



COUNTRY PRIVATE SECTOR DIAGNOSTIC

# CREATING MARKETS IN UKRAINE

Doubling Down on Reform: Building Ukraine's  
New Economy

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# ABBREVIATIONS AND ACRONYMS

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CIS	Commonwealth of Independent States
CPSD	Country Private Sector Diagnostic
CSA	Climate-smart agriculture
DALY	Disability-adjusted life years
DCFTA	Deep and Comprehensive Free Trade Area
EBRD	European Bank for Reconstruction and Development
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FDI	Foreign domestic investment
FTA	Free trade agreement
GDP	Gross domestic product
GHG	Greenhouse gas
GMP	Good Manufacturing Practice
GPS	Global Positioning System
GVC	Global value chain
ha	Hectare(s)
HAQ	Health Access quality
UAH	Ukrainian hryvnia
HS	Harmonized System
ICT	Information and communication technology Intergovernmental
IPCC	Panel on Climate Change
IT	Information technology
JCI	Joint Commission International
LPI	Logistics Performance Index
MNE	Multinational enterprise
MtCO <sub>2</sub> e	Metric tons of carbon dioxide equivalent
NCD	Noncommunicable diseases
NHSU	National Health Service of Ukraine
NPL	Nonperforming loan
OECD	Organisation for Economic Co-operation and Development
OOP	Out-of-pocket
OTG	Oblast Territorial Community (oblastna territorialna gromada)
PISA	Programme for International Student Assessment

PMI	Private Medical Insurance
PPD	Public-private dialogue
PPIAF	Public-Private Infrastructure Advisory Facility
PPP	Public-private partnership
R&D	Research and development
SME	Small and medium enterprise
SOB	State-owned bank
SOE	State-owned enterprise
TFP	Total factor productivity
UCAB	Ukrainian Agribusiness Club
UNDP	United Nations Development Programme
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
WBG	World Bank Group
WHO	World Health Organization
WTO	World Trade Organization
WUO	Water user organization

# EXECUTIVE SUMMARY

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Ukraine is at a critical juncture. In a context of both legacy and emerging challenges, including an unprecedented global pandemic, the government of Ukraine has an opportunity to unleash the potential of the country's private sector to build the foundations of a new economy that is more dynamic and equitable. The government has embarked on an ambitious reform agenda, reaffirming its commitment to strengthen institutional governance, unshackle market forces, and fully insert the country in global trade and investment flows. The government can build on such efforts to ensure that the private sector will be a key driver of Ukraine's post-crisis economic growth.

The present Country Private Sector Diagnostic (CPSD) will help inform the Government of Ukraine's reform efforts, especially those leveraging the power of the private sector to boost economic growth and improve the lives of all Ukrainians. The CPSD addresses knowledge gaps in sectors that are critical to economic growth and in which private sector participation is currently hampered by legal, regulatory, or other constraints. While focusing on a subset of policy actions through which reform can unlock private sector investment and growth, the report also addresses the need for change within the private sector itself. The CPSD describes cross-cutting constraints that affect the private sector and underscores the imperative to address long-standing governance and structural bottlenecks. In addition, the report takes a detailed look at three sectors for which public policy actions and active involvement by the private sector could leverage the country's natural and human capital endowments and exploit its comparative advantage. The three sector assessments expand and build on extensive analytical work already undertaken inside and outside the World Bank Group (WBG) underlining implementable policy actions to (a) support the swift implementation of the recently approved land reform and promote investments in climate-smart technologies to raise agricultural productivity and exports; (b) boost exports and ramp up the attraction of proactive foreign direct investment (FDI) to increase participation in European manufacturing value chains; and (c) leverage private sector solutions and investment to enhance efficiency in the provision of health services.<sup>1</sup>



## COUNTRY CONTEXT

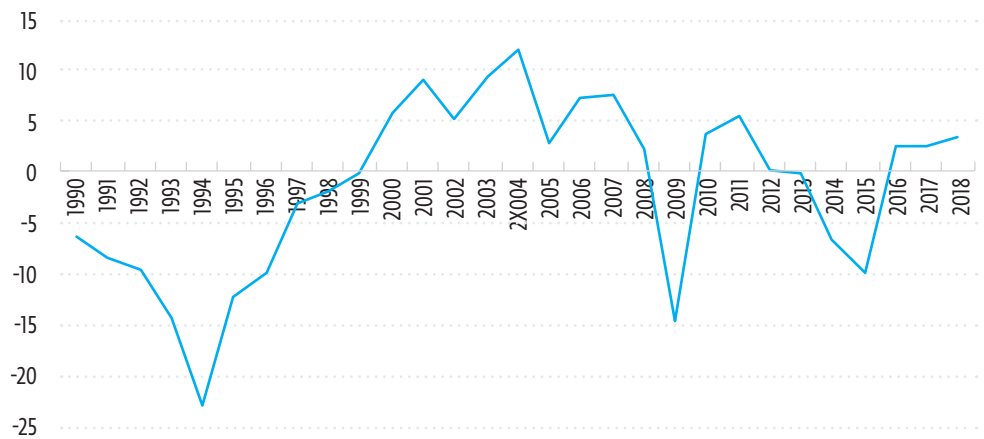
Ukraine has taken important steps to improve the business environment in which the private sector operates. Recent reforms include improvements in dealing with construction permits, making it easier to obtain access to electricity, registering property, protecting minority investors, improving access to credit, and trading across borders. The start of the provisional application, in January 2016, of the Deep and Comprehensive Free Trade Area (DCFTA), which forms part of the Association Agreement between Ukraine and the European Union (EU) signed in June 2014, has given further impetus to—and underscored the importance of—the modernization agenda.

Despite such gains, Ukraine's transition into a market-driven economy remains incomplete, holding back economic growth. Ukraine has experienced a dramatic transformation since independence from the Soviet Union, but remaining elements from the old economic system and powerful vested interests represent a drag on economic growth. The state continues to be an outsized economic player and retains control of a substantial share of productive assets.<sup>2</sup> In addition, while important improvements were achieved in the business climate, Ukraine stills trails its neighbors on resolving insolvency, getting electricity, and trading across borders, which are relevant constraints to the growth of private sector investment.

Indeed, Ukraine's economic growth has been modest and volatile and needs to be accelerated in a sustainable way to converge to the income levels of the European Union and of other peers that had similar levels at the beginning of the 1990s. After the strong economic contraction of the 1990s, the average annual gross domestic product (GDP) growth rate was 2.2 percent over the 2000–2018 period. Not only has GDP growth been modest, but it has also been very volatile, with strong expansions followed by deep recessions and marked macroeconomic instability. In the past four years, GDP growth has been more stable and averaged 3 percent. From 2001 to 2008, the country experienced an economic expansion, growing at 7 percent per year, mostly driven by favorable external conditions and positive terms of trade. The global financial crisis brought the expansion period to an end, revealing the fragile nature of the growth experienced over the previous seven years and the need to accelerate the pace of reforms to promote structural transformation and sustainable growth. Economic recovery after the crisis came to a halt with the outbreak of the conflict in eastern Ukraine (2014–15) that followed the Euromaidan revolution, with a cumulative contraction of 16 percent over the period (figure ES.1). During 2014–15, the hryvnia depreciated by 70 percent, the fiscal deficit widened, and public debt nearly doubled. The financial system was hit by an outflow of deposits and an increase in the number of nonperforming loans (NPLs). The authorities responded shortly after the crisis with timely and decisive reforms that helped stabilize the economy and address the structural imbalances, and the economy began to recover in 2016. However, the economic and political crises caused the deterioration of poverty indicators, losing the poverty-reduction momentum gained during the years of high economic growth. At the current average GDP growth rate of 3 percent, it would take Ukraine 50 years to reach Poland's current income levels—a stark call to accelerate the transition from an old-growth model based on legacy industries, commodity exports, and a predominant focus on the Commonwealth of Independent States (CIS) market.

Since 2015, the economy has shown positive signs of structural realignment, but important challenges remain. Improving productivity and increasing investment in the local economy remain critical elements to accelerate growth. Debt overhang, a legacy of the global financial crisis, continues to cripple private and state-owned enterprises, especially those exposed to currency risk during the dramatic depreciation of the hryvnia (World Bank Group 2019a). The country has been unable to compete with its neighbors in FDI attraction, occupying the last position in FDI stock per capita among emerging European countries.<sup>3</sup> In parallel, the increasing public sector’s demand for domestic credit has crowded out credit for private enterprises, stifling real sector activity (World Bank Group 2019a). Slower growth in the supply of labor, resulting from a demographic slowdown and emigration to neighboring countries, further increases the importance of boosting productivity and capital accumulation.

**FIGURE ES.1 UKRAINE GROWTH IN GROSS DOMESTIC PRODUCT (%), 1990–2018**



Source: World Bank, "World Development Indicators."

**Accelerating economic growth will depend on the implementation of key structural reforms and the consolidation of macroeconomic stability to foster investment and productivity growth.** Long-running structural challenges have significantly lowered the potential growth rate of the economy. For any sustained growth acceleration, supply side reforms—such as those highlighted by the CPSD—are needed. Otherwise, the economy runs risks of overheating very quickly as output gaps will close very quickly in the rebound. GDP growth reached 3.2 percent in 2019, driven by agriculture and sectors dependent on domestic consumption, while manufacturing and investment growth remained weak. Growth could be accelerated up to 4 percent if progress is achieved in three key areas: (a) attract private investment into tradable sectors by establishing a transparent market for agricultural land, demonopolizing key sectors, and strengthening antimonopoly policy and enforcement, privatizing state-owned enterprises, and tackling corruption; (b) increase the efficiency and growth of bank lending to the corporate sector by completing the reform of state-owned banks and reducing NPLs; and (c) safeguard macroeconomic stability to continue reducing inflation, interest rates, and public debt (World Bank 2019b).

**The COVID-19 outbreak poses additional challenges to the goal of achieving higher and more sustainable economic growth.** Indeed, COVID-19 will abruptly interrupt the recent growth trend experienced by the country. Before the pandemic, GDP growth projections suggested a gradual acceleration of GDP growth rates from 3.7 percent in 2020 to 4.2 percent in 2022 (World Bank 2020b). At present, COVID-19 is affecting Ukraine through multiple channels. First, the lockdown measures to curb the epidemiological curve have hit economic activity hard. Between February and May 2020, industrial production dropped by 32 percent and retail sales by 17 percent. Second, the global economic slowdown and the disruption of trade and global value chains are expected to affect the country's manufacturing exports, while the commodity price shock will also shrink the country's agricultural exports. Third, COVID-19 also found the country in a still fragile macroeconomic position, which, in a context of heightened risk aversion in global financial markets, will undermine the government's ability to adopt countercyclical fiscal and monetary policies. Indeed, the outbreak has substantially worsened Ukraine's growth prospects in the short term. According to the World Bank's Global Economic Prospects of June 2020 (World Bank 2020c), the country's GDP will contract by 3.5 percent and is expected to grow by 3 percent in 2021 and 4 percent in 2022.<sup>4</sup>

**Prospects for a quick and robust rebound in economic growth from the COVID-19 economic downturn are tied to increasing the role of the private sector in the economy.** While the COVID-19 pandemic imposes a heavy toll on the country's economic growth prospects, it also opens opportunities for Ukraine's private sector. COVID-19 found Ukraine with limited fiscal space to attenuate its negative impacts. Related emergency expenditure pressures in health, social protection, and support to firms will likely increase government fiscal deficits and debt and further squeeze the fiscal space. In a context of reduced room to maneuver for government stimulus policies, expanding the contribution of the private sector to economic growth becomes critical for a quick growth recovery.

**The CPSD assesses options for fostering the development of the private sector in three sectors of the economy that can facilitate a swift recovery in economic growth.** The recommendations presented by the CPSD would help mitigate some of the negative impacts of COVID-19 and support higher and more sustainable economic growth. In agriculture, global markets for staples remain well supplied and food prices remain relatively stable, with projections suggesting sufficiency into 2020–21 due to good harvests this year (World Bank 2020b). However, risks to food safety remain in many countries because of widespread income losses and disruption in domestic food supply chains. Therefore, in the short term, country priority needs to contain hindrances to the production, distribution, and logistics of food, taking actions such as ensuring access to inputs to farmers for the next season and promoting innovations to increase future productivity. Ukraine should leverage this moment to further strengthen its position in agriculture by supporting the development of land markets and promoting innovative climate-smart technologies that could improve agricultural productivity.

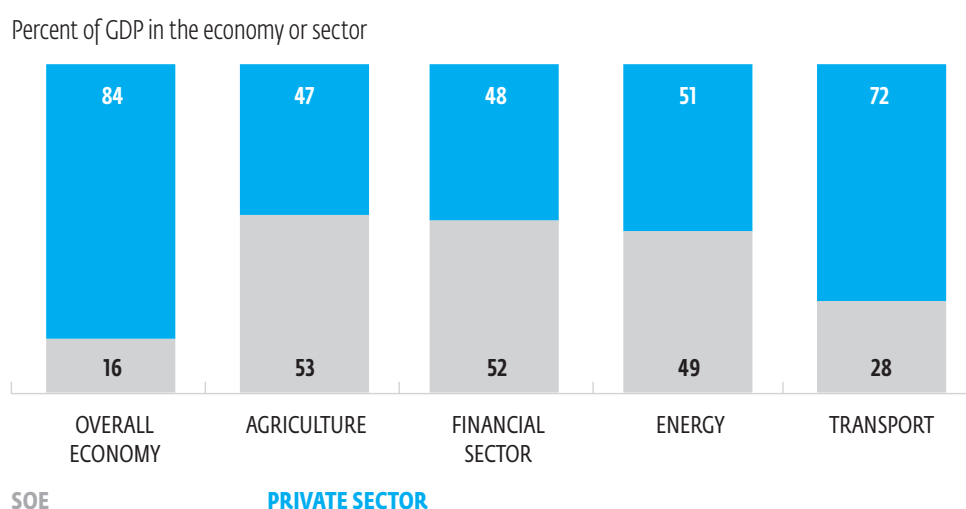
At the same time, the disruption of global value chains (GVCs) caused by the extensive lockdown and travel restrictions has led some observers to argue that the need to increase the resilience of global production networks will lead to efforts to reduce an excessive geographic concentration of suppliers and to diversify the location of intermediate production activities. Near-shoring and the potential reconfiguration of GVCs could potentially create opportunities for Ukraine and other countries in Europe's periphery, although there is at present a high level of uncertainty about the ultimate shape the GVCs will adopt in a post-COVID-19 global scenario. In any case, expanding Ukraine's participation in GVCs and increasing domestic value added are policy objectives that continue to be critical to increase productivity and accelerate growth. This changing environment further provides an opportunity for Ukraine to accelerate the participation of the private sector in provision of health care services, including fast-tracking policies and strategies for use of e-health services.<sup>5</sup> Given the spotlight on the ability of the countries' health systems to address the challenges brought by COVID-19, the increasing participation of the private sector in the provision of health care services seems to be instrumental to leveraging the ability of these systems to respond quickly and efficiently to future health shocks and to improve the quality of health care services overall. Increasing pressures on government health budgets related to the aging of the population are now exacerbated by COVID-19. In a context of hard budget constraints and increasing health expenditure trends, efficiency gains in service delivery and the increasing role of private sector investments and management in the health care system are more critical than ever.

## KEY CROSS-CUTTING CONSTRAINTS FOR PRIVATE SECTOR DEVELOPMENT

**Lack of competition in key markets and a large state footprint inhibit private sector activity in Ukraine.** Increasing private sector investment and attracting more FDI will require an improved competition environment, the elimination of monopolies in contestable sectors, and a commitment to strengthen the rule of law. State-owned enterprises (SOEs) continue to represent a significant share of Ukraine's economy and play a dominant role in sectors such as transport, utilities, energy, and finance (figure ES.2). SOEs are present in 28 economic sectors, and their market share exceeds 50 percent in at least half of them (Pop and others 2019), stretching beyond network industries in which governments traditionally play an active role. Together, SOEs and politically connected firms are the main players in all productivity-enabling sectors of the Ukrainian economy. SOEs and politically connected firms are less productive and exhibit weaker corporate governance than unconnected private firms. Anticompetitive conditions result in additional costs and lower the expected returns on investment, making the Ukrainian market less attractive for both foreign and domestic firms (Smits and others 2019). Only a small number of strategic SOEs should remain under state ownership, and those that do remain require further improvements in their governance, including the appointment of independent supervisory boards (Smits and others 2019).

Improvements to the following cross-cutting factors would be critical to enabling a more competitive environment: (a) ensure a competitively neutral environment that minimizes the policy-based advantages of SOEs and politically connected firms; (b) improve the predictability, consistency, and transparency of the regulatory framework, both in principle and in its application; and (c) support the development of robust, independent market institutions.

**FIGURE ES.2 ESTIMATED SHARE OF STATE-OWNED ENTERPRISES IN THE UKRAINE ECONOMY, 2016**



Source: World Bank staff based on data from Ukraine's Ministry of Economic Development and Trade.  
Note: GDP = gross domestic product; SOE = state-owned enterprise.

**A weak financial sector has contributed to deficient financial intermediation and limited access to finance.** Efficient financial intermediation and credit growth have been constrained by a high share of nonperforming loans in the system, the legacy of the global financial crisis, and the capture of state-owned banks (SOBs) by strong vested interests. The credit market could be reactivated with the implementation of regulations in place that require write-offs of fully provisioned NPLs. Measures to clean up NPLs should be coupled with reforms to strengthen the corporate governance of SOBs and the corporate insolvency framework. Steps to modernize SOBs and guarantee their independence include the approval of the state-owned bank law in 2019, intended to strengthen the independence of bank management. In May 2020, the Ukrainian Parliament approved legislation to strengthen the bank resolution framework.

**Inadequate infrastructure and energy market distortions hinder competitiveness.**

Ukraine ranks poorly on quality-of-infrastructure indicators across most sectors, with the exception of railways. Despite recent improvements in the regulatory framework, private sector participation remains limited and is a key constraining factor in two of the three sectors that are the focus of this report. Improving the performance of the transport sector is paramount to strengthening the competitiveness of Ukrainian agricultural and manufacturing exports, attracting FDI, and increasing the country's participation in GVCs. Opportunity areas include the adoption of international rules around licenses and registration, measures to improve operational efficiency in ports, use of increased capacity of inland waterways, and investments in multimodal logistics centers and advanced information technology (IT) systems. Similarly, the electricity sector is inefficient and suffers from declining reliability and low investment. Positive signs of improvement in these areas include the government's expressed commitment to address ownership of gas transit and production by 2020. Moreover, the plan to unbundle the gas sector and establish a wholesale electricity market is expected to increase efficiency, sector transparency, and competition, and to promote the awareness and engagement of energy users. More needs to be done to build on these improvements if the country is to realize its potential. Opportunities exist for public-private partnerships (PPP) across infrastructure sectors and health. Further, while the government is strengthening the regulatory framework around PPPs, there continue to be several issues that need addressing—that is, lack of cohesive sector policies and regulations, lack of a central registry of PPPs, lack of capacity to implement and manage projects, and lack of transparent monitoring of the fiscal implications of PPPs.

**Ukraine has achieved higher educational outcomes than its peers with similar per capita income, but labor market rigidities have hampered economic dynamism.**

Historically, Ukraine has benefited from a strong education system that has propelled the country's economic and social development (Gresham and Ambasz 2019). Ukraine boasts one of the highest education attainment rates in the world, including the largest engineering force in Central and Eastern Europe, with 16,000 IT and 130,000 engineering graduates each year (Ukraine Invest 2020). The country ranks 50 out of 157 countries in the WBG's Human Capital Index 2017.<sup>6</sup> However, the skills supplied by the education system do not match those demanded by the expanding sectors of the economy (Gresham and Ambasz 2019). The steady migration to neighboring countries and high youth unemployment rates (nearly twice the overall country average)<sup>7</sup> offer further evidence of a mismatch between the demand and supply of human capital skills. The lack of overall investment has impeded capital formation and job creation, contributing to stagnant labor productivity. Industrial value added per worker in 2018 was at 75 percent of its 2007 level.<sup>8</sup>

Table ES.1 provides examples of how these cross-cutting constraints affect specific sectors.

**TABLE ES.1 CROSS-CUTTING CONSTRAINTS ON SELECTED SECTORS, UKRAINE**

SECTOR	CONSTRAINT			
	COMPETITION AND BUILDING A LEVEL PLAYING FIELD FOR THE PRIVATE SECTOR	ACCESS TO FINANCE	INFRASTRUCTURE	EDUCATION AND SKILLS
<b>Climate-smart agriculture (CSA) and land market reform</b>	State support is ineffective and potentially distortive.	Land laws, for the last two decades and up to very recently (end of March 2020), have been restrictive on the use of land for access to finance. Lack of finance is also a key constraint for CSA, specifically because of the poor enabling environment for climate finance.	Irrigation systems are inadequate and inefficient, and need to be replaced by climate-smart alternatives. Costly transport and logistics networks also add to carbon emissions. Ports are inadequate to handle bulky agriculture inputs like fertilizers.	Scarce support is available on research and extension facilities for CSA; lack of skills among agronomists and research and development personnel and lack of awareness among users (farmers/firms).
<b>Manufacturing GVCs</b>	The legacy of SOEs and weak competition policy hamper the ability of companies to innovate and compete in international markets.	Poor access to credit reduces the dynamism of the private sector. Lack of export financing hinders the globalization of domestic firms.	Transport and logistics systems are inefficient and uncompetitive, unnecessarily increasing the cost of doing business in Ukraine.	Labor productivity is hindered by skills mismatches. The IT sector is being challenged by the out-migration of qualified workers to the EU.
<b>Health care</b>	Regulatory environment for PPPs is weak and nontransparent; e-health regulations are underdeveloped; sanitary standards are opaque and complex. A systemic, integrated approach to promoting and monitoring service outcomes is lacking. Engagement with the private sector is limited.	Limited access to long-term financing instruments, shallow pool of equity financing, and unattractive lending terms are available for long-term projects in the sector.		Health service skills in areas such as ambulatory treatment, preventive care of NCDs, nursing, and management are lacking. There is a high prevalence of "moonlighting" due to low state salaries for public sector health professionals.

Note: CSA = climate-smart agriculture; EU = European Union; GVCs = global value chains; IT = information technology; NCDs = noncommunicable diseases; PPPs = public-private partnerships; SOEs = state-owned enterprises.

## SECTOR ASSESSMENTS AND RECOMMENDATIONS

Upgrading the lackluster economic growth of the past requires a combination of measures to tackle these cross-cutting constraints, as well as interventions to address sector-specific barriers to private sector development. The latter should be guided by efforts to leverage Ukraine’s rich natural and human capital endowments, a source of comparative advantage in specific economic sectors. The three CPSD sector assessments were chosen with four main criteria in mind: (a) to keep in focus ongoing government of Ukraine reforms that will pave the way for improved sector competitiveness; (b) to strengthen areas in which the country exhibits comparative advantage; (c) to distill where future markets will emerge through extensive consultations with the private sector and other stakeholders; and (d) to fill in knowledge gaps in areas with considerable potential for future private sector engagement in newly created markets. The selection of these sectors does not preclude the importance of others but aims to exemplify private sector investment viability and touch on solutions that could be relevant across the broader economy.

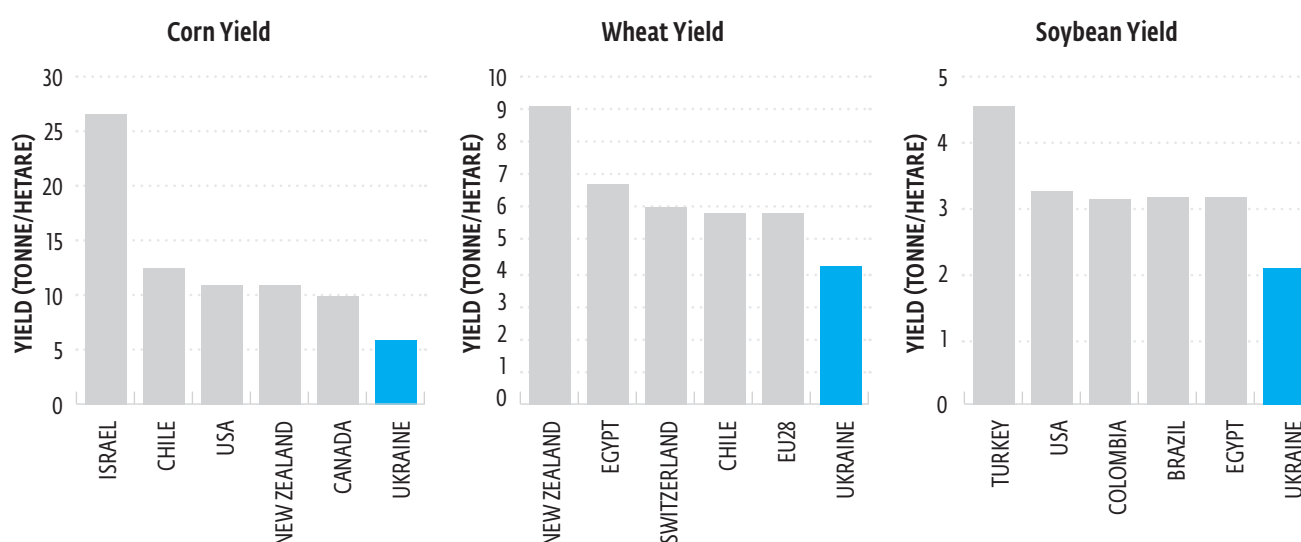
### Improving agricultural productivity and exports through the adoption of climate-smart technologies and land market reform

The agriculture sector accounts for the largest share in the country’s export basket—produced predominantly by the private sector—and will continue to see significant export demand increases in the future. The dominant share of agricultural production (about 66 percent) is exported—primarily wheat and corn. For the period 2015–17, agricultural exports averaged about US\$15.8 billion (44 percent of the country’s export earnings), making the sector the largest source of export revenue (State Statistics Service of Ukraine 2018). In 2019, Ukraine was the fifth largest exporter globally in wheat and fourth-largest global corn exporter, with an 11 percent and 18 percent share respectively of the world’s total.<sup>9</sup> Oilseed is the second-largest subsector, with stable production flows and an expanding crushing industry, which has made Ukraine the largest exporter of sunflower oil in the world. The global demand for agricultural products is projected to rise significantly by 2050, driven by population growth, urbanization, and changes in dietary mix. The demand for cereals and vegetable oils is expected to be particularly high—cereal demand is projected to increase by a third, reaching 3 billion tons by 2050. Further expanding production is possible by increasing yields, which are far below global standards. Yields in cereals and oilseeds are in the range of 16 to 53 percent of those of world leaders in these crops (figure ES.3).



Climate change poses a key risk to agricultural productivity over and above the adverse impacts of the structural inefficiencies. Changes in weather patterns resulting in temperature and precipitation variances are already showing evidence of reducing production and yields. The 2009 drought reduced wheat production by 30 percent. The increasing frequency of drought events (once every three years on average)<sup>10</sup> has exacerbated changes in river runoff that may decrease by 30–50 percent in any given year. This is important given producers' high dependency on natural precipitation and is a key contributing factor to already high production volatility, with wheat production fluctuating by as much as 20 percent and corn by almost 25 percent every three years (Fileccia, Guadagni, and Hovhera 2014). Estimates from the Ukrainian Agribusiness Club (UCAB) show that climate change may result in harvest losses of up to 40 to 60 percent.<sup>11</sup>

**FIGURE ES.3 UKRAINE YIELDS LAG MARKET LEADERS, 2017**



Source: OECD and FAO 2019.

Note: EU 28 = member states of the European Union in 2018.

**Significant opportunities exist for the growth of the private agricultural sector in Ukraine via climate-smart agriculture (CSA) technologies.** Implementing CSA technologies could improve yield/productivity and revenue at the farm/enterprise level, reduce greenhouse gas emissions for the country, and improve long-term resilience of agriculture. Analysis of the state of agricultural production in Ukraine and interviews with stakeholders resulted in the identification of adoption of seven CSA technologies with the potential of increasing agricultural competitiveness: fertilizers, crop protection chemicals, crop rotation, irrigation, agritech/data and planning, seeds, and no-till. Modeling of the potential financial and economic impacts of adopting these technologies in Ukraine shows reductions in average carbon dioxide emissions per hectare, lower costs, and additional revenues per year. Adoption of climate-smart fertilizer, no-till practices and agritech/data tools show the highest returns among the seven technologies listed. If the modeling is credible, then implementation would require an investment of approximately US\$1.7 billion and return additional revenue of US\$11 billion, and would create a carbon reduction of approximately 11 million metric tons carbon dioxide-equivalent (Carbon Trust and UkrAgroConsult 2019).

However, there are key constraints to adoption of CSA practices that could be addressed through some key interventions. Large Ukrainian agriholdings are already implementing global best practices of CSA technology, providing local examples of these practices in use. However, a dominant share of agricultural production is carried out by about 45,000 small and medium farm enterprises, which face significant barriers to implementing the practices. These include lack of access to finance, knowledge, and skills. In addition, certain regulatory obstacles hinder availability of inputs that are important for sustainable agricultural practices.

Specific short-term recommendations include the following: (a) amending the law on pesticides and agrochemicals to formally recognize the European conformity list of fertilizers and also ease registration and testing requirements to import EU-approved fertilizers; (b) more broadly, align the state support in agriculture with the EU's Common Agricultural Policy; (c) promote a new law for the establishment of water user organizations (WUO), reform water tariffs, reform the legal and regulatory framework for issuing groundwater-abstraction permits, all to support modern irrigation systems; (d) develop public sector expertise by establishing research institutions; (e) enable a carbon market-enabling environment, including establishing climate standards as a means to promote climate finance and more broadly ease access to credit through (f) passing laws on crop receipts and state support of agricultural insurance.

Just recently, at the end of March 2020, the government of Ukraine approved a partial lift of the moratorium on land sales, which helps address the problem of disincentive to invest on fragmented land sizes. Initial estimates suggest that once the moratorium on land sales is fully lifted and in full effect (implementation is set to begin in July 2021), this would have an impact on incremental economic growth of 0.9 percent to about 2.2 percent per year over a 5-year period. Tackling the land reform is a key priority to this agenda, with regulations on landownership for the past two decades creating a significant disincentive to invest in productivity-enhancing processes and technologies, such as CSA practices. The new law currently allows only for citizens of Ukraine, and for a specific land size (no more than 100 hectares), the option to trade; there is the potential of extending this option to include legal entities owned by Ukrainians and foreign investors, possibly under a nationwide referendum in the future, to trade larger plots (up to 10,000 hectares) in 2024.<sup>12</sup>

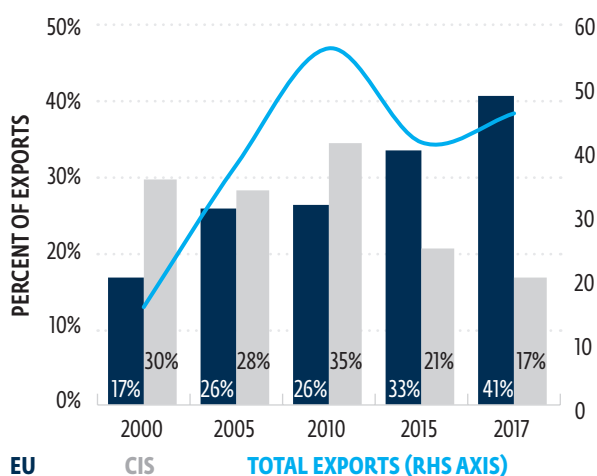
### Connecting Ukraine to Europe's manufacturing global value chains

Given its proximity to the EU market and the relative breadth and depth of the economy, Ukraine stands to gain from better integration into GVCs. The breakdown of production stages across borders allows countries to specialize in activities in which they have a comparative advantage and to exploit economies of scale. GVCs serve as a conduit to transfer new skills to workers, innovative technologies to local firms, and improved managerial practices to local entrepreneurs, thereby boosting economic growth. Greater participation in global markets also fosters competition in the domestic economy, reducing the market power of large incumbent firms. While a country's GVC participation is the result of the interaction of factor endowments, geography, and institutions, it is also the result of deliberate public policies to expand factor endowments, enlarge export markets, overcome geographical barriers, and provide certainty to economic agents (World Bank 2019b).

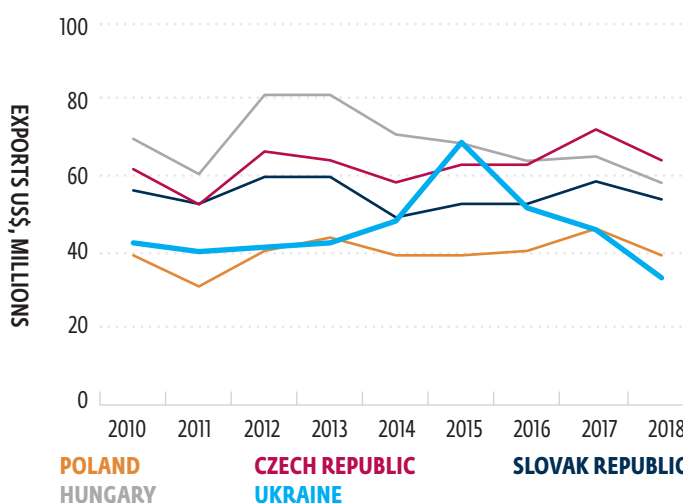
Trade facilitation barriers, a limited range of efficiency-seeking FDI inflows, and constrained domestic links have diminished Ukraine's success in linking up to European value chains and have held back the country from achieving dynamic and sustainable growth (Smits and others 2019). Over the past decade, Ukraine has been caught between receding access to supply-chain trade with the Russian Federation, in the wake of the conflict in eastern Ukraine, and a yet-underdeveloped access to supply-chain trade with countries in the European Union (figure ES.4). Moreover, while Ukraine's exports to the European Union have been rising over the past decade—a trend that is expected to continue thanks to the recently instituted DCFTA between Ukraine and the EU—its exports to the EU are less complex, compared with both those of other countries in Eastern Europe and Ukraine's traditional export basket to the Commonwealth of Independent States. As a result, Ukrainian exports have trailed those of comparator countries in Eastern Europe, both in terms of volume and complexity. Similarly, Ukraine's FDI inflow figures are below the country's investment potential. FDI inflows to Ukraine reached their lowest level in a decade in 2015, in large part because of the military conflict, and have not returned to their pre-2015 levels. Moreover, efficiency-seeking FDI, a key driver for countries to integrate into the global economy and move up the value chain, is low.

**FIGURE ES.4 EXPORTS AND FOREIGN DIRECT INVESTMENT**

**a. Exports to CIS and EU countries, percent of total exports, 2000-2017**



**b. FDI inward stock, percent of GDP, 2010-2018**



Source: Exports: World Bank Group staff based on CEPII-BACI International Trade Database. FDI: UNCTAD 2019; UNCTAD World Investment Report 2014–19; tradingeconomics.com (World Bank). Data for Poland, Slovak Republic, Hungary, and Czech Republic based on OECD 2019, FDI stocks (indicator).

Note: CIS = Commonwealth of Independent States; EU = European Union; FDI = foreign direct investment GDP = gross domestic product.

**The cases of two newly emerging GVC activities in Ukraine—automotive components and IT services—illustrate well that the country will need concerted policy and institutional support to deepen and broaden participation in global production networks.** Ukraine has attracted several automotive component suppliers over the past decade, mostly labor-intensive manufacturing and assembly activities, as European automakers shift assembly of budget models east to take advantage of lower labor costs. Production of automotive components (such as ignition wiring sets) grew from US\$21 million in 2000 to US\$1.2 billion in 2017 and became one of the fastest-growing product categories of Ukraine’s exports in recent years. A cluster of automotive suppliers located in western Ukraine hosts over 30 transnational corporations. This is a promising start, but Ukraine is now concentrated in the lowest-value-added segments of the automotive value chain and will need to offer more than just cost-efficient labor to move beyond this point. At the same time, Ukraine has become a competitive destination for IT outsourcing. In the past five years, the number of digital FDI projects in Europe has more than doubled, driven by US business, which was responsible for 37 percent of digital FDI projects in Europe last year. IT service exports during 2015–18 have shown a 19 percent compound annual growth rate and represented the second-largest share of exports in 2018. With lower operating costs compared with other countries in Western Europe, this makes the sector a hotspot in merger and acquisition activity: indeed, the region saw over 70 merger and acquisition transactions between 2015 and 2018.<sup>13</sup> In contrast to the automotive sector, Ukraine’s IT sector has captured an increasing share of value added, with exports ranging from code programming to testing, new product development, design, and research and development (R&D). But the dynamism of Ukraine’s IT sector is being challenged by the rapid out-migration of qualified workers to neighboring countries in the EU.

**The dilemma for Ukraine is how to attract FDI and increase more sophisticated exports in a world in which GVCs incorporate a growing share of services—such as R&D, design, and marketing—while at the same time leveraging its IT services sector to move to activities within other GVCs to capture a greater share of their value added.** Fortunately, the sector assessment preidentified additional opportunities to increase exports and attract FDI in industries in which GVCs are active: electronics/IT, apparel/textiles, automotive, and machinery and equipment. The assessment thus offers a guide to follow up on the in-depth analyses to help validate specific segments of value chains in which Ukraine could participate and thus design strategies to reap the competitive position of the country and respond to the skills needs and standards requirements of key industries.

Specific recommendations to integrate into GVCs include to (a) improve the rule of law and increase transparency in permitting and procurement, while continuing with the implementation of cross-cutting reforms to improve foreign investors' assessment of the business environment in Ukraine; (b) strengthen the country's investment policy and promotion framework, with a particular focus on sectors with promising prospects to attract investment and increase exports (automotive, machinery and equipment, electronics/IT); (c) build up the entrepreneurial and innovation capabilities of local firms, so that they can participate in GVCs; (d) address existing skills gaps and labor market rigidities; (e) take advantage of the expanded market access to the EU by strengthening trade facilitation, policy, promotion, and support services; and (f) address infrastructure bottlenecks that deter industrial activities and export growth. Industrial infrastructure, such as industrial parks, needs to respond to demand and requires thorough planning and implementation to guarantee that the resources needed—such as labor, land, water, connectivity, electricity, and information and communications technology—are readily available and that the regulatory environment is conducive to private sector investment. Industrial parks must adhere to international best practices—including on eco-industrial parks—ensuring that regulations and procedures do not waste fiscal resources.

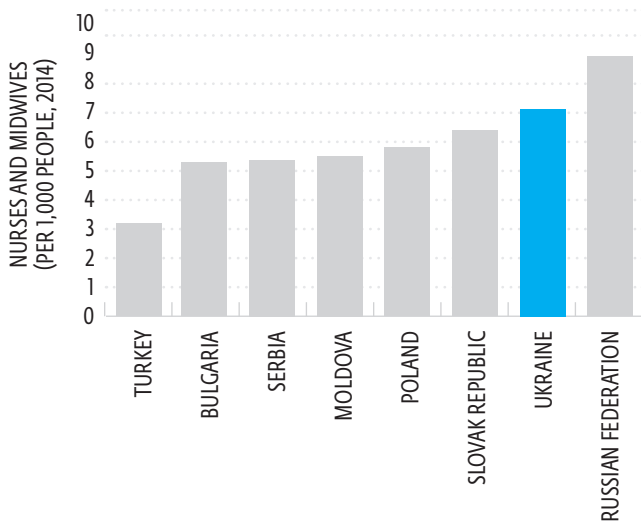
### **Leveraging the private sector's contribution to support health care reforms**

**Ukrainians have among the worst health outcomes in Europe.** Life expectancy at birth is 72 years (2017), more than 10 years less than the EU average; the adult mortality rate is significantly higher than the average for Europe; and over 25 percent of the adult population, 18 to 65 years of age, has a chronic disease or condition. Poor health affects productivity and economic growth. Ukraine has one of the highest rates of disability due to noncommunicable diseases (NCDs) in Eastern Europe and Central Asia.

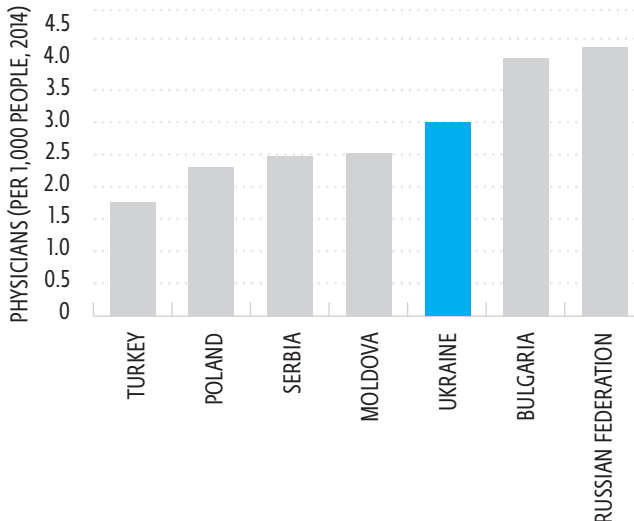
**These poor outcomes are, in part, a consequence of the lack of public and private investment in modernizing the health care system over the past 20 years.** The system suffers from a legacy of Soviet-era systems and infrastructure. Curative services are prioritized over preventive ones, hospitals over ambulatory services, and specialists over primary health care. This inefficient allocation of public resources in the sector has resulted in an outdated system with an excessively large hospital sector. Expenditures on network facilities and staff account for over 60 percent of the state budget, with little left for basic services and investments in infrastructure modernization. Overall, the country's health outcomes are far below what one would expect given the relatively high numbers of doctors, nurses, and hospital beds. (figure ES.5)

**FIGURE ES.5 UKRAINE'S HEALTH WORKFORCE AND INFRASTRUCTURE, COMPARED WITH NEIGHBORING COUNTRIES, VARIOUS YEARS**

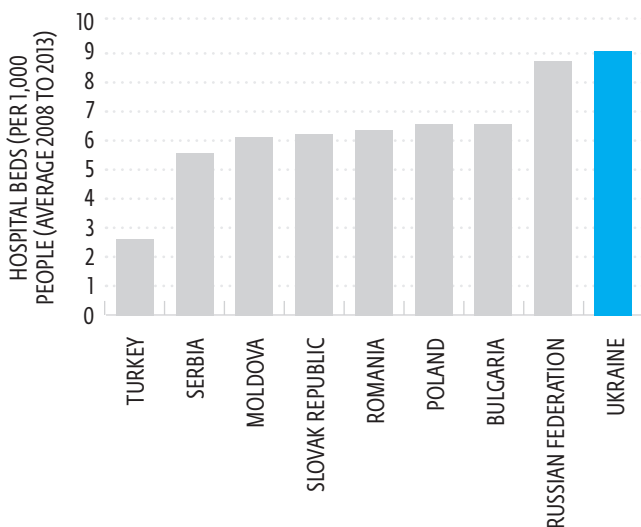
**a. Number of nurses and midwives**



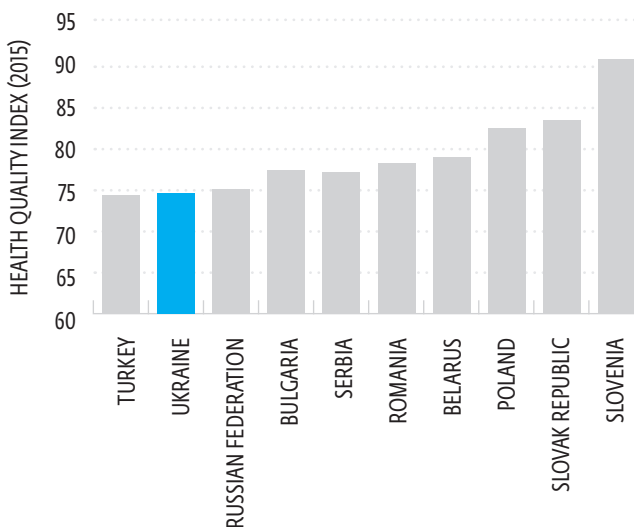
**b. Number of doctors**



**c. Number of hospital beds**



**d. Health outcomes**



Source: World Bank, "World Development Indicators."

**The government recognizes these constraints and, over the last few years, has implemented a comprehensive health sector reform package that will require a paradigm shift in demand and supply of health services.** The enactment of the health reform bill in 2017 included reorganization of primary care and the establishment of a state procurement agency (the National Health Service of Ukraine, or NHSU, as purchaser of services) to procure private sector services. The reform represents an opportunity to modernize and transform the health care sector (a) from a hospital-centric treatment model to an efficient decentralized system with renewed focus on primary health care and health promotion; (b) from input- to output-based strategic financing, while ensuring outcomes; (c) from the so-called free-care-for-all system with significant informal payments to a transparent benefits package; and (d) from a heavily curative approach to a functional public health system.

**The role of the private sector in the provision of health care services has thus far been limited because of the lack of a concrete vision and several barriers to participation.**

The private sector's share in the health care market is marginal, at just about 3 percent of health care expenditures in the country. This role has been restricted to pharmacies, diagnostic facilities, and private practices that provide services directly to people, with virtually no outsourcing from public facilities. Key barriers to increased private sector participation are a weak PPP framework, limited financing opportunities, minimal public-private dialogue (PPD), e-health regulatory gaps, poor quality of service, poor governance, and an underdeveloped private medical insurance (PMI) market. Lack of skills—specifically among medical, nursing, and management staff—is another key constraint. This deficiency is partly driven by professional education that is highly theoretical and lacks practical training.

**Significant opportunities exist for the growth of the private health sector in Ukraine.**

Private sector participation is possible with public sector initiative if contracting mechanisms can be improved. Though nascent, some early public-private activity has started in primary health care, both formal and informal. About 100 privately owned primary health care practices have signed contracts with the NHSU. More transparent public procurement has improved prospects for private suppliers of medicines and medical equipment and has improved efficiency. Centralized procurement, outsourced to international organizations, has generated savings of about 39 percent for some essential drugs. Stakeholder consultations suggested that the role of the private sector was critical as an “enabler of reform”—that is, as a means to introduce new innovations, technologies, and techniques. E-health services offer an opportunity for the private sector, if the government should develop a comprehensive strategy. Finally, in the pharmaceuticals sector, there is an opportunity for the country to move to generic drug manufacturing as patents of global brands expire.

**Specific recommendations to unlock these opportunities and enable private investment include efforts to** (a) update the standards framework by adopting the norms for facilities, drugs manufacturing, and advice on quality assurance and control within contracts with health service providers; (b) decrease barriers for imports and certification of equipment and goods; (c) remove duplication and overlap between different state agencies; (d) support e-health regulation; (e) strengthen the PPP framework by improving the contract management system and the process for managing the fiscal implications of PPPs; (f) build capacity for understanding and designing PPPs among key stakeholders; and (g) strengthen PPD through a proper forum, ensuring that vested interests are curtailed.

## PRIORITY RECOMMENDATIONS AND KEY POLICY ACTIONS

Table ES.2 summarizes the Ukraine CPSD's priority recommendations and key policy actions.

**TABLE ES.2 PRIORITY RECOMMENDATIONS AND KEY POLICY ACTIONS FOR UKRAINE**

PRIORITY RECOMMENDATIONS	KEY POLICY ACTIONS
<b>1. CLIMATE-SMART AGRICULTURE (CSA)</b>	
<p><b>1.1.</b> Promote adoption of climate-smart technologies in agriculture in a market-based manner.</p> <p><b>Who:</b> Government of Ukraine</p> <p><b>How:</b> tariffs, regulations, no incentives</p>	<p><i>Short-term actions</i> (next 1–2 years):</p> <ul style="list-style-type: none"> <li>• Revise regulations/introduce reform to allow the importation of modern fertilizers, especially from the EU: Amend the Law of Ukraine on Pesticides and Agrochemicals to formally recognize the European conformity list of fertilizers and draft regulations to remove registration and testing requirements to import EU-approved fertilizers.</li> <li>• Analyze tariff structures on imports of CSA with possible reform of rationalization/reduction technologies.</li> <li>• Assess the current state incentive system for agriculture to analyze transparency and efficiency, and to align with EU agricultural policy.</li> <li>• On irrigation, (a) promote a new law for the establishment of a WUO; (b) reform water tariffs for irrigation and drainage service delivery; (c) reform the legal and regulatory framework for issuing groundwater-abstraction permits to agricultural water users and for establishing a web-based permit administration system.</li> </ul>
<p><b>1.2.</b> Improve data availability and information on solutions and best practices.</p> <p><b>Who:</b> Government of Ukraine</p> <p><b>How:</b> capacity, new research institution, awareness</p>	<p><i>Short-term actions</i> (next 1–2 years):</p> <ul style="list-style-type: none"> <li>• Explore establishing a research institution for CSA technologies to provide data, information, and best practices, or build the capacity of existing institutions, or both.</li> <li>• Advise financial institutions on CSA opportunities, build capacity to assess risks and benefits for lending, and develop financial products for CSA practices.</li> <li>• Support public and private advisory services for irrigated agriculture based on science, knowledge, and information and secure long-term funding.</li> </ul>
<p><b>1.3.</b> Help strengthen the market for climate finance/access to credit for CSA practices.</p> <p><b>Who:</b> Government of Ukraine/private sector</p> <p><b>How:</b> standards, financial sector capacity</p>	<p><i>Short-term actions</i> (next 1–2 years):</p> <ul style="list-style-type: none"> <li>• Establish climate standards and enable carbon accounting principles.</li> <li>• Support expansion of agrifinancing through (a) passing the law on crop receipts, currently tabled in Parliament; (b) building the capacity of stakeholders to implement the crop receipts law in the public sector, financial sector, and among farmers and small and medium enterprises (SMEs); (d) passing the law on the state support of agriculture insurance.</li> </ul> <p><i>Medium-term actions</i> (3–5 years)</p> <ul style="list-style-type: none"> <li>• Advise financial institutions on CSA opportunities, build capacity to assess risks and benefits for lending, develop financial products for CSA practices.</li> </ul>



## 2. LAND MARKET REFORM

Package of reforms including:

- 2.1.** Expand land reform on agricultural land sales, to include larger size of plots and business and foreign ownership, and implement measures to improve the transparency of land rights.

**Who:** Government of Ukraine

**How:** legal reform

- 2.2.** Provide landowners with tools to protect their land rights and prevent the concentration of agricultural land in the hands of a few.

**Who:** Government of Ukraine

**How:** capacity/safeguards, awareness

- 2.3.** Implement measures to increase access to credit among agricultural SMEs using land as collateral.

**Who:** private sector, farmers/banks

**How:** training, incentives

*Short-term actions* (next 1–2 years):

- Expand, at the earliest opportunity, the coverage of the recently passed land turnover law (approved by Parliament on March 31, 2020, coming into effect July 1, 2021) to include the sale of agricultural land of any size and allow businesses and foreign investors to trade land.
- Adopt safeguards to prevent the concentration of agriculture.
- Upgrade the technical and operational capacity of the Parliamentary Ombudsman for Human Rights to enable broader protection of land rights.
- Inform and enable landowners to exercise their rights.
- Complete the registration of all state land by 2023, correcting systematic errors in the cadaster.
- Establish local land use plans to fully harness the revenue potential of state land.
- Transfer use or ownership rights for any land that is not already under contract, using transparent electronic auctions.

*Short-term actions* (next 1–2 years):

- Train farmers and banks in how to put together and evaluate viable investment proposals.
- Provide targeted support, such as partial credit guarantees, that can incentivize banks to lend to farmers in SMEs.

### 3. MANUFACTURING GLOBAL VALUE CHAINS (GVCS)

**3.1.** Reform the country's investment policy and institutional framework for promotion.

**Who:** Government of Ukraine

**How:** institutional framework, after-care program, supplier development program, industrial parks

*Short-term actions* (next 1–2 years):

- Strengthen the institutional framework and develop a national strategy for investment policy and promotion with adequate resources (human and financial) and performance-based metrics to evaluate progress toward goals.
- Review Ukraine's international investment agreements (IIAs), benchmarking with a new generation IIAs and EU standards.
- Conduct a comprehensive inventory of investment incentives and benchmark with competing investment locations.
- Design and implement a supplier development program, with emphasis on the industries with a proven track record of deepening economic links in other European countries.

*Medium-term actions* (next 3–5 years):

- Implement an after-care program to encourage reinvestments and scale-ups by existing investors (this will also affect greenfield FDI through follow-on practices common in FDI-dominated value chains).
- Strengthen investment retention and investor grievance management.
- Ensure an adequate supply of serviced industrial parks, as well as other supporting infrastructure, driven by investors' demand and adhering to international best practices—including on eco-industrial parks—to reduce FDI start-up times and costs, ensuring that regulations and procedures do not waste fiscal resources.

**3.2.** Implement industry-specific trade and skills policy reforms to fully leverage the expanded access to the EU market; base them on deep-dive findings.

**Who:** Government of Ukraine

**How:** national quality infrastructure, standards

*Short-term actions* (next 1–2 years):

- Develop and resource a national quality infrastructure strategy aimed at supporting testing, educating on standards, and adopting standards to improve domestic firm integration into GVCs to meet the requirements of export market standards (via FDI links or exports).
- Implement a program to improve the branding of Ukrainian products on export markets.
- Strengthen SME and entrepreneurship development programs by providing export market information, training, and trade support services to local SMEs.

*Medium-term actions* (next 3–5 years):

- Establish/strengthen trade financing instruments.
- Enhance the development of advanced skills by building and upgrading qualification and occupational standards; introduce performance-based incentives to encourage firm-level investments in skills upgrading and on-the-job training.

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#### 4. HEALTH CARE REFORM

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**4.1.** Improve the regulatory environment.

**Who:** Government of Ukraine

**How:** standards, quality assurance

*Short-term actions (next 1–2 years)*

- Update standards to reflect the needs of modern health care.
  - Adopt new versions of building and construction norms.
  - Set standards for drug manufacturing and registration, compliance with bioequivalence.
  - Decrease barriers for imports and certification of equipment and goods from the international market to improve internal competition and efficiency.
- Introduce a clear regulatory oversight framework, including oversight functions and avoiding duplication and overlap between different state bodies.
- Support strengthening and regulation of e-health services.

*Medium term actions (3–5 years)*

- Establish quality assurance, including a National Quality Improvement Strategy, and consider setting up a Quality Accreditation Body.

**4.2.** Introduce formal public-private sector dialogue (PPD).

**Who:** Government of Ukraine/ private sector

**How:** dialogue

*Short-term actions (next 1–2 years)*

- Establish an appropriate forum for PPD and PPPs, ensuring vested interests are contained. Develop a joint strategy between relevant ministries and the private sector.

**4.3.** Support capacity building and upgrading of skills.

**Who:** Government of Ukraine/ private sector

**How:** capacity, skills

*Medium-term actions (3–5 years)*

- Assess current curriculum for undergraduate and postgraduate medicine to identify gaps in skill building in line with global best practices.
- Develop capacity in public and private institutions to understand, assess, and design PPP models.

**4.4.** Strengthen public-private partnerships (PPPs).

*Short-term actions (next 1–2 years)*

- Improve the PPP contract management system and institutionalize a process for assessing, accounting, and disclosing the fiscal implications of PPPs.
  - Enable the potential for PPPs in the future through capacity development for (a) understanding and designing PPP models; (b) identifying gaps the private sector could fill; (c) developing/finalizing PPP legislation; and (d) screening projects and prioritizing a PPP pipeline.
-

FIGURE ES.7 UKRAINE: DEVELOPMENT INDICATORS, 2014–22 (ESTIMATED)

SELECTED INDICATORS	2014	2015	2016	2017	2018	2019E	2020F	2021F	2022F
GDP at Market Prices, US\$ mn	133,504	91,031	93,270	112,603	124,647	139,085	139,586	147,993	150,687
Real GDP growth, %	-6.6	-9.8	2.3	2.5	3.3	3.2	-5.5	1.5	3.1
Real Total Consumption growth, %	-6.4	-15.7	1.4	7.2	6.9	8.2	-5.3	2.3	3.3
Real Private Consumption growth, %	-8.3	-19.7	1.8	8.4	8.9	11.9	-7.3	3.2	4.1
Real Gross Investment growth, %	-24.0	-9.2	20.1	18.4	14.3	14.2	-15.0	8.2	5.2
Real Gross Private Investment growth, %	-22.3	-16.7	16.8	18.0	8.3	16.2	-22.5	7.5	1.3
Real Exports of Goods & Services growth, %	-14.2	-13.2	-1.6	3.6	-1.6	6.7	-4.5	1.7	3.1
Real Imports of Goods & Services growth, %	-22.1	-17.9	8.4	12.8	3.2	6.3	-9.8	6.6	5.0
Total Consumption, % GDP	90.1	85.2	83.9	85.0	87.2	87.7	86.0	87.2	86.4
Total Private Consumption, % GDP	70.6	66.2	64.5	63.8	65.6	68.4	65.0	66.3	66.0
Gross Investment, % GDP	14.1	13.5	15.1	15.6	16.7	17.9	15.8	17.1	18.0
Gross Private Investment, % GDP	12.6	11.0	12.0	12.3	12.5	13.6	11.0	11.8	12.0
Exports of Goods & Services, % GDP	48.6	52.6	49.3	47.8	45.0	47.3	45.4	46.9	47.5
Imports of Goods & Services, % GDP	52.1	54.5	55.5	54.8	54.3	57.8	52.0	55.7	56.1
Domestic Savings, % GDP	10.7	13.3	11.5	13.5	13.4	17.0	17.3	15.3	15.8
Private Savings, % GDP	15.2	14.5	13.7	15.8	15.4	19.1	22.2	18.3	18.9
Agriculture, value added, % GDP	10.2	12.1	11.6	9.8	9.9	9.5	9.7	10.0	10.0
Industry, value added, % GDP	22.8	21.8	23.0	22.0	21.3	20.2	19.7	19.9	20.1
Manufacturing, value added, % GDP	12.2	11.9	12.2	12.1	11.6	10.8	..	..	..
Services, value added, % GDP	54.2	51.1	50.2	54.3	54.8	56.8	56.4	55.8	62.9
Revenue, % GDP	40.3	41.9	39.0	39.1	39.1	39.2	38.7	42.2	43.5
Expenditure, % GDP	44.8	43.0	41.3	41.4	41.1	41.3	43.6	45.2	46.6
o/w Interest Payment	2.3	4.2	4.2	3.8	3.4	3.2	3.7	4.6	4.3
Overall Fiscal Balance, % GDP	-4.5	-1.2	-2.3	-2.3	-2.0	-2.1	-5.0	-3.0	-3.0
Primary Fiscal Balance, % GDP	-2.1	3.0	2.0	1.5	1.4	1.0	-1.3	1.6	1.3
General Government Debt, % GDP	70.4	80.0	69.2	71.9	60.6	50.4	62.0	58.9	56.8

SELECTED INDICATORS		2014	2015	2016	2017	2018	2019E	2020F	2021F	2022F
Money and Prices	Inflation, consumer prices (annual change, period avg.)	12.2	48.7	13.9	13.7	9.8	4.1	4.8	5.0	5.0
	Policy interest rate (annual average)	..	..	..	..	..	..	..	..	..
	Domestic Credit to the Private Sector (% GDP)	59.8	47.0	38.6	31.1	27.7	22.8	..	..	..
	Nominal Exchange Rate (local currency per USD)	11.9	21.8	25.6	26.5	28.1	28.1	29.3	29.6	31.5
	Real Effective Exchange Rate Index (2015=100)	106.4	100.0	102.1	107.1	110.6	114.3	121.8	123.7	116.9
External Accounts	Current account balance (current US\$ mn)	-4,596	-189	-3,450	-2,414	-4,042	-1,209	2,029	-2,745	-3,363
	Current account balance (% of GDP)	-3.4	-0.2	-3.7	-2.1	-3.2	-0.9	1.5	-1.9	-2.2
	Foreign Direct Investment, net inflows (% of GDP)	0.2	0.2	0.2	2.1	1.9	2.1	2.1	2.5	2.7
	External debt, total (% GDP)	95.0	129.0	123.3	102.5	91.9	..	..	..	..
	Multilateral debt (% of total external debt)	9.2	10.2	9.6	10.6	10.0	..	..	..	..
	Debt service ratio (% of exports GNFS)	29.4	55.2	23.2	20.7	20.7	..	..	..	..
	Gross Official Reserves (incl. Gold), bn US\$	7.5	13.3	15.5	18.9	21.1	25.6	28.3	33.5	38.8
	Gross Official Reserves, months of imports	1.2	2.9	3.2	3.3	3.2	3.6	..	..	..
Population and Income	Population, total (mn)	45.3	45.2	45.0	44.8	44.5	44.3	44.0	43.8	43.5
	Population Growth (annual %)	-0.5	-0.3	-0.3	-0.5	-0.5	-0.6	-0.6	-0.6	-0.6
	Unemployment Rate (% of labor force)	9.3	9.1	9.4	9.5	8.8	8.9	8.9	..	..
	Employment to population ratio, 15+, total %	49.4	49.7	49.4	49.3	49.6	49.3	49.1	..	..
	GDP per capita (US\$, nominal)	2,949	2,016	2,072	2,515	2,799	3,140	3,170	3,379	3,460
	Real GDP per capita growth (annual %)	-6.1	-9.5	2.6	3.0	3.9	3.8	-5.0	2.0	3.7
	International poverty rate (\$1.9 in 2011 PPP)	0.01	0.02	0.00	0.02	0.01	0.01	0.01	0.01	0.01
	Lower middle-income poverty rate (\$3.2 in 2011 PPP)	0.12	0.48	0.43	0.25	0.36	0.24	0.34	0.24	0.24
	Upper middle-income poverty rate (\$5.5 in 2011 PPP)	2.50	6.28	5.58	4.63	3.37	2.11	2.33	2.07	1.75
Inequality - Gini Coefficient	24.0	25.5	25.0	26.0	26.1	..	..	..	..	

SELECTED INDICATORS		2011	2012	2013	2014	2015	2016	2017	2018	2019
Financial Sector	Bank capital to assets ratio (%)	14.8	15.0	15.1	11.2	8.0	9.8	11.9	10.8	13.5
	Bank liquid reserves to bank assets ratio (%)	5.8	5.5	7.0	5.8	11.7	11.4	11.2	10.7	22.4
	Bank NPLs to total gross loans (%)	14.7	16.5	12.9	19.0	28.0	30.5	54.5	52.8	48.4
	Lending interest rate (%)	15.9	18.4	16.6	17.7	21.8	19.2	16.4	19.0	19.8
	Real interest rate (%)	1.5	9.8	11.8	1.6	-12.3	1.6	-4.7	3.1	10.8
Other Development Indicators	Human Capital Index (HCI)	..	..	..	..	..	..	..	0.7	..
	Probability of survival to age 5	..	..	..	..	..	..	..	0.99	..
	Harmonized test scores	..	..	..	..	..	..	..	490	..
	Logistics Performance Index (LPI) Rank	..	65.00	..	60	..	78	..	65	..
	Access to electricity (% of pop'n)	100.0	99.9	100.0	100.0	100.0	100.0	100.0	100.0	..
	Access to electricity, rural (% rural pop'n)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	..
	People using at least basic drinking water services (%)	94.6	94.2	94.0	93.6	93.7	93.7	93.8	..	..
	People using at least basic sanitation services (%)	95.8	95.9	96.1	96.2	96.2	96.2	96.2	..	..
	Mobile cellular subscriptions (per 100 people)	121.9	130.9	138.4	144.3	142.0	133.2	131.4	127.8	130.6
	Fixed Broadband Subscriptions (per 100 people)	7.0	8.0	8.9	9.3	11.6	12.0	12.4	12.8	16.2

Notes: ".." indicates not available. E = estimate, F = forecast.

Sources: Macro-Poverty Outlook (October 2020), World Development Indicators, Human Capital Project (2018), Macrobond.

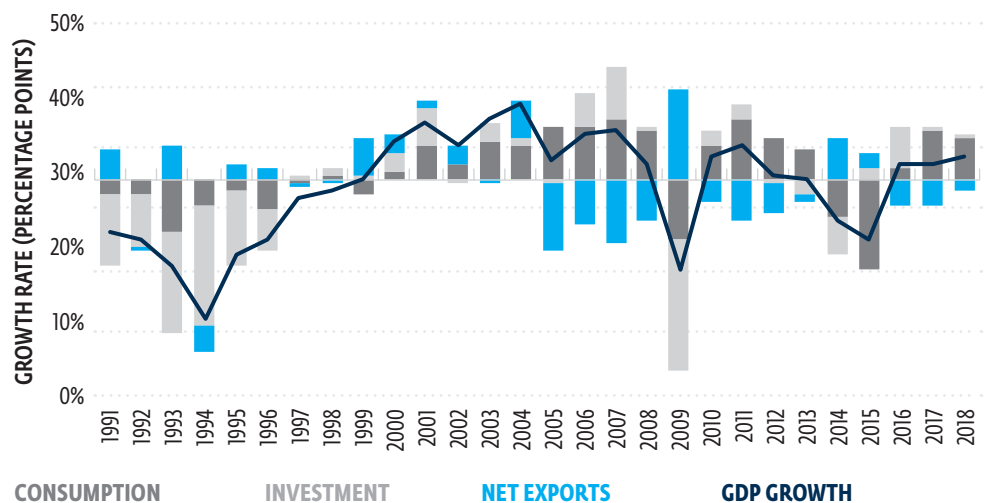
Last Updated: 10/09/2020

# 1. COUNTRY CONTEXT

## UKRAINE HAS STRUGGLED TO BUILD SOLID FOUNDATIONS FOR STRUCTURAL TRANSFORMATION AND SUSTAINABLE GROWTH

Ukraine's growth trajectory since independence from the former Soviet Union has been characterized by high volatility, with alternating episodes of rapid growth, contraction, and stagnation, driven mostly by domestic demand shocks (figure 1.1). The country underwent a severe contraction starting in 1989, reaching positive gross domestic product (GDP) growth rates only after 1999. During these 10 years of accumulated contraction, GDP collapsed by an estimated 59 percent.<sup>14</sup> In 1990, Ukraine's GDP per capita in purchasing power parity terms was slightly above Poland's, but in 2018, Poland's GDP per capita in purchasing power parity terms was 3.5 times the GDP per capita (purchasing power parity) of Ukraine. These divergent growth paths are partly explained by delayed reforms in Ukraine, higher costs associated with reallocating resources from traditional to competitive sectors, and limited domestic savings to finance the costs of reforms (Smits and others 2019). In Ukraine, the early transition period was characterized by incomplete and delayed reforms, a slow privatization process that benefited a small number of insiders, and the emergence of powerful economic agents with a strong influence in policy making (Smits and others 2019).

**FIGURE 1.1 VOLATILE GROWTH PATTERNS, DRIVEN LARGELY BY DOMESTIC DEMAND, 1991–2018**



Source: World Bank staff estimates based on World Development Indicators data.  
Note: GDP = gross national product.

**Economic reforms and stabilization measures in the late 1990s, coupled with a more favorable external environment, contributed to an economic rebound in the early 2000s.** During the period 2000–2007, the average annual growth rate reached 7 percent, and GDP per capita nearly doubled (Smits and others 2019). Rapid growth was mainly driven by favorable external conditions—large financial and capital inflows and favorable terms of trade—without the support of the structural transformation underpinnings that drive sustainable growth. In 2007, the fragile nature of the economic boom was evident, and recession ensued as international and financial flows came to a grinding halt (Smits and others 2019). During the global financial crisis, the economy contracted by close to 15 percent of GDP, triggering a balance-of-payments and banking crisis.

**Economic conditions have deteriorated since the Euromaidan revolution and the eruption of the conflict in the Donbas region of eastern Ukraine in 2014–15.** The conflict brought a significant contraction in industrial production, coupled with disruption in supply and distribution chains in the East, causing revenues to shrink dramatically. The crisis was accompanied by a severe deterioration of Ukraine’s economy in 2014–15: the hryvnia depreciated by 70 percent in just two years; the fiscal deficit widened, reaching 10 percent of GDP in 2014; and public debt nearly doubled. The financial system was also hit by an outflow of deposits and an increase in the number of nonperforming loans (NPLs), triggering bank failures.

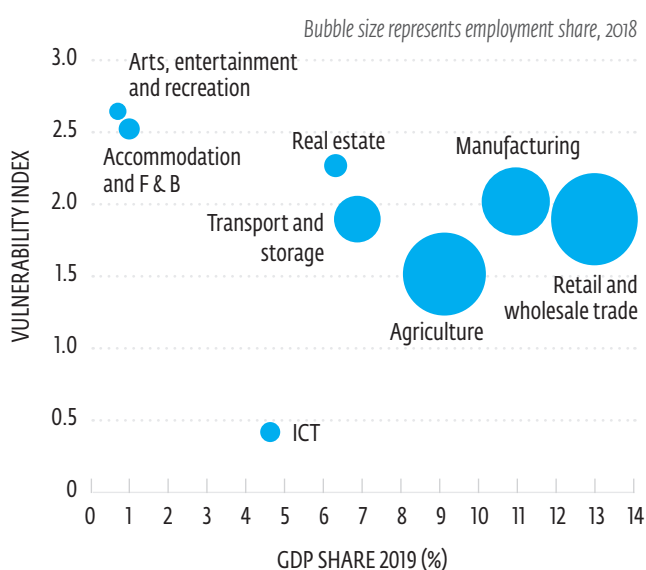
**Improvements in economic management and renewed structural reform efforts have boosted the economic outlook since 2016.** The authorities responded shortly after the crisis with timely and decisive reforms, which helped to stabilize the economy and address the structural imbalances that had made Ukraine vulnerable to recurrent crises and volatile growth. The economy began to recover in 2016, with a gradual improvement in GDP growth (2.4 percent GDP growth), followed by a slight improvement in 2017 (2.5 percent GDP growth) and stronger growth in 2018 and 2019 (3.4 percent and 3.2 percent, respectively). The average real wage declined by 28.2 percent in January 2016 compared with precrisis (January 2014) levels, but it increased 19 percent in 2017, partly because of the sharp increase in public sector salaries and the minimum wage in 2017. The unemployment rate remained high at 9.5 percent in 2017, while underemployment remains significant.

**GDP growth projections for Ukraine have significantly worsened because of the COVID-19 outbreak.** Containment measures, reduction in trade and global value chains, tourism flows, and heightened volatility have already affected the country (figure 1.2). Industrial output plummeted by 32 percent between February and May, as output and new orders fell at unprecedented rates amid company shutdowns. Retail sales followed a similar trend, falling 17 percent in the same period. Given the reliance on face-to-face contact, other sectors strongly affected by lockdown measures to contain COVID-19 are real estate and accommodations services. As a result, Ukraine’s GDP growth projections for 2020 have been significantly revised downward by the World Bank, from 3.7 percent (before the COVID-19 outbreak) to –3.5 percent (projection as of June), in a scenario in which containment measures



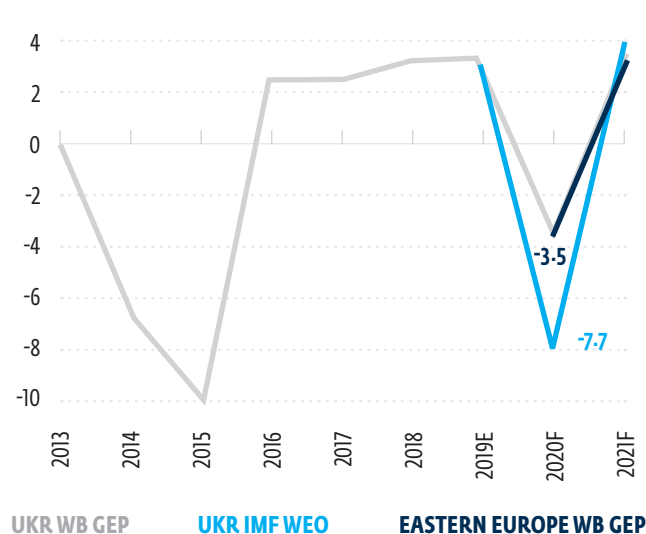
and travel restrictions are lifted and supply chains reestablished in the second part of 2020. However, according to the International Monetary Fund (IMF), the economic recession could go to  $-7.7$  percent in a downside scenario in which output and trade disruptions take longer to recover. For 2021, depending on how quickly the impact of the COVID-19 fades, GDP growth is expected to rebound to around 3 percent (World Bank 2020c) (figure 1.3).

**FIGURE 1.2 SECTOR VULNERABILITY TO COVID-19 IN UKRAINE**



Source: World Bank Group team calculation using State Statistics Service of Ukraine

**FIGURE 1.3 REAL GDP GROWTH (%)**



Source: World Bank, "Global Economic Prospects," June 2020; IMF, "World Economic Outlook," June 2020.

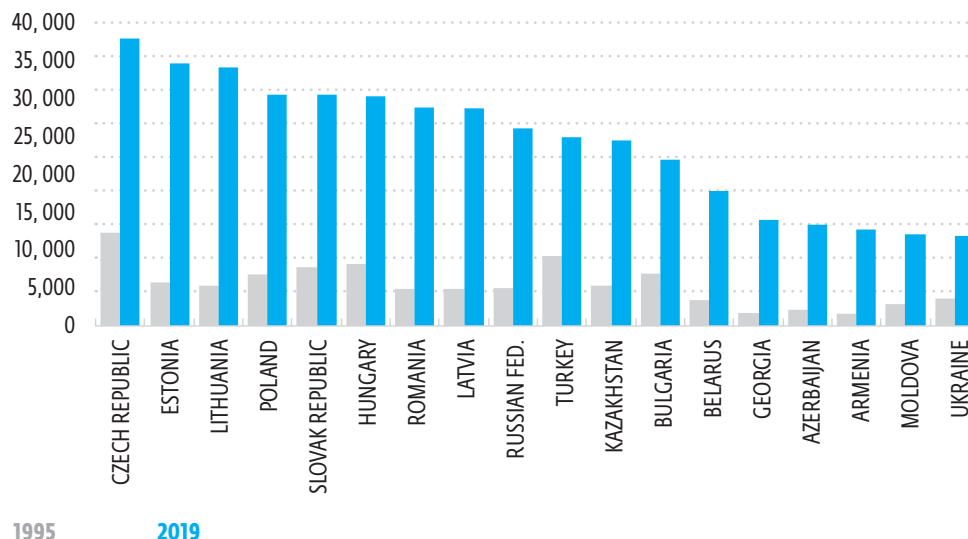
A swift recovery and higher and more sustainable economic growth depend on the ability of the Government of Ukraine to deliver on key reform priorities to address bottlenecks to investment and productivity. GDP grew by 3.2 percent in 2019, driven by agriculture and sectors dependent on domestic consumption, while manufacturing and investment growth remained weak. Progress by the government of Ukraine in the following areas could increase growth to 4 percent per year by 2021: (a) attracting private investment into tradable sectors by establishing a transparent market for agricultural land by implementing the recently passed land law and expanding its coverage, demonopolizing key sectors, and strengthening antimonopoly policy and enforcement, as well as privatizing state-owned enterprises (SOEs) and tackling corruption; (b) increasing the efficiency and growth of bank lending to the enterprise sector by completing the reform of state-owned banks (SOBs) and reducing NPLs; and (c) safeguarding macroeconomic stability to continue reducing inflation, interest rates, and public debt (World Bank 2019b).

**Addressing current expenditure pressures and fiscal risks, while securing adequate financing, would help Ukraine safeguard macroeconomic stability and, at the same time, will require a stronger role of private investments in the economy.** COVID-19 has also hindered government fiscal consolidation efforts as deficit and debt are expected to increase substantially due to lower revenues, increasing expenditure needs and negative growth. Going forward, to support fiscal sustainability, the government of Ukraine needs to address current expenditure pressures and control the fiscal deficit, expected to reach 5 percent of GDP, and to gradually reduce debt from its projected level of almost 60 percent at the end of 2020. With reduced fiscal space, government stimulus fiscal policies are highly constrained. In addition, high external financing needs due to upcoming debt repayments in 2020–21 have been generating exchange rate pressures that are exacerbated by the heightened risk aversion of international credit markets triggered by COVID-19 and the fall of oil prices. In this context, with the need to mobilize adequate international financing to meet external financing needs on affordable terms, it is critical for the government to maintain the reform momentum and continue cooperation with development partners. Monetary policy is also constrained given the high external financing needs, which can lead to exchange rate pressures, high inflation, and undermine the ability of adopting monetary easing. In this context, a medium-term fiscal consolidation plan will require efficiency gains and a greater contribution of the private sector to the country's economic growth.

**Ukraine will remain vulnerable to external shocks and commodity price cycles because of its reliance on commodity exports.** To increase resilience to external shocks, Ukraine will need to accelerate the structural transformation of its economy by boosting nontraditional and higher-value-added exports. Safeguarding external sustainability will also require attracting foreign direct investment (FDI). The present report offers recommendations on both fronts and proposes to deepen Ukraine's participation in manufacturing global value chains.

**The country has managed to reduce poverty at an impressive rate, but it remains at the bottom of the regional distribution of GDP per capita** (figure 1.4). Between 1995 and 2017, the compound annual growth rate of GDP in Ukraine stood around 1 percent, trailing all its peers in the region, while real GDP per capita has remained lower than in 1991, despite shrinking population levels. During the golden years of high economic growth (2002–08), poverty levels decreased dramatically: the share of the population living on less than US\$5.50 a day declined from 43.5 percent in 2002 to less than 2.5 percent in 2014. Poverty gains stemmed mostly from pensions and social transfers, giving rise to concerns over sustainability. In the aftermath of the 2014 crisis, labor market conditions, the compression of public spending, and an increase in energy prices contributed to a deterioration of poverty indicators, with the share of the population living on less than US\$5.50 a day reaching 4.6 in 2017. In addition, over 50 percent of the population that lives on less than US\$10.00 a day is at a high risk of slipping back into poverty (the so-called fragile middle).<sup>15</sup> Living conditions have been affected, particularly among internally displaced persons and conflict-affected persons, amid restrictions on freedom of movement, the suspension of pensions and social benefits, and mine contamination (UNHCR 2019).

**FIGURE 1.4 UKRAINE PER CAPITA INCOME GROWTH, COMPARED WITH PEERS, 1995 AND 2019**  
GPD per Capita, PPP (current US\$)



Source: World Bank, World Development Indicators.

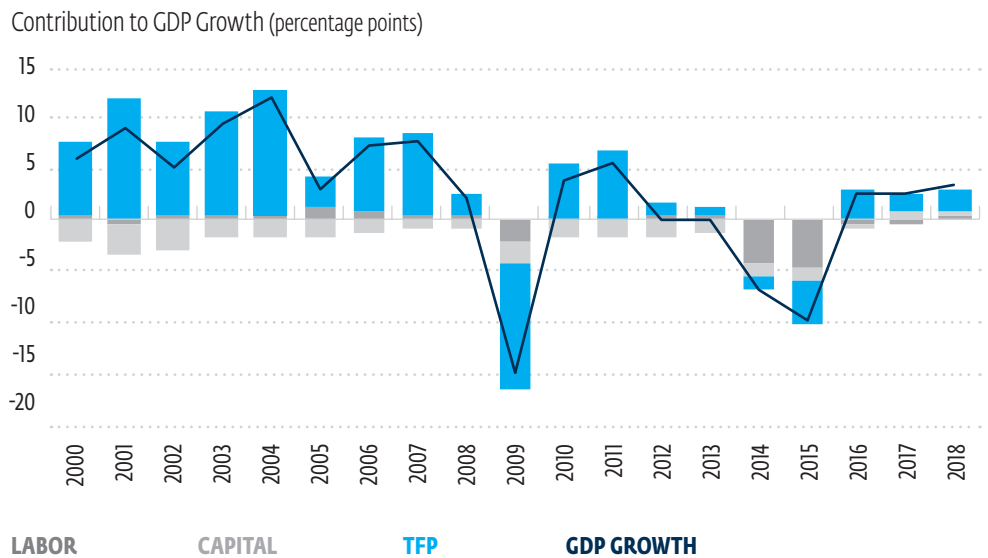
Note: GDP = gross domestic product; PPP = purchasing power parity.

## LOW PRODUCTIVITY, INSUFFICIENT INVESTMENT, AND DECLINING LABOR PARTICIPATION HAMPER ECONOMIC GROWTH

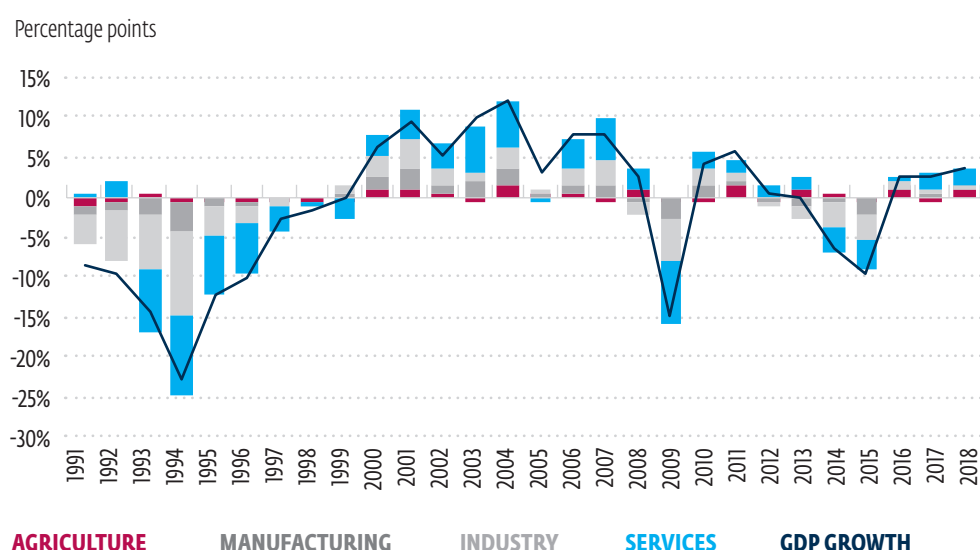
Except for a brief window between 2000 and 2008, Ukraine's total factor productivity (TFP) growth has remained low. During 2000–2008, the annual TFP growth rate averaged 6.6 percent, accounting for over 80 percent of the increase observed during the period. Robust TFP growth was due in part to rebounding capacity utilization following the sharp post-transition contraction of the 1990s, with marginal contributions from labor and capital accumulation to overall growth (figure 1.5). The investments needed to boost capital accumulation failed to materialize because of unaddressed vulnerabilities: an overvalued real exchange rate, persistent current and fiscal account deficits, volatile interest rates, and a low domestic savings rate (Smits and others 2019). The 2008–09 global financial crisis showed the weak underpinnings of TFP growth experienced since the early 2000s, with Ukraine TFP growth performance starting to lag that of most of its regional peers. The long-running structural challenges that affect TFP have significantly lowered the potential growth rate of the economy. For any growth acceleration to be sustained, supply-side reforms are needed; otherwise, the economy runs risks of overheating very quickly as output gaps will close very quickly in the rebound.

There are signs of an incipient structural transformation, with a slight increase in the contribution of the services sector to total value added and a decline in the relative contributions of industry and agriculture (figure 1.6). The services sector accounted for about 50 percent of value added in 2017, with the value added of the industry and agriculture sectors equivalent to 21 and 10 percent of GDP, respectively. The 2014–15 crisis resulted in a relative reversal of the trend, with the share of agriculture picking up. Employment trends have been steady, with a progressive increase in the share of employment in services to the detriment of industry and agriculture. The contributions of industry and services to value-added growth have been volatile since independence, alternating between episodes of contraction and recovery. Following the collapse during the 1990s, Ukraine’s large industrial base rebounded in the 2000s, supported by improving global demand, while the services sector expanded as the new market economy took hold. The expansion of services following 2004 was partly driven by the unsustainable credit-fueled consumption and investment boom, as banks borrowed externally to expand their portfolios in Ukraine. Since 2009, the story of industry and services has largely been one of stagnation and contraction. In contrast, the contribution of agriculture has increased but not to its full potential, despite Ukraine’s abundant endowment of fertile agricultural land and its role as a major producer and exporter of agricultural commodities.

**FIGURE 1.5 UKRAINE GROWTH 2000–2018, DRIVEN MAINLY BY TOTAL FACTOR PRODUCTIVITY, WITH MODEST CONTRIBUTIONS FROM LABOR AND CAPITAL ACCUMULATION**



Source: The Conference Board Total Economy database, "Growth Accounting and Total Factor Productivity."

**FIGURE 1.6 VALUE-ADDED GROWTH PATTERNS**

Source: World Bank staff estimates based on "World Development Indicators" data.

**Debt overhang, low FDI, and public sector imbalances have constrained investment and capital accumulation.** Gross fixed capital formation as a percent of GDP fell from 21.4 percent on average in the period 2000–2008 to 16.4 percent on average in the period 2009–18, lagging the average for Europe and Central Asia (20.5 percent) and Central Europe and the Baltics (21.7 percent).<sup>16</sup> Ukraine has remained an unattractive market for FDI inflows, occupying the last position in FDI stock per capita among emerging European countries (UNCTAD 2018). After peaking in 2008 at US\$10.7 billion—the highest level since 1992—net FDI inflows reached an all-time low of just US\$847 million in 2014. Since then, FDI net inflows have recovered modestly, reaching US\$2.47 billion in 2018.<sup>17</sup> An important share of the inflows is concentrated in nontradable sectors, such as financial intermediation, construction, real estate and retail trade (Smits and others 2019). Despite bank restructuring, debt overhang continues to cripple private and state-owned enterprises, especially those exposed to currency risk during the dramatic depreciation of the hryvnia (Smits and others 2019). Finally, the increase in demand for domestic credit by the public sector (from 3 to 40 percent of total domestic credit in the period between 2009 and 2014) has effectively crowded out credit for private enterprises, further stifling real sector activity (Smits and others 2019).

Historically, Ukraine has benefited from a strong education system that has propelled the country's economic and social development, but the skills it instills do not correspond to the demands in the labor market (Gresham and Ambasz 2019). Ukraine boasts one of the highest education attainment rates in the world, including the largest engineering force in Central and Eastern Europe, with 16,000 information technology (IT) and 130,000 engineering graduates each year (Ukraine Invest 2020). The country ranks 50 out of 157 countries in the Human Capital Index 2017, a measure of the amount of human capital that a child born today can expect to attain by age 18.<sup>18</sup> Ukraine's Human Capital Index score for 2017 was higher than what would be predicted for its income level and, although behind the average for Europe and Central Asia, Ukraine performs well among low- and middle-income countries, particularly in the schooling variables of the index. Nevertheless, the latest Programme for International Student Assessment (PISA) 2018 results indicate that, compared with the average performance in the European Union (EU), Ukrainian students show lower competency in the three subjects assessed: reading, math and science. In reading, Ukrainian students perform about 16 PISA points (roughly equivalent to half a year of schooling) behind students in the EU.<sup>19</sup> In addition, the skills supplied by the education system do not match those demanded by the expanding sectors of the economy, which increasingly use technology and require advanced capabilities—both cognitive and “soft” skills used in interpersonal relations (Gresham and Ambasz 2019). The lack of overall investment has hindered capital formation and job creation, contributing to stagnant labor productivity. Industrial value added per worker in 2018—a proxy for labor productivity—is at 75 percent of its 2007 level, after reaching a low point of US\$5,265 (constant 2010 US\$) in 2015 (66 percent of its 2007 value).<sup>20</sup>

**Declining total labor force and labor force participation as a result of migration and demographic transition imply that labor's contribution to growth has been negative.** A combination of outmigration and an aging population has led to a massive reduction in the total labor force pool and has dramatically reduced the supply of skills. Some 2019 estimates show that up to 9 million Ukrainians of a 20.2 million total active labor force work abroad for some part of the year, and 3.2 million have regular full-time work outside the country.<sup>21</sup> Of these workers, most do not plan to return. Reasons for outmigration seem to be a combination of several factors—from poor governance that affects the daily life of Ukrainian citizens and limits their access to education and health services to poor provision of state services and increasing living costs. Outmigration due to discontent with the quality of life, economic and financial uncertainty, political instability, and weak governance is particularly harmful to Ukraine, because the migrants are less likely to return to the country if they leave with their entire families. In addition, the aging population puts additional pressure on the social safety system, with profound implications for economic growth. Weak service delivery, notably in health care and education, also undermines human capital and contributes to slow productivity growth in the private sector.

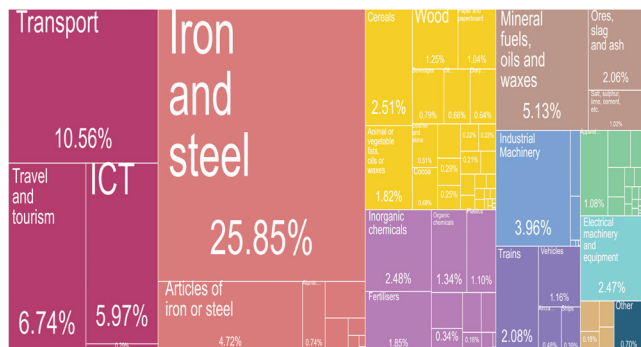
## **UKRAINE'S PRIVATE SECTOR WOULD BENEFIT FROM EFFORTS BY THE COUNTRY TO DEVELOP LINKS WITH GLOBAL VALUE CHAINS, INVEST IN CLIMATE-SMART AGRICULTURE, AND SUPPORT HEALTH CARE REFORMS**

Despite significant potential, Ukraine's export basket remains highly concentrated in primary and low-complexity products. Ukraine has a privileged geographic location at the crossroads of Europe and Asia, the largest endowment of fertile agricultural land in Europe, well-educated workers, and an open trade regime. The Association Agreement with the EU has opened a market of over 500 million people with high purchasing power, while the Russian market, with over 144 million people, remains an important source of demand for Ukrainian exports (albeit with shrinking participation in the share of total exports). Despite all of these advantages, Ukraine's merchandise export basket remains highly concentrated in low-value-added products such as foodstuffs, metals, and minerals, which account for over three-quarters of total merchandise exports. The list of export partners is relatively diversified, with no country representing more than 8 percent of Ukraine's total exports. The main export destinations include the Russian Federation, Poland, Italy, Turkey, Germany, China, and India.<sup>22</sup>

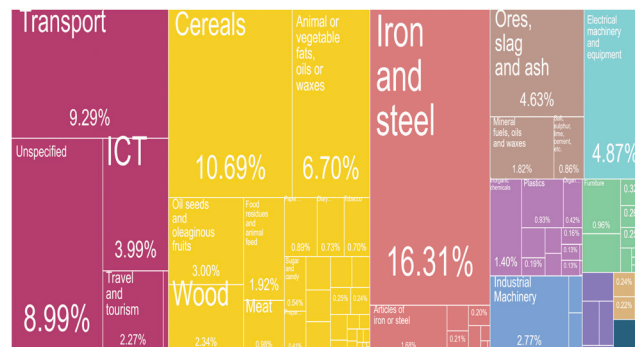
Merchandise trade composition has undergone a shift over the past decade, with a decline in the share of capital- and energy-intensive goods in favor of natural resources-intensive goods. This trend is explained by the decline of the traditional industries, which are suffering from a readjustment of energy prices, the conflict in the Donbas region, and the redirection of trade flows toward the West. Scant investments resulted in a steady decline in the share of capital-intensive exports to a mere 16 percent of total exports in 2017 (Smits and others 2019). In addition, the prevalence of energy subsidies has delayed the transition toward high-value, export-oriented industries. As a result, contrary to the trend observed in most regional peers, the average economic complexity index of the export of goods declined by 11 percent from 1995 to 2017.<sup>23</sup> In contrast, the economic complexity index of exports grew in the Czech Republic (29 percent), Hungary (63 percent), Poland (also 63 percent), and the Slovak Republic (3 percent).<sup>24</sup> Services exports, on the other hand, have experienced encouraging development with the emergence of a vibrant information and communication technology (ICT) sector (figure 1.7).

**FIGURE 1.7 COMPOSITION OF TOTAL EXPORTS**

**a. 2006, total US\$51.7 billion**



**b. 2018, total US\$63.8 billion**



Source: "Atlas of Economic Complexity" database.

Note: ICT = information and communication technology.

**Ukraine has struggled to attract FDI, especially in nontraditional export sectors, and is failing to integrate into global value chains (GVCs).** Foreign investors have so far mainly targeted the domestic market, especially nontradable sectors such as finance, retail trade, and other services (Smits and others 2019). The share of FDI in manufacturing is smaller than in comparable countries such as Poland and Turkey, and it is concentrated in metallurgy, where the end product is sold as a commodity in global markets. The concentration of FDI inflows into services and low-value-added industries and weak links with regional value chains have limited the generation of technological externalities and knowledge spillovers that would improve the competitiveness of local firms (Smits and others 2019). The share of GVC products participating in Ukraine's export bundle reached only 5.7 percent of total exports in 2014, behind Vietnam (59 percent), Romania (38 percent), Turkey (38 percent), and Poland (27 percent) (Smits and others 2019). Ukraine would benefit from attracting more export-oriented, efficiency-seeking FDI projects in a broader range of manufacturing subsectors.

**Ukraine is a global powerhouse in the production and export of certain agricultural products, but it suffers from low productivity and yields.** Ukraine is a leading producer and exporter of cereals that create the backbone of the agriculture sector. Cereals and oilseeds compose close to 60 percent of agricultural production, and almost 70 percent of this product is exported. Ukraine enjoys about 11 percent of the global market share in grains and is the largest exporter of sunflower oil in the world. The share of noncomplex agricultural exports, such as wheat, barley, rapeseed, and maize, more than doubled from 2008 to 2017 (Smits and others 2019). In 2018, the value of agricultural exports from Ukraine reached a record value of US\$18.6 billion.<sup>25</sup> Part of the reason for this impressive performance is the natural endowments that the country



possesses. Ukraine is the second-largest country in Europe in terms of land mass, with 56 percent of total area corresponding to arable land (33 million hectares). The country also boasts one of the largest stocks of chernozem, a type of very fertile soil rich in micronutrients. However, agricultural productivity lags global benchmarks. For example, Ukrainian yields vary from 16 to 53 percent of yields of global leaders in production of cereals (maize, barley, wheat) and oilseeds (soy, sunflower).

**The competitiveness of the agriculture sector is hindered by several distortions, including a two-decade moratorium on land sales, partially lifted recently, which has affected 96 percent of agricultural land.** Competitiveness in agricultural markets is impeded by a host of factors that have been analyzed previously—distortions in factor input markets, opaque and non-evidence-based allocation of state subsidies to producers, high transport and logistics costs, and weak value chain structures, including poor frameworks for quality and standards, and a lack of access to markets. A key constraint has been the challenge of land reform, which has affected almost all agricultural land in the country. The moratorium on land sales and low transparency in landownership and transactions have been major barriers to productive investments in agriculture (World Bank Group, 2019a). On March 31, 2020, the Ukrainian Parliament approved the new Law “On Amendments to Certain Laws of Ukraine on the conditions of Turnover of Agricultural Land” No. 552-IX, which comes into effect on July 1, 2021. The law eases a ban on the sale of certain types of agricultural land, though with some limitations. The new law currently allows only citizens of Ukraine, and for a specific land size (no more than 100 hectares), the option to trade, with the potential of extending this option to include legal entities owned by Ukrainians and foreign investors to trade larger plots (up to 10,000 hectares) in 2024, possibly under a nationwide referendum in the future.<sup>26</sup> The moratorium has also constrained access to financing to small- and medium-sized producers, because land could not be used as collateral (World Bank Group 2019a).

**Improving productivity is also inhibited by the adverse consequences of climate change.** Studies show that changes in weather patterns are affecting temperature and precipitation patterns in Ukraine in a net negative way on agricultural productivity. A World Bank Group–Food and Agriculture Organization of the United Nations (WBG-FAO) study in 2014 (Fileccia, Guadagni, and Hovhera 2014) noted that production is becoming more volatile. On average, every three years, wheat production fluctuates by 20 percent and corn by 25 percent. Drought conditions are becoming more frequent, damaging production—the drought in 2009 resulted in a reduction of 30 percent in production of wheat crop in the country.<sup>27</sup> It is estimated that climate change is going to exacerbate this condition. According to estimates by the Ukrainian Agribusiness Club (UCAB), climate change may result in harvest losses of as much as 40 to 60 percent due to droughts. Therefore, in a situation in which the adoption of practices not only improves productivity but does so sustainably, climate-smart agriculture becomes imperative for the country to consider.

The country's health sector is highly inefficient and reflects an outdated Soviet-style architecture that emphasizes an input-based rather than an output-based allocation of resources and rewards. In addition, several other constraints impair the sector's performance, including limited access to capital and long-term financing, poor contractual enforcement guarantees, weak regulatory and oversight practices in the face of poor quality standards, and the absence of public-private dialogue (PPD). This situation has resulted in a very small and fragmented private sector, and in subpar health and life expectancy outcomes. The health system in Ukraine exhibits important coverage and quality gaps that have resulted in poor health and economic outcomes for the population: life-expectancy at birth (72 years) is six years lower than the average for Europe and Central Asia,<sup>28</sup> per capita public expenditure on health is among the lowest and least efficient in the region, and the incidence of catastrophic out-of-pocket payments among households is high (14.5 percent in 2015) (Goroshko, Shapoval, and Lai 2018). Quality health care services could improve labor productivity and generate positive spillovers into other productive activities.

However, given the ongoing and planned health care reforms and the government's appetite for change, there is significant potential to support private sector participation and bring the country's health care systems up to par with other developed countries. A number of reforms have been announced recently, signaling the government's intent to modernize the health sector. A first package of reforms, approved in October 2016 and launched in mid-2018, included (a) transforming health care financing, including creating a national purchasing entity—the National Health Service of Ukraine (NHSU)—that will contract with the private sector on a level playing field with the public sector; (b) modernizing primary health care; (c) enhancing the public health system; (d) addressing noncommunicable diseases (NCDs); and (v) improving access to pharmaceuticals. The implementation of these health reforms officially commenced following the adoption of the laws on Health Financing Guarantees in December 2017. These reforms provide opportunities for the private sector to contribute to health care service provision. Early results from establishment of the NHSU show an increase in the number of private sector providers that have signed contracts with the agency. There is also momentum in the transformation of primary health care, with over 27 million patients having registered with a family doctor. Further analysis is needed to assess those areas in which the private sector could participate given this changing landscape.

## 2. KEY CROSS-CUTTING CONSTRAINTS TO PRIVATE SECTOR DEVELOPMENT

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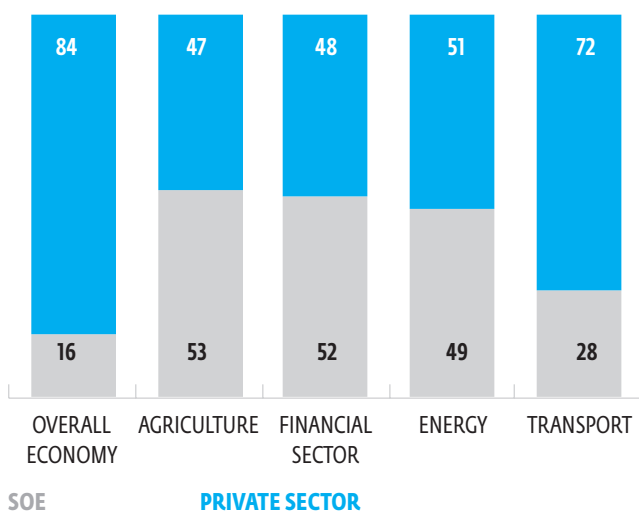
### THE PRIVATE SECTOR LANDSCAPE IN UKRAINE

Ukraine has undergone a dramatic transformation since independence, but the transition into a fully developed market economy remains elusive. The private sector accounts for 84 percent of GDP, but large swaths of the economy are dominated by state-owned enterprises (see figure 2.1a). SOEs continue to represent a significant share of Ukraine's economy—16.3 percent of GDP is produced by more than 3,400 SOEs—and have a significant role in agriculture (53.3 percent), the financial sector (51.8 percent), energy (49.2 percent), and transport (27.6 percent). The overwhelming majority of private firms are small and medium-sized enterprises (SMEs). In 2018, enterprises with fewer than 250 persons employed represented more than 99 percent of all enterprises in the business economy and accounted for 65 percent of the total business employment, 55 percent of total turnover, and 52 percent of value added in the business sector. Moreover, 95 percent of Ukrainian firms are microenterprises—that is, enterprises with fewer than 10 persons employed—and 83 percent of enterprises in the business sector are individual enterprises (figure 2.1b). Regarding the sectoral composition, 86 percent of all enterprises operate in the services sector, accounting for about 70 percent of employment and generating 62 percent of the value added. Close to half of the value added in business services is generated in the wholesale and retail trade sector. In general, in all economies, larger enterprises are more productive than smaller firms. This is especially true in industrial sectors in which large capital investments are required.<sup>29</sup>

**FIGURE 2.1 PRIVATE SECTOR AND STATE-OWNED ENTERPRISES IN UKRAINE**

**a. Estimated share of SOEs in the economy, 2016**

(Percent of GDP in the economy or sector)

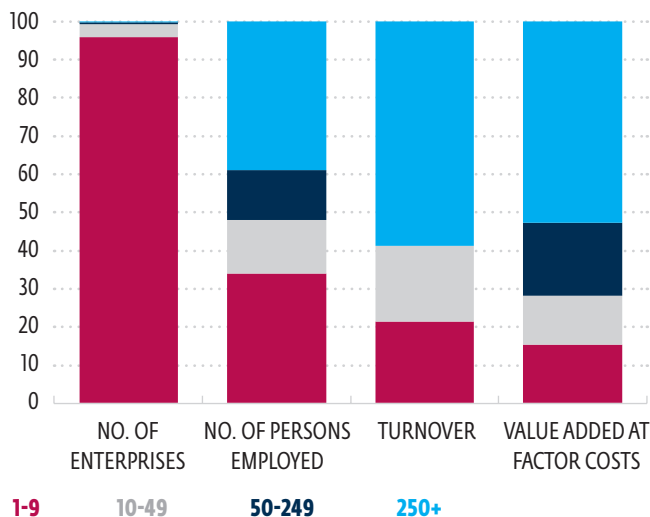


Source: World Bank staff based on data from Ukraine's Ministry of Economic Development and Trade.

Note: GDP = gross domestic product; SOE = state-owned enterprise.

**b. Number of firms, employment, turnover and value added**

(Business economy excluding financial intermediation, percent, 2017)

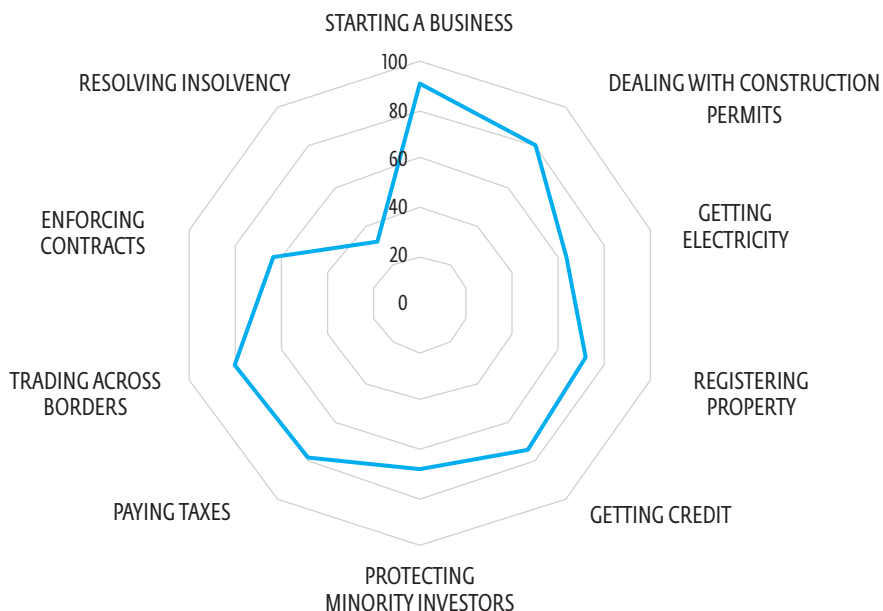


Source: OECD 2019, Compendium of Enterprise Statistics in Ukraine 2018.

**Ukraine has taken important steps to improve the operating environment for private firms.** In recent years, the country has actively promoted reforms to improve the country's business environment. Reforms include improvements in dealing with construction permits, making it easier to obtain access to electricity, registering property, protecting minority investors, improving access to credit, and trading across borders (see box 2.1). Nevertheless, a gap remains with respect to the frontier of best practices in a number of areas that influence private sector development (figure 2.2).

**FIGURE 2.2 DOING BUSINESS 2020 - UKRAINE**

Distance to frontier (0-100) score in each dimension



Source: World Bank, Doing Business report, various years.

Note: In both panels, higher numbers denote better outcomes.

Despite such improvements, private sector competitiveness continues to be hampered by an incomplete transition, as is evident from the outsized role of the state in the economy, the poor enforcement of property rights, deficient governance, and weak market competition (Smits and others 2019). The private sector in Ukraine operates in a weak business and investment climate, characterized by weak financial intermediation, limited market contestability, and deficient infrastructure. Ukraine has an average score of 5.3 out of 10.0 in the European Bank for Reconstruction and Development (EBRD) Assessment of Transition Qualities index 2018, behind countries such as Russia, Armenia, and Georgia. The index captures six qualities of a sustainable market economy: competitive, well governed, green, inclusive, resilient, and integrated. Ukraine's scores are particularly low in competitiveness and governance (4.7 and 4.6 out of 10.0, respectively).<sup>30</sup>

**BOX 2.1 RECENT BUSINESS REFORMS IN UKRAINE DOCUMENTED IN THE DOING BUSINESS 2020 REPORT**

**“Dealing with Construction Permits:** Ukraine streamlined dealing with construction permits process by eliminating the requirement to hire an external supervisor and introducing an online notification system. Ukraine also made obtaining a construction permit less costly by reducing the contribution fee to the Kyiv City Council.”

**“Getting Electricity:** Ukraine made getting electricity easier by streamlining the issuance of technical conditions and by implementing a geographic information system. Ukraine also improved the reliability of power supply by introducing an outage compensation mechanism.”

**“Registering Property:** Ukraine made registering property easier by increasing the transparency of the land administration system.”

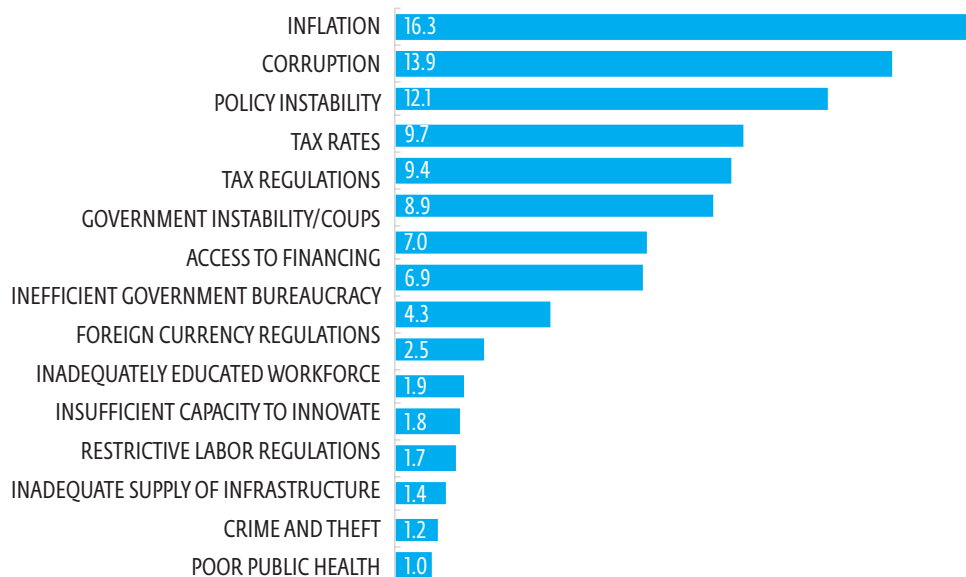
**“Getting Credit:** Ukraine improved access to credit information by establishing a new public credit registry in the National Bank of Ukraine.”

**“Protecting Minority Investors:** Ukraine strengthened minority investor protections by requiring greater disclosure of transactions with interested parties.”

**“Trading across Borders:** Ukraine reduced the time to import by simplifying conformity certification requirements for auto parts.”

Source: World Bank 2020a, 124–25.

**FIGURE 2.3 MOST PROBLEMATIC FACTORS FOR DOING BUSINESS IN UKRAINE, 2017**



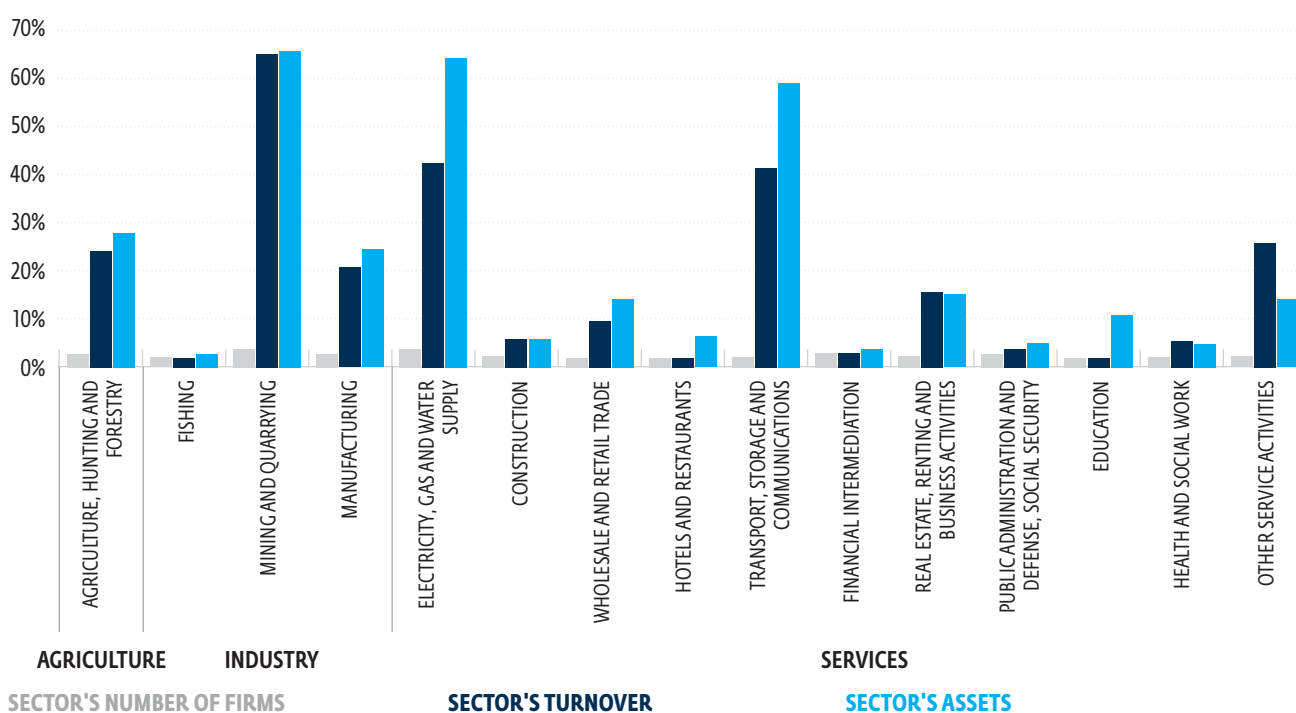
Source: World Economic Forum, Executive Opinion Survey 2017.

## THE UKRAINIAN ECONOMY SUFFERS FROM WEAK COMPETITIVE PRESSURE, WITH LITTLE ROOM FOR INVESTMENT IN VALUE ADDITION

In Ukraine, high levels of market concentration and a heavy SOE footprint are compounded by an unusually large share of politically connected private firms.<sup>31</sup> Firms are considered politically connected when they can influence the policy process to their advantage at the expense of the public interest. Recent research has found that between 0.5 and 2.0 percent of all firms in Ukraine are politically connected, yet these firms account for over 20 percent of total turnover. Politically connected firms tend to operate in capital-intensive industries such as mining, energy, and transportation, where they account for over 40 percent of total turnover and over 50 percent of total assets (Pop and others 2019).

The share of politically connected private firms is unusually high, reaching over 60 percent of sectoral turnover or assets in capital-intensive industries (Pop and others 2019). The wave of privatizations in the 1990s shifted the ownership of former state monopolies to politically connected private interests that have stalled the transition into open and contestable markets. SOEs and politically connected firms tend to be less productive than nonconnected firms, show a smaller return on assets (World Bank 2018a), and exhibit weak corporate governance. The propensity of SOEs and politically connected firms in concentrated markets to lobby for regulatory protection and other policy-based advantages undermines the principle of competitive neutrality in government interventions and substantially impedes market dynamics. This is especially the case in markets that are not naturally conducive to contestation, deterring competition and productivity-enhancing investments.

**FIGURE 2.4 MARKET SHARES OF POLITICALLY CONNECTED FIRMS BY SUBSECTORS, 2015, %**



Source: Pop and others 2019.

**Together, SOEs and politically connected firms are the main players in all productivity-enabling sectors of the Ukrainian economy.** SOEs are present in 28 economic sectors, and their market share exceeds 50 percent in at least half of them (Pop and others 2019), stretching beyond network industries in which governments traditionally play an active role. SOEs operate alongside politically connected firms in at least 13 markets, including banking, transportation, mining and quarrying, energy, and agribusiness. The relationship between SOEs and politically connected firms varies widely from market to market. For example, the energy-generation subsector includes at least one SOE and at least one firm owned by each of the country's four most powerful oligarchs. All of the country's four biggest banks are now SOEs, after the largest, PrivatBank, was expropriated from an oligarch in 2016 because of alleged risky lending practices. In the oil and gas subsector, the government owns 51 percent of the joint stock company Ukrnafta, one of Naftogaz's main production and refining subsidiaries, while an oligarch is a minority holder (figure 2.4).

**Ukraine needs to improve its regulatory framework, institutional arrangements, and enforcement mechanisms to foster competition.** Although Ukraine's economywide and sectoral product-market regulations are relatively progressive in principle, their application needs to be strengthened to ensure a level playing field supported by competitively neutral public policies. Institutions in charge of enforcing property rights, such as courts, remain weak (Smits and others 2019). Contract enforcement relies on political connections with top officials, creating legal uncertainty and deterring investments (Smits and others 2019). Large enterprises have access to external contract enforcement mechanisms, such as international guarantees as part of investment treaties, but these mechanisms are either unavailable to or are too costly for small firms (Smits and others 2019). At present, multiple sectoral regulators and market institutions are not fully independent and cannot effectively execute their mandates. Ukraine has improved its position in Transparency International's Corruption Perception index over the years, but it still occupies a low position: 120 out of 180 countries in 2018.<sup>32</sup>

**The unbundling of monopolies or dominant players could yield substantial efficiency gains that enhance the competitiveness of downstream sectors.** Ukraine's Anti-Monopoly Committee has expressed a strong commitment to enforcing the competition regime, but it remains constrained by poor funding (as of 2016, it was one of the most poorly funded government agencies in the country) and a lack of tools to properly prosecute cases involving cartels and bid rigging (OECD 2016b). The high degree of vertical integration in network industries and key productivity-enabling sectors (such as electricity and gas) increases the risk of market foreclosure if antimonopoly regulations are not enforced. Other anticompetitive practices include the support of specific enterprises through subsidies, and regulatory and institutional barriers to entry, exit, and restructuring (Smits and others 2019). Anticompetitive conditions result in additional costs and lower the expected return on investments, making the Ukrainian market less attractive for both foreign and domestic firms (Smits and others 2019). Key measures identified to enhance competition include (a) ensuring a competitively neutral environment that minimizes the policy-based advantages of SOEs and politically connected firms; (b) improving the predictability, consistency, and transparency of the regulatory framework, both in principle and in its application; and (c) supporting the development of robust, independent market institutions.



## DEFICIENT FINANCIAL INTERMEDIATION AND LIMITED ACCESS TO FINANCE

Efficient financial intermediation and credit growth for the private sector are constrained by a large state-owned banking sector and a high share of nonperforming loans in the banking system. The authorities responded to the stress in the banking system following the 2014 crisis with major financial system reforms and bank interventions that have helped restore and strengthen financial sector stability. The magnitude of the crisis is illustrated by its massive costs—direct fiscal costs are estimated to exceed 15 percent of GDP, and the combined cost to the government, banks, and the private sector is estimated at some 38 percent of GDP—as well as the reduction in the number of institutions, down from about 180 in 2014 to 88 in 2017. The sector lost about a third of its assets, and the share of nonperforming loans (NPLs) peaked at 54.5 percent of total loans in 2017. Credit to the private sector contracted sharply from 90 to 37 percent of GDP during this period. The authorities' intervention also resulted in a sharp increase of the state footprint in the sector, with state-owned banks (SOBs) accounting for over half of total assets and NPLs.

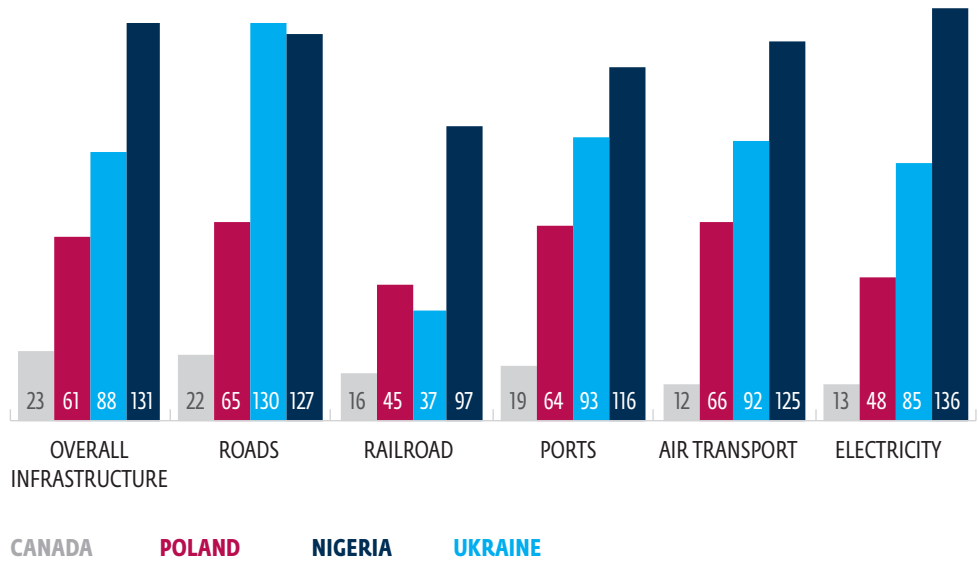
Reforms to strengthen the corporate governance of SOBs and effective NPL workout mechanisms are paramount to restoring credit growth to the private sector—and in May 2020, the Ukrainian Parliament approved legislation to strengthen the bank resolution framework. Tackling the high level of NPLs will require strengthening the corporate insolvency framework and addressing inefficiencies in the judicial system, which remain major impediments to NPL resolution. Finally, the development of nonbank financial institutions and financial-market infrastructure is also critical for a dynamic private sector. At present, nonbank financial institutions remain underdeveloped, with a poor regulatory framework and weak institutions.

## INADEQUATE INFRASTRUCTURE AND ENERGY MARKET DISTORTIONS

Inadequate and inefficient infrastructure, poor public investment management, and the slow pace of reform in the infrastructure sector are holding back private sector competitiveness. Limited fiscal space for new investments, weak governance, a lack of maintenance, and the inability to mobilize significant private investments have resulted in a sharp deterioration of the quality of existing infrastructure. Ukraine ranks poorly on quality-of-infrastructure indicators across most sectors, with the notable exception of railways (figure 2.5). Despite recent improvements in the regulatory framework, including in public-private-partnership legislation, private sector participation remains limited; see box 2.2. Restrictive regulatory frameworks in network industries, coupled with weak market institutions that would normally ensure competitive and efficient markets, also contribute to deterring the entry of private operators (World Bank 2018b). Despite these challenges, the infrastructure sector is nonetheless undergoing comprehensive reforms, anchored and spurred by the Ukraine-EU Association Agreement and participation in various regional and international initiatives (such as the Extractive Industries Transparency Initiative and the Energy Community with the EU).

**FIGURE 2.5 UKRAINE’S GENERALLY POOR RANKINGS OF QUALITY OF INFRASTRUCTURE ASSETS**

Quality of infrastructure assets (2017 Global Competitiveness Index Rank)



Source: World Economic Forum, "Global Competitiveness Index."  
 Note: High number denotes poor performance.

**Improving the performance of the transport sector, in particular with respect to the quality, reliability, and efficiency of its logistics systems, is paramount to strengthening the competitiveness of Ukrainian exporters.** Despite Ukraine’s improvement in the Logistics Performance Index (LPI) ranking,<sup>33</sup> moving from the 80th to the 66th position between 2016 and 2018, logistics costs continue to be high and impede private sector competitiveness. Transport capacity is underused, and the services available are often substandard. Improving performance will require substantial reforms in all measures of the LPI, along with subsector reforms and investment in railways and roads, the use of river transport, and an overall improvement in the management of public assets. For example, the railways (carrying over 70 percent of nonpipeline freight traffic) struggle with inadequate and old locomotives and rolling stock and with depreciated infrastructure. The road network also requires upgrading. It is estimated that about 51 percent of the road network does not meet the rough-road requirements and 39 percent does not meet the strength requirements (World Bank 2017c).

**BOX 2.2 PUBLIC-PRIVATE PARTNERSHIPS IN UKRAINE**

Public-private partnerships (PPPs) have the potential to contribute to Ukraine's efforts to close the rampant gaps in physical and social infrastructure. Ongoing efforts to build capacity and institutions to manage PPPs, such as the Public-Private Infrastructure Advisory Facility's support to the country's PPP unit or the United States Agency for International Development's PPP Development Program, are promising steps in laying the foundation for a future PPP agenda. A range of sectors, such as roads, seaports, airports, power, and renewables, offer potential opportunities for PPPs—in addition to the health care sector, which is discussed in greater detail in chapter 5 in this report. To realize this potential, the country needs to further strengthen its enabling environment and regulatory framework for PPPs.

The broader country's enabling environment and regulatory framework are gradually emerging with a range of issues that need attention. First is the range of laws according to which PPPs and concessions can be implemented, each with different regulatory requirements depending on project and sector. There is a lack of sector policies, and the associated sector regulations need reform. Attempts to create a standard regulatory environment via the PPP law and its 2015 overhaul have not succeeded because developing projects under this legislation is more challenging than with concession laws. Negotiations with selected bidders are not restricted and there is no "standstill" period—conditions that raise transparency concerns, particularly in a region where bilateral negotiations often prevail. The new Concessions Law, passed in 2019, can be

expected to create a solid-enough framework for attracting foreign direct investment in infrastructure. Furthermore, no comprehensive central registry of PPPs is available to the public because the country has no system in place to manage the implementation of PPP contracts, nor one that would allow it to track progress. Project development remains a challenge for regional authorities.

The country's fiscal consolidation efforts underscore the importance of managing the fiscal implications of PPPs carefully going forward. Over the past few years, Ukraine was able to consolidate its fiscal space, thus public funds were not available for investing in infrastructure. Yet, such limited fiscal space points to the need to transparently monitor the fiscal implications of PPPs. Fiscal implications include the direct fiscal implications, such as fiscal support to close a project viability gap as well as contingent liabilities. Recently enacted legislation requires PPP concessionaires to submit an annual report which, among other things, must provide an update on the financial obligations of the concessionaire under the PPP agreement, as well as state support obligations under the contract.

To allow PPP projects to tap into local capital markets instead of relying on international financial institution funding, the issue of limited access to capital and long-tenor debt needs to be addressed. All of these efforts would benefit from a national strategy developed by the Ukraine government with clear economic and social infrastructure priorities and aspirational targets for the resulting service improvements.

Sources: Ghossein and Ruiz Nunez 2018; Biletska and others 2016; World Bank 2018b; Economist Intelligence Unit Infrascopes Index; Pop & Others (2019); World Bank 2019c.

**The sector requires the introduction of international rules and conventions around licenses, registration, inspections, and enforcement.** Port efficiency and operations in Ukraine are below those of its peers, and have deteriorated over time. Efficient port operations require improved land access and spatial planning, reductions in port prices, and faster turnaround times, among other enhancements. Inland waterway transport, potentially a key mode of transport, now handles just one-tenth of the peak 66 million tons handled in the 1980s. Further opportunities lie in investments in strategic transport corridors, multimodal logistics centers, and advanced IT systems, and in building the skills and competencies of the transportation sector workforce.

**The energy sector is characterized by inefficiency, poor governance linked to past pricing and management structures, declining reliability, and low investment.** Ukraine is a major net importer of oil and gas, and an important transit country. At the same time, its economy remains one of the most energy intensive and energy inefficient in the region (for example, two to three times more energy intensive than Poland, the Czech Republic, and the Slovak Republic)—the result of high energy subsidies to energy-intensive sectors. Energy supply reliability and security remain major sources of vulnerability. Disruptions of electricity, gas, and heating supply can have serious repercussions for productivity and output, particularly given the high energy intensity of Ukraine's economy. In addition, universal access to electricity and gas, coupled with the cold climate, means that a reliable energy supply is essential for the population, particularly the poor. The authorities have embarked on energy sector restructuring (including having Naftogaz vertically unbundle the gas sector and establishing a wholesale electricity market) to increase energy efficiency, sector transparency, and competition, and to promote the awareness and engagement of energy users.

# 3. SECTOR ASSESSMENT: CREATE A MARKET FOR CLIMATE- SMART AGRICULTURE TECHNOLOGIES AND IMPROVE AGRICULTURAL PRODUCTIVITY THROUGH LAND MARKET REFORM

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## THE PROBLEM TO SOLVE

Agriculture, critical to the country's GDP, employment, and exports, is restricted in investment potential despite comparative advantages. Ukraine's rich black soil, the largest share in the world, makes it a global producer and exporter of several key staple crops. The country enjoys dominant global shares in cereal and oilseeds. However, yields lag behind global competitors because of several impediments to productivity highlighted in previous analytical work, including a poor business environment, inefficient input markets, the lack of food standards, and disconnected agribusiness value chains. Besides those constraints, the adverse impact of climate change is posing a threat to the country's existing and future production and yields. Failure to address climate change and to implement productivity-enhancing measures could undermine the country's competitive advantage in production and exports in the largest subsectors, despite continuing increases in global demand for agricultural products. Although large agricultural producers already use state-of-the-art production equipment, smaller producers are at a disadvantage in the adoption of climate-friendly and climate-adoptive technologies.

The moratorium on agricultural land sales and weaknesses in transparency of land rights and transactions have contributed to low productivity and investment in the agriculture sector and to low land rents for millions of Ukrainians for the past 20 years. The authorities have taken steps toward strengthening the transparency of land records and transactions. A new land turnover law has been passed lifting some of the restrictions on agricultural land sales. On March 31, 2020, the Ukrainian Parliament approved the new Law “On Amendments to Certain Laws of Ukraine on the conditions of Turnover of Agricultural Land” No. 552-IX, which comes in effect on July 1, 2021. The law eases a ban on the sale of certain types of agricultural land, though with some limitations. However, under current stipulations of the new law, only citizens of Ukraine, and landowners of land with a specific land size (no more than 100ha) are allowed the option to trade, with the potential of extending this to include legal entities owned by Ukrainians and foreign investors, possibly under a nationwide referendum in the future, to trade larger plots (up to 10,000 has) in 2024.<sup>34</sup> However, safeguards against the possible concentration of agricultural land in the hands of a few and improved access to financing for small and medium farmers will also be important in increasing productivity.

## **AGRICULTURE’S TREMENDOUS POTENTIAL FOR GROWTH AND INVESTMENT IN UKRAINE**

Agriculture has the potential to drive higher economic growth and living standards for Ukrainians—it is estimated that a 30 percent increase in agricultural productivity could result in cumulative 4.4 percent growth in GDP over five years and 12.5 percent growth over 10 years.<sup>35</sup> Around 71 percent of the country’s land is agricultural, and more than half of it is arable land. Ukraine has the largest endowment of arable land in Europe—33 million hectares (ha), compared with 18 million ha in France, 12 million ha in Germany, and 11 million ha in Poland (Smits and others 2019). The country also has one-third of the world’s endowment of the highly fertile black “chernozem” soil, a large variety of climatic zones, and favorable temperatures and moisture content that allow production of a large range of crops. In addition, Ukraine has a strategic location with access to agricultural markets in Europe, the Middle East, North Africa, and Asia. These factors should enable Ukraine to tap its agriculture potential to boost economic growth and improve living standards for the population.

The Ukrainian agriculture sector has a dominant role in global markets and has been a major driver of economic growth and exports, even during times of crisis. While the industry and services sectors drove a strong rebound in economic growth between 2000 and 2007, they stagnated thereafter and contracted during 2014–15. Agriculture, on the other hand, has served as a steady performer, growing at an average of 3.5 to 6.6 percent between 2000 and 2013 and contracting only slightly during the crisis in 2014–15. In 2018, the sector grew at 7.8 percent, compared with almost negligible growth in manufacturing and 3.5 percent growth in services.<sup>36</sup> However, its sectoral share of GDP has been declining and, in 2018, agriculture accounted for

only about 10 percent of GDP. While the employment share in the sector has declined (in line with global trends), agriculture sector employment increased after the global financial crisis as it absorbed the labor force from other sectors that had contracted (it accounted for 18 percent of formal employment in 2016). Of the crop output, cereals and oilseeds compose the largest share of production, about 58 percent. In terms of exports, Ukraine was the second-largest global grain exporter after the United States, with an 11 percent share of the world's total. In 2017, Ukraine was the ninth-largest producer of wheat in the world. Oilseed is the second-largest subsector, with stable production flows and an expanding crushing industry, which has made Ukraine the largest producer of sunflower seeds and exporter of sunflower oil in the world (2017). Fruit and vegetables make up a relatively smaller share of the total agriculture sector, specifically fruit (1 percent of total production in 2017). In 2017, grains, fats, and oilseeds together accounted for 74 percent of total agricultural exports.<sup>37</sup>

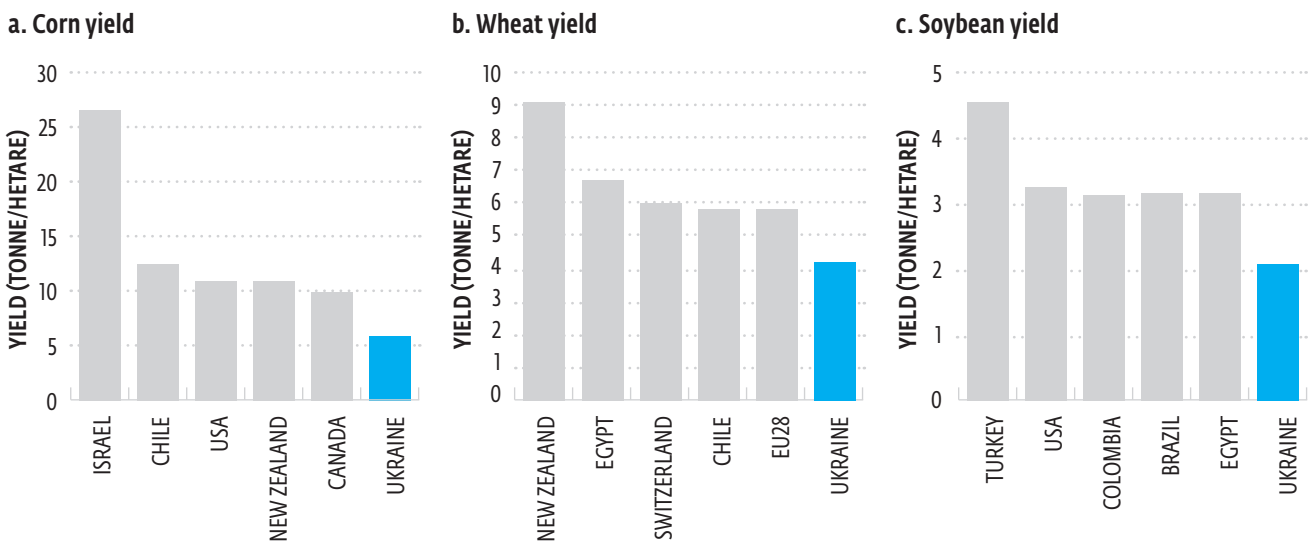
**Despite a probable reduction of the demand for agricultural commodities related to COVID-19 in 2020, longer-term projections in global demand for agricultural products suggest that Ukraine's agriculture sector can continue to play a leading role in supply, if it can address challenges of productivity compounded by climate change effects.** Lockdown and containment measures worldwide are disrupting agricultural value chains, and the fall in income caused by the pandemic is expected to affect agricultural production in the short run. However, longer-term trends indicate that the demand for agricultural products should increase. World population is expected to grow to almost 10 billion by 2050, with a majority living in Africa and South Asia. The FAO estimated that growth in demand will require an increase in agricultural production of 50 percent from 2012 levels (FAO 2017). Demand for cereals and vegetable oils is expected to be particularly high. For example, demand for cereals is expected to reach 3 billion tons by 2050, from utilization levels of 2.6 billion tons in 2017 (FAO 2009, 2019). Besides increasing demand for cereals and oil grains for human consumption, demand is also being driven by the feed and biofuel industries. The International Trade Centre estimates that Ukraine has a large unfulfilled export potential in cereals, at US\$2.9 billion per year, and in vegetable oils and fats, at US\$2.3 billion per year.<sup>38</sup> However, Ukraine needs to resolve the challenges of lagging productivity and risks from climate change if it is to fully exploit its leading exporter status going forward.

**This analysis estimates that the implementation of certain climate-smart agriculture (CSA) technologies could increase revenues and margins for producers, while delivering significant economic benefits at the same time.** Using financial and economic modeling for adoption of identified CSA practices, it is estimated that agricultural producers could increase revenues by as much as US\$11 billion in the first year (through increased productivity and yields) and help achieve a reduction in greenhouse gas (GHG) emissions of 11 metric tons of carbon dioxide equivalent (MtCO<sub>2e</sub>) per year. This would require investments in new equipment and technologies, estimated at close to US\$3 billion. Details of the analysis are given in the next section.

## THE CHALLENGE OF LAGGING PRODUCTIVITY AND RISKS FROM CLIMATE CHANGE

Agricultural productivity in Ukraine is a fraction of that in other European countries and is volatile because of dependency on weather patterns. The gaps in value added compared with other countries are large and threaten to impede further development of the sector. Agriculture value added per hectare in 2014 was US\$413 in Ukraine, compared with US\$1,142 in Poland, US\$1,507 in Germany, and US\$2,444 in France. The primary reason for this difference is that agricultural production in Ukraine focuses on lower-value-added products (such as grains). Even in pure crop production, yields in Ukraine are lower than in other global comparators (figure 3.1) and, while yields did rise after the 1990s, they have stagnated over the past decade. For example, wheat yields were 4 tons per hectare in Ukraine in 2014, compared with 5 tons per hectare in Poland, 7.4 tons per hectare in France, and 8.6 tons per hectare in Germany (World Bank 2017b). Production also is volatile. The volatility in agricultural production in Ukraine is already higher than average for other countries, partly because of the high dependency on natural precipitation (only 2 percent of cropland is irrigated). On average, over the course of every three years, wheat production fluctuates by 20 percent and corn by 25 percent (Fileccia, Guadagni, and Hovhera 2014).

**FIGURE 3.1 LAG OF AGRICULTURE YIELDS BEHIND MARKET LEADERS**



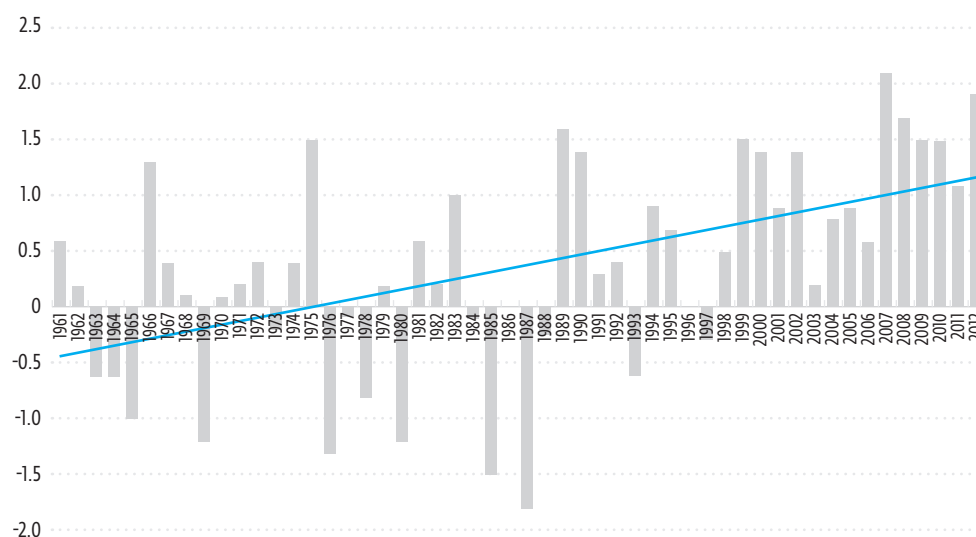
Source: OECD 2019.

Notes: EU28 = Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, and the United Kingdom.; USA = United States.



Besides low productivity and unsuitable farming practices, the adverse impacts of climate change also threaten the country's global competitiveness in agricultural products, with estimates indicating climate change could cause agricultural productivity loss of 40–60 percent in the coming years.<sup>39</sup> Previous analytics have identified several key constraints to improving current yields and raising future competitiveness. They include a weak business environment dominated by the lack of a regulated market, distorted state support, inefficient input markets (a lack of access to finance), high transport and logistics costs, and the inadequate and ineffective presence of global standards and regulations. A detailed discussion on land markets and reforms follows in the next section. Climate change and increasing variability in temperature are further expected to hinder crop productivity in the country. Historical trends show that during the past half century the average temperature in Ukraine has increased significantly (figure 3.2), causing changing weather patterns. While warmer temperatures might be beneficial for yields in some parts of the country, agriculture in the semiarid southern zone could suffer from a significant increase in droughts.

**FIGURE 3.2 AVERAGE ANNUAL TEMPERATURE DEVIATIONS FROM THE NORM (IN CELSIUS), UKRAINE, 1961–2012**



Source: World Bank Climate Change Knowledge Portal.

Drought events in the country have increased in intensity and frequency because of global climatic changes in temperatures and rainfall (IPCC 2012). Droughts are now occurring on average once every three years, causing crop productivity to decline. For example, the drought in 2009 resulted in a 30 percent reduction in production of wheat crop in the country. It is expected that climate change will exacerbate these phenomena in the future. In some major productive areas of the country (the so-called Steppe area, in the southern part of the country), these impacts are more severe than elsewhere (Fileccia, Guadagni, and Hovhera 2014). This is compounded by the poor condition of current irrigation practices in Ukraine. According to UCAB estimates, climate change may result in harvest losses of as much as 40 to 60 percent due to droughts. Furthermore, winters with more frequent unstable snow cover and lower temperatures in some parts of the country could increase the risk of crop failure, which, along with increased pest attacks, could reduce productivity by 20 to 30 percent (box 3.1).

### BOX 3.1 CLIMATE CHANGE AND ITS IMPACT: EVIDENCE FROM STAKEHOLDERS

Interviews with representatives of producers, farm enterprises, financial institutions, and the government point to some awareness of the potential risks from climate change, and the need to adapt agricultural practices.

#### Producers/Enterprises/Input Suppliers

- For the past several years, spring has practically disappeared in Ukraine. Summer actually begins after winter, which introduces new requirements for operational efficiency, especially for sowing. (Farmer)
- Demand for early postemergent herbicides for sunflower, corn, and soybeans has increased due to global climate change. (Arysta, chemical company)
- The need for fungicides is on the rise because of unstable weather conditions during the growing season and significant impact of temperature and moisture or humidity on the immune system of plants. Therefore, supporting plant health with protection products is a high priority. (Corteva, chemical and seed company)
- Climate change brings unpredictable weather conditions to Ukraine. Due to warm winters, pests have a greater chance of surviving and causing more damage to crops. (Corteva)

#### Other Stakeholders

- Changes in temperature have fundamentally changed approaches to fertilizing plants, both quantitatively and technologically. (Crédit Agricole)
- If warming continues at its present pace, yields of most crops may fall substantially in just 15 to 20 years because of increasing aridity. (Meteorological service)
- Increasing temperatures are destroying crops and the lack of moisture creates a challenging environment for growing different plants. Climate change should always be considered to avoid losses in productivity. (Member of Parliament)
- The number of days of high temperature has increased significantly (thermal waves), which triggers the premature maturation of seeds. (Ministry of Ecology and Natural Resources of Ukraine)

Ukraine's irrigation systems are concentrated in the south, where they cover a significant proportion of the total land area and support the production of all of Ukraine's rice, almost all its tomatoes, and a large share of other vegetables, fruits, and berries. Drainage covers around 10 percent of all agricultural land (over 3 million ha), mainly in the north and northwest, and makes a significant contribution to Ukraine's total production of cereals and beef. Efficient irrigation is of critical economic importance for Ukraine because it is a precondition for the cultivation of high-value fruits and vegetables, and for achieving and sustaining higher yields.

Changing rainfall patterns and runoff indicate that summer river flows are likely to decrease substantially, by as much as 50 percent, across Central and Eastern Europe, including in Ukraine. Annual river runoff in northern Ukraine may rise by 15 to 25 percent, with increased winter runoff and decreased spring runoff. In southern Ukraine, annual river runoff may decrease by 30 to 50 percent, exacerbating both drought risk and the frequency and magnitude of extreme floods. It is likely that the country will suffer increased water stress over the 21st century, as severe droughts—classified today as events that would occur once in every 100 years—are projected to become twice as likely by 2070 (table 3.1).<sup>40</sup> The World Bank's *Think Hazard!* tool<sup>41</sup> rates the risk of river and urban flood and wildfires as high and the risk of extreme heat and water scarcity as medium.<sup>42</sup>

**TABLE 3.1 CLIMATE STRESSORS AND CLIMATE RISKS IN AGRICULTURE PRODUCTION**

CLIMATE STRESSOR AND CLIMATE RISKS	
AGRICULTURE PRODUCTION	
Stressors	Risks
<b>Rising temperature</b>	Reduced losses from early spring frost
	Rise in winter wheat yields in north
	Decrease in rainfed high-input cereal yield in the south
<b>Fewer frost days</b>	Delayed sowing dates: overall plant length cycles substantially unchanged
<b>Changes in precipitation type and amount</b>	Increased moisture evaporation from the soil surface
	Intensified decomposition of humus, resulting in decreased soil fertility
<b>Shift in onset of seasons</b>	Reduced capacity of the soil to retain moisture as a result of erosion from extreme wind/water events
	Increased vulnerability of winter crops from reduced snow cover
<b>Drought</b>	Decreased grain quality resulting from higher CO <sub>2</sub> concentrations
	Increased volatility of sector and world prices

Note: CO<sub>2</sub> = carbon dioxide.

## CLIMATE-SMART AGRICULTURE

Climate-smart agriculture is an approach to managing agricultural production in a manner that increases productivity, enhances resilience, and reduces GHG emissions (see box 3.2).<sup>43</sup> Definitions across key institutions are given in appendix A.1. CSA technologies encompass adaptation and mitigation production practices and methods that not just help improve yields but do so in a sustainable way that helps manage future productivity. A meta-analysis of crop simulation under several climate scenarios found that farm-level adaptations of CSA technologies could increase crop yields by an average of 7 to 15 percent compared with nonadoption (Sova and others 2018). Studies that have analyzed specific CSA technologies also have estimated that yields have improved while costs have declined. For example, a study that looked at the cereal systems in India found that the use of CSA technologies reduced costs by up to 23 percent, while production remained equal or increased. These systems also resulted in moderating the effect of higher temperatures and increasing irrigation water productivity by 66 to 100 percent compared with traditional production systems (Khatri-Chhetri and others, 2017).

### BOX 3.2 DEFINITION OF CLIMATE-SMART AGRICULTURE (WORLD BANK)

CSA is an approach to managing landscapes—cropland, livestock, forests and fisheries—that aims to achieve three “wins”: (a) increased productivity to improve food security and boost farmers’ incomes; (b) enhanced resilience to drought, pests, disease, and other shocks; and (b) reduced greenhouse gas emissions.

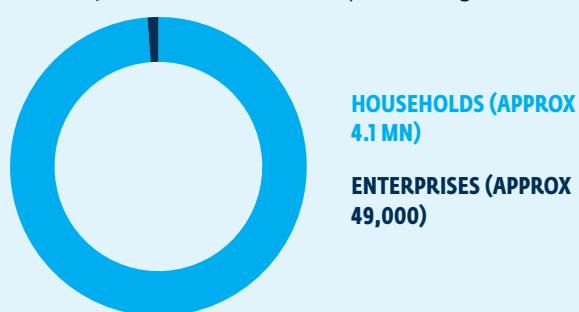
### BOX 3.3 SPECTRUM OF AGRICULTURAL PRODUCERS IN UKRAINE

A wide spectrum of agricultural producers operates in Ukraine. Production is primarily divided between enterprises and households. About 4 million household farms in rural areas (with an average acreage of about 1.23 hectares of land each) produce about 40 percent of the output. The remaining output is produced by about 49,000 farm enterprises, among which there is a wide variability of sizes by hectareage (figure B3.3.1).

**FIGURE B3.3.1 AGRICULTURAL PRODUCERS IN UKRAINE**

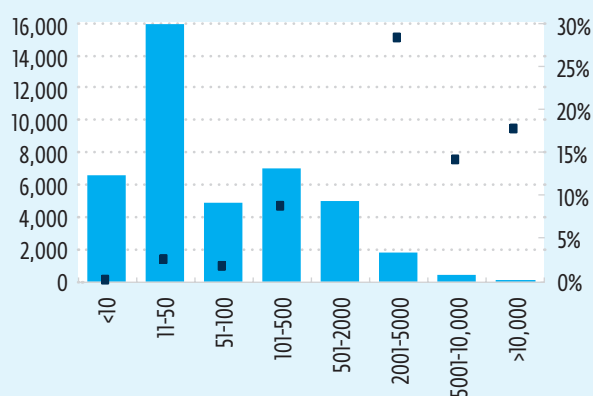
#### a. Share of households and enterprises

Share of households and enterprises in agriculture



#### b. Agriculture enterprises, number and share of land (in ha)

Agricultural Enterprises: Number and share of land



#### NUMBER OF ENTERPRISES SHARE OF AGRICULTURAL LAND

Source: State Statistics Service of Ukraine, 2018.  
Note: Ha = hectares.

The farm enterprises can also be categorized into two groups. About 180 enterprises (less than 1 percent of the total share of enterprises) account

for about 20 percent of the cumulative share of land being cultivated. Of these, about 100 of the largest enterprises, “agriholdings,” manage millions of hectares held in land banks. On the other end is the large share of small and medium enterprises—40 percent of the total number of farms but holding only between 11 and 50 hectares, about 2.5 percent of total land share.

An agriholding is a conglomerate with thousands of hectares (ha) of land that comprises several business entities engaged in various activities, including logistics, trade, and processing. They combine several farms of different sizes (that can be smaller than 2,000 ha or larger than 10,000 ha). For example, Ukraine’s largest agriholding, Ukrlandfarming, controls 654,000 ha, or 3 percent of Ukraine’s arable land. Other top agriholdings that are engaged in several agricultural subsectors and activities include Agroprosperis (430,000 ha), Kernel (390,000 ha), Astarta (245,000 ha), and Ukroprominvest Agro (122,000 ha).

Not surprisingly, these large agriholdings have the easiest access to all the necessary inputs, including credit and the latest foreign technology. They also exhibit productivity and yields that match, and sometimes surpass, global benchmarks and implement innovative and cutting-edge agricultural practices that include climate-smart solutions.

That larger share of smaller farm enterprises faces constraints in accessing the necessary inputs for climate-smart methods. However, large farms enjoy disproportionate access to state-allocated resources—although it is not clear whether that access is also directed to the largest agriholdings. In 2014, 79 large farms that operated on over 5,000 ha of land received close to 37 percent of the entire state support budget while accounting for only 12 percent of all farms in the country. In 2017, the two largest poultry producers received almost 50 percent of all the state support allocated to agricultural producers. In contrast, of the 4 million household farms, only about 41.0 percent are aware of the state support program, and only 20.3 percent of household farms applied for state support in the period 2000–17.

For Ukraine, these technologies provide a solution to manage the challenges that the agriculture sector faces from low productivity and the risks of climate change. Furthermore, they allow Ukraine to raise its competitiveness in the long run by building resilience in its agriculture sector. While the large agricultural producers in Ukraine often use state-of-the-art production equipment, smaller producers face a number of barriers in adopting climate-friendly and climate-adoptive technologies (box 3.3).

## **OPPORTUNITIES IN CSA TECHNOLOGY MARKETS**

CSA technologies encompass numerous agricultural methods and practices, seven of which were selected for analysis in Ukraine (table 3.2). These include practices that cover more sustainable and efficient use of inputs such as seeds, fertilizer, water, and energy. Selection was based on stakeholder consultations with producers and was influenced by the existing practices being implemented, or those that producers said would be necessary in the future. Furthermore, the analysis was restricted to the grains and oilseed subsectors given their dominant share in the country's agricultural production and exports. Discussion with stakeholders suggests that the implementation of these technologies is feasible across other subsectors in varying degrees, dependent on the maturity of the subsector and the production processes. However, as a World Bank Group meta-analysis of CSA technologies shows,<sup>44</sup> the majority of these technologies have been used with food crops such as rice, maize, and wheat. This is the case for two reasons: (a) food security considerations have led to the development of high-production systems for those crops and (b) the preponderance of experts who contributed to the meta-analysis report deal with those crops.

**TABLE 3.2 CLIMATE-SMART AGRICULTURE TECHNOLOGIES STUDIED**

CSA TYPE	CSA MEASURE	DESCRIPTION	BENEFIT
<b>Nutrient smart</b>	Fertiliser	Soil sampling and mapping	Improved yields / lower input costs
		Type of fertiliser	
	GPS application following scouting / drone / satellite / tractor data		
Crop protection chemicals	Types of protection	Improved yields / less crop losses	
	GPS application following scouting / drone / satellite / tractor data		
Crop rotation	Rotation of crop types to increase soil nutrition	Preserve soil nutrients / less fertiliser	
<b>Water smart</b>	Irrigation	Irrigation of crops when required	Produce crops on unproductive land where there is low precipitation
<b>Knowledge smart</b>	AgriTech / Data & planning	Weather Station / Precipitation records	Efficiencies across farm inputs (e.g. fertiliser, fuel)
		Production and yield records	
	Seeds	Drought, disease resistant or yield increasing	Improved yield / less crop loss
<b>Energy smart</b>	No-till	No-till / low till, seeders, cover crops	Less inputs (fuel, fertiliser)

Note: agritech = agricultural technology; CSA = climate-smart agriculture; GPS = global positioning system.

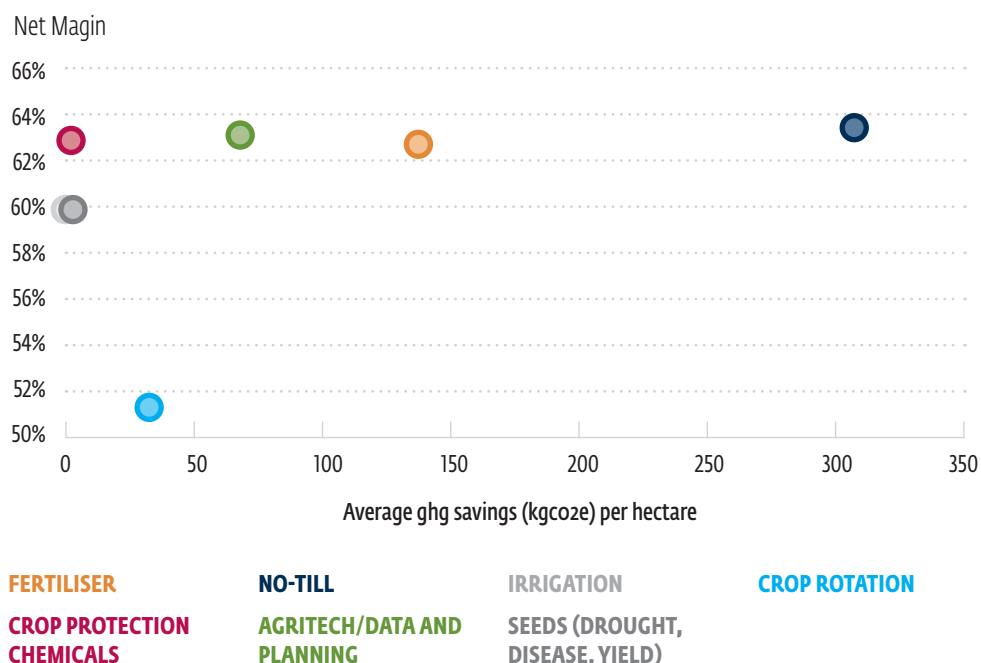
Some large Ukrainian agriholdings already implement global best practices of CSA technology. Hence, examples of the use of these technologies exist in the country.

**The adoption of these CSA technologies requires investment potentially up to US\$1.7 billion across numerous subsectors.** The investment potential is large—if the modeling is credible,<sup>45</sup> implementing all private and public sector CSA measures would require US\$1.7 billion of investment and result in additional revenue of US\$11 billion and a carbon reduction of 11 million MTCO<sub>2</sub>-e.<sup>46</sup> Even if only 20 percent of potential technologies were implemented, that would still require US\$340 million. **Net margins are estimated to increase by 50 to 63 percent of current levels because of both improved productivity and reduced costs from more efficient modes of production.**

These estimates do not take into account the multiple variations of the economic and financial benefits that are possible by interacting different technologies or considering different soil conditions. However, the estimates are broadly in line with other analyses that have been reviewed (being at the lower end of the financial returns estimated) and reconfirm that financial viability for such a market exists with positive economic benefits.

Potential investors to fill this financing gap would be financial institutions to lend to grain producers, focusing initially on inputs and later on capital expenses; IFC investors as new clients for producers of grain both for export and as animal feed; and investors for fertilizer producers, especially if and when new fertilizers are licensed. The breakdown of the financial and economic benefit by technology is provided in figure 3.3 and table 3.3.

**FIGURE 3.3 NET MARGIN OF CLIMATE-SMART AGRICULTURE TECHNOLOGIES**



Source: Carbon Trust and UkrAgroConsult 2019.

Note: agritech = agricultural technology; GHG = greenhouse gas; kgCO2e = kilogram carbon dioxide equivalent;



**TABLE 3.3 INCREMENTAL PER HECTARE COSTS AND BENEFITS OF ADOPTING CLIMATE-SMART AGRICULTURE SOLUTIONS**

CSA SOLUTION	AVERAGE GHG REDUCTION PER HECTARE (KGCO <sub>2</sub> E)	AVERAGE CHANGE IN COST PER YEAR (USD)	AVERAGE YIELD IMPROVEMENT IN YEAR 1	AVERAGE CHANGE IN REVENUE PER YEAR (USD)	NET MARGIN
<b>Fertiliser</b>	138.4	\$6	10%	\$99	62%
<b>Crop Protection Chemicals</b>	1.8	-\$2	10%	\$99	63%
<b>No-Till</b>	308.9	-\$4	8%	\$79	63%
<b>AgriTech / Data and planning</b>	68.7	-\$16	12%	\$117	65%
<b>Irrigation</b>	-	\$0	3%	\$0	59%
<b>Seeds (drought, disease, yield)</b>	1.8	\$18	10%	\$99	61%
<b>Crop Rotation</b>	32.6	-\$6	-8%	\$49	62%

Source: Carbon Trust and UkrAgroConsult 2019.

Note: -- = not applicable; the CSA Irrigation solution assumes that 700,000 hectares of degraded land is reclaimed back into production. As a result, there is no "incremental" cost and benefit to evaluate, because the CSA measure relates to new land not already in production. Agritech = agricultural technology; CSA = climate-smart agriculture; GHG = greenhouse gas; kgCO<sub>2</sub>e = kilogram carbon dioxide equivalent.

**The key takeaways from this analysis are that:**

- There is a business case for investment that also delivers economic returns by way of a reduction in GHG emissions.
- Ukraine should prioritize specific CSA technologies. In this case, economic and financial benefits point to the top three being the use of climate-smart fertilizer, the implementation of no-till technology, and the adoption of agritech/data tools and planning.
- Although the implementation of other CSA technologies, such as the use of climate-smart seeds, does not provide as high a direct GHG benefit as the top three, the other technologies would provide significant indirect GHG benefits by avoiding crop failures due to climate change impacts. Similarly, crop rotation, when practiced correctly, stabilizes soil health and prevents soil erosion that could lead to long-term soil degradation.

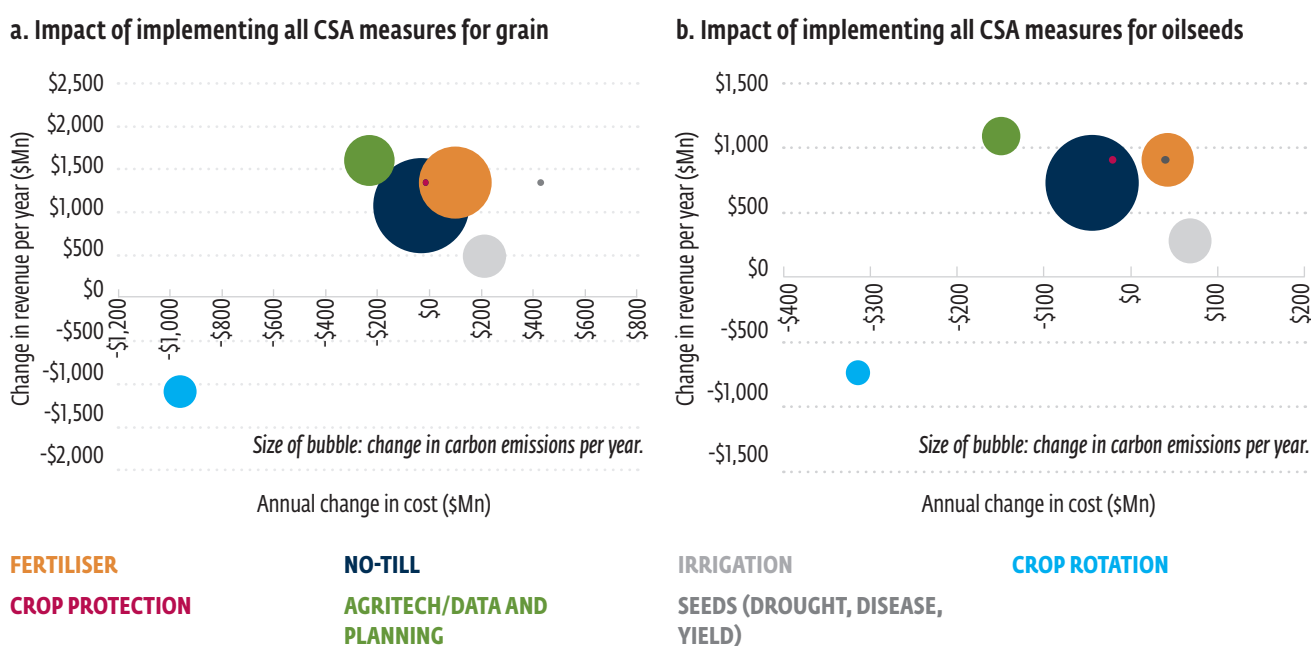
However, adoption of these CSA technologies requires significant capital expenditures. Estimates of capital expenditures are about US\$2.9 billion to yield the economic and financial returns previously listed across existing acreage of grains and oilseeds. As is evident, the lion's share of this capital expenditure requirement is in the adoption of climate-smart irrigation systems, which has been estimated only for the expansion of irrigation to hitherto degraded land (700,000 ha of land). A separate World Bank Group analysis on the irrigation systems in Ukraine has estimated capital costs for modernization of the current systems and the rehabilitation of old systems at between US\$1,400 and US\$2,400 per hectare (World Bank 2017a). If these were to be applied across the existing acreage of land that has old irrigation systems, the total required investment in irrigation would be even more substantial. An estimate from the National Investment Council of Ukraine assesses an investment requirement of US\$2 billion–\$4 billion in irrigation systems across 1.5 million–2 million ha of land to address climate change impacts (Agricultural Sector of Ukraine, 2018). An overview of the nature of capital expenditure needs is provided in table 3.4.

**TABLE 3.4 CAPITAL EXPENDITURE NEEDS FOR CLIMATE-SMART AGRICULTURE TECHNOLOGIES**

TECHNOLOGY	CAPEX/HA (\$)	TOTAL CAPEX (\$ MN)	DESCRIPTION OF MEASURE
<b>Irrigation Systems</b>	2,400	1,680	Establish modern irrigation systems including drip and pivot
<b>No-Till</b>	27	553	Purchase of no-till equipment (4 meter till for tractor)
<b>Agri-tech/Data &amp; Planning</b>	17	346	Purchase of software to access data and planning tools
<b>Crop Protection Systems</b>	14	295	Purchase of software and equipment to spray protection chemicals using a drone
<b>Fertilizer</b>	2	41	Purchase of sprayers for liquid, organic and low emission fertilizer
<b>Crop Rotation</b>	Not required		No additional/minimal capital expenditure required. Annual cost changes due to change in fertilizer need.
<b>Climate-smart Seeds</b>	Not required		No capital expenditure required. Annual cost changes due to purchase of higher cost seeds

Source: Carbon Trust and UkrAgroConsult 2019.

Note: Agri-tech = agricultural technology; capex = capital expenditure; capex/ha = capital expenditure per hectare.

**FIGURES 3.4 OVERALL IMPACT OF CLIMATE-SMART AGRICULTURE TECHNOLOGIES ON GRAINS AND OILSEEDS**

Source: Carbon Trust and UkrAgroConsult 2019.

Note: Agritech = agricultural technology.

Besides irrigation systems, the capital needed for the adoption of other CSA technologies is about US\$1.3 billion. Implementation of the top-three CSA technologies alone, in terms of financial and economic benefits, would require US\$0.9 billion. Even with an assumption of 50 percent implementation rate of these three technologies, the capital need would be about US\$500 million, which is a significant amount given the lack of access to finance for producers, a constraint discussed later. These three technologies are discussed next, particularly the nature of the production methods, key benefits and constraints, and examples from global experiences.

### A. No-till technology

Currently, as per field surveys conducted in this analysis, most farmers use conventional plowing methods, even though moving to no-till technology would be beneficial. In the traditional practice, a typical farm is plowed once or twice, seeded, and then covered. Moving to no-till technology allows for seeding and tilling at the same time, which reduces soil carbon loss and provides significant fuel savings. Besides the reduction in soil carbon loss, this technology allows for soil erosion prevention; the preservation of humidity, humus, and soil structure; and the expansion of consecutive sowing of different crops. There is also an estimated cost reduction in capital and labor, which, together with improved yields, results in higher profitability.

The no-till technology market comprises both domestic and foreign producers (40 percent domestic and 60 percent foreign producers), who use local distributors (such as Agrosoyuz, Agromir, UkrAgroTsentr, and AgroTill) on a national scale, with smaller players regionally. Consolidation among these distributors is ongoing, as larger players establish their own regional networks.

The estimation in the analysis shows that moving to no-till technology across existing land cultivated for grains and oilseeds would result in incremental revenue of US\$1.8 billion in the first year after yields stabilize and turn positive. Reduction in GHG emissions over this period would be about 6.9 MtCO<sub>2</sub>e. Over a three-year period, which is considered the average time over which producers will estimate returns, the total increase in revenue would be about US\$5.6 billion (due to increased yields year-on-year). The capital investment required has been estimated conservatively at US\$0.5 billion and would depend on the size of the tilling machine and tractor needed for implementation.

“Agrochemical surveys show a deterioration of the soil. In absolute terms in **Ukraine soil humus has fallen by 0.22 percent over the past 20 years**. The loss in monetary terms amounts to more than **UAH 450 billion.**”

*Prime Lab Tech supplier.*

The biggest barrier to the adoption of these technologies is the time lag in the improvement in yields, and hence in profitability. Converting to a profitable no-till outcome could take five to seven years, because in the initial years there is a decline in production before the benefits are realized later. There is also an initial increase in costs involving fertilizer use and efforts to control infestation. Some farms manage this risk by gradually converting fields to reduce the overall impact on a farm’s production capacity.

In addition, the other key constraint in adopting CSA technologies is the lack of access to finance. Farmers and enterprises are constrained in their ability to obtain finance for the adoption of this technology because of both demand and supply factors. These factors include the inability to monetize land as an asset—with the new land law coming in effect in July 2021 addressing this in part—a lack of carbon-accounting principles or a market that hinders climate finance flows, and the risk aversion of banks to lending for CSA. The long gestation period for improving yields, and hence revenues, also adds a barrier for farmers to obtain short-term capital.

A very high and critical barrier is the lack of knowledge and of research and extension systems to support CSA. Producers are not fully knowledgeable of these practices, nor of how to use them correctly. The ecosystem does not provide useful or relevant data or research that could help them make decisions on CSA technology and its usage. In universities the study of CSA as a field is very limited, reducing the availability of skilled agronomists and other experts needed to help implement these practices.

## **B. Use of low-emission organic liquid fertilizer**

Moving to a more optimal blend of lower-emission fertilizer would improve grain yields by an average of 75 percent. Currently, a significant proportion of Ukrainian farms do not use organic fertilizer or any form of fertilizer that may be considered climate smart. In fact, the underapplication of fertilizer in general is widespread across the country and is one of the reasons for the low productivity. Of the farmers who were interviewed for this analysis, most said they use chemical-based solid fertilizer, though 64 percent of the farmers have applied some form of improved fertilizer to some of their crop in the past 12 months.

However, given the type of fertilizer that is commonly used (chemical-based), there is an overapplication of nitrogen in the soil, which reduces productivity and can harm future yields. Moving to a more optimal blend of fertilizer (organic, liquid, and low-emission inputs that combine to produce less nitrogen), even at current application rates, could be both economically and financially beneficial (box 3.4).

**The main constraints to implementation of this practice are similar to those of the others: a lack of knowledge and finance, and also a lack of supply of fertilizers in general and climate-smart fertilizer in particular.** The modeling in the analysis indicates that conversion to use of climate-smart fertilizer could lead to incremental revenues of about US\$2 billion owing to increased yields, as well as a reduction in GHG emissions of 3 MtCO<sub>2e</sub> per year. Capital expenditure is minimal and would cover the purchase of any specific sprayers. While the cost of organic fertilizers is lower than of chemical fertilizers, stakeholder surveys still highlight the lack of access to finance as the key constraint to usage. This observation may reflect the broader issues regarding the supply of credit, as awareness of different types of fertilizers is not widely prevalent. The lack of knowledge about the use of techniques, data, and global experience has also been cited as a concern. Furthermore, supply of organic (manure-based) fertilizer is limited because of an undeveloped livestock sector, which will take time to develop and to produce the fertilizer needed. Manufactured organic fertilizer (Sumus) is locally produced, but supply is small.

**In general, Ukraine has a low supply of fertilizers, which are costly.** Domestic production makes up about 60 percent of the total supply, and the market is dominated by a few producers—one firm alone produces 80 percent of the domestic supply, and the remaining is produced by two state-owned joint-stock companies. Domestic production is also highly contingent on the availability of gas, which constitutes a large share of the cost of fertilizer production. That requirement drives up the cost of production in Ukraine because gas and ammonia both need to be imported. Therefore, Ukraine needs to become more efficient in its fuel production and consumption to further improve its supply of fertilizer. The remaining 40 percent of the fertilizer supply is imported. Nevertheless, fertilizer imports may not be regarded as substitutable products for farmers. There are also concerns about anticompetitive practices by the main fertilizer producer, especially in the nitrogen fertilizers market. This market is fraught with uncertainties because fertilizer imported from Russia is banned. It is important that Ukraine eases imports from the EU in this situation by amending laws that recognize the European Conformity list of fertilizers and also by removing registration and testing requirements for imports of EU-approved fertilizers. Further, the weak and inefficient transport and logistics sector constrains the import market. The state-owned Odessa Port factory and other port facilities may be reequipped to produce or import nitrogen fertilizer, an effort that could improve the supply of nitrogen fertilizer in the country. However, Ukraine's competitiveness in the production of fertilizer versus imports should be determined based on an assessment of how the domestic industry can compete in the global market.

**BOX 3.4 EXPERIENCE WITH CLIMATE-SMART FERTILIZER IN UKRAINE**

In Ukraine, an Italian fertilizer company and an Irish fertilizer applicator company have partnered to conduct field test pilots of the application of climate-smart fertilizer on corn, wheat, sunflowers, and soy.

The typical cost for this application is US\$35 per hectare, where the fertilizer is applied with the seed to help plants grow roots quickly, resulting in three times the root compared with standard fertilizer.

This process supports drought resistance and lower

degradation of soil, and it has yielded additional US\$80–US\$200 per hectare.

The Irish company plans to start manufacturing in Ukraine, because substantial demand is estimated in Ukraine for this market. Furthermore, agricultural equipment suppliers are subject to import tariffs.

From the farmers' perspective, use of this fertilizer becomes cost-effective with large field sizes.

**C. Use of Agritech/data and planning tools**

**The use of data and decision tools and other agricultural technology among small and medium-sized farms is scarce.** Larger farms and agriholdings have greater access to these systems because they have greater knowledge of their relevance, especially where the agriholdings have foreign-trained staff (box 3.5). The adoption of this method implies (a) using precipitation records and data from weather stations, (b) using regional benchmarking and historic farm production and yield records to make informed agricultural decisions, and (c) monitoring growing conditions from objective satellite-derived observations.

**The use of these data allows for better management of farming practices and inputs to enable efficiency.** For example, historic data of growing conditions can be used to identify the return period for investment for various levels of crop failure, which could then be used to define vulnerability and return periods on investment for crop rotation. Wetness and temperature anomalies can be used as indexes in insurance programs to trigger the catastrophic bonds used to compensate farmers for their losses in near real time.

The modeling of costs and benefits of the use of such data and tools shows an increase in revenue of about US\$2.7 billion in the first year as productivity improves from the more efficient use of inputs, and this revenue increases marginally over the short term as yields continue to improve. Capital costs for purchase of these tools are estimated on the basis of current market prices at a total of about US\$0.34 billion.

**The constraints to fuller adoption of this CSA practice are also most severe in terms of access to finance, knowledge, and availability of solution providers.** At present, the majority of these solutions are being provided by small Ukrainian IT companies, some of which are growing as demand for this product increases. Some of the larger agriholdings have their own operations/systems that gather and analyze the data. One large agriholding whose representative was interviewed is working on a prototype of an agritech system for the Ukrainian market. Because of (a) the lack of a well-developed ecosystem of providers who could train the farmers at scale, (b) links between current users of these technologies and others, and (c) little support from other sources (public or private), there is a lack of awareness and knowledge, impeding greater implementation.

### BOX 3.5 GLOBAL EXPERIENCE

In the United States, John Deere's decision support solution pulls data from sensors, market prices, weather, machine conditions, historical yields, soil salinity, and other data points to enable farmers to make smart decisions.

Even if they had the time to study the data, farmers are not data analysts, nor do they have the tools, data, or systems to optimize their yields. At the same time, several detailed factors in production cannot be easily optimized: seed count, plant separation, water,

fertilizer, labor, machine down time, row distances, harvester speed, and others.

John Deere generates highly actionable "prescriptions" for farmers to drive better yields, cut waste, and improve product quality. Every seed, air droplet of fertilizer, irrigation step, and turn of a tractor can now be guided by data, according to the manufacturer. The firm sells data-ready, hands-free machines, solar-powered and satellite-integrated data capture sensors, and information delivered from the cloud to their customers' phones and tablets.

## BARRIERS TO ADOPTING AND IMPLEMENTING CSA TECHNOLOGIES

**Despite the evident financial benefits, CSA uptake is slow for a number of reasons.**

First, the volatile and unpredictable economic situation is harmful because it results in high interest rates in the country, hindering borrowing for long-term investment. Lack of enforcement of contracts and broader adherence to the rule of law also deters investment in these expensive technologies. The issue of landownership, discussed in the next section, has been a key disincentive to investments in productivity of land via any long-term measures. Resolving these cross-cutting constraints is crucial for the successful mainstreaming of CSA solutions in Ukraine.

**The analysis also identifies some other barriers that stakeholders cited as common across technologies: the lack of access to finance, knowledge and skills, and a lack of availability of solutions providers.** Studies in other countries on barriers to adoption of CSA technologies cite the same barriers. For example, an appraisal of benefits and barriers of CSA practices in smallholder farming systems in Colombia identified insufficient financial capital, water scarcity, and a lack of technical knowledge as key constraints. Another study of adoption of CSA technologies in Kenya among farm enterprises cited access to finance as a key constraint. A World Bank compilation of study of CSA technologies across 33 countries identified a lack of capacity in the form of training and information as the single most important barrier affecting 90 percent of all interventions.

**A previous WBG study on the adoption of conservation agriculture in Ukraine also highlighted similar constraints to the adoption of no-till technology,** in particular (Fileccia, Guadagni, and Hovhera 2014). The study pointed to the need for improved research networking to facilitate knowledge sharing and remove the misconceptions that these practices are not suitable for Ukrainian soil. The lack of access to finance was cited as another key constraint, particularly the higher premiums charged by insurance companies for financing CSA practices due to a lack of awareness and an inability to price risk adequately.

“Falling margins and profits make farmers realize the need for changes. The point is that they often lack understanding. They do not know where to go, whom to turn to, and where to start.”

*Smart Farming, agricultural data firm*

“Usually Ukrainian farmers don’t trust and act on government agronomy advice; they act on their own possibilities and on information received from multinational companies.”

*Arysta*

“Unfortunately, we don’t have any instruments that provide consultancy to the level of small family farms yet. Small farmers need advice as well as subsidies provided from the government to buy equipment.”

*Member of Parliament*

These constraints are more stringent for the SMEs in the sector than for large agriholdings because SMEs don’t have access to finance or the knowledge and capacity to adopt CSA practices. As mentioned in box 3.3, approximately 1 percent of formal agricultural enterprises—the agriholdings—operate about 20 percent of land and have access to factor inputs and technologies to adopt cutting-edge agricultural practices, including CSA technologies. The smaller enterprises are more constrained because of the challenges described in the following sections, and the recommendations are therefore geared toward this stakeholder specifically.

### Access to finance

Almost 50 percent of farmers surveyed identified a lack of financial resources as a reason for not implementing CSA technologies. The number of small and medium farmers who are constrained by financial capital was higher.

Given the landownership structure in Ukraine, farmers cannot use land as collateral for credit, and there is little incentive for them to invest in an asset that they do not own. Furthermore, the users associate risks with these investments because of several cross-cutting issues discussed later (lack of enforcement of contracts, lack of infrastructure, and a long gestation period to attain profitability in certain technologies) that further deter investment and the need for credit. The new land law passed on March 31, 2020 and coming in effect on July 1, 2021, opens up the possibility of using the land as collateral for loans.

Furthermore, the several supply-side constraints in the financial sector are exacerbated by the existing weaknesses in the banking system mentioned earlier. Specifically,

- Banks lack the knowledge, capacity, and systems to finance CSA investments. This hinders their ability to assess and price risk, deterring them from making climate-smart credit available. This is compounded by the fact that on the demand side, there is sometimes a lack of transparency since several MSME’s cannot provide the records of their financial history that would allow them to source the formal banking sector.
- The lack of a carbon-accounting framework in Ukraine implies that there is no method of calculating the costs and benefits of implementing these solutions, nor suitable auditing or certification. This lack of maturity is also a barrier for international carbon finance providers to channel funds to this market.
- Related to the above constraint is the need for climate-smart standards in Ukraine that can help define CSA activities and support the flow of financing. For instance, international crop certification schemes (Roundtable on Responsible Soy Production, SAI: Farm Sustainability Assessment, Global GAP) provide quantitative and qualitative metrics that allow producers in countries to certify that they are following CSA practices. This allows them to seek climate-smart-eligible financing.
- Finally, there is also a lack of relevant financing instruments in the market to support CSA investment (box 3.6), especially those that can help manage and mitigate risks associated with the use of these practices, which are new—for example, insurance and preharvest guarantee schemes. The lack of these instruments is part of the broader weaknesses in the financial sector that reflect a small share of lending to the agriculture sector.



### BOX 3.6 FINANCIAL INSTRUMENTS FOR AGRICULTURE

Banks financed agriculture for a total amount of UAH 68 billion (US\$2.7 billion) in 2018, which is 7.9 percent of a total credit portfolio of the banking system of Ukraine. This has increased marginally from a share of 7.1 percent in 2014.<sup>47</sup> The inability to use land as an asset against loans has been a key constraint; the new land law opens up the possibility of using the land as collateral for loans starting in 2021.

Some key financial instruments available for the sector are as follows:

- **Crop receipts.** Crop receipts is a preharvest financing instrument that enables farmers to secure loans on a pledge of a future crop. They have been in use in Ukraine since 2015. From that time, over 2,400 crop receipts have been issued with total value US\$631 million as of December 2019 (more recently, as of May 2020, the total funding for crop receipts had reached \$US1 billion). More than 3.5 million tons of grains and oilseeds were used as pledges within issued crop receipts. The default rate for crop receipts remains less than 1 percent. Besides financial institutions, input suppliers are also key providers of this source of financing. To operationalize crop receipts, officials established a transparent register of crop receipts, which enables free access by creditors to see if farmers have any encumbrances on their farming operations. The registry thus creates transparency and reduces the fraud of pledging the same collateral to multiple creditors. A new law also has been drafted that will reduce the costs of a crop receipt by providing automation in preparation of crop receipts, validation of land plots, and property rights through other registries. Passing of this law is important to expand sources of financing for agriculture. Besides this, other key changes needed are to update the crop register to enable features from the law and to build capacity among stakeholders to operationalize the law.
- **Partial credit guarantees (PCG).** A partial credit guarantee provides a guarantee of some percentage of losses, thus enabling a bank to lend to farmers who may not have sufficient collateral to get a loan. This instrument is often created to enable small farmers to get commercial loans. The government has been developing a concept and manual to operationalize a national PCG, with support from the World Bank. This fund would be capitalized by the government, and recent discussions suggest that the Ukrainian government would put approximately UAH 240 million in the fund (roughly US\$10 million). Foreign investors might also be able to place their capital in the fund, but that option likely would require independent high-quality governance, auditing, and so on.
- **Agriculture insurance.** Although agriculture is a key element of the Ukrainian economy, agriculture insurance is not as prevalent as it should be given its importance as a risk management tool. Only a very small share of insurance companies in the market cater to the agricultural sector. According to estimates, for the period 2005–17, only about 6 percent of the total number of insurance companies operating in Ukraine provided agri-insurance, and only about 3 percent of all sown area was insured (Nesterchuk and others 2018). The related insurance penetration ratio, expressed as area insured to area planted, is about 7.5 percent. Compared with Russia (20.0 percent) and other important European countries such as Austria and Spain (up to 80.0 percent), insurance penetration in Ukraine is small. Agricultural insurance is currently carried out through traditional insurance products that cover both monorisks and multirisks. More sophisticated instruments, such as weather index–based insurance products, are in very early stages of development. In general, there is low trust of insurance in the market because Ukraine lacks adequate procedures to evaluate agri-insurance products to ensure that the products provide value to farmers. As a result, farmers often buy cheaper products that do not pay out when they are needed. The passing of the Split Law has been an important step toward regulatory reform by shifting the responsibility for nonbanking institutional governance from the existing regulator to the Central Bank. This

reform will need to be followed by building capacity among the new regulators to implement their new role. Further, the draft of the new law on state support of agriculture insurance needs

to be passed. This would clarify the procedure for subsidies in the future because the current structure has high likelihood of subsidy abuse and mismanagement.

### Access to knowledge infrastructure and skills

Stakeholder surveys highlight that awareness of CSA technologies is increasing, but there are still barriers to adoption, especially among smaller enterprises. Ninety percent of farmers surveyed had heard of CSA technologies and had considered adoption, a result that echoes the trend seen across CSA technology adoption in other countries. However, there is a lack of understanding of these solutions and their practical implementation. Farmers do not have the technical or managerial skills to understand CSA technologies and their costs and benefits, even though they see the need. Users also do not trust existing decision-making information, which is dominated by public sources or specific technology solution providers.

**Support is scarce in terms of agronomy data or decision-support systems, or agronomists who can advise farmers on CSA technologies.** Systematic and readily accessible agrometeorological data and decision-support tools are not available in the market. Technology providers are often the gatekeepers of these solutions. Therefore, the focus becomes specific to products instead of to an integrated holistic approach to information. Furthermore, farmers treat these providers with considerable skepticism. Public sources provide agronomy data (box 3.7), but farms and enterprises do not trust this source as being effective or adding value. Global best practices and experience are not available widely or shared. While a large number of agricultural research-based enterprises exist, they are not necessarily engaged in cutting-edge research or global innovations. This lowers the quality of agronomists who are available to support farm enterprises. A farm enterprise survey in 2016 conducted by a local consulting firm identified the lack of skilled personnel available at farms as partly due to lack of appropriate training at universities and partly due to the unwillingness of skilled staff to work in rural areas.

#### BOX 3.7 AGRICULTURAL RESEARCH AND EXTENSION SERVICES

The National Academy of Agricultural Science is the country's main institution for agricultural research. It has a special status that provides it with complete autonomy without independent auditing or any state control. It oversees more than 340 institutes and experimental farms, of which five are national research centers, 52 are research institutes, and more than 200 are experimental farms. However, the

research is considered disconnected from practical requirements or from international best practices and research.

The country's agricultural advisory services are also underdeveloped and largely underfunded. The credibility and reliability of extension officers in these services is considered low.

Source: Institute for Economic Research and Policy Consulting, Ukraine.

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“Private land ownership can potentially give impetus to investment in improving the quality of land and natural resources usage. Thereby, the issue of sustainable development on one’s own land becomes even more relevant.”

*Credit Agricole*

The most effective would be the right legislation allowing farmers to use as soon as possible the latest world achievements in genetics and plant protection, and a rapid registration and regulatory approval system.

*Corteva*

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**Barriers reduce both the domestic and foreign supply of CSA technologies.** For Ukraine-based producers and providers of inputs and equipment, the capital costs of expansion are high given the general high interest rates and low availability of capital. The lack of high uptake and demand for their products also lowers revenues, which is a deterrent to further growth plans. For foreign equipment and solution providers—especially providers of capital-intensive solutions such as irrigation systems and no-till machinery—high import tariffs further increase costs and lower profitability. In some markets, such as in fertilizers, a business environment that does not allow for free competition hinders availability. Further analysis is needed on input markets to analyze these challenges in more detail, including solutions to address them (Box 3.8).

### **Cross-cutting barriers that impede overall private sector development have also been highlighted in the analysis as constraining implementation of CSA technologies**

Several key constraints to private sector development mentioned earlier in the note also were cited through stakeholder surveys as barriers to the use of CSA in the country. Specifically,

- **Importance of land reform.** The ability to own land and clear and transparent systems to support ownership are critical for incentivizing farms and enterprises to invest. The next section provides in greater detail an assessment of this reform and estimates of benefits that could accrue with changes in the current land laws.
- **Improved judiciary and the rule of law.** Stakeholder interviews with farmers and enterprises suggest that contracts are not easily enforceable in dealings with equipment suppliers or public insurance companies.
- **Appropriate legislation and stable policy environment.** Further analysis should be done to determine an incentive structure of subsidies and taxation that would provide an impetus for the adoption of CSA technologies, especially in the case of solutions such as no-till farming, for which returns from investment are delayed.

- **Lack of infrastructure.** One of the key barriers to implementation of these technologies is insufficient infrastructure—specifically, irrigation and transport and logistics.
  - *Irrigation.* The use of modern irrigation systems (such as pivot or drip irrigation) is not only a form of climate-smart technology, but also a broader economic benefit. Ukraine still has outdated Soviet-style irrigation systems that are inefficient and insufficient. Replacing this infrastructure with efficient systems such as drip and pivot irrigation would help reclaim degraded land for agricultural use. Besides this basic infrastructure, other constraints around ownership of water resources and regulatory barriers need to be addressed to increase investment in irrigation, even though there is interest.
  - *Transport and logistics.* The cost of agricultural logistics in Ukraine is 30 to 40 percent higher than in France and the United States. The river transport system is significantly underdeveloped and could offer major transport emission reductions if climate-smart initiatives were adopted in the sector. A strong transport and logistics infrastructure is also critical to supporting the expansion of the CSA technology sector. For instance, a dynamic fertilizer industry requires a well-developed transport and logistics network because it is a bulky commodity. At the moment, Ukrainian ports are not equipped to handle large fertilizer imports (poor facilities for loading, unloading, and packaging), which comprise 40 percent of the total of available fertilizer. As a result, imports have been restricted to countries that can transport it by rail. As mentioned earlier, work is ongoing to modernize Ukrainian ports, which could help ease the flow of imports of fertilizers. The lack of trust in the logistics network also creates a barrier for fertilizer users from engaging in long-term contracts with international fertilizer producers.

### BOX 3.8 UNEVEN ADOPTION OF CLIMATE-SMART AGRICULTURE TECHNOLOGIES ACROSS PRODUCERS

Adoption of climate-smart agriculture (CSA) technologies across different farm enterprises by size is uneven in both Ukraine and globally for several reasons, with no clear evidence that larger enterprises are faster adopters. First, there are unclear and blurred distinctions of what constitutes CSA practices in general. Therefore, a farmer may be implementing a climate-smart production method but may not classify it as such. Second, the benefits from implementing CSA technologies are sometimes unclear, which affects adoption patterns differently depending on the risk appetite of the producer. The

larger the enterprise, the greater the firm's ability to withstand the risks. However, the risk-taking ability can sometimes be offset by the delay in making implementation decisions caused by bureaucracy in larger farm enterprises. This lack of nimbleness was cited during the stakeholder interviews by large farms in this analysis. Finally, the availability of credit and knowledge is a key to the ability to purchase and adopt these practices. Farmers usually lack the tools and awareness of CSA practices and have limited access to financial and human capital resources. Therefore, they implement solutions piecemeal.

## RECOMMENDATIONS FOR SUPPORTING WIDER ADOPTION OF CSA TECHNOLOGIES

Stakeholder consultations with farmers, farm enterprises, agriholdings, business associations, input suppliers, and government agencies point to some key actions that could help scale adoption of CSA technologies. These recommendations include addressing the lack of awareness and gaps in knowledge, skills, financing, and infrastructure and resolving regulatory barriers.

**The institutional framework for designing and implementing a climate change strategy in agriculture is a matter to be resolved from the top down and is constrained by capacity issues and weak implementation (box 3.9).** A number of government agencies oversee different aspects of regulations that involve climate change, and the level of coordination among them is weak. The Ministry of Energy and Environmental Protection is the main implementing agency, although the Ministry of Economic Development, Trade and Agriculture; the Verkhova Rada; and the Cabinet of Ministers also remain central to the effort. Institutional capacity is constrained because of limited knowledge about climate change among policy makers and enforcers.

### BOX 3.9 CLIMATE CHANGE STRATEGY IN UKRAINE

Laws passed in the 1990s laid down the principles for environmental protection covering obligations of different government bodies, enforcement mechanisms, and access to information in Ukraine. The law on fundamentals (strategy) of the state environmental policy up to 2020, covering all aspects of environmental protection, presented the first attempt to define a coherent strategy, although it was not superseded by the legislation overseeing land, water, and air pollution.

Specific to climate change issues, the Ukrainian parliament—the Verkhovna Rada—ratified the Paris Agreement in July 2016. A climate change strategy was adopted in December 2016 to cover the period

up to 2030, with the stated purpose of ensuring Ukraine's participation in the achievement of one of the main United Nations Sustainable Development Goals: to combat climate change.

The strategy has five goals across four sectors that include crop production. The goals include (a) strengthening the institutional, legislative, and regulatory structure; (b) reducing greenhouse gas emissions; (c) developing a scientific knowledge base and monitoring systems; (d) updating training and education; and (e) implementing measures to adapt to climate change at community levels and small agricultural enterprises.

**The national climate change strategy recognizes the current challenges and seeks to address them through a detailed action plan.** For example, the government of Ukraine recently approved a new strategy for the irrigation and drainage sector. The strategy identifies several areas of reforms, with a key one being the creation of WUOs with state participation. This would pave the way for incentives for greater investment in the upgrading of existing and the construction of new irrigation systems (pressure pump stations and pipe networks). The strategy focuses on opportunities across six priority irrigation canals. Legislation is underway to provide WUOs with the legal status to

promote private sector investment in shared irrigation and drainage infrastructure. The strategy also foresees reform of the prevailing tariff system. However, the significant investment opportunities that have been identified in the strategy are contingent upon the land reform being implemented efficiently and being expanded to enable legal entities and foreign investors to own and trade agricultural land of any size.

### COVID challenges and opportunities

The COVID-19 pandemic has caused a general havoc to the global economy and affected economic sectors in different ways. The vulnerability of the agricultural sector to the effects of COVID-19 and the containment measures adopted by governments is moderate. The agricultural sector has been affected, although initial assessments show that global markets for food staples are well supplied and food prices remain relatively stable. Projections by the US Department of Agriculture suggest that the stock-to-use ratio for these staples will remain high into 2020–21 because of good harvests this year. However, risks to production and food security at the country level remain, as domestic supply chains get disrupted because of interruptions in production, transportation, and distribution. Social distancing also has an impact on the availability of agricultural labor supply. Recognizing that food is a fundamental need, farmers and agricultural workers need to be placed on the same footing as health care workers engaged in fighting COVID-19. Likewise, global and national food systems need to be equally regarded as health systems in ensuring that hunger and poor nutrition are prevented. In this regard, ensuring access to inputs and the functioning of distribution channels and affordable credit to support the eventual reduction of cash flows becomes critical in addressing the challenges brought by combined supply and demand shocks. In addition, COVID-19 effects highlight the importance of insurance mechanisms to cover risks associated with supply price shocks.

There is opportunity to further leverage and build on these ongoing initiatives, with a focus on addressing CSA barriers, especially for the farmers and SMEs, through a two-pronged approach.

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**Recommendation (public sector level):** Focus on revising regulation to allow for cost-efficient inputs needed for CSA practices and on capacity building of public institutions to provide information for an improved private sector.

**Recommendation (private sector level):** Update knowledge and awareness of private sector players on the type and viability of CSA solutions applicable for Ukraine, and identify and help design climate-smart finance solutions and access to finance.

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Keeping the ease of implementation and prioritization of reforms in mind, specific recommendations can be further distinguished in the short term and long term and in the key enablers, whether the public sector or private firms (table 3.5).

**TABLE 3.5 RECOMMENDATIONS FOR SUPPORTING THE CLIMATE-SMART AGRICULTURE SOLUTIONS MARKET**

	SHORT TERM (1–3 YEARS)	LONG TERM (>5 YEARS)
<b>SUPPORT TO PUBLIC SECTOR/ REFORMS NEEDED</b>	<ul style="list-style-type: none"> <li>• <b>Expand land reform and land rights protection safeguards.</b> New land law approved on March 31, 2020, goes in effect on July 1, 2021.</li> <li>• <b>Reform policy and regulations.</b> Reforms in fertilizers, seeds, crop protection systems, and tariffs for imported technologies               <ol style="list-style-type: none"> <li>1. Fertilizers                   <ol style="list-style-type: none"> <li>a. Amend law of Ukraine on Pesticides and Agrochemicals to formally recognize EU conformity list of fertilizer types, per new EU regulations.</li> <li>b. Related to the previous, draft regulation to remove registration and testing requirements to import the EU-approved fertilizers.</li> </ol> </li> <li>2. Irrigation                   <ol style="list-style-type: none"> <li>a. Promote a new law for the establishment of a WUO.</li> <li>b. Reform water tariffs for irrigation and drainage service delivery.</li> <li>c. Reform legal and regulatory framework for issuing groundwater-abstraction permits to agricultural water users and establishing a web-based permit administration system</li> </ol> </li> </ol> </li> <li>• <b>Develop public sector expertise.</b> Explore establishing research institutions specifically as CSA authorities to be sources of data and dissemination of global best practices and advice (including assessment of existing platforms for adapting to CSA needs).</li> <li>• Enable a carbon market–enabling environment, including establishing climate standards, to facilitate the growth of a climate finance market.</li> <li>• Align the state support in agriculture with the EU Common Agricultural Policy.</li> <li>• Support the expansion of agrifinancing.               <ol style="list-style-type: none"> <li>1. Introduce amendments to crop receipts law and ensure passage; that will allow crop receipts to become a tradable security.</li> <li>2. Build the capacity of stakeholders to implement the crop receipts law in the public sector and financial sector for farmers and SMEs.</li> <li>3. Ensure passage of a law on the state support of agriculture insurance.</li> </ol> </li> </ul>	<p><b>Improve logistics.</b></p> <ul style="list-style-type: none"> <li>• Strengthen the road and rail freight handling capacity to reduce costs of production.</li> </ul> <p><b>Address forestry.</b></p> <ul style="list-style-type: none"> <li>• Investigate financing of forest bands (status of agriculture land) to help CSA.</li> </ul> <p><b>Develop public sector expertise.</b></p> <ul style="list-style-type: none"> <li>• Establish a funding and advisory body to provide extension services to farmers on CSA technologies with potential initial incentives/subsidies.</li> </ul> <p><b>Reform policy and regulations.</b></p> <ul style="list-style-type: none"> <li>• Assess the state incentive system for agriculture to allow for efficient and transparent allocation of state resources to incentivize implementing CSA technologies.*</li> </ul> <p><b>Develop an irrigation strategy.</b></p> <ul style="list-style-type: none"> <li>• Ensure that the irrigation strategy is implemented.</li> </ul>

<p><b>SUPPORT TO PRIVATE SECTOR/ PRIVATE SECTOR ENGAGEMENT NEEDED</b></p>	<p><b>Create market awareness.</b></p> <ol style="list-style-type: none"> <li>1. Build awareness of CSA technologies, promoting private sector data solutions, both at the individual farm level and on agri-insurance, leveraging experience of existing firms in Ukraine who are at cutting edge of these technologies.</li> </ol> <p><b>Support public-private advisory services.</b></p> <ol style="list-style-type: none"> <li>2. Advise financial institutions on CSA opportunities; develop CSA products for the financial institutions, and support in risk reviews. Facilitate sustainable collaboration mechanisms and models of PPPs to promote CSA adoption.</li> <li>3. Facilitate creation of an effective and sustainable PPD on CSA adoption.</li> <li>4. Support public and private advisory services for irrigated agriculture based on science, knowledge, and information, and secure long-term funding.</li> <li>5. Support pilots with private sector “anchor” firms to adopt CSA solutions (by these firms and their suppliers).</li> </ol>	<p><b>Attract private investment into CSA, potentially,</b></p> <ul style="list-style-type: none"> <li>• Financial institutions to lend grain producers, focusing initially on inputs, later capital expenditure</li> <li>• Grain producers, both for export and as animal feed, with IFC investees as new clients</li> <li>• Fertilizer producers, especially if and when new fertilizers are licensed</li> <li>• Irrigation systems solution providers</li> </ul>
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\* The government has a subsidy program to support agribusinesses, although a large share of this support currently reaches only the largest producers, while 41 percent of all SME producers, including individual farmers, are not aware of the subsidy program. Furthermore, allocation of state support funds is often administratively cumbersome and nontransparent. Therefore, a more evidence-based system based on principles of transparency and allocation for the most efficient use will help drive long-run competitiveness of the sector.

## THE MORATORIUM ON FARMLAND SALES HAS UNDERMINED INVESTMENT AND PRODUCTIVITY.

An important share of Ukraine’s agricultural output is produced by SMEs.

Approximately one-third ( 34 percent in 2019 and average 37 percent between 2016-2018) of gross agricultural output is produced by household farms with less than 3 ha of land, representing 90 percent of the farming units in the country. Households produce most of the high-value crops, including 84 percent of fruits and berries; 94 percent of vegetables, roots, and tubers; 73 percent of milk; and 99 percent of honey. The rest of the sector is represented by about 42,200 farm enterprises/agriholdings of up to 700,000 ha of land.

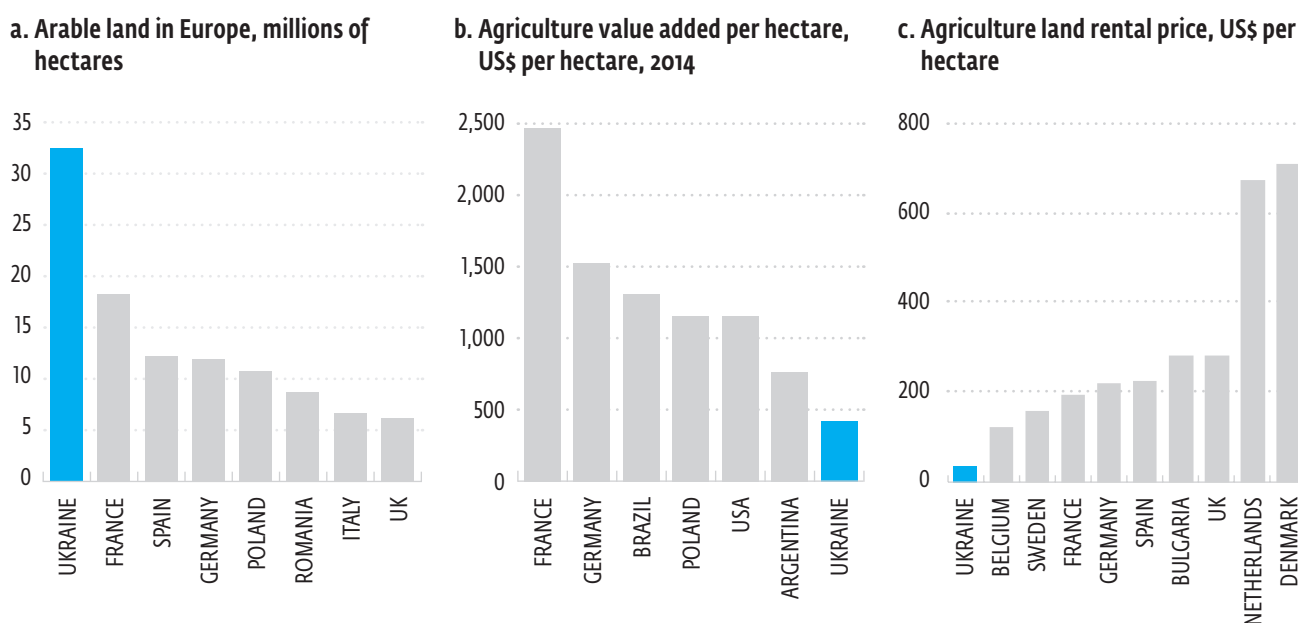
**The moratorium on agriculture land sales, which has been in place for almost 20 years, has been a major impediment to attracting investment and unlocking productivity in agriculture.** The moratorium has greatly undermined the security of land tenure. It also has reduced incentives to undertake productivity-enhancing investments and to manage the land in a more sustainable manner, such as through irrigation investments, planting of perennials, and crop rotation. Limited investment undermines the ability of farmers to expand and move into employment-intensive products with higher value added.



Agricultural land rents in Ukraine are a fraction of those in other European countries (figure 3.5), a situation that undermines the livelihoods of a large number of rural landowners and discourages the productive use of the land. The rental price of agricultural land per hectare is US\$81 in Ukraine (median lease price),<sup>48</sup> compared with US\$195 in France, US\$219 in Germany, US\$279 in Bulgaria, and US\$672 in the Netherlands. As a result, a large number of rural landowners are deprived of a fair return on one of their most valuable assets. In fact, some 4.5 million small landowners, often retirees, currently receive 10 to 20 percent of their annual income from renting out land at rates that are a fraction of their potential return.

The moratorium has also undermined the flow of financing to small and medium producers because land could not be used as collateral. If the ownership of land cannot be transferred, then it also cannot be used as collateral to obtain financing. The lack of access to financing prevents many small and medium farmers from expanding and moving into higher value-added products, or investing in productivity-enhancing practices. The moratorium has thus prevented millions of landowners from using their most valuable asset as collateral.

**FIGURE 3.5 AGRICULTURAL LAND COMPARISONS**



Source: World Bank 2017b.

## RECOMMENDATIONS FOR LAND REFORM

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**Recommendation:** Expand coverage of lifting of the moratorium on land sales and implement measures to improve the transparency of land rights.

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**The government has recently taken important steps toward strengthening the transparency of land rights.** The steps taken so far include (a) establishing interoperability of the land registry and cadaster; (b) adopting a resolution on land governance monitoring that requires authorities to collect, store, and publish data on land transactions, tax disputes, privatization, and expropriation by categories of landowners and land users; (c) upgrading the system of providing free legal support for land registration; (d) piloting electronic auction platforms for land auctions; and (e) mandating the transfer of state land to local government ownership, with an initial 1.5 million ha transferred in 2018.

**The government has also taken steps to increase the registration of state agricultural land to increase transparency and productivity.** In addition to 30 million ha of private agricultural land, about 10 million ha belongs to the state. However, only 25 percent of state agricultural land is registered, and the process of allocating usage rights has often been highly nontransparent. This not only discourages the productive use of this land but also deprives the public of about US\$250 million in annual revenues. The government recently committed to registering all state land by 2023, correcting systematic errors in the cadaster, establishing local land use plans to fully harness the revenue potential from such land, and transferring use or ownership rights for any land that is not already under contract using transparent electronic auctions.

**A package of laws, including the land turnover law, with the different design options was discussed publicly last year.** This package included several reforms, such as (a) prevention of raiding, (b) change of public land management, (c) the transfer of authority to oblast territorial communities (*oblastna territorialna gromada*, or OTGs), (d) spatial planning and land management by OTGs, (e) public access to land data, (f) restructuring of land taxation, (g) provision of a credit guarantee for small agricultural enterprises, (h) the elimination of free land privatization, (i) restructuring of state support for agricultural producers, and (j) the privatization of state-owned agricultural enterprises. On March 31, 2020, the Ukrainian Parliament approved the new Law “On Amendments to Certain Laws of Ukraine on the conditions of Turnover of Agricultural Land” No. 552-IX, which comes into effect on July 1, 2021. The law eases a ban on the sale of certain types of agricultural land, though with some limitations. The new law currently allows that only citizens of Ukraine and for a specific land size (no more than 100ha) have the option to trade, with the potential of extending this to include legal entities owned by Ukrainians and foreign investors to trade larger plots (up to 10,000 has) in 2024, subject to possibly under a possible nationwide referendum in the future. Restrictions on the size of land purchases and participation by legal entities and foreign investors would likely still deter the most promising types of investment until these restrictions are removed.

**Initial estimates show that the impact of fully lifting the moratorium on incremental economic growth would be between 0.9 and 2.2 percent per year over a five-year period, depending on the reform design and complementary policies.** The main channel of the impact on growth is the exit of producers with lower value added and the expansion of producers with higher value added, as the price of land rises. The impact is at the lower end of the interval (about 1 percent per year) if the reform design included lifting the moratorium for sale of state land only. The impact is also lower (about 1.5 percent per year) with current limits on the size of land purchases (such as 500 ha for individuals and 5,000 ha for legal entities), or if the participation of foreigners is restricted. The impact would be about 2.2 percent per year with the simultaneous opening of the market for both state and private land, without limits on size and with participation of legal entities and foreigners. The impact is greater if the lifting of the moratorium could be combined with increased access to credit for small and medium farmers through, for example, a partial credit guarantee instrument that would allow banks to book the full value of the collateral. The impact would also be greater if the efficiency of agricultural subsidies (which have historically been allocated to large and influential producers on an ad hoc basis) could instead be used to enhance the productivity of small and medium producers. However, estimates of impact above 2.5 percent per year should be treated with caution, because efficiency improvements resulting from the improved allocation of agricultural subsidies would likely take some time to achieve.

**The rapid approval of this integrated package of laws and the implementation and the expansion of land reform is essential.** It is critical that the proposed rules are well understood so that landowners can exercise their rights, investors can plan their decisions, and the financial sector has time to prepare products for SMEs.

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**Recommendation:** Provide landowners with tools to protect their land rights and prevent the concentration of agricultural land.

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**Safeguards must be put into place to prevent the concentration of agricultural land in the hands of a few and to inform and enable landowners to exercise their rights.** This effort will require action on several fronts, including (a) open access to registry and cadastral data, and the establishment of a robust monitoring system that would allow identifying and addressing problems in near real time; (b) targeted support to land acquisition and diversification by small farmers; (c) mandatory price reporting for all land transfers and the use of e-auctions for any transfer of (ownership or lease) rights to public land; (d) increases in land taxation to reduce incentives for speculative land acquisition; (e) establishment of size limits in line with antimonopoly legislation; and (f) nationwide outreach to increase legal awareness.

In addition to public information campaigns, one way to ensure that these outcomes have broad support would be to upgrade the technical and operational capacity of the Parliamentary Ombudsman for Human Rights to enable broader protection of land rights. This office would report directly and regularly to Parliament and provide an independent source of redress. Doing so would help provide landowners with unbiased legal advice regarding their land rights and help them access the judicial system if their rights are violated.

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**Recommendation:** Implement measures to increase access to credit among agricultural SMEs.

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**Access to financing for family farmers and rural SMEs will be important.** One of the key steps to improving access to finance for family farmers and SMEs is the full lifting of the moratorium with improved transparency of land rights, because then land could be used as collateral to access credit. Collateral is more important for small and medium producers than for larger producers, which are already creditworthy. Although several foreign banks are already active in lending to agricultural producers, the complementary steps being taken to strengthen credit markets by improving the corporate governance of state-owned banks should also help increase access to finance for SMEs. At the same time, many SMEs keep limited records and have no credit history, which are impediments to financing in the short term. Measures to help kick-start this market include (a) training for farmers and banks on how to put together and evaluate viable investment proposals and (b) targeted support, such as partial credit guarantees, that can incentivize banks to lend to small and medium farmers. Besides this instrument, other long-term financial instruments are needed to help farmers purchase land, including leasing, mortgages and mortgage-type loans like split mortgages, and adaptation of long-term crop receipts.

# 4. SECTOR ASSESSMENT: CONNECT UKRAINE TO EUROPE'S MANUFACTURING GLOBAL VALUE CHAINS

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## PROBLEM TO BE SOLVED

The objective of this assessment is to identify the challenges and opportunities that exist in increasing Ukraine's participation in European manufacturing global value chains (GVCs). As such, it offers a partial look at the broader manufacturing sector, with a lens on industry segments that trade across borders and participate in specific phases of the production of final goods. That said, some of the analysis and recommendations are relevant to all manufacturing activities. The chapter identifies policy actions and reforms that are deemed necessary to attract FDI, increase the complexity of activities undertaken in the country, and raise Ukraine's share of value added in GVC operations. It also identifies products and industries in which the country could have unexploited export potential or the possibility of attracting FDI. Thus, the chapter provides guidance on where downstream investment opportunities may exist that could be validated through a more detailed follow-up analysis.<sup>49</sup>

Participation in GVCs is a vehicle to boost productivity and raise incomes, a point documented at length in the *World Development Report 2020: Trading for Development in the Age of Global Value Chains* (World Bank Group 2019a). GVCs refer to a production process in which value is added at different stages in at least two countries. The breakdown of production stages across borders allows countries to specialize in activities in which they have a comparative advantage and to exploit economies of scale. Moreover, GVCs serve as a conduit to transfer new skills to workers, innovative technologies to local firms, and improved managerial practices to local entrepreneurs, thereby boosting economic growth. Greater participation in global markets also fosters competition in the domestic economy, reducing the market power of large incumbent firms. Importantly, a country's GVC participation is the result of not only the interaction of factor endowments, geography, and institutions, but also of deliberate public policies—policies to (a) expand factor endowments by attracting FDI, correcting skills mismatches, and fostering technology adoption; (b) overcome a small market size by opening new export markets and improving access to imported inputs; (c) overcome or take advantage (as the case may be) of the locational context through investment in logistical or ICT infrastructure; and (d) provide certainty to economic agents through better governance.

**Ukraine's only modest success to date in linking up to European GVCs is a key factor holding back the country from achieving dynamic and sustainable growth.** The collapse of the Soviet bloc in the early 1990s disrupted the tightly knit industrial web that was built under the centrally planned communist regime. Ukraine, which within the Soviet Union had specialized in producing heavy machinery and energy-intensive industries, was particularly affected. Although the country has been gradually moving toward becoming a full-fledged market-driven economy, the transition from the old economy is still incomplete. Thus, a World Bank Group report (Smits and others 2019, 3) concludes that, today, "Ukraine is at a crossroads: despite impressive success in some sectors, the foundations of the emerging new economy are still fragile, and the old economy is still having a strong negative effect on growth." Limited global integration, the result of the country's inability to attract FDI and develop high value-added export-oriented industries, will continue to restrain prosperity in Ukraine unless the country takes decisive action.

**The challenge that Ukraine faces in attracting FDI, boosting exports, and becoming an active player in Europe's regional value chains is compounded by rapid technological innovation that is changing the face of manufacturing across the globe and its role as a ladder for development.** Automation and new technologies are already changing the skills that employers seek in workers, with some observers warning of a possibly drastic decline in the demand for labor, particularly of low-skilled workers. Under such a scenario, the reshoring or a near-shoring of manufacturing activity to high-wage locations, closer to large consumption markets, would ensue and would make attracting manufacturing FDI to low-cost countries more difficult. At the same time, the boundaries between the manufacturing and the services sectors are becoming increasingly blurred, as the value of services embedded in manufacturing rises. Despite existing concerns, the 2020 *World Development Report* asserts, "Technological change is more likely to be a boon than a curse for trade and GVCs" (World Bank 2019a, 1). In this new context, the technological disruptions underway and the "servicification" of manufacturing call for a broader set of policy responses, beyond those that have been traditionally relied upon to bolster the manufacturing sector (Hallward-Driemeier and Nayyar 2017).

**The COVID-19 pandemic casts a cloud of uncertainty on the future of GVCs.** Manufacturing GVCs are strongly vulnerable to COVID-19 effects. Indeed, the disruption of GVCs caused by extensive lockdown and travel restrictions has led some observers to argue that the need to increase the resilience of global production networks will lead to efforts to reduce an excessive geographic concentration of suppliers and to diversify the location of intermediate production activities. Near-shoring and the potential reconfiguration of GVCs could potentially create opportunities for Ukraine and other countries in Europe's periphery. However, there is at present a high level of uncertainty about the ultimate shape the GVCs will adopt in a post-COVID world.

**The task ahead is exacting, but Ukraine has several factors in its favor.** In principle, de-concentration and near-shoring of GVCs may benefit newcomers in Eastern Europe, like Ukraine. To seize the opportunities brought by the reconfiguration of GVCs, the country will need to accelerate the improvements in the business climate. Today, Ukraine has an opportunity to connect to Western GVCs given the recent establishment of the DCFTA between Ukraine and the EU;<sup>50</sup> the existence of a dynamic Ukrainian ICT sector linked to the global economy; and a well-educated population yearning to prosper. The following discusses how the country can build on those strengths.

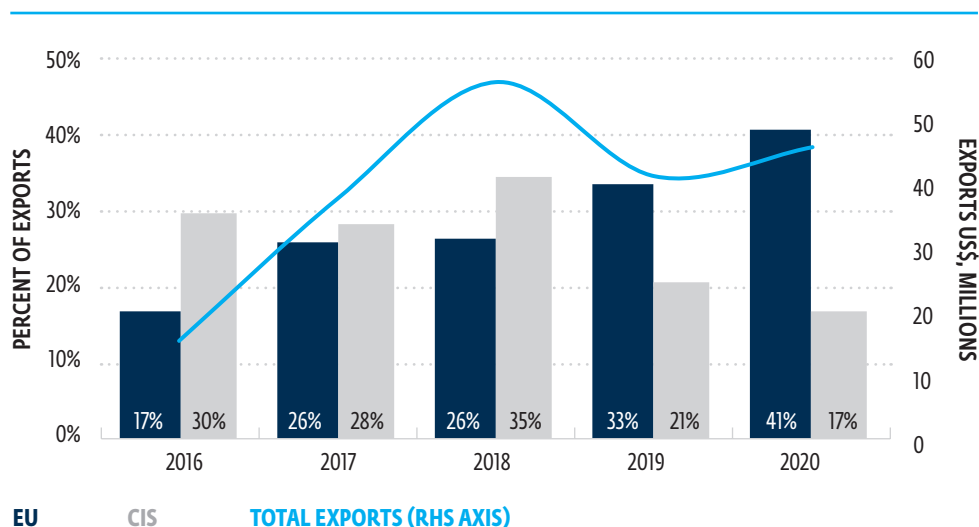
## SECTOR CONTEXT

**Ukraine's manufacturing sector suffered a steep decline after the disintegration of the Soviet bloc.** The country fared far worse than its peers in Eastern Europe. Industrial employment in Ukraine suffered a 12-percentage-point decline as a share of total employment, falling from 37 percent in 1995 to 25 percent in 2017. The share of industrial employment also declined in comparator countries, but in a much more subdued fashion.<sup>51</sup> A similar trend, although even more dramatic, is evident in manufacturing value added, which plummeted from 31 percent to 12 percent of GDP.

### **Export volumes have stalled, and the complexity of Ukraine's export basket is modest**

**Over the past decade, the collapse of Ukraine's traditional export markets in Russia and other Commonwealth of Independent States (CIS) countries has further complicated the performance of its manufacturing sector.** Ukraine has been caught between a receding access to supply-chain trade with Russia and an as-yet underdeveloped access to supply-chain trade with countries in the EU. Over the period 2000 to 2016, Ukrainian exports first strongly expanded and then precipitously declined when the financial crisis hit. After a short-lived recovery, trade further declined as Russia retreated as a main export destination in the wake of the conflict in Eastern Ukraine (figure 4.1).

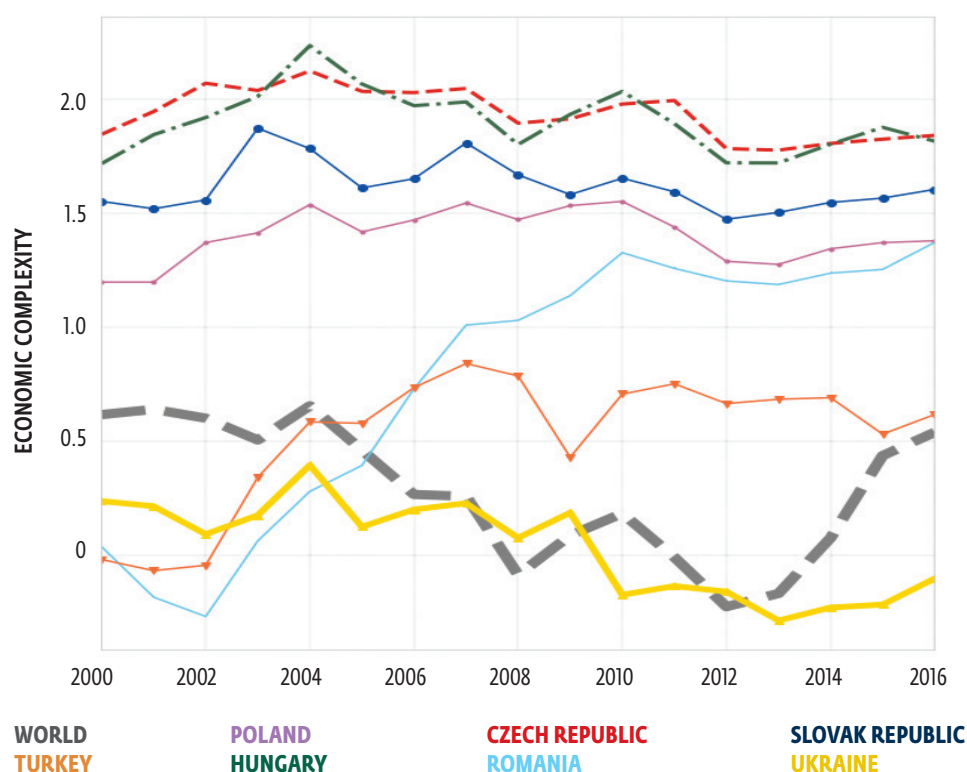
**FIGURE 4.1 EXPORTS TO CIS AND EU COUNTRIES, PERCENTAGE OF TOTAL UKRAINIAN EXPORTS**



Source: World Bank Group staff based on CEPII-BACI International Trade Database.  
 Note: CIS = Commonwealth of Independent States; EU = European Union.

Although Ukraine’s exports to the EU have been rising over the past decade, its exports to the EU are less complex than both those of other countries in Eastern Europe and those of Ukraine’s traditional export basket to CIS countries. Reduced access to the Russian market led not only to a decline in the quantity of exports, but also to a decline in the complexity of Ukraine’s export mix, with agricultural products replacing metal and machinery products as the country’s main exports. Ukraine’s largest exports are in low- and moderate-complexity products, agriculture, and metals, respectively. Exports to Russia tend to be more diversified than exports to the EU. Exports to EU countries are predominantly found in agriculture, textiles, and basic chemicals, while Russia-bound exports include complex products in machinery and more advanced chemicals such as pharmaceuticals.



**FIGURE 4.2 EVOLUTION OF EXPORT COMPLEXITY, 2000–2016**

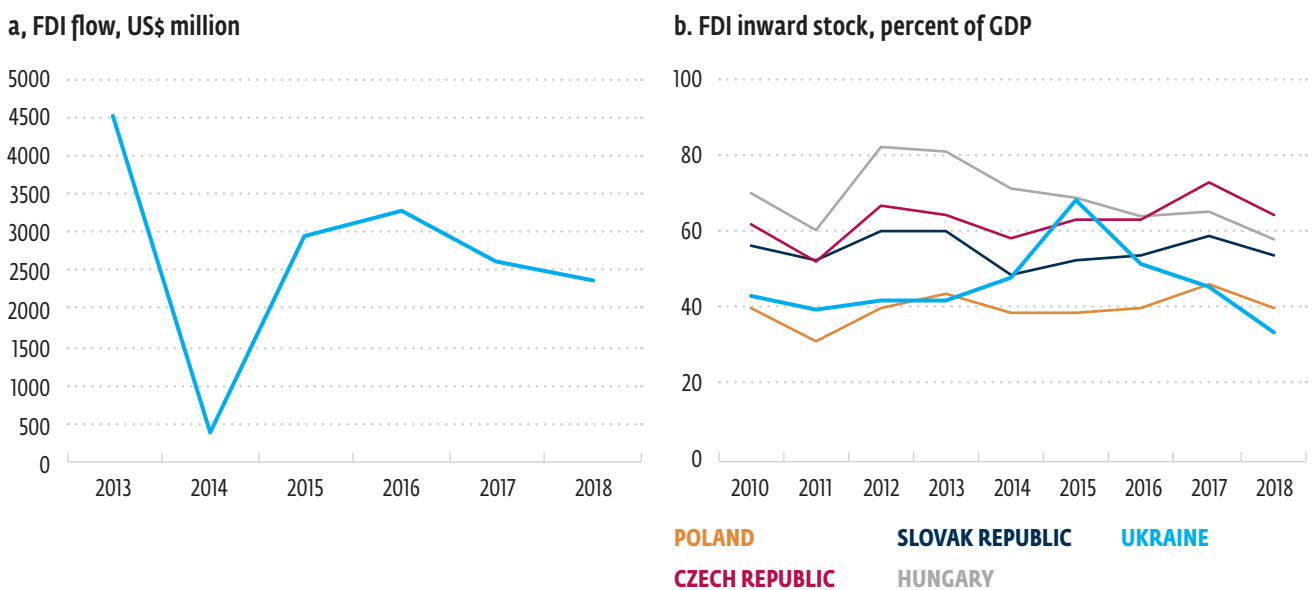
Source: Atlas of Economic Complexity, Harvard University Growth Lab, <http://atlas.cid.harvard.edu>; Hartog and Neffke 2019.

As a result, the complexity of Ukrainian exports has been declining for the past decade. Ukraine's exports lag behind those of comparator countries in Eastern Europe, both in volume and complexity. Ukraine already lagged behind its comparators in terms of export complexity at the start of the observation period. The exceptions are Turkey and Romania, which produced even-less-complex exports than Ukraine in 2000. However, these countries were able to move into more complex export categories relatively quickly, with Romania almost fully converging with its Eastern European peers. Meanwhile, Ukraine's export complexity steadily declined. The most complex products are generally sold to either Russian or to less developed economies in Latin America and Southeast Asia, although Ukraine's exports to the latter markets are negligible in total value (figure 4.2).

### Foreign direct investment remains low

Ukraine’s FDI inflow figures are below the country’s investment potential. In addition to international trade, FDI is a defining feature and a key driver of GVCs. Foreign investors play an active role in shaping host economies’ export structure and their participation in international production networks. Therefore, policies that attract FDI also constitute an indirect way to deepen countries’ participation in GVCs. However, FDI inflows to Ukraine reached their lowest level in a decade in 2014, in large part because of the unprecedented geopolitical tensions and military conflict, and have not returned to their pre-2014 levels. Ukraine’s FDI stock as a percentage of GDP, at 33 percent in 2018, is lower than that of its regional peers (figure 4.3).

**FIGURE 4.3 FDI PERFORMANCE**



Source: UNCTAD, World Investment Report 2014–19; Tradingeconomics.com (World Bank data). Data for Czech Republic, Hungary, Poland, and Slovak Republic based on OECD (2019), FDI stocks (indicator).

Note: FDI = federal direct investment.

**Existing FDI has a positive impact on Ukraine’s economy.** Despite the challenging geopolitical situation and economic crisis, companies with FDI contribute strongly to Ukraine’s economy. FDI companies are significantly larger than non-FDI companies and on average produce 11 times more gross value added per company and employ 5.3 times more workers than non-FDI companies. They are also more productive: their labor productivity (gross value added per employee) is on average double that of non-FDI companies, as total factor productivity is double that of non-FDI companies (Saha, Kravchuk, and Kirchner 2018). The sector structure of FDI is heavily skewed toward nontradable sectors, with a varying and unequal distribution of labor productivity—for example, the food processing industry and ICT are the two sectors with the highest labor productivity, while heavy industries and agriculture have significantly lower productivity differentials (figure 4.4).

Most FDI-related employment in Ukraine comes from companies headquartered in Germany, the Netherlands, the United Kingdom, Switzerland, and France.<sup>52</sup> However, firms in those countries seem to have different motives for investing in Ukraine. Whereas investments from German, Dutch, and Swiss companies are consistent with the integration of Ukraine into their value chains—targeting manufacturing activities in the automotive (Germany), food (the Netherlands), and machinery (Switzerland) industries—British and French investments seem to be more driven by market-seeking motives, with most investments focusing on the retail and financial services markets. Given the dominance of Western European countries as sources of FDI, it is unsurprising that, outside the greater Kyiv area, most FDI locates close to their EU customers, along the country’s northwestern border. Moreover, in the region around Kyiv, foreign multinational enterprises (MNEs) more often seek access to the Ukrainian market, with investments focused on wholesale and retail trade, logistics, banking, and insurance. In contrast, investment in the northeastern regions seems more efficiency seeking, with FDI mainly targeting manufacturing industries in machinery, textiles, and car production (Hartog and Neffke 2019).

**FIGURE 4.4 INDUSTRIAL COMPOSITION OF FDI-RELATED EMPLOYMENT IN UKRAINE, 2019**

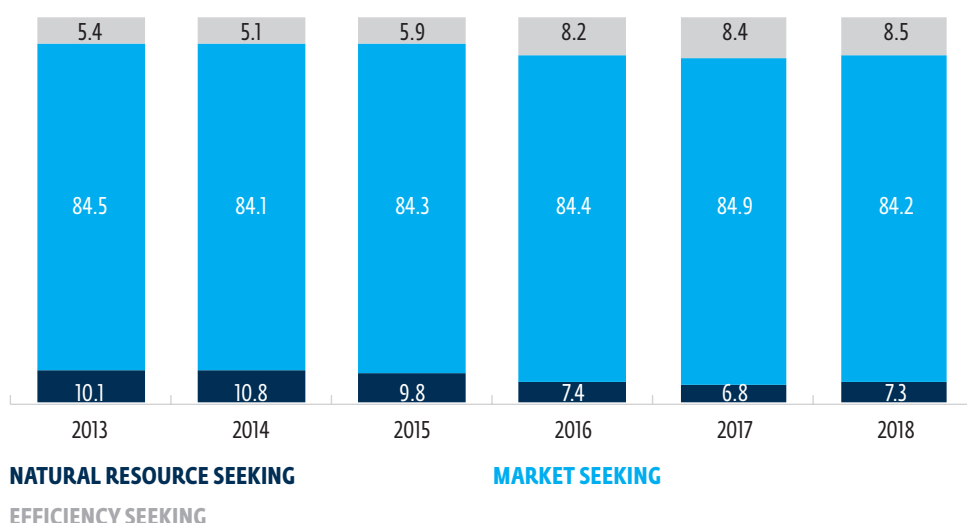
Total employment: 128,155



Source: Hartog and Neffke 2019, based on Dunn & Bradstreet firm-level employment data.  
 Note: FDI = foreign direct investment.

In Ukraine, efficiency-seeking FDI—a key driver for countries to integrate into the global economy and move up the value chain—is low (figure 4.5). Efficiency-seeking FDI is not only export oriented, but also is key to export diversification. Although it is typically more difficult to attract, efficiency-seeking FDI could become more than a source of capital, contributing to technology and knowledge transfer, boosting export diversification, increasing global competitiveness, and creating higher-quality jobs for the citizens of Ukraine. Next to overall production costs, efficiency-seeking FDI is, in particular, sensitive to market entry, logistical, infrastructure, and trade tariff and nontariff barriers. Within efficiency-seeking sectors, the number of FDI projects and their contribution to the total economic output are still limited, although the share of efficiency-seeking FDI is slowly increasing. The only sector with continuous inflows of efficiency-seeking FDI is the automotive plastic and electrical components sector.<sup>53</sup>

**FIGURE 4.5 TYPES OF FOREIGN DIRECT INVESTMENT, BY INVESTORS' MOTIVATION IN UKRAINE (RELATIVE SHARES)**



Source: Calculations based on State Statistics Service of Ukraine data (2019).

Note: In the absence of detailed statistical data on foreign direct investment (FDI) project motivation, data are based on proxy sector data; the proxy data for efficiency-seeking FDI are based on FDI contribution to exports in manufacturing (in 2018, companies with foreign participation accounted for 7.2 percent of exports. Source: "Why Cyprus Is Bigger Than Germany" [in Ukrainian], <https://rating.zone/chomu-kipr-bilshyj-za-nimechchynu>.)

Natural resource-seeking investment comprises mining, agriculture, forestry, and fishing. Market-seeking investment comprises all services, except for information technology and other information services (these are potentially tradable and therefore open to efficiency-seeking investment), and a substantial part of manufacturing (93 percent). Efficiency-seeking investments reflect investment projects in export-oriented sectors or industries (7 percent of manufacturing and all information and communication technology services).

## EMERGING OPPORTUNITIES AND NEW CHALLENGES

Although Ukraine trails its peers in attracting FDI and increasing exports of more complex products to the EU, the country has the potential to expand its participation both in the production stages of manufacturing GVCs and in those stages in which services are more prominent. As a first approximation to identify where such opportunities may lie, this assessment relied on a detailed statistical analysis of bilateral FDI and export flows, disaggregated at the industry (for FDI) and product category (for exports) levels. The analysis helped identify areas in which Ukraine appears not to be fully exploiting its comparative advantages. The trade dataset used in this analysis provides an exhaustive description of bilateral trade among 235 countries in thousands of different products categories, focusing on the period 2000–2016 and products classified at the four-digit level of the Harmonized System (HS 1992). The second dataset is taken from records provided by Dun & Bradstreet, which collects information on economic establishments around the globe.<sup>54</sup> For each establishment, Dun & Bradstreet provides an estimated number of employees, up to six different four-digit Standard Industrial Classification (SIC) 1987 industry codes, the establishment’s geographical location, and, where applicable, which parent company owns the establishment. The analysis uses these ownership relationships to construct bilateral FDI flows between countries, measuring FDI in terms of the number of workers that are employed in one country in establishments that are owned by firms headquartered in another country. The dataset contains information on about 150 million establishments.<sup>55</sup>

**Ukraine’s actual exports and MNE employment fall short of what the statistical analysis predicts.** An application of a gravity model of trade—the workhorse econometric model to understand the determinant of international trade flows—to bilateral exports and, separately, to bilateral MNE investment patterns helps predict products in which Ukraine’s exports should be higher, as well as industries in which the country should be able to attract more jobs from foreign firms. The standard gravity model is extended by incorporating economic complexity–based information on how well each product matches Ukraine’s productive capabilities, as embedded in the current export mix and MNE employment. The analysis looks at all exports and FDI flows, and not only those associated with GVCs, identifying opportunities across sectors and products.

**Opportunities to increase exports and attract FDI exist in industries in which GVCs are active: electronics, apparel and textiles, automotive, and machinery and equipment.** Tables 4.1 and 4.2 present some of the most salient products and industries in which latent opportunities would be available to Ukraine. The products listed offer a guide to follow up in-depth analyses that are needed to validate specific segments of a value chain in which Ukraine could participate, and to design strategies to reap the competitive position of the country. Moreover, such strategies must grapple with the changing nature of GVCs, in which the boundaries between manufacturing and services activities are increasingly blurred, as described next.

**TABLE 4.1 AUTOMOTIVE, ELECTRONICS AND MACHINERY AND EQUIPMENT****a. Selected industries with potential foreign direct investment attraction opportunities**

SIC INDUSTRY CODE	INDUSTRY NAME	REVEALED COMPARATIVE ADVANTAGE (RCA)	PREDICTED RCA	CURRENT MNE JOBS (2019)
3534	Elevators and moving stairways	0	39.9	0
3585	Refrigeration and heating equipment	2.0	34.4	100
3612	Transformers, except electric	0	3,518.8	—
3613	Switchgear and switchboard apparatus	19.1	33.8	1,300
3621	Motors and generators	0	22.2	—
3634	Electric housewares and fans	0	31.2	—
3643	Current-carrying wiring devices	0	165.8	—
3674	Semiconductors and related devices	0	2442.9	—
3679	Electronic components, nec	0	73.7	—
3699	Electrical equipment and supplies, nec	1.0	24.8	100
3711	Motor vehicles and car bodies	6.7	24.3	1,000
3714	Motor vehicle parts and accessories	11.3	119.3	4,100
3841	Surgical and medical instruments	0	16.7	—

## b. Selected products with potential export opportunities

HS PRODUCT CODE	PRODUCT NAME	REVEALED COMPARATIVE ADVANTAGE (RCA)	PREDICTED RCA	CURRENT EXPORTS (US\$, MILLION, 2016)
8409	Parts suitable for use with spark-ignition engines	0.05	0.15	6.2
8418	Refrigerators, freezers	0.08	0.49	6.6
8471	Automatic data processing machines	0.01	0.20	1.8
8501	Electric motors and generators	0.01	0.40	0.7
8504	Electrical transformers	0.46	0.84	33.0
8528	Monitors and projectors; reception apparatus for television	0.20	0.29	68.0
8537	Electrical boards and panels for protecting electrical circuits	0.14	0.26	17.0
8542	Electronic integrated circuits	0.04	0.43	2.3
8703	Cars	0.00	0.07	1.5
8704	Motor vehicles for transporting goods	0.00	0.49	0.7
8708	Parts and accessories of the motor vehicles	0.01	0.09	14.0
8905	Floating or submersible drilling platforms	0.07	4.54	0.3
9018	Medical, surgical, dental or vet instruments	0.08	0.47	3.3

Source: Summary of results in Hartog and Neffke 2019.

Note: — = not applicable; HS = Harmonized System; MNE = multinational enterprise; nec = not elsewhere classified; SIC = Standard Industrial Code.

**TABLE 4.2 TEXTILES AND APPAREL SECTOR—SELECTED PRODUCTS WITH POTENTIAL EXPORT OPPORTUNITIES**

HS PRODUCT CODE	PRODUCT NAME	REVEALED COMPARATIVE ADVANTAGE (RCA)	PREDICTED RCA	CURRENT EXPORTS (US\$, MILLION, 2016)
6104	Women's suits	0.9	1.7	34.0
6109	T-shirts	0.3	5.1	24.0
6110	Sweaters, pullovers, sweatshirts, etc.	0.1	3.4	7.3
6203	Men's suits, not knit	1.8	4.4	130.0
6204	Women's suits, not knit	1.1	2.1	95.0
6205	Men's shirts, not knit	0.3	3.4	6.1
6206	Women's shirts, not knit	0.4	2.3	12.0
6211	Active wear, not knit	1.2	4.9	9.6
6302	House linen	0.1	1.5	4.1
6403	Footwear, with leather body	0.5	2.6	25.0

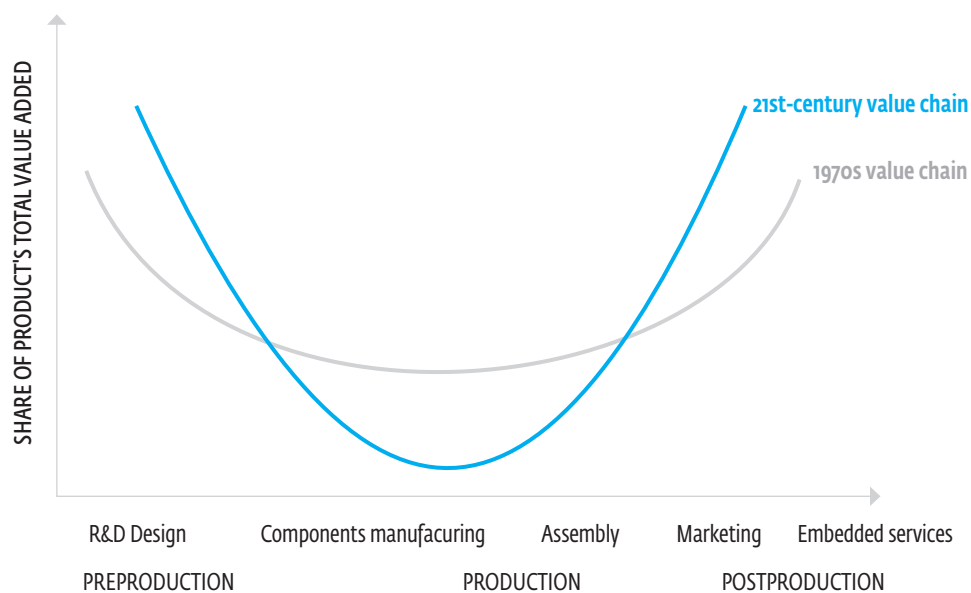
Source: Summary of results in Hartog and Neffke 2019.

### The changing nature of GVCs

Worldwide, GVCs incorporate a growing share of services and relatively fewer manufacturing production operations. Case studies of specific products show that value creation along a GVC tends to be unevenly distributed among activities. The highest value creation is found in upstream activities, such as in the development of a new concept, research and development (R&D), and the manufacturing of key components. But it is also found in downstream activities, such as marketing, branding, and customer service. In between, value added is low in activities such as product assembly, which is frequently offshored to emerging and developing economies. This is the basic idea behind the so-called smile curve, which describes the value distribution along the value chain (figure 4.6). In 2011, embodied services accounted for 40 percent of gross exports of manufactured goods in the EU (Hallward-Driemeier and Nayyar 2017).



**FIGURE 4.6 EVOLUTION OF GLOBAL VALUE CHAINS OVER THE PAST FOUR DECADES: THE “SMILE CURVE”**



Source: Hallward-Driemeier and Nayyar 2017.

Note: R&D = research and development.

Many Ukrainian manufacturing plants also offer a variety of services (Hartog and Neffke 2019). Manufacturing establishments that also report service activities account for almost 45 percent of employment in locally owned manufacturing plants and 60 percent of employment in foreign-owned manufacturing plants. However, most of these services are in logistics and sales, especially in foreign-owned plants. Advanced business services are more often provided by manufacturing plants that are foreign owned rather than local firms. These activities are further concentrated in plants that produce machinery or metal products. Most employment in such manufacturing plants resides in the city of Kyiv and, to a lesser extent, in the traditional manufacturing regions of Kharkiv and Dnipropetrovsk in the country’s east and in the regions bordering Poland. IT services are provided by a tiny segment of the manufacturing sector, by plants in machinery manufacturing. Geographically, these plants are almost exclusively found in the capital city.

Two newly emerged Ukrainian GVC sectors, automotive components and IT services, illustrate well the challenge the government is facing in raising Ukrainian value added in GVCs. The automotive components sector, for example, includes mostly labor-intensive manufacturing and assembly that have been outsourced to Ukraine to decrease production costs; it accounts for a lower share of the total value of the product (bottom of the “smile curve”). The sector depends on imports of intermediates for the components production (that is, backward GVC participation) and leaves little space for increasing local content, because sourcing is typically organized on a global or regional basis. In contrast, the Ukrainian IT services sector has captured more

value added. IT services that are exported range from code programming to testing, new product development, design, and R&D (the upper, preproduction part of the “smile curve”). Several examples of local IT companies have increased the domestic value added contained in their services (product) exported abroad (forward GVC participation) by service/product and functional upgrading (box 4.1). Increasing value added within GVCs is a particular challenge for the rest of a Ukrainian export sector that is characterized by predominant trade in intermediate goods (iron, steel, and agricultural products), with low to medium value added. These traditional Ukrainian export goods come from commodity-processing sectors, which are the least GVC intensive.

#### BOX 4.1 THE CASE OF RING UKRAINE

Ring is a Ukraine-based information technology company that designs, programs, and tests home-monitoring systems and two-way intercoms for the smartphone era. From initial program coding outsourcing, the company has moved to high-value-added operations, including machine learning, computer vision, data mining, artificial intelligence, and product design and development. Production of the actual home monitoring devices is done in Asia.

Source: Ring Ukraine website, <https://ring-ukraine.com/about>.

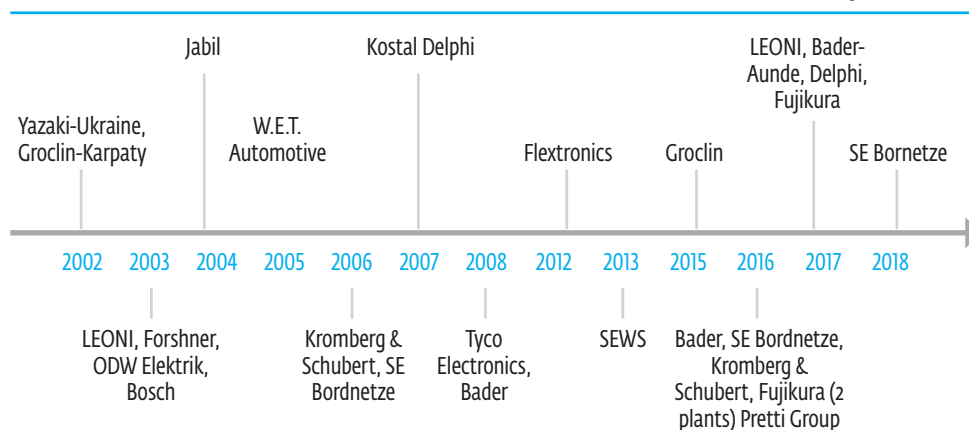
“...the disruption of commercial and production networks associated with the disintegration of the Soviet Union, aggravated by asset stripping and an inability to attract foreign investment, resulted in the decline of Ukraine’s auto industry.”

*Smits and others 2019, p. 3.*

**The automobile industry illustrates well the competitive challenges—and the opportunities—that Ukraine faces.** Over the past decade, local production of motor vehicles suffered a dramatic collapse. In 2008, the county produced 426,000 vehicles, including 402,000 cars, 14,000 commercial vehicles, and 10,000 buses. Ten years later, in 2018, car production was a mere 5,660 units; commercial vehicles, 672 units; and buses, 831 units—a combined total of 7,163 motor vehicles.<sup>56</sup> Initially, the industry was severely affected by the 2008–09 global financial crisis, after a fall in the country’s GDP of 15 percent (EIU 2020). In addition, according to the Ukrainian Motor Vehicles Manufacturing Association (UkrAutoprom), the collapse of production resulted from trade liberalization and tariff reductions as part of the World Trade Organization (WTO) accession; loss of access to the Russian market; used car import liberalization; and the military conflict. In 2018, imported vehicles represented 90 percent of all new vehicle sales. Employment in automobile assembly has remained virtually unchanged, fluctuating around 45,000 workers from 2010 to 2016. In contrast, during this period, jobs expanded briskly in the Czech Republic (by 21 percent to 168,000), Hungary (by 43 percent to 93,000), Poland (by 26 percent to 188,000), and the Slovak Republic (by 38 percent to 70,000). Ukraine’s inability to attract automotive sector FDI at the same pace as its neighbors is a likely contributing factor to its disparate performance.

Nevertheless, the country has attracted several automotive component suppliers over the past decade (figure 4.7). For the past decade, the automotive sector has been the top manufacturing FDI sector in Europe.<sup>57</sup> With ongoing pressure on profit margins, automakers have shifted assembly of budget models east, to take advantage of lower labor costs, and component suppliers have followed them. In Ukraine, automotive components (such as the production of ignition wiring sets) grew from US\$21 million in 2000 to US\$1.2 billion in 2017 and became one of the fastest-growing product categories of Ukraine's exports in recent years. A cluster of automotive suppliers located in western Ukraine hosts over 30 transnational corporations (including Yazaki, Jabil, Leoni, Bosch, Kostal Delphi, Flextronics, Tyco, Kromberg & Schubert, Sumitomo, Groclin, and Fujikura), creating more than 35,000 jobs and bringing in US\$450 million of foreign capital into the country over the past 15 years (Eurocar Group 2019b).

**FIGURE 4.7 FOREIGN DIRECT INVESTMENT IN UKRAINIAN AUTOMOTIVE SECTOR, 2002–18**



Source: Eurocar Group 2019a.

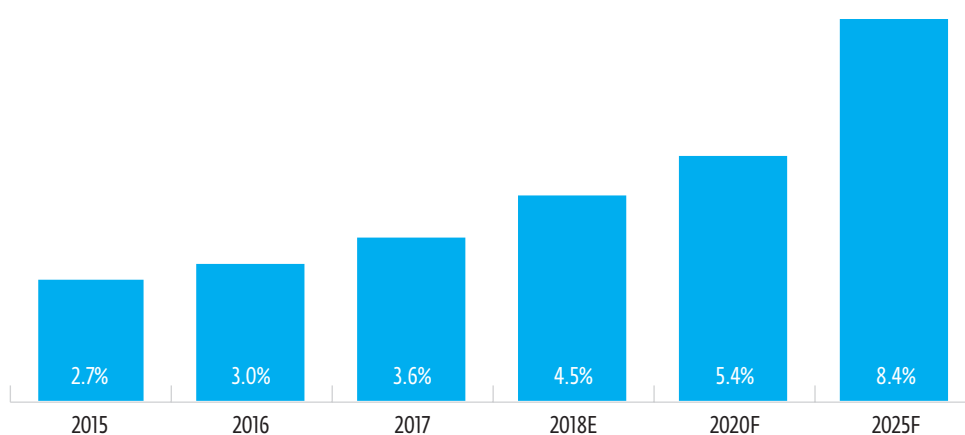
**The future of the traditional automotive industry is in question, however.**

Urbanization, changing consumer expectations, and emerging digital technologies are driving a wave of disruptive innovation. Faced with a downturn in growth expectations, businesses are easing off on FDI globally, including in Europe. The decrease is primarily caused by decelerating manufacturing and supply chain FDI plans, which perhaps reflects the end of the supply chain reorganization cycle: only 10 percent of surveyed businesses in 2019 EY's Attractiveness Survey Europe planned to invest in manufacturing, supply chain, and logistics projects in 2019 compared with 16 percent in 2018. Declining investment plans are undoubtedly a result of the cocktail of the British exit from the European Union, wider political uncertainty, and a weak economic outlook across Europe.

The outlook is further complicated by the COVID-19 outbreak and the impact it will ultimately have on the global configuration of the industry, as well as on final consumer demand for vehicles. The global automotive market is expected to shrink by about 20–25 percent in terms of volume compared with 2019, owing to COVID-19–related disruptions, as per an early IFC industry assessment. In terms of demand, global sales will increase only gradually. Automotive sales in Europe are expected to drop by 18–22 percent. Prudent consumer behavior and loss in disposable incomes, due to rising unemployment or furloughs in the region, will depress demand. COVID-19 impact on the aftersales market is likely to be less severe. As replacement of vehicles is delayed, the need for spare parts will increase to support longer vehicle life. This situation can benefit manufacturers, especially for tires, batteries, fuel filters, and air filters, because most of their turnover and margins depend on the aftermarket.

Regarding IT services, Ukraine is keeping abreast of the leading European FDI trend and has become a competitive production destination. In the past five years, the number of digital FDI projects in Europe has more than doubled, driven by US business, which was responsible for 37 percent of digital FDI projects in Europe 2018. In Ukraine, the export value of IT services in the period 2015–18 has shown a 19 percent compound annual growth rate (figure 4.8). The share of IT services in overall exports rose from third place in 2017 to second place in 2018. More than 50 percent of IT services revenues come from the United States, followed by the United Kingdom (AVentures Capital, Aventis Capital, and Capital Times 2019). With lower operating costs than in other countries in Western Europe, Ukraine’s sector is a hotspot in mergers and acquisitions activity. Indeed, the region saw over 70 mergers and acquisitions transactions between 2015 and 2018. For instance, Google purchased Viewdle, a facial recognition company; Snapchat acquired Lookserly, a real-time facial modification app; and Oracle bought Maxymiser, a Ukrainian provider of cloud-based software for marketers.

**FIGURE 4.8 EXPORT VOLUME OF THE IT OUTSOURCING INDUSTRY IN UKRAINE**



Source: AVentures Capital, Aventis Capital, and Capital Times. 2019

Note: E = estimated; F = forecast.

Ukraine today is home to 110 R&D centers for global tech giants, including Microsoft, Samsung Electronics, Apple, Skype, IBM, Boeing, Ericsson, Siemens, Oracle, Magento, and Wargaming. The country's rich tech scene has also fueled rapid growth in the local start-up community. Joooble, Grammarly, DepositPhotos, GitLab, PetCube, Mobalytics, Preply, Attendify, CleanMyMac, InvisibleCRM, Looktery, and Readdle are only a few of the big names that started in Ukraine (Daxx 2020). The country should focus on aftercare services for existing investors, particularly during the COVID-19 crisis and its immediate aftermath, to retain investments by such prominent IT firms. Investors that are cared for in the crisis will develop an affinity to the location knowing that they are a priority. Moreover, as the country seeks to attract new investment, testimonials from existing firms will serve as an effective promotion mechanism.

## FACTORS THAT AFFECT UKRAINE'S PARTICIPATION IN EUROPEAN GVCs

While factor endowments and geography are key determinants of a country's participation in GVCs, countries must consider multiple elements and policy levers if they are to connect to, and take full advantage of, GVCs. Which actions to prioritize and adopt will depend on the specific country context and, in particular, on the stage of development of its manufacturing and service sectors.

**TABLE 4.3 FACTORS THAT INFLUENCE GLOBAL VALUE CHAIN PARTICIPATION AND CORRESPONDING CHALLENGES IN UKRAINE**

FACTORS THAT AFFECT GVC PARTICIPATION	CHALLENGES
<b>Institutional quality</b>	<ul style="list-style-type: none"> <li>Strengthen the rule of law and continue to implement cross-cutting reforms to revert entrenched negative perceptions about Ukraine's business environment.</li> </ul>
<b>Endowments</b>	<ul style="list-style-type: none"> <li>Update and strengthen the country's investment policy and promotion activities, with a focus on key sectors</li> <li>Strengthen the entrepreneurial and innovation capabilities of local firms that are needed to increase their participation in GVCs.</li> <li>Address existing skills gaps and labor market rigidities in order to cope with the tightening supply of labor.</li> </ul>
<b>Market size</b>	<ul style="list-style-type: none"> <li>Ensure that trade policy, promotion, and support services fully leverage the expanded access to the EU market.</li> </ul>
<b>Geography</b>	<ul style="list-style-type: none"> <li>Solve infrastructure bottlenecks that deter industrial activities and export growth.</li> </ul>

Source: World Bank staff, based on World Bank Group 2019a, chap. 7.

Note: EU = European Union; GVC = global value chain.

The World Development Report 2020 identifies policy areas that countries should consider as they seek to participate more actively in GVCs. The report considers four sets of factors that matter for GVC participation and that must be kept in mind in the design of appropriate policy responses. Table 4.3 describes the four sets of factors and corresponding challenges that Ukraine faces in each of them. The rest of this section discusses in more detail policy areas that merit attention in Ukraine.

### The rule of law and entrenched negative perceptions about Ukraine's business environment

Foreign investors residing outside Ukraine have a poor and negative perception of the country. A country's general national image and brand is one of the most important assets of any state, encouraging inward investment, adding value to trade, and attracting tourists and skilled migrants. Although Ukraine recently started targeted and powerful public relations activities abroad, the message was mostly directed to the image of the country related to the situation in Crimea and the occupied eastern provinces. At the same time, international media kept reporting on a number of issues that portray the country's image badly (poor governance, the unstable political situation, unfair competition, selective justice) that are central to investor decision-making. Positioning a nation's brand for FDI goes beyond public relations activities and is an important part of the investment promotion. Investors' perception gap in evaluating the country's liberalization achievements, combined with recurrent concerns about governance and insufficient infrastructure development, has been an important investment impediment to Ukraine.

#### What do companies say?

“We preferred investing in Romania, where higher production costs were offset by lower general business risk.”

Political instability, dragging reforms, and, most importantly, poor governance are seen as an endemic part of the business climate in Ukraine. Almost 90 percent of respondents to a 2017 survey of more than 180 domestic and foreign companies by the American Chamber of Commerce in Ukraine said that the fight against corruption should be the main priority for enhancing the country's business climate. Over 70 percent of those surveyed believed that the courts are the most deficient in this respect, while 54 percent considered tax and customs authorities to be the main issue. One-third of respondents—34 percent, or 8 percentage points fewer than in 2016—blamed local authorities (American Chamber of Commerce in Ukraine 2017). Phenomena such as arbitrary law enforcement raids have not yet been eliminated in Ukraine.<sup>58</sup> Political instability, the poor rule of law, and weak governance not only fuel negative perceptions of the investment climate in Ukraine by foreign companies, but they also directly affect the country's business risk ranking—one of the key indicators used by foreign investors during the site selection process.

### Ukraine's investment policy and promotional institutional framework

Ukraine is open to FDI and has few restrictions, but its investment policy has several opportunities to improve. The government of Ukraine actively seeks FDI. In 2014, the National Investment Council was established as a consultative and advisory body under the President, and in 2016 the government established the Ukraine Investment Promotion Office (UkraineInvest.com)—a state agency with a mandate to attract and support FDI. Ukraine also established a Business Ombudsman in 2015 to provide a forum for domestic or foreign businesses to file complaints about unjust treatment by state or municipal authorities, state-owned or controlled companies, or their officials. Ukrainian legislation provides for national treatment of foreign investors, in line with its WTO commitments.

**Investment promotion and facilitation need to be strengthened.** Two investment promotion intermediaries (UkraineInvest and National Investment Council) have unclearly delimited and overlapping responsibilities, which likely have been motivated more by the existing political landscape than by an objective need for separate governance structures. Ukraine could facilitate expansion from existing investors in priority sectors by strengthening aftercare programs, currently housed under UkraineInvest. The organization seems to have little in-house sector expertise, however, and aftercare programs are limited to troubleshooting and not to policy advocacy, reinvestment, and investment embedding. In addition, capacity constraints and the lack of a clear strategic prioritization of UkraineInvest investor servicing activities mean Ukraine does not have a supplier development program. A particular challenge for the investment promotion team will be to dispel the existing negative perception of Ukraine as an investment destination, as mentioned earlier.

**The regulatory framework for the establishment and operation of business in Ukraine by foreign investors is generally similar to that for domestic investors.** Foreign and domestic private entities can engage in all forms of remunerative activity, with some exceptions: foreign companies are restricted from owning agricultural land, producing bioethanol, manufacturing carrier rockets, and some publishing activities. In addition, Ukrainian law authorizes the government to set limits on foreign participation in state-owned enterprises, although the definition of “foreign participation” is vague and the law is rarely used in practice (US Department of State 2019). As a result of these statutory restrictions, Ukraine has a score on the Organisation for Economic Co-operation and Development (OECD) FDI Restrictiveness Index higher (0.124) than the OECD average (0.065).<sup>59</sup> In addition, Ukraine has signed more than 70 bilateral investment treaties that provide foreign investors with substantive and procedural protection. However, the 2016 OECD Policy Review indicates that Ukraine should consider updating its international investment agreements with a view to ensuring that they better reflect government intent and emerging trends in investment treaty policy (OECD 2016a).

**The implementation of intellectual property–related reforms remains slow in Ukraine.** Intellectual property protection and enforcement are fundamental conditions for innovation and competition. A recently released report of the Office of the US Trade Representative (2019) found an absence of sufficient progress by Ukraine in the area of intellectual property rights protection and left Ukraine on the Priority Watch List. A joint OECD/EUIPO report (2017) on trade in fake goods identified Ukraine as one of the four main transit points used for introducing fake goods into the EU.

### What do companies say?

“Ukraine is a cost-competitive location. But the investment incentive package offered to our project in Poland was a better deal at the end of the day.”

**The level of investor protection has been reported as generally sufficient and broadly consistent with international norms.**<sup>60</sup> Ukrainian legislation, international treaties, and conventions signed and ratified by Ukraine provide foreign investors with a fairly wide range of instruments that enable investors to protect their interests in the event of any kind of investment dispute. Expropriation has been rare, and most international investment agreements that Ukraine has concluded cover both direct and indirect expropriation (OECD 2016a). Investment arbitration is a legal instrument for the protection of foreign investors’ rights in Ukraine. Nevertheless, as suggested by the OECD 2016 investment review, further specification of investment protection provisions would help to better reflect government intent (OECD 2016a, 73).

**Ukraine has recently adopted measures to strengthen the institutional capacity to protect investors’ rights.** The Cabinet of Minister established a Commission for Business Protection in 2019 to consider appeals to deal with measures that interfere with private businesses. The Ministry of Justice of Ukraine and its territorial bodies have established a board for reviewing complaints against decisions, actions or omissions in the areas of state registration of real property rights and business registration. Ukraine has increased cooperation with the OECD, including the country’s accession to the OECD Declaration on International Investments and Multinational Enterprises, which will facilitate the introduction of international standards of investment activities; the elimination of restrictions on sectors in which foreign investment is prohibited and by ensuring national regime for transnational corporations; the implementation of principles and standards of corporate social responsibility.

**Access to locational investment incentives in Ukraine is limited, reducing the country’s regional cost competitiveness.** Cost competitiveness is one of the key location factors for manufacturing FDI. To retain their international competitiveness, many regional FDI competitors provide locational investment incentives (fiscal or financial). Ukraine also provides some investment incentives; however, there seems to be no strategic framework for the incentives based on international benchmarking and cost-benefit analysis. The incentives include industry-specific investment incentives and incentives to small businesses and large investment projects (Dumych and Razuvaiev 2019). The range of investment incentives provided in Ukraine is restricted, however, and likely not competitive in comparison with other Central and Eastern European comparator countries (table 4.4). Neither does the system include behavioral incentives to make foreign investors in the country undertake functions regarded as desirable, such as training, local sourcing, R&D, or exporting. Policy makers need to clearly understand how Ukraine compares with other comparator economies and assess adjustments in its investment incentive systems accordingly. Nevertheless, given existing fiscal constraints, the country must prioritize nonfiscal investment incentives, such as facilitating access to industrial land and speeding up licensing.



**TABLE 4.4 INVESTMENT INCENTIVES IN SELECTED CENTRAL AND EASTERN EUROPEAN COUNTRIES**

	BULGARIA	CZECH REPUBLIC	HUNGARY	POLAND	SERBIA	SLOVAK REPUBLIC	ROMANIA	UKRAINE
<b>Investment cash grant</b>	+	+	+	+	+	+	+	–
<b>Employment grant</b>	+	+	+	+	+	+	+	–
<b>Training grant</b>	+	+	+	–	–	–	–	–
<b>CIT relief or exemption</b>	+	+	+	+	+	+	–	+
<b>Property tax exemption</b>	–	+	–	+	–	–	+	–
<b>Exemption from other taxes</b>	+	–	–	–	+	–	+	+
<b>Property sold at a reduced price</b>	+	+	–	–	–	+	–	–
<b>Country specific</b>	+	–	+	+	+	–	–	–

Source: Data for Bulgaria, the Czech Republic, Hungary, Poland, Serbia, the Slovak Republic, and Romania: Central European Financial Observer 2015; data for Ukraine: Dumych and Razuvaiev 2019.

Note: CIT = Corporate Income Tax

**Links, and interfirm and intersectoral spillovers, need to be actively promoted and supported.** A combination of deliberate effort, targeted policies, and hands-on support is required to facilitate FDI links. Because no link or supplier development program is in place in Ukraine, the investment promotion authorities should design and implement an aftercare program that targets strategic investors and priority sectors with the aim of understanding their motivation, sourcing strategies of MNEs, types of value chains, and capacities of local suppliers. The aftercare program should then lead to designing a links strategy, including tailored implementation solutions for linking high-potential domestic firms to foreign investors and GVCs. Other business service providers (SME development agency, export promotion organization, innovation agency, and so on) should become involved in the process of embedding FDI in the local economy and in providing SME and entrepreneurship development programs that ultimately lead to Ukraine's higher GVC participation. Moreover, Ukraine could consider behavioral incentive programs to tackle specific market failures that prevent the formation of links with local suppliers in target sectors.

## Trade policy and promotion and support services are needed to fully leverage expanded access to the EU market

The government should speed up the implementation of existing free trade agreements and consider entering into negotiations for new ones. Ukraine has a liberal trade policy and free or preferential market access to many export destinations. In May 2008 Ukraine joined the WTO, which introduced opportunities to participate in the multilateral trading system and cooperate better with states and groups of states. In 2015–16, Ukraine joined and ratified the Agreement on Trade Facilitation and the revised Agreement on Government Procurement and has accepted the protocol amending the WTO’s Agreement on Trade-Related Aspects of Intellectual Property Rights. A free trade agreement (FTA) with the European Free Trade Association was signed in 2010 and entered into force in June 2012. In 2012, Ukraine also ratified an FTA with CIS countries (besides the CIS FTA, Ukraine has several bilateral FTAs with individual CIS countries). After joining the WTO Ukraine concluded several FTAs, in particular: FTA with member-states of the European Free Trade Association (in force from 1st June 2012), FTA with Montenegro (in force from 1st January 2013), FTA with Canada (in force from 1st August 2017). A FTA with Israel was completed and signed in January 2019. Ukraine is currently negotiating with Turkey and Serbia.

The DCFTA is by large degree the most important FTA for Ukraine, because it goes beyond market access measures. The DCFTA provisionally came into force in January 2016. The DCFTA is more than a traditional FTA that removes customs duties. It is a tool to modernize Ukraine’s trade relations and speed up economic development by providing market access and, by extensive harmonization of laws, causing it to adhere to norms and regulations in various trade-related sectors. In addition, it is a tool to improve the competitiveness and efficiency of the Ukrainian economy, attract new FDI, and increase labor productivity, value-added output, and, ultimately, real income and the quality of life of Ukrainian citizens. Appendix B describes some the thematic coverage of the DCFTA.

### What do companies say?

“We bring parts and components not just from the EU, but also from Switzerland, the Balkans, Turkey, Israel... Tariff removal, border crossing simplification, and cumulation of origin are crucial for our operation in Ukraine.”

As a result of improved market access to the EU, there are no major trade barriers that prevent Ukraine from attracting efficiency-seeking FDI. Interviews with existing investors did not reveal any major trade barriers that would prevent firms from exporting to the EU internal market. Some impediments related to trade facilitation measures (customs clearance) were mentioned—in particular, the need to introduce authorized economic operators, a national cargo-tracking system to allow the transparent exchange of information between Ukrainian and EU customs officials, and ways to reduce time and transport transaction costs. One particular issue closely related to Ukraine’s global trade regards Ukraine’s adherence to cumulation of origin disciplines of the Regional Convention on pan-Euro-Mediterranean preferential rules of origin (PEM Convention).<sup>61</sup> For foreign investors using Ukraine as a springboard for exports to GVCs and depending on input imports from countries outside the EU and export of intermediate goods, cumulation of origin is an important trade policy tool to facilitate market access.

### What do companies say?

“Ninety-nine percent of our inputs are imported from our global suppliers—all electronic components come from Asia, some mechanical parts from Europe. We found a local supplier for packaging and some mechanical parts and could increase the local content a bit more if we find the right supplier.”

### Entrepreneurial and innovation capabilities of local firms are needed to increase participation in GVCs

Upgrading Ukraine’s participation in GVCs requires a targeted long-term SME development strategy that tackles the low level of involvement of Ukrainian SMEs in export activities.<sup>62</sup> Ukraine’s export strategy road map for 2017–21 concludes that “the SMEs export activity is rather low, and cannot be considered as a driver of short-term economic growth (...) This indicates that long term growth requires better efforts directed towards integrating SMEs in export value chains” (Ministry for Development of Economy, Trade and Agriculture, Ukraine 2017, 20).

**Trade and business support services in Ukraine remain largely at an embryonic stage.** The national export strategy states that there is a misalignment between the ambitions of government trade and business services, on the one hand, and the needs of enterprises, on the other hand. There are obvious gaps in institutional structure and services delivery in areas such as trade finance, certification, transport, cargo handling, trade promotion, and branding. The country needs a coordinated network of institutions that remove barriers to trade, and provide effective and affordable services along the value chain, and the phases of international trade transactions (Ministry for Development of Economy, Trade and Agriculture of Ukraine 2017, xi).

**Two areas of trade and business support services are particularly relevant to Ukraine’s ambition to participate in GVCs: FDI links and export promotion services.** As mentioned earlier, there is no government-sponsored supplier development program that could help foster and support relationships between existing FDI in Ukraine and local firms. While sourcing in MNCs is often organized on a global or regional level, with limited access for local SMEs to enter the supply chain, there is always some part of the operation that could be sourced locally and should be proactively promoted.

**Export promotion services are provided by the Export Promotion Office of Ukraine, which was established only in 2018.** The office provides services in export consulting, export education, and business-to-business and business-to-government matching that help SMEs grow and prepare for new market opportunities. The office is implementing the EU4Business initiative that targets overall private sector development and focuses on SMEs, supporting access to finance or business advice. The current part of the program has a budget of EUR 40 million consisting of advisory support through the opening – by EBRD – of 15 business support centers providing business advice (budget: EUR 28 million).<sup>63</sup> An additional EUR 12 million is directed to loans for SMEs, giving priority to companies that already export and are willing to increase their share in foreign markets, or to companies that are about to start exporting. The office could become the main public provider of trade and business support services, although anecdotal evidence collected during interviews with private firms suggests that the Office needs to have in place a rigorous monitoring and evaluation (M&E) framework to ensure the relevance of its trade support services to SME needs.

### What do companies say?

“Our products are as good as those produced in Poland. Brand “Made in Ukraine” is not.”

### What do companies say?

“We recently lost one of our export deals. An Italian competitor was able to provide better Eximbank-sponsored export financing terms—our cash flow does not allow us to provide a similar long-term export credit to the customer.”

**Difficulties in accessing credit limit the development of SMEs and the dynamism of the Ukrainian private sector.** The Executive Opinion Survey conducted by the World Economic Forum in 2017 indicates that access to financing is one of the most problematic factors for doing business in Ukraine. SMEs face specific access to finance challenges across sectors and value chains. Tight credit conditions limit firms’ ability to invest in new equipment and modernization. Expensive and inadequate access to bank loans is affecting the production capacity of the Ukrainian economy and is discouraging enterprises from applying for loans. High credit rates and liquidity problems have also been reported by the recent domestic enterprise survey. Access to finance will be critical for the full implementation of some of the DCFTA provisions (including environmental provisions of the acquis, which are estimated to cost about US\$11.5 billion).

**The absence of export financing and export insurance services hinders the internalization of domestic firms.** Ukraine provides no export subsidies and has no classic export credit or export guarantee agency (WTO 2016). The traditional focus of UkrEximBank, the State Export-Import Bank of Ukraine, is the servicing of import and export transactions. Thus it does not currently perform the financing and insurance function, limiting businesses’ access to finance further and increasing the risks borne by the exporters. Domestic firms repeatedly named the absence of export financing and export insurance services as a factor that places Ukrainian exporters at a disadvantage to third-party exporters.

**Low participation in GVCs limits access to new knowledge and technologies, which in turn further hampers the ability of Ukrainian firms to participate in GVCs in an era of rapid technological change.** Innovation is crucial for improving productivity, diversifying production, and increasing value added. FDI, a typical driver of innovation through technology transfer and imports, does not provide enough incentives for innovation in Ukraine, because current FDI in manufacturing is limited to labor-intensive assembly, which depends on imports of components and provides few opportunities for local sourcing.

### What do companies say?

“Last year we introduced a new automated warehouse manipulation system. It took us more time than we originally planned as we financed everything from our profit. Banks loans were way too expensive.”

**Ukraine’s innovation system provides limited support to SMEs attempting to access knowledge and technology.** Ukraine offers too few tax incentives for innovative industries, no legislation base for innovation tax incentives, and no tax credits for companies that implement innovations. Moreover, limited access to finance itself is a barrier to innovation. Debt financing is limited and interest rates are high. Most investments in innovation are internally financed by companies. Equity financing through the stock market is mostly unavailable because of weak institutions and rule of law. Ukraine has only a few private equity and venture capital firms that are funding some innovative companies. Moreover, research institutions and universities do not effectively support innovation in Ukrainian companies. Both are structured to service the old, pre-independence economy and need major reforms to adapt to the new private sector realities. However, there is little demand from business for such institutions to support innovation.<sup>64</sup> Box 4.2 describes the challenges for technology upgrading and innovation in Ukraine, in particular in the ICT sector.

**In 2019 the Strategy for the Development of Innovation for the period up to 2030 was approved.** Its objective is to build a national innovation ecosystem to ensure rapid and high-quality transformation of creative ideas into innovative products and services, increase the level of innovation of the national economy, creating favorable conditions for innovation, increasing the number of implemented developments, increasing economic return, attracting investment in innovation. In another positive development sign, the country recently launched the Ukrainian Startup Fund to promote the creation and development in Ukraine of technology startups in the early stages of development in order to increase their global competitiveness.

#### **BOX 4.2 TECHNOLOGY UPGRADING AND THE CHALLENGES OF THE ICT SECTOR IN UKRAINE**

Economic growth is intimately related to the technology capabilities of a country. A recent World Bank Group report (Radosevic and others 2019) looks at economic growth in Ukraine through the lens of technology upgrading. Technology upgrading occurs through technological, industrial, and organizational change. The report argues that Ukraine has a limited capability to generate, as well as absorb, new technology. The country ranks last among comparison countries in a composite index of technology upgrading, with especially low performance in terms of production, management, and research and development capabilities. To address the challenges, three main areas for policy action are recommended: (a) the development of firms' managerial capabilities and adoption of productivity-enhancing technologies; (b) better integration into global value chains; and (c) supply and retention of a digital-ready workforce. The report also offers cross-cutting recommendations for improving Ukraine's business environment and the complementarities needed for firms to grow and upgrade.

Sources: Radosevic and others 2019 and Aridi and others 2020.

In particular, the report takes a closer look at the booming information and communication technology (ICT) sector, Ukraine's fastest-growing sector. The ICT sector showcases the country's potential, while simultaneously demonstrating which factors and capabilities can constrain its future growth. While Ukraine has developed a vibrant ICT industry, significant challenges exist for its long-term success. The report finds that the confluence of several factors spurred an entrepreneurial response among hundreds of firms. However, most of these firms focus on low-value-added segments of the ICT global value chain and lack the managerial and technical capabilities to compete globally, much less develop new products and services. As the global ICT services sector evolves, multilevel interventions are required to maintain the sector's growth trajectory and realize the economic and social benefits normally associated with the development of a domestically interconnected ICT sector. In order for Ukraine to secure its digital future, it must seize windows of opportunity in the global and European data economy.

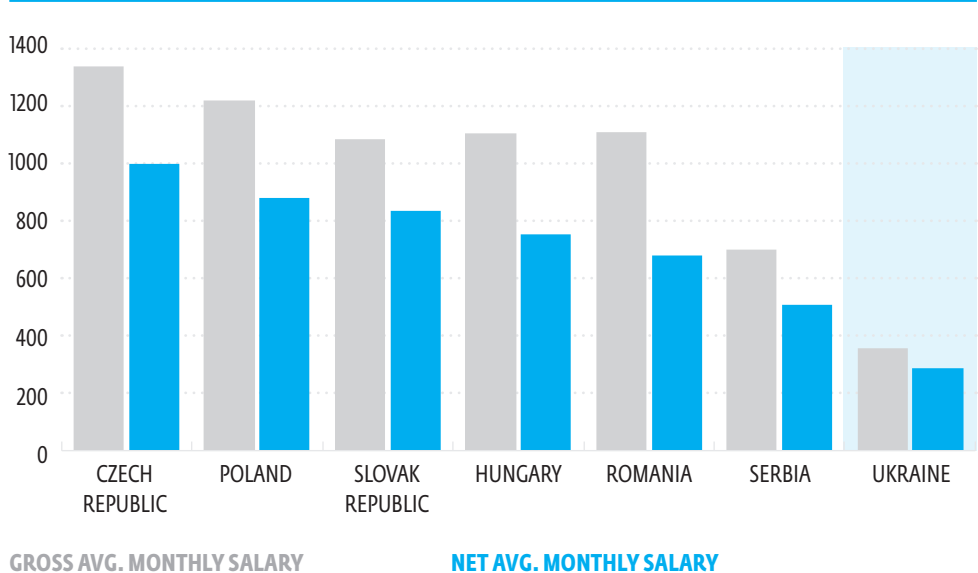
**What do companies say?**

“With our recent expansion we plan to employ close to 5,000 people in Ukraine. Retaining existing staff and recruiting new staff has, however, become a nightmare. People just leave the country. Supporting internal mobility in the country would help.”

**Skills gaps, labor market rigidities, and the tightening supply of labor**

Labor cost differentials have been the main determinant for efficiency-seeking FDI in manufacturing in Ukraine, but they are narrowing. Wages in Ukraine were considerably lower than in comparator Central European countries (figure 4.9). Average wages in Ukraine have been growing rapidly since 2015, partly driven by competition for Ukrainian workers abroad, especially in Poland.<sup>65</sup> Local producers must therefore compete for labor with companies in Poland, the Czech Republic, the Slovak Republic, and other Central and Eastern European countries. High labor turnover, difficulty in recruiting new workers, and increasing labor costs have been generally reported and were the underlying reasons that some foreign investors left the country.<sup>66</sup> Outmigration hits the manufacturing sector particularly hard because labor costs in the sector have not been pegged to US dollar/euro exchange rates and wages do not copy international labor markets.

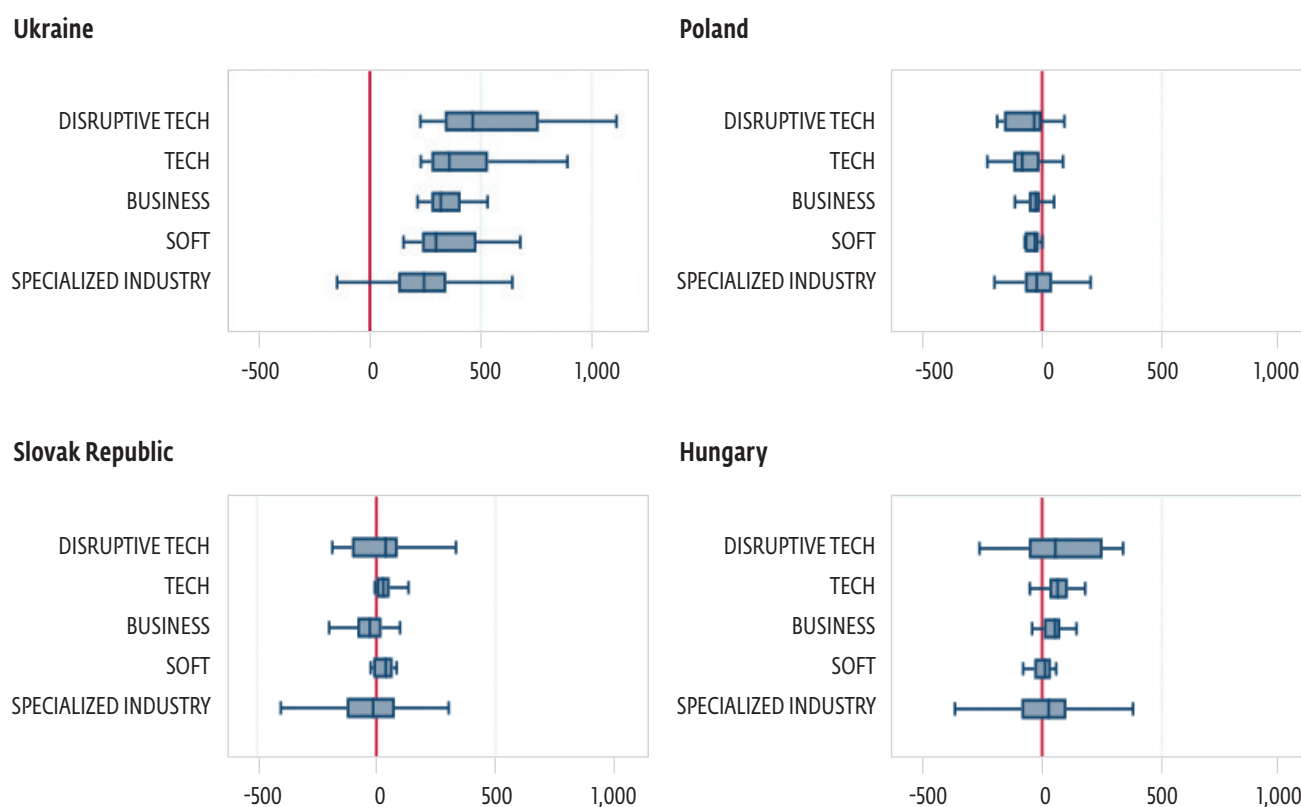
**FIGURE 4.9 AVERAGE MONTHLY GROSS/NET SALARIES IN SELECTED CENTRAL AND EASTERN EUROPEAN COUNTRIES, 2020, IN EUROS**



Source: "List of European countries by average wage," various sources via Wikipedia, [https://en.wikipedia.org/wiki/List\\_of\\_European\\_countries\\_by\\_average\\_wage](https://en.wikipedia.org/wiki/List_of_European_countries_by_average_wage).

**Labor productivity is hindered by mismatches in skills.** Skills gaps significantly constrain firms' performance in Ukraine: 40 percent of firms in four key sectors (agriculture, food processing, IT, and renewable energy) report a significant gap between the type of skills their employees have and those they need to achieve the firms' business objectives. Although skills gaps are not the most pressing constraint that firms face, they limit companies' ability to hire, perform, and grow (Del Carpio and others 2017). The formal education and training system is not providing students with the skills that employers need, and it suffers from weak governance and an inefficient funding system (Libanova and others 2016). Partnerships between firms and education institutions are scarce, with only one-fifth of firms in key sectors maintaining regular contacts with educational and training institutions (Del Carpio and others 2017). Anecdotal evidence provided during private firm interviews suggests that foreign investors proactively establish contacts with local secondary and tertiary educational institutions to close the qualification gap and adjust school and vocational training curricula to labor market needs.

**FIGURE 4.10 NET OUT-MIGRATION BY SKILL CATEGORY, PER 10,000 LINKEDIN MEMBERS**



Source: World Bank staff calculation using World Bank Group-LinkedIn Digital Data for Development.

## What do companies say?

“Induction training for unskilled labor in our local plant takes about two weeks. For the rest of our skilled workers we had to start an in-house training center or even sent them to one of our foreign branches. We hope to convince one of the local universities to adjust their curriculum to meet our production needs.”

The dynamism of Ukraine’s IT sector, in particular, is being challenged by the rapid out-migration of qualified workers to neighboring countries in the EU. In order to sustain rapid growth of its IT services exports and to leverage the industry as a vehicle to capture a larger share of value added in manufacturing GVCs, Ukraine absolutely must expand Ukraine’s endowment of IT skills. Nominal monthly wages in the IT sector have been rising far faster than in the rest of the economy and the salaries are on par with regional competition. For instance, the average monthly salary of a mid-career software engineer in Ukraine (US\$2,028 per month) is higher than in Belarus (US\$1,939) and Romania (US\$1,971), but lower than in Poland (US\$2,028) (Shavalyuk 2018). Nonetheless, Ukraine is losing highly qualified workers—particularly workers with disruptive technology skills, such as artificial intelligence, cloud computing, data science, cyber security, and robotics—and technology skills, such as computer graphics, game development, mobile app development, and web design (figure 4.10). The recent announcement by Prime Minister Honcharuk that the government of Ukraine is launching an IT Creative Fund to promote training new IT professionals is a welcome sign (Ukraine government 2019).

## Infrastructure bottlenecks that deter industrial activities and export growth

Industrial land is available for manufacturing projects, but the process to access it could be further streamlined to reduce costs, time, and unpredictability. To save time and transaction costs, reduce uncertainty, and generally reduce risk exposure in Ukraine, several interviewed companies preferred leasing already-developed industrial land (or even production facilities) with already-existing access to all utilities, rather than purchasing industrial land. As of August 2020, the Register of Industrial Parks of Ukraine included 43 projects in 19 regions of the country with a total area of about 1,846 ha, mostly in the Kyiv (seven projects) and Lviv (seven projects) regions. Twenty-eight industrial parks were initiated by city or regional councils, while the remaining 15 are private or developed jointly by private companies and municipal councils. However, in reality only three parks are operational.<sup>67</sup> The costs of leasing land plots in Ukraine industrial parks are reportedly up to 50 percent higher than in comparator locations in Central and Eastern Europe; the cost of utilities is internationally competitive, although the existing monopolies in the utility sectors impair Ukrainian competitiveness both on prices and on commercial terms for getting firms access to utilities.

**An adequate supply of and access to serviced industrial infrastructure must accompany efforts to attract FDI and participate in GVCs.** Governments should strive to get the conditions right before embarking on building industrial infrastructure. Successful industrial parks and zones are demand driven—that is, they respond to investors’ reported needs. Successful industrial parks are located in sites with access to competitive logistics, with adequate infrastructure, and with the required talent pool, and they offer the services investors need. Moreover, they function under clear rules, regulations, and procedures for setting up and operating a business, and they facilitate coordination across different government entities, without wasting precious



fiscal resources. Professional management, with minimal political meddling in business decisions, and often under the responsibility of a private operator, helps align the operation of the industrial park or zone with business and economic development objectives. Finally, investors increasingly value industrial sites that adhere to strict environmental and social standards, such as those proposed under the ecoindustrial parks initiatives jointly developed by the World Bank Group, the United Nations Industrial Development Organization, and the German Development Cooperation (GIZ).

### What do companies say?

“Poor road conditions narrowed the choice for our investment site in Ukraine. We could not produce in an otherwise good location in central Ukraine due to the state of physical infrastructure there.”

**Logistics systems are not efficient and competitive, unnecessarily increasing the cost of doing business in Ukraine.** Weaknesses in Ukraine’s logistics are reflected in its low ranking in the Logistics Performance Index (LPI). Five key drivers of current high logistics costs are (a) lack of regulatory clarity and suboptimal management of public assets that create barriers to private investments, (b) underutilization of river transport, (c) underinvestment in rail transport, (d) inefficiencies in storage management, and (e) excessive use of road transport (World Bank 2018d). Three particular issues related to logistics were mentioned in meetings with the private sector: (a) nonexistent railway infrastructure for private locomotive traction, (b) incompatible maximum permitted weights and dimensions for (inter)national and regional roads, and (c) insufficient truck quotas for Ukrainian trucks used with EU member states (Poland has been a particular problem, but it now seems to have been addressed by the Ukrainian government) (UNIAN Information Agency 2019). Experts have recommended several priorities for investment, funding, and modernization of Ukraine’s road sector, including improving vehicle load control, ensuring routine road maintenance and promotion of competition in the maintenance industry, and preparation of capacity improvement projects with private financing. (World Bank 2018c).

## PRIORITY RECOMMENDATIONS AND KEY POLICY ACTIONS

To increase GVC participation, Ukraine must adopt a multipronged approach that tackles the array of challenges described in the previous section. Together, these challenges constitute a broad and ambitious agenda that exceeds by far the scope and the timeframe of this CPSD. As mentioned earlier, this agenda must include efforts to (a) improve the rule of law and increase transparency in permitting and procurement, while continuing to implement cross-cutting reforms to improve foreign investors’ assessment of the business environment in Ukraine; (b) strengthen the country’s investment policy and promotion framework, with a particular focus on sectors with promising prospects to attract investment and increase exports; (c) build up the entrepreneurial and innovation capabilities of local firms, so that they can participate in GVCs; (d) address existing skills gaps and labor market rigidities; (e) take advantage of the expanded market access to the EU by strengthening trade policy, promotion, and support services; and (f) address infrastructure bottlenecks that deter industrial activities and export growth.

The government of Ukraine has reaffirmed its commitment to tackle some of the more pressing challenges and continue on the path to reform.<sup>68</sup> Table 4.5 presents priority recommendations and outlines key policy actions.

TABLE 4.5 PRIORITY RECOMMENDATIONS, KEY POLICY ACTIONS

KEY POLICY ACTIONS		
PRIORITY RECOMMENDATIONS	SHORT TERM (NEXT 1-2 YEARS)	MEDIUM TERM (NEXT 3-5 YEARS)
<b>Reform the country's investment policy and promotion institutional framework.</b>	<ul style="list-style-type: none"> <li>Strengthen the institutional framework and develop a national strategy for investment policy and promotion with adequate resources (human and financial) and performance-based metrics to evaluate progress toward goals.</li> <li>Review Ukraine's international investment agreements benchmarking with new-generation investment agreements and EU standards.</li> <li>Conduct a comprehensive inventory of investment incentives and benchmark with competing investment locations.</li> <li>Design and implement a supplier development program, with emphasis on industries with a proven track record of deepening economic links in other European countries.</li> </ul>	<ul style="list-style-type: none"> <li>Implement an aftercare program to encourage reinvestments and scale-ups by existing investors (this will also affect greenfield FDI through follow-on practices common in FDI-dominated value chains).</li> <li>Strengthen investment retention and investor grievance management.</li> <li>Ensure an adequate supply of serviced industrial parks, as well as other supporting infrastructure, driven by investors' demand and adhering to international best practices, including on eco-industrial parks, to reduce FDI start-up times and costs, ensuring that regulations and procedures do not waste fiscal resources.</li> </ul>
<b>Implement industry-specific trade and skills policy reforms to fully leverage the expanded access to the EU market, using deep-dive findings.</b>	<ul style="list-style-type: none"> <li>Develop and resource a national quality infrastructure strategy aimed at supporting testing, standards education, and standards adoption to improve domestic firm integration into GVCs to raise export market standards requirements (via FDI links or exports).</li> <li>Implement a program to improve branding of Ukrainian products on export markets.</li> <li>Strengthen SME and entrepreneurship development programs by providing export markets information, training, and trade support services to local SMEs.</li> </ul>	<ul style="list-style-type: none"> <li>Establish and strengthen trade financing instruments.</li> <li>Enhance the development of advanced skills by building and upgrading qualification and occupational standards; introduce performance-based incentives to encourage firm-level investments in skills upgrading and on-the-job training.</li> </ul>

Note: EU = European Union; FDI = foreign direct investment; GVC = global value chain.

# 5. SECTOR ASSESSMENT: LEVERAGE THE PRIVATE SECTOR'S CONTRIBUTION TO SUPPORT HEALTH CARE REFORMS

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## PROBLEM TO SOLVE

The primary objective of this sector assessment is to explore the key barriers to and opportunities for a stronger private sector contribution to Ukraine's health care system. This assessment is timely in light of the government's efforts through a cascade of reforms that seek to transform the sector from an input-based system to a modern, transparent, outcome-based system with more autonomy for health care providers and contestability for funding sources. It is even more critical at this juncture when nearly all countries worldwide are confronted with the health systems under the crisis arising from the COVID-19 pandemic. Other factors that warranted the inclusion of a health sector assessment in this CPSD include the government's interest in the role of private sector solutions in the service sector.

The health care system in Ukraine faces important shortcomings that have contributed to poor health outcomes. Inadequate investment in modern infrastructure has resulted in an outdated system with an excessively large but outdated hospital sector, and underdeveloped modern primary care. This situation has contributed to poor health outcomes relative to the numbers of doctors and nurses and to the hospital infrastructure being used. The challenge the system faces is accentuated by the growing burden of noncommunicable diseases (NCDs). These are growing globally: NCDs increased from 60 percent of deaths in 2000 to more than 70 percent in 2016. Ukraine is particularly affected because it has one of the highest rates of NCDs in Eastern Europe and Central Asia.

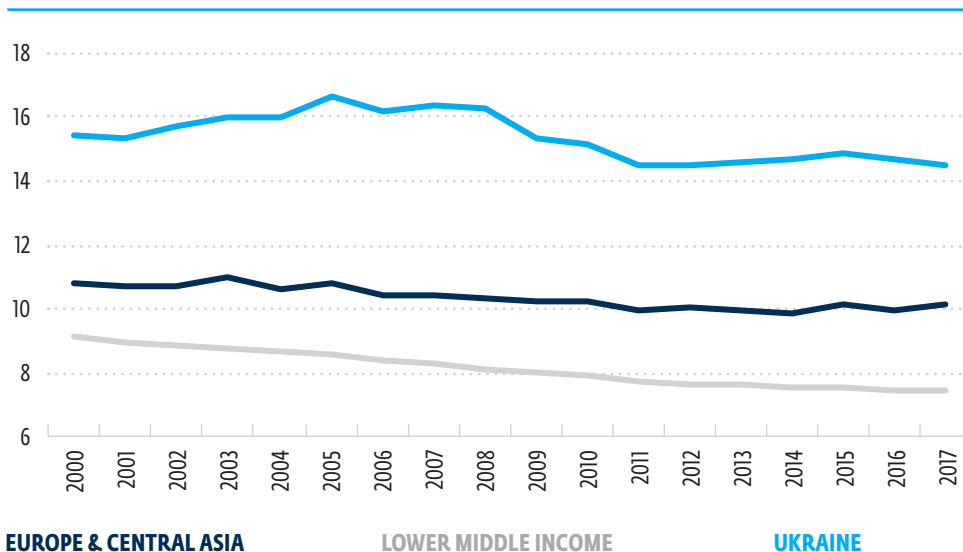
The private sector has potential to make a larger contribution in the health sector (in light of the recent reforms) in a range of service delivery activities from primary health care to specialist and emergency care, in the supply of medicines and medical equipment, and in using e-health as an innovative way of delivering health services. An increased role for the private sector is in line with global trends and can fill the significant service delivery and investment gap that has become evident under the current COVID-19 situation. In many countries the private sector is playing an increased role in health service provision. Changing population demographics and disease profiles are placing substantial pressure on public sector systems. In light of this pressure, many governments are turning to the private sector to help support improvements in efficiency, quality of care, and financial investment. The private sector has a particularly important role in responding to NCDs. When used correctly, the private sector is often well positioned in terms of management capacity, expertise, and capital to effectively manage and treat NCDs, either by directly providing services to patients or through collaboration with the public sector. An overview of the pharmaceuticals sector is given in box 5.1.

**Increasing the private sector's contribution will require active involvement and coordination by the public sector.** This role arises because the public sector is responsible for stewardship of a country's health system and sets overall policy. As a steward of the health sector, the public sector thus has an important role in attracting appropriate private sector investment. This report identifies key barriers that need to be overcome to increase the private sector's contribution. The end of this section provides recommendations and policy actions to address the barriers while maintaining the role of the public sector as the main provider of core health care services.

## CONTEXT

Ukraine now has one of the worst health profiles in the European region, characterized by high rates of mortality, morbidity, and disability. Despite the high number of hospitals (twice the European average), the health care system has failed to deliver quality services to the population. Scant investments to modernize Soviet-era infrastructure and inefficient management systems have resulted in worsening health outcomes: between 1991 and 2012, mortality increased by 12.7 percent; life expectancy at birth is 72 years (2017), more than 10 years less than the EU average; HIV/AIDS and tuberculosis prevalence are among the highest in Europe; and the adult mortality rate is significantly higher than the average for Europe (the mortality rate for men is 65 percent higher than the European average, at 9.3 per 1,000 in Ukraine (2017) compared with 178 per 1,000 in Europe) (figure 5.1). Ukrainians are disproportionately exposed to risk factors such as smoking, excessive drinking, unhealthy diets, a lack of physical exercise, and pollution (figure 5.2). As a result, over 25 percent of the adult population (18 to 65 years of age) has a chronic disease or condition, and NCDs are the main cause of morbidity and mortality. Cardiovascular diseases and cancer accounted for 81 percent of all deaths in 2013–14.

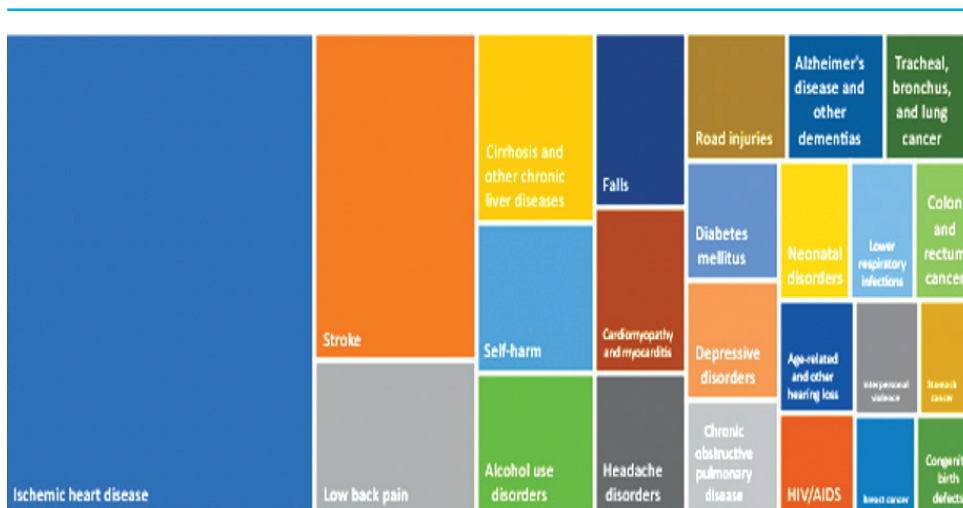
**FIGURE 5.1 DEATH RATE, PER 1,000 PEOPLE, 2000–2017**



Source: World Bank, World Development Indicators, 2019.

Poor health outcomes and the consequent loss of productivity are contributing factors to Ukraine’s subpar economic performance. A healthy population and a productive labor force are imperative to Ukraine’s economic recovery: studies indicate that an increase in life expectancy of just one year would contribute to raising GDP per capita by about 4 percent. According to Human Capital Index data (2017), adult survival rates are relatively low, and the country suffers from among the highest rates of disability from NCDs in Eastern Europe and Central Asia.

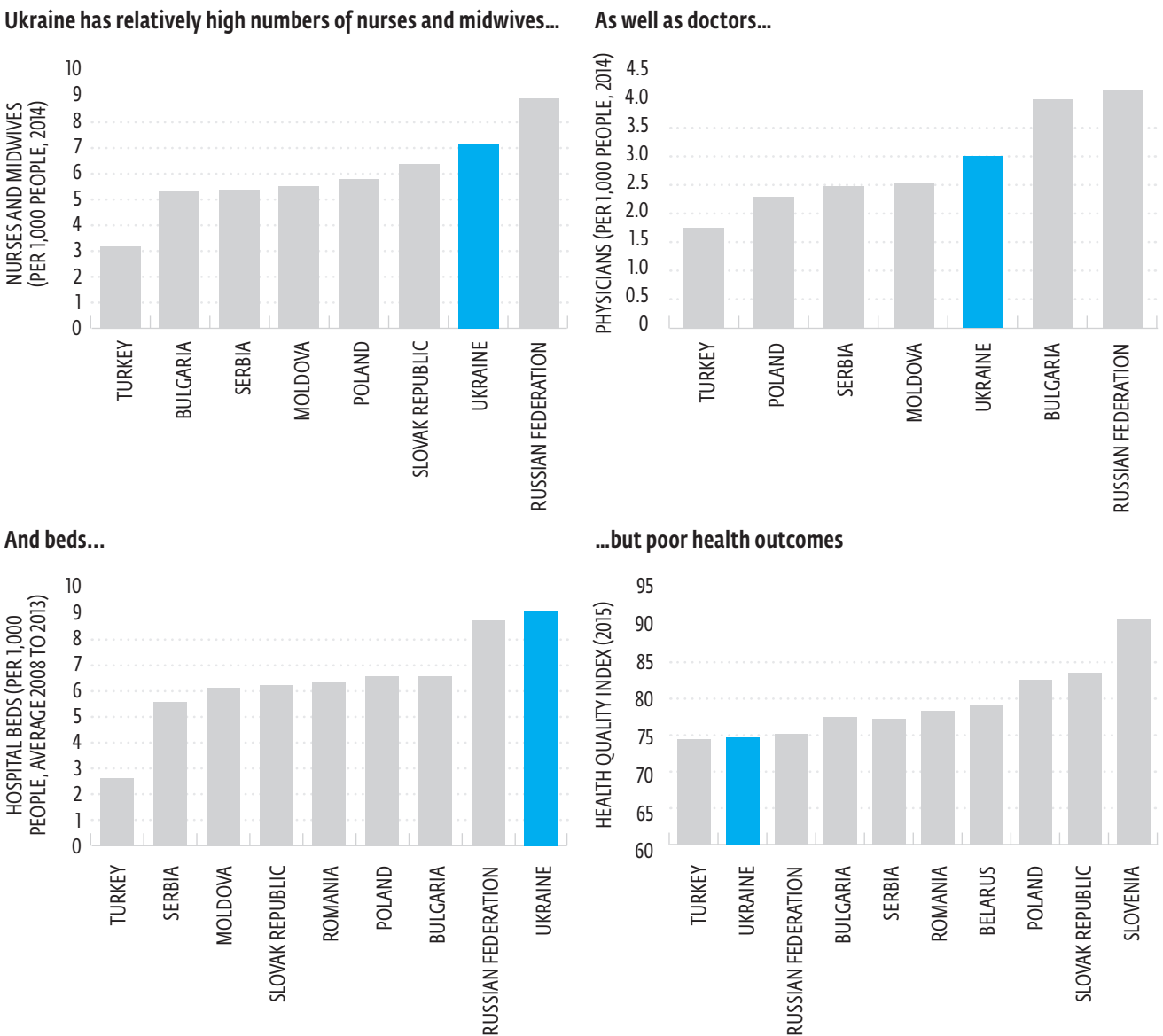
**FIGURE 5.2 TOP 25 DISEASES BY PERCENTAGE OF TOTAL DISABILITY ADJUSTED LIFE YEARS (DALY), UKRAINE 2017**



Source: IHME 2018.

These poor health outcomes are occurring despite a large number of health care workers and substantial health infrastructure. As illustrated in figure 5.3, Ukraine has more nurses, physicians, and hospitals than other countries in the region. Despite this advantage, it performs relatively poorly on the Health Access Quality (HAQ) index. The HAQ index measures the extent to which a country successfully treats patients. A higher score suggests that a country more successfully responds to its treatable burden of disease. The poor performance on the HAQ index, combined with the high levels of inputs, suggests that Ukraine’s health care system is relatively inefficient.

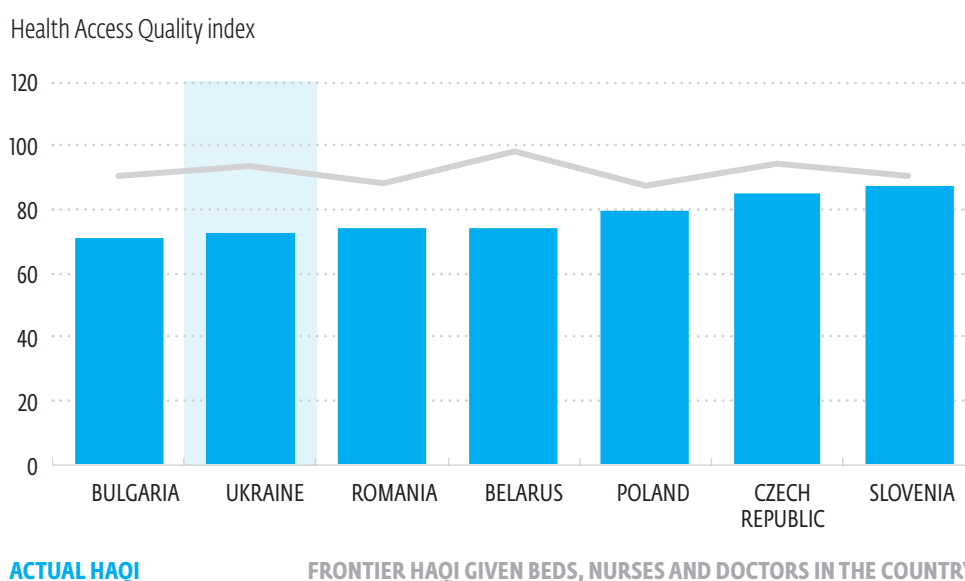
**FIGURE 5.3 UKRAINE’S HEALTH CARE SYSTEM’S SUBSTANTIAL HEALTH WORKFORCE AND INFRASTRUCTURE**



Source: World Bank, World Development Indicators.

The low level of efficiency of Ukraine's health care system is confirmed by the analysis shown in figure 5.4. The graph compares what Ukraine is achieving on the HAQ index against what countries on the frontier have achieved with a similar number of hospitals, doctors, and nurses.<sup>69</sup> This conclusion is similar to the results of others (GBD 2015 Healthcare Access and Quality Collaborators 2017), which suggests that Ukraine underperforms on the HAQ index relative to the frontier when taking into account income per capita, average years of education, and total fertility rates

**FIGURE 5.4 UKRAINE'S HEALTH CARE SYSTEM VERSUS THE FRONTIER FOR COUNTRIES WITH SIMILAR LEVELS OF INPUTS**



Source: GBD 2015 Healthcare Access and Quality Collaborators 2017.

Note: HAQI = Health Access Quality Index.

**The low level of efficiency of Ukraine's health care system reflects a number of structural problems.** Ukraine retains elements of a post-Soviet-era health system that places significant emphasis on services provided at hospitals. Past structural challenges and inefficient use of funding have resulted in Ukraine's demonstrating the following major issues and challenges that need to be addressed by health care sector reform:

- Low efficiency of service delivery, including excess hospital capacity, inefficient processes with outdated protocols, and very long lengths of stay; focus on patient stay and underdevelopment of outpatient, post-acute services; and, most importantly, lack of preventive care;
- Low quality of service delivery and unequal access to care throughout the country; and
- Chronic underinvestment that hinders both quality and efficiency.

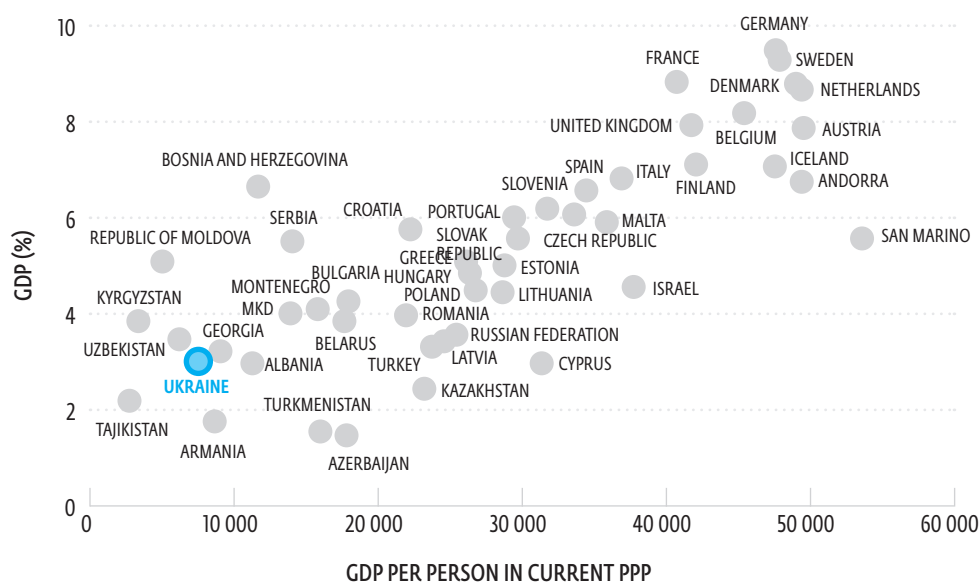
**The current system is still organized to prioritize curative over preventive services, hospitals over ambulatory services, and specialists over primary health care.** This type of system does not align with globally recognized modern medical care and service organization. Government health resources are heavily concentrated in large cities, especially in Kyiv, where 40 percent of national health care spending is destined. Expenditures on network facilities and staff account for over 60 percent of the state budget, with little left for basic services and investments in infrastructure rationalization and modernization. High staff costs are not reflected in high wages, however: the average monthly wage for the sector (US\$230 per month) is 33 percent below the average national official salary. Finally, annual spending on medicine in public institutions is only about 5 to 6 percent of total expenses.

**The system is overly reliant on hospitalization.** As suggested by figure 5.3, hospitalization is higher in Ukraine than in other countries in the region. For example, in 2013 when in Ukraine there were 22.5 discharges per 100 population, the average for the European region was 18.0, and in neighboring countries the average was 16.5 for Poland, 20.9 for Romania, and 20.7 for the Czech Republic. Not only is hospitalization more frequent, the average length of stay is also significantly higher. In 2013, the average length of stay was 11.7 days in Ukraine, 7.0 days in Poland, 9.4 days in the Czech Republic, 5.6 days in Bulgaria, and 7.3 days in Romania, with the European regional average being 8.6 days. The hospital sector is therefore oversized in terms of both beds and the number of hospitals. Having too many hospitals (and often too many buildings per hospital) leads to duplication of services; high operating costs, including high utility bills; aging infrastructure due to the impossibility of refurbishing and maintaining all existing hospitals adequately; and suboptimal workflows that affect the quality and safety of care.

**The current payment system for funding health care facilities entrenches inefficiency (figure 5.5).** Public financing is based on centrally based standards of capacity (such as bed numbers) rather than on demand or quality of service, and there is little incentive for improved cost control and more efficient use of resources in health care facilities. The system incentivizes hospitals to maintain high occupancy levels, resulting in high hospitalization rates and long average lengths of stay. Studies by the World Bank indicate that 38 percent of hospital admissions may not be justified, and 57 percent are longer than appropriate. In early stages of reform, the government has started to introduce changes to this system: funding of primary health care practices is now based on payments per patient registered, which creates competition among practices for patients but at the same time does not provide any incentive for these practices to optimize patient outcomes. A pilot initiative is expected to be implemented nationally in 2020 for payment per hospitalization.



**FIGURE 5.5 STATE SPENDING ON HEALTH VERSUS GDP PER CAPITA, WHO EUROPEAN REGION, 2015**



Source: World Health Organization

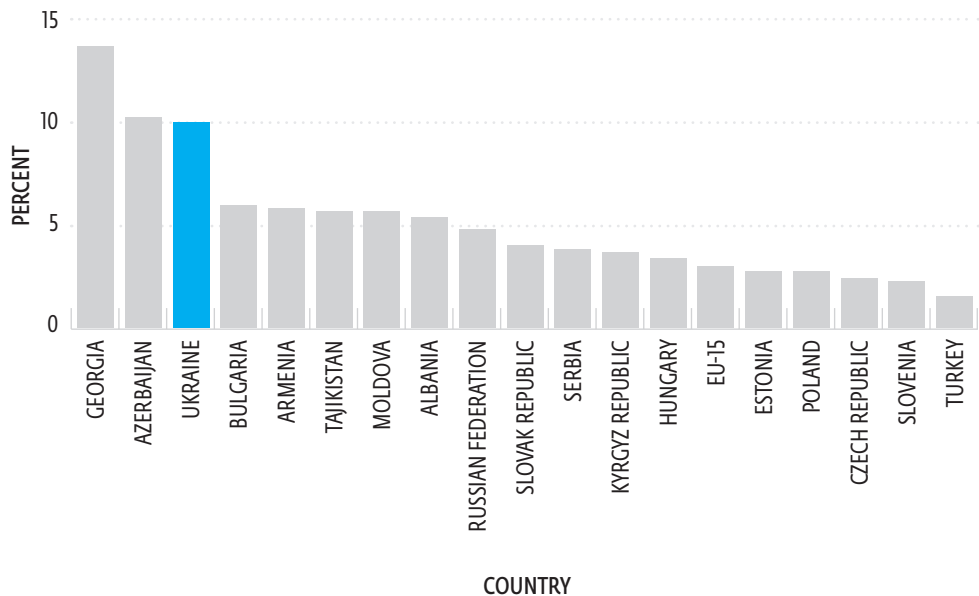
Note: GDP = gross domestic product; PPP = purchasing power parity; WHO = World Health Organization.

**The system is particularly poorly suited to respond to NCDs, the main source of productivity losses.** There is a lack of up-to-date equipment, scarce human resources in highly specialized disciplines geared toward modern NCD management, a lack of continuing education for all health professionals, and often a lack of exposure to modern care practices. Many specialists are older and Soviet-era trained, and not necessarily fully familiar with modern changes in care processes. Health care services are not currently oriented to prevention, early detection, and effective management of NCDs; they are basically unchanged since independence and focused on the control of infectious diseases and curative care. High levels of consumption of alcohol (13.9 liters of pure alcohol per person per year [WHO 2015] and tobacco (21 percent prevalence as of 2014 [MoH 2014]), unhealthy diets, and little physical activity are among the factors that explain the high level of NCDs.

**Service provision is not transparent, and there is evidence of a shadow economy with informal under-the-table payments.** Ukraine's constitution entitles all citizens to health services in government- and community-owned facilities without user charges and without limits on the volume of care provided (Goroshko, Shapoval, and Lai 2018). However, informal payments are common in practice across the health system. In particular for inpatient care, patients are expected to pay for medicines out of pocket (OOP), to bring medicines and medical supplies when admitted to the hospital, and to pay medical staff for service provision (Goroshko, Shapoval, and Lai 2018). Factors driving these practices are multiple and include, for example, low wages in the medical field, scarce medical supplies, rigid rules around medical practice, and a lack of monitoring and results-based resource allocation. Some practices have morphed from the Soviet culture of "thank you gifting" to an informal payment expectation.

It is estimated that informal OOP payments for health care services reached almost 50 percent of total health expenditures in 2015; the proportion of people reporting OOP payments increased from 86 percent in 2010 to 93 percent in 2015. Higher OOP expenditures affect living standards of low-income households, which must divert funds from other necessities (such as food, clothing, and schooling) to pay for health care costs. Moreover, people defer seeking medical assistance for fear of facing high OOP payments, leading to worsening health outcomes down the road (Twigg 2019). A higher reliance on OOP spending is associated with greater inequality in the use of health care services for both outpatient and inpatient care. Whereas utilization is relatively equal across socioeconomic groups in the EU15 (and in the case of inpatient care, somewhat pro poor), it is far more unequal in the high OOP-spending countries of Georgia, Azerbaijan, and Ukraine (figure 5.6).

**FIGURE 5.6 OUT-OF-POCKET PAYMENTS ON HEALTH CARE AS A PERCENTAGE OF TOTAL HOUSEHOLD SPENDING**



Source: Smith and Nguyen 2013.

Private sector participation in this sector is highly fragmented with a few large corporations that dominate the market, primarily based in and around Kyiv. On the one hand, Ukraine has more than 10,000 licensed providers, mainly physician-owned clinics. On the other hand, there are 21 recognized “corporate players,” of which the top 10 hold 40 percent of the total private health care market. In general, the private sector is characterized by low standards of quality, ethics, and transparency. Transforming this landscape to allow for more efficient private sector providers to enter the market is crucial to expanding access to affordable health care.

### BOX 5.1 UKRAINE'S PHARMACEUTICALS SECTOR

**The pharmaceutical sector has been growing at an annual average growth rate of 11 percent over the past three years (2017–19).** The growth was facilitated by the production of more affordable Ukrainian substitutes of imported drugs, which are 4–16 times cheaper. It is estimated that a significant portion of imports, which are about \$ 1.5 billion per year, could be replaced by domestic drugs.<sup>a</sup> Another growth driver has been the procurement of drugs through hospitals. On average, between 2010 and 2018, the hospital drug market grew at 7 percent in Ukraine. In just two years, it more than doubled, from 50 million packages sold in 2016 to 134 million in 2018.

**The industry's contribution to GDP in 2017 was about 0.83 percent, at UAH 24.6 billion, and it employed about 0.15 percent of all formal employees.** Since the 2013–14 crisis, the shape of the sector has changed from being led by foreign companies to being led by domestic producers. Darnitsa, Farmak, Arterium, and Health are among the top five manufacturers in the sector.

**Investment in the pharmaceutical sector is second only to the food industry in Ukraine.**

During 2012–18 capital investments almost doubled—from US\$642 million to US\$1.04 billion. The Ukrainian pharmacy sector is considered one of the most developed in the post-Soviet space. But the share of production of innovative medicines is no more than 9 percent of the entire market. The reason is the high cost and duration of the research and development (R&D) process. Investments in the creation of a single molecule can amount to billions of dollars, and the whole process—development, clinical research, and, if successful, market launch—take up to 12 years. According to the Expert Center of the Ministry of Health, at the end of February 2019, only 1.2 clinical trials per 100,000 population were conducted in Ukraine, while in Poland there were 4.3. Firm investment in R&D in the pharma sector globally is about 15 percent of net sales. Darnista, one of the top five Ukrainian manufacturers, spends about 10 percent of its gross income on R&D, generics, and bio-similars.

**Ukraine trade in the pharmaceutical sector has historically leaned toward the Russian**

**Federation.** Ukraine ranks 61st in the global ranking of pharmaceutical exporters, selling drugs abroad at US\$180 million per year. Traditionally, the main market for exports has been Russia, although the value of trade has declined since the political events in 2014. Ukrainian firms have been seeking other markets and in 2018 entered the Brazilian and Iraqi markets for the first time. In terms of imports, the main markets are post-Soviet countries, with Uzbekistan being the largest supplier, followed by Kazakhstan and Russia.

**There is potential for further growth in the sector.**

Drug consumption in Ukraine is significantly lower than in EU countries. Average spending on medicines per year is about US\$73 in Ukraine, compared with US\$258 in Estonia and US\$509 in Sweden. Further, about 90 percent of drugs are purchased by Ukrainians out of pocket. Thus, the implementation of the proposed health insurance scheme should provide impetus to increase demand for drugs. Since 2017, the government has covered part of Ukrainians' expenses on drugs. The Affordable Medicines program includes 23 drugs for cardiovascular disease, diabetes, and asthma. Private sector players believe that this program, along with change of its administration to the National Health Service, will provide impetus to grow the pharma sector.

**Ukraine also has potential to produce generic drugs once the patents of popular drug brands expire.** Most patents in the industry were registered in the late 1980s–early 1990s. Their validity period is 20 years with the possibility of extension by a maximum of five more years. This situation creates a large potential for Ukrainian manufacturers because the production does not require huge investments like those in innovative pharmaceuticals. Estimates suggest that US\$4 million–\$8 million and three to five years are required to create and launch a generic drug on the market.

**However, there are some key constraints to further growth.** One major constraint is the lack of skilled personnel in the industry. Despite 28 universities offering courses in pharmaceuticals, the curriculum has not kept pace with the global trends and innovations in this sector. Universities train specialists for the pharmacy segment,

but there is an acute shortage of personnel in the field of biotechnology. The pharmaceutical regulatory system is cumbersome and cannot keep up with rapid changes in the industry. Drug tender procedures to supply state institutions lack transparency and efficiency.

**Ukraine still lags in international certification, which is a key enabler to compete with imports and access foreign markets.** Good Manufacturing Practice (GMP) is one of the main standards in the world that defines the requirements for the production of medicines and dietary supplements (biologically active additives). In 2016–18, nine Ukrainian companies each received a GMP certificate from the European Union. In comparison, in the same time period, neighboring Belarus received 1; Russia, 18, Turkey, 34; and Romania, 75. Domestic patent law remains far below international

standards, particularly in regard to enforcement by the police and courts.

**Some key action steps are needed to support expansion of the pharmaceuticals market.** First, the government needs to support implementation of GMPs and provide financial assurance for strengthening the quality of medication for domestic customers. It also needs to facilitate greater access to export markets. The government further must simplify regulations for the registration (re-registration) and market entry of new drugs. The country needs to establish a Ukrainian Medical Agency, which is being planned already, to support the development, availability, and monitoring of medicines and medical devices. The law to create this agency has been drafted. Finally, procedures need to be established for managed entry agreements to expand access to select drugs.

a. A more detailed assessment of the pharmaceuticals sector is warranted. It is not clear whether the increase in manufacture of generic drugs rests on principles of efficiency and competitiveness in Ukraine. This is important in light of the current global environment in which drug-exporting countries are instituting bans on exports, which may lead importing countries to turn to manufacturing.

## KEY BARRIERS TO PRIVATE SECTOR PARTICIPATION IN THE HEALTH CARE SECTOR

The private sector suffers from a number of barriers that impose particular constraints on its participation in the health care sector. These include limited access to financing, an underdeveloped regulatory regime (whose shortcomings are accentuated by weak governance), and a shortage of workers with a number of key skills. Progress in overcoming these constraints is held back by the lack of effective engagement between the private and public sectors.

### Limited access to financing

**Health care facilities have very little access to long-term financing instruments in Ukraine, and interest rates are unattractive.** The lack of financing limits investments in the health care sector, and new facilities typically take several years to develop and to reach full operational capacity. In addition, Ukraine has a very shallow pool of equity financing, with only a handful of private equity investors in the market. Ukraine has no restrictions regarding private and foreign ownership in the health care sector.

**Ukrainians make limited use of PMI, which is an important enabler of access to private medical services.** PMI represents just 1.1 percent of total spending on health care and around 2.0 percent of private spending on health care. The low penetration of PMI partly accounts for the high levels of OOP expenditures observed in Ukraine. Even the largest corporate health care providers generate only about 0.2 percent of their revenues from PMI, which is low even for countries with similar income levels. The potential for expansion of PMI services is observed in the recent increase in PMI accounts, estimated around 20 percent. Currently, foreign companies account for 80 percent of all local PMI cover provided. The growth potential of PMI will be more clearly understood once the government confirms its formal approach to strengthening social health insurance, for example, through contribution models and benefit inclusions and exclusions.

### **An underdeveloped regulatory regime and poor governance**

**The regulations for ensuring the quality of care are often ineffective.** The Ministry of Health, the entity responsible for the development and approval of state quality standards and clinical protocols, is also in charge of issuing licenses to health care facilities and to entities engaged in the production and sale of pharmaceuticals and medical equipment. However, rules and regulations have little impact on quality, and patient rights in the health care system are not protected systematically, given the absence of specific legal mechanisms for handling patient complaint. The overall approach to quality is isolated rather than a systemwide integrated-processes approach to promoting and monitoring performance of service outcomes.

**Ukraine's sanitary standards are opaque and overly complex.** Following a reform in March 2018, sanitary rules and standards became the responsibility of the State Service for Food Safety and Consumer Rights. Soviet-era regulations are being revised to match international norms, but there is still a need for a comprehensive review and proper dissemination of new standards because staff members seem largely unaware of the current updates. In addition, stakeholders report limited transparency in oversight practices and overlapping mandates among various regulatory bodies. Periodic oversight of small private facilities has been under a moratorium for the past four years because of complaints about corrupt practices among inspectors. As a result, most private facilities are inspected only prior to opening. Finally, there is no legislation or oversight of quality assurance, either public or private. Basic international quality assurance concepts are not well known in Ukraine, and only one Ukrainian health care facility has ever achieved Joint Commission International (JCI) accreditation (by comparison, Turkey has more than 50 JCI-accredited facilities).<sup>70</sup>

**Regulatory constraints are accentuated by weak governance,** which was repeatedly brought up as an important issue by stakeholders during the assessment. Stakeholder consultations often raised concerns about transparency in obtaining licenses, rules around state inspections, and awarding of academic and professional qualifications. Although Ukraine has improved its Transparency International Corruption Perceptions Index score by two points (from 30 to 32 in 2018), this score is still below the average score of 35 for the Europe and Central Asia region and well below the global average score of 43.

**E-health legislation in the country is underdeveloped.** The World Health Organization (WHO) defines e-health as the use of information and communication technologies for health. Ukraine shows evidence of high investment activity in e-health among leading local health care companies and start-ups, for example in electronic medical records, digital radiology,<sup>71</sup> telehealth, e-prescribing, and innovative mobile applications (apps).<sup>72</sup> However, there are important regulatory and policy gaps that limit the adoption of e-health technologies, including regulation of telehealth services, data-sharing protocols through electronic medical records systems (such as making them compliant with the EU's standards),<sup>73</sup> and regulations governing the use of big data in the health sector (WHO 2015). As a result, many private health care companies that routinely store and transmit medical information digitally face legal uncertainty with regard to data privacy. Ukraine adopted a national health information system policy in 2012 and a National e-Health Strategy in 2013 (WHO 2015), and an e-health program has been established within the Ministry of Health, mainly tasked with facilitating exchange between the purchasing agency of the National Health Service of Ukraine and private sector providers. However, the program does not cover e-health activities within and between private sector organizations and patients. Furthermore, ICT adoption, a key element for the development of e-health, is also behind the levels of ICT adoption in the Europe and Central Asia region, according to the World Economic Forum's Global Competitiveness Index 2018. Ukraine's performance in this respect is 20 points below the region's top three countries (Russia, Kazakhstan, and Georgia) and similar to those of the least ICT-ready countries (Kyrgyz Republic and Tajikistan).

**The environment for implementation of PPPs is weak.** Ukraine has an enabling legislation for PPPs, yet the implementation is at risk because of a range of unresolved issues.<sup>74</sup> While this is of general concern for PPPs across all sectors, it is of particular relevance for PPPs in the health sector. Health PPPs, especially hospitals, tend to be complex arrangements that require careful management of risk as they evolve. With the need for rolling performance oversight, Ukraine capacity to manage PPP contracts suffers from a range of issues:<sup>75</sup> Ukraine established its first PPP agency in 2019 to support implementation of PPP contracts, but it is at a very early stage of its development. The agency has yet to define responsibilities, specific management tools, or risk mitigation mechanisms to address the evolving nature of risks throughout the project life cycle. Tracking progress and completion of construction works under PPP contracts is not centrally tracked—given the complex nature of health PPPs and associated performance information, that deficiency poses a serious risk.

**Performance of PPPs needs to be better managed.** While the country has a system in place to monitor and evaluate the PPP contract implementation after construction, the performance is currently not assessed against evaluation criteria set in the tender documents. Adjusting payments in case of nonperformance is currently not one of the tools of contract management because the contract management authority cannot abate or reduce payments for nonperformance of operating obligations under the PPP contract. Although this is not specifically a regulatory issue, it is important that the individual PPP agreements address this.

**Another risk arises from the lack of transparency around contract awards and the fact that PPP contract performance information need not be available to the public.** These shortcomings are of particular relevance in rolling out a PPP agenda in the health sector because the Ukraine health sector is taking on a comprehensive effort to adjust its size. This effort potentially may lead to the closure or consolidation of hospitals, rationalization of hospital beds, and management of hospitals or discrete health services through PPP arrangements. These developments will in turn sensitize the public at large to the quality of service it receives. Transparency about the service provision by health PPPs will therefore be of utmost importance. The regulatory framework foresees the modification or renegotiation of PPP contracts, but government agencies lack experience in successfully renegotiating such contracts.

**In general, weak capacity among public sector partners and agencies hampers the ability to implement PPPs.** Often, the preparation of PPPs is assigned to private actors, which is a bad practice. Transparency and competition are often jeopardized by the lack of public sector capacity. The lack of capacity and funding also undermines the government's ability to assess fiscal implications and conduct post-transaction performance monitoring.

### **Lack of specific skills**

**Certain key health service skills have been under supplied in Ukraine.** These skills relate to providing customer service, ambulatory treatment, evidence-based medical practice, preventive care of NCDs, and patient safety. Low levels of skills are reported among the medical, nursing, and management areas of the health sector. Many Ukrainian doctors lack the skills of medical professionals in other countries, and many perform tasks usually done by nurses elsewhere. Similarly, nurses commonly perform tasks that would be assigned to nursing assistants elsewhere. Professional education is highly theoretical, lacking practical training. Furthermore, low state salaries incentivize public sector health professionals to seek “moonlighting” opportunities. For example, in public hospitals, about 40 percent of inpatient doctors and 33 percent of outpatient doctors occupy other jobs, often in the private sector, and sometimes not related to health care. Such parallel employment may decrease staff availability, productivity, and service provision at state facilities.

### **Limited engagement with the private sector**

**The government's ability to improve the environment for the private sector is reduced because of its limited engagement.** There is little awareness among the relevant government institutions (the Ministry of Health, the Ministry of Economy, and the NHSU) of the potential for private sector participation in the health care sector. Dialogue between public agencies and private providers is almost nonexistent, reflecting the incipient level of development of private companies and fragmentation among service providers. Stakeholders report that the trade association is not fully active and, as such, has failed to provide unified representation for private sector interests before the government.

## OPPORTUNITIES

The recent comprehensive health sector reform program will require a **paradigm shift in demand and supply of health services**. The reform announced by the previous government contains many elements that align with modern health system practices and that represent an opportunity to modernize and transform the health care sector. These include moving (a) from a hospital-centric treatment model to an efficient decentralized system with renewed focus on primary health care and health promotion; (b) from input-based to output-based strategic financing, while ensuring outcomes; <sup>76</sup>(c) from the so-called free-care-for-all system with significant informal payments to a transparent benefits package; and (d) from a heavily curative approach to a functional integrated health system. A first package of reforms, approved in October 2016 and launched in mid-2018, included reforms to (a) transform health care financing, including creating a national purchasing entity—the National Health Service of Ukraine—that will contract with the private sector on a level playing field with the public sector; (b) modernize primary health care; (c) enhance the public health system; (d) address NCDs; and (e) improve access to pharmaceuticals. The implementation of the health reforms officially commenced following the adoption of the laws on Health Financing Guarantees in December 2017. The transformation from an input-based to an output-based system has gained momentum with the reorganization of primary health care: funding is now based on capitation payments per patient registered, instead of on a fixed salary per practice staff. This new system encourages doctors to deliver quality services to attract and maintain patients. At the time of this report, about 75 percent of the population was registered with a primary health care practice.

### BOX 5.2 HEALTH CARE REFORM PILOT INITIATIVES

Payment per hospitalization, based on about 50 aggregated types of cases. (This pilot was planned to roll out nationally in 2020, at time of writing.)

Direct contracting with about 5,000 pharmacies to provide designated prescription drugs (covering three conditions), with about 1 million prescriptions issued.



**By introducing more autonomy for health care providers—and contestability of the funding resources, which will be allocated on the basis of performance agreements—health sector reform will also provide increased opportunities for private sector providers.** Significant opportunities are expected to materialize in the medium term, including PPPs for modernization/consolidation of hospitals and community primary health care services, and for private primary health care providers. The explicit definition of what is covered by the state in the reform package will allow for the development of voluntary health insurance and growth in private sector participation in service delivery.

**Greater private participation with public sector initiatives has strong potential if contracting mechanisms can be improved.** For example, the use of multiyear population volume presents sensible options for price negotiations based on volume and a willingness for the private sector to consider shared risk when managing populations with a defined disease profile (for example, hypertension).

**Health reform has produced early results.** The NHSU was established in 2018 and the first phase of the reform—transformation of primary health care, officially launched in July 2018—is under implementation. So far, 97 percent of all public health care providers and over 100 privately owned practices have signed contracts with the NHSU, and over 27 million patients have registered with a family doctor by signing a declaration with the selected care provider. The second phase of the reform (starting in 2020) will open additional services to contracting with the NHSU, including diagnostic tests, polyclinics, and hospitalization. As a word of caution, however, stakeholder consultations highlighted that there is a risk of low private sector participation in NHSU contracts in the early years, because the reimbursement fees are likely to be low.

**More transparent public procurement practices have improved the prospects for private suppliers of medicines and medical equipment.** Previously, an estimated US\$100 million to US\$250 million of the annual health budget was lost every year because of corruption in public procurement practices (Twigg 2019). Of the 6,000 suppliers registered, only 10 companies with ties to the administration won procurement contracts, usually based on highly inflated prices (Twigg 2019). In 2015, procurement was handed down to international organizations, such as the United Nations Development Programme and UNICEF, with positive results: centralized procurement outsourced to international organizations has generated savings of about 39 percent for some essential drugs. In addition, the reimbursement program for essential drugs, called “Accessible Medications” (*Dostupni Liky*), initiated in 2017, has provided millions of people with subsidized essential drugs. Down the road, a more transparent framework for public procurement of pharmaceutical products under the NHSU should lead to enhanced market contestability and result in better prices and lower costs for the health administration and, eventually, for patients.

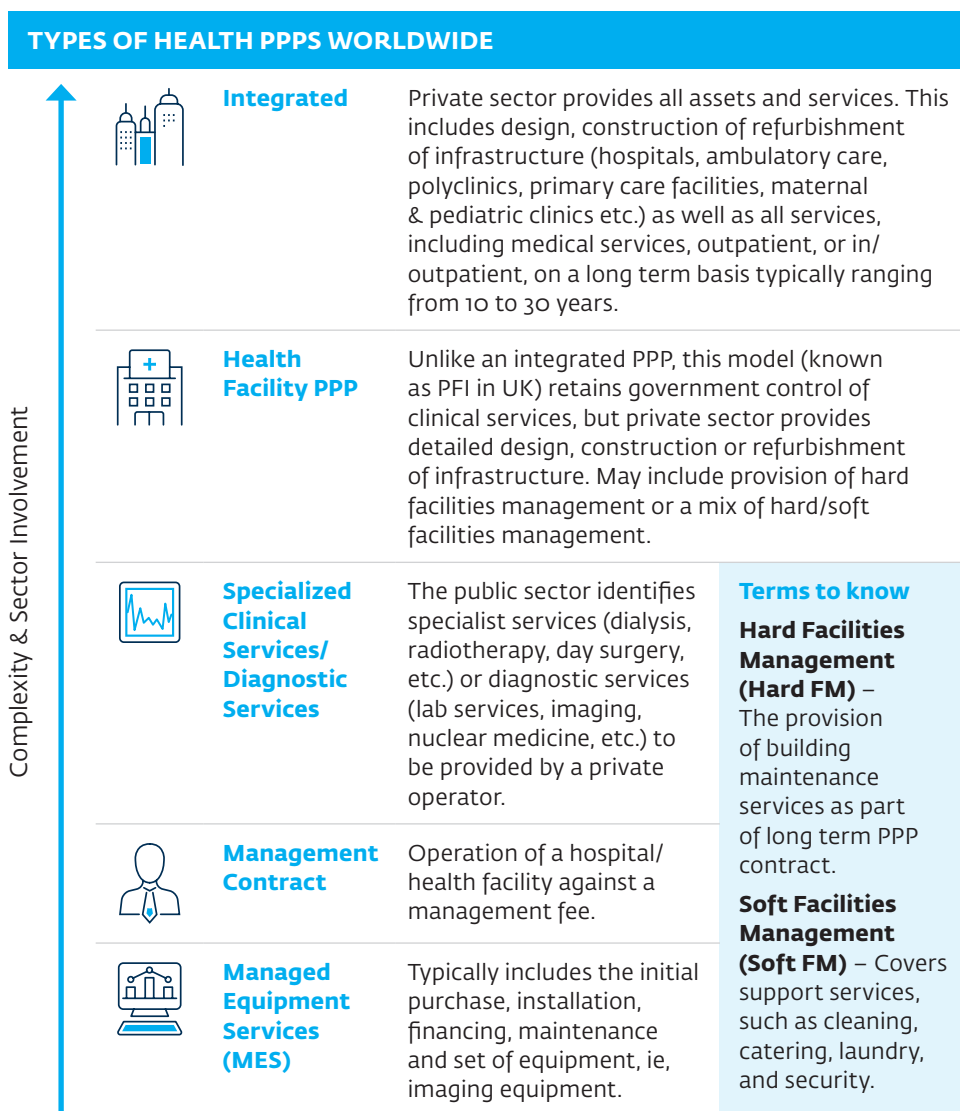
**Transformation of the health system and service provision will benefit from an e-health strategy.** Technological advancement and innovation are helping to reshape the ways in which health services are planned and delivered. Given that Ukraine is entering a phase that requires a comprehensive health care overhaul, it would be amiss not to embrace technology evolution. The government would benefit from studying the approach that Estonia adopted with its e-health strategy implementation. Areas in which a focus on innovation and technology can support health system strengthening were highlighted in IFC's health sector deep dive and resulting strategy. Examples include

- **Building, administration, and analysis of electronic health data** (big data systems), such as patient demographics, diagnosis codes, and treatment, using data analytics to obtain better insights to provide high-quality health services.
- **Application of mobile and wireless technologies**, such as mobile phones, patient monitoring devices, personal digital assistants, and mobile software apps, to support the achievement of health objectives.
- **Health care consultations** and service delivery through telemedicine channels.
- **Innovations in technologies** that tackle supply chain inefficiencies to lower costs and improve the access of health products.

**PPPs in the health care sector, such as through hospital administration**, promise ample potential for expansion, particularly as PPP capability evolves (such as regarding personnel, skills, and enabling legislation). The government has limited resources and capacity to resolve these issues and views the PPP instrument as a mechanism to attract private expertise and capacity, as well as financing. The Ministry of Health has set up a task force to implement PPP mechanisms. Its report (2014) states, "The combination of efforts of public and private partners is most desirable where there is a need for construction and equipping of cancer centers, rehab centers, diagnostic centers, dialysis and perinatal centers, etc., all those infrastructure objects, the emergence of which is critical for the development of the effective health-care system."

**The PPP Agency, within the Ministry of Economy, prioritized two sectors to prepare and implement PPP: transport and health care.** The recently established NHSU now contracts with public (and some private) practices on the basis of capitation payments. In addition, pilot initiatives include payment per hospitalization for a range of case types and direct contracting with pharmacies to provide drugs (covering three conditions).<sup>77</sup> There is a shared view that the private sector could potentially be an enabler of health reform efforts, through, for example, injecting modern management and clinical practices and introducing new technologies. It is important to support the government in identifying PPP models used internationally that are relevant for Ukraine and that can be appropriately tailored to need. For example, the model in Turkey, where the private sector was leveraged to fill gaps in financing and capacity, provides an example of how PPP could be implemented in Ukraine. The implementation occurred in three stages: (a) social health insurance contracted with private hospitals; (b) public hospitals outsourced specialized services to private providers (labs, imaging, radiotherapy, rehabilitation, and so on); and (c) a large hospital PPP program worked to build and maintain infrastructure, as well as coordinate the outsourcing of specialized services to the private sector (while core medical services remain with the public sector). Assessing the full range of PPP models and identifying the ones best suited will be important for Ukraine. Figure 5.7 provides an overview of the most important types of PPPs in the health sector.

**FIGURE 5.7 TYPES OF HEALTH CARE PUBLIC-PRIVATE PARTNERSHIPS WORLDWIDE**



Source: World Bank Group PPP Toolkit.  
 Note: PPP = public-private partnership.

However, PPP implementation in other countries provides some key lessons for Ukraine (box 5.3). One such lesson is to be pragmatic and start with PPPs in asset-light models such as diagnostic centers and pathology labs before moving to hospitals, in the phased approach previously mentioned.<sup>78</sup> This approach enables the government to demonstrate the viability of these models and builds capacity and the grounds for more complex PPPs. Second, strong political commitment is key for PPP success. Further, the government needs to evaluate fiscal impact to ensure that it will have sufficient funding.

**BOX 5.3 EXAMPLES OF PUBLIC-PRIVATE PARTNERSHIPS IN HEALTH CARE AND THEIR LESSONS**

Examples of private sector support for health system strengthening offer positive lessons and highlight challenges relevant to the case of Ukraine. Such examples include

- **Kyrgyz Republic.** The country started its public-private partnership (PPP) program with health PPPs, selecting service-based PPPs to improve the delivery of public specialized services such as dialysis and public diagnostics (imaging, labs). Both health subsectors enjoy healthy competition among specialized private operators, ready to deploy internationally. Although small to medium-sized, these health projects allowed the country to test the PPP law and opened the way for other sectors (education, transport). The effort showed it is crucial to select areas of care with large private sector capacity and specialized players ready to deploy expertise in Ukraine. Project screening and prioritization should include early market sounding.
- **Brazil, India.** Both countries adopted a regional approach for health projects (imaging networks with a telemedicine setting, a lab hub-and-spoke network) to enable them to increase access to quality health services in remote regions. These models of health care PPPs enable the countries to optimize the use of scarce human resources, as well as to set strict continuing medical education obligations on specialized private providers. In Ukraine, however, most health facilities belong to different municipalities and oblasts. This constitutes an obstacle to those economically optimal approaches.
- **Czech Republic.** The Czech government started pilot PPP projects some 15 years ago. The Ministry of Defense initiated a hospital project, which was canceled at the end of the tender after four years of development. This experience showed that in order for a PPP project to be successful, the two most important ingredients are political commitment at the highest level and careful selection of the most needed, high-priority projects for the country.
- **Colombia.** Twenty-three years of experience with social health insurance provided via public and private service provision offers good insight into tariff design, benefit structures, and claim management coordination. Third-party administrators are used to coordinate social health insurance claims and payments, and there have been positive and negative lessons. The country example illustrates how the private sector has had to adjust and mature to changing tariff structures.
- **Georgia.** Eighty-five percent of health service provision is purchased by the public sector (through national insurance) from the private sector. This example provides insights for governments in getting the benefit design correct and aligned to funding, and for the private sector in developing integrated-system models that can align with government payment structures.
- **Kenya.** Experience from the Kenyan health sector illustrates the use of PPP contracts for the supply, installation, and servicing of medical equipment and for staff training. It provides insights into how to address equipment challenges in hospitals using PPPs, including the requirement of strong upfront demand analysis and manufacturers with in-country capability to meet service plan expectations.

## Lessons on PPPs in the Health Sector:

- **Build government capacity and recruit PPP champions.** PPPs grow in the presence of a stable political commitment that is often overlooked. An important aspect of success is the willingness or the capacity of governments to undertake PPPs. Similarly, government capacity or commitment is the main reason PPPs do not pass from the options report stage to the bidding assistance stage.
- **Ensure broad stakeholder consultation and government commitment.** Early engagement with stakeholders, building broad coalitions and political consensus early in the PPP process, can add support and maintain momentum behind sector reforms.
- **Embed PPPs in a sector strategy to ensure alignment with demand for services.** Such a

strategy or country master plan should reflect the pros and cons of public and private service delivery and ongoing trends in shifting inpatient to outpatient care to create a countrywide picture of the resulting demand for hospital and medical care facilities. Embedding health PPPs in an overall country-level plan will ensure that newly contracted services and opened facilities are aligned with the demand for services, avoiding the construction of “white elephants.”

- **Start pragmatic.** A pragmatic approach and a simple start to structure PPPs lend themselves to setting better demonstration effects. Depending on country needs and priorities, asset-light models are a good solution for countries that lack government capacity or regulatory infrastructure to manage more complex structures. They can provide a relatively low-risk, asset-light, lower-capital-cost opportunity to demonstrate the private sector’s ability to positively affect health care delivery over the short term and help ease longer-term concerns.
- **Focus on lowering costs and improving quality.** Given ongoing debate in many countries around the private sector’s role in the delivery of health care, PPPs that expand beyond infrastructure to clinical services can face significant public criticism and resistance. PPPs must therefore demonstrate the private partner’s ability to deliver clinical services at a lower cost while maintaining or exceeding quality of care. Discrete clinical services PPPs that address a clear clinical capacity need, such as diagnostics or dialysis, can provide a relatively low-risk, asset-light, lower-capital-cost opportunity.
- **Consider distributional effects of health PPPs** already at the design stage, in particular in their service delivery, and plan for adequate monitoring and evaluation to be able to provide service to underserved, poor, or excluded groups.
- **Focus on easy-to-deliver structures and note that infrastructure-based PPPs may not drive innovation.** In building new facilities through a PPP, governments have the opportunity to improve facility design and layout and may be able to offset project costs through savings derived from more efficient patient flow and patient care/service delivery. However, the incentive systems of typical Infrastructure-based PPPs focus on cost and on-time delivery, favoring large facilities based on standard, preexisting templates.
- **Establish formal mechanisms that allow regular interactions between government and the concessionaire.** Managing the operational phase of health PPPs may be facilitated by a public-private liaison committee. When the government and the concessionaire formed a liaison committee comprising representatives from both groups, this committee looked at the issues relating to the day-to-day operation of the contract and was very helpful in not only ensuring the smooth functioning of the PPPs but also in addressing risk factors, at least in the initial phase of operation.
- **Build in contractual flexibility for midway corrections.** Concession agreements can foresee some flexibility to allow reviews and revisions at regular intervals during the concession period, along with a provision for extraordinary adjustments on performance targets as and when needed. This flexibility was found to be helpful in deciding and allowing for midway corrections.
- **Provide robust referral management for integrated and service-based PPP models.** Experience points to the need and benefits of including primary care services and robust referral management in integrated PPP contracts to allow hospital management to better manage patient care and patient volumes driven by secondary and tertiary care.
- **Adopt payment security to reduce financial risk and enhance private sector confidence.** Many health projects require payment from governments to private operators, ideally through an escrow account. In some countries, PPP laws require that concessionaires be provided with a payment guarantee. Hence, project structures can require the government to route a part of the expenditure budget, equivalent to the maximum monthly payment, to an escrow agent.

The next stage of the reform will focus on reorganizing the large hospital network, for which an underlying hospital strategy and government vision are needed. Future steps include the definition of a basic health care package, the rationalization of high-cost specialist acute services (to be offered only at designated hospitals), and the encouragement of hospital autonomy as communal noncommercial enterprises that can independently manage their budgets. The administrative and financial independence of health care providers will be accompanied by the establishment of supervisory boards and transparent and competitive mechanisms for the selection of state and municipal hospital directors. Expected outcomes of the optimization of the oversized hospital network include savings to allow staff salary increases and a reduction in the number of hospitalizations by more than 15 percent in the period 2019–25. The reform also projects further development of rural primary care to improve access to primary health care in remote areas, the recruitment and advanced training of qualified health care providers, the establishment of telemedicine telecommunications infrastructure, and additional guarantees and rewards for health care providers (Čihula, Likarchuk, and Ushchapivska 2018).

## RECOMMENDATIONS TO ADDRESS KEY BARRIERS TO PRIVATE SECTOR PARTICIPATION

Several action items could be considered to support private sector participation in Ukraine. These include addressing a number of highlighted barriers, including work on quality assurance and oversight, skills, purchasing, and e-health systems. These reforms are extremely important to laying the groundwork for private sector activity in the sector in the future. The following recommendations could leverage the ongoing work and fill some of the other gaps that have been highlighted in the analysis.

**In addition to specific initiatives, increased collaboration between the public and private sectors is critical.** There is strong potential for a coordinated knowledge exchange. Often misunderstandings and issues of trust between public and private stakeholders could be easily rectified through progressive knowledge management. Knowledge exchange could include issues of contracting methods, payment structures, quality improvement, and data utilization.

**Given the importance of PPPs in addressing the health sector challenges and potential for private sector investment, specific reforms are needed in PPP implementation:**

- **Improve the PPP contract management system to better manage the risk of implementing the country's PPP agenda.** An improved contract management system would at least (a) define the responsibilities, management tools for the implementation of PPPs, and risk mitigation mechanism to address the evolving nature of risks during PPP implementation and (b) ensure that performance is assessed against evaluation criteria set in the tender documents and provide a clause to abate payments for nonperformance of operating obligations under the PPP contract. The performance of PPPs should also be reported in a transparent manner.
- **Institutionalize a process and define responsibilities for the assessing, accounting, and disclosing of fiscal implications from PPPs contracts.** This process, while institutionalized with the Ministry of Finance playing a role in managing these implications, is still new and the capacity to manage is weak.

**Health sector reforms will open up substantial opportunities for private sector investment.** Three key reforms are needed:

- Ensure sufficient state funding is spent efficiently, providing the population with affordable and high-quality health care service,
- Strengthen the role of the private sector as implementer of reforms by introducing new practices, technologies, and treatments, and
- Support direct foreign and domestic investments in scalable health care service players looking to expand services.

**The investment potential is large.** Potential investment entities could be networked hospital providers, specialist NCD-related service providers, diagnostic service providers (imaging and pathology), and primary care network providers.

### COVID-19 opportunities and challenges

The COVID-19 crisis has brought to light in sharp clarity the significant challenges faced by health care systems and services across the world. In most countries, the medical infrastructure is inadequate to meet the needs of patients, with few hospitals and other health facilities; insufficient equipment, such as ventilators, personal protective equipment, masks, testing kits, and drugs; and medical staff in short supply. Ukraine has a high share of medical workers testing positive for the coronavirus (20 percent). Further, testing rates per population in the country are among the lowest in the region. In some countries, the private sector has not been able to respond quickly enough because of government policies that restrict its role in serving the population. Medium term to long term, challenges may arise for affordability of health services if the economic downturn continues; this may have implications for insurance coverage schemes, public sector reimbursements for COVID-19, and so on.

**Countries have responded in many ways.** Common features have been to institute export bans on drugs and medical equipment while deploying existing manufacturing facilities (both public and private) to increase the supply of items such as masks and other personal protective equipment. Labor from other sectors such as tourism and hospitality that are severely impaired is being trained to deliver basic health services. E-health services and technology use in the sector are expanding to overcome the challenges of social distancing.

**Ukraine's hard budget constraints and reduced fiscal space for increases in health budgets present opportunities for an expanded role of the private sector in the country's health care services provision.** Ukraine may need to fast-track its reforms in the sector to enable the country not only to expand its health service coverage, but also to enhance the efficiency of service delivery. Ukraine can do so by exploiting the potential of private sector participation through the opportunities mentioned earlier—e-health services, PPPs, and supporting delivery of the transformative reform package put forward by the government.

**TABLE 5.1 RECOMMENDATIONS TO ADDRESS KEY BARRIERS TO PRIVATE SECTOR PARTICIPATION**

	SHORT TERM (1–3 YEARS)	LONG TERM (>5 YEARS)
<b>Supporting the public sector</b>	<p><b>Improve the regulatory environment</b></p> <ol style="list-style-type: none"> <li>1. Update standards to reflect the needs of modern health care, in line with international norms.               <ol style="list-style-type: none"> <li>a. Adopt new versions of building and reconstruction norms, engineering standards.</li> <li>b. Advise on quality assurance and control within the contracts with service providers: hospitals and outpatient clinics.</li> <li>c. Establish standards of drug manufacturing and registration, compliance with bioequivalence.</li> <li>d. Decrease barriers for imports and certification of equipment and goods from the international market to improve internal competition and efficiency.</li> </ol> </li> <li>2. Introduce a clear regulatory oversight framework that includes oversight functions and avoids duplication and overlap between different state bodies.</li> <li>3. Support strengthening and regulation of e-health. Enable e-health systems (data privacy standards, protocol for sharing data), so consider a quality register like Sweden or blockchain like Estonia and regulation overhaul to enable e-medicine as a tool.</li> </ol>	<p><b>Upgrade skills</b></p> <ol style="list-style-type: none"> <li>1. Update curriculum for undergraduate clinical training, postgraduate medicine, and broader leadership and management skills.</li> </ol> <p><b>Establish quality assurance</b></p> <ol style="list-style-type: none"> <li>1. Establish national sanitary standards, publish and update periodically, clarify regulatory oversight.</li> <li>2. Formulate a quality improvement strategy, including setting up a quality accreditation body.</li> </ol>
<b>Joint public-private engagement</b>	<p><b>Support public-private sector dialogue</b></p> <ol style="list-style-type: none"> <li>1. Establish an appropriate forum for PPD (ensuring vested interests are mitigated). Ministry of Health (and/or Ministry of Economy) should develop a strategy for private sector engagement in the health sector. Strengthen Ministry of Health capacity.</li> <li>2. Strengthen the NHSU to enable expansion of contracting scope. Also consider copayment models.</li> </ol>	
<b>Public-private partnerships (PPPs)</b>	<ul style="list-style-type: none"> <li>• Improve the PPP contract management system and institutionalize a process for assessing, accounting, and disclosing fiscal implications of PPPs.</li> <li>• Enable the potential for PPPs in the future through capacity development for (a) understanding and designing PPP models, (b) identifying gaps that the private sector can fill, (c) developing/finalizing PPP legislation, and (d) screening projects and prioritizing a PPP pipeline.</li> </ul>	



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# APPENDIX

## APPENDIX A.1: DEFINITION OF CLIMATE-SMART AGRICULTURE



**Food and Agriculture Organization**

“Climate-Smart Agriculture (CSA) is an **approach** that helps to guide actions needed to transform and reorient agricultural systems to support development and **ensure food security** in a changing climate.”



**CGIAR & Climate Change Agriculture and Food Security**

“Climate-Smart Agriculture (CSA) is an integrative **approach** that explicitly aims at sustainably **increasing agricultural productivity**, building climate resilience, and reducing greenhouse gas emissions from agriculture.”



**World Bank**

“Climate-Smart Agriculture (CSA) is an approach to managing landscapes—cropland, livestock, forests and fisheries—that aims to achieve **three “wins”**: (1) **Increased productivity** to improve food security and boost farmers’ incomes; (2) **Enhanced resilience** to drought, pests, disease and other shocks; (3) **Reduced GHG emission**.”

### **What is common?**

CSA is an **approach** aimed at increasing productivity, taking into consideration climate change concerns & Impacts.

IFC’s Strategy is to **contribute** to CSA by providing investments and advisory operations that contribute to one or more of the three pillars of CSA.

Note: GHG = greenhouse gas.

## APPENDIX A.2: METHODOLOGY AND DESIGN OF CLIMATE-SMART AGRICULTURE STUDY

The climate-smart agriculture (CSA) deep dive was conducted over a period of two months, combining quantitative and qualitative methods. Both methods were applied to a sample of 90 grain and oilseed producers. The sample was derived from the database of producers with a local consulting firm—UkroAgroconsult—and aimed to cover large agriholdings, large-firm enterprises, and small and medium farmers.

REGION	LARGE (MORE THAN 2000 HA)*	MEDIUM (300-2000 HA)	SMALL (FARMERS/ PRIVATE FARMERS (10-300 HA)
South	8	12	3
East	8	12	3
West	5	9	6
North	9	12	3
<b>Total</b>	30	45	15

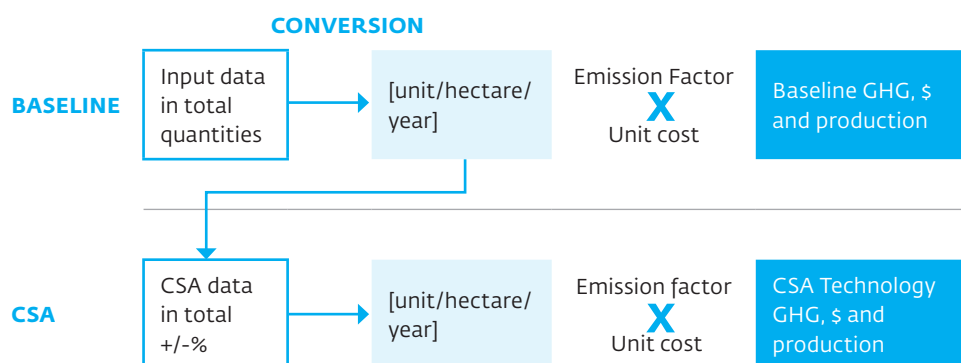
Note: \* Large enterprises include a sample of five agriholdings to cover the top end of the size spectrum of enterprises. Ha = hectare.

- A. **Quantitative methods.** The lead firm, the Carbon Trust, used its proprietary modeling tool to estimate baseline and endline estimates of financial and economic returns of adopting each of the CSA technologies (the environmental impact in terms of carbon equivalent emissions).
- a. A questionnaire asking for basic financial data was applied to the sample to calculate the baseline. 20 initial responses were tested to confirm appropriateness of the questionnaire and veracity of data. The questionnaire was conducted through telephonic interviews and field visits. Modeling was done to calculate baselines of input costs. The inputs modeled were seeds, fertilizer, crop protection chemicals, fuel, and soil loss. These inputs were found to have the most material impact in terms of revenue, cost, or carbon footprint. The financial costs were combined and converted to a dollar per hectare unit to allow for the assessment of the financial impact on a country level. The carbon impact of each of the inputs was determined by multiplying the quantity used with its emissions factor. An emissions factor is the equivalent unit of carbon dioxide emitted during the use of the input.
  - b. Literature review of the Ukrainian agricultural sector and of global experience was done to identify the relevant CSA technologies applicable for Ukraine. This review was based on research papers, industry databases, and local expertise from UkrAgroconsult. Seven CSA technologies were selected to model on the basis of their environmental and economic potential. Assumptions for changes in inputs and capital expenditure needs were made for each of the CSA technologies in consultation with the local consulting firm, leveraging local data and global benchmarks. The changes on the baseline scenario due to the implementation of the CSA technologies were modeled on a per-hectare basis to allow for a scaling



of the baseline results to show the countrywide impacts. The total financial and environmental impact of each of the seven CSA technologies was modeled and the results were extrapolated to show the impact for all grain and oilseed farmland in Ukraine.

- c. Endline financial and economic returns were calculated with the assumptions. The financial analysis assessed the required capital expenditure and the change in both quantity and unit costs of the defined inputs. The total costs and revenue were calculated on an annual basis.



Note: GHG = greenhouse gas.

- B. **Qualitative methods.** Besides fielding qualitative questions to the sample through the questionnaire, UkroAgroconsult also conducted stakeholder interviews across relevant government agencies, input suppliers, development partners, and farmer associations.

ALL 4 REGIONS	AGRO-HOLDINGS	LARGE MORE THAN 2000 HA	MEDIUM FROM 300 TO 2000 HA	SMALL (FARMERS, PRIVATE FARMS) FROM 10 TO 300 HA
<b>Total</b>	5	25	45	15

#### STAKEHOLDER INTERVIEWED

Name	Entity and position
Mrs. S. Grinchuk	MinEcology Head of Dep't
Mr. M. Malkov	Head of FAO Office, Ukraine
Mr. L. Kozachenko	Member of Parliament
Mrs. T. Adamenko	HydroMeteo Service of Ukraine
Mr. G. Novikov	Head of Farmers Association

#### SUPPLIERS INTERVIEWED

Name	Entity and position
Mr. E. Radovenyuk	Grain Alliance CEO
Mrs. A. Babich	Corteva Agriscience (DuPontPioneer HiBred) Comm. Manager
Mr. A. Shevchuk	Arista Crop Protection Head Specialist
Mrs. L. Bondareva	Credite Agricole Ukraine Supervisory Board Member
Iaroslav Boyko	AgriLab
Arkadiy Lungul	Kernel

REGION	AGRO-HOLDINGS	LARGE MORE THAN 2000 HA	MEDIUM FROM 300 TO 2000 HA	SMALL (FARMERS, PRIVATE FARMS) FROM 10 TO 300 HA
South	1	7	12	3
East	1	7	12	3
West	1	4	9	6
North	2	7	12	3
<b>Total</b>	5	25	45	15

**Scope and caveats.** The scope of the analysis was limited to the following key variables in the interest of costs and time, which could affect the applicability of the estimates from the analysis:

- The data analysis is based on averages across cost breakdowns, revenues, and farm sizes. This average may hide differences in net financial and economic returns by farm size.
- While the data covers producers across Ukraine, the analysis is largely concentrated in farm regions around Kyiv and hence does not take into account specificity, which would show up in costs and returns across the three climatic zones of the country.
- The analysis does not take into account labor and land costs for baseline and endline calculations. Therefore, it assumes constant returns to these factor inputs over time. Further, it does not take into account the impact of land reforms that would change the cost of land. However, it is assumed that such impact would be felt across all agricultural sectors, and hence the financial and economic returns from this analysis would still be comparable to similar estimates in other subsectors. Further, the change in land use that may flow from changes in land prices (that is, move to higher-value-added crops) was discussed with stakeholders. These interviews suggest that this shift will happen over the long term and will still not reduce the dominant share of cereals and oilseeds in overall agricultural production in Ukraine. Hence this potential scenario was not considered. Increased use of CSA could also affect the use of labor for farming practices. However, it is assumed that the reduction in the number of employees will be offset by an increase in wages with the requirement for better-skilled workers.
- The analysis is restricted to production. It does not take into account financial/ economic costs and benefits of other variables in the final product of grains and oilseeds—that is, transport and logistics, distribution, and storage. Moving to more climate-friendly alternatives (such as energy-efficient transport) would have an effect on greenhouse gas emissions and financials that are outside the scope of the analysis.

## APPENDIX A.3: KEY ASSUMPTIONS FOR FINANCIAL AND ECONOMIC MODELING OF CLIMATE-SMART AGRICULTURE ESTIMATES

1. Key assumptions for estimation of costs, revenue, and greenhouse gas (GHG) emissions are given as follows:

### Baseline

INPUTS/COSTS		REVENUE	
<b>Input</b>	Scope	The sales prices of the commodities per tonne are used to determine this revenue.	
<b>Seeds</b>	Total number of seeds purchased within a year	<b>GRAIN</b>	<b>OILSEED</b>
<b>Fertiliser</b>	Quantity and type applied within a year	<b>Barley</b>	Rapeseed
<b>Crop protection</b>	Quantity and type applied within a year	<b>Wheat</b>	Sunflower
<b>Diesel</b>	Quantity used by agricultural machinery to work the land	<b>Corn</b>	Soybean
<b>Soil loss</b>	Number of tonnes of soil lost due to tillage practices per year		

**Exclusions:** Costs like labour, lease of land, equipment, maintenance and excluded from this analysis

It is assumed that all the produced crops are sold at their respective commodity price in the year of production.

### Baseline scenario

Total per hectare

	Unit/hectare/year	QUANTITY			COST (\$/HECTARE/YEAR)			EMISSIONS (KGCO <sub>2</sub> E/HECTARE/YEAR)		
		Grain	Oilseed	Total	Grain	Oilseed	Total	Grain	Oilseed	Total
<b>Seeds</b>	kg	655	24		\$332	\$65				
<b>Fertiliser</b>	kg	571	322		\$151	\$92		832.52	470	
<b>Crop protection</b>	kg	1.0	2		\$23	\$45		27	45	
<b>Fuel</b>	litres	15	30		\$16	\$33		39	82	
<b>Soil loss</b>	tonne	57	57					1,634.55	1,634.55	
<b>Total</b>					\$522	\$235		2,533	2,231	

OUTPUTS		QUANTITY			REVENUE (\$/HECTARE/YEAR)			EMISSIONS (TCO2E/HECTARE/YEAR)		
	Unit/hectare/year	Grain	Oilseed	Total	Grain	Oilseed	Total	Grain	Oilseed	Total
<b>Production per hectare (Yield)</b>	tonne	5.0	2.4	7.45	\$1,006	\$967	\$987			
<b>Extrapolation factors</b>								0.83	0.47	1
								0.03	0.05	0
								0.04	0.08	0
								1.63	1.63	3
								2.53	2.23	5

		QUANTITY		
		Grain	Oilseed	Total
<b>Total seeded area</b>	ha	13,350,000	9,380,000	22,730,000

**Overall total Ukraine level**

INPUTS		QUANTITY			COST (\$/YEAR)			EMISSIONS (KGC02E/YEAR)		
	Unit/year	Grain	Oilseed	Total	Grain	Oilseed	Total	Grain	Oilseed	Total
<b>Seeds</b>	kg	8,737,931,296	227,626,682	8,965,557,978	\$4,428,856,560	\$609,146,874	\$5,038,003,434			
<b>Fertiliser</b>	kg	7,622,800,000	3,020,600,000	10,643,400,000	\$2,012,776,014	\$865,875,767	\$2,878,651,781	11,114,075,547	4,404,047,935	15,518,123,482
<b>Crop protection</b>	kg	13,919,950	16,582,740	30,502,690	\$311,111,916	\$422,806,624	\$733,918,540	354,958,725	422,859,870	777,818,595
<b>Diesel</b>	litres	194,916,470	284,429,153	479,345,623	\$212,964,668	\$310,765,735	\$523,730,403	523,894,539	764,485,834	1,288,380,373
<b>Soil loss</b>	tonne	762,952,500	536,067,000	1,299,019,500	-	-	-	21,821,280,643	15,332,105,800	37,153,386,443
<b>Total</b>					\$6,965,709,157	\$2,208,595,001	\$9,174,304,158	33,814,209,454	20,923,499,439	54,737,708,893

OUTPUTS		QUANTITY			REVENUE (\$/HECTARE/YEAR)		
	Unit	Grain	Oilseed	Total	Grain	Oilseed	Total
<b>Production</b>	tonne	66,800,000	22,935,000	89,735,000	\$13,429,660,000	\$9,072,141,000	\$22,424,807,157

## APPENDIX B: DCFTA DISCIPLINES

The Deep and Comprehensive Free Trade Area (DCFTA) is a part of the European Union-Ukraine Association Agreement signed in June 2014 and is one of EU's most ambitious bilateral agreements. The DCFTA consists of 15 chapters, 14 annexes, and 3 protocols. Individual chapters cover the following key trade related areas:

- **Market Access for Goods** (removal of customs duties on imports and exports)
- **Trade Remedies** (antidumping, antisubsidy, and global safeguard)
- **Sanitary and Phytosanitary (SPS) Measures** (facilitate trade in animal and plant products)
- **Customs and Trade Facilitation** (simplify customs requirements and formalities and prevent fraud)
- **Trade in Services and e-Commerce** (freedom of establishment of services and nonservices sectors)
- **Current Payments and Movement of Capital** (free movement of capital)
- **Public Procurement** (full access to both EU and Ukrainian procurement markets)
- **Intellectual Property** (complement to the Agreement on Trade-Related Aspects of Intellectual Property Rights on designs, copyright, patents, and geographical indications)
- **Competition** (prohibition and sanctions of practices that could distort competition and trade)
- **Trade-Related Energy** (pricing-, transport-, and regulation of trade-related energy goods and services)
- **Transparency** (contact points on application of regulations)
- **Trade and Sustainable Development** (commitment to labor and environmental agreements)
- **Dispute Settlement** (World Trade Organization-based model for dispute settlement)
- **Mediation Mechanism** (solutions to market access problems).

## APPENDIX C: DETAILS OF TOP 10 HEALTH PRIVATE SECTOR PROVIDERS IN UKRAINE

COMPANY	LOCATION (S)	NO OF HOSPITALS	NO OF CLINICS	SERVICE PROFILE
<b>Dobrobut</b>	Kyiv	1	13	General
<b>LISOD</b>	Kyiv	1	0	Oncology
<b>Into-Sana</b>	Odessa, Kyiv	1	10	General
<b>Isida</b>	Kyiv	1	3	Reproductive
<b>Boris*</b>	Kyiv	1	1	General
<b>Oberig</b>	Kyiv	1	1	General
<b>Mother &amp; Child Ukraine</b>	Kyiv, Zhytomyr	0	4	Reproductive
<b>Medikom</b>	Kyiv	1	4	General
<b>Oxford Medical</b>	19 cities	0	28	General
<b>Eurolab</b>	Kyiv	1	0	General

Source: Local market reports. Excludes diagnostics/lab services, dentistry, pharmaceuticals sales, and private provision in state facilities.

\* Boris acquired in Dobrobut in June 2019.

# NOTES

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- 1 The report draws extensively on stakeholder interviews, original quantitative and qualitatively analysis, secondary sources, and the extensive body of knowledge on Ukraine that the WBG has produced in the recent past.
- 2 The recent World Bank Group (2019a) report analyzes in detail Ukraine's growth performance since independence, analyzing its determinants and remaining challenges.
- 3 UNCTAD (United Nations Conference on Trade and Development), "FDI stock per capita (in US\$, 2018)," UNCTADSTAT database.
- 4 The International Monetary Fund projects a deeper GDP fall of -7.7 percent.
- 5 In the short term, the private sector could also play a role in the manufacture of essential personal protective equipment, as is being done in other countries (for example, by automakers using assembly lines for manufacture of ventilators and masks).
- 6 The Human Capital Index measures the amount of human capital that a child born today can expect to attain by age 18—in Ukraine, higher than what would be predicted for the location's income level. See World Bank Human Capital Project, October 2018, [www.worldbank.org/humancapitalproject](http://www.worldbank.org/humancapitalproject).
- 7 World Bank, "Youth Unemployment Rate for Ukraine," FRED (Federal Reserve Economic Data), Federal Reserve Bank of St. Louis, 2018 (accessed August 21, 2019), <https://fred.stlouisfed.org/series/SLUEM1524ZSUQR>.
- 8 World Bank, "Industry (including construction), value added per worker (constant 2010 US\$)—Ukraine, 2018." Retrieved August 21, 2019, <https://data.worldbank.org/indicator/NV.IND.EMPL.KD>.
- 9 US Department of Agriculture (USDA), Grain: World Markets and Trade, June 2020
- 10 In the southern and eastern regions, droughts are now occurring each year, compared with once every four to five years. In the northern and western regions, droughts are now occurring one or two times every 10 years, compared with no droughts historically.
- 11 UCAB is Ukraine's leading sectoral business association of agricultural producers and agribusiness enterprises, including the largest players in the market.
- 12 President of Ukraine, official website, April 28, 2020.
- 13 For instance, Google purchased Viewdle, a facial recognition company; Snapchat has acquired Looksery, a real-time facial modification app; and Oracle has bought Maxymiser, a Ukrainian provider of cloud-based software for marketers.
- 14 State Statistics Service of Ukraine.
- 15 Poverty figures from World Bank, World Development Indicators, defined as poverty headcount ratio at \$5.50 a day (2011 PPP) (% of population).
- 16 "Gross fixed capital formation (% of GDP)," from World Bank national accounts data and Organisation for Economic Co-operation and Development (OECD) national accounts data files, 2018 (accessed August 21, 2019), <https://data.worldbank.org/indicator/NE.GDI.FTOT.ZS?view=map>.
- 17 World Bank, "World Development Indicators" data, 2018.
- 18 World Bank, "Human Capital Project" database, October 2018, [www.worldbank.org/humancapitalproject](http://www.worldbank.org/humancapitalproject).
- 19 World Bank Group analysis of the 2018 results of the OECD's Programme for International Student Assessment (PISA), which measures the ability of 15-year-olds to use their reading, mathematics, and science knowledge and skills to meet real-life challenges.
- 20 World Bank, "Industry (including construction), value added per worker (constant 2010 US\$)—Ukraine, 2018" (accessed August 21, 2019), <https://data.worldbank.org/indicator/NV.IND.EMPL.KD>.
- 21 Figures cited in Kiryukhin, D., "Losing Brains and Brawn: Outmigration from Ukraine", Wilson Center, 2019; and Economist Intelligence Unit, Ukraine Economic Forecast, April 2019.
- 22 International Trade Centre, "List of importing markets for the product exported by Ukraine in 2018" (accessed August 22, 2019), <https://www.trademap.org/>.
- 23 Atlas of Economic Complexity" database, 2017, Growth Lab, Center for International Development at Harvard University (accessed August 22, 2019), <http://atlas.cid.harvard.edu/>.
- 24 "Atlas of Economic Complexity" database, 2017.
- 25 U.S. International Trade Administration, "Ukraine—Agricultural Sector," 2019 (accessed August 22, 2019), <https://www.export.gov/article?id=Ukraine-Agricultural-Machinery>.
- 26 President of Ukraine Official website, April 28, 2020.
- 27 Filecia & others, 2014
- 28 World Bank, "Life expectancy at birth, total (years)," 2017, World Development Indicators (database) (accessed August 22, 2019), <https://data.worldbank.org/indicator/SP.DYN.LEE0.IN?locations=UA>.
- 29 Figures from State Statistics Service of Ukraine 2018.

- 30 EBRD (European Bank for Reconstruction and Development), "Assessment of Transition Qualities," 2017–present (accessed August 22, 2019), <https://www.ebrd.com/economic-research-and-data/transition-qualities-asses.html>.
- 31 This section is based on World Bank (2018a) and Pop and others (2019).
- 32 Transparency International, "Corruption Perception Index 2018," <https://www.transparency.org/en/cpi/2018>.
- 33 World Bank, "Logistics Performance Index," <https://lpi.worldbank.org>.
- 34 President of Ukraine Official website, April 28, 2020.
- 35 Based on estimates given in the Project Appraisal Document (PAD) (2019) of the proposed International Bank for Reconstruction and Development (IBRD) loan of US\$200 million for accelerating private investment in agriculture (P166941).
- 36 Part of the reason for the manufacturing sector performance is the political situation in eastern Ukraine, which has been a center for manufacturing production and exports. The primary losses due to the Russian occupation of parts of Donetsk and Luhansk oblasts have been of coal from coalmines. The vast majority of metallurgical plants are in the center of the country, close to the ore mines. More significant has been the drop in heavy machine tool exports because of the occupation and because the major buyers of Soviet machine tools are other ex-Soviet states. Russia was the major buyer, and it no longer buys machine tools from Ukraine. It also no longer buys Ukrainian-made gas and oil transmission pipes.
- 37 The agriculture sector accounts for the largest share in the country's export basket. The dominant share of agricultural production (about 66 percent) is exported—primarily wheat and corn. For the period 2005–07, the value of agricultural exports averaged US\$5.3 million, which accounted for 13 percent of total merchandise exports. However, for the period 2015–17, agricultural exports averaged about US\$17.8 million, which accounted for 44 percent of the country's export earnings, making the sector the largest source of export revenue (State Statistics Service of Ukraine 2018).
- 38 International Trade Centre
- 39 Agriculture is also part of the climate problem, generating 19 to 29 percent of total GHG emissions.
- 40 World Bank, Climate Change Country Brief—Ukraine, <https://climateknowledgeportal.worldbank.org/country/ukraine>
- 41 Think Hazard! is part of the World Bank's Global Facility for Disaster Reduction and Recovery, which provides a general overview of hazards for a given location that should be considered in project design and implementation to promote disaster and climate resilience.
- 42 See the Ukraine portal, <http://thinkhazard.org/en/report/254-ukraine>.
- 43 In this report, the words "technology" and "practice" have been used interchangeably in this context.
- 44 The WBG meta-analysis covers CSA practices over 33 countries.
- 45 Appendix A.2 describes the methodology and design of the CSA study.
- 46 Ukraine's total GHG emission per capita in 2014 was 5.0 metric tons (according to the World Development Indicators), which is a total of approximately 210 MTCO<sub>2e</sub>. Of the total global volume of emissions for agriculture, Ukraine accounts for 14 percent (Holubeva 2018).
- 47 Baker Tilley and National Bank of Ukraine data published in 2019.
- 48 At land auctions, prices can go higher up to a median lease price of US\$128 per hectare.
- 49 The present sector assessment on manufacturing GVCs is based on extensive stakeholder consultations, literature reviews, and original data analysis, the latter as part of a collaboration with the Growth Lab at the Harvard Kennedy School. Two background papers were commissioned as part of the assessment; their analysis and recommendations are reflected herein. For more details, see Hartog and Neffke (2019) and Hejzak (2019).
- 50 DCFTA is part of the Association Agreement between the EU and the Republic of Ukraine, offering Ukraine a framework for modernizing its trade relations and for economic development by the opening of markets via the progressive removal of customs tariffs and quotas, and by an extensive harmonization of laws, norms, and regulations in various trade-related sectors, creating the conditions for aligning key sectors of the Ukrainian economy to EU standards.
- 51 From 1995 to 2017, industrial employment, as a share of total employment, declined in the Czech Republic from 42 to 38 percent, in Hungary from 33 to 30 percent, in Poland from 32 to 31 percent, and in the Slovak Republic from 29 to 36 percent.
- 52 FDI statistics in Ukraine face a challenge of "round-trip capital." A significant share of FDI inflows into Ukraine come from financial hubs such as Cyprus or the British Virgin Islands, and also from the United Kingdom or the Netherlands. This is, in fact, round-trip domestic capital used to evade taxes or conceal ownership structures. National Bank of Ukraine estimates that during 2010–18 about 22 percent of FDI inflow (US\$8 billion) was subject to round tripping
- 53 Examples of efficiency-driven FDI are investments by Fujikura, Leoni AG, Kromberg & Schubert, Sumitomo Electric, Taiko Electronics, Jabil, Yazaki, Flex, and Kostal. There are 35 production facilities in Ukraine with more than 35,000 employees and total investment of over €400 million (Eurocar Group 2019a).
- 54 For the case of Ukraine, Dun & Bradstreet has advantages over alternative datasets. Relative to fDi Markets data, for example, Dun & Bradstreet has a better resolution (about 1,400 industries instead of around 250) and coverage (between six and seven times as many foreign-owned establishments). In addition, Dun & Bradstreet is based not on press releases but on company records, it has a more fine-grained geocoding, and, importantly, it shows not just the foreign-owned economy but also the domestic economy.



- 55 Details of the analysis can be found in the background paper by Hartog and Neffke (2019).
- 56 Figures provided are from UkrAutoprom, the Ukrainian Motor Vehicles Manufacturing Association.
- 57 Based on data from EY's Attractiveness Surveys Europe, 2017–19.
- 58 A highly publicized raid of Security Services of Ukraine on ArcelorMittal, the country's largest foreign investor, on July 17, 2019, and the opening of criminal proceedings under the criminal code of Ukraine were generally seen by both the domestic and foreign business communities as yet another example of political interference and selective justice.
- 59 OECD, "FDI Regulatory Restrictiveness Index," <https://stats.oecd.org/Index.aspx?datasetcode=FDIINDEX#>.
- 60 Foreign investors enjoy protection against changes in FDI legislation for a period of 10 years after introduction. Moreover, they are protected against nationalization or guaranteed for compensation and reimbursement of losses resulting from the action, the omission of the action, or the improper performance by state or municipal bodies. Ukraine guarantees to repatriate profit and guarantees that in the event of the termination of investment activity to remit the revenues and allow the firm to withdraw the investment without paying export duties.
- 61 See the European Union website on the convention, [https://ec.europa.eu/taxation\\_customs/business/calculation-customs-duties/rules-origin/general-aspects-preferential-origin/arrangements-list/paneuromediterranean-cumulation-pem-convention\\_en](https://ec.europa.eu/taxation_customs/business/calculation-customs-duties/rules-origin/general-aspects-preferential-origin/arrangements-list/paneuromediterranean-cumulation-pem-convention_en).
- 62 The 2013 Enterprise Survey indicates that only 11.8 percent of Ukrainian small enterprises with up to 20 employees exported directly or indirectly, and 95.9 percent of their sales were intended for the domestic market.
- 63 [www.eu4business.eu/programme/eu4business-network-business-support-centres-ukraine](http://www.eu4business.eu/programme/eu4business-network-business-support-centres-ukraine)
- 64 See Cheney and others 2017; Radosevic and others 2019; and Aridi and others 2020.
- 65 Assembly plants in Poland offer official employment with salaries in the UAH 20,000 per month range in local currency. Poland and several other Central and Eastern European countries have also considerably eased access to their labor markets to migrant workers from Ukraine.
- 66 For example, TE Connectivity, which produced electronic components for the automotive sector in Ivano Frankovsk and employed about 800 staff, announced closure of its operation in May 2019.
- 67 Data on industrial parks available here: <https://me.gov.ua/Documents/Download?id=b71b528d-c97a-4f62-8130-f54bae25fc7>. See also Antonyuk (2019).
- 68 The WBG's Country Partnership Framework 2017–21 already recognizes some of the key areas that have been discussed.
- 69 The analysis fits a stochastic production model to evaluate the frontier. This is used to evaluate the frontier Healthcare Access and Quality Index score given independent variables describing the country's beds, physicians, and nurses per population. In the specification used, all variables are logged, which corresponds to a constant returns-to-scale assumption. The results are similar using data envelopment analysis.
- 70 It should be kept in mind that this accreditation is expensive and relevant for hospitals specifically.
- 71 Picture archiving and communication systems.
- 72 For an example, in Ukrainian, see <https://www.dobrobut.com/news/c-oplata-on-line-v-prilozenii-dobrobut>.
- 73 General Data Protection Regulation recognizes data concerning health as a special category of data and provides a definition for health data for data protection purposes. These standards have been established for health care services in the EU. Although Ukraine is not part of the EU, adhering to these standards will prepare the country to expand to other markets like the EU.
- 74 Preparation of PPPs scored 78 (out of 100) and procurement 57 in WBG's benchmarking. World Bank PPP database, <https://bpp.worldbank.org/en/data/exploreconomies/ukraine/2018>.
- 75 Ukraine scored at only 42 out of 100, lower than the Europe and Central Asia region and the average score for lower-middle-income countries.
- 76 The long-term goal for any health system, including Ukraine, should be to move to a value-based health care payment model, which prioritizes outcomes. However, this requires extremely sophisticated IT systems and data exchange protocols, which are currently absent in the country. As a step toward this direction, the focus of reforms should be to address productivity related to input use.
- 77 As of April 1, 2020, case-based contracting has been implemented across all hospitals in Ukraine. The case-based payments will be delayed toward the end of 2020, and the share of case-based payments will start with 25 percent and increase to 40 percent. Further, the risk of an adverse incentive for overprovision of services is expected to be mitigated through volume caps on contracts and quarterly monitoring and review of the shares of case-based payments so that budget neutrality is ensured.
- 78 It is crucial to select areas of care with large private sector capacity and specialized players ready to deploy expertise in Ukraine. Project screening and prioritization should include early market sounding. The World Bank Group is supporting the government in a master plan to identify health facilities (including hospitals) that are viable for PPPs, consolidation, closure, and so on, to enhance efficiency of the country's health sector.

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