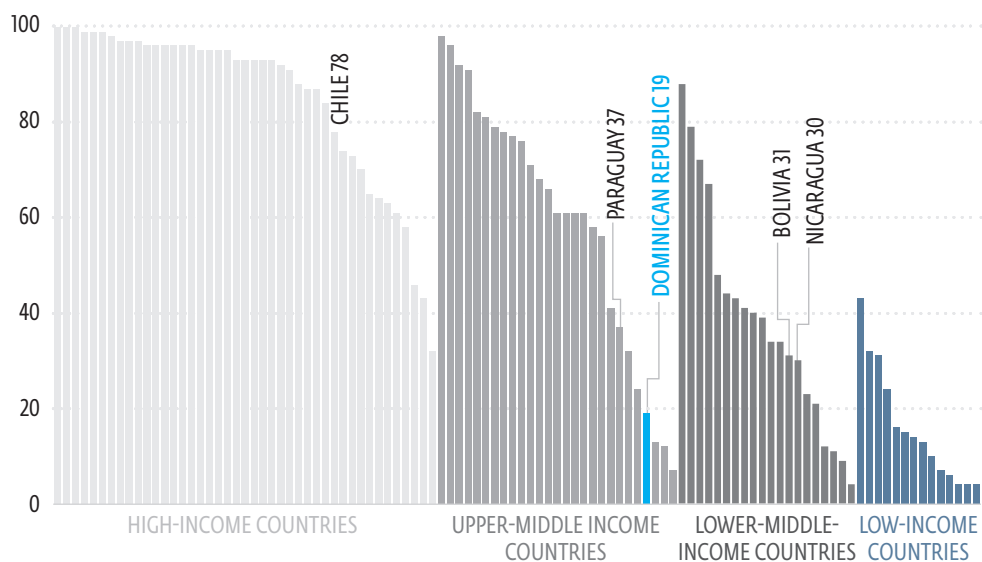
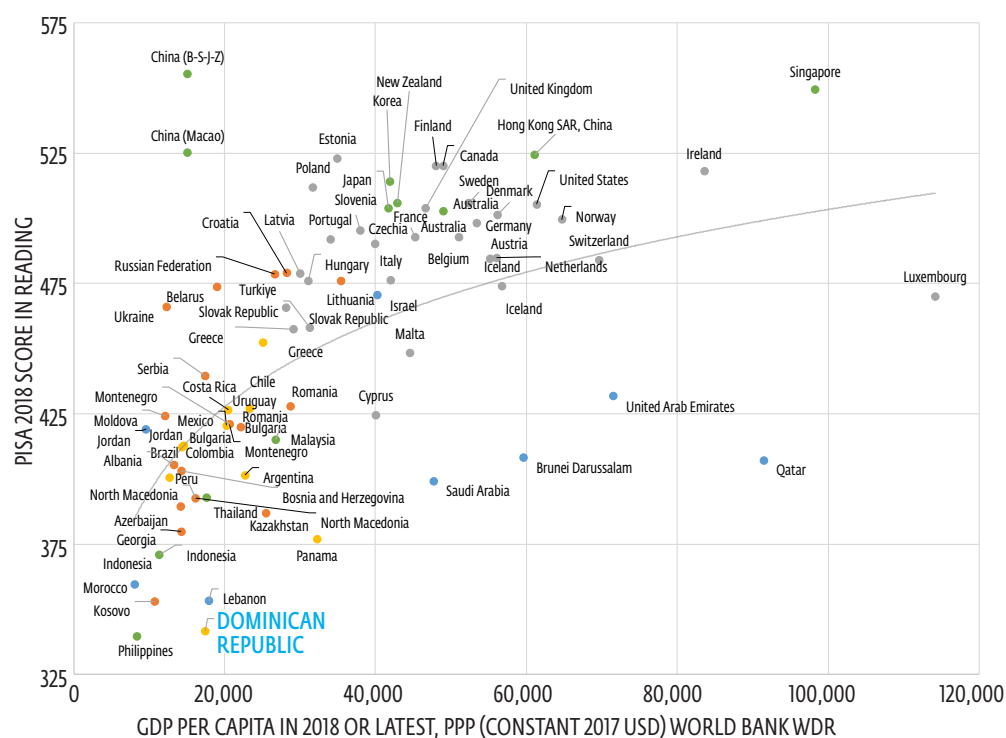
\*Detailed recommendations are provided in a dedicated 2023 World Bank report, Report on Approval Procedures for Company Establishment in Three Special Regimes: Special Economic Zones, Border Development, and Logistics.

### 3.2. THE SKILLS GAP AND LOW-QUALITY EDUCATION

Educational outcomes in the DR are significantly below what would be expected for a country at its level of economic development and a key constraint to the country's productive potential.<sup>73</sup> (See table 3.2.) The 2018 World Bank Human Capital Index ranks the Dominican Republic 101st out of 157 countries.<sup>74</sup> This ranking is low compared to its LAC regional peers and income group, mostly owing to the indicators that reflect learning outcomes, such as the harmonized test scores and the learning-adjusted years of school. Although approximately 70 percent of the labor force has completed secondary school—3 percentage points higher than structural peer countries and only 2 percentage points below aspirational peers—labor productivity is roughly half the level of aspirational peers and 44 percent lower than in structural peers.<sup>75</sup> According to World Bank estimates, only 19 percent of the DR's students complete primary school with a minimum achievement level in math (figure 3.6). The 2018 test scores from the Organisation for Economic Co-operation and Development's (OECD's) Programme for International Student Assessment (PISA) showed that the Dominican Republic ranked, on average, 23 positions below its structural comparators and 43 positions below its aspirational comparators. Household survey data show that workers joining the labor market in the DR had an average learning gap of four years relative to their peers in the United States for a similar length of time spent in school.<sup>76</sup>

**While there is gender parity in terms of learning outcomes in basic education, slightly in favor of girls, young women face cultural norms and constraints that cut short their educational aspirations and trajectory in the system.** Early pregnancy is rampant, with 93 births (in 2018) per 1,000 women ages 15–19, much higher than the average for LAC (56) and the average for the DR's income group.<sup>77</sup> Additionally, Dominican women face considerable asymmetries in the labor market compared to men. Starting with a lower labor participation rate (64 percent for women versus 74 percent for men), women are more likely than men to experience unemployment and to work fewer hours; they are also likely to earn less than men even when employed in the same sector (earning, on average, 85 percent of men's earnings).<sup>78</sup>

**This fundamental challenge for the Dominican Republic results from decades of avoiding critical reforms in the sector, leading to inefficiency in expenditures and, ultimately, poor access to qualitative education.** Although the budget has increased substantially since 2013 (the pretertiary education budget has doubled, from 2.3 to 4.0 percent of GDP), the system still grapples with decades of underinvestment in the sector. That underinvestment translates into the current situation of underprepared students (low penetration of early childhood education), pedagogical inputs not aligned with teaching-learning activities (old curriculum, lack of resources in schools, limited school hours), underqualified and unmotivated teachers, and system and school management mechanisms that do not support the teaching-learning process.

**FIGURE 3.6 THE DOMINICAN REPUBLIC IN THE GLOBAL CONTEXT FOR EDUCATION****a. Percentage of students that complete primary education with a minimum achievement level in math****b. Ratio of development and performance level in PISA 2015**



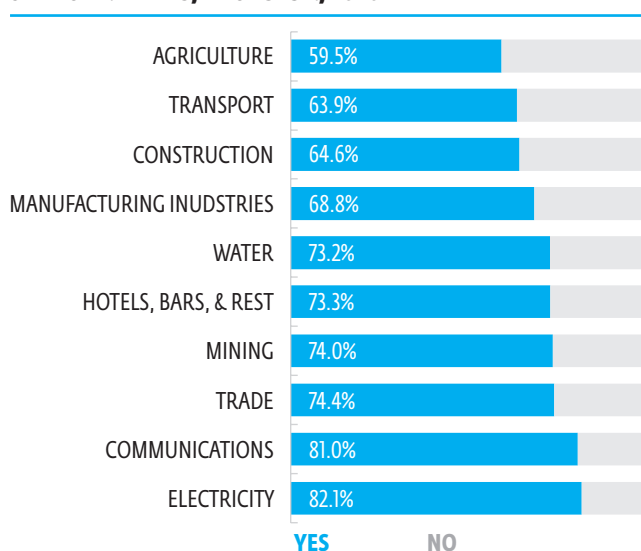
**Skills shortages are among the most critical structural obstacles reported by private sector firms across the economy.**<sup>79</sup> A survey of firms in the SEZ regime revealed that 19 percent of firms have reported that deficient human capital is a bottleneck for private sector development, making it the second main bottleneck.<sup>80</sup> Similarly, a national survey of the private sector revealed that nearly 10 percent of firms consider inadequate human capital a constraint for business development, the fourth main constraint in the survey.<sup>81</sup> Specifically, 40 percent of those firms referred to a lack of technical skills as a major constraint for filling vacancies, a problem that is more pronounced in large firms. Among firms with more than 250 employees, 54 percent reported having difficulty filling a vacancy compared to 41 percent of micro enterprises with 16 to 19 employees. Nearly 70 percent of all firms indicated that their labor force requires stronger technical skills to improve job performance, a share that goes up to 82 percent in electricity, 81 percent in the communication sector, 74 percent in the retail trade sector (or commerce), and 73 percent in hospitality (figure 3.7).

**The magnitude of the skills mismatch is further demonstrated by the estimated gaps between potential demand for skills in fast-growing sectors and current insufficient demand.** A recent study of the medical device production cluster indicates the sector expects to reach 35,000 jobs, which will generate a demand in the next five years for (a) 15,983 assemblers, (b) 4,599 machine operators and basic technicians, (c) 3,502 senior technicians, and (d) 2,199 professionals from engineering and related areas.<sup>82</sup> The inability to supply professionals with the required skills in the projected volumes could become a significant barrier to developing the growth potential of the fastest growing export sector (in chapter 4, see Policies That Affect Linkages with Education and Skills Training Institutions in the section, Medtech Context). Employers in the medtech cluster are already working with local institutions to train workers. But current programs are insufficient to keep up with the demand for technicians, and some are not located near employment opportunities.<sup>83</sup>

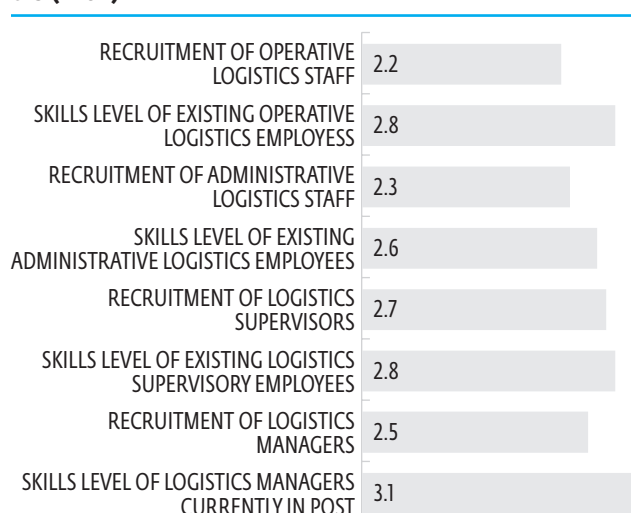
**In 2023, the World Bank conducted a detailed assessment<sup>84</sup> of the skills, competences, and professional preemployment and on-the-job training available for logistics in the DR, as well as the demand for logistics skills, as a proxy for these gaps** The logistics sector in the Dominican Republic is growing, and policy efforts aim to position the country as a regional logistics hub. Growth and expansion projects executed by shippers and other companies in the logistics sector are driving staffing demand, with the biggest share of unfilled vacancies in operational (50 to 60 percent) and administrative (30 to 40 percent) occupations. The survey found a shortage of candidates with adequate logistics skills in the market: 85 percent of interviewed companies pointed to a shortage of qualified candidates for operative-level positions (especially crane operators), and 78 percent indicated a shortage of qualified staff for administrative-level positions. The shortage of operative and administrative staff is reflected in the low scores and maturity levels across various demand-side categories assigned by the World Bank report<sup>85</sup> based on interviews with industry organizations and stakeholder groups (figure 3.8). Consequently, most companies recruit personnel without proper knowledge and then invest in on-the-job training related to the specific technical or operational aspects of the job. Every operative logistics staff member needs training during the first months of employment. Length of training can vary from 2–3 months in some companies to 6–11 months in others. Because many logistics companies and producer associations have invested in cold chain facilities, the skills that are most in demand include cold chain facility operation and management, as well as precooling techniques that are needed for optimum storage of

the products. In agri-logistics, food packaging companies, the wholesale market, and hotel suppliers require personnel with knowledge or certification in food hygiene and safe food handling. In transportation and logistics, key skill shortages include freight forwarding, dispatchers of ships or port terminals, ship/terminal yard planners and operations supervisors, and superintendents or chief supervisors.<sup>86</sup> A national survey<sup>87</sup> found that companies reported 5,277 vacancies in the transportation and warehousing economic activity group in 2020; a projection indicated the potential for 19,894 vacancies for operational jobs in a five-year period, 5,673 vacancies for administrative and technical jobs, and 818 vacancies for managerial positions. In contrast, in the year the survey was conducted, there were 94 graduates from the logistics careers offered by universities and colleges and 411 graduates from the two logistics technical high school programs, highlighting the breadth of the skills gap in logistics.

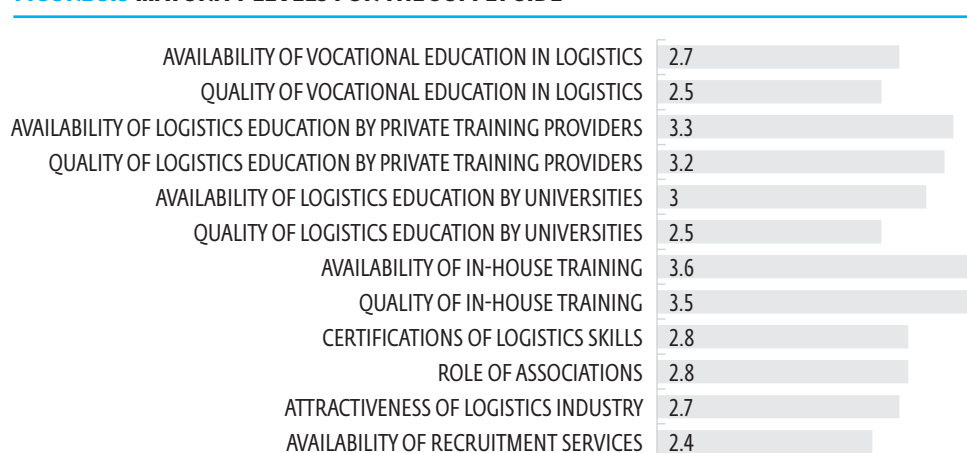
**FIGURE 3.7 PERCENTAGE OF FIRMS REPORTING A NEED FOR SKILLS TRAINING, BY SECTOR, 2020**



**FIGURE 3.8 MATURITY LEVELS FOR THE DEMAND SIDE 0-5 (BEST)**



**FIGURE 3.9 MATURITY LEVELS FOR THE SUPPLY SIDE**



Source: Assessment data from World Bank, Dominican Republic: Assessment of Logistics Skills, Competencies, and Training (Washington, DC: World Bank, 2023).

Note: Maturity levels used in the assessment: Level 1 = Minimal Capability, Level 2 = Marginal Capability, Level 3 = Average Capability, Level 4 = Advanced Capability, Level 5 = Global Best Practice.

**The skills mismatch and shortages in the logistics sector can be partially addressed through joint strategies with private sector associations and through specialized programs.** The rapid growth of the sector needs to be met with the requisite strategies, policies, and resources to support relevant skill generation. The World Bank assessment<sup>88</sup> finds low levels of maturity for the availability and quality of vocational and university programs in logistics compared to in-house training (Figure 3.9). The availability of preemployment education for logistics is limited, with 45 percent of companies indicating limited vocational offerings and 75 percent indicating limited university and college offerings. The main providers of vocational education and technical programs are the governmental institution Instituto de Formación Técnico Profesional (INFOTEP) and several business associations. The latter have developed programs to cover basic logistics topics, but they do not cover the growing needs of the sector. A technical high school program on logistics and transportation is also being offered in several schools, but many of the companies interviewed for the logistics assessment were not aware of it, suggesting limited coordination between providers and the private sector. The educational offerings from universities and colleges remain limited, with three institutions offering a total of seven specialized programs: three at technician grade, three at bachelors' grade, and one at masters' grade. A lack of qualified instructors and teachers to support existing programs adds to the challenge of developing more programs, and the overall low level of foundational skills in the science, technology, engineering, and mathematics (STEM) fields weakens the pipeline of qualified students entering these programs. Additionally, women and girls in the DR continue to be underrepresented in STEM careers as they account for no more than 40 percent of graduates in STEM fields.<sup>89</sup> As a result, and since many of the professionals in the sector come from more general careers (such as industrial engineering, management, and international commerce), training on logistics-specific skills is often provided on the job, through private training providers, or both. Companies have developed internal training programs and provide in-house training for 50 to 100 percent of required skills. The main challenges in in-house training include limited availability of trainers that combine practical knowledge and pedagogical skills, limited capacity to train all required personnel in the required time, and difficulty balancing the workload of trainers and trainees against regular daily activities.

**Opportunities are growing for the private sector to participate in closing the skills gaps across industries in the Dominican Republic.** Private sector associations play a pivotal role not only in informing the design and curricula of specialized programs but also in closely coordinating policies. A structured public-private dialogue can help address the multiple channels that contribute to closing the gap, including (a) the use of performance-based private sector providers of essential training, such as English language proficiency, as well as specialized and vocational training in agri-logistics, medtech, and other rapidly evolving sectors; (b) design of curricula in universities and continuing education centers; and (c) orientation of scholarships abroad. Support for industry networks can also improve the flow of skills and alleviate the mismatch. Recent IMF analysis of firm-to-firm hiring found higher match quality associated with hiring from buyers or suppliers than from unconnected firms; such hiring led to further benefits, such as higher firm productivity growth, faster employee wage growth, and longer job match duration.<sup>90</sup>

Table 3.2 offers priority actions to deal with the constraint of the DR's skills gaps.

**TABLE 3.2 MATRIX OF PRIORITY ACTIONS TO ADDRESS THE SKILLS GAP AND LOW-QUALITY EDUCATION**

POLICY	SPECIFIC ACTIONS	TIMELINE	LEAD ACTORS
Closing the skills gap	<ul style="list-style-type: none"> <li>• <b>Leverage performance-based private sector provision of relevant vocational skills</b> in sectors such as logistics and MedTech to address current gaps in targeted sectors, based on gap assessment with private sector associations, where providers are paid for successful and sustained (more than 8–12 months) work placements of trainees.</li> <li>• <b>Increase labor force proficiency in English through a comprehensive language program focused on short-term results</b> (create business-oriented versions of Inglés por Inmersión, provide scholarship and internship opportunities abroad through MESCyT) and long-term impact (early childhood, middle school, and high school).</li> <li>• <b>Improve the attractiveness and public awareness of jobs (and growth prospects) in sectors such as logistics, medtech, and other fast-growing sectors</b> to increase educational enrollment through promotional campaigns, fairs, internships, and so on.</li> <li>• <b>Develop case studies on good practices and lessons learned</b> from countries where skills improvement (such as English) has been successfully achieved.</li> </ul>	Short term	MICM
	<ul style="list-style-type: none"> <li>• <b>Establish more comprehensive sector-specific specialized training programs for skills in high-demand sectors, scaling and improving university programs that provide specialized skills:</b> Reform university curricula through industry-academia dialogue to offer flexible and customizable courses that are responsive to changing market needs and geared toward competencies relevant for higher-value-added processes and products. Also, develop university-level certification programs for specific sought-after technical skills or short-cycle postsecondary programs provided by polytechnical schools. Sector-specific training should stress (a) specialized areas, such as medical devices and e-health, smart manufacturing, and global shared services (for medtech); and food handling, precooling, cold chain equipment management (for agri-logistics); (b) technology, focused on 3D printing, robotics, and new materials; and (c) capabilities, focused on creativity and design thinking, customer centricity, technology design, and soft skills.</li> <li>• <b>Promote FDI investment in continuing education and skills training of employees.</b></li> </ul>	Medium to long term	<p>MESCyT sector clusters</p> <p>MH CNZF MESCyT + universities</p>

Note: CNZFE = National Council for Exporting Special Economic Zones; MESCyT = Ministry of Higher Education, Science, and Technology; MH = Ministry of Finance; MICM = Ministry of Industry, Commerce, and SMEs.

### 3.3. ENERGY AND ELECTRICITY

**Unreliable electricity infrastructure and the high cost of energy is another key constraint to private sector competitiveness, especially in manufacturing.** (See table 3.3.) According to the World Bank's 2016 Enterprise Survey, 14 percent of Dominican firms rank electricity as a main barrier to growth, as energy losses continue to be an obstacle to an efficient and well-functioning electricity system. While, historically, losses in the national interconnected system have been high, such losses had been on a downward trend converging toward 20.0 percent before abruptly reversing toward 30.0 percent due to the pandemic shock; since 2020, they have oscillated above 30.0 percent, closing at 32.4 percent in 2022. Losses are particularly high in areas with high poverty rates, where distribution networks are often poorly managed and are highly vulnerable to fraud. The eastern region of the country, for example, faces lagging and outdated infrastructure, which undermines its collection capacity and makes it an outlier in terms of energy losses. Meanwhile, electricity service quality indicators remain among the lowest in the Latin America and Caribbean region.<sup>91</sup> As a result, poor and vulnerable households are disproportionately affected by unreliable access to basic electricity services. Moreover, despite efforts from the 2020–24 administration to minimize interruptions, they continue to be a drag on competitiveness. On average, Dominican firms lose 5 percent of their sales due to power outages. Removing distortions in the energy sector could potentially unlock 0.09 percentage points increase in GDP by reducing blackouts that disrupt manufacturing activity.<sup>92</sup>

**The electricity sector in the DR is segmented<sup>93</sup> with a high level of private participation in power generation.** Privately owned generation accounts for 73 percent (3,822 megawatts) of the country's total installed capacity, with the remaining delivered by fully public companies or through PPPs.<sup>94</sup> The publicly owned Electricity Transmission Company (Empresa de Transmisión Eléctrica Dominicana; ETED) is in charge of the management, operation, and maintenance of the National Interconnected Electric System (Sistema Eléctrico Nacional Interconectado; SENI)<sup>95</sup> and of preparing the transmission expansion plan. Almost all power distribution<sup>96</sup> is carried out by three state-owned, regional electricity distribution companies (Empresas Distribuidoras de Electricidad; EDEs)<sup>97</sup>—EDE Norte, EDE Sur, and EDE Este—each controlling about a third of the market. However, concessions exist whereby private sector operators run a vertically integrated electricity market, with noticeably higher overall performance levels than the EDEs.

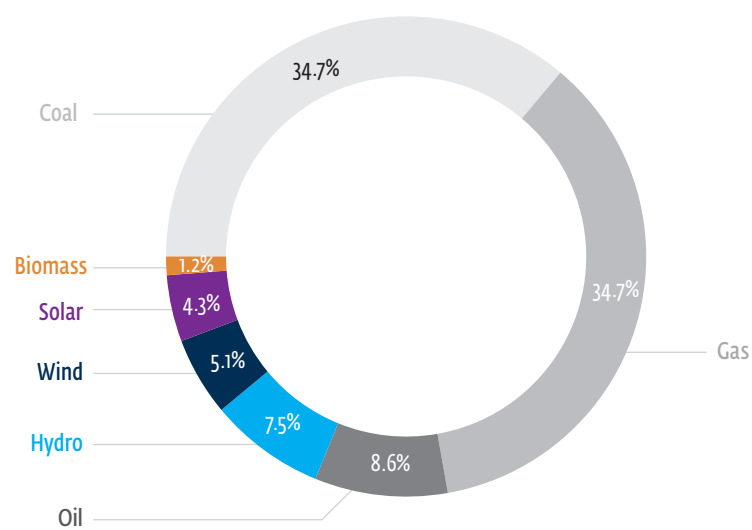
**The sector lacks financial viability, indicating the need for state-owned enterprise reforms and increased private sector participation in renewable energy generation.** The DR's electric system features the third highest industrial electricity price in LAC (approximately US\$ 16 cents/kilowatt-hour).<sup>98</sup> Below-cost electricity tariffs, which function as a generalized subsidy, disproportionately benefit high-income households, resulting in a heavy burden for the state, representing 1.3 percent of GDP in 2022. The tariff revenue received by the EDEs covers only about two-thirds of costs, and regulations requiring indexation of tariffs to fuel prices and exchange rates have not been implemented per existing tariff regulation. Bono Luz, a social transfer program for poor and vulnerable households, adds to government expenses and exacerbates the burden on the state derived from the electricity sector. The November 2021 tariff increase was the first electricity tariff adjustment in over a decade. However, the scheduled increase in tariffs was paused in June 2022 due to political backlash, as higher electricity bills for households reinforced inflationary pressures experienced during the postpandemic era. This tariff revenue shortfall together with high energy losses (mostly due to widespread energy theft) as well as high generation and operating costs have produced chronic financial deficits in the EDEs. On the distribution segment, the World Bank is supporting authorities through a Multiphase Programmatic Approach aimed at improving the operational, financial, and environmental performance of the EDEs.<sup>99</sup> Private investment can further support the enhancement of the electricity sector by expanding the penetration of renewables in the generation segment.

**Sector governance faces significant challenges including an outdated legal framework, a fragmented institutional framework, and weak regulatory enforcement.** The Corporación Dominicana de Empresas Eléctricas Estatales (CDEEE) was created to be the overall coordinating body of all state-owned enterprises operating in the sector. The central government allocated substantial resources to the CDEEE to finance investment projects and cover the financial losses of public enterprises in the electricity sector. Over time, it established de facto policies and was the recipient of all government subsidies while operating within an environment of weak government oversight and lack of transparency.<sup>100</sup> Consequently, the 2020–24 administration dissolved CDEEE; it was at this point that the Unified Council of the EDEs was created, reporting directly to the Ministry of Energy and Mines (MEM). Persistently high financial losses and low operational performance in the EDEs highlight continued challenges to improving the oversight and accountability of sector entities. For many years, electricity rationing was the answer to low operational performance and financial losses. This in turn has created a cycle of poor quality of service, lack of trust between distribution companies and consumers, poor payment discipline, and electricity theft.

**Given the large share of fossil fuels in the grid and their historically high costs, private sector investment in renewable energy projects is instrumental in ensuring a sustainable and competitive electricity system.** High reliance on imported fossil fuels for power generation (80 percent of the country's primary energy supply) has made the DR vulnerable to adverse international fuel price shocks; it has also contributed to high emission intensity and poses a threat to achieving GHG emission reduction goals and improving local air quality. By December 2022, clean generation accounted for 18.1 percent of the country's energy supply (figure 3.10), of which nonconventional renewables represented 10.6 percent. But given the country's significant endowment of renewable energy resources, the potential generation is 6 gigawatts (GW) by 2030.<sup>101</sup>

Despite the low share of nonconventional renewables in its energy grid, the Dominican Republic reaffirmed its commitment to raising the regional share of renewables in the power generation mix to 70 percent by 2030 at the United Nations (UN) COP26 climate conference. This aspirational goal will require substantial efforts on the policy side to ensure that private sector generation of renewables increases significantly within a seven-year window. In February 2021, the government signed and approved the Electricity Pact (Pacto Eléctrico), which is expected to help diversify the nation's energy matrix with cleaner technologies, reduce electricity losses in the distribution network, and promote financial sustainability of energy distributors. The pact also promotes distributed energy<sup>102</sup> to make the energy system more efficient.

**FIGURE 3.10 SHARE OF ELECTRICITY BY SOURCE, 2022**



Source: Ministry of Energy and Mines.

**Securing a reliable and sustainable—environmentally and financially—electricity supply is the cornerstone of the DR's National Development Strategy (NDS) 2030.** As described previously, to strengthen the sector's governance, the government amended the General Electricity Law to liquidate CDEEE and provide clear roles and responsibilities to key sectoral entities. Authorities are also taking steps to improve the governance and management of the distribution companies, mainly through performance indicators and improvements in the contracting framework for outsourced commercial functions (for example, meter reading, collection, and client and fraud management). Also, an amendment to the General Electricity Law for a "Harmonized Law of the Electricity Sector" has been submitted for Congress's approval. The amendment formally designates MEM as the overarching governing body in the sector and integrates the National Energy Council (CNE) into MEM to centralize and strengthen the planning functions, while moving the regulation of electricity cooperatives from CNE to the Superintendency of Electricity (SIE). Further revision and convergence of tariffs toward cost recovery and incentives to reduce distribution losses will improve the financial self-sufficiency and operational performance of the electricity sector and contribute to GHG emissions reduction. These policy actions will facilitate the establishment of a PPP between the EDEs and private companies.



**Private sector investment in renewable energy is enhancing the sector's climate resilience and sustainability, as is the government's acceleration of the development of renewable projects to mitigate the country's dependence on imported fossil fuels.** The Electricity Pact is supporting a least-cost approach to power generation that could lead to competitive renewable energy auctions in the medium term, with opportunities for local and international project developers. The authorities involved in this planning need to consider the system's flexibility to accommodate further renewable energy penetration in line with the country's decarbonization targets. One of the pillars will be creating direct opportunities for private sector participation, either (a) to help improve the financial sustainability of the sector, (b) to meet specific targets for renewable energy generation, or (c) to promote distributed energy. Competitive procurement procedures, if implemented as envisaged by Presidential Decree 65-23, will further contribute to the reduction of renewable energy costs. Furthermore, a draft of the Energy Efficiency law is currently in Congress; it provides the regulatory basis for the implementation of pertinent measures for buildings and industry. In anticipation of this bill, the presidential decree for public sector energy efficiency was signed in April 2023; the decree mandates standards for public institutions, including the scope for replacement of energy-efficient equipment and rooftop solar in public sector buildings. This will contribute to reducing costs, enhancing the resilience of the power grid, and promoting private sector investment in power generation.

**Private developers have mainly focused on solar projects; however, the country has significant wind potential that remains untapped.** Potential installed capacity of commercial wind generation in the Dominican Republic is approximately 35.3 GW at an average capacity factor of 29.8 percent, with some highly attractive zones at 35.3 percent.<sup>103</sup> Most important, not only have the costs of developing wind projects substantially decreased and the impacts on land use lessened, the country also benefits from a wind generation profile that complements solar energy—wind output is strongest in evenings and mornings. Private sector investment can be accelerated if sector-specific constraints are addressed; these include environmental and social issues, which tend to delay and increase the cost of projects, and the need for onsite wind measurement and biodiversity surveys.

Table 3.3 lists priority actions to address the constraints of the DR's energy and electricity constraints.

**TABLE 3.3 MATRIX OF PRIORITY ACTIONS TO INCREASE RENEWABLE ENERGY PENETRATION**

POLICY	SPECIFIC ACTIONS	TIMELINE	LEAD ACTOR
Increasing penetration of renewables	<ul style="list-style-type: none"> <li>• <b>Implement the decree and streamline competitive tenders by establishing standardized project documents.</b> This will reduce uncertainty and legal costs and speed up procurement processes. Expanding the bidder pools can increase competition in tenders, resulting in lower tariffs, and enhancing tender design can mitigate the risk of developer concentration and ensure competitive tariffs.</li> </ul>	Short term	MEM
	<ul style="list-style-type: none"> <li>• <b>Optimize the integration and stability of renewable energy in the country's grid.</b> The country benefits from complementarity of wind and solar resources, given that wind output is strongest in the evenings. Improving the regulatory framework for remuneration of firm capacity will help replace polluting generation (such as coal) and facilitate the development of renewable energy projects with storage. The site selection process must prioritize development nearby, readily available evacuation capacity and be done in tandem with planned transmission sector investments.</li> </ul>		MEM CNE SIE OC  MEM CNE
	<ul style="list-style-type: none"> <li>• <b>Address environmental and social issues early on through a standardized approach.</b> Perform early-stage biodiversity work to inform (a) optimal site selection, (b) appropriate wind and solar power plant design, (c) avoidance of collision with threatened bat and bird species (for wind) and jeopardizing agricultural production (for solar). In addition, address social risk via preparatory work for land rights acquisition in ways that reflect industry best practices—a step that is crucial in a market with high uncertainty and ambiguity pertaining to land titles (development of land use rights agreement, cadastral mapping, rights registration).</li> </ul>		
	<ul style="list-style-type: none"> <li>• <b>Enable the introduction of battery systems in the market.</b> Design and implement regulation pertaining to the different market uses of battery technology, as well as their remuneration schemes in ways that provide clarity to investors.</li> </ul>		SIE
	<ul style="list-style-type: none"> <li>• <b>Increase investment in the transmission sector</b> aligned with predetermined sites where renewable sources are abundant but evacuation capacity is inadequate.</li> </ul>	Medium to long term	ETED

Note: CNE = National Energy Council; ETED = Dominican Electricity Transmission Company; MEM = Ministry of Energy and Mines; OC = Energy Grid Coordinator; SIE = Superintendency of Electricity.







## 4. KEY PRIVATE SECTOR INVESTMENT OPPORTUNITIES TO GROW MARKETS

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Although structural cross-cutting constraints are gradually being addressed, some sectors offer opportunities for private sector investment while helping the economy pivot toward a more resilient and inclusive trajectory. The sector selection process for this report looked at a long list of sectors (including tourism, agriculture, medtech, electronics, garment manufacturing, real estate, and logistics) where accelerating private sector investment in a three- to five-year horizon is feasible, and where sector growth contributes to pivoting the economy toward a more inclusive and resilient trajectory.

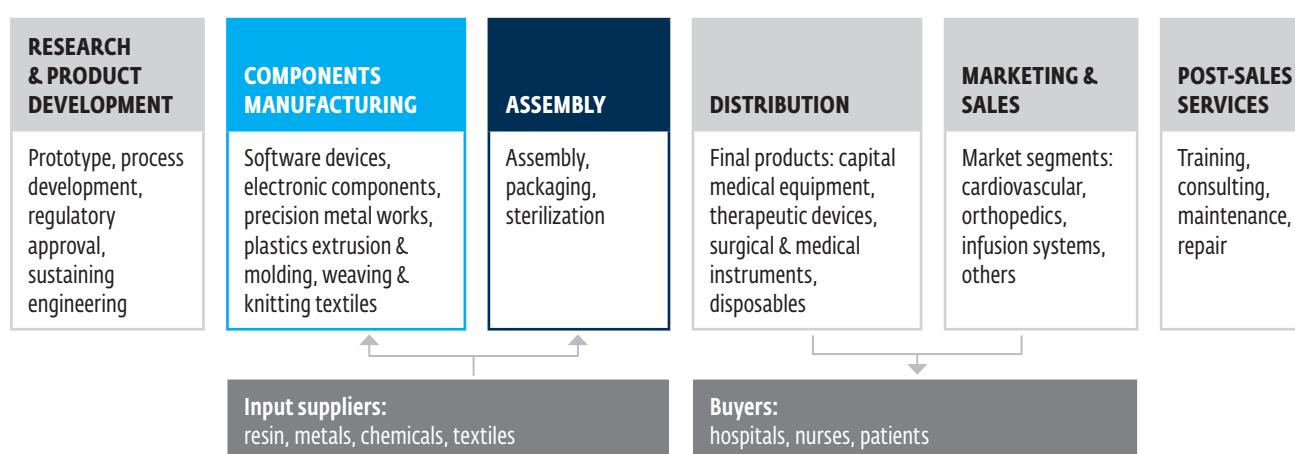
The following sector assessments highlight opportunities in three short-listed sectors. First, the medtech assessment helps showcase how private sector investments and public policy actions can support growth in high-value-added manufacturing sectors (which are also leading employers of women), while helping to develop backward linkages, and scale a new growth paradigm that is more inclusive of local SMEs and local talent. Recommendations aim to help seize potential nearshoring opportunities (and manufacturing FDI more broadly) and strengthen the broader set of high-value-added manufacturing sectors in the DR (for example, electronics and pharmaceuticals). Second, the industrial real estate sector assessment shows how ripe opportunities for the development of eco-industrial parks can improve access to the next generation of serviced industrial land. A better industrial infrastructure will strengthen the competitive advantage of the DR and reduce the share of fiscal incentives in its unique value proposition. The private sector already plays a leading role in offering serviced industrial land in the DR, but reforms can help better leverage capital markets, increase resilience in the face of disaster risks, decarbonize the growth of manufacturing, improve the circularity of the economy, and position the DR as a leading destination in Latin America for green FDI. Third, the agri-logistics sector assessment identifies investments and reforms that can promote climate-smart agriculture, while also providing a blueprint of how logistics, more broadly, can better leverage the geographic position of the DR to promote higher-value added exports.

The rationale for the short-listing of these three sectors is rooted in many considerations, including the fact that (a) they offer a wide-ranging illustration (one tradable sector, one non-tradable sector, and one cross-cutting sector) of opportunities for private sector investment in the short term that also contribute to strengthening sector competitiveness and expanding sector growth in the mid-to-long term; (b) they draw attention to sectors that are not yet very dominant (for example, tourism is already a major player in the DR economy) but that have a significant potential to grow and thereby diversify FDI and the exports basket; (c) they serve as a proxy example to a larger set of sectors with similar characteristics (for example, the medtech diagnostic and recommendations bear relevance to a wider range of manufacturing sectors such as electronics and pharmaceuticals); (d) they help provide insights on opportunities where capital markets can be leveraged to achieve developmental objectives (for example, recommendations about special purpose vehicles to finance the development of eco-industrial parks through capital markets are relevant to the wider range of investments in sustainable infrastructure); and (e) their assessment complements, instead of duplicates, available and recent findings in the literature (for example, a recent IDB report extensively covered the logistics sector, and the focus on the agri-logistics segment aims to bring complementary granularity).

## 4.1 MEDICAL DEVICES

The medical technology industry—often referred to as medtech—is transforming health care. The Advanced Medical Technology Association (AdvaMed)<sup>104</sup> defines the industry as “the companies that develop, manufacture, and distribute the technologies, devices, equipment, diagnostic tests, and health information systems that are transforming health care through earlier disease detection, less invasive procedures, and more effective treatments.” A visualization of the medtech value chain can be seen in figure 4.1. Likewise, AdvaMed defines “a medical device as an instrument, apparatus, implant, machine, tool, in vitro reagent, or similar article that is used to diagnose, prevent, mitigate, treat, or cure disease or other conditions, and, unlike a pharmaceutical or biologic, achieves its purpose by physical, structural, or mechanical action but not through chemical or metabolic action within or on the body.”

**FIGURE 4.1 MEDICAL DEVICES GLOBAL VALUE CHAIN**



Source: P. Bamber and G. Gereffi, “Costa Rica in the Medical Devices Global Value Chain: Opportunities for Upgrading” (Durham, NC: Duke University Center on Globalization, Governance and Competitiveness, August 2013).

Medtech products can be classified according to the typology in table 4.1. This typology includes a minor adjustment on the one introduced by Bamber and Gereffi in 2013;<sup>105</sup> it replaces “capital equipment” with “diagnostic/imaging equipment.” Nevertheless, it preserves the general idea that products increase in complexity, cost, and strategic importance to medtech manufacturers as one goes down the table.

This assessment includes a description of the main global trends and their implications for medtech agents and processes. Key markets include (a) Class 1 medical devices (disposables and other low-risk products) and Class 2 higher-tech medical devices for the US market, and (b) services for health care providers. After describing the trends in the industry and their implications, the CPSD identifies a series of growth opportunities in the DR medtech sector. Contrasting these opportunities with the current situation, it identifies a set of constraints and gaps for every value chain. Finally, it highlights private sector investment opportunities, which can also enable the growth and competitiveness of medtech in the DR. The section ends with a summary of policy recommendations that the DR government can implement in the coming years to unleash private sector investment and growth in the medtech sector in a three- to five-year horizon.

**TABLE 4.1 MEDTECH PRODUCT TYPOLOGY**

PRODUCT CATEGORY	MAIN CHARACTERISTICS	COMPANIES OPERATING IN DR
<b>Disposables</b> High-volume commodities; single-use products such as bandages, surgical gloves, plastic syringes, catheters, and needles.	<ul style="list-style-type: none"> <li>• Cost-driven</li> <li>• Large numbers of production</li> <li>• Less need for medical expertise</li> <li>• Follow specific quality standards for medical devices</li> </ul>	
<b>Surgical and medical instruments</b> Multi-used products that need sterilization between uses with different patients. Products such as forceps, medical scissors, dental drills, and specialized surgical instruments.	<ul style="list-style-type: none"> <li>• More medical expertise needed</li> <li>• Some instruments have electronics</li> <li>• Many of them are increasingly cost-driven</li> </ul>	
Therapeutic devices Implantable and non-implantable devices for physical illness or disability. Products such as hearing aids, pacemakers, and prosthetics.	<ul style="list-style-type: none"> <li>• Requires medical expertise and specialists</li> <li>• Obtaining bio-compatibility and regulatory approvals is a costly process, increasing the price of the device</li> </ul>	
<b>Diagnostic imaging equipment (Class 2)</b> Single-purchase equipment to use repeatedly over some years. Products to use in patient monitoring, diagnostics, and imaging. From blood pressure monitors or infusion pumps to MRI equipment or operating room (OR) robots.	<ul style="list-style-type: none"> <li>• Ongoing management of accessories, services, and parts</li> <li>• High need of medical expertise and different types of engineering skills</li> <li>• Long-term investments</li> </ul>	

Sources: P. Bamber and G. Gereffi, “Costa Rica in the Medical Devices Global Value Chain: Opportunities for Upgrading” (Durham, NC: Duke University Center on Globalization, Governance and Competitiveness, August 2013); T. Martí, “Desarrollo de Encadenamientos Productivos para el Clúster de Dispositivos Médicos de la República Dominicana,” 2016.

## Medtech Context

### Global trends

Medtech is a global industry valued at US\$520.32 billion in 2021. The industry has grown at a compound annual growth rate (CAGR) of 4.2 percent in the past five years. Some 55.5 percent of global revenue is made by the top 20 firms (figure 4.2). North America is the largest regional market and, therefore, the main contributor to global medtech revenue. In 2020, the United States was the largest exporter of medtech products at 17.9 percent of global market share, followed by Germany (12.2 percent), the Netherlands (11.0 percent), and China (9.5 percent).

The global health sector is evolving due to the confluence of fast-evolving trends such as the transition of the basis of pharmaceutical manufacturing from chemistry to biotechnology, or the increased sophistication of medical equipment and instruments made possible by new technologies and connectivity. These major transitions could be categorized in five dimensions: demographics, political and regulatory, sociocultural, technological, and industry dynamics.

In terms of demographic factors, three key themes are also affecting the demand for health care and medtech: an aging population, mass displacement of people, and income polarization. The 2010s saw the global population over age 70 grow by 627 million, increasing from 5 percent to 12 percent of the total population. In another decade, 16 percent of the world's eight billion people will be over 70.<sup>106</sup> An increase in the number of older adults is correlated with an increased risk for noncommunicable diseases, such as heart disease, diabetes, and cancer, and thus an increased need for health care. The UN High Commissioner for Refugees<sup>107</sup> comments that more than 70 million people were forcibly displaced in 2018, up from slightly more than 43 million a decade earlier in 2009. This situation places unexpected demand on the health infrastructure of receiving countries, which negatively affects their ability to provide health care to citizens. Finally, recent research<sup>108</sup> and a 2016 IMF report<sup>109</sup> show that income polarization will be a long-term challenge to growth in the world's largest medtech markets. At the top of the income pyramid, the expansion of income will likely increase the use of private and preventive health care, which in turn will drive up health care costs associated with new technology<sup>110</sup> and further limit health care accessibility for low-income populations.

Political and economic changes are also affecting the provision and accessibility of health care and thereby the demand for medtech. The World Health Organization (WHO)<sup>111</sup> reports that domestic spending on health—both out-of-pocket and publicly funded—is rapidly increasing worldwide. Between 2000 and 2017, global health spending outpaced economic growth by 0.9 percent. However, this figure masks the picture in low-income countries, where average health spending was 70 times lower than in high-income countries (US\$41 per person versus US\$2,937 per person in 2017). Countries with fast-growing economies increased their health spending in sync with their increases in income. However, among the economies growing the fastest, the picture was not as clear: 42 increased their public spending on health care by 2 percent of GDP on average, but in 17 others, public spending as a percentage of current health spending declined, even in the face of economic growth.







**Over the years, health care has shifted from a treatment-of-the-sick approach (reactive model) to a prevention-and-cure approach (proactive model).** Several factors brought about this shift, including an increased understanding of the importance of preventive health care, changing health care needs of individuals and communities, and advances in medical technology.<sup>112</sup> Traditionally, the health care system has focused on treating illnesses and diseases after they have developed, often through medications and procedures—this focus has driven the growth of the medical devices industry. However, this approach can be costly and is not always effective in improving long-term health outcomes. In recent years, there has been a growing recognition of the importance of preventing and detecting illnesses, emphasizing lifestyle changes, health education, and regular checkups.<sup>113</sup> Preventive health care involves taking proactive steps to reduce the risk of developing illnesses and diseases. Such steps include vaccination, regular exercise, healthy eating habits, stress management, and regular screenings for diseases like cancer, diabetes, and heart disease. By adopting these preventive measures—often through technological devices to aid in data collection and monitoring—individuals can reduce their risk of developing chronic illnesses and improve their overall health and well-being.<sup>114</sup>

**Technological innovations are helping companies develop new models for health care.** Such innovations include increased interconnectivity of health care technologies and smart solutions for medication administration. Global medical device companies are actively developing and applying new Industry 4.0 technologies for process digitalization and additive manufacturing. As the costs of these technologies decline and they become more widespread, greater pressure is exerted on prices and costs in health products and services (due to patent expirations and greater regulatory requirements for new products).

**Finally, the industry is witnessing an increasingly high concentration and integration with other businesses, which presents both challenges and opportunities.** The global competitive environment for medical devices is dominated by a small group of large companies (the first 15 represent more than 50 percent of the market). Industry dynamics have shifted so that start-ups now represent a larger proportion of drug discoveries and inventions, and those firms are subsequently acquired by the larger players. This trend has persisted throughout the 1990s and 2000s<sup>115</sup> and is expected to continue.<sup>116</sup> Finally, a 2021 McKinsey report<sup>117</sup> highlighted the potential for digital technologies to drive health care cost savings of up to \$3 trillion a year by 2030 while simultaneously improving health care quality if medtech companies were to more effectively embrace those technologies. These efficiency-driven savings can be realized by capitalizing on opportunities to integrate digital technologies at different stages of the patient pathway, from primary prevention and screening to surveillance and self-management at home.



FIGURE 4.2 MAIN PLAYERS OF THE SECTOR

LOCATED IN DR	RANK	COMPANY	REVENUE 2021 (Billions US\$)
	1	Medtronic	\$31.7
	2	Johnson & Johnson MedTech	\$27.1
	3	Siemens Healthineers	\$20.5
	4	Royal Philips	\$20.3
	5	Medline Industries	\$20.2
	6	GE HealthCare	\$17.7
	7	Stryker	\$17.1
	8	Cardinal Health (medical segment)	\$15.0
	9	Abbott (medical device segment)	\$14.4
	10	Baxter	\$12.8
	11	Henry Schein	\$12.4
	12	Boston Scientific	\$11.9
	13	Owens & Minor	\$9.8
	14	BD (medical segment)	\$9.5
	15	B. Braun Melsungen	\$9.3
	16	3M Co. (health care segment)	\$9.1
	17	Alcon	\$8.2
	18	Fujifilm Holdings (health care only)	\$7.3
	19	Zimmer Biomet (minus ZimVie spinoff)	\$6.8
	20	Olympus (medical business)	\$6.7
	21	Terumo	\$6.4
	22	Intuitive Surgical	\$5.7
	23	Hologic	\$5.6
	24	Edwards Lifesciences	\$5.2
	25	Smith+Nephew	\$5.2
	26	Steris	\$4.6
	27	Fresenius Medical Care (health care products)	\$4.4
	28	Canon Medical	\$4.4
	29	Dentsply Sirona	\$4.3
	30	BioMérieux	\$4.0

Source: Becker's Hospital Review, 2021.

## DR sector size and performance

**The DR is an attractive location for efficiency-seeking medtech firms.** It is a politically and economically stable country with competitive salaries, ease of starting up operations, and proximity to US headquarters of MNCs that are major medical device manufacturers. The DR government and the medtech supporting bodies are supporting the sector through tax exemptions in the SEZs, a supplier categorization tool to stimulate more linkages between the free zone medical device companies and local suppliers, and closer collaborations with the universities and technical schools to close the skills gaps faced by the industry. Similarly, the nonprofit agency representing private firms under the SEZ regime (ADOZONA) and the Medical Devices Cluster provide strategic and complementary support in ways that improve the medtech business environment in the country.

**The crowding of other locations, such as Costa Rica and Mexico, makes the DR an attractive option for US medical device manufacturers who wish to nearshore or diversify their supply chains by capitalizing on the offerings of a competitive and stable economy in the Caribbean.** Early medical device companies were attracted by a variety of factors such as its free zone parks (second half of the 1980s), but also the tariff advantage of the Caribbean Basin Initiative, an economic program that arose because of the US Act for the Economic Recovery of the Caribbean Basin (1983). The DR's macroeconomic stability, its SEZ tax exemptions, and the access it provides to reduced labor costs compared with the United States and Puerto Rico (US) can be harnessed as the country also invests in strengthening more structural competitive advantages based on skills and advances supporting services.

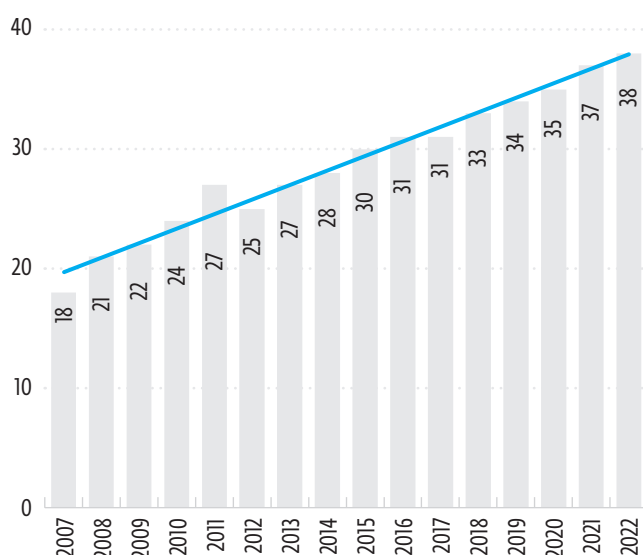
**The initial profile of the early medical device sector entrants was labor-intensive assembly and packaging operations.** Many firms used a twin-plant model: they operated a plant in Puerto Rico (or elsewhere) responsible for complex and sensitive processes and another plant in the DR responsible for assembly operations and packaging. The greatest growth of medical device firms occurred in textile-based medical products. For many years, the textiles sector led the free zones in export volumes, investment, and job creation. Both international and Dominican firms were involved. The same US tax code changes that attracted the medical device firms also attracted companies from the other electronics and jewelry industries at about the same time. Medtech companies in the DR have grown steadily (figure 4.3).

**As some firms gained experience and achieved good operational results in DR, their plants evolved into more complex operations.** The more complex operations have included automated and semiautomated assembly and packaging, molding, and extrusion; E-beam and ethylene oxide (EtO) sterilization; and larger and more sophisticated clean rooms. Some have since started vertically integrating more aspects of the manufacturing process, including the transfer of operations from other countries (Puerto Rico, for example).<sup>118</sup>

Many globally leading medtech firms are now present in the DR, including Medtronic, Cardinal Health, Fresenius, B. Braun, and BD (see table 4.2). Their DR manufacturing plants are part of the global manufacturing networks of these companies and supply the global value chains of some segments of medical products. Most of the medical devices produced in the DR remain disposables and surgical and medical instruments. There are also some therapeutic devices produced in the country, but they are mostly non-implantable ones. In terms of assembly, six of the 20 main global medtech players have manufacturing plants in the DR. These MNCs are complemented by original equipment manufacturers (OEMs) and other contractors that provide services to the MNCs. The operation profile of this group of companies includes basic assembly operations, automated and semiautomated assembly, and packaging. As shown in table 4.1, the companies operating in the DR are mostly producing disposables. B. Braun, for example, is producing mostly IV sets with a current capacity of 160 million units per year and a growth plan to double in seven years.

**FIGURE 4.3 MEDICAL DEVICES SECTOR IN THE DR**

**a. Number of MedTech Companies in Dominican Republic, by year**



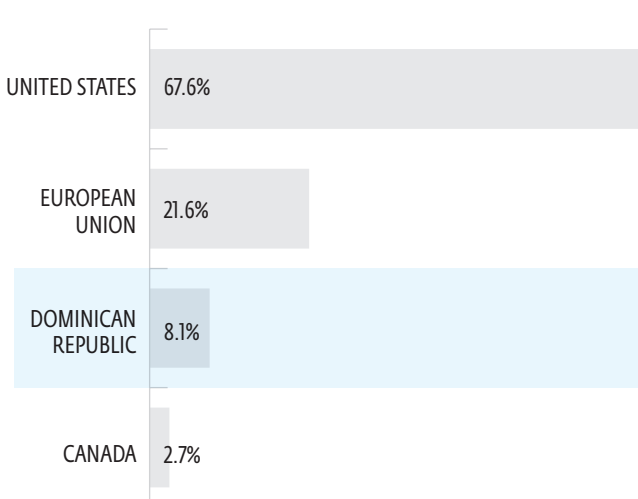
**NUMBER OF COMPANIES BY YEAR**

**GROWTH: 4.9% (CAGR)**

Source: CNZFE, Informe Estadístico, 2022.

Note: Only three companies in the Dominican Republic's medical devices sector are domestic companies.

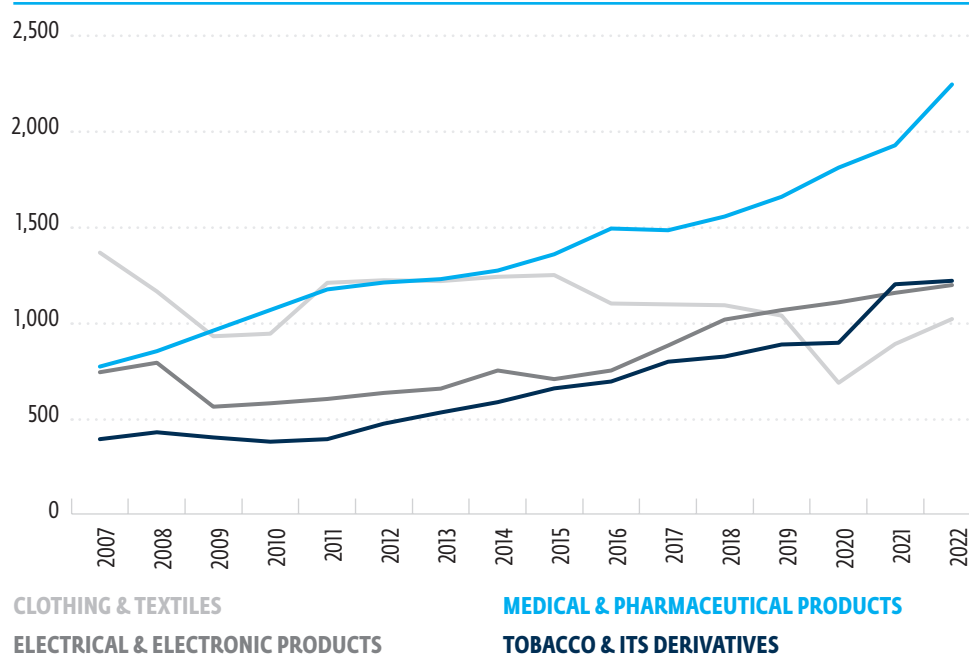
**b. Percentage of Companies by country of origin 2021**



The cluster also starts to include supporting services, but backward linkages remain limited. An example is sterilization, which is a critical requirement of medtech manufacturing due to the industry's highly regulated nature. Sterilization usually takes place in-house or is outsourced outside the country, but a local facility—run by the American firm Cosmed Group—is now providing the service. The company started its operations in the DR three years ago because of the demand from its clients in the United States. Similarly, molding and extrusion components are manufactured by global suppliers located in the DR (such as Hayco) or by vertical integration of the medtech MNCs. Local suppliers, such as Plásticos Multiform, are producing only some noncritical components, such as packaging, and they are few.

Exports have grown substantially, and since 2009 medtech has rivaled the DR's clothing and textiles sector for highest volume of goods exports (figure 4.4). Medtech has become the largest exported good, surpassing gold, reaching US\$2.2 billion in 2022. Between 1996 and 2022, the medical devices and pharmaceuticals sector saw exports increase from US\$154.1 million (5 percent of total free zone exports) to US\$2.18 billion (28 percent of total free zone exports).<sup>119</sup> All the production of the medical devices sector is in the free zones, as well as all the exports. There are no companies outside the free zones that are manufacturers of this sector.

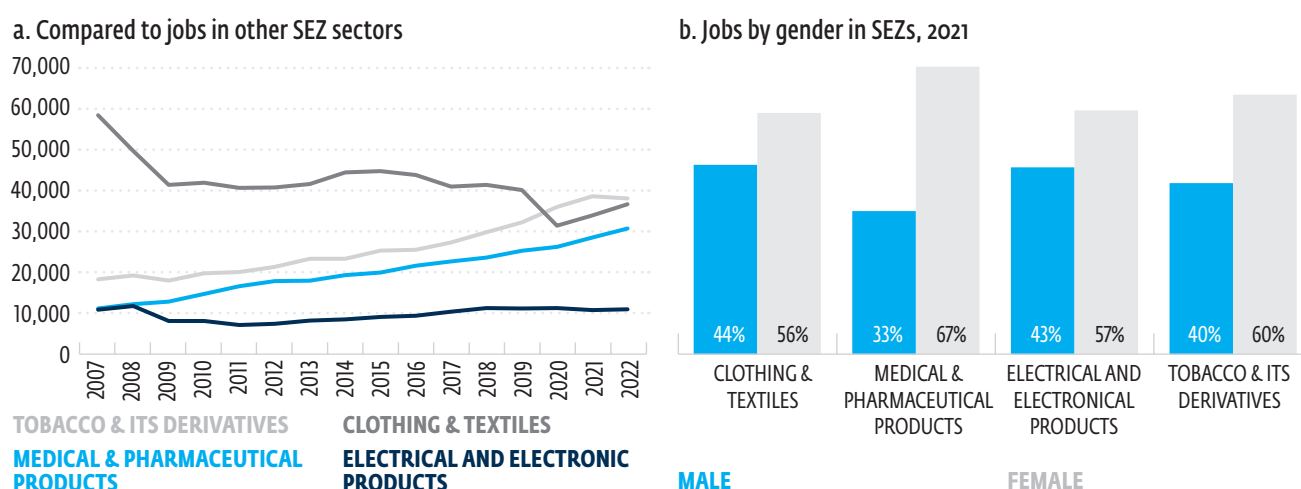
**FIGURE 4.4 MEDICAL DEVICES EXPORTS (US\$, MILLION)**



Source: CNZFE 2021.

The medical and pharmaceutical products sector is generating jobs in the DR that are increasing, and the female employee percentage is higher than in the rest of the free zone sectors and national companies. As of 2021, medical and pharmaceutical products account for 15.7 percent of free zone jobs (figure 4.5, panel a).<sup>120</sup> Moreover, medical and pharmaceutical products is the only sector of the top three exporting sectors (the others being electronics and tobacco and its derivatives) that has had positive job growth over the past decade. Females hold 64 percent of the medical devices and pharmaceuticals jobs (figure 4.5, panel b), which is significantly higher than the 48 percent average in SEZs or 40 percent average nationwide.

### FIGURE 4.5 JOBS IN MEDTECH



Source: CNZFE, 2021.

**Finally, the accumulated investment in the medical devices and pharmaceuticals sector grew over the past 10 years.** Medical devices and pharmaceuticals initially accounted for the equivalent of 71 percent of the investment in clothing and textiles, but they now account for 210 percent of that sector's investment. The DR's two main regional competitors are Costa Rica and Mexico. Mexico is the largest exporter of medtech products in Latin America and the Caribbean and the top supplier to the United States (table 4.2). Medical devices are the top export product from Costa Rica.

**TABLE 4.2 THE DR'S MAIN COMPETITORS**

	DR	COSTA RICA	MEXICO
<b>Jobs (medtech vs. total jobs)</b>	0.63%	2.22%	0.23%
<b>Number of companies (medtech vs. total companies)</b>	0.02%	0.26%	0.05%
<b>Exports (medtech vs. total exports)</b>	15.49%	33.41%	1.34%
<b>Main characteristic</b>	Third-largest Latin American supplier of medical devices and pharmaceuticals	Medical devices are Costa Rica's number 1 export product.	First exporter in Latin America and the Caribbean and first supplier to the United States

[illegible]

## Main public policies that affect the sector

### Policies that affect linkages with the local economy and industry

**High standards of product safety and quality concerns characterize the medical devices industry.** There is a high concentration in the industry because few firms can sustain the high investment costs required and simultaneously maintain strong global production and marketing.<sup>121</sup> Although the medical devices firms in the DR are largely based on assembly operations, they face different challenges because they are part of a highly regulated industry, and their markets (Europe, Japan, and the United States) are very demanding. These firms prefer to use their existing suppliers from their global value chains rather than try to buy locally. The evidence for that statement is twofold: (a) MNCs continue to import most of their raw materials (including plastic components and plastics for packaging), and local raw materials purchases remain less than 5 percent of total purchases—though it is worth noting that in Costa Rica, despite efforts made to develop local linkages, these increased only modestly from 6 percent to 9 percent between 2012 and 2014 (while in electronics, they remained negligible<sup>122</sup>); (b) where local purchases of raw materials are made, they tend to focus mainly on paper, cardboard packaging, and printed materials. Such items are primarily used as secondary packaging or support materials for production processes.<sup>123</sup> Those materials carry the lowest requirements, so the firms can more easily choose local suppliers, maintain lower inventories, and achieve quicker delivery times.<sup>124</sup>

**Various institutions have spearheaded initiatives in response to the barriers and to strengthen the Dominican manufacturing sector.** In 2017 the Association of Industries of the Dominican Republic (AIRD) and the National Competitiveness Council (CNC) developed a General Plan for the Promotion of Linkages. It had action lines to develop the suppliers, improve supply-demand mechanisms, reduce the complexity and transaction cost between companies of different tax regimes and identify and attract potential investments to generate and exploit growth opportunities. In 2017, ADOZONA participated in the Digital Production Linkages Program (Programa Encadenamiento Productivo Digital) by the DR government to develop a tool to categorize the local suppliers of medical devices. It is a process to evaluate and categorize each potential supplier based on the requirements of the purchasing companies. They subsequently transferred the tool to the Ministry of Industry, Commerce, and SMEs, which is now in charge of the categorization. So far, 18 local companies have been categorized, and only five comply with the requirements to be sector suppliers. Box 4.1 describes hurdles in obtaining licensing and permits.

### Policies that affect linkages with education and skills training institutions

**Another factor that affects the competitiveness of the DR as an attractive site for medical device manufacturers is the demand for talent.** Four key factors shape that demand: (a) plant expansions, (b) the production of more complex products, (c) the inclusion of higher technological content in products, and (d) the growth of operations within existing plants. The demand for talent can be categorized in three ways: (a) demand for more skilled workers; for example, Marti estimated that 3,500 technicians and 2,200 engineers would be needed in the five-year period starting in 2019,<sup>125</sup> (b) demand for new skills including specialized manufacturing knowledge, the ability to handle new regulatory requirements, and a better understanding of medical products and technologies to complement manufacturing knowledge, and (c) demand for new functions that, although not new to the industry, may be new to local operations and include plastic molding, sterilization, and automation.

As discussed in section 3, education is not producing enough well-trained graduates for most of these categories. A constraint that affects the amount of available talent in this industry is that there are fewer STEM graduates from universities and technical schools than the sector needs.<sup>126</sup> Each firm is then forced to carry out its own internal training, which results in higher incremental operational costs at the firm level and duplication of effort across sectors. These inefficiencies are barriers to the competitive growth of the sector in the DR.

As part of the policy effort to address this gap by tapping into the global supply of education services, the Ministry of Superior Education, Science, and Technology annually gives more than 1,700 scholarships to Dominicans to study abroad, but allocations can be substantially improved. Every year the DR government spends US\$30 million in scholarship grants to send Dominican students to 62 international universities in Europe, Latin America, and the United States. The degrees must be in what the government considers strategic areas: innovation, tourism, technology, basic sciences, education, and engineering. Interviews with firms and beneficiaries suggest that the selection process of beneficiaries could be substantially improved, objectified, and made more transparent, to ensure that the qualifications of grantees meet the needs of the industries. Similarly, a stronger and institutionalized coordination between the ministry and the strategic industry is recommended to ensure better targeting and adaptation to the needs of the private sector, as well as employment prospects by grantees upon their return.

#### **BOX 4.1 STREAMLINING LICENSING AND PERMITS TO TACKLE BUREAUCRATIC HURDLES IN THE MEDTECH SECTOR**

As highlighted in section 3.1 on the business environment, ongoing advisory services by the World Bank have found that the process of establishing companies to produce medical devices under the SEZ special regime remains burdensome and lengthy: it includes 12 administrative procedures, 96 different requirements, and an average wait time of 11 months. There is no single window where the entrepreneur can go through the entire process. Instead, firms have to interact with six different public institutions. Bottlenecks are often found in the environmental licensing and the sanitary registry, but the redundancy is also explained by the fact that each institution asks for the same requirements multiple times because databases of the various agencies are not digitalized, linked, or streamlined based on a coherent strategy that includes all relevant agencies. For the same reason, it is also not possible to carry out procedures in parallel. As a result, the wait time for an entrepreneur to start operations remains about 44 weeks (much less than in the GTR but far longer than the time that would allow the DR to be well positioned to seize the nearshoring opportunities).

## Medtech Opportunities

The investment opportunities of the medtech sector in the DR are distributed across two main markets (table 4.3). The first is increasing the export of Class 1 and some Class 2 medical devices to the United States, further expanding the niche currently occupied by the DR. The second domain of opportunity is leveraging the current base of business process outsourcing (BPO) and call center firms to expand the provision of services to health care providers. Because of the differing characteristics of those markets, this section addresses them separately, each time providing an overview of the market opportunities, potential investment areas, and constraints and challenges that must be overcome to pursue the investments in each of the markets.

**TABLE 4.3 OVERVIEW OF INVESTMENT OPPORTUNITIES**

MEDTECH MAIN MARKETS	INVESTMENT OPPORTUNITIES
Disposables, surgical instruments, and therapeutic medical devices for the US market	A. Local supplier of services for MNCs B. Local manufacturing of packaging supplies C. Local manufacturing of components
Services for health care providers	Information technology or outsourcing services

### Market 1: Class 1 and some Class 2 medical devices for the US market

As shown in section 2.3, most firms in the DR specialize in producing and exporting medical devices of relatively low to medium technological complexity. The US medical devices market is expected to grow annually by 5.4 percent during the forecast period 2022–29.<sup>127</sup> Specifically, the product category of disposables is expected to grow 16.7 percent annually between 2021 and 2028.<sup>128</sup> Companies in the DR have been growing significantly in recent years in response to this demand. For example, B. Braun is currently manufacturing about 170 million intravenous (IV) sets per year, and it is expecting to double its production in six years. Its staff has also grown: four years ago, B. Braun had 1,800 employees, and it currently has 2,700. This is a profitable niche, and other destinations in Latin America and the Caribbean, such as Costa Rica and Mexico, increasingly compete for it.

The estimated market size for medical device product lines with the highest potential for being supplied by local companies in the DR ranges from US\$145 to US\$175 million.<sup>129</sup> These products are classified as *materials with the lowest barriers to entry and the least demanding requirements*. They are commodity-type components, packaging materials, or materials that do not go into the product but are used in the production process. Specific product examples include basic flexible plastics (for example, plastic bags, plastic rolls and sheets, heat-shrinkable plastic, plastic labels, and adhesive tapes); thermoformed plastics (for example, trays and thermoformed components); and paper and cardboard (for example, corrugated cardboard and packaging paper, printed matter, and labels).



**An additional US\$100 million market opportunity is also estimated for materials with higher requirements and barriers, but where local supplier capacities could be developed.**<sup>130</sup> These products are materials and components that have medium potential for successful linkage between free trade zone (SEZ) medical device companies and local suppliers. The basic manufacturing technologies exist in the DR, but local firms would need to develop additional capacities and knowledge to supply them. Specific product examples include molded plastics (for example, containers, lids, and accessories for assembly and packaging) and chemicals (for example, solvents, cleaners, and adhesives).

### Opportunity analysis and market landscape

In the low-sophistication medical devices segment of the market, there are three opportunities that the Dominican Republic can pursue: (a) local suppliers of health services for MNCs; (b) local manufacturing of packaging suppliers (such as individual plastic bags, plastic bags for transporting, cardboard boxes, and pallets); and (c) local manufacturing of components. In each case, MNCs need various products and services as primary or intermediate inputs that they have been providing internally or sourcing from the United States because of the lack of options in the country.<sup>131</sup> Services considered here are (a) sterilization, (b) lab tests, and (c) calibration services. Regarding packaging, some local companies provide such supplies, including Plásticos Multiform, Jabil, and IntraPac. MNCs usually have more than one supplier to mitigate risk and be able to manage last-minute needs. Because the components are inputs to finished products, it would reduce time to have them manufactured locally. Currently, there are several efforts and a suppliers' specialization program led by the government to link the local industry and free trade zone (SEZ) medical device companies.

**The government-led suppliers' specialization program has not yet had the desired effect in increasing local linkages, for two main reasons.** First, a stronger and dedicated convening power is needed to achieve the required coordination at the national level among all the relevant players. Second, the program mainly focuses on supplier categorization but does not provide the resources that firms need to improve their capabilities once they have been audited and categorized. Other constraints affecting the exploitation of the low-sophistication medical devices market segment are detailed in box 4.2. Furthermore, there are structural trends that pose a challenge to backward linkages, such as the tendency of MNCs to vertically integrate the production of the components. For example, B. Braun in the DR buys injection-molded components from other US B. Braun plants, but it will be done internally in the DR in the future. It is doing plastic extrusion already in new facilities in the DR. Also, disposable medical devices are commodities and therefore have high price sensitivity. Automation and vertical integration of plants are key to reducing costs. The conditions have made it an unattractive opportunity for new local suppliers entering this segment because of the high barriers to entry and the high bargaining power of the buyers (MNCs).

**BOX 4.2 MAIN CHALLENGES FOR THE CLASS 1 AND CLASS 2 MEDICAL DEVICES MARKET**

Local firms that either currently supply or wish to enter the supply chains of the large MNCs for the production of Class 1 and Class 2 medical devices faced some key constraints:

- **Technical constraints** (in order of importance):
  - Regulatory and quality management system certifications (for example, ISO 13485, which is a standard for the medical device industry; this is the most important technical factor and most commonly cited by medical device companies)
  - Technical capabilities for product design and production (the technical gap is larger in services because the knowledge and equipment are more complex)
  - Control of materials, processes and inspection, environment, and health and safety plan
  - Handling, storage, packaging, and transportation of materials
  - Training, recordkeeping, and good manufacturing practices
- **Financial:** Local suppliers may face long receivable delays and high cost of company improvement to meet MNC requirements.
- **Information asymmetry:** Buyers (manufacturers) lack detailed info on local supply capacities and suppliers lack info on purchase requirements, despite the initial efforts of the suppliers' specialization program (the success of which has been hampered for the reasons set out above).
- **Low suppliers' bargaining power:** MNCs are locked into supply contracts and international suppliers are more competitive than local companies, and they have even started to vertically integrate the production of some components.
- **Lack of accreditation body in the DR for sterilization and lab testing companies:** Suppliers interested in providing these services are accredited by Entidad Costarricense de Acreditación (ECA), the Costa Rica Accreditation Entity.

## Specific investment opportunities

### Investment Opportunity A: Increase local supplies of services for MNCs

There is an opportunity to increase the provision of the necessary ancillary services required by medical device manufacturers to offset the current lack of options within the country (table 4.4). These services include sterilization and lab testing (box 4.3).

**TABLE 4.4 EXAMPLE OF INVESTMENT OPPORTUNITIES IN LOCAL SUPPLY OF SERVICES FOR MNCs**

SERVICE	INVESTMENT OPPORTUNITY	DESCRIPTION
<b>EtO sterilization services</b>	There is an opportunity to further grow the sterilization market in the country.	A US company that started in the DR in 2021, is interested in expanding its operations to deploy ovens in the market, which have a capacity of 30 pallets, 53-foot containers. Investment needs are estimated to be at least US\$ 16 million in equipment only.
<b>Lab testing services</b>	There is an opportunity within the local value chain to provide these types of services, as well as the calibration services that are also locally demanded.	<p>The opportunity is to provide microbiology testing services to meet medical device manufacturers' sterilization validation and laboratory testing needs. MNCs are currently buying these services in the United States.</p> <ul style="list-style-type: none"> <li>Medical device lots produced have test requirements before being distributed to the client, such as sterilization or Limulus amoebocyte lysate (LAL) tests.</li> <li>Conducting these recurrent lab tests within the country rather than outsourcing to suppliers in the United States would reduce cost and lead time.</li> </ul> <p>Sterilization services companies cover this service in other countries, yet not in the DR. Local lab testing suppliers serving the food industry could get test accreditations needed to fill that void.</p>

## BOX 4.3 BENCHMARKING COSTA RICA – STERILIZATION SERVICES AND LAB TESTING SERVICES

### Sterilization Companies

There are two sterilization companies in Costa Rica, both from the United States: Steris (T/A "Synergy Health AST, SRL"), which opened in 2009, and Sterigenics, which started operating in 2013. Steris provides ethylene oxide (EtO) and electron beam (E-beam) sterilization, while Sterigenics provides EtO services only.

In 2021 Costa Rica's medical devices exports reached US\$5.21 billion, as compared with the DR's US\$1.93 billion in medical devices exports in the same period. These amounts indicate that despite a market that is almost three times as large as the DR's, Costa Rica's manufacturers are currently supplied with one more contract sterilization company than the DR has.

Medical devices can now be exported directly from Costa Rica to various destinations worldwide, thanks to on-site sterilization services and logistics companies. This ability has resulted in significant savings in production time, transportation, and warehousing.

### Lab Testing

Apart from the provision of E-beam and EtO sterilization services in Costa Rica, Steris is also certified to provide the laboratory testing service for the testing of biological indicators, associated with the provision of sterilization services. Having this service available locally is an important factor in improving logistics efficiency for Costa Rica-based manufacturers.

### Investment Opportunity B: Local manufacturing of packaging supplies

There is an opportunity to supplant international suppliers by providing packaging materials for medical device manufacturers. A local packaging supplier, that works mostly in the agribusiness industry, started working for the medtech industry providing firms with primary and secondary packaging. It was part of the local effort from the government and ADOZONA to link the local industry and Free Trade Zone Medical Device Companies. It took almost two years from the first MVP (minimum viable product) to get all the requirements, clean rooms, and certifications that the sector needs (table 4.5).

**TABLE 4.5 EXAMPLE OF INVESTMENT OPPORTUNITY IN PACKAGING BUSINESS**

SERVICE	INVESTMENT OPPORTUNITY	DESCRIPTION
Packaging	MNCs require local supply to mitigate risk, even if they have foreign suppliers. COVID-19 supply chain disruptions increased this need. Local supply of high-quality labels, solvents, and glues is also important.	Replicate and expand local success stories; estimated costs: US\$ 5 million investment, excluding the cost of the land where the plant would be built. The facility's design and construction, including air and power systems; estimated cost: US\$ 2.5 - 3 million. Producing packaging equipment; estimated cost: US\$ 2 million.

### Investment Opportunity C: Local manufacturing of components

There is an opportunity to supply a group of key components with high requirements and barriers for existing local suppliers, such as molded components, extruded plastic tubes, and metal components. Currently, a Chinese company, Hayco, provides injection-molded parts, plastic extrusions, and metal components. It has factories in China and in the DR with a total of 6,000 employees. These figures indicate that there is a market, and interviews have confirmed that there is space for growth of local supply, should standards be met.

## BOX 4.4 MAIN CHALLENGES FOR HIGHER-TECH MEDICAL DEVICES

### Higher-tech medical devices for the US market

The constraints faced by the DR to upgrade into the production of higher-tech devices for supplying the US market are considerable, as follows:

- **Talent:** Producing high-tech equipment requires more and more highly skilled talent, and at the same time, the labor cost to produce it has a lower impact on its total cost.
- **R&D:** Higher-tech equipment requires specialized capabilities for product design and development and large investments.
- **Financial:** Higher capital outlay is needed to set up operations and a longer payback period.
- **Coordination:** Tighter coordination is required among manufacturers, suppliers, educational institutions, and government.

As shown in earlier sections in this chapter, some of the major global medtech players in surgical and medical instruments and therapeutic devices have manufacturing plants in the DR that are part of their global supply chains. Nonetheless, these types of firms tend to restrict the production of higher-tech medical devices to their home bases or other developed countries because of proximity to the talent required, the destination markets, and the availability of adequate intellectual property protection. With the requisite supplier development programs in place, there could be an opportunity for the DR to begin producing and exporting higher-tech devices.

### Opportunity Analysis and Market Landscape

The more technology-intensive a product is, the less labor cost becomes a decisive factor

in its production. The major medical device manufacturers prefer to keep their non-labor-intensive production—which can be automatized and is critical to their strategic growth—close to their home bases. Alternatively, they offshore it to other developed countries where they can be certain to find an adequate level of talent and a greater surety of intellectual property protection for their strategic products. This poses a challenge for the DR, which can only be addressed by sustained (beyond a three- to five-year horizon) and transformative investment in skills, intellectual property rights regulation, R&D investment, and the scaling of the cluster to create a critical mass of specializations and suppliers.

The scale of these challenges suggests that investments in higher-tech medical devices are not likely to be significant in the short term. Interviews with MNCs' headquarters suggest that the location decision for higher-tech medical device production plants is less dependent on low labor costs and tax exemptions. They prefer to produce higher-tech product categories closer and even in the same country as headquarters where they can find an adequate, reliable level of talent and protect intellectual property. Gereffi, Frederick, and Bamber in 2019 show that it took 15 years for Costa Rica to see a significant upgrade toward producing product categories of higher technological content. However, in the meantime, the policies aimed in that direction can benefit other knowledge-intensive sectors, as is also the case in Costa Rica. Policy recommendations are made later in this document.

Source: Interviews with US headquarters of medtech firms; Gary Gereffi, Stacey Frederick, and Penny Bamber, "Diverse Paths of Upgrading in High-Tech Manufacturing: Costa Rica in the Electronics and Medical Devices Global Value Chains," *Transnational Corporations Journal* 26, no. 1, 2019.

## Market 2: Services for health care providers

As discussed in the global trends section, the transition from a conventional, reactive model centered on treating sickness to a proactive model focusing on patients' demands and prevention of illness is changing the health care industry. Preventive treatments involve several players interacting with each other and integrating data from various sources while facilitating communication between patients and health providers. The development of health services that involve medical devices and technologies supported by ICT is becoming necessary.<sup>132</sup>

By 2023, the global market for health care outsourcing is anticipated to grow at a 12.3 percent CAGR to reach US\$449.6 billion,<sup>133</sup> and nearshoring such services is an increasingly attractive strategy. North America accounts for a major share of the market, in terms of revenue, owing to the presence of many service providers in the region. This outsourcing trend helps vendors minimize delivery costs and improve electronic medical records management, consumer engagement, and clinical transformation. It also helps minimize errors in medical billing and staff training costs.

The DR has more than 60 call centers and BPO companies in SEZs contributing almost 29,000 jobs. The Dominican Contact Center and the business process outsourcing industry started in the mid-1990s, outsourcing their services to Canada, Europe, Latin America, and the United States. Currently, 62 percent of the companies provide services to the telecommunications and financial sectors. The rest of the companies cover many other industries, including health and IT services (for example CCD Health and Arium). A mix of local firms and multinationals, such as Teleperformance, are located in two main hubs in the country, Santo Domingo and Santiago.

## Opportunity Analysis and Market Landscape

This group of opportunities includes services outsourced by medtech manufacturers and health care providers, as well as other e-health solutions; they could be summarized as follows:

- a. **Services for handling complaints about medical devices:** Regulatory requirements by the U.S. Food and Drug Administration for handling complaints about medical devices have become stricter in recent years. MNCs like Olympus USA have a massive center with more than 200 people dedicated to creating reports and processes in the United States. Some of them have this service outsourced with a clear potential for being nearshored in places with call center infrastructure and medical devices expertise.
- b. **Scheduling services for health interventions:** Call centers operating in the DR can support outpatient health care providers for appointment scheduling and engagement. The idea would be to target US-based health care providers who nearshore these types of services.
- c. **Decision-making solutions:** There is demand for information system solutions to support decision making in the health system, including companies, centers, and their professionals. Medical staffing shortages in the United States will be an increasing problem, with a deficit of 122,000 physicians by 2032.<sup>134</sup> Outsourcing support diagnosis services will become part of the solution.

- d. **Digitalization services for health care providers:** Services are also required to facilitate electronic health records, interoperability among players (insurance, health care providers, pharmacies, laboratories, and so on), and decision making related to treatment or outcomes. Box 4.5 describes the challenges faced by services companies in the DR aiming to cater to health care providers.
- e. **ICT and software services for e-health solutions:** Small R&D companies operating in life sciences and digital health are part of a patient-centric solution focused on a preventive approach. The means of delivery could be mobile app solutions, small electronic devices, software connected to remote medical teams, and continuous glucose monitoring systems, among others.

#### BOX 4.5. MAIN CONSTRAINTS AND CHALLENGES FOR SERVICES FOR HEALTH CARE PROVIDERS

Pursuing opportunities in services requires overcoming a set of critical constraints including the following:

##### **Talent:** Low level of English fluency and limited human capital to drive higher-value outsourcing services

- Insufficient English fluency to attend to patients – This is a key advantage in Costa Rica, and a key weakness in the DR.
- Scarcity of highly trained staff to move from BPO agents responding on the phone to higher-trained staff capable of relying on tech to solve complex problems through different interfaces and provide support
- High staff turnover due to scarcity of English and tech skills
- Remote monitoring of patients by contact centers requires nurses, social workers, and medical assistants (that is, persons with the relevant medical skills to understand health indicators and act accordingly). Such assistants are not available in the DR.
- e-Health solutions require multiple technology skills such as 3D printing, robotics, AI and machine learning, robotic process automation, big data and user experience and user interface (UX/UI) among others.

##### **Technical:** Required process definition for operations that are centered on process execution and tasks by health care providers

- From routine tasks to multi-interfaces. BPO operations are currently centered on low-tech service delivery with a large pool of people executing routine tasks. Health care service providers require teams that can implement more sophisticated tasks and work on the development of design-centric solutions in different interfaces.
- R&D networking and agglomeration spillovers. Electronic, BPO, and digital service companies are seldom interacting with each other. They would benefit from the domain expertise from one type of company and the digital capabilities of the other type.

## Specific investment opportunities

### Investment Opportunity: Services for Health Care Providers

There is an opportunity to invest in local BPO and KPO companies and position the country as a US nearshore hub of outsourced health care services. For example, CCD Health is a local BPO company that already works for health care providers in the United States (table 4.6). It was founded in 2011. In 2017 it was acquired by Amergent Capital, a private equity investment firm (a mix of local and US capital), and it turned the company to exclusively work for the health sector. CCD Health has grown from 200 employees in 2017 to more than 1,300 in 2023, growing from call center agents to higher technical skills and engineering jobs. The company pays an average monthly salary of RD\$35,000. (The minimum salary in the SEZ is RD\$8,310.) Its specialization is scheduling appointments for radiology interventions for US hospitals and health centers. CCD Health has also developed an artificial intelligence (AI) tool that predicts no-shows, which is a critical and costly problem for health care centers. It is already working on developing services to diagnose patients remotely and capitated health care models.<sup>135</sup>

Local BPO companies are already working for health care providers in the United States. One company has seen strong growth and as a result expanded its workforce from 200 employees to 1,300 employees in the past 6 years. Its activities include: scheduling appointments for interventions for US hospitals and health centers.

**TABLE 4.6 EXAMPLE OF INVESTMENT OPPORTUNITY IN SCHEDULING SERVICES FOR HEALTH INTERVENTIONS**

SERVICE	INVESTMENT OPPORTUNITY	DESCRIPTION
<b>Scheduling services</b>	Appointment scheduling and engagement call centers for outpatient US health care providers who outsource these types of services nearshore	BPO companies, could target the health sector with an initial investment of over US\$ 10 million per company. Capital expenditures (including computers, IT infrastructure, cabling, and site support) are estimated at US\$ 5 million per 1,000 seats, with an average use life of seven years. Operational expenditures vary based on customer and service type, ranging from US\$ 1.4 million to US\$ 1.8 million.

There is also an opportunity to leverage the DR's base of BPO and KPO firms to provide digitalization services such as telemedicine, patient portals, and data analytics to nearshore markets. Digitalization services for health care providers incorporate technology and digital tools into health care operations to improve patient care and outcomes, increase efficiency, and reduce costs. For example, local companies like Arium have already started providing such services (and could provide them to locally based firms like CCD Health). Arium helps health care providers to transform digitally: through electronic health records, and interoperability among players (insurance, health care providers, pharmacies, laboratories, and so on), and decision-making related to treatment or outcomes. Its target market is Latin America and the Caribbean, and its employees are not only technical professionals but also doctors and nurses, to help understand both worlds (IT and health). This is a growing field as US medical staffing shortages are projected to be an increasing problem, with a deficit of 122,000 physicians by 2032, and outsourcing support diagnosis services will increasingly become part of the solution (table 4.7).



**TABLE 4.7 EXAMPLE OF INVESTMENT OPPORTUNITY IN DIGITALIZATION SERVICES FOR HEALTH CARE PROVIDERS**

SERVICE	INVESTMENT OPPORTUNITY	DESCRIPTION
<b>Digitalization services</b>	Improvements and solutions based on information systems to support decision making in the health system, companies, centers, and their professionals	<p>There is an opportunity to create additional companies that provide solutions based on information systems, such as Arium.</p> <p>The creation of an additional company like Arium would require capital investment that ranges between US\$1 million and US\$1.5 million in software, cloud, equipment, and R&amp;D investment. The exact requirements of investment will vary depending on the precise services supplied.</p>

### Recommendations

The medtech sector has been growing significantly in the DR, but most of the growth has come from the already established MNCs increasing their production and adding vertically integrated operations. Channeling the growing investment in medical devices in the DR into the local economy requires connecting them. Connecting them means reducing the technical gap between the local suppliers' and MNCs' requirements. Reducing the technical gap is easier for local packaging suppliers or other noncritical inputs, but these inputs are commodity products that generate less added value around them. Reducing the technical gap is more complex in services such as sterilization and lab testing.

Developing technological skills and digital capabilities and improving the local entrepreneurship ecosystem are necessary for forming the foundation of the next wave of FDI (including in other sectors). Proximity and cheap labor are insufficient to continue attracting investment in the medical devices sector.<sup>136</sup> Table 4.8 describes recommendations across key policy areas that could relax constraints that are binding for investment opportunities and growth of the sector in the time horizon (three to five years):

**TABLE 4.8 MATRIX OF PRIORITY ACTIONS FOR MEDTECH**

MEDTECH			
POLICY AREA	SPECIFIC ACTIONS	TIMELINE	LEAD ACTORS
<b>Strengthening certification and accreditation</b>	<p><b>Adopt measures to narrow the certification and accreditation gaps between domestic and foreign firms through the following:</b></p> <ol style="list-style-type: none"> <li>1. Create or upgrade local institutions tasked with attaining international credentials and capabilities to certify domestic firms.</li> <li>2. Consider cooperation with Costa Rican Ministry of Health's department of medical devices and its accreditation body.</li> <li>3. Support domestic labs to cater to medtech MNCs by reducing information asymmetries and providing financial or nonfinancial incentives that enable labs to attain necessary accreditations to enter the lab testing market.</li> </ol>	Short to medium term	<p>MICM</p> <p>INDOCAL</p> <p>ODAC</p> <p>ECA</p>

MEDTECH			
POLICY AREA	SPECIFIC ACTIONS	TIMELINE	LEAD ACTORS
Incubating and promoting linkages	<b>Support technology and capability adoption through dedicated programs with financing instruments:</b> <ol style="list-style-type: none"> <li>1. Digitalize firms by (a) supporting entrepreneurs developing digital-first business models and best practices and (b) facilitating financing for digital development and growth.</li> <li>2. Provide incentives that target investment in training to support the development of competitive capabilities of staff in domestic firms.</li> </ol>	Medium term	MICM CNC Centro de Capacitación e Investigación del Plástico
	<b>Establish an R&amp;D support program to strengthen firms' investment in higher-value-added product/service development:</b> <ol style="list-style-type: none"> <li>1. Leverage MICM's existing categorization platform to promote linkages with suppliers (such as packaging).</li> <li>2. Perform technical and technological audits (for example, by Centro de Capacitación e Investigación del Plástico for plastics) to identify existing gaps in capability and technology to meet requirements by medical device manufacturers.</li> <li>3. Engage anchor MNCs to collaborate with suppliers (for example, the experience of Plásticos Multiform) on pilot orders. Provide financial and nonfinancial support to pilot collaborations.</li> <li>4. Develop customized training programs to address the needs in terms of packaging design, material selection, quality control, and regulatory compliance (see table 4.1).</li> </ol>		Organizations that support the start-up and entrepreneurial ecosystem
	<b>Increase access to invoice factoring to local suppliers to improve their liquidity and increase their investment</b> in competitiveness-enhancing infrastructure, machinery, technology, and capacity building of staff and management. Tap into multilateral organization programs that facilitate that access.	Short to medium term	Private, public, and development financial institutions
Orienting FDI promotion to increase linkages	<b>Shift the FDI strategy toward a proactive approach:</b> <ol style="list-style-type: none"> <li>1. Adopt a nearshoring strategy that targets medtech and sectors with the highest nearshoring potential (such as electronics) and orients FDI attraction efforts to reinforcing the value chains and stronger integration in GVCs.</li> <li>2. Prioritize public investments in building local capabilities or closing business environment gaps for these sectors.</li> <li>3. Engage in FDI attraction efforts that target foreign firms that are critical suppliers in the GVC, providing products and services that increase the competitive advantages for MNCs to invest in the DR.</li> </ol>	Short term	MICM CNZFE ADOZONA Pro-Dominicana ProIndustria
Closing the skills gap	Recommendations are consolidated and outlined under the Skills Gap section in chapter 3.	Short term	

MEDTECH			
POLICY AREA	SPECIFIC ACTIONS	TIMELINE	LEAD ACTORS
Reducing bureaucratic hurdles for investment in medtech	<ul style="list-style-type: none"> <li>• <b>Simplify registration processes for the establishment of medical devices companies under the regime for Special Economic Zones</b> by reducing administrative procedures from 12 to 8, number of requirements from 96 to 67, and the time from 44 to 32 weeks (based on findings and recommendations from world bank report on Procedures for the Establishment of Companies in Three Special Regimes of the Dominican Republic).</li> <li>• <b>Incorporate the medtech sector in the priority list when creating a single window</b> centralizing the reception of information and interconnecting the involved agencies and databases (see the preceding recommendation on the business environment).</li> </ul>	Short to medium term	CNZFE MH DGII (Taxes) DGA (Customs) MSP MARENA

Note: CNC = National Competitiveness Council; CNZFE = National Council for Exporting Special Economic Zones; DGA = General Customs Directorate; DGII = Internal Revenue Directorate; ECA = Costa Rica Accreditation Entity; MARENA = Ministry of Environment and Natural Resources; MH = Ministry of Finance; MICM = Ministry of Industry, Commerce, and SMEs; MINERD = Ministry of Education; ODAC = Dominican Accreditation Body; OGTIC = Government Office of Information Technology and Communication; Pro-Dominicana = National Export and Investment Promotion Agency; PROINDUSTRIA = Industrial Development and Competitiveness Center.

## 4.2 INDUSTRIAL REAL ESTATE AND ECO-INDUSTRIAL PARKS

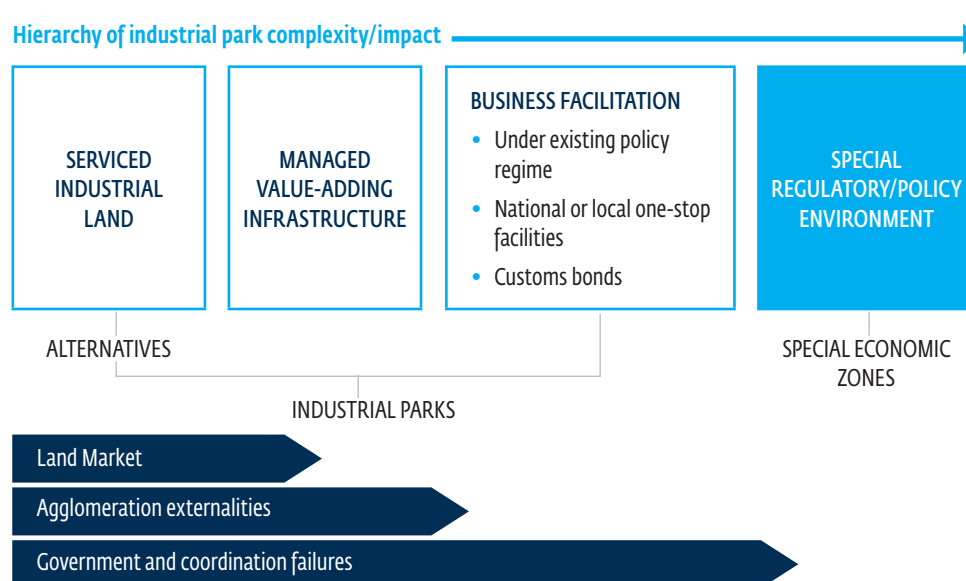
### Industrial Parks versus Special Economic Zones

Industrial parks (IPs) are real estate areas oriented toward industrial activity and equipped with adequate infrastructures and business services adapted to manufacturing. The advantages of IPs to manufacturing and auxiliary firms stem from (a) the customization of infrastructure and services to the specific needs of manufacturing (such as wider streets and waste collection and treatment but also professional services, shared conference space, or care facilities), (b) the agglomeration effects and economies of scale they generate for firms in related activities, and (c) the spatial buffering they help create with residential and mixed-use areas (those due to sound pollution or road safety concerns). The intrinsic advantages of this real estate product are relevant independently from additional fiscal or similar advantages sometimes provided to firms in industrial parks because of industrial policies (such as the ones the Dominican Republic provides through its SEZ regime). Industrial parks have become a ubiquitous industrial and investment policy tool, in both developed and developing economies, where they can be a key enabler of Industrial growth. In their various forms, IPs have over the past 50 years been a popular tool implemented by governments in developing economies to foster industrial investment and production, particularly of manufacturing for exports.

SEZs are industrial parks to which fiscal or regulatory advantages are attached (e.g., tax incentives, custom regimes, streamlined administrative procedures), and global experiences suggest that these have a mixed record in terms of impacts (figure 4.6). The main distinctive factor between these areas and other entities containing similar industrial activities (including other industrial parks) is not only related to the quality

of the infrastructure or the service, but to a legislated special treatment in terms of customs and fiscal advantages, business services, or ease of doing business. The number of SEZs is estimated to have grown from 79 in 29 countries in 1975 to over 5,400 operational SEZs in 147 countries in 2018<sup>137</sup> and has most likely increased further since. SEZs have a mixed track record; in some cases, they are a catalyst for industrialization and export-led growth (where they were well-designed and supported by a conducive business environment). However, some zones fail in attracting investors and boosting competitiveness and have been the object of much debate about their economic rationale, efficiency, and impacts on their host economies.<sup>138</sup>

**FIGURE 4.6 FROM INDUSTRIAL LAND TO SEZs: A SPECTRUM**



Source: Adapted from Farole, *Special Economic Zones in Transition Economies: Experience and Lessons Learned*, 2019.

**In the Dominican Republic, the special regulations that used to be designated to free trade zones have been expanded beyond any specific geographic area to all firms that fit a certain profile** (such as firms operating in preferential sectors like logistics, of primarily exporting firms), effectively turning what used to be a series of specific geographic zones with fiscal advantages into a broader “SEZ fiscal regime.” Similarly, industrial parks in the Dominican Republic can be covered by the SEZ regime or outside of it (for example, there were 86 IPs in the DR in 2022 under the SEZ fiscal and customs regime, but the total number of IPs in the country was larger and included parks dedicated to local SMEs targeting the local market). Although there are strong synergies between the two policy tools, it is important to distinguish between the public debate around the relevance and impacts of the SEZ fiscal regime (addressed in the recent CEM by the World Bank<sup>139</sup>) and the intrinsic value of industrial parks to industrial development, and the additionality of promoting sustainable parks relative to the current standards used on newly built industrial real estate, which are addressed more extensively in this CPSD.

**This sector assessment is focused on the role of the private sector in the development of industrial parks in the Dominican Republic.** It will explore how industrial parks can be better leveraged to promote decarbonization, resilience, and circularity in the industrial sector in the Dominican Republic, while also facilitating the attraction of more and greener FDI, especially in higher-value-added products that contribute to export diversification. This approach aligns with the larger focus of the CPSD on how to strengthen the DR's competitive advantages in a way to wean the economy off the dependence on fiscal incentives.

### Global Trends

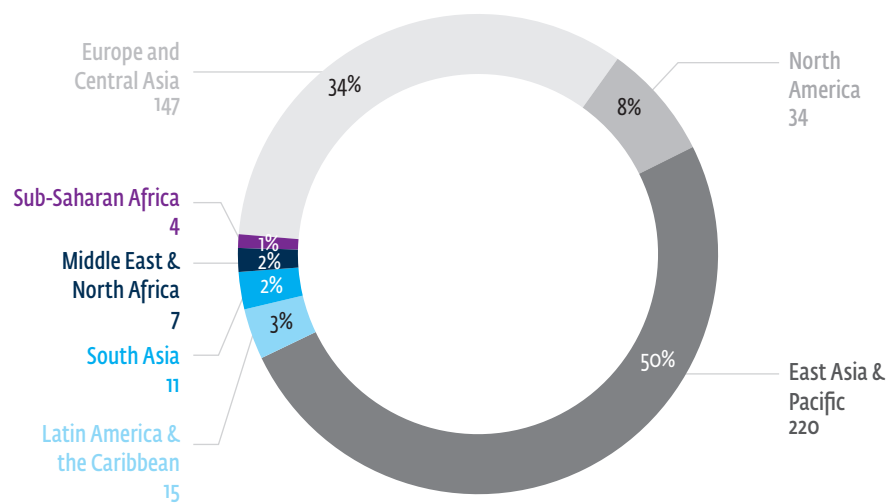
**The nearshoring trend is likely to increase demand for industrial land in economies around the US market, as in the case of the Dominican Republic.** Several challenges in the global trade arena are contributing to the nearshoring trends: (a) labor costs and trade tariffs have increased in China, (b) proximity to the end consumer is strategic where speed of new product introduction is key, (c) resilience of supply chains is deteriorating as shocks lasting for a month occur every 2.7 years, and (d) environmental, social, and governance (ESG) considerations and environmental regulation are becoming increasingly stringent and Asian manufactured products are generating higher carbon emissions. Analytical studies conducted by the World Bank to support the nearshoring strategy of the Dominican Republic (see box 2.1 on the DR nearshoring strategy) and interviews with global manufacturers in the automotive and medical device industries confirm that these global trends are taking shape in the Latin America and Caribbean region.

**Because global consumer appetite is simultaneously moving toward more sustainable products, global manufacturers are increasingly adopting ESG standards, while their suppliers in emerging economies are increasingly facing compliance costs.** Studies have shown that there is generally a positive correlation between ESG-score improvements and share price outperformance, even in emerging markets.<sup>140</sup> Executives of multinational companies contemplating nearshoring strategies are increasingly incorporating environmental and social considerations in their decision-making process about localization. Interestingly, 75 percent of the average company's ESG footprint lies with suppliers (many of which are SMEs) because these suppliers need to pay for premiums in power purchases, invest in upgrading facilities (including in renewables) and technologies to improve energy efficiency, and adopt recognized ESG certifications. This situation is particularly salient for Dominican IPs, which host American and European firms and export most of their goods to those markets.

**In that context, having industrial real estate with environmental and social indicators in place is becoming critical for both ESG compliance and competitiveness.** As both corporates and governments intensify their transition toward energy efficiency and carbon-neutral standards to minimize adverse environmental externalities, the nexus between spatial planning initiatives and green approaches has become strategic for the global manufacturing sector. Park developers stand to gain and attract more FDI from building a new generation of industrial parks—as well as from retrofitting upgrades of existing ones—according to standards that respond to the evolving global demand and the Paris Agreement. In other words, promoting ESG standards represents a de facto FDI attraction policy. Research has shown that eco-industrial parks (see box 4.6), for example, can decrease operational costs by up to 37 percent, achieve higher sale premiums of up to 31 percent and faster sale times, up to 23 percent higher occupancy rates, and higher rental income of up to 8 percent.<sup>141</sup>

A timely adoption of an EIP approach can help countries like the DR leverage this trend to promote sustainable growth and achieve their climate mitigation and adaptation objectives. While the EIP concept was formulated and piloted in the 1990s, it took off over the past couple of decades and has been implemented in various forms and names (including low carbon zones, eco-industrial parks, green parks, and RE 100 Zones). As of 2020, a global survey identified 438 industrial parks that have adopted EIP technologies (figure 4.7), 56 percent of which were established since 2001.<sup>142</sup>

**FIGURE 4.7 GLOBAL DISTRIBUTION OF INDUSTRIAL PARKS ADOPTING**

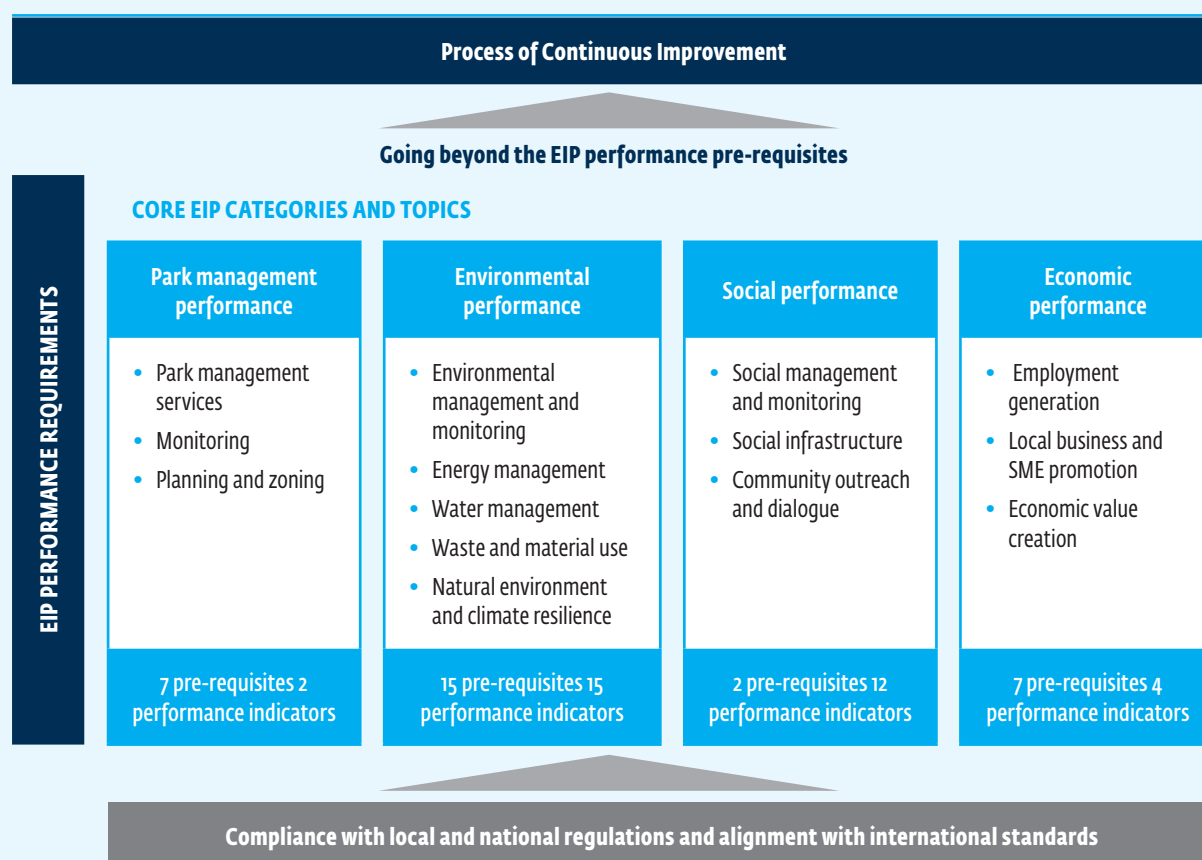


Source: World Bank, "Circular Economy in Industrial Parks: Technologies for Competitiveness" (World Bank, Washington, DC, 2021).

#### **BOX 4.6 ECO-INDUSTRIAL PARKS AND ESG COMPLIANCE OF INDUSTRIAL INFRASTRUCTURE**

**Eco-industrial parks (EIPs) have emerged in different countries as a model to better manage environmental aspects in industrial parks (IPs), while deriving competitiveness benefits from more efficient and sustainable industrial practices.** An EIP is defined as a dedicated area for industrial use that supports sustainability through the integration of social, economic, and environmental quality aspects into its site selection, planning, management, and operations. Specifically, better management of environmental aspects, decarbonization, resource efficiency and circularity, climate resilience, and so on, is expected in EIPs through dedicated regulations, institutions, equipment, infrastructure, or a combination of those, as well as support to tenant companies for green innovation and technology adoption. Environmentally and economically beneficial linkages can also be developed with other industries, cities, or both outside of EIPs, aiming to benefit the largest number of firms possible and to maximize positive spillovers. See figure. B4.6.1.

FIGURE B4.6.1 EIP PERFORMANCE REQUIREMENTS



Source: World Bank, UNIDO, and GIZ, "International EIP Framework," 2021. For more details, refer to recent publications on EIPs, including World Bank, UNIDO, and GIZ, "International EIP Framework,"

**Eco-industrial parks build on good fundamentals of industrial park development and need to be grounded on current and future market demand for serviced industrial land.** They should provide a focus on piloting and spurring regulatory reform and infrastructure that can help unlock or trigger increased demand from local and foreign investors. The EIP framework opens the door to integrating the ESG angle through a combination of regulatory improvements and technology adoption. In the Republic of Korea, through a national program, more than 100 industrial parks introduced EIP measures between 2005 and 2015. This effort mitigated greenhouse emissions by more than 2 million tons carbon dioxide equivalent (CO<sub>2</sub>-eq), resulted in 36.8 million tons of wastewater reused/recovered, increased energy savings by 383,000 tons of oil equivalent (ToE), and catalyzed US\$761 million of private investments, thus increasing economic benefits by US\$ 2.4 billion. In Germany's Höchst Industrial Park, over 500,000 metric tons CO<sub>2</sub> emissions are mitigated every year through various EIP interventions such as improved energy efficiency and increased use of renewable energy sources within the park. The park also generated €6.65 billion worth of investment and 22,000 jobs.

**Among the global industrial parks surveyed, waste treatment and renewable energy technologies are widely adopted in EIPs.** The World Bank survey identified 227 industrial park cases (51.8 percent of the total number of EIPs) where renewable energy technologies were deployed, and 248 EIPs (56.6 percent) that are actively using waste treatment technologies. Adoption of waste treatment and renewable technologies is higher (22.0 percent and 26.0 percent, respectively) than resource efficiency (41.3 percent), industrial symbiosis (45.9 percent), and water efficiency (47.5 percent) technologies.

Source: World Bank, UNIDO, and GIZ, "International EIP Framework," 2021. For more details, refer to recent publications on EIPs, including World Bank, UNIDO, and GIZ, "International EIP Framework," and World Bank, "Circular Economy in Industrial Parks: Technologies for Competitiveness" (2021). Park et al. 2018.

## Sector size and performance in the Dominican Republic

The Dominican Republic has been leveraging industrial parks to promote exports of goods ever since the Gulf and Western Corporation was established in 1969 (see appendix A for a detailed historical overview of the evolution of industrial parks and special economic zones in the Dominican Republic). In 1990, Law 8-90 was passed to promote exports and trade, providing favorable fiscal and customs regimes to industrial parks dedicated to exports (in this document, this is referred to as the SEZ regime, as described previously). Law 392-07 later extended these privileges to IPs developed and operated by ProIndustria, the DR's public agency dedicated to the promotion of industrial development.

**Built industrial shell space in industrial parks has steadily increased since 2000, registering a 3.5 percent compound annual growth rate (CAGR) between 2000 and 2021, with occupation rates of industrial parks reaching 93 percent at the end of 2021.** As of 2021, half of the Industrial parks under the SEZ regime were located in the Northern Region, 24 percent were in the National District and Santo Domingo Province, and the rest were scattered across the south and east of the country. Industrial real estate (built shell space) reached approximately 49 million square feet in area by 2022, a 14.3 million square foot increase relative to 2010. Of this total area, 47.5 million square feet is currently occupied, with 8.6 million square feet dedicated to exported services and specialized zones under the SEZ regime (such as Alorica, TelePerformance), and approximately 1.4 million square feet to logistics, with the remaining 37 million square feet dedicated to manufacturing activities.

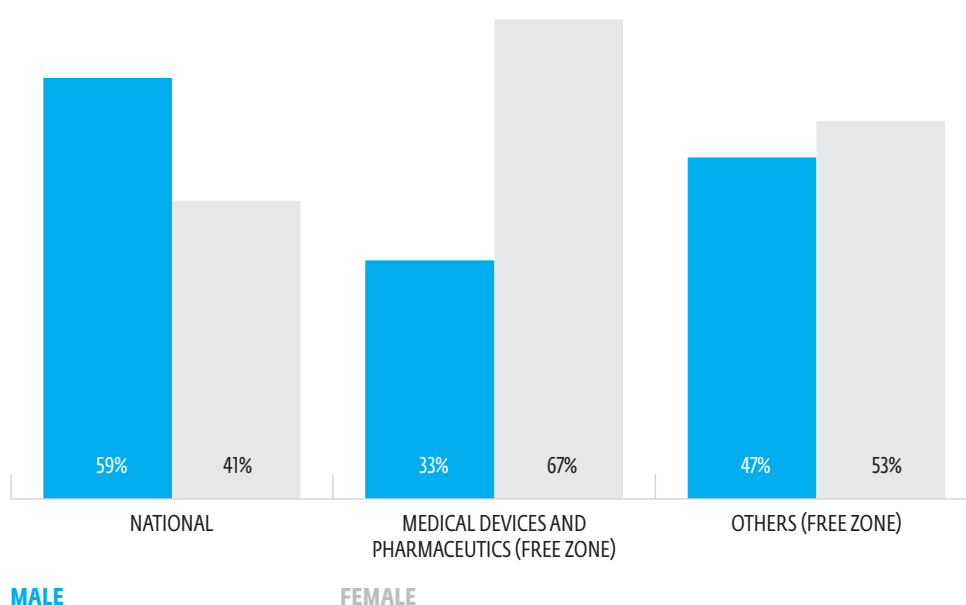
The private sector has been a major player in developing and operating industrial parks in the DR, with 76 percent under the SEZ regime privately owned and 4 percent operating under a mixed public-private administration. The remaining 20 percent of parks are owned by the government. IPs benefiting from SEZ regimes in the Dominican Republic can be (a) privately developed and managed (including Las Americas and PISSA II), (b) developed and operated by a public-private or not-for-profit organization (such as Corporación Santiago); (c) publicly developed and operated by ProIndustria—the governmental agency in charge of the promotion of industrial development (as La Vega is), or (d) publicly developed (by ProIndustria) but privately operated through an outsourcing or PPP agreement (such as San Pedro de Macorís). Some policy actions on regulatory shortcomings and coordination failures could significantly improve the country's ability to harness private capital, capacity, and skills to promote higher environmental and social standards that also enhance competitiveness (as described further in this section).



**The Dominican Republic's industrial parks have played a supportive and evolving role in promoting manufacturing and export diversification.** After fueling economic growth during the 1980s and 1990s, industrial park employment plummeted and exports stagnated in the 2000s, following the Multi-fiber Agreement in 2005, the increased Asian competition (largely influenced by China's entrance to the World Trade Organization), and the Great Financial Crisis in 2008. Yet, industrial park exports and employment levels have been on a recovery path since 2009, with medical equipment, electrical apparatuses, chemicals and plastics, and footwear partially filling the void left by textiles (previously a third of DR's export basket). In 2022, 16.0 percent of the tenant companies' activities were in tobacco, followed by clothing and textiles manufacturing (12.0 percent), agro-industrial products (7.8 percent), medical and pharmaceutical products (5.0 percent), cardboard (3.9 percent), footwear (3.5 percent), and electrical products (3.1 percent). It's worth noting that these occupation ratios do not reflect shares of exports, productivity, or the growth trend. Exports from IPs under the SEZ regime increased significantly, valued at US\$4.2 billion in 2009 versus US\$7.8 billion in 2022. Despite hosting only a relatively small number of the tenant firms (5 percent of total firms), the medical product and pharmaceutical product manufacturers were responsible for the largest share of the IP's exports in 2022 at 29 percent, valued at US\$2.2 billion. Electronic products and tobacco products were responsible for 16 percent (US\$1.2 billion), and clothing and textiles, 13.4 percent (US\$1 billion).

**As such, these industrial parks enabled the attraction of US\$2.9 billion during the 2010–22 period toward manufacturing activity, accounting for 8 percent of all FDI.** In terms of investment accumulated in 2022, 38 percent (US\$1.5 billion) originated from the United States while another 18 percent (US\$712 million) originated from Spain and Mexico evenly, with the rest originating in Europe and Canada. The economic activity held in these parks was responsible for 58 percent of the net foreign reserve increase in 2021,<sup>143</sup> which highlights the other avenue through which it provides relief on external accounts. By contrast, the absolute contribution of the free zone regime in Costa Rica in 2018 totaled US\$4.7 billion or 7.9 percent of its GDP; the country's economic zones furthermore generated 115,000 direct jobs and 57,000 indirect jobs, representing 12 percent of the total private sector's formal employment in the Central American country.<sup>144</sup>

**While total employment in SEZs is relatively low (4 percent in 2022), firms in industrial parks also generate positive impact in terms of inclusion.** Over 150,000 households in the DR are positively affected through direct or indirect jobs generated from economic activity in industrial parks,<sup>145</sup> and they maintain a significant higher employment rate for women (see figure 4.8). Of the affected households, 40 and 47 percent are categorized as vulnerable and poor, respectively. Wages received by workers at industrial parks constitute approximately two-thirds of household income for these families. The informality rate in export-oriented IPs in the DR is practically null (compared with a 34 percent average informality rate in the industry sector as a whole), which offers another advantage to working families by providing access to social security, stable jobs, health care facilities on site, and less fragility in periods of crisis like the COVID-19 pandemic. Firms in these IPs also experienced a faster recovery during the pandemic, surpassing 2019 formal employment levels by 4 percent in 2021, whereas aggregate formal employment outside industrial parks remained below pre-pandemic levels.

**FIGURE 4.8 JOBS BY GENDER, NATIONAL VS. SEZS, 2022**

Source: CNZFE (Consejo Nacional de Zonas Francas Exportadoras), "2022 Statistics Report."

However, there are limited economic linkages between firms within parks and domestic firms.<sup>146</sup> FDI for export-oriented firms within industrial parks increased from 4 percent of total FDI in 2010 to 9 percent in 2019. Total sales from industrial parks accounted, on average, for nearly 3 percent of GDP over 2010–19, but the contribution of industrial parks to growth and job creation in the wider economy remains below the contribution of local firms not benefiting from the same special regime. A 1 percent increase in industrial parks output leads to an estimated average increase in output in the rest of the economy of only 0.6 percent, and to a 0.5 percent increase in indirect employment creation. In comparison, a 1 percent increase in local manufacturing production leads to an estimated average increase in production in the rest of economy of 1.4 percent, and to a 1.7 percent increase in indirect job creation. This difference is largely due to the lack of linkages between exporting firms inside SEZs and the non-exporting local firms outside of them (see section 3.1).

Harnessing global trends, the Dominican Republic has an opportunity to update its industrial parks policy and position the parks as a green investment location to attract high-quality investors, independent from the debate on fiscal incentives. As competition for investment locations has increased, countries like Costa Rica have revamped their development strategy to position themselves as a carbon-neutral and sustainable investment location. The Dominican Republic has taken steps toward updating its Nationally Determined Contributions and embarking on a green taxonomy strategy for the country. These can be incorporated into the DR's economic growth strategy by targeting a large portion of its industrial base located in industrial parks.

## **Main public policies that influence the development of industrial real estate**

### **Policies that distort industrial land markets**

**Industrial land markets are inefficient in the Dominican Republic.** As described in the Urbanization and Territorial Development Report,<sup>147</sup> the DR suffers from fractioned territorial planning (urban versus rural), which does not allow for proper management of urban growth and peri-urban areas. There is also a lack of clarity between the competences of the different institutions responsible for territorial planning and a lack of inter-institutional coordination. This failure contributes to weak land use planning in the Dominican Republic, with a lack of ex ante definition of which land can be used for residential, industrial, or agricultural purposes, leading to information asymmetries and inefficient markets for industrial land. It also creates distortions in pricing, as commercial and residential uses (which often have higher densities and rates of return) can crowd out industrial use in the absence of analytically underpinned land use planning. Taking stock of this need, the government launched the Santo Domingo 2050 decree, which incorporates 985 million square feet of public land and dedicates a significant part of it to the creation of an industrial corridor around the Circunvalación de Santo Domingo Avenue. This effort can significantly help address the constraint in the midterm, provided adequate and comprehensive territorial and land use plans are elaborated shortly.

**If the DR wants to effectively use IPs as an instrument for economic and territorial development, it has to create a transparent and efficient industrial land market and strive to elaborate a clear spatial strategy.** Adequate territorial planning continues to be a challenge in the country, and that challenge has implications on the efficiency of land markets. Some of the main issues identified in the report are that (a) the current institutional and regulatory framework is weakly interlinked and has major gaps; (b) planning instruments are poorly advanced and implemented across the board (at the national, regional, and local levels); (c) there is a strong prevalence of tourism-oriented sectoral territorial planning; (d) the capacity required to develop planning instruments (and their implementation) is still poor, particularly at the local level; and (e) basic and thematic information required to develop territorial planning instruments is missing.

### **Policies that stifle the mobilization of private sector capabilities to optimize the use of public assets for industrial development**

**The government of the Dominican Republic holds a significant amount of land in strategically located areas suitable for industrial development, as previously stated.** These assets could be optimally leveraged by tapping into the sophisticated capacities of the country's private sector to own, develop, and operate industrial parks. In this regard, the new PPP law is still not optimal for engaging the private sector in managing these assets because it is fairly new and contains critical weaknesses. Although the law in general is in line with regional standards, it has three key weaknesses that could deter investors: (a) after the PPP project is awarded, this decision needs to be approved by Parliament; this step adds an additional risk that is difficult to mitigate; (b) the grantors (infrastructure line ministries) are not part of the National Council (created by the law), which is led by the Ministry of the Presidency, and this could reduce

incentives for line ministries to claim ownership and champion a project; and (c) the funding for management and operations by the PPP agency (Dirección General de Alianzas Público Privadas) and the grantor's contract supervision could be very limited (2.5 percent of total capital costs in total), undermining the efficiency and efficacy of these bodies. It is worth noting that these issues are applicable to the broader spectrum of sector and assets eligible for PPPs (not solely for industrial development), as conveyed in the Dominican Republic Country Economic Memorandum prepared by the World Bank.

**The Dominican Republic's relatively diverse experience with vehicles for the development of projects with construction risks also offers an equally suitable route to mobilize private sector capital with potentially shorter lead periods for implementation.** The government has gained relevant experience since 2013 in putting together public trust funds to mobilize private sector capital for a diversity of purposes. For instance, the first one to be created with the purpose of supporting the operation and management of roads is RD Vial, which has even been used to leverage resources via a bond issuance for an equivalent of US\$468 million. Additional public trust funds include the newly created Pro-Pedernales, which seeks to combine public and private sector capital for developing the region of Pedernales.

#### Policies that affect the access to long-term finance

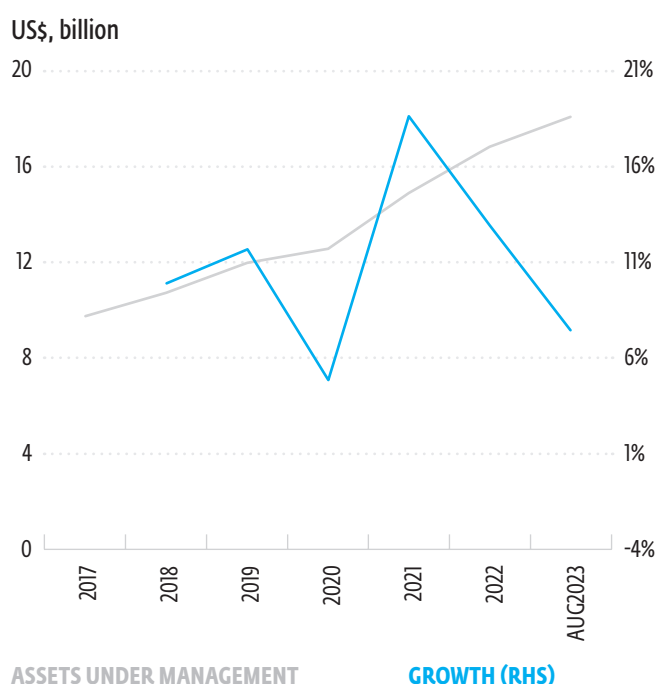
**In recent years, the growing trend toward long-term finance solutions has emerged as a promising means of financing projects with a construction component, such as industrial parks.** In contrast to traditional financing mechanisms, like bank financing, that have short repayment periods, long-term financing offers several distinct advantages that cater to the unique needs of industrial parks. Industrial park projects are capital intensive and require substantial financial resources for their successful implementation. In most cases, these projects require large investments in land preparation, infrastructure development and refurbishment, construction of buildings, and procurement of machinery. Therefore, long-term financing solutions, which provide for a more extended repayment period (such as 15 years), give these projects sufficient time to generate revenues and become self-sustaining. These longer-term financing solutions result in repayment schedules that better match the project's revenue generation capacity. Consequently, the burden of debt servicing is reduced, giving projects the ability to sustain regular cash flow streams to support new investments. A long-term finance solution provides room for diversification of investors (domestic and international), combining banks and institutional investors like pension funds. These institutional investors seek to deploy capital to viable ventures with investment horizons that match the needs of their own clients. This would result in industrial parks enjoying flexibility, accessing sufficient working capital, and being structurally aligned with the investment horizon of institutional investors, which would ultimately lead to their long-term success.

However, financing such projects can be challenging, particularly in developing countries where capital markets are less developed. In this context, there has been growing interest in long-term finance solutions that can provide the necessary funding for these projects. One example of a global experience toward long-term finance solutions for industrial parks is the Asian Infrastructure Investment Bank (AIIB).<sup>148</sup> Another example comes from Brazil, which has created a dedicated line of credit within the Brazilian Development Bank (BNDES) to provide long-term financing for industrial parks.<sup>149</sup> In China, the government also has been active in promoting the development of industrial parks through the establishment of dedicated funds. For example, the China Industrial Parks Development & Investment Fund has been set up to provide long-term financing for industrial park projects. The fund also provides other forms of support, such as guidance for project development and management.

**In the Dominican Republic, banks' ability to continue to provide financing may be affected by two interrelated factors:** the concentration of sponsors in the form of conglomerates within the industrial park sector and the regulatory regime imposed by single borrower limits. Additionally, solvency constitutes another limitation. By the end of 2022 banks had a loan portfolio of around US\$24.5 billion (21.7 percent of GDP),<sup>150</sup> with very low exposure to industrial parks. Growth rates of banks' loan portfolios reached a composite average growth rate of 10 percent in the past five years, which gives room to increase future financing of industrial growth, provided constraints on single borrower limits are addressed. Indeed, anecdotal evidence suggests that regulatory restrictions could increasingly limit the ability of the banking sector to be the sole source of funding for growth in industrial real estate. Particularly, the single borrower lending limit, which restricts the aggregated loan amounts of banks to a single borrower, at a conservative 10 percent of core capital,<sup>151</sup> may be reached given the projected increase in demand for industrial parks. Even under conservative scenarios, the demand is likely to exceed US\$690 million, while the limit was about US\$466 million as of December 2022. The concentration of sponsors (who develop the projects) across sectors in the country, often in the form of conglomerates, may limit the diversity of projects and financing opportunities available. This concentration poses risks as it increases the exposure of financial institutions to specific sponsors. Also relevant is the fact that lending to the expected demand of IPs would significantly reduce banks' solvency ratio as, according to the local regulation,<sup>152</sup> those loans carry a risk weight of 100 percent, the same as any other unsecured loan according to the local regulation.<sup>153</sup>

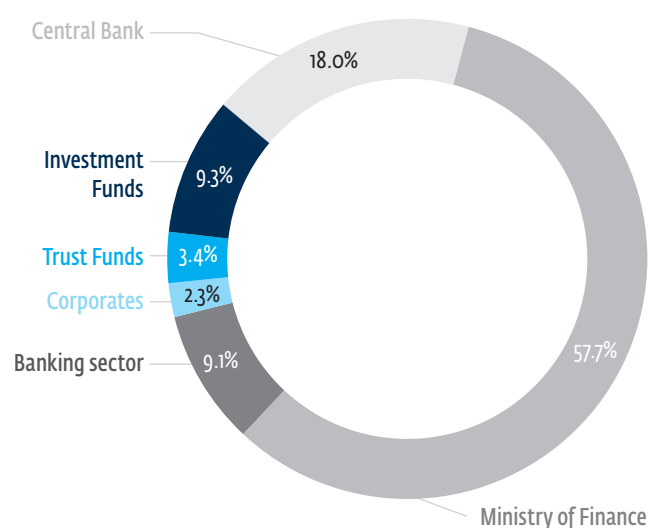
**Institutional investors, such as pension funds, are increasingly relevant potential providers of finance for the development of industrial parks** (see box 4.7). Pension funds look to diversify their portfolios and seek out investments with reliable income streams, which industrial parks could provide given their potential for long-term lease agreements and steady rental income. By investing in industrial parks, pension funds can benefit from regular cash flows and the potential for capital appreciation over the long term. Pension funds in the Dominican Republic have assets under management for US\$17.3 billion, equivalent to 15.4 percent of GDP. Their rapidly growing portfolios are highly concentrated in government securities, reaching about 75 percent between central bank and Ministry of Finance bonds (see figures 4.9 and 4.10). For instance, pension funds in Colombia and Mexico do invest in projects via investment funds, using the local variations of real estate investment trusts (REITs) and debt funds. Colombian pension funds had about US\$350 million in real estate funds—REITs or otherwise—in 2022 while Mexican pensions funds had about US\$8.1 billion in REIT investments by March 2023, or 2.8 percent of their portfolio. While only a portion of those investments is for industrial parks, it shows that pension funds have a preference to outsource their investments to professional teams when real estate and construction risks are involved. Debt funds also play a crucial role in financing industrial park development by channeling pension funds' capital. These funds specialize in providing debt capital to projects and can offer flexible financing solutions tailored to the specific needs of industrial park developers. Their expertise in evaluating risk and structuring financing arrangements can be valuable for institutional investors, which usually face limitations when performing these activities.

**FIGURE 4.9 PENSION FUNDS' ASSETS UNDER MANAGEMENT AND GROWTH RATES**



Source: SIPEN.

**FIGURE 4.10 PENSION FUNDS INVESTMENT PORTFOLIO, AUGUST 2023**



#### BOX 4.7 SUCCESSFUL CASES OF UTILIZING INVESTMENT FUNDS AS PLATFORMS TO CHANNEL PENSION FUND RESOURCES TOWARD INDUSTRIAL REAL ESTATE.

Although historically focused on the tourism and commercial real estate markets, institutional investors are starting to take interest in the industrial real estate market. Recent examples include the following:

- Nigua Free Zone.** Pioneer, an investment fund management company, acquired Nigua Free Zone through Fondo de Desarrollo de Sociedades II in 2020. Nigua is an industrial park under the SEZ regime with over 30 years in operation and over 400,000 square feet for manufacturing or service operations. After Pioneer acquired the asset under the fund, it listed the fund in the domestic capital market and sold shares to investors, largely represented by pension funds in the country. As of December 2022, the Fondo de Desarrollo de Sociedades II, which includes other assets besides Nigua, was valued at approximately US\$ 115 million and was entirely owned by AFP Popular, one of the main pension funds in the country
- Zona Franca Tamboril.** Altio, another key player in the investment fund arena, acquired Tamboril, an 813,000-square foot industrial park which holds 31 industrial shells and 8 buildings with a 100 percent occupation rate. Tamboril is, however, held under a closed real estate investment fund that invests in commercial, corporate, and tourism real estate. Key pension funds (Popular, Reservas, Crecer, Siembra) have channeled US\$ 87 million through this fund

In the Dominican Republic, the Capital Market regulator, the Superintendencia de Valores (SIMV), is contemplating regulatory changes aimed at deepening the market to attract institutional investors, thereby increasing capital flow. The proposed changes encompass several key aspects aimed at facilitating investment and promoting capital flow. These changes include

- Differentiated requirements and expedited processes for public offerings specifically targeted at institutional investors.** This streamlining of authorization processes can reduce bureaucratic hurdles, making it easier for institutional investors to participate in public offerings and access investment opportunities.
- Elimination of regulatory hurdles to encourage private corporations to go public.** Law 163-21 focuses on promoting initial public offerings among private corporations by eliminating various regulatory hurdles related to stock issuance and transactions.
- A one-stop window for pension fund investments would be aimed at streamlining and centralizing the process for including pension funds in investment funds.** Once operational, this platform will provide a unified and efficient mechanism for pension funds to invest in a range of investment funds. Besides simplifying the investment process, this can enhance transparency and facilitate capital allocation.
- Harmonization of regulations related to the requirements established by the Risk and Investment Limits Committee (CCRLI).** This harmonization effort seeks to align and standardize regulations, ensuring consistent application of investment limits and risk management practices across different entities. This can contribute to a more cohesive and transparent investment landscape.



**Moreover, the potential for the financial sector to play a significant role in supporting climate finance and mitigation, in particular, is a central opportunity for the Dominican Republic.** The financial sector can contribute to climate finance through various avenues. One key aspect is the integration of ESG factors into investment decision-making processes. By considering climate risks and opportunities, financial institutions can identify investments that align with sustainable development goals and contribute to climate mitigation efforts. This can involve financing projects related to renewable energy, energy efficiency, sustainable agriculture, waste management, and other climate-friendly initiatives. Furthermore, the financial sector can support climate finance by facilitating the mobilization of private capital toward climate-resilient infrastructure projects. Such initiatives include developing innovative financial instruments and mechanisms that attract investments in sustainable infrastructure, such as green bonds, climate funds, and specialized investment vehicles.

**The potential for the financial sector to play a significant role in supporting climate finance and mitigation is a central opportunity for the Dominican Republic.** While progress is being made in sustainable finance initiatives, additional regulatory reforms are needed to scale capital market mobilization for funding sustainable industrial growth. Key areas for beneficial reforms include enhancing disclosure and reporting requirements with clearer guidelines for ESG disclosure, promoting issuance of green bonds to facilitate financing of sustainable projects, and strengthening investor protection. The government is reviewing dispute resolution mechanisms to align with sustainable development goals and attract domestic and foreign investments in eco-friendly projects. The collaboration between the World Bank, the Ministry of Finance, and other stakeholders reflects a proactive approach to developing a national green taxonomy, showcasing the country's commitment to green financing and sustainable investment practices through its local capital markets.

**Finally, carbon markets can play a crucial role in facilitating the finance of eco-industrial parks in the Dominican Republic by providing an additional revenue stream for projects that reduce greenhouse gas emissions and promote sustainable practices.** As highlighted in the following sections, eco-industrial parks and retrofitting investments in existing brownfield parks can reduce or offset carbon emissions, as well as increasing resilience to climate change effects. Investments can include renewable energy installations, energy efficiency improvements, waste management initiatives, and reforestation efforts. Developers and operators of IPs can generate carbon credits from these investments and sell them on the carbon market, providing a new source of revenue that can be used to finance the development and operation of parks, or to improve their bottom lines. Investors favoring eco-friendly portfolios may support EIPs with verified carbon offsetting, boosting their value proposition through participation in carbon markets and generating carbon credits. Government policies and regulations are essential to support the participation in carbon markets and facilitate these financing opportunities for eco-industrial parks. The government is currently working with multilateral institutions to improve relevant regulations, but further guidelines can be incorporated to ensure the credibility and environmental integrity of carbon credits that can potentially be generated by eco-industrial parks.



### Policies that affect the adoption of green technologies, circular economy, or decarbonization

Eco-industrial parks are influenced by a wide set of regulations that cover legal aspects of industrial land and zones, environment, social elements, and local economic development. Good-practice industrial park laws and regulations generally adopt the country's environmental and social laws, unless they are weaker than international standards. This means that promoting eco-industrial parks requires a review of the potential uptake of certain actions and technologies by industrial parks and the role of regulations that may promote or hinder this dynamic (table 4.8).

**TABLE 4.8 EIP INTERNATIONAL FRAMEWORK: REGULATORY ANALYSIS**

<b>Park management</b>	Examples include national regulations on park ownership (private); reporting requirements; environmental and social management at the industrial park level
<b>Environmental</b>	Allowance of waste exchanges (industrial symbiosis); green building standards; energy management standards; captive generation of renewable energy; adaptation and business recovery standards
<b>Economic</b>	Regulations that allow for linkages with local companies; regulations and actions that encourage local job creation
<b>Social</b>	Regulations related to grievance mechanisms

Source: World Bank, UNIDO, and GIZ, "International EIP Framework," 2021.

Notable gaps and opportunities exist in the Dominican Republic's current legislation as it relates to industrial park sustainability practices, legal requirements, and the Eco-Industrial Parks International Framework. This section will focus on those policy instruments influencing parks terms of their administrative procedures, environmental performance, social performance, and economic performance. High-level recommendations to bridge existing gaps between local recommendations and the EIP Framework are included. Certain countries have enshrined the EIP approach into their economic park legal framework, providing as guidance to industrial park developers and operators a certification program for EIPs (including China, Türkiye, and Vietnam).

Energy-related regulations—in aspects of energy efficiency, renewables, energy management, and networks for waste heat recovery in general and as they relate to industrial parks—are generally well defined. In renewables, Law No. 57-07 establishes a generous incentives regime that covers projects relevant to industrial park development and operations including solar (photovoltaic) installations of any size and biofuel plants of any production volume; the law is further reinforced by feed-in tariffs, net metering, interconnection standards, and auctions that already form part of the renewable energy package of existing regulations. In promoting energy efficiency, provisions of Article 40 of Law 64-00, requires companies affecting the environment with their activities to obtain permits from the Ministry and Environment and Natural Resources, thereby obligating industrial parks and others to implement energy and emissions reduction measures. The industrial park sector's energy consumption could benefit from revised building codes and a Green Buildings Certification Program specifically, incentives (loans, credits, rebates) for energy efficiency, and defined national targets for energy efficiency.

**The General Law of Integral Management and Co-processing of Solid Waste (225-20), enacted in 2021, introduces key concepts to help industrial park operators and their tenants leverage circular economy principles.** The law addresses extended producer responsibility measures and the promotion of green markets related to waste, in addition to establishing a green bond framework to finance green projects. Despite this law, there is a lack of institutional support to help generate and promote industrial symbiosis in industrial parks. That goal requires companies to report waste material and a specialized institution to identify waste exchanges between companies in industrial parks. In the Republic of Korea, the Korea Industrial Complex Organization developed a program to promote industrial symbiosis. More than 450 feasibility studies were conducted on industrial symbiosis across the country as part of the national EIP program, 247 out of which were commercialized. In total, 1,865 companies have participated in identifying industrial symbiosis opportunities to date, generating around US\$41.6 million in cost savings every year.

**Business continuity through resilient construction, although not a feature of sustainable production, is likewise covered by local legislation, though notable gaps do exist.** Recent developments, including the Law on Territorial Planning (368-22) and the establishment of the Ministry of Housing and Buildings (which streamlined multiple agencies and the sector's governance), complement the 2030 National Development Plan that acknowledges the need for resilience planning. Despite important recent advances on this front, existing building codes still don't have a legally enforceable code for design for high winds, raising concerns for infrastructure built in a hurricane-prone region of the world where climate change is expected to increase their intensity. In terms of oversight, it has also been reported that construction monitoring is rarely enforced for small and medium-sized projects, a fact that is exacerbated by a lack of legal accountability should construction fail—be it for residences, commercial and public buildings, and industrial structures.

**All stakeholders within the DR's economic zone sector have a role to play to enhance the resilience of industrial assets.** Governance structures must be improved to ensure their enforcement at the design stage and, through site audits, to the construction stage. Meanwhile, developers and industrial tenants should be encouraged to increase their understanding of hazard exposure and integrate resilience solutions that surpass those established by existing regulations into the zones' master planning and monitoring activities by using self-diagnostic tools such as IFC's Building Resilience Index or contracting experts.

**Finally, although not enshrined by law, several government programs do foment improved performance in social and environmental matters, to the benefit of industrial parks and the private sector broadly.** These include capacity building for companies and their workers through the National Institute for Technical and Vocational Training (INFOTEP), training in cleaner production and circular economy projects for MSMEs hosted by the Ministry of Industry and Commerce, and the creation in 2018 of the National System of Innovation and Technological Development (SNIDT), which encourages innovation and technology development—all of which directly and indirectly support industrial park developers in their quest to pursue greener and more sustainable operations in line with international investors and premium export markets. Box 4.8 describes some similar efforts in Mexico.

**BOX 4.8 IMPROVING POLICIES FOR EIPS IN MEXICO**

There are over 500 industrial parks (IPs) in Mexico, which account for three million jobs in the automotive, distribution and logistics, metalworking, electronics, plastics, food and beverages, chemicals, construction, pharmaceuticals, paper, textiles, medical devices, and aerospace sectors. The industrial parks in Mexico represent an estimated 7 percent of the energy consumption of the country and a total of 30 percent of the greenhouse gas emissions of the industry sector. If the industries within these industrial parks were to lower their emissions by 20 percent, as indicated by the Nationally Determined Contributions, it would significantly contribute to Mexico's reaching its targets under the Paris Agreement by 2030.

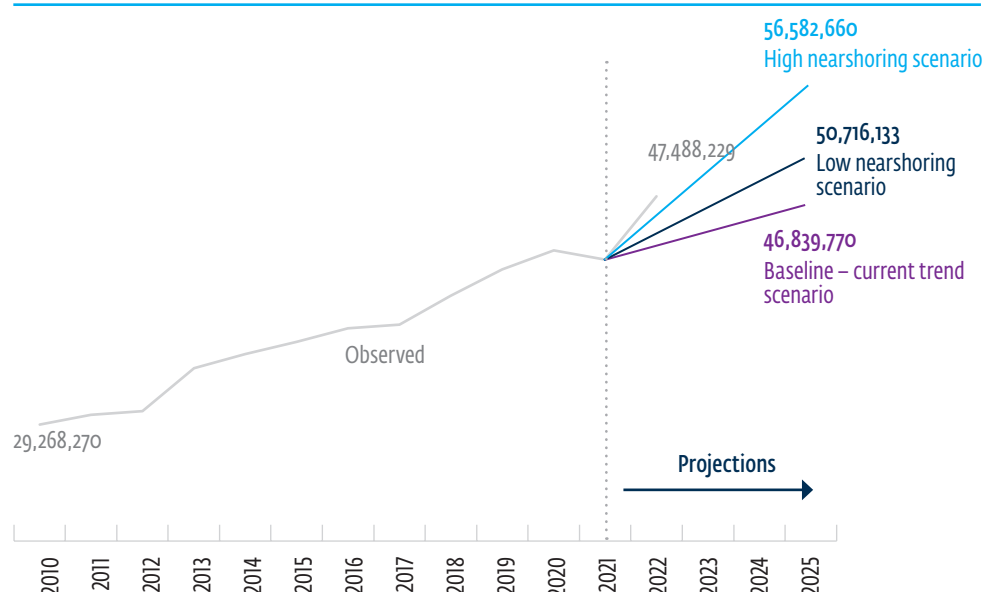
Recent discussions with park operators highlight an increased demand for land—especially those with EIP-type interventions in place. Under a World Bank technical assistance project, a regulatory review was conducted to identify the main constraints to the adoption of EIP approaches. These included the following:

- Water management principles, especially for industrial institutions, have limited coverage in the regulations.
- While energy efficiency has been identified as a focus area, a larger spectrum of resource efficiency, waste, and by-product synergies has limited reference. Hence, implementation arrangements, frameworks, and support systems for those efforts are limited
- Development of a green technology market within Mexico, with a focus on enhancing the export of goods and services from the country, contributions to the local economy, and employment generation, is not actively referred to in any legislation.
- Although not explicitly referred to by name, industrial symbiosis and waste/by-product exchange are mentioned as “waste recycling” in several laws and regulations. However, other synergies (non-waste industrial symbiosis) have limited reference. For EIP specific applications, regulatory bylaws on renewable energy generation, occupational health and safety, and resource efficiency are limited.

Source for emission figures: Greenhouse gas emissions by sector, Mexico, 2019, <https://ourworldindata.org/mcas.ms/grapher/ghg-emissions-by-sector?time=latest&country=~MEX>.

### Investment opportunities

**Over a five-year horizon, projections of nearshoring opportunities suggest an increase in demand for high-quality industrial land at a higher rate than recent growth trends of industrial real estate development and a resulting investment need of up to US\$690 million (figure 4.11).** Global nearshoring analyses show that in the next five years, sectors that are already hosted by the DR's industrial zones could see US\$1.3 trillion in exports diversify or modify geographies.<sup>154</sup> Regarding the DR, under an optimistic scenario,<sup>155</sup> the potential of new trade flows from nearshoring (compared with the exports levels in the absence of nearshoring) could reach US\$2.7 billion in a five-year horizon, while a baseline approach using Inter-American Development Bank (IDB) estimates suggests that approximately US\$1.6 billion in additional exports could be harnessed.<sup>156</sup> Consequently, the total additional industrial shells required to host new exporting activity from nearshoring<sup>157</sup> could range between 4.4 million and 8.3 million square feet—a 10.0 to 19.5 percent increase from its 2021 level. The 2022 observed data have already surpassed projections, as an additional 5 million square feet of industrial shell space were built, of which 1.4 million correspond to logistics activities and 3.3 million to manufacturing, reaching a total of 47.5 million square feet.<sup>158</sup>

**FIGURE 4.11 INDUSTRIAL PARKS SHELL SPACE OCCUPIED, SQUARE FEET**

Source: CPSD team calculations based on CNZFE data on historic occupied industrial shell space, IDB projections (US\$1.58 billion), and assuming DR can capture its current share of global export of the McKinsey nearshoring estimates (US\$ 2.7 billion). Projections assume the current exported value per square foot (US\$191 per square foot) will remain constant and use the nearshoring estimates of additional export flows generated from nearshoring to construct the projected occupied shell space required to host additional manufacturing activity. IDB estimates can be found in the June 7, 2022, news release at <https://www.iadb.org/en/news/nearshoring-can-add-annual-78-bln-exports-latin-america-and-caribbean>. Inter-American Development Bank – 2021 and McKinsey estimates are in Susan Lund et al., Risk, Resilience and Rebalancing in Global Value Chains (McKinsey, 2020).

Considering global trends and recent data from the DR, three main opportunities for the private sector to contribute to resilient and green industrial growth can be identified: (a) investments in real estate investment trusts to develop and operate greenfield EIPs; (b) green financing to decarbonize and strengthen the resilience of brownfield parks; and (c) investments in utility-scale photovoltaic rooftop systems to decarbonize industrial growth.

### **Investment Opportunity 1: Investment trusts to develop and operate greenfield EIPs**

There is an opportunity for private sector investment in real estate to support decarbonized and resilient industrial growth, particularly by promoting eco-industrial parks standards in greenfield developments. The development of eco-industrial parks will also help showcase how IPs can evolve beyond fiscal incentive-based competitive advantages (to attract both FDI and local investments) to compete on a more substantive unique value proposition. Depending on the impact of nearshoring, the total investment needed for building modern and resilient industrial real estate could vary between US\$200 million and US\$400 million (for a total expansion in industrial shell space between 4.4 million square feet—based merely on past growth performance—and 8.3 million square feet—based on the nearshoring-backed baseline scenario).

**Access to more suitable long-term finance can increase the interest of the private sector in the development of EIPs—instead of regular Class B IPs—and REITs could be an option to achieve that goal by mobilizing private sector capital.**<sup>159</sup> REITs are trusts that acquire, develop, operate, and recycle income-generating real estate, mostly attracting institutional capital through a favorable tax regime, a transparent capital structure, and a predictable dividend payment profile. The key feature indeed is that they are comparatively efficient flow-through structures, as they are required to redistribute almost all their net earnings to their shareholders in exchange for not being liable to corporate tax. Most are publicly listed on the stock exchange markets, although this does not always need to be the case as participation in their capital can take place via private transactions. The Dominican market has several mutual funds—locally called investment funds but often sharing the characteristics of REITs—dedicated to real estate which hold US\$767 million<sup>160</sup> in assets under management mostly in the housing, commercial and hotel sectors. According to the local investment fund association (ADOSAFI) by December 2022 there were 13 real estate funds with a total of US\$723.9 million of assets under management. However, there are other funds that may invest in real estate as part of a mixed strategy while some funds classified as real estate have excess liquidity invested in securities not related to real estate. Most importantly, these funds are offered to institutional investors such as Pension Funds, which hold over 50 percent of the total amount of investment funds, or other private investors.

**Leveraging REITs to finance the development of private greenfield EIPs could be straightforward in the Dominican Republic, although a clearer regulation could reinforce the process.** A potential business model involves creating a REIT dedicated to EIPs and open to international investors. Initially, the sponsor/owner could make an in-kind contribution in the form of land and existing (income-producing) parks to the REIT, securing a sizeable equity stake based on the valuation of those assets. Private sector developers would then contribute with cash to finish building enough equity for the REIT to start developing new assets. After an initial investment period (which does not have to be defined ex-ante unlike in most private equity funds), the REIT would hold a stable portfolio long enough to build up a credible dividend payment profile, and recycle portions of its portfolio to test the valuation and demonstrate likely uplifts resulting from nearshoring and sustainability gains. A plausible and beneficial exit strategy could be to then proceed to an IPO and open the REIT to retail investors, particularly from the Dominican Republic. Partial ownership of any involved public agency in the REIT could be recycled via divestiture, at a later stage. Adoption of this model is feasible in the Dominican Republic, with experienced asset managers capable of structuring and offering REITs to investors. Improving information on the opportunities for investors and reporting to regulators are tasks that are already taking place. However, while nothing impedes replicating an adapted or improved version of the structure of REITs, no specific regulation exists for them, so regulatory improvements and clear government norms—including a definition—could increase the interest in this type of instrument.

**In cases where land ownership is and has to remain public, REITs could also be limited to providing debt, while also increasing mobilization of private sector capital by introducing trust generating skills for IP management.** Privatizing public land could prove to be controversial and fraught with capture risks, but the development of EIPs on public lands could remain possible even when maintaining land ownership with the government. A REIT could, for example, lend to the project or become a partner in the project (under a PPP agreement), renting land from the government, developing it and renting it out to final users. In these cases, an additional advantage of a REIT, is the leveraging of third-party professional management. Managed funds could make institutional investors feel more secure in providing their capital if they see a specialized professional asset management team in charge of the investments. Securing a professional, well-regarded asset manager for the REIT should be straightforward in the Dominican Republic: operating the REIT requires expertise that can easily be found in the DR's private sector, but also in a few public sector entities with private sector standards.

**In both cases, private or public-private EIP projects, construction risks may not easily be absorbed by investors of REITs, so some credit enhancement might be needed to create the market.** While REITs may take construction risk, they usually have a diversified portfolio with a number of investments that provide positive cash flows. This would hardly be the case with greenfield EIPs. Therefore, final investors may prefer to see a clear indication that if construction risks materialize, at least a portion of their investments will be protected. This would require some form of guarantee or liquidity support from a credible third party. A guarantee will make sure that a lender will get repaid in case of a missed payment while liquidity support would provide additional capital to keep the construction ongoing and thus avoid a missed payment. Both instruments would work on a contingent basis, that is that they would be disbursed upon reaching a specific condition, such as a ratio deteriorating or missing an obligation.

## **Investment Opportunity 2: Finance to green brownfield industrial parks**

**The industrial parks in the Dominican Republic offer significant opportunities in greening existing operations and those of the tenant firms.** An analysis conducted using IFC EDGE Green Building and Building Resilience Index (BRI) as benchmarks has estimated the potential in GHG emissions savings that could be achieved in the DR in the coming three to five years, by making a portion of existing factory shells green and resilient, as well as investment need it would entail.

**Increased resource efficiency measures in factory shells located in the DR's industrial parks present a clear area of opportunity and investment, with quicker returns estimated if implemented at the design and construction stages.<sup>161</sup>** Findings from an analysis using IFC's EDGE tool, which was developed to roughly mimic the factory shells present across the Dominican Republic, demonstrate that the highest energy savings stem from cooling, heating and lighting; given that these factory shells can vary in function (warehousing, manufacturing, mixed use, and so on), efficiencies from refrigeration, equipment and pumps are considered secondary or within the realm of the tenants' operations.

**The EDGE application's analysis of a 17,000 square foot (or 1,580 square meter) factory shell in the DR found significant potential savings in energy, followed by water, if certain retrofits are applied.** Concretely, energy efficiency of the building could increase by 27 percent if the roof and exterior walls are better insulated, glass efficiency for windows is increased, and more efficient lighting is installed for internal and external areas. This translates to 17.92 megawatt-hour/year in energy savings and approximately 7.5 fewer tons of carbon dioxide-equivalent (CO<sub>2</sub>-e)/year in net carbon emissions. In terms of water efficiency, a typical factory shell can save 9.63 percent by employing lower-flow technologies in restrooms and kitchens. Overall, contemplating both energy and water efficiency measures, utility cost savings can increase by US\$11,000 compared to a business-as-usual scenario.

**The size of the investment and payback period for employing the most cost-effective energy efficiency measures depends largely on the building's construction stage.** A newly built 17,000 square foot factory shell employing materials and measures from the sample park (with. steel structure, concrete floor, non-insulated metal roof, concrete wall blocks, and aluminum windows) in 2023 costs approximately US\$540,000 (or US\$33 per square foot); the same newly built 17,000 square foot factory shell employing highly efficient materials and measures (with. steel structure, concrete floor, insulated metal roof, insulated foam and metal panel walls, and aluminum-glass windows) would cost US\$630,000 (US\$55 per square foot) or an additional US\$90,000 with a payback period of 8.2 years. For existing buildings, applying the same measures to maximize efficiency to a similar 17,000 square foot enclosure costs approximately US\$172,000, largely as a result of demolition costs associated with dismantling and replacing structural elements; the payback period for a retrofit is 15.6 years, highlighting the advantages of integrating such measures at the design stage during industrial park expansions and greenfield developments. Metal panel walls in the DR have likewise proved economically attractive owing to their inherent flexibility, allowing park operators to modify the size of rented space based on client needs.

**By introducing onsite rooftop solar power to industrial parks, efficiencies are higher still.** Using IFC's EDGE application, and assuming a minimum 25 percent annual energy use, industrial park operators employing the same aforementioned resource efficiency measures can further increase their utility cost savings by US\$39,325/year (or US\$50,325/year compared to the existing less efficient sample) while reducing their net carbon emissions by an additional 15.9 tons of CO<sub>2</sub>e. Installing rooftop solar solutions onto the Dominican Republic's factory shells, even at the minimum 25 percent annual use, likewise pushes efficiencies beyond the 40 percent threshold required for EDGE's Zero Carbon Ready Certification, thus signifying a clear decarbonization pathway and access to targeted global and regional funds that define such criteria for disbursement. Currently, park operators, tenants, or both that choose to forgo efficiency measures and invest only in solar rooftops will spend approximately \$US18.50 per square foot or US\$1.20 per watt. Operators and legislators alike must take care to weigh the potential trade-offs between resource efficiency stemming from the use of certain materials and their resilience to climate change and natural disasters, subsequently described in greater detail.



**The resilience of Dominican Republic's industrial parks to climate change and other natural disasters presents a clear area of opportunity and investment.** Significant gaps were identified in the national building codes, signaling inherent vulnerabilities for the existing industrial building stock. With inputs from experts and one sample industrial park, a high-level analysis of the construction practices employed in existing factory shells was conducted utilizing IFC's Building Resilience Index, a web-based hazard mapping and resilience assessment framework for the building sector. The tool evaluated an industrial park asset's exposure to 15 hazards under four hazard categories of wind, water, fire, and geoseismic, and its vulnerability based on the adoption of resilience measures recommended to mitigate relevant hazards. The results suggested that industrial park assets in the Dominican Republic generally fail to incorporate most of the recommended resilience practices in their planning and construction. When these assets experience disasters, avoidable economic losses for park operators and tenants are likely.

**The assessments demonstrate that industrial assets in the DR are likely to be extremely vulnerable to wind hazards.** Primary structures in the country's economic zones are designed to withstand only up to 160 kilometer-per-hour windspeeds (about a Category 2 hurricane) and are observed to survive Category 3 hurricanes. However, since 2019, the country and immediate region experienced at least nine violent hurricanes with maximum windspeeds exceeding 240 kilometers per hour (including Hurricanes Laura, Eta, Iota, and Ian). Considering that climate change is increasing the intensities and frequencies of hurricanes in the region, global best practices recommend that buildings be designed to withstand 290 kilometer-per-hour windspeeds.

**Water related risks, often accompanied by hurricanes and tropical storms, are evident in the current inventory of the country's factory shells.** Much of the essential mechanical and electrical equipment is found at floor level, which is prone to be damaged even in smaller localized flooding events. Elevating mechanical and electrical equipment and connections, installing hydrostatic flood vents and backflow valves, and ensuring rain drainage systems are designed with future heavy precipitation estimations would mitigate these risks in industrial buildings.

**Fire resilience is another problematic area for industrial assets in the DR.** The commonly exposed steel structures of existing industrial assets are likely to withstand fires for a very short duration. Coating them can improve their fire rating. Sprinkler systems and adequate water supply must be introduced. Access routes between industrial buildings were also found to be inadequate for fire engines and emergency personnel; remediating this problem would require careful planning by existing zone operators.

**In terms of geoseismic risks, a decent degree of resilience is present in existing industrial assets.** This is most likely due to the seismic design of buildings being firmly regulated by existing regulations and high compliance by practitioners. Nevertheless, resilience can be further improved with a range of solutions, including retrofits to ensure steel braces are installed between load-bearing structural elements. For buildings hosting high-value operations, seismic base isolation could likewise be introduced, though it would be more difficult and costly to implement in existing buildings, highlighting the need for strategic design-stage interventions to leverage cost-benefit dynamics. In locations where landslides could be a possibility, defensive structures can be required to protect the assets.

**The business case for investing in resilience in buildings globally is well-established and applies equally to those located in the Dominican Republic.** The National Institute of Building Sciences estimates that the update and adoption of building codes can yield a benefit-cost ratio of 11:1, while pushing a building beyond codes to match global best practices from its design or as a retrofit provides an additional 4:1 benefit-cost. For factory shells in the Dominican Republic, the incremental cost for adopting recommended global best practice measures is estimated at up to US\$280,000 per factory shell, depending on the location-specific hazard exposure of each industrial asset and the targeted level of resilience enhancement; this figure excludes the disassembly costs for existing assets and the costs for measures that ensure operational continuity. Given how varied industrial parks are, in terms of their size, density, and number of firms that might share a factory shell, cost-benefit estimates at the national level are, at this stage, impossible to quantify.

### **Investment Opportunity 3: Leveraging underutilized rooftops for Utility-Scale Photovoltaic Projects**

**Integrating photovoltaic rooftop systems (PVRs) can reduce electricity costs and increase profitability for industrial parks.** As mentioned previously, PVRs could ease the burden of high electricity bills by up to 95 percent,<sup>162</sup> thereby reducing occupancy costs for tenants. This is more salient in the Dominican Republic where electricity prices are among the highest in the region, with industrial electricity tariffs oscillating around US\$16 cents/kilowatt-hour,<sup>163</sup> 14 percent higher than in comparable regional peer Costa Rica.<sup>164</sup> From the park operator perspective, an alternative use of PVRs is utility-scale generation, which creates an additional line of business for parks by becoming a renewable energy supplier to the grid through a purchasing power agreement (PPA) with distribution companies. As the largest carbon emitter in the Caribbean and Central America region with 29 metric ton carbon dioxide (MtCO<sub>2</sub>) as of 2021,<sup>165</sup> of which the industrial sector constitutes 11.3 percent<sup>166</sup> (equivalent to 40 percent of Costa Rica's and a third of Panama's total emissions), PVRs also enable the sector to converge toward carbon neutrality.

**However, the approval processes related to larger projects in the renewable energy space remain burdensome.** Projects are considered utility-scale beyond 1.5 megawatts (MW) and must exhaust long approval processes, which include obtaining definitive concessions that enable generators to commercialize produced energy. Reducing these hurdles can unleash investment potential in solar capacity, including rooftops. Streamlining the approval process of projects can reduce uncertainty among developers and lower transaction costs, by standardizing project documentation and creating ex ante environmental and social de-risking solutions for projects. Similarly, battery storage systems require regulatory frameworks that provide clarity about the cost-benefit of incorporating batteries. A key concern expressed by market players is the lack of clarity regarding remuneration schemes for the technology. Authorities must undertake optimization dispatch analysis, determine ancillary versus energy services role and compensation schemes of battery storage, and defining optimal configuration and sizing.

**The potential of installing PVRS in existing and greenfield industrial parks could reach more than US\$300 million in investment in the next five years.** Potential installed capacity of existing industrial parks in the DR is approximately 400MW.<sup>167</sup> Under a more targeted approach, focusing on the 10 largest existing industrial parks, which represent nearly half of the available 45 million square feet of industrial buildings in the country, installed capacity under a high-adoption scenario could reach 230MW,<sup>168</sup> which represents approximately US\$253 million in investment.<sup>169</sup> Of these 230MW, 50MW are currently being developed as Parque Solar Zonaxol. This project consists of PVRS installation on Corporación Zona Franca de Santiago, the largest industrial park of the country, which created a special purpose vehicle (SPV) (Zonaxol) and co-invest alongside other private investors while seeking to sign a PPA with EDENORTE. Moreover, under a low-adoption scenario, where only Santiago, San Pedro de Macoris, La Vega, PIISA, and Las Américas install PVRSs,<sup>170</sup> capacity would total approximately 164 MW and US\$181 million in investment, which is slightly under the amount of solar rooftop capacity added between 2011 and 2020 in the entire country.<sup>171</sup> Moreover, should half of the estimated 8.3 million ft<sup>2</sup> needed to meet nearshoring demand under include PVRSs, 46 MW of additional PVRSs would be developed in the next four to five years requiring US\$50 million in investment.

**Investors can use a renewable energy service company (RESCO) model to operationalize investments in PVRSs on eco-industrial parks.** Under a RESCO model, the RESCO is the owner of the PVRS assets and operations, responsible for development and for securing financing for the project. In cases where the project does not wish to operate in the spot market, the RESCO must negotiate a PPA with an off-taker (energy distribution company or bilateral party). The RESCO pays a monthly rent for rooftop utilization to the rooftop owner (for cases where rent contracts provide tenants with the use of rooftops) or directly uses the rooftops when the RESCO is also the owner of the rooftops.

**Debt funds can participate in the financing by channeling capital of institutional investors, thus becoming an alternative source to banks' financing.** Debt funds are a possible vehicle for institutional investors to channel capital to PVRS in the form of loans. Unlike REITs (see opportunity 1), which must invest always in real estate assets, debt funds can extend loans to any type of project regardless of the sector to which they belong. An additional advantage of debt funds—shared with REITs—is that they do have professional teams making investment decisions, providing the financial expertise that institutional investors usually don't have.

Table 4.9 lists recommendations for eco-industrial parks.

**TABLE 4.9 RECOMMENDATIONS TO DEVELOP THE ECO-INDUSTRIAL PARK MARKET**

ECO-INDUSTRIAL PARKS			
POLICY AREA	SPECIFIC ACTIONS	TIMELINE	LEAD ACTORS
<b>Improve access to serviced industrial land</b>	<ul style="list-style-type: none"> <li>Identify the most suitable and strategic land within Santo Domingo 2050 for EIP development, and related infrastructure investments, through land use and territorial plans.</li> <li>Map the land available for industrial park development or expansion in existing parks (public and private) and provide the information publicly on the website of the CNZFE.</li> <li>Consider PPP-based development of available industrial land owned or currently managed by ProIndustria.</li> <li>Consider a legal process that would allow ProIndustria to hire private management that can help convert these spaces into eco-industrial parks.</li> </ul>	Short term	MEPyD  CNZF and ProIndustria  ProIndustria  ProIndustria
	Elaborate comprehensive regional and municipal land use plans, foreseeing land for industrial development based on market demand analysis, connectivity, proximity to residential areas, and protection of environmental resources.	Medium term	MEPyD
<b>Leverage financial markets for the development of greenfield EIPs or the retrofitting of brownfields</b>	<ul style="list-style-type: none"> <li>Clarify the status and, if necessary, codify a regulatory framework of REITs in the DR to allow capital mobilization of institutional investors.</li> <li>Modify the mandate of public sector trusts fund to mobilize capital markets (via equity and debt).</li> <li>Promote green finance (such as lines of credit) to support developers and operators aiming to retrofit brownfield industrial parks and strengthen their resilience (such as through investments to achieve EDGE or BRI certification).</li> <li>Promote the creation of debt funds long-term finance to developers aiming to launch greenfield EIPs.</li> </ul>	Short term	SIPEN  SIMV  BCRD  MEPyDMF
	Explore the possibility of creating a REIT and capitalize it with public and private resources to invest in EIPs.	Medium term	SIMV MICM Fiduciaria Reservas
<b>Introduce reforms on EIP regulation</b>	<ul style="list-style-type: none"> <li>Develop a national strategy for eco-industrial parks and consider integrating a EIP certification scheme.</li> <li>Strengthen institutional support to industrial park operators to adopt EIP approaches (such as industrial symbiosis).</li> <li>Integrate EIP requirements into the development and operation of public-private developed industrial parks.</li> </ul>	Short term	MIC  CNFZE  ADOZONA
	Improve building codes associated with green buildings and develop institutional support that promotes green building certification.	Medium term	MICM

Note: BCRD: Central Bank of the Dominican Republic; CNC: National Council for Competitiveness; MEPyD: Ministry of Economy, Planning and Development; MICM: Ministry of Industry, Commerce, and SMEs; ProIndustria: National Center for Industrial Development and Competitiveness; SIMV: Superintendency of Capital Markets; SIPEN: Superintendency of Pension Funds.

## 4.3 AGRI-LOGISTICS

### Agri-logistics Context

#### Logistics Endowments

This sector assessment focuses on agri-logistics, in particular, because of the key role it can play in driving climate-smart agricultural development, and it highlights constraints and investment opportunities in three markets for fruit produce. Strategic investments and reforms in logistics can help leverage a key endowment of the DR—its pivotal position between the US and Caribbean markets—to increase the overall competitiveness of tradable sectors. The development of this sector can also help leverage the country’s geographic position to create a hub for logistics services in the Caribbean.

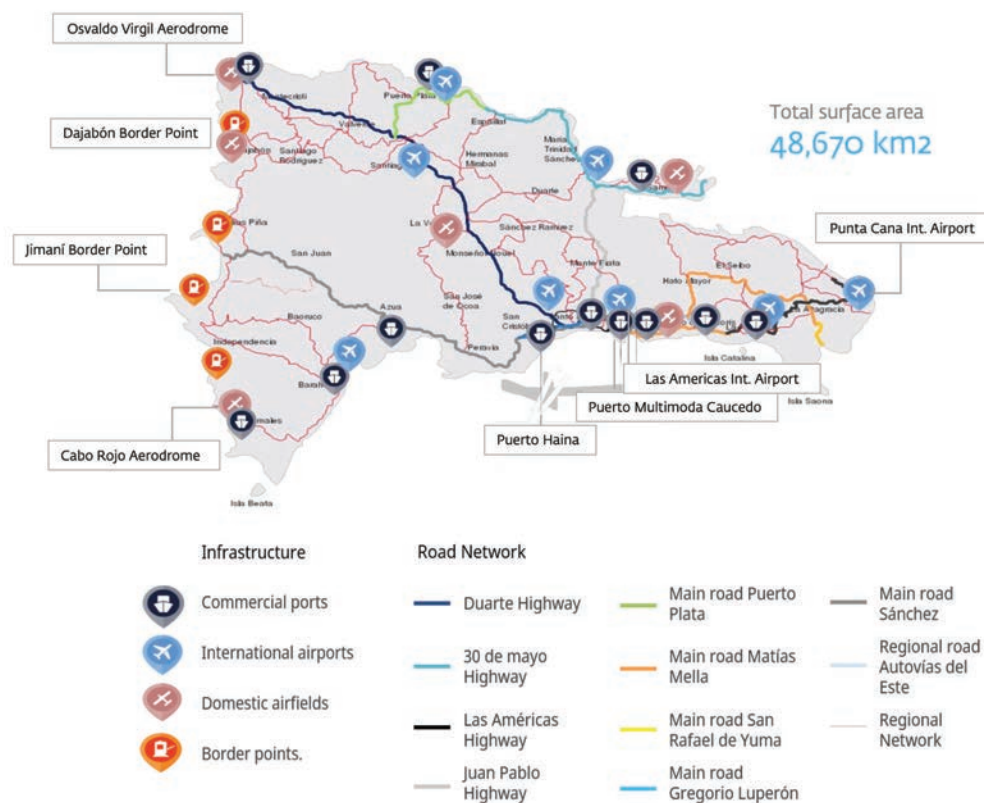
**Foreign investment in logistics in the Dominican Republic is rising.** While transport accounts for only 1 percent of the cumulative 2010–20 foreign direct investment in the country, it reached its highest level in the past 10 years despite the pandemic, amounting to US\$92 million in 2020.<sup>172</sup> Logistics represents the fifth most relevant sector in greenfield FDI investments; according to a recent OECD study, it accounted for 10 percent of total greenfield FDI in 2014, up from 6.5 percent in 2010. FDI in logistics is dominated by two main players: the United Arab Emirates (55 percent) and the United States (40 percent).

**Private sector firms in the logistics sector are highly coordinated and maintain an active policy dialogue with authorities through various associations.** With the support of the IDB, the National Observatory of Logistics and Cargo Transportation (Observatorio Nacional de Logística y Transporte de Carga) conducted a survey to understand the characteristics of the sector and received 186 firm responses.<sup>173</sup> The survey revealed that, in terms of level of service tertiarization, logistics firms are heavily concentrated in the first and second party logistics—model segments of the sector (1PL, with 38.5 percent, and 2PL, with 35.7 percent). The more complex segments (3PL and 4PL, the specialized logistics companies that provide services to users of a chain) represent only 25 percent. The sector is organized in professional associations that are quite active. They include the Freight Forwarders Association, the National Private Enterprise Council (CONEP), the American Chamber of Commerce, and the Logistics Cluster. The Logistics Cluster, a chapter within the Dominican Association of Free Zones (ADOZONA), was created in 2015 as a coordinating entity of the sector with the participation of 22 firms. The cluster is tasked with the elaboration of initiatives that strengthen the sector’s growth, focusing on four pillars: (a) promoting educational offerings aligned with the sector’s needs, (b) identifying new opportunities within the sector, (c) diagnosing sector constraints that hinder cost and time reductions, and (d) leveraging the country’s logistics advantages to attract foreign and local investment in the sector.<sup>174</sup>

**Authorities have made strides toward improving the institutional framework of logistics.** The National Institute of Terrestrial Transport was created in 2017 to regulate tariffs and competition in the cargo transport market. In 2021, the DGA launched a 24-hour dispatch program as part of a public agenda aimed at achieving zero bureaucracy and increasing efficiency in institutional processes. The goal of the program is to ensure the merchandise departs within 24 hours of an order. In 2012, the DR launched the Authorized Economic Operator program which authorizes importers, exporters, and customs agents to accelerate the dispatch of merchandise and reduce redundant inspection and verification. Moreover, presidential decree 262-15 created the Logistics Centers as a way to reduce time and costs in logistics activities and promote the emergence of the DR as a logistics hub.

**A variety of perishable products are produced and exported from the Dominican Republic, and improving the quality of logistics would greatly enhance the value-added and competitiveness of the agriculture sector.** For example, the Dominican Republic is the world's second largest avocado producer, yet exports are a fraction of production destined for local markets. Increased exports to higher-value markets could significantly raise farmers' incomes. High-quality agri-logistics are critical to accessing these markets by expanding the services needed and decreasing their cost. Distribution logistics and cold chain management are among the key hindrances for export competitiveness of perishable and semiperishable Dominican products. The assessment will identify the most promising opportunities for the sector.

**Most Dominican companies concur that a fundamental objective of public and private management should be enhancing road infrastructure for land transportation, according to the findings of the National Logistics Report (2021).<sup>175</sup>** This is of utmost importance for the fruit industry, given the widespread locations of production, export facilities, and tourist destinations. The primary fruit production zones are predominantly situated in the southwest and south of the country for mango, the northwest for plantain, the southwest for avocado, and the eastern (Monte Plata) and central regions for pineapple. The principal seaports and airports for exports are located in Santo Domingo and Punta Cana. And cities such as Santo Domingo, Punta Cana, Puerto Plata, La Romana, Samaná, and Santiago de los Caballeros serve as critical areas for tourism and local consumption. The distances between these logistics points range from 8.5 linear kilometers to 573 linear kilometers, with a higher concentration of infrastructure in the areas surrounding Santo Domingo. (See figure 4.12 and box 4.10.)

**FIGURE 4.12 LOGISTICS MAP OF THE DOMINICAN REPUBLIC**

Source: National Logistics Observatory (Observatorio Nacional De Logística Y Transporte De Carga De La República Dominicana), "Reporte Nacional de Logística: Apoyo a la implementación del Plan Nacional de Logística de Cargas (PNLOG) 2020–2032," 2021.



**BOX 4.9 SUMMARY OF LOGISTICS INFRASTRUCTURE AND CAPABILITIES IN THE DR**

- 1 The main infrastructure is integrated by 12 commercial ports, 8 international airports (7 currently operating), 6 domestic aerodromes, and 4 border points. In the decade from 2001 to 2011, significant investments were made in the expansion and modernization of port and airport infrastructure (including Puerto Caucedo, Santo Domingo Airport, and Punta Cana Airport). Investments amounted to approximately US\$400 million (IFC data portal).
- 2 About 80 percent of international trade is maritime, but seaport trade is heavily unbalanced geographically and in terms of trade flows. While the country's seaport system includes 13 ports, 54 percent of transshipment traffic (70 percent of tonnage) is handled by only two ports (Haina and Caucedo), significantly tilting activities toward the country's south ports. Of total port traffic, 70 percent is for imports, 16 percent is for transshipments, and only 14 percent is for exports.
- 3 The national maritime fleet is composed by 38 merchant shipping vessels with a total capacity of 68,000 deadweight tons (dwt) and an average port throughput of 68,000 dwt and 1,979,465 twenty-foot equivalent units (TEUs).
- 4 The road system has a total length of 19,705 km. The transport network's main arteries run from the northwest to the southeast, connecting Santo Domingo, the main ports and airports, and economic centers. Overall, 47 percent of roads are paved. The average age of the motor freight fleet is 21 years.
- 5 In 2022, 86 industrial zones were formally in operation under the Special Economic Zones (SEZ) regime in the DR, in addition to several non-SEZ and non-exporting industrial parks managed by Proindustriab Industrial parks using the SEZ regime increased by 75 percent in number and 62 percent in area since 2010
- 6 Foreign Direct Investment in logistics-related sectors (transport, Special Economic Zones, and Telecom) sums up 21 percent of total FDI.

Sources: National Logistics Observatory (Observatorio Nacional De Logística Y Transporte De Carga De La República Dominicana), "Reporte Nacional de Logística: Apoyo a la implementación del Plan Nacional de Logística de Cargas (PNLOG) 2020–2032," 2021;

**Scope of the Agri-logistics Sector Assessment**

The agri-logistics sector in the Dominican Republic can be defined as the system of services that allows the flow from the sources of origin of agricultural production to consumers. This Country Private Sector Diagnostic (CPSD) provides an in-depth assessment of the agri-logistics sector in the Dominican Republic and its role in accessing the three main markets: international buyers, the hospitality industry, and local wholesale markets and supermarkets. The diagnostic includes the processes and agents linked to the agri-logistic activities described in figure 4.13. The analysis focuses on logistics activities, not the agriculture production part of the value chain.

**FIGURE 4.13 MAIN AGRI-LOGISTICS ACTIVITIES COVERED BY THIS CPSD**

Post-harvesting and gathering	Short freight transportation	Warehousing/Storage management	Cold Chain/Long freight transportation	Packaging / Processing	Port freight / Air freight	Transparency and Traceability technologies
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**This assessment includes a description of the main global trends in the three identified agricultural markets and their corresponding implications for agri-logistics agents and processes,** which tend to point more strongly toward shortcomings in “soft” logistics rather than transport and infrastructure per se. The agri-logistics value chain, with its constraints and opportunities, differs depending on the end market. The analysis then identifies a series of concrete growth opportunities in the DR agri-logistics sector. Contrasting those opportunities with the current situation, the team identified a set of constraints and gaps for every value chain, recommended a corresponding series of reforms, and highlighted private sector investment opportunities. The report ends with a summary of policy recommendations the DR government can implement in the coming years to unleash private sector investment and growth in the agri-logistics sector over a three- to five-year horizon.

**The diagnosis focuses on fruits because of their relevance within the agriculture sector, their growth opportunities in local and global markets, and especially the need to gather more information on the needed agri-logistics activities to place them in the main markets.** The assessment presents a general overview of tropical fruits in the Dominican Republic and the organic production of the main ones (avocado, pineapple, mango, and banana), and outlines figures and opportunities for cocoa and dairy products. (See boxes 4.10 and 4.11.)

### **Agriculture: Sector Size and Performance**

The agricultural sector has been a keystone of the Dominican Republic’s economy and currently represents 5.7 percent of the country’s GDP.<sup>176</sup> Nevertheless, most producers are smallholders: about 71 percent of producers cultivate farms smaller than 4 hectares. A large part of production is dedicated to crop activities (63 percent), followed by livestock activities (20 percent), and a combination of both activities (17 percent).<sup>177</sup>

**Currently, agricultural exports from the DR to all markets represent around 18 percent of the country’s total merchandise exports (about US\$2 billion per year).** The leading agricultural exports include cocoa, bananas and plantains, and avocados. Additionally, thanks to a more flexible and open trading system (that is, entry into the Central America–Dominican Republic Free Trade Agreement), the country has made progress in phasing out most tariffs on fruits and vegetables and has also improved its sanitary and phytosanitary measures.<sup>178</sup>

**After almost a decade of growth, Dominican tropical fruits have seen a decline in harvesting area and production, while increasing in export value over the last two years (figure 4.14).** Growth will lie in continuing to improve access to higher value add markets rather than increasing production. The following fruits represent 90 percent of exported products in the category “08 Edible fruit and nuts,” and therefore, this assessment was largely based on their production and export data: bananas, avocados, mangoes, pineapples, oranges, lemons, papayas, melons, coconuts, watermelons, and other locally grown fruits such as fresh tamarinds, cashew nuts, jackfruit, lychees, sapodillo plums, passion fruit, and carambola. As figure 4.14 shows, the value of fruit exports has increased over the last decade, with higher growth for mangoes and more volatile growth for bananas.

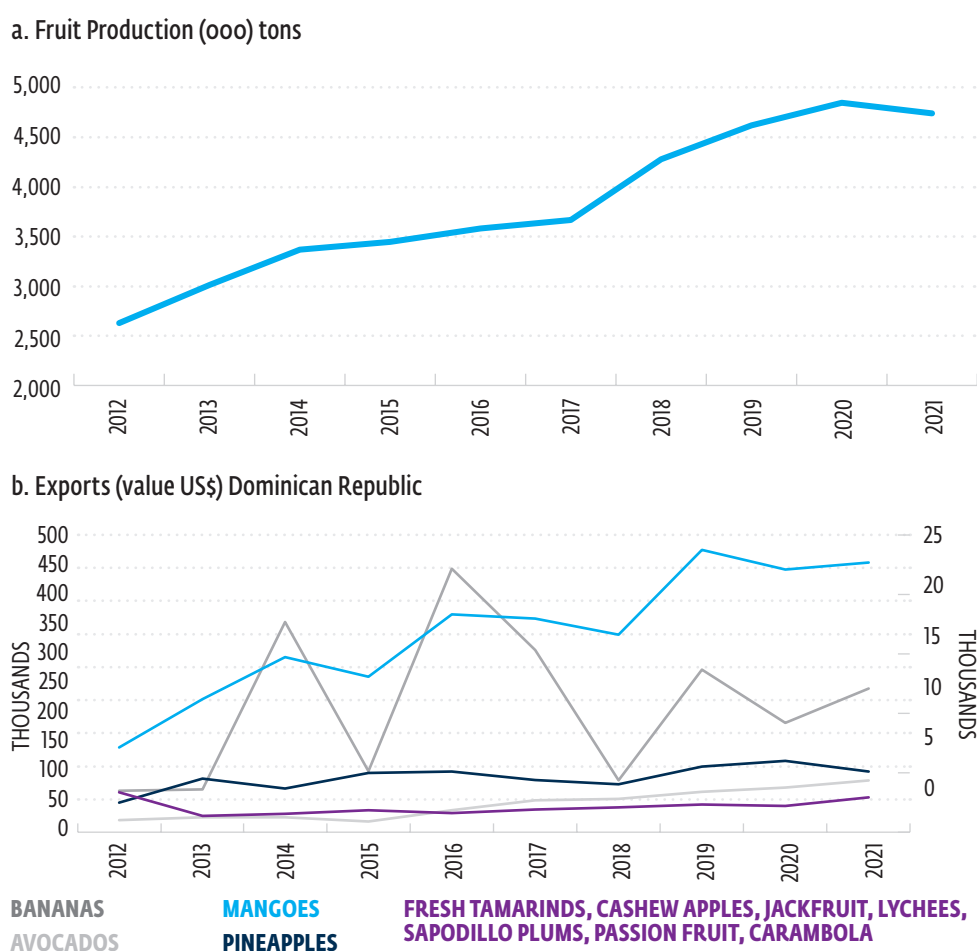
#### BOX 4.10 FRUITS SECTOR OVERVIEW IN THE DR

### Fresh fruits sector in the DR (2021):

- Harvested area: 214,293 hectares
- Production: 4.8 million tons
- Exports value: US\$335 million (Exports are concentrated in a few countries and products; tropical fruits are destined for the United States (27 percent), the United Kingdom (16 percent), the Netherlands (11 percent), and Belgium (8 percent)).
- The DR exports mostly agricultural commodities; however, 8.7 percent of agricultural land is dedicated to organic production. The DR is the world's largest producer of organic cocoa and organic bananas.

[illegible]

**FIGURE 4.14 FRESH FRUITS PRODUCTION AND EXPORTS (BANANAS, AVOCADOS, MANGOES, PINEAPPLES, AMONG OTHERS)**



Sources: FAOSTAT, FAOSTAT Food and Agriculture Data, 2022; TRADEMAP, Trade statistics for international business development 2022.

**Avocado production in the Dominican Republic has gradually increased over the decades such that it has become the fifth largest global producer and a relevant player for international markets, especially the United States.** The global avocado farming area reached 858,152 hectares (ha) in 2021, with the DR share representing 4.4 percent (37,468 ha). The world's main avocado producers are Mexico, Colombia, Peru, Indonesia, and the Dominican Republic. As for domestic production, in 2021, the DR produced 643,388 tons<sup>179</sup> and exported 56,456 tons (representing 9 percent of total production in 2021); the value of the exports was USD\$77,986,000, up 15 percent compared to 2020, making the DR the ninth largest exporter in the world. The main buyer was the United States, followed by the Netherlands, Spain, the United Kingdom, and Curaçao.<sup>180</sup> In the DR, there are two avocado harvesting seasons every year; the first runs from June to August/September for the Criollo, Simmonds, and Booth varieties; the second runs from September/October to February/March for the Hass variety, which is mainly marketed in Europe.<sup>181</sup>

**Pineapple production has traditionally been destined for local consumption; the Dominican Republic is still a small player at the international level; however, producers are working to have adequate volume to reach the EU market.**<sup>182</sup> In 2021, the total area devoted to farming pineapple worldwide reached 1,046,712 ha, of which the DR represents 0.73 percent (7,641 ha). The main pineapple producers are Costa Rica, Indonesia, the Philippines, Brazil, and China.<sup>183</sup> In 2021, 580,048 tons were produced domestically, while 6,805 tons were exported (representing 1 percent of total production in 2021); the value of exports was USD\$5,076,000, a 15 percent decrease compared to 2020. The main export markets were Israel, Curaçao, the United States, Italy, and Spain.<sup>184</sup> The most demanded varieties of pineapple in the DR are MD2 (70 percent), Cayena Lisa (20 percent) and Pan de Azúcar (5 percent).<sup>185</sup>

**Regarding mango production, the Dominican Republic is still a small player at the international level; however, in markets like the United States and Spain, it has grown by 120 percent and 73 percent, respectively, in the past 5 years.** The leading mango producers are India, China, Indonesia, Pakistan, and Mexico. In 2021, 54,426 tons were produced in the DR<sup>186</sup> and 20,694 tons were exported (representing 38 percent of total production). Exports amounted to USD\$22,670,000, up 3 percent over 2020 to markets like the Netherlands, the United States, the United Kingdom, Spain, and France.<sup>187</sup> The local mango varieties include Banilejo, Cachimán, Colón, Mariposa, Fabrico, Yamagui; new varieties were also introduced, such as Palmer, Haden, Irwin, Kent, Keit, Glenn, Carrie, Tommy Atkins, Springfields, and Sensación.<sup>188</sup> The mango sector in the DR is known for its excellent quality and extraordinary flavor. Sales of this fruit have been growing and expanding internationally, not only in the United States and Europe, but also in Asia and Russia.

The Dominican Republic is currently a relevant banana producer, especially organic varieties. Its production is destined for both domestic and international markets, and it is 13th among banana (organic + traditional) exporting countries. In 2021, the global banana farming area reached 5,336,862 hectares, of which the DR contributed 0.5 percent (29,296 ha). Main banana producers include India, China, Indonesia, Brazil, and Ecuador.<sup>189</sup> Domestic production in 2021 totaled 1,262,834 tons, and 357,802 tons were exported (representing 28 percent of total production); exports amounted to USD\$218,096,000, growing 32 percent compared to 2020. The main export markets were the Netherlands, the United Kingdom, Germany, Sweden, and Belgium.<sup>190</sup> The most widely used variety is the Cavendish, included among the group known as “Media mata” which produces medium-size bunches. The Gross Michell variety was used massively in previous commercial plantations.<sup>191</sup>

#### BOX 4.11 COCOA AND DAIRY MARKET OVERVIEW IN THE DR

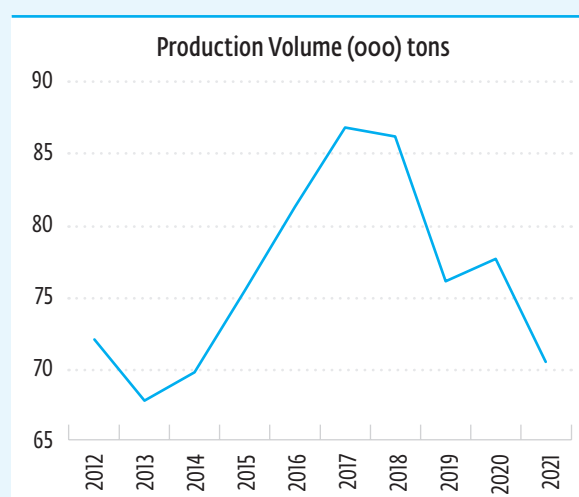
##### Cocoa market in the DR (2021)

**Dominican cocoa is among the best in the world and one of the 15 countries\* in the select group of gourmets cocoa producers.**<sup>192</sup>

There are two types: Sanchez (unfermented) accounts for 70 percent of Dominican exports and is the preferred type in the United States; Hispaniola (fermented) is preferred by European markets.<sup>193</sup> In 2021, the world farmed over 11.5 million hectares of cocoa, and the DR contributed 1.1 percent (131,251 ha). Côte d'Ivoire, Ghana, Indonesia, Brazil, and Ecuador are the world's leading cocoa producers.<sup>194</sup>

**The DR produced 70,631 tons in 2021 and exported 70,704 tons (this includes reexports of production from Haiti) to markets such as the Netherlands, the United Kingdom, Germany, Sweden, and Belgium.**<sup>195</sup> The volume of production (figure B4.11.1) has declined since 2017; however, the value of exports has increased. According to the CONACADO association (a union of cocoa cooperatives in the DR), in the past four years, the sector has been hit by the various droughts that have affected the country and the drop in prices due to the COVID-19 pandemic.<sup>196</sup>

FIGURE B4.11.1 COCOA PRODUCTION



Source: FAOSTAT, 2022.

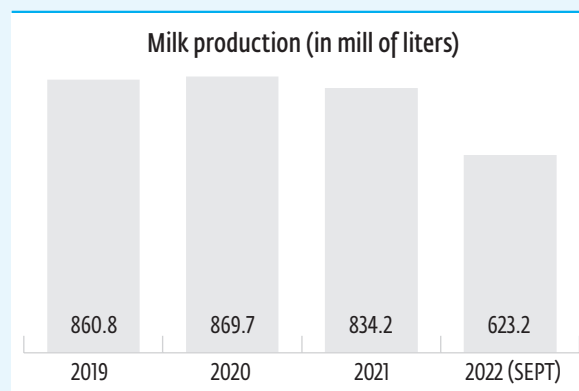
**The cocoa industry and its logistics are well-developed in the DR; however, there are opportunities for further investment and growth, especially in first-mile logistics.** The investment opportunities identified point to gaps in collection and fermentation centers in rural areas, as well as the use of polypropylene sacks that can be replaced with more sustainable packaging materials.

\*In 2019, the Dominican Republic was included in the select group of 15 countries recognized as producers of gourmet cocoa. Since 2005, the country has had an international certificate that catalogs it as the best organic cocoa worldwide (Ministry of Agriculture).

### Dairy market in the DR

**Exports of raw milk are aimed at other Caribbean countries such as Curaçao, Bonaire, Aruba, Puerto Rico, and the French and English islands.** Dairy exports from the DR focus on three products with integrated logistics: whole powdered milk, whole liquid milk, and ultra-high temperature (UHT) milk (which does not require a cold chain for its transportation). The country's milk production has remained stable (figure B4.11.2); however, exports of liquid milk and UHT milk have increased since 2020, with whole liquid milk reporting the highest value (between UHT milk and whole powdered milk) at US\$412,000 in September 2022.<sup>197</sup>

**FIGURE B4.11.2 DAIRY PRODUCTION**



Source: DIGEGA, 2022.

**This sector presents relevant vertical integration that allows the main companies to control costs, quality, and availability of materials and products.** This means big players have their own facilities, transportation, and collection centers. However, according to the Ministry of Public Health, currently, associations of small producers (around 1,600 farmers) lack collection and cold storage infrastructure.

Sources: Ministry of Agriculture. 2020. Cacao orgánico RD recibe premio mundial chocolate. <https://agricultura.gob.do/noticia/chocolate-organico-rd-recibe-premio-mundial/>;

### Major Public Policies That Impact the Sector

Traditional agriculture has evolved considerably since the early 1980s; recent strategies from the Ministries of Agriculture and Economy, Planning, and Development have been oriented toward sustainable production and food security. The National Development Strategy (NDS) 2010–2030 (Ley Orgánica No. 1-12) and its corresponding regulatory decree (Decreto 134-14) are led by the Ministry of Economy, Planning, and Development (MEPyD). This strategy defines the guiding principles to support the agricultural sector and prioritizes export promotion and food security outlined in the Strategic Agricultural Development Plan.<sup>198</sup>

The Strategic Agricultural Development Plan was built around three main objectives:

- (1) increasing productivity and competitiveness,
- (2) promoting agricultural exports, and
- (3) strengthening self-sufficiency.

The Public Sector Plurennial National Plan, led by the MEPyD, complements the Strategic Agricultural Development Plan; it provides guidelines for improving the quality of local production and its export penetration by fostering innovation (for example, promoting sustainable production, as the Dominican Republic already has 8.7 percent of agricultural land dedicated to organic production, second only to Uruguay in Latin America and the Caribbean). Nevertheless, the Dominican Republic does not invest enough in agriculture research and development (R&D); in 2018, expenditures in R&D as a share of agricultural value-added in the country were around 0.19 percent, below top-performing agri-food exporters and other countries in the region, such as Chile (2.41 percent), Brazil (1.82 percent), and Costa Rica (1.1 percent).<sup>199</sup>

### Key Constraints to the Development of Agri-logistics

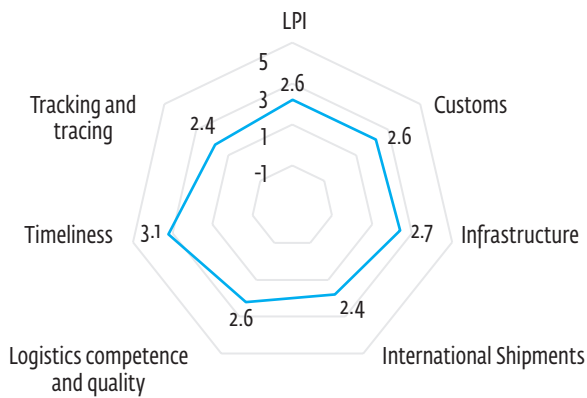
**The Dominican Republic faces great challenges to consolidate its logistics infrastructure.** According to the latest World Bank's Logistics Performance Index (LPI) measurements, the Dominican Republic has remained average for Latin America and the Caribbean. However, in the most recent edition available (2023), the country score declined from 2.68 to 2.6 (out of 5); the DR has worsened its results in this survey in variables such as timeliness of delivery, international shipments, and tracking and tracing. However, it has improved its performance in infrastructure and customs.<sup>200</sup> Mexico and Panama are the most important competitors for the Dominican Republic, and both countries are twice as efficient as the DR in the LPI. (See figures 4.15 and 4.16.)

**Weaknesses in cold chain management are among the key hinderances for export competitiveness in semiperishable and perishable Dominican products.**<sup>201</sup> A myriad of factors affects the agriculture subsystem of logistics. First, the deterioration of tertiary and secondary road networks increases the cost of access to agriculture production regions. Second, legacy deficiencies in ground transportation services—such as low-quality equipment and a lack of compliance with delivery times—affect the quality of delivered agriculture products. Third, consolidation centers are scarce, and ports and airports have insufficient or inadequate cold warehousing. Fourth, from a public standpoint, intrusive and untimely customs inspection practices affect product integrity. Fifth, while some cold chain components are advanced individually, the interaction and connectivity among them is weak. Last, capabilities related to the trackability throughout the entire chain, particularly with trucking units, is weak.



**FIGURE 4.15 THE DR'S LOGISTICS PERFORMANCE INDEX 2023**

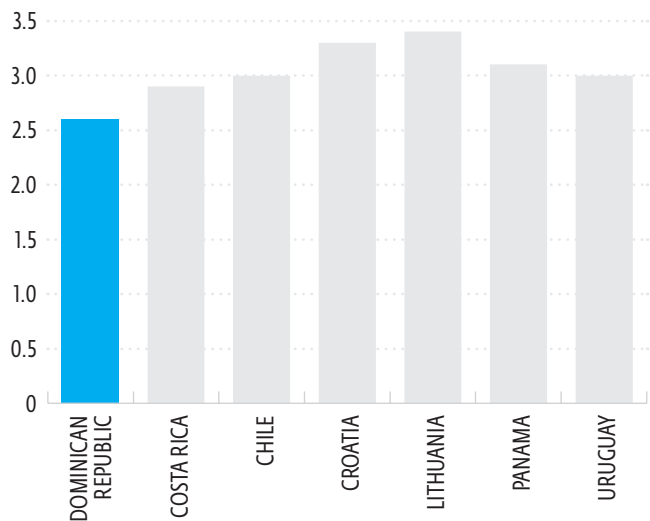
Dominican Republic, Logistics Performance Index, 2023



Source: World Bank, Logistics Performance Index, 2023.

**FIGURE 4.16 COMPARISON OF AGGREGATED LOGISTICS PERFORMANCE INDEX**

Logistics Performance Index (0-5, 5 best)



**In terms of transportation infrastructure, the main gaps for agri-logistics in the DR are related to secondary and tertiary roads.** The quality of roads in the DR is high relative to regional counterparts and has improved steadily in the past few years mainly driven by investments in primary road corridors.<sup>202</sup> However, secondary and tertiary networks represent 72 percent of all roads in the DR, and they are in precarious condition, making access to production nodes (especially agriculture) limited and costly. Additionally, primary roads with access to main centers of consumption and production are affected by congestion; and while the recent construction of circumventing highways has improved the situation, transport operators complain that the toll costs of these new highways are high, resulting in a full transfer of the price burden to end consumers. For the 2020–40 horizon, the transportation infrastructure investment needed to achieve basic levels of services was estimated to be US\$6.3 billion, of which 98 percent corresponds to roads. Improving the quality of the road infrastructure would require an investment of US\$8.2 billion.

**The air transportation infrastructure can also benefit from infrastructure improvements as well as regulatory upgrading.** The DR has nine international airports, six of which are administered by the private sector through concessions, and three are private. According to the National Infrastructure Plan, the air transport sector needs to modernize airport infrastructure (especially for cargo) and update regulations to clarify functions and responsibilities among entities and to improve operations control. Worth noting are recent private sector initiatives to improve logistics operations in the country. In November 2020, Santo Domingo's Las Americas airport—run by Aerodom through a concession—officially opened the doors of its new cargo terminal, with a 6,800-square-meter warehouse that brings together in a single space all the players and services in the freight transport chain. Also, Grupo Punta Cana, in partnership with DP World, announced plans to launch “Punta Cana Hub” within the next 36 months, which will include a logistics center to facilitate the transport of cargo to South and North America and to Europe.

**Competition and market demand issues in the ground transportation services sector constitute a major drag on the DR's logistics performance.** The trucking market is dominated by the trucking union FENATRADO, which engages in uncompetitive price setting for shipments—16 percent higher than the average for the region.<sup>203</sup> Political economy aspects have subdued authorities' capacity to eliminate cartel-like practices in this sector since the union represents one of the largest constituencies in the country. A second factor explaining high transportation costs is empty returns in shipping trips. For example, exports to Haiti are transported on trucks, and Dominican imports from the Haitian market are negligible; so virtually all trucks return empty from the border. Third is the age of the truck fleet: 60 percent of the fleet predates the year 2000, and 38 percent were fabricated between 2001 and 2016. This poses risks to the quality of certain products, particularly given the scarcity of refrigerated trucks, and affects reliability related to shipping times.

**Additionally, the private sector companies involved in logistics lack a strong focus on sustainability.** According to the national logistics report from the Logistics Observatory and the IDB, 64.0 percent of companies in the Dominican Republic do not measure any sustainability indicators in environmental terms, and only 36.0 percent have implemented some form of sustainability monitoring.<sup>204</sup> Additionally, 58.1 percent of the companies are unaware of information or data related to measuring the carbon footprint indicator.

**The agriculture sector in the Dominican Republic is predominantly characterized by informal practices.** Even in cases where agricultural units have a certain level of formality, the study revealed that 99 percent of the producers interviewed in FAO and UN migration research reported engaging in verbal and informal hiring practices.<sup>205</sup> This trend persisted even though 7 percent of the surveyed agricultural units were formally registered and 14 percent were part of a cooperative. These findings highlight the prevalence of informal contractual arrangements within the sector, indicating a lack of formalization and reliance on informal agreements.

**However, the country has started to address these issues, by strengthening its institutional framework and regulations for promoting responsible and sustainable agriculture.** The National Council for Sustainable Development and the National Institute of Agricultural and Forestry Research both promote sustainable production. Law No. 64-00 on Environment and Natural Resources drives the operation of these institutions; it establishes the legal framework for environmental protection, including regulations related to sustainable agriculture practices and the conservation of natural resources. It also promotes biodiversity and the sustainable use of land and water.

**The DR has also enacted legislation specifically related to the logistics sector, primarily focusing on infrastructure and foreign trade processes.** One notable example is Law No. 63-17, developed with the support of the IDB, which addresses cargo transportation. In 2015, the country implemented decree 262-15, known as the Regulation of Logistics Centers and Logistics Operating Companies; it set out the legal framework for creating and operating logistics centers within the Dominican Republic. As a result, the Dominican Republic Logistics Cluster was formed to enhance the quality of human resources, promote logistics centers, reduce transportation times and costs, and position the country as a key logistics hub in the Caribbean.

Lastly, in 2021, the country reformed its customs legislation, aiming to enhance the customs process. The DGA's the "dispatch in 24 hours" strategy seeks to improve the efficiency of customs procedures, as the country's supply chain has experienced a decline in performance in recent years. The analysis conducted by the National Freight Logistics Observatory using the World Bank's Logistics Performance Index revealed a significant 5.67 percent decrease in the score attributed to customer dissatisfaction with the punctuality of deliveries, tracking and tracing of shipments, and the effectiveness of customs clearance procedures.<sup>206</sup> From the private sector perspective, there are still opportunities to improve customs and noncustoms procedures and facilitate foreign trade.

### Agri-logistics Opportunities

The identified opportunities to improve the competitiveness of the agri-logistics sector in the Dominican Republic amount to US\$100 million. The opportunities are distributed in a series of projects in first-mile infrastructure (cold chain facilities, storage centers, and transportation assets), technological solutions, packaging services, IV range processing,<sup>207</sup> cold storage in ports, and specialized last-mile transportation.<sup>208</sup>

Increases in the supply of cold chain and collection centers, as well as more sophisticated logistics services, must include more sustainable, resilient, and cleaner energy facilities. The Global Cold Chain Alliance has stated that new cold chain storage projects in Latin America should be designed with sustainability certifications (for example, EDGE and LEED), implement clean energy, and use environmentally friendly refrigerant technologies. The World Food Logistics Organization is supporting a new USDA "Trade Safe" project that expands cold chain training and consultations from packhouses and airports to improve efficiencies via education and investment for a broader group of cold chain stakeholders.<sup>209</sup> This section presents the main global trends in the three main markets, describes the value chains in the Dominican Republic, and also describes the investment opportunities identified, providing some specific examples of infrastructures and investment projects. (See table 4.10.)

**TABLE 4.10 PRESENTATION OF OPPORTUNITIES**

MAIN AGRI-LOGISTICS MARKETS	CONTEXT IN TERMS OF	SPECIFIC OPPORTUNITIES
<b>International markets (Market 1)</b>	<ul style="list-style-type: none"> <li>Global trends</li> <li>Local value chain structure and constraints</li> </ul>	<ol style="list-style-type: none"> <li>1. Increase capacity of cold chain storage and rural collection centers.</li> <li>2. Local packaging and manufacturing (boxing, strapping, pallets).</li> <li>3. Increase sophistication of agri-logistics services provided, using data analysis and technological solutions.</li> </ol>
<b>Hospitality Industry (Market 2)</b>		<ol style="list-style-type: none"> <li>1. Specialized agri-logistics for companies supplying the hospitality industry.</li> <li>2. Minimally processed food (IV range production).</li> </ol>
<b>Local Retailers (Market 3)</b>		<ol style="list-style-type: none"> <li>1. Ensure quality of agri-logistics services all along the chain from farm to retailer.</li> <li>2. Cold chain facility for the wholesale market.</li> <li>3. Specialized transport from farms or collection centers to supermarkets, wholesale markets, and grocery stores.</li> </ol>

## Market 1: Agri-logistics for International Markets

### Global Trends

High-value-added fresh fruits for international markets need to guarantee the cold chain and traceability while reducing their environmental footprint. Key facts concerning this market are these: (a) Global revenues in the fresh fruits segment amount to US\$622.80 billion in 2022. (b) The market is expected to grow annually by 5.79 percent (compound annual growth rate, 2022–27). (c) The fresh fruits segment is expected to grow 2.9 percent in volume in 2023.<sup>210</sup> Main fresh products trends at a global level are as follows:

- **Growth in consumption of healthy foods:** In 2022, the global health and wellness food market was valued at US\$841 billion and projected to increase to US\$1 trillion by 2026.<sup>211</sup> Proactive health-minded buying has been a main consumer trend related to COVID-19 according to Nielsen.
- **Growth of environmentally responsible consumption:** In 2021, about 44 percent of global consumers were more likely to buy products with a clear commitment to sustainability, according to a global consumer survey.<sup>212</sup> The European Commission embraced a new agreement around an EU regulation on deforestation-free supply chains. The new law will ensure that key goods placed on this market will no longer contribute to deforestation and forest degradation, since the EU is a major economy and consumer of these commodities.<sup>213</sup> This includes concerns about the environmental effects of shipping, since the International Maritime Organization estimates that carbon dioxide emissions from shipping were equal to 2.89 percent of the total global anthropogenic CO<sub>2</sub> emissions for that year.<sup>214</sup>
- **New regional and global competitors have emerged in the fresh fruits segment,** for example, Curaçao, Trinidad and Tobago, and Italy. These new competitors are close to the main consumption areas (United States, United Kingdom, European Union).<sup>215</sup>
- **Agri-logistics implications include the high relevance of maintaining the cold chain during handling, transport, and storage of fruits; preserving the healthy benefits; and avoiding negative environmental footprints.** Also key to this process is implementing traceability and transparency solutions to help buyers and consumers make informed choices while minimizing food waste. Improving storage management and information flow becomes necessary to reduce the distribution of poor-quality food. It is recommended not to store fruits in break bulk; fruits should be packed for export, precooled, and then stored in cold storage facilities.

The global average per capita consumption in the fresh fruits segment is expected to reach 32.1 kilograms (kg) in 2022.<sup>216</sup> The top 10 fruits exported globally are bananas, grapes, apples, avocados, oranges, cranberries, tamarinds and others, cherries, peaches, and mangoes consumed by markets such as the United States, Spain, the Netherlands, Mexico, Chile, China, Thailand, Vietnam, Türkiye, Peru, and Italy.<sup>217</sup>

**The US, UK, and European markets have great import potential.** The global fresh fruits market is expected to grow annually by 5.79 percent (compound annual growth rate, 2022–27). The United States is one of the DR's main markets for fresh fruit, gradually increasing its yearly per capita consumption from 101 pounds in 2000 to about 116.86 pounds in 2021.<sup>218</sup> Europe, with more than 530 million consumers, accounts for 43 percent of the global trade value of fresh fruit and vegetables (more than US\$73 billion).<sup>219</sup> The Dominican Ministry of Agriculture affirms that the country is capable of exporting about US\$2,000 million a year in tropical fruits to Europe, the United States, Japan, and other markets, but currently it exports less than a quarter of that amount.<sup>220</sup> Therefore, the first market opportunity corresponds to the global trend related to health and nutrition as well as a deficit of fresh and organic fruits. (See box 4.12.)

#### BOX 4.12 AGRI-LOGISTICS VALUE CHAIN STRUCTURE IN THE DR FOR INTERNATIONAL MARKETS: MAIN CONSTRAINTS AND CHALLENGES



Some of the constraints and challenges observed in the agri-logistics value chain for international markets are the following:

- **Postharvesting and gathering:** The deterioration of tertiary and secondary road networks leads to increases in costs and decreases in quality; congestion on primary roads and new highways tolls also increase costs. Lack of methods and equipment for the control of temperature and humidity variables affect fruit quality control. Other challenges include a lack of postharvest heat-removal facilities near farms, few options for temperature-controlled logistics (TCL) warehouses (especially upstream), inconsistent refrigerated transportation from farm to packing houses, and uneven maintenance of existing cold chain infrastructure (TraSa Program)
- **Short freight transportation:** Congestion and road safety constitute important factors undermining the efficient movement of goods between cities. Short supply chains resulting from the geography of the country discourage the use of refrigeration and cold chain management.
- **Warehousing:** Exporters and consolidators of fruit cargo have some storage and cold storage capacity; however, gaps in some parts of the value chain affect the quality of the products. This constraint is further accentuated due to the high electricity consumption derived from cold chain equipment and the country's high electricity prices (see section 3.3, Energy and electricity). Among the 300 consolidation centers spread around the country, many (mostly small and medium-size) do not have cold chain capacity. The architectural design of the consolidation centers does not fully comply with food safety standards. That is, most of the centers do not have elevated floors to avoid contamination from ground surface sources.
- **Packaging and processing:** Food packaging companies do not adequately manage technical product information, which prevents both international buyers and producers from improving their processes. DR packaging inputs are expensive in comparison to competitors due to the small number of suppliers. Most key

packaging materials are imported. Regarding human capital, there is a shortage of candidates with adequate logistics skills to fill the increased demand (69 percent of respondents to a World Bank survey say there is low or very low availability of qualified candidates for operative level positions).

- **Port and air freight:** There are some gaps in the last-mile cold chain (during inspections or when transferring the fruit to the aircraft or vessel). Intrusive and untimely customs inspection practices affect product integrity. Better phytosanitary controls are required.

- **Contract enforcement:** Producers often establish informal agreements with exporters in the agri-logistics value chain for fruit exports. Formal contracts are not commonly used in commercial relationships. However, this lack of legal agreements can ultimately affect the trust and reliability of the export operation. Fruit packers and exporters are compelled to seek last-minute suppliers, disregarding high-quality product standards. According to the Dominican Logistics Cluster, this practice highlights the need for improved agreements between producers and exporters to ensure consistent product quality and foster a stronger foundation of trust in the overall operation.

Sources: OECD, 2020; Observatorio Nacional de Logística y Transporte de Carga de la República Dominicana, 2021.

Note: In the representation of the value chains, the green color represents the productive sector (agriculture), the orange links represent the agri-logistic services, and the blue color represents the customers.

## Specific Private Sector Investment Opportunities

### Investment Opportunity #1: Increase Capacity of Cold Chain Storage and Rural Collection Centers

There are around 300 fruit packaging companies and associations in the country that could invest in increasing cold chain capacity. According to the Agricultural Trade Agreements Office in the Ministry of Agriculture, this group of companies has some experience trading in international markets; additionally, 92 providers belong to the Association of Cargo Agents and Logistics Operators, which means they have access to information on global logistics trends for the agribusiness sector.<sup>221</sup> FDI is also arriving in the country to fill this gap. A good example is Emergent Cold, a company that is investing US\$ 40 million in a new temperature-controlled storage facility located in Puerto Caucedo. This investment will generate new storage capacity for 8,000 pallet positions, and is following the EDGE Advanced standards focused on sustainability and resource efficiency.<sup>222</sup>

Exports of fresh fruits to sophisticated markets must comply with international standards for packaging, cold chain, and quality/sustainability certifications. The value of exports of fresh fruits has experienced great volatility throughout the past decade, explained mainly by the banana exports. However, the overall downward trends were offset by the continuous growth of mango exports. In all cases there is consensus that there is potential for growth and diversification in international markets with sophisticated requirements. Tables 4.11, 4.12, and 4.13 lay out specific examples of investments for various products (subsectors) and actors in the agri-logistic chain.

**TABLE 4.11 EXAMPLES OF COLD CHAIN STORAGE AND COLLECTION OPPORTUNITIES**

SUBSECTOR OR PROCESS	INVESTMENT OPPORTUNITY	MAGNITUDE OR TECHNICAL DESCRIPTION
<b>Pineapple</b>	Small collection center and cold chain facility in Monte Plata province	<ul style="list-style-type: none"> <li>• Cold storage at 10°C</li> <li>• Precooling and packing capability</li> <li>• More than 400 pineapple growers in the province of Monte Plata are associated in a cooperative.</li> </ul>
<b>Mango</b>	Cold storage facility in Bani	<ul style="list-style-type: none"> <li>• Optimum storage at around 10°C (ripe mango can be stored at 8°C)</li> <li>• Precooling and packing capability</li> </ul>
<b>Avocado</b>	Three facilities for collecting and cold storage One infrastructure for packaging	<ul style="list-style-type: none"> <li>• Storage temperature of 5°C to 13°C</li> <li>• medium-size, 500–700 square meters</li> <li>• For packaging: 1,500–2,000 square meters (it would also serve as an operations center for exports)</li> <li>• Location: Circunvalación Santo Domingo – Carretera AZUA-BANI</li> </ul>
<b>Banana</b>	Collection center in the northern DR	<ul style="list-style-type: none"> <li>• Services needed: cutting, washing, and transportation to the south for export in refrigerated containers</li> </ul>
<b>Airports</b>	Refrigerated transport from warehouse to aircrafts	<ul style="list-style-type: none"> <li>• At least 10 refrigerated trucks for airports (based on Aerodom calculation)</li> </ul>
<b>Seaports</b>	Cold room at ports for loading and inspection of refrigerated containers Container yard near the Port of Manzanillo, to serve products such as bananas, avocados, and pineapples	<ul style="list-style-type: none"> <li>• Container yard: near the Port Manzanillo to expedite exports and ensure equipment availability to support increasing export volumes; to improve shipping spaces for perishables in general</li> <li>• Individual approaches to identify modernization or expansion needs</li> </ul>

Source: Competitiveness based on Interviews with key actors from agri-logistics sector: ADOEXPO, ASONAHORES, AERODOM, CONACADO, OTCA, Ministerio de Agricultura, Puerto Río Haina, MERCADOM, DIGEMAPS, CEDAF, Programa TraSa, Clúster Nacional de Aguacate, ASOPROPIMOPL

### Investment Opportunity #2: Develop Local Packaging and Manufacturing Capacity

The cost of packaging supplies (such as boxing, strapping, and pallets) is significantly higher in the DR than in other countries in the region due to lack of competition. According to the association of exporters and sectoral associations of fruit producers, packaging suppliers in the DR mainly focus on companies located in the SEZs; for other exporters, access to packaging inputs is more expensive. Based on this constraint and to move toward a more responsible value chain, there is an opportunity to develop a sustainable packaging supply.<sup>223</sup>



**TABLE 4.12 PACKAGING BUSINESS OPPORTUNITY**

SUBSECTOR OR PROCESS	INVESTMENT OPPORTUNITY	MAGNITUDE OR TECHNICAL DESCRIPTION
<b>Fruits</b>	Local production of main packaging supply to create domestic competition Identified constraint: No competitive domestic packaging supply	<ul style="list-style-type: none"> <li>Supplies: pallets and cardboard boxes for fruits, wrapping material for bananas and avocados</li> </ul>

Source: Competitiveness based on Interviews with key actors from agri-logistics sector: ADOEXPO, ASONAHORES, AERODOM, CONACADO, OTCA, Ministerio de Agricultura, Puerto Rio Haina, MERCADOM, DIGEMAPS, CEDAF, Programa TraSa, Clúster Nacional de Aguacate, ASOPROPIMOPL

### Investment Opportunity #3: Increase Sophistication of Agri-logistics Services with Data Analysis and Technological Solutions

To improve traceability and transparency along the complete value chain, agri-logistics agents could use artificial intelligence, algorithms, or machine learning for more efficient product tracking. One area to consider is first-mile logistics with cold chain capacity—cooling at the first mile of distribution is an opportunity for improving the quality of fresh fruits, minimizing losses, and increasing exports to greater, more sophisticated markets.

## Market 2: Agri-logistics for the Hospitality Industry

### Global Trends

The hospitality industry demands minimally processed fresh fruits, a better shelf life, and high-quality products. (See box 4.14, constraints and challenges.) The hospitality industry plays an important role in advancing toward a transparent and sustainable food system. The importance of this sector was shown in 2021 when international tourists' average expenditure was US\$1,391.<sup>224</sup> Global tourism grew by 4 percent in 2021 (415 million tourists compared to 400 million in 2020). However, international tourist arrivals (overnight visitors) remained 72 percent lower than in 2019 (1.5 billion), the year before the pandemic.<sup>225</sup> The DR is the fourth-most-visited destination in Latin America and the main destination for tourism in the Caribbean.<sup>226</sup> The main fresh product trends for the hospitality industry at a global level are as follows:

- **Reducing waste:** Since customers are becoming more environmentally responsible, reducing waste is considered a positive guest experience in hotels and restaurants. Food waste represents 33 percent of the total hospitality industry's waste.<sup>227</sup>
- **Minimally processed food:** Healthy eating habits boost the consumption of unprocessed foods, including food categories such as whole grains, fresh fruits, salads, lean meats, milk, and yogurt. Sixty-six percent of millennials are incorporating plant-based foods into their daily diet.<sup>228</sup>
- **Locally sourced and seasonal fruits:** Food transport, packaging, and processing make up 6 percent of CO2 emissions from rich countries. Locally sourced and seasonal food means lower environmental footprints.<sup>229</sup>

The main implication for agri-logistics actors is the need to provide traceability to consumers and hospitality buyers. Food packaging companies must optimize their communication with all parties in the food supply chain. This means accurate and real-time data to ensure food safety. Food packaging companies can incorporate new logistics services to develop unprocessed and/or minimally processed foods. Distributors and food packaging companies can also promote sustainable practices in the hospitality industry by improving the tracking of fruit and other food waste. (See box 4.13.)

#### BOX 4.13 EXAMPLES OF TRANSPARENCY AND TRACEABILITY SOLUTIONS

**There is an opportunity for logistic services and technology companies to develop solutions aimed at increasing product traceability and providing transparent information on good practices of production and farming.** The Center for Agricultural and Forestry Development, in partnership with the Dominican company Cefanet, developed a traceability solution that allows georeferencing and quality parameter control, impacting 64 agricultural companies within the framework of the Export Quality Program (funded by the US Department of Agriculture). Another institutional project in this area comes from the Dominican Association of Exporters and the Institute of

Technical Standards of Costa Rica; together they developed “Export Check Up,” a tool to improve market access by evaluating a series of aspects related to transparency in sustainability, human rights, and organic certifications, among others.

**Logistics companies can add value for their customers by incorporating technological solutions that improve product traceability.** Some logistics service companies have developed technological solutions and applications that allow them to support their customers efforts to provide better traceability of products. According to logistics companies, the average investment for technological developments ranges between US\$25,000 and US\$35,000.

Source: Competitiveness based on Interviews with key actors from agri-logistics sector: ADOEXPO, ASONAHORES, AERODOM, CONACADO, OTCA, Ministerio de Agricultura, Puerto Río Haina, MERCADOM, DIGEMAPS, CEDAF, Programa TraSa, Clúster Nacional de Aguacate, ASOPROPIMOPL

#### BOX 4.14 AGRI-LOGISTICS VALUE CHAIN FOR THE HOSPITALITY INDUSTRY IN THE DR: MAIN CONSTRAINTS AND CHALLENGES



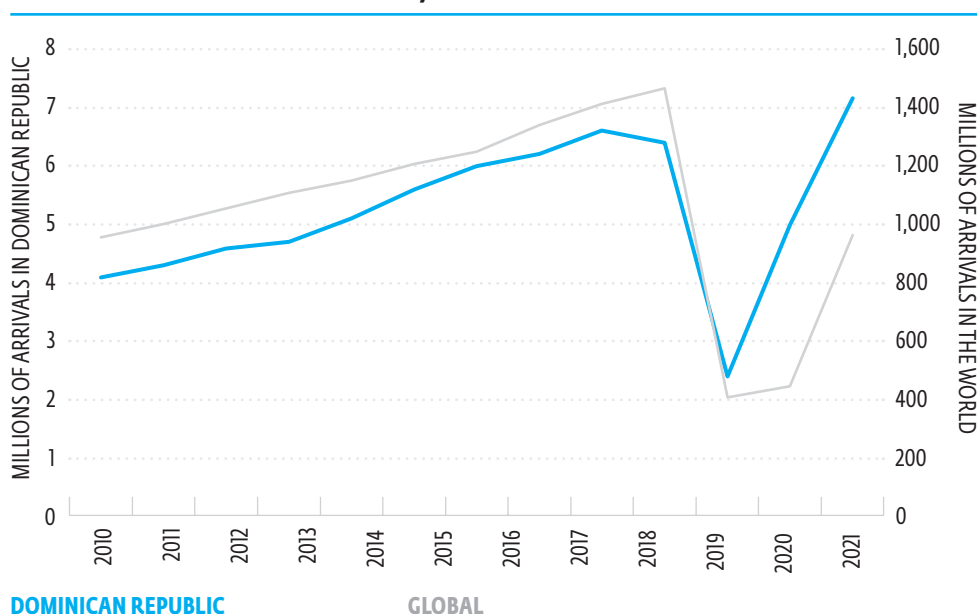
The main constraints and challenges observed in this value chain are the following:

- Postharvesting and -gathering:** The lack of rural accessibility in the agri-logistics value chain for export represents a significant obstacle to balanced territorial development. Without reliable and efficient transportation infrastructure, farmers in rural areas may struggle to get their products to market, which can limit their opportunities for growth and economic development. In addition to transportation infrastructure, another challenge in the agri-logistics value chain is the lack of postharvest heat-removal facilities near farms. Properly cooling harvested products is critical to maintaining their quality and extending their shelf life; but without access to such facilities, farmers may struggle to preserve their crops. Furthermore, there are few options for TCL warehouses, particularly upstream in the agri-logistics value chain. This can make it difficult to store and transport temperature-sensitive products, such as fresh fruits and vegetables, and can result in significant spoilage and waste.
- Short freight transportation:** Concentrated traditional transport service providers with strong bargaining power increase the cost of transportation, especially affecting domestic markets (the hospitality sector in this case). Low-quality equipment and noncompliance with delivery schedules affect the quality of delivered agriculture products. Congestion and road safety undermine the efficient movement of goods between cities. Short supply chains resulting from the geography of the country discourage the use of refrigeration and cold chain management.
- Warehousing:** The hospitality industry's suppliers do not have enough cold chain capacity. Most of the intermediaries between producers and hotels do not have specialized fruit storage and preservation services.
- Packaging and distribution:** There is a lack of IV range production capacity and technology. Packaging inputs are expensive in comparison to competitors due to the small number of suppliers. Most key packaging materials are imported.
- Consumers:** There is a scarcity of high-quality local products and underdeveloped logistics automation processes.

Sources: OECD, 2020; OTCA, 2022 (interview with Victor Rodríguez); Ministry of Tourism, 2021.

**In the Dominican Republic, tourism has rebounded faster than in the rest of the world (figure 4.15).** In 2021, international visitors in the DR spent over US\$5 billion, 75 percent more than in 2020. However, that number was still 35 percent below what was recorded in 2019.<sup>230</sup> Tourists arriving in the Dominican Republic in 2021 came mainly from the United States, Puerto Rico, Colombia, Ukraine, Spain, Germany, France, Argentina, Canada, and Russia.<sup>231</sup> In 2021, globally, the average international tourist spent US\$1,391,<sup>232</sup> whereas in the Dominican Republic, foreign tourists spent US\$1,104.66 per trip—an average of US\$140.9 per night (with average trips of 7.8 nights).<sup>233</sup>

**FIGURE 4.17 INTERNATIONAL TOURISM, DOMINICAN REPUBLIC AND GLOBAL**



Source: UN World Tourism Organization, 2022.

**Overall, tourism is a growing sector in the DR. The highest performers are hotels, bars, and restaurants, with a year-on-year growth rate of 39.3 percent.<sup>234</sup>** According to the DR Central Bank, the country's economy expanded by around 6.1 percent in the first quarter of 2022. The Tourism Promotion Council approved 119 new projects in 2021: 38 hotels, 34 real estate projects, and 14 projects that combine both activities. According to the Central Bank, in 2019, the number of rooms available was 83,041, so the new projects will boost this capacity by 24.7 percent.<sup>235</sup> A relevant opportunity in the agri-logistics sector is for high-standard suppliers to provide fresh fruits, ready to eat, to hotels and restaurants with sensitivity to local products and varieties and attention to quality and compliance.

**The local agricultural sector already supplies 85 percent of the total fresh primary products required by the tourism industry.<sup>236</sup>** In 2017, the Dominican Republic's tourism industry spent over US\$490 million on food and beverage consumption, with tourism accounting for 8 percent of the country's total food consumption.<sup>237</sup>

## Specific Private Sector Investment Opportunities

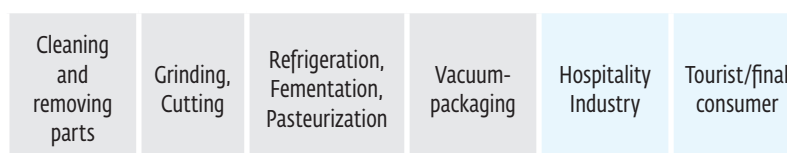
### Investment Opportunity #4: Agri-logistics Opportunities in the DR for the Hospitality Industry

Agri-logistics companies should focus on developing first-mile logistics, packaging, and transformation according to hospitality industry standards (minimally processed), to guarantee quality and transparency throughout the value chain. Table 4.13 describes two major opportunities: to develop specialized agri-logistics for companies supplying the tourism sector and to provide low-processed food, also known as IV range production. In keeping with these opportunities, the Trade Safe program points out that food processing operations, such as juice processing, bottling, modified atmosphere packaging technology, and services, as well as other light value-adding activities can be alternatives for suppliers to the hotel sector in the country.<sup>238</sup>

**TABLE 4.13 EXAMPLES OF HOSPITALITY INDUSTRY OPPORTUNITIES**

SUBSECTOR OR PROCESS	INVESTMENT OPPORTUNITY	MAGNITUDE OR TECHNICAL DESCRIPTION
<b>Specialized agri-logistics for companies supplying the hospitality industry</b>	On-demand planning and daily transport with cold chain capacity of ready-to-eat small batches of locally sourced products	To be successful, the different players of the value chain need to be able to supply year-round, with a certain level of production to guarantee prices, as well as a large variety (especially local varieties) with last-mile, fast cold logistics. Nowadays, fruit distribution to hotels is done without programming the demand or proper information flow between producers and hotels. This creates an opportunity for specialized suppliers. <sup>239</sup> Hospitality Industry fruit demand will be around 371,380 tons in 2023. <sup>240</sup> According to the DR Association of Hotels and Tourism, in the next two to three years, hotel capacity will increase by 6,000 rooms. In the MERCADOM wholesale center, there are around 10 hotel suppliers that can be developed, generating more specialized offerings, with sustainable practices, such as order scheduling, to avoid waste and promote reusable packaging and containers. <sup>241</sup>
<b>Minimally processed foods (IV range production)</b>	Extension of fruit packaging companies to minimally processed practices and methods (IV range) for ready-to-eat products such as peeled fruit, juice, smoothies, sauces, cold soaps, to supply hotels, restaurants, and cafes	Minimal processing methods do not substantially change the nutritional content of the food, but they do preserve its natural flavor, generating less waste while becoming a convenient solution for the hospitality sector. <sup>242</sup> (See figure 4.16 for examples of possible agri-logistic activities) The IV range processing activities for fruits are currently carried out internally in hotels, but they can be externalized and covered by fruit distributors in the Agri-logistics value chain. <sup>243</sup>

**FIGURE 4.16 . IV RANGE PROCESESS**



### Market 3: Agri-logistics for Local Retailers

The per capita consumption of fresh-fruit and milk in the Dominican Republic is higher than the world average; however, product quality remains a challenge. In 2020, while global per capita consumption of fresh fruits reached 67.95 kg per person per year<sup>244</sup>, the production for local consumption or industrial processing totaled 4.1 million tons.<sup>245</sup> Dominica (the Caribbean island) has the largest per capita consumption of fruit in North America and the Caribbean at 396 kg per person per year, followed by the Dominican Republic at 324 kg; Saint Vincent and the Grenadines is third, at 151 kg.<sup>246</sup>

The DR produces about 80 percent of the food it consumes;<sup>247</sup> therefore, as a middle-income country, the demand for quality fruit has increased. The DR has a population of 11 million consumers. It has the 10th largest economy in Latin America and the largest in the Caribbean region open for commercial trade,<sup>248</sup> which makes it a relevant market in the region. Most Dominican supermarkets are integrated into the national organization of commercial companies, which notes that supermarkets often use multiple nonspecialized intermediaries to purchase locally produced fruit; nevertheless, recently, a small group of supermarkets have traded directly with producers, establishing good logistics practices.<sup>249</sup> MERCADOM manages the main wholesale market in the country, supplying many stores, retailers, and other establishments such as restaurants and hotels. It is a central hub for food distribution and supply, making it an essential player in the supply chain.

#### Global Trends

Supermarkets demand well-presented fresh fruits and vegetables all year round, with adequate sanitary conditions and local varieties of seasonal fruits and vegetables. The fresh products department is usually one of the main selling points for consumers when selecting a supermarket or grocery store. In 2021, fresh fruit sales represented over 48 percent of all product sales in the United States, making it one of the most profitable fresh foods categories.<sup>250</sup> The quality of the store's fresh food is a major issue; according to a report from Fruit Logistica, consumers are choosing their supermarket based on the freshness and quality of the store's fresh food, with emphasis on the fresh fruits and vegetables section.<sup>251</sup>

Supermarkets look for uniformity and consistency in all features (size, ripeness, sugar level, oil level), seasonal and desired products, and unique or differentiated varieties of crops. Farmers, in response, must follow a rigorous plan and implement it both when growing and postharvest. They need to be able to meet buyers' demands year-round. To meet the demands of modern consumers concerned about health, retailers need to embrace the quality of the store's fresh foods and the use of online platforms. The global food and grocery retail market is projected to reach US\$14.78 trillion by 2030, showing a compound annual growth rate of 3.0 percent.<sup>252</sup> In 2021, the world consumed 528,505 million tons of fruits (mainly fresh).<sup>253</sup> With the rise of online retail, the fruit and vegetable market will likely grow significantly over the next 10–15 years, reaching around 7 percent growth globally by 2030.<sup>254</sup>

The central implication for the agri-logistics value chain is the necessity to improve times from farm to the table while helping local producers plan their crops and harvest, increasing the quality of fruits and other locally sourced foods. Automation in the retail industry will help control the performance of the products and evaluate their compliance with the product information provided to buyers, while developing models for Internet sales and distribution or platforms that connect actors along the value chain. Automation will enable better planning of production and logistics processes by providing more information to stakeholders (farmers, logistics service providers, and traditional and modern channel retailers). (See box 4.15.)

#### BOX 4.15 AGRI-LOGISTICS VALUE CHAIN FOR LOCAL RETAILERS IN THE DOMINICAN REPUBLIC: MAIN CONSTRAINTS AND CHALLENGES



Some of the constraints and challenges observed in this value chain are the following:

- **Collecting and Gathering:** The lack of postharvest heat-removal facilities near farms and few options for TCL warehouses (especially upstream) create inconsistent refrigerated transportation from farms to packing houses and interrupt the cold chain process (Trade Safe Program).
- **Short freight transportation:** Concentrated traditional transport service providers with strong bargaining power increase the cost of transportation, especially affecting domestic markets (wholesalers, and supermarkets).
- **Warehousing and distribution:** Distributors usually do not have cold chain capacity.
- **Packaging for local retailers:** Obsolete packaging equipment and technology to meet the needs of supermarkets, groceries, and other retailers remains a challenge. Packaging inputs are expensive in comparison to competitors due to the small number of suppliers. Most key packaging materials are imported.
- **Local consumer:** logistics automation processes are underdeveloped and take-up of omnichannel sales is low. Supermarkets' bargaining power leads in some cases to inconvenient payment periods (60–90 days).

Sources: Office of Agricultural Trade Agreements (OTCA), (Interview Viktor Rodríguez), 2022; Ministry of Tourism, 2021; International Trade Administration, 2022.



## Specific Private Sector Investment Opportunities

### Investment Opportunity #5: Agri-logistics Opportunities in the DR for Local Retailers: Ensuring Quality All along the Chain from Farm to Retailer

Agents involved in agri-logistics have the opportunity to offer services that increase fruit quality by helping local producers plan their production. (See table 4.14.)

Likewise, they can connect producers with supermarkets and other retailers while generating information of interest to end consumers (product origin, nutritional information, benefits, and so on). Currently, some supermarkets in the DR have development programs for local fruit and vegetable suppliers that provide support to farmers to increase the quality and level of supply.<sup>255</sup> (See box 4.16.)

As already mentioned, the DR produces about 80 percent of the food it consumes, and the demand for quality fruit has increased. The DR's 11 million consumers and 10th largest economy in Latin America make it a relevant market in the region. Although supermarkets often use multiple nonspecialized intermediaries to purchase locally produced fruit, more recently some supermarkets have begun to trade directly with producers, establishing good logistics practices.<sup>256</sup> (See figure 4.18.)

#### BOX 4.16 FROM FARM TO SUPERMARKET: AGRI-LOGISTICS GOOD PRACTICES EXAMPLE

Through partnerships between supermarkets and farmers, logistical activities such as selection and packing are carried out directly on the farms, using materials supplied by the supermarkets as part of pilot projects with a small number of farmers. According to the supermarket association, these supermarkets use fewer intermediaries; pay their suppliers in a shorter time than average; and are focused on precooling, transportation, and storage practices that preserve fruit quality.

**FIGURE 4.18 ALLIANCES TO IMPROVE LOGISTICS BETWEEN FARMERS AND SUPERMARKETS**



Source: National Organization of Commercial Companies (ONEC), Office of Agricultural Trade Agreements (OTCA).

**TABLE 4.14** EXAMPLES OF FARM TO WHOLESALE MARKET AND SUPERMARKET OPPORTUNITIES

SUBSECTOR OR PROCESS	INVESTMENT OPPORTUNITY	MAGNITUDE OR TECHNICAL DESCRIPTION
<b>Cold chain for wholesale market</b>	Cold chain facility for the wholesale market	<ul style="list-style-type: none"> <li>• Location: MERCADOM (629 retailers)</li> <li>• Area: 60,000 square meters of cold chain needed</li> <li>• Potential investment: US\$60 million (based on current investment proposal from MERCADOM)</li> </ul>
<b>Transportation for supermarkets and wholesale markets</b>	Specialized transport from farms or collection centers to supermarkets, wholesale markets, and grocery stores	<ul style="list-style-type: none"> <li>• Reference investment: US\$466,931 to purchase seven specialized trucks to transport food from production areas to Santo Domingo</li> </ul>

### Recommendations

The value chains face a series of cross-cutting constraints for the three agri-logistics businesses, focused on first-mile storage and cold chain constraints. These specific challenges are reflected in weak tracking capacity throughout the chain, particularly with trucking units; inadequate skills and training in the logistics labor market (at all levels, including operators and management); the need for investment in electric grid infrastructure to improve cold chain logistics; underdeveloped transportation infrastructure, evidenced in low connectivity with provinces and low density and quality of roads within the provinces, especially in the southern border provinces; broken cold chains in high-volume production areas; and gaps in cold storage capacity.<sup>257</sup>

The following recommendations are meant to address some of these constraints, help accelerate private sector growth, and improve agri-logistics processes in the country. The first group of recommendations aims to close infrastructure and services gaps. The second group of recommendations addresses some of the governance or coordination failures identified. (See table 4.15.)

TABLE 4.15 AGRI-LOGISTICS RECOMMENDATIONS

POLICY AREA	SPECIFIC ACTIONS	TIMELINE	LEAD ACTORS
Closing the infrastructure and services gap	<b>Adopt multiple measures related to improving last-mile logistics:</b> <ul style="list-style-type: none"> <li>Structure investment projects (for example, obtain concessionary loans or blended finance) to build or upgrade               <ul style="list-style-type: none"> <li>cold chain capabilities in ports and airports, by modernizing vehicle fleets, expanding refrigerated container capacity (in the north), and building cold storage for cargo and container inspection processes (in the south).</li> <li>cold chain facilities for the whole sale market.</li> </ul> </li> </ul>	Short term	MAG MIC MEPyD ProDom MOPC
	<b>Adopt multiple measures related to improving first-mile logistics and collection capacity services:</b> <ul style="list-style-type: none"> <li>Create an infrastructure debt fund (for example, coordinated by local financial institutions and with the support of international financial institutions) or dedicated lines of credit to finance (or facilitate access to finance) with a particular focus on SMEs facing limited access to credit:               <ul style="list-style-type: none"> <li>Increase the capacity of cold chain storage (for mango, banana, pineapple, and avocado) and rural collection centers (for pineapple, avocado, cocoa, dairy).</li> <li>Increase the sophistication of agri-logistics services provided, by using data analysis and technological solutions.</li> </ul> </li> </ul> <p>Note that financing programs for cold chain facilities should review the results of ongoing initiatives such as the TraSa program.</p>		Domestic banks airports and ports operators MAG MICM MEPyD
Addressing market and governance constraints	<b>Adopt multiple measures to facilitate the export process and reduce storage times at ports and airports:</b> <ul style="list-style-type: none"> <li>Improve communication with stakeholders regarding the operation and benefits of the Single Window for Foreign Trade (VUCE) through informative campaigns and outreach to producers' and exporters' associations.</li> <li>Implement an integrated, simultaneous inspection system at ports and airports, to allow joint, coordinated, and concurrent action by the control authorities involved in the supervision and control of foreign trade operations at inspection sites for select noncustoms procedures and regulations (for example, phytosanitary reviews, sectoral statistical requirements from MAG and antidrug inspections). Ensure interoperability with the VUCE.</li> </ul>	Short term	DGA MAG DNCD MICM
	<ul style="list-style-type: none"> <li><b>Develop and implement a comprehensive intervention program to improve food safety</b>, focused on improving the handling and quality practices and infrastructure of wholesale centers and food distributors for the tourism sector and supermarkets.</li> </ul>		MICM MAG MSP
	<ul style="list-style-type: none"> <li><b>Promote Productive Alliances<sup>a</sup> and/or facilitate public-private dialogues between agri-logistics agents, on the one hand, and tourism operators, on the other, to address information asymmetries and improve alignment.</b> Focus on specific quality requirements, delivery times, product delivery conditions, seasonality of production, and so on. These alliances help improve the quality of final products and the development of agri-logistic processes.</li> </ul>	Short term	MIC MAG JAD MITUR
	<ul style="list-style-type: none"> <li><b>Redefine MERCADOM's strategy</b> to reinforce its role as a supplier to other businesses (business to business, or B2B), rather than business to consumer (B2C). The Ministry of Agriculture can develop guidelines for MERCADOM to specialize in distributing to retailers, supermarkets, and hospitality suppliers. This can help it transform into a specialized space for fruit processing, such as IV range production, or for the development of agri-logistic activities such as packing and storage.</li> </ul>	Short term	MAG MERCADOM

POLICY AREA	SPECIFIC ACTIONS	TIMELINE	LEAD ACTORS
	<ul style="list-style-type: none"> <li>• <b>Carry out supplier development programs, with a financing component, for packaging in the DR.</b> Encourage local companies to produce the necessary inputs for the packaging of agricultural products, especially using sustainable materials for cardboard boxes, pallets, and sacks, among others.</li> </ul>	Short term	MICM Banco Agrícola Domestic banks MAG
	<ul style="list-style-type: none"> <li>• <b>Facilitate access to equipment and technology adoption loans</b> that allow fruit packing companies and fruit suppliers, particularly SMEs, access to hotels to scale their capacity and add value to minimally processed food by acquiring cutting, peeling, and packaging equipment, among other technologies.</li> </ul>	Short term	MICM Banco Agrícola BanReservas
	<ul style="list-style-type: none"> <li>• <b>Promote formalization and strengthening</b> of agri-logistics partnerships through mechanisms such as Productive Alliances. Such Programs foster formal contractual frameworks and collaboration between producers, food packaging companies, sectoral associations, and other exports agents, providing legal support, strengthening quality control systems, and offering financial assistance to improve the overall efficiency and reliability of the agri-logistics exports process.</li> </ul>	Short term	MAG MICM Logistics Cluster JAD

Note: Banco Agrícola: Agriculture Bank; DGA: General Directorate of Customs; DNCD: National Narcotics Control Directorate; INFOTEP: National Institute of Technical Training; JAD: Dominican Agribusiness Board; MAG: Ministry of Agriculture; MEPyD: Ministry of Economy, Planning, and Development; MERCADOM: Dominican Agriculture Supply Market; MICM: Ministry of Industry, Commerce, and SMEs; MITUR: Ministry of Tourism; MOPC: Ministry of Public Works and Communications.

\*Productive Alliances are an approach introduced by the World Bank in the early 2000s in Latin America and the Caribbean. Productive Alliances connect a group of smallholder producers, one or more buyers, and the public sector through a business plan, which describes the capital and services needs of the producers and proposes improvements that would allow them to upgrade their production capacities and skills to strengthen their linkage with the market (that is, the buyers), through productive investments, technical assistance, and business development.

# APPENDIX

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## APPENDIX A: HISTORY OF SPECIAL FISCAL REGIMES IN THE DOMINICAN REPUBLIC

The Dominican Republic has been promoting export-oriented industries through different types of special regimes since the late 1960s. The initial special regimes were focused on physical location and access to industrial real estate and were formed around geographic areas with concentrated industrial activity to provide spatial solutions for externalities related to manufacturing. The first Industrial Park<sup>258</sup> was established by the Gulf and Western Corporation in 1969. The second was created in 1972 in the province of San Pedro de Macorís and was sponsored by the government through the Industrial Development Corporation, a decentralized entity of the state, which oversaw its administration and operation. The Industrial Free Zone of Santiago was created shortly after and structured as a nonprofit corporation managed by the region's top businesspeople. Dominican Industrial Parks quickly became among the most competitive in the region, as domestic operators managed them well and established their reputation with the United States and other international firms involved in offshore manufacturing. The boom in the demand for industrial space continued through the late 1980s, when the DR installed the most industrial real estate in the Caribbean and Central American region.

**At the outset, industrial park development did not benefit from a supportive financial sector given its small size and limited capabilities.** Dominican banks had small balance sheets, which allowed them to provide only short-term financing, while developers required medium to long-term financing. Consequently, Industrial Parks had to be financed through larger than usual equity contributions, cash flow from large advance rental payments required from tenants, or bilateral development credit. To fill that gap, the World Bank and the Government of Japan supported the DR to expand industrial real-estate capacity with a US\$30 million loan in the 1990s. Additional issues constraining industrial park development included poor supply of electricity, an uncompetitive trucking industry, port congestion and pilferage, and acute scarcity of middle management skills—most of which persist even if to a lesser extent.

**In the 1990s, fiscal regimes were expanded to include not only access to industrial real estate, but also access to streamlined and simplified regulatory procedures, such as licensing, permitting, or tax incentives and exemptions.** The new regimes were referred to as Special Economic Zones (SEZ) and grew in number after the United States assigned a specific import quota of clothing and textiles to the Dominican Republic under the MFA. The preferential market access, combined with the investment and tax incentives provided by the government to SEZs, led to the proliferation of garment manufacturers in SEZs, most of which employed low-skilled labor. The MFA expired in 2005, but a series of policy actions helped facilitate the gradual recovery and diversification of SEZs into more sophisticated sectors, such as footwear, surgical equipment, electrical products, and pharmaceuticals. Policy reforms included the signing of the CAFTA-DR agreement in 2007, the accession of the DR to the Economic Partnership Agreement between the Caribbean and the European Union in 2008, and the reforms of the SEZ regime, which included the elimination of export share

requirements (ESR) for firms in priority sectors (leather, textiles, and apparel) and the extension of some fiscal incentives to non-SEZ firms in these sectors, making them no longer conditional on physical location. In 2011, the incentives conditioned on export performance were fully eliminated for all SEZ firms, regardless of their sector of operation, in accordance with the compromises signed under the CAFTA-DR free trade agreement.

**As of 2021, 79 industrial parks were formally in operation under the SEZ fiscal regime, compared to 48 in 2010.** The parks are managed by ProIndustria, a public agency dedicated to the promotion of manufacturing.<sup>259</sup> Half of the Industrial Parks under the special fiscal regimes are in the Northern Region, 24 percent in the National District and Santo Domingo Province, and the rest are in the south and east of the country. The construction of Industrial Parks has steadily increased since 2000, growing 3.5 percent annually, closely mirroring real GDP growth over the same period. Industrial real estate reached approximately 46 million sq feet in 2021, an 11 million sq feet increase since 2010. Over the same period, the occupation rate of Industrial Parks under the SEZ fiscal regime increased from 84 to 93 percent. Seventy-six percent of industrial real estate is privately owned, 20 percent is owned by the government, with the remainder operating under mixed public-private administration.

**Currently, firms in SEZ regimes continue to enjoy a variety of duty-free and fiscal exemptions,** such as full corporate tax exemptions; full exemption from local VAT or tax on assets; and exemptions from any import and export taxes and tariffs. Many SEZs are classified as non-regulated areas for the purchase of electricity, which allows users to sign power-purchase agreements directly with electricity generating firms and benefit from lower prices than those available to companies located outside SEZs. Regulatory transparency and clear communication of objective criteria to obtain a license to establish a firm inside an SEZs are left wanting and may limit the access of new operators to SEZs and the corresponding regulatory advantages.

**Other tax incentives schemes that coexist in parallel to SEZs target tourism, local manufacturing (PROINDUSTRIA), and border zones.** Tourism is a key source of foreign exchange and jobs in the DR. The development of tourism benefited from the enactment of law 158-01, which provided tax incentives to both existing and new tourism areas. Similarly, the country introduced new incentives in the Law for Industrial Innovation and Competitiveness (PROINDUSTRIA), which aimed to enhance the competitiveness of the industrial sector by improving its legal and institutional framework, promoting diversification and production linkages through industrial parks, and enhancing ties with global markets. These incentives were introduced in a decade that was also marked by several tax relief and tax increase laws. Lastly, in 2001, a new tax-relief scheme was implemented specifically for the Special Zone for Border Development, consisting of the five provinces bordering Haiti and two adjacent ones due to their high levels of poverty and lagging economic development. Unlike other schemes, this prioritizes economic activity in the region irrespective of the sector.

Over the years, the addition of fiscal regimes did not always lead to the replacement of earlier ones or prompt their review and reform. This contributes to the fragmentation discussed in section 3.1.

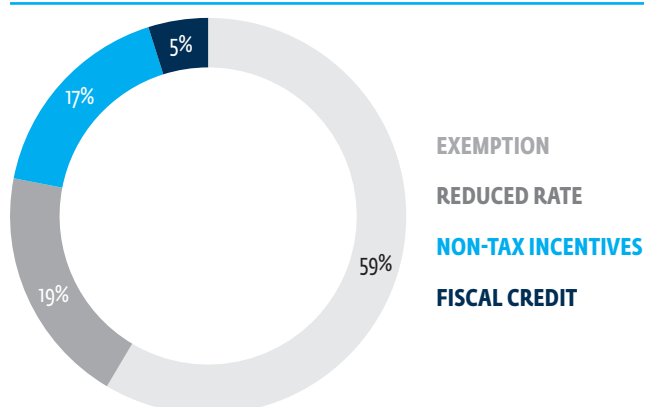
## APPENDIX B: MAPPING OF INVESTMENT INCENTIVES IN THE DOMINICAN REPUBLIC AND COMPARATOR COUNTRIES

Investment incentives are measurable economic benefits that governments grant with the aim of directing investment towards certain productive sectors or regions or influencing the nature of such investments. These benefits can be tax-related, such as exemptions, reductions in tax rates, deductions, tax credits, accelerated depreciation, etc., or non-tax related, such as grants, loans, rebates, or provision of goods and services or payments in kind, to support the development of businesses or improve their competitiveness. Location incentives aim to influence investor decisions on where to locate (thus attracting investment to a country or region), while behavioral incentives aim to induce investors to engage in certain activities or behaviors (thus encouraging employment, forming links with local suppliers, adopting green technologies).

The key elements of the design and implementation of cost-effective and well-targeted incentives include defining the policy objective, focusing on the marginal investor, linking incentives to policy objectives and instruments, and rigorously monitoring and evaluating. International good practices suggest that incentives should be clearly included in the law, ideally the Tax Code or related legislation; managed in an agile manner and with minimal discretion; designed with clear and objective eligibility criteria; monitored in terms of fiscal expenditure, with results included as part of the annual budget; centrally inventoried; and systemically monitored and evaluated to assess whether the schemes are effective in achieving the stated objectives.

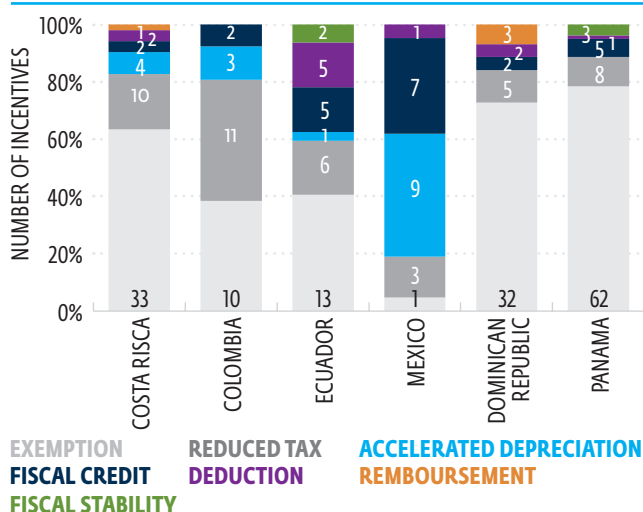
Comparative analysis of public information on investment incentives available in Ecuador, Panama, Costa Rica, the Dominican Republic, Mexico, and Colombia shows that 75 percent of the tax incentives available in 2022 were exemptions and reduced tax rates (figure B.1). The Dominican Republic is in line with other developing countries and with the countries analyzed in this section with 81 percent of tax incentives composed of exemptions and reduced tax rates, while tax credits and accelerated depreciation represent 4 percent each of the total (figure B.2).

**FIGURE B.1 FISCAL INCENTIVES BY TYPE OF INCENTIVE IN THE SIX COUNTRIES**



Source: Prepared by the World Bank team. Calculations based on data from 6 countries (Mexico, Costa Rica, Dominican Republic, Colombia, Ecuador and Panama).

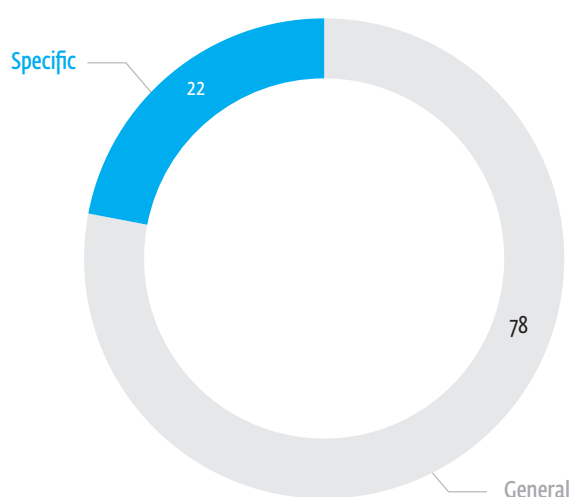
**FIGURE B.2 DISTRIBUTION BY TYPE OF INCENTIVE IN EACH COUNTRY**



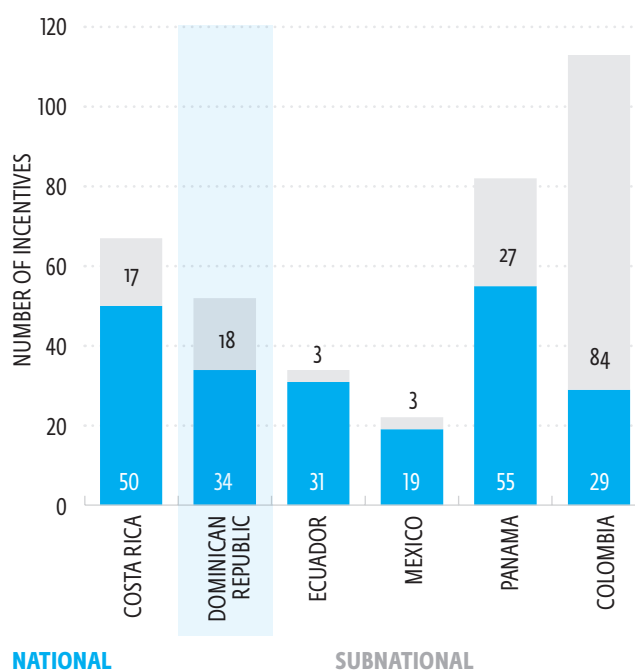


Most incentives in the six countries are sector-specific (figure B.3) and national (figure B.4), except in Colombia, where 84 incentives are subnational compared to 29 that are national. In the Dominican Republic, 34 incentives are national, and 18 incentives are subnational.

**FIGURE B.3 TOTAL INCENTIVES BY TYPE OF SECTOR**

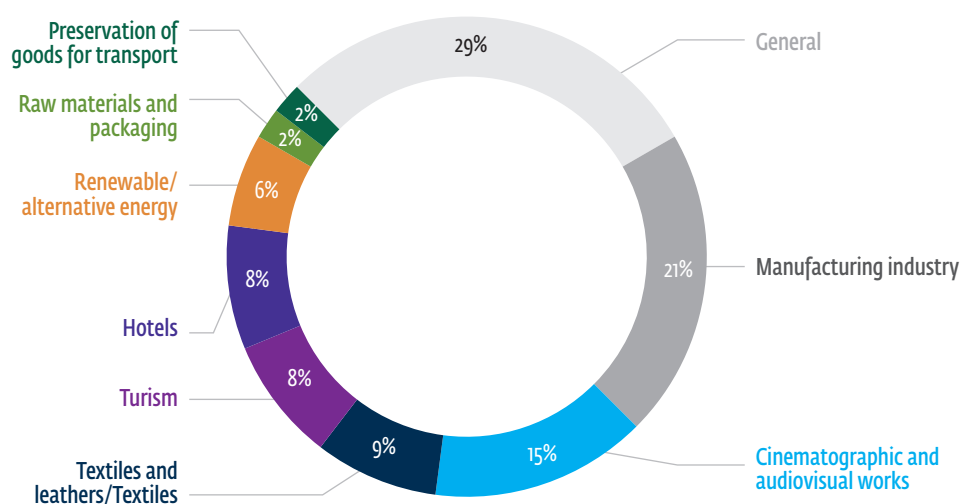


**FIGURE B.4 TOTAL INCENTIVES BY LOCATION**



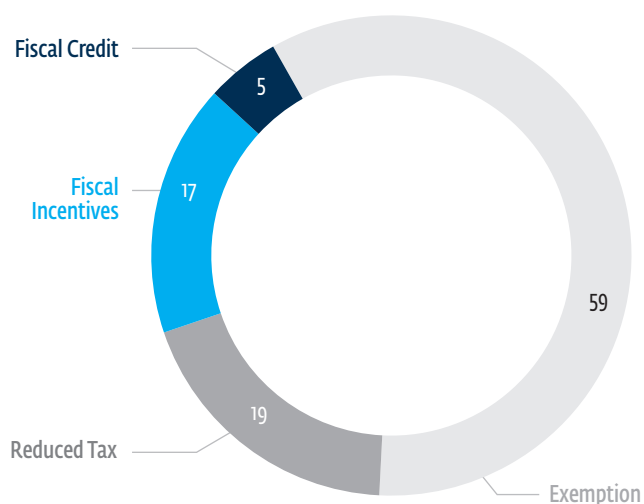
By sector in the Dominican Republic, the manufacturing sector is the main beneficiary, receiving 21 percent of incentives, while the tourism sector and hotels, despite their importance to the country's economy, receive only 16 percent (figure B.5). Agriculture, despite being an important source of resource generation, does not seem to receive any specific incentives.

**FIGURE B.5 FISCAL INCENTIVES PER SECTOR IN THE DOMINICAN REPUBLIC**

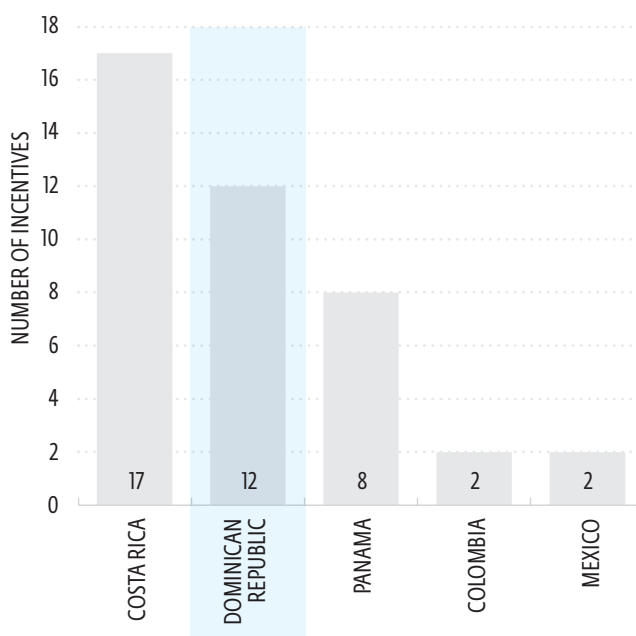


Most incentives within free zones constitute exemptions (59 percent) or reduced taxes (19 percent) (figure B.6). Among the six countries, the Dominican Republic is second, after Colombia, with 12 incentives available within the free zones (figure B.7).

**FIGURE B.6 FREE ZONE INCENTIVES BY TYPE OF INCENTIVE**



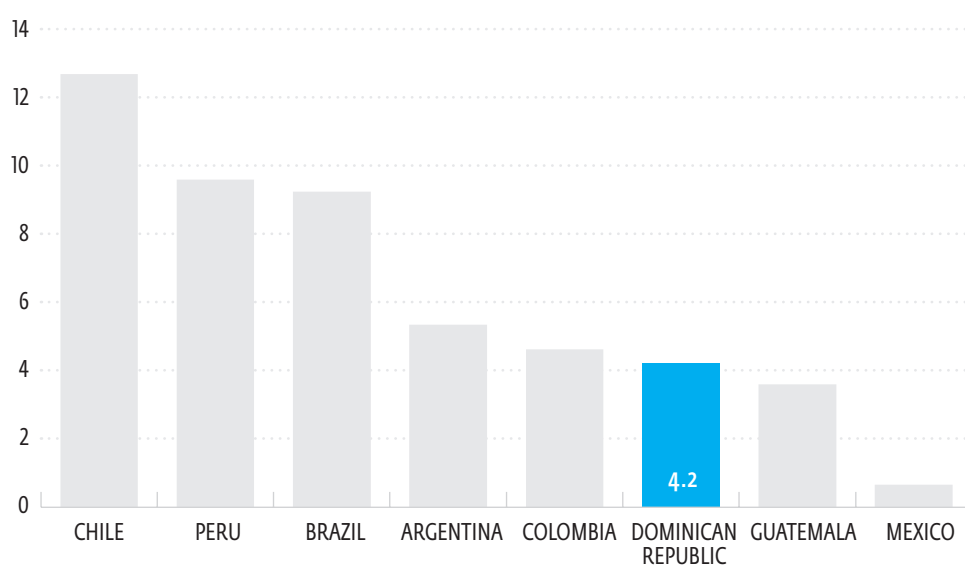
**FIGURE B.7 TOTAL INCENTIVES IN FREE ZONES**



## APPENDIX C: GOVERNMENT MEASURES TO SUPPORT THE PRIVATE SECTOR AMID THE COVID-19 PANDEMIC

Tax measures introduced by the government to support the private sector as COVID-19 lockdown measures caused revenue headwinds included filing/payment deadline extensions, deductible options for corporate income tax, and an exemption of certain penalties for custom duties. Employment measures included partial salary subsidies in companies with economic difficulties and income support for independent workers. Economic stimulus measures included selective debt service moratoriums and rollovers, lower monetary policy rate to encourage a general decrease in interest rates in the financial system through the monetary policy transmission mechanism, and liquidity and solvency provision measures to the financial system. While the policy response was crucial to speed up the recovery and avoid excessive bankruptcies, the size of the fiscal stimulus (relative to GDP) was smaller than in many other LAC economies (figure C.1).

**FIGURE C.1. ADDITIONAL SPENDING AND FORGONE REVENUE, % OF GDP**



Source: IMF and National authorities. Note: Estimates as of September 27, 2021. Percent of GDP is based on October 2021 World Economic Outlook unless otherwise stated

**The Banco Central de la República Dominicana (BCRD, the central bank) reacted decisively with interest rate cuts and ample liquidity provision that supported credit and economic activity.** The main interest rate was reduced from 4.5 percent to 3 percent at the onset of the pandemic, along with other key rates, such as the 1-day REPO facility rate, the overnight deposit rate, and the legal reserve ratio for banks. The Central Bank also relaxed financial institutions' prudential regulations by freezing debtor ratings, capping required provisions, and facilitating loan restructuring, and created a guarantee and financing fund to benefit MSMEs. The accommodative monetary and financial policies fostered by the Central Bank provided liquidity facilities to the financial system of about 5 percent of GDP to bolster credit growth, and allowed the private sector (namely, commerce, manufacturing, agriculture, construction, and tourism) to resume capital expenditure projects and launch new ones towards the second half of 2021.

**The DR's tourism sector rebounded quickly due to targeted measures in local tourism hubs and the easing of entry rules.** Lockdown measures and the halting of tourist arrivals hit the sector heavily during 2020. However, in early 2021, the government supported the vaccination of most tourism sector workers to make the country safer for tourists and attract foreign visitors. The government also lifted travel restrictions for incoming visitors and offered free medical insurance for tourists staying at certain hotels, and a robust testing policy. These measures have allowed the country to remain one of the Caribbean's most attractive destinations, as travel restrictions eased globally and vaccinations rates increased in major source markets, but the measures have also drawn criticism domestically as more stringent testing and vaccination rules are in place for residents compared to tourists. At the time of writing this document, the government had lifted all COVID-19 related restrictions.

**As COVID-19 recedes and the economic recovery continues, pandemic-related support is either expiring or being phased out.** The program to support workers who were furloughed (Fondo de Asistencia Solidaria al Empleado, FASE) was phased out in April 2021, while social transfers under the Supérate program (previously denominated "Progresando con Solidaridad") have been scaled down but remain above pre-pandemic levels as the target population increased and new subsidies to food were established.

Sources: IMF 2021 Article IV, WBG Dominican Republic CPF 2022–2027, KPMG COVID-19 Global Tax Developments Summary, The Economist EIU.

# NOTES

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- 1 Central Bank of The Dominican Republic - External Sector Statistics; ProDominicana
- 2 World Bank World Development Indicators dataset.
- 3 CPSD team calculations based on, World Bank World Development Indicators dataset.
- 4 As measured by those living on less than \$2.15 a day (2017 purchasing power parity).
- 5 Based on data from the World Bank World Development Indicators (WDI)
- 6 For more details, see H. Winkler and M. Montenegro, Dominican Republic Jobs Diagnostic (Washington, DC: World Bank, 2021).
- 7 CPSD team calculations based on Ministry of Finance Public Credit statistics and Central Bank Real Sector statistics.
- 8 World Bank World Development Indicators dataset.
- 9 PSD team calculations based on data from Harvard Growth Lab's Atlas of Economic Complexity data.
- 10 While FDI is important for economic growth, not all FDI is the same. One way to differentiate is by an investor's motivations using a framework established by British economist John Dunning that describes four types: (a) natural resource-seeking investment, (b) market-seeking investment; (c) strategic asset-seeking investment; and (d) efficiency-seeking investment. Efficiency-seeking FDI is particularly important for countries looking to integrate into the global economy and move up the value chain. See Cecile Fruman, "Why Does Efficiency-Seeking FDI Matter?," World Bank blog, February 5, 2016, <https://blogs.worldbank.org/psd/why-does-efficiency-seeking-fdi-matter>.
- 11 Central Bank of the Dominican Republic - external sector statistics.
- 12 CPSD team calculation bases on UNCTAD-EORA database and World Bank World Development Indicators.
- 13 CPSD team calculation based on Consejo Nacional de Zonas Francas Exportadoras, Tesorería de Seguridad Social.
- 14 CPSD team calculations using information from the General Directorate of Customs (DGA).
- 15 CPSD team calculations using information from the General Directorate of Customs (DGA).
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- 17 CPSD team calculations based on Central Bank of the Dominican Republic external sector statistics.
- 18 Portal de Servicios del Gobierno Dominicano, <https://www.gob.do>.
- 19 Transparency International, Corruption Perception Index, <https://www.transparency.org/en/cpi/2022/index/dom>.
- 20 World Bank, Worldwide Governance Indicators, <https://info.worldbank.org/governance/wgi/>.
- 21 World Economic Forum, Global Competitiveness Index, <https://www.weforum.org/reports/global-competitiveness-report-2019/>.
- 22 World Bank Group. Dominican Republic—Country Economic Memorandum: Sustaining Economic Growth (Washington, DC: World Bank, 2023).
- 23 Ministry of Energy and Mines, electricity sector performance indicators.
- 24 World Bank, Dominican Republic—Country Economic Memorandum.
- 25 Central Bank of the Dominican Republic - External Sector statistics.
- 26 CPSD team calculation, based on Central Bank of the Dominican Republic, Consejo Nacional de Zonas Francas.
- 27 Central Bank of the Dominican Republic, external sector statistics.
- 28 CPSD team calculations using information from the General Directorate of Customs (DGA).
- 29 Consejo Nacional de Zonas Francas, Statistics Report, 2022
- 30 CPSD team calculations based on CNZFE data on historic occupied industrial shell space, IDB projections (US\$1.58 billion), and assuming DR can capture its current share of global export of the McKinsey nearshoring estimates (US\$ 2.7 billion). Projections assume the current exported value per square foot (US\$191 per square foot) will remain constant and use the nearshoring estimates of additional export flows generated from nearshoring to construct the projected occupied shell space required to host additional manufacturing activity. IDB estimates can be found in the June 7, 2022, news release at <https://www.iadb.org/en/news/nearshoring-can-add-annual-78-bln-exports-latin-america-and-caribbean> Inter-American Development Bank – 2021 and McKinsey estimates are in Susan Lund et al., Risk, Resilience and Rebalancing in Global Value Chains (McKinsey, 2020).
- 31 CPSD team calculations, based on Central Bank of the Dominican Republic external sector statistics.
- 32 CPSD team, based on IFC's Building Resilience Tool analysis
- 33 OECD (Organisation for Economic Co-Operation and Development), "Production Transformation Policy Review of the Dominican Republic: Preserving Growth, Achieving Resilience, 2020, <https://www.oecd-ilibrary.org/sites/1201cfea-en/index.html?itemId=/content/publication/1201cfea-en>.

- 34 Gross domestic product (GDP) per capita in 2019 stood at US\$8,282 (in current dollars), equivalent to US\$18,413 when adjusted by purchasing power parity. Source: World Bank World Development Indicators database.
- 35 World Bank Poverty Team calculations using Central Bank of the Dominican Republic ENCFT data.
- 36 World Bank, *Dominican Republic: Gearing Up for a More Efficient Tax System—An Assessment of Tax Efficiency, a Cost-Benefit Analysis of Tax Expenditures, and an Exploration of Labor Informality and Its Tax Implications* (Washington, DC: World Bank (2017), <https://openknowledge.worldbank.org/entities/publication/9fbo8e72-2d48-5942-b557-5b314begade7>).
- 37 "Concept Note for Dominican Republic Country Climate and Development Report" (internal document, World Bank, Washington, DC, 2022).
- 38 For more information, see <https://gain.nd.edu/our-work/country-index/rankings/>.
- 39 For more information, visit the IMF climate data website here: <https://climatedata.imf.org/pages/go-indicators>.
- 40 World Travel and Tourism Council, 2019.
- 41 "Concept Note for Dominican Republic Country Climate and Development Report."
- 42 "Concept Note for Dominican Republic Country Climate and Development Report."
- 43 Reynaldo Payano-Almanzar and Joselín Rodríguez, "Meteorological, Agricultural and Hydrological Drought in the Dominican Republic: A Review," *Current World Environment* 13, no. 1 (2018): 124, doi:10.12944/CWE.13.1.12.
- 44 "Concept Note for Dominican Republic Country Climate and Development Report."
- 45 Comisión ODS, *Hoja de ruta como acelerador de la Agenda 2030—Producción y consumo sostenible*, 2020, <https://mepyd.gob.do/publicaciones/Hoja-de-ruta-produccion-y-consumo-sostenible>.
- 46 F-gases are fluorinated greenhouse gases often used as substitutes for ozone-depleting substances in a variety of industrial applications: refrigeration and air-conditioning (HFCs), electronics, cosmetics, and pharmaceuticals (PFCs), and as insulation gases in high-voltage switchgear (SF6). See [https://ec.europa.eu/clima/eu-action/fluorinated-greenhouse-gases\\_en](https://ec.europa.eu/clima/eu-action/fluorinated-greenhouse-gases_en). See also Climate Watch data, 2018 (latest available), <https://www.climatewatchdata.org/>.
- 47 Based on 2022 GDP data from the Central Bank of the Dominican Republic. The tourism share is not significantly distant from the prepandemic average (7.7 percent).
- 48 Based on data from the Central Bank of the Dominican Republic.
- 49 Mainly the special economic and free trade zones regime established by Law 8-90 of January 1990.
- 50 World Bank. *Dominican Republic - Country Economic Memorandum: Sustaining Economic Growth* (Washington, DC: World Bank, 2023).
- 51 Fernando Botelho and Vladimir Ponczek, "Segmentation in the Brazilian Labor Market," *Economic Development and Cultural Change* 59, no. 2 (2011); Olivier Bargain and Prudence Kwenda, "The Informal Sector Wage Gap: New Evidence Using Quantile Estimations on Panel Data," *Economic Development and Cultural Change* 63, no. 1 (2014); John Ariza and Gabriel Montes-Rojas, "Labor Income Inequality and the Informal Sector in Colombian Cities," *Cuadernos de Economía Magazine* 36, no. 72 (2017).
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- 53 Hernan Winkler and Miriam Montenegro, "Dominican Republic Jobs Diagnostic," (Job Series 28, World Bank, Washington, DC, 2021).
- 54 Galina Hale and Mingzhi Xu, "FDI Effects on the Labor Market of Host Countries" (Working Paper 2016-25, Federal Reserve Bank of San Francisco, September 2016).
- 55 The surge in gold exports was largely driven by Pueblo Viejo, a mine that started commercial production in 2012.
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- 57 Source: Dirección General de Aduanas 2022 export data.
- 58 IMF (International Monetary Fund), *World Economic Outlook* (Washington, DC: IMF, 2023).
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- 63 See Transparency International's Corruption Perception Index, <https://www.transparency.org/en/cpi/2022/index/dom>.
- 64 See Worldwide Governance Indicators, <https://info.worldbank.org/governance/wgi/>.
- 65 World Economic Forum, *Global Competitiveness Report 2019*, <https://www.weforum.org/reports/global-competitiveness-report-2019/>.
- 66 See the United Nations' E-Government Survey 2022, <https://publicadministration.un.org/egovkb/en-us/>.

- 67 These institutions are National Council of Free Export Zones (Consejo Nacional de Zonas Francas de Exportación; CNZFE); Ministry of Finance (Ministerio de Hacienda); General Directorate of Internal Revenue (Dirección General de Impuestos Internos; DGII); General Directorate of Customs (Dirección General de Aduanas; DGA); Ministry of Environment and Natural Resources (Ministerio de Medio Ambiente y Recursos Naturales; MARENA); and Ministry of Health (Ministerio de Salud Pública; MSP).
- 68 Law 8-90 on the Promotion of SEZ from 1990 (and its bylaw) establishes the CNZFE's nature, competences, structure, and administration, including how the CNZFE evaluates and authorizes companies' requests to operate within the SEZ regime. The CNZFE comprises different institutions from the public and private sectors (led by the MICM, and including ProDominicana, Dominican Association for Export, among others). CNZFE's decisions are voted and approved by simple majority.
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- 71 Jose Daniel Reyes et al., *Special Economic Zones in the Dominican Republic: Policy Considerations for a More Competitive and Inclusive Sector* (Washington, DC: World Bank, 2017).
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- 73 The team will work closely with the Education GP to finalize this section in the final CPSD report and will provide punctual recommendations on how to address skills shortages in specific sectors based on inputs from consulted firms.
- 74 World Bank. The Human Capital Project (Washington, DC: World Bank, 2018), <https://openknowledge.worldbank.org/handle/10986/30498>.
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- 76 *Dominican Republic—Country Economic Memorandum*.
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- 81 *Dominican Republic—Country Economic Memorandum*.
- 82 Dominican Republic, Ministerio de Industria, Comercio y Mipymes, *Estudio De Necesidades De Talento Para Apoyar El Crecimiento Del Sector De Dispositivos Médicos*, 2019.
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- 85 World Bank, "Dominican Republic: Assessment of Logistics Skills, Competencies, and Training."
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- 88 World Bank, "Dominican Republic: Assessment of Logistics Skills, Competencies, and Training."
- 89 World Bank gender statistics are taken from the UNESCO Institute for Statistics. See <http://uis.unesco.org/>.
- 90 IMF, *World Mobility and Domestic Production Networks* (Working Paper, IMF, Washington, DC, 2020.)
- 91 The average customer on the public power grid experienced 18 interruptions and 22 blackout hours per month in 2020, far above the averages of regional peers such as Panama and Costa Rica. See <https://sie.gob.do/sobre-nosotros/departamentos/estadisticas-direccion-regulacion/>.
- 92 *Dominican Republic—Country Economic Memorandum*.
- 93 The market consists of separate generation, transmission, and distribution companies.
- 94 Organismo Coordinador del Sistema Eléctrico Nacional Interconectado de la República Dominicana (OC), "Informe Mensual de Operación Real," Diciembre 2022. See <https://www.oc.do/Informes/Operaci%C3%B3n-del-SENI/An%C3%A1lisis-Operativo>.
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- 96 Some small local networks are either cooperatives or under private ownership (for example, Consorcio Energético Puna Cana Macao; CEPM) in the eastern region of the country).
- 97 Created after the breakup of the formerly state-owned Dominican Electricity Corporation in the 1999, the EDEs were initially privatized but later sold back to the government; EDE Norte and EDE Sur were acquired in 2003 and EDE Este in 2009, making the government the sole administrator of the EDEs.



- 98 Ministry of Energy and Mines, "Informe de Desempeño" (2022).
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- [illegible]

- [illegible]

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