

6. Trends in Ukraine's sustainable infrastructure investments

This chapter describes sustainable infrastructure planning in Ukraine and presents current trends in investment in large-scale infrastructure projects. It compares Ukraine's infrastructure plans in the energy, transport, industry and water sectors against its international commitments under the Paris Agreement on climate change and the Sustainable Development Goals (SDGs). The chapter also explores Ukraine's strategic documents for long-term economic development, sectoral development and the environment, including those related to climate change mitigation and adaptation. It identifies misalignments between stated goals and observed investment flows and provides recommendations to improve strategic planning for sustainable infrastructure.

State of play: economy, investment and climate change in Ukraine

Economy and trade

Table 6.1. Key indicators on Ukraine's economy

Population (2019)	44 385 155
Urbanisation rate (2019)	69.5%
Annual population growth (2018)	-0.5%
Surface area	603 550 km ²
GDP (USD, current price, 2019)	153 781 million
GDP per capita (USD, current price, 2019)	3 659
Real GDP growth (year-on-year change, 2019, 2020)	3.2%, -7.2%
Inflation (average consumer price, y-o-y change, 2020)	7.7%
Exports of goods and services (% of GDP, 2019)	41.2%
Imports of goods and services (% of GDP, 2019)	49.0%
FDI, net inflows (% of GDP, 2019)	2.0%
General government net lending/borrowing (% of GDP, 2019, 2020)	-2%, -8.2%
Unemployment (% of total labour force, 2019)	8.9%
Remittances (% of GDP, 2019)	10.4%
Transparency, accountability and corruption in the public sector rating (1= most corrupt, 6 = least corrupt)	n.d.

Source: World Bank (2021^[1]), *World Development Indicators (database)*, World Bank, <https://datacatalog.worldbank.org/dataset/world-development-indicators>; IMF (2020^[2]), *World Economic Outlook: October 2020*, International Monetary Fund https://www.imf.org/external/datamapper/GGXCNL_NGDP@WEO/OEMDC/ADVEC/WEOWORLD

Economy and demographics

Ukraine is a lower-middle income country in Eastern Europe. It lies on the northern shore of the Black Sea and shares borders with Belarus to the north, Russia to the east, Moldova to the southwest and several European Union member states (Hungary, Romania, Poland, Slovak Republic) to the west. It is by far the most populous country in the EU Eastern Partnership (EaP)¹; its population of just over 44 million is larger than the other five Eastern Partnership countries' populations combined. Since 1993, when Ukraine's population stood at 52 million, the country's population has consistently decreased. Ukraine's demographic decline stems from one of the lowest birth rates in the world (less than 1.5 live births per woman in 2019). Unlike in neighbouring Moldova, net emigration is not the primary driver of Ukraine's decreasing population size. Ukraine actually experienced net immigration between 2010 and 2019, but not enough to compensate for the negative natural population growth rate. If current trends continue, Ukraine's population could be 20% smaller than in 2019 by 2050 (UNDESA, 2019^[3]).

Ukraine's GDP has followed a less predictable path. After a decade of decline from its peak prior to the breakup of the Soviet Union (USD 205.8 billion in constant 2010 USD in 1989), the country's GDP reached its low point in 1999 (USD 84.4 billion). From 2000 to 2008, positive growth not only returned but reached unprecedented levels; Ukraine's GDP almost doubled by 2008 (USD 153.7 billion). Ukraine's GDP suffered two major shocks in the following years. First, the global financial crisis in 2008-2009, and then the 2014 Maidan Revolution², Russia's temporary occupation of Crimea and the ongoing armed conflict in the eastern Ukrainian territories of Donetsk and Luhansk. These events, combined with other factors linked to the important share of natural resources, energy infrastructure and steelmaking capacities in the temporary occupied regions led to a severe contraction of the Ukrainian economy, and as a result GDP declined by 15% in real terms between 2013 and 2015. A period of recovery followed until 2020 only to be cut short by the COVID-19 pandemic's severe economic impacts on the Ukrainian and global economies. Ukraine is

projected to be the Eastern Partnership economy hardest hit by the COVID-19 pandemic, with its GDP shrinking by -7.2% in 2020 (compared to -1.5% in Armenia, -4% in Azerbaijan, -3% in Belarus, -5% in Georgia and -4.5% in Moldova) (IMF, 2020^[4]).

As of February 2020, Ukraine had diagnosed 29.3 COVID-19 cases per thousand inhabitants, considerably less than in Armenia (56.5), Georgia (65.4) and neighbouring Moldova (40.5) but more than in Azerbaijan (22.8) and Belarus (27). Ukraine's death rate (562 deaths per million inhabitants) is the fourth highest in the Eastern Partnership after Armenia (1 049), Moldova (937) and Georgia (817). Azerbaijan (311) and neighbouring Belarus (187) have recorded far fewer deaths (Roser et al., 2020^[5])³. Ukraine declared a state of emergency in March 2020 followed by a countrywide lockdown until May. International and domestic travel were restricted and remote working arrangements were encouraged to slow the virus's spread. Schools, hospitality venues and recreational areas were shut and wearing masks became obligatory in public spaces (OECD, 2020^[6]). After initial success in reducing cases, measures were relaxed over the summer until infections began rising rapidly again, leading to a second lockdown (OECD, 2020^[7]).

Lockdown measures and the global economic downturn are expected to have a profound impact on Ukraine's economy. In response, the Ukrainian government approved in May 2020 the *Economic Stimulus Programme to Overcome Negative Consequences of Restrictive Measures to Prevent the Occurrence and Spread of Acute Respiratory Disease COVID-19 Caused by SARS-CoV-2 Coronavirus for 2020-2022*. It outlined programmes to support small and medium enterprises and identified the improvement of water supply, sewerage and sanitation as a key priority. However, in some of the government's efforts to revitalise the economy, funds and attention have been redirected from environmental causes. For instance, as part of much wider budget cuts, the budget of the Energy Efficiency Fund was cut by UAH 1.6 billion (OECD, 2021^[8]). These cuts helped fund the UAH 64.7 billion (USD 2.4 billion) Fund to Counter COVID-19, which will allocate resources to infrastructure renewal, regional development and support to businesses and citizens (OECD, 2020^[7]).

The sectoral split of Ukraine's service-oriented economy is very similar to that of neighbouring Moldova. In 2019, services accounted for 54.4% of Ukraine's GDP (54.3% in Moldova), while agriculture accounted for 9% (9.9% in Moldova), industry (including construction) accounted for 22.6% (22.8% in Moldova) and manufacturing accounted for 10.8% (10.9% in Moldova) (World Bank, 2021^[11]).

Trade

Ukraine has been a member of the World Trade Organisation since 2008. Like Georgia and Moldova, Ukraine signed an Association Agreement with the European Union, including a Deep and Comprehensive Free Trade Agreement (DCFTA), which came into force in 2017. The European Union's Eastern Partnership (EaP) is a key initiative for continued cooperation between the EU, its member states and Ukraine. It aims to strengthen ties and encourage reform on a number of policy areas, including on governance, connectivity, economic development and environmental protection.

Previous preparations for an Association Agreement were abandoned in 2013, unleashing a wave of civil unrest that culminated in the 2014 Maidan Revolution. Prior to the revolution, Ukraine's stance on closer ties with the European Union was somewhat more ambiguous. In 2013, the pre-revolution government negotiated and abandoned an Association Agreement with the European Union and, simultaneously, negotiated observer status for Ukraine within the Eurasian Customs Union, a precursor to the Eurasian Economic Union.

Following the revolution, state policy shifted to unambiguous support of closer ties with the European Union. Public opinion has also become less split on the issue: In 2013, 42% of Ukrainians thought the country would join the European Union in the future, while 31% considered integration into the Eurasian Economic Union the more likely option. By 2019, 53% of Ukrainians saw their future in Europe, compared to only 13% that preferred the Eurasian Economic Union. National surveys, however, mask considerable regional differences. Western Ukraine and central Ukraine are staunchly pro-European, with 71% and 60%

of Ukrainians in these regions supporting integration into the EU respectively. Opinions in southern and eastern Ukraine are less unified. EU integration enjoys only 32% support in the south and 34% in the east of Ukraine, while 24% of southerners and 27% of easterners favour joining the Eurasian Economic Union instead. Staying independent of both blocs is the preferred option for 31% of the population in southern Ukraine and 30% in the east (Ilko Kucheriv Democratic Initiatives Charitable Foundation, 2019^[9]).

Ukraine has been a Contracting Party of the European Union's Energy Community since 2011. The Energy Community's Secretariat supports Ukraine's implementation of reforms in the energy sector, including on energy efficiency, renewable energy development and environmental protection. Ukraine's progress on transposing legislation and implementing necessary reforms is quite advanced but uneven. The Energy Community Secretariat rates overall implementation of reforms in Ukraine as 61% complete, with gas (84%), statistics (81%), energy efficiency (67%), environment (64%), renewable energy (52%) and climate (51%) as well-advanced areas. However, on other issues, such as infrastructure (8%) and the oil sector (35%), Ukraine's implementation remains at an early stage (Energy Community, 2020^[10]).

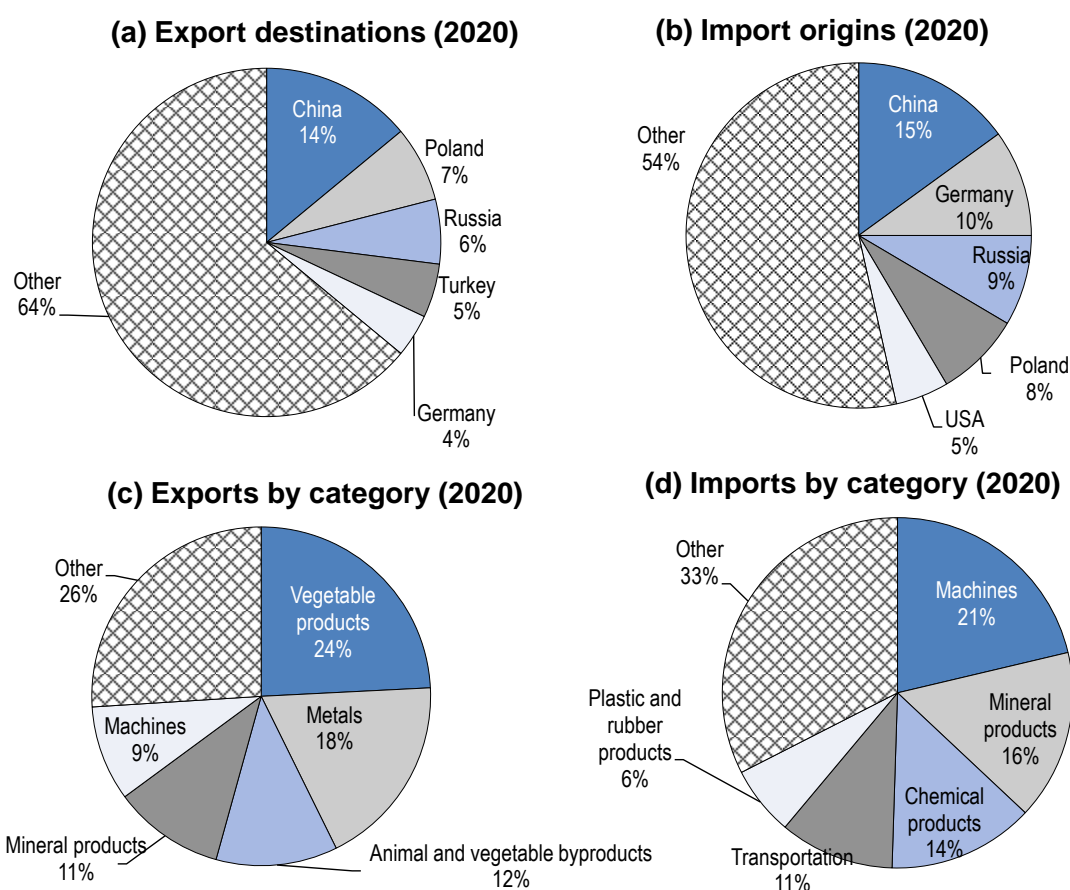
As a result of armed conflicts beginning in 2014 between Ukraine on the one side and Russia and separatist forces on the other, Ukraine does not have complete sovereign control of its eastern and southern maritime borders. On the Crimean peninsula in the southeast of Ukraine, Russia occupied the Ukrainian territories of the Autonomous Republic of Crimea and Sevastopol in 2014 and, despite international condemnation, has since administered them as *de facto* federal subjects (as a republic and a federal city respectively). In Ukraine's eastern Donetsk and Luhansk *oblasts* (regions) – an area collectively known as the Donbass (or Donbas), two internationally unrecognised breakaway states have been declared and have wrested some *de facto* territorial control from Ukraine's government. The self-proclaimed Donetsk People's Republic and Luhansk People's Republic claim sovereignty over the whole territory of the respective Ukrainian *oblasts* but have only established control over the eastern areas adjacent to the border with Russia. The EU and several OECD countries imposed economic and diplomatic sanctions on Russia because of its temporary occupation of Crimea and involvement in armed conflicts in the breakaway regions in eastern Ukraine. In 2014, the European Council condemned the “inflows of fighters and weapons from the territory of the Russian Federation into Eastern Ukraine as well as the aggression by Russian armed forces on Ukrainian soil” (European Council, 2014^[11]). Also in 2014, the OECD postponed all activities related to the accession of Russia to the organisation and signed a memorandum of understanding with Ukraine on strengthening existing cooperation (OECD, 2014^[12]; OECD, 2014^[13]).

The ongoing conflict has had a major impact on the trade relationship between Ukraine and Russia. In 2012, Russia alone accounted for 24% of Ukraine's exports and 31% of imports, making it by far Ukraine's most important trading partner. By 2016, Russia's share of Ukraine's exports and imports had shrunk by about half (11% and 17% respectively), and the downward trend has continued (8% of exports and 15% of imports by 2018) (Observatory of Economic Complexity, 2018^[14]). A major component of Ukraine's imports from Russia until 2016 was natural gas. Imported gas, almost exclusively from Russia, supplied the majority of Ukraine's domestic consumption, but Ukraine pivoted towards European suppliers starting in 2012 and, by 2016, almost entirely stopped importing natural gas from Russia altogether (Naftogaz Europe, 2017^[15]).

Despite its diminished share of Ukraine's import and export markets, Russia remains one of Ukraine's most important trading partner, particularly as a source of imports (9%), but China has surpassed it as Ukraine's most important trade partner, accounting for 14% of exports and 15% of imports in 2020 (Figure 6.1). The European Union accounts for over 35% of Ukraine's exports and 43% of imports, with Germany (10% of imports, 4% of exports), Poland (7% of exports, 8% of imports), and Italy (4% of exports and exports) as particularly important trading partners. Non-EU, emerging economies, especially Turkey (5%) and India (4%) also account for a considerable share of Ukraine's exports, primarily metal ores and agricultural goods.

In 2020, Ukraine's most important exports 2343 vegetable products (24%), particularly corn and wheat, and metals (19%), predominantly ferrous metals. Although raw materials and low value-added goods account for most of Ukraine's exports, manufacturing – mostly machines and machine parts (9%) – also represents an important export sector. Ukraine mostly imports manufactured goods (machines, 21%; chemical products, 14%; and transportation, 11%) and mineral products, which account for 16%, especially refined petroleum and petroleum gas.

Figure 6.1. Trade of Ukraine



Source: State Statistics Service of Ukraine (2020^[16]), Ukraine's foreign trade in goods (January-November 2020), https://ukrstat.org/en/operativ/menu/menu_e/zed.htm

Investment climate

Following the 2014 Maidan revolution, Russian military intervention and the associated economic downturn, Ukraine implemented sweeping reforms to ensure macroeconomic stability, particularly in regulating the country's banking sector and nationalising PrivatBank, the country's largest commercial bank. Ukraine introduced the principle of non-discrimination of foreign investment and enhanced provisions to protect foreign investors' rights (OECD, 2016^[17]).

Ukraine has undertaken several institutional reforms to strengthen investment promotion. It established the National Investment Council under the president in 2014; a Business Ombudsman to facilitate conflict resolution between foreign investors and domestic institutions in 2015; and UkraineInvest, an investment promotion agency, in 2016. Unique among EaP investment promotion agencies, UkraineInvest has a

dedicated board to supervise its operations. Although Ukraine's board has public sector representatives and independent experts, it lacks representatives from the private sector, academia and civil society. UkraineInvest targets key sectors in its FDI attraction efforts, namely agribusiness, manufacturing, energy, infrastructure and innovation technology. It also targets particular countries in Europe (Denmark, France, Germany, Norway, Sweden) and beyond (Qatar, Saudi Arabia, the United Arab Emirates, USA). While UkraineInvest offers essential services to potential investors (e.g. licence and construction approval, assistance with utilities and legal issues, business matchmaking and cluster programmes, aftercare services), it does not function as an effective one-stop service centre since it does not provide a window to several administrative procedures necessary to start and run a business such as tax registration and work permits (OECD, 2020^[18]).

Despite some recent improvements, foreign direct investment (FDI) remains low compared to the size of Ukraine's economy. Net FDI inflows have hovered around 4% of GDP since 2016, broadly in line with trends elsewhere in the Eastern Partnership (with the notable exception of Georgia where net FDI inflows scaled for GDP have been twice to three times as large) (World Bank, 2021^[11]).

According to the OECD FDI Restrictiveness Index, which measures barriers to foreign direct investment such as foreign equity limitations and operational restrictions, Ukraine has the most restrictive FDI rules in the Eastern Partnership, a region that, although less open than the OECD average to FDI, is characterised by relatively open economies. In 2019, on a scale from 0 (open) to 1 (closed), Ukraine scored 0.121, which is higher (i.e. more closed) than the regional average for the Eastern Partnership (0.064) and OECD countries (0.085). Unlike in the second and third most restrictive countries in the region, Belarus (0.086) and Azerbaijan (0.077), where restrictions apply primarily to the media sector and, to a lesser degree, business and financial services, Ukraine's restrictiveness applies more broadly, extending to real estate, media, transport and agriculture. In an important step towards loosening restrictions, the moratorium on the sale of agricultural lands was recently lifted (Verkhovna Rada of Ukraine, 2020^[19]). Ukraine is the only EaP country with discriminatory screening and approval mechanisms to regulate the entry and operations of foreign investors. On their own, Ukraine's FDI restrictions are unlikely to discourage investors, but the FDI Restrictiveness Index only captures part of the picture. It does not, for instance, measure other components of the investment climate such as the extent of state ownership and how restrictions are implemented in practice (OECD, 2020^[18]).

Foreign investors cite poor quality infrastructure, ongoing armed conflict and corruption, particularly in the judiciary, as major obstacles in Ukraine. In its annual Corruption Perceptions index, Transparency International ranked Ukraine 126th out of 198 countries in 2019 edition, tied with Azerbaijan as the two EaP countries perceived as facing the greatest corruption challenges. Although the situation in Ukraine has improved somewhat since before the Ukrainian revolution (144th in 2012), Ukraine is lagging behind other EaP countries in rooting out corruption (Armenia, 77th; Belarus, 66th; Georgia, 44th) (Transparency International, 2019^[20]). As part of an effort to eliminate corruption, oligarchic influence on public policy and vested interests, Ukraine established the National Anti-Corruption Bureau, the High Anti-Corruption Court and split the State Financial Service into the State Tax and State Customs Services. These institutions, however, have recently come under increasing pressure and face multiple challenges in carrying out their assigned functions (Verlanov, 2020^[21]).

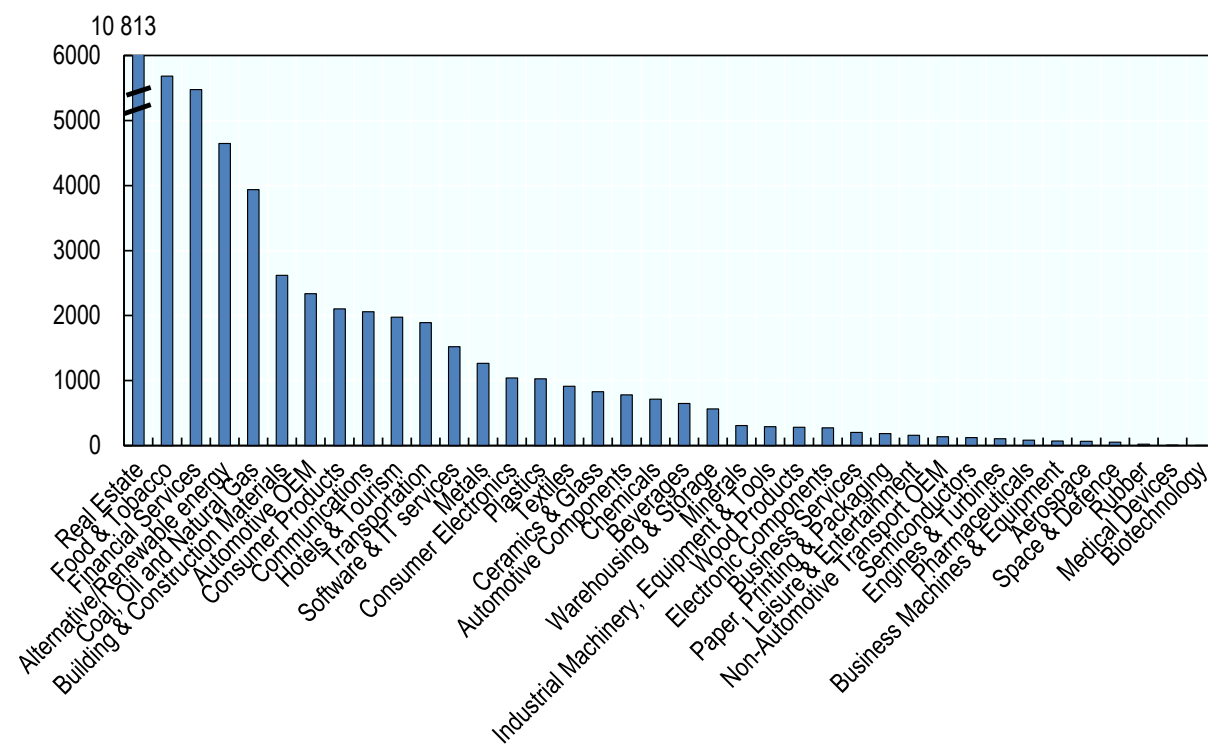
In addition, Ukraine's overall regulatory environment needs considerable reform to facilitate businesses and attract investment. The World Bank's 2020 Ease of Doing Business report ranked Ukraine 64th out of 190 countries overall, lower than its EaP peers Armenia (47th), Azerbaijan (34th), Belarus (49th), Georgia (6th) and Moldova (48th). Ukraine's procedures for getting electricity and resolving insolvency are particularly inefficient and time-consuming; it ranks 128th and 146th worldwide on these metrics respectively. On average, businesses need to pass through 5 procedures requiring 267 days to get electricity, while firms wishing to resolve insolvency can expect to spend 2.9 years and about two-fifths of the estate in question on the various procedures (World Bank, 2020^[22]).

That said, in addition to its anti-corruption measures, Ukraine has made some progress in improving other aspects of its investment climate. Ukrainian investment legislation includes the principle of non-discrimination of foreign investment and general provisions on foreign investment protection (OECD, 2016_[17]). Ukraine has simplified its tax system, including through a new e-declaration system, reducing the number of payments from 135 per year in 2012 and 28 per year 2013-14 to just 5. Consequently, the time that businesses spent on average in 2012 preparing and filing their taxes halved from 657 hours in 2012 to 328 hours starting in 2018. Progress has been even swifter on simplifying construction permits. Whereas acquiring a permit in 2012 required 21 procedures and took 403 days on average, only 10 procedures and 72.5 days are needed in 2020 (World Bank, 2020_[22]).

Between 2003 and 2017, Ukraine attracted USD 38.7 billion of FDI to greenfield projects. Although FDI flows to greenfield projects among EaP countries were greatest in Ukraine over this time period, all of its regional peers except Belarus attracted more greenfield FDI relative to the size of their economies. In Ukraine, most greenfield FDI flows concentrated in real estate (28%), food & tobacco (15%) and financial services (14%) (Figure 6.2). Infrastructure-related investments were also sizeable, with alternative/renewable energy sources and fossil fuels attracting 12% and 10% respectively.

Figure 6.2. Greenfield FDI in Ukraine by economic activity, 2003-2017

Cumulated greenfield FDI capital between January 2003 and September 2017 in USD million

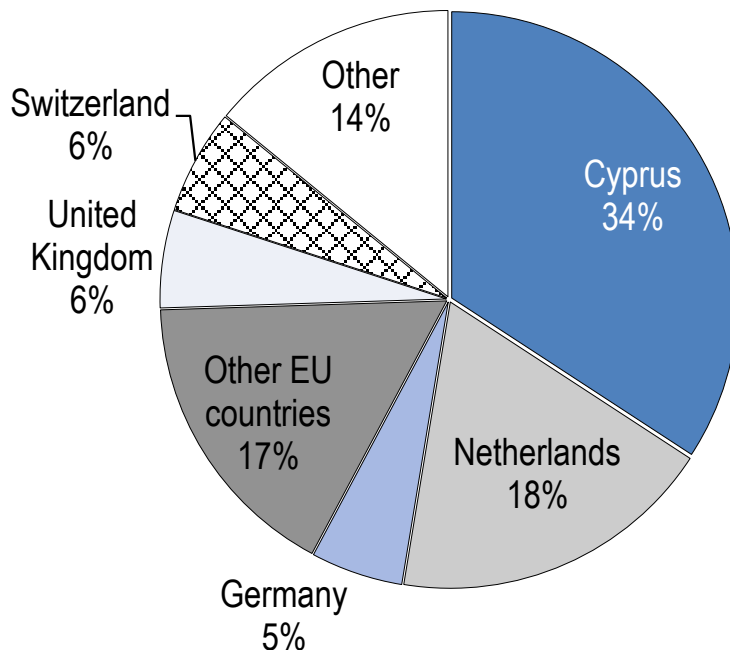


Source: OECD based on fDi Markets (2019_[23]), fDi Markets: the in-depth crossborder investment monitor (database), fDi Markets, <https://www.fdimarkets.com/>

European Union countries account for 74% of Ukraine's FDI inflows (Figure 6.3). According to the National Bank of Ukraine, about two-fifths of Ukraine's FDI in recent years is "round-tripping FDI" (i.e. FDI that is actually domestic in origin but rerouted through a foreign country). The prevalence of this phenomenon

likely explains the large shares of countries with particularly favourable tax regimes such as Cyprus (34%), the Netherlands (18%) and Switzerland (6%). Russia plays only a marginal role in Ukraine's FDI inflows, accounting for less than 2% in 2018, although its share used to be considerably larger (8% in 2010). Part of Cyprus's large share, however, may in effect reflect trans-shipping FDI transactions from Russian entities to Ukraine (OECD, 2016^[17]).

Figure 6.3. Ukraine's inward FDI stock by country of origin, 2018



Source: Havlik, P., A. Kochnev and O. Pindyuk (2020^[24]), "Economic Challenges and Costs of Reintegrating the Donbas Region in Ukraine", Research Paper 447, Wiener Institut für Internationale Wirtschaftsvergleiche (WIIW), <https://wiiw.ac.at/economic-challenges-and-costs-of-reintegrating-the-donbas-region-in-ukraine-dlp-5351.pdf>

Ukraine's public debt position improved markedly between 2014 and 2019. Government reforms, including debt restructuring in 2015 and pension reforms in 2017, helped reduce public debt as a share of GDP from 85% to 50%. Public debt is expected to spike to 65% of GDP, reversing the government's previous gains, due to the ongoing COVID-19 crisis, but it will then resume its downward trajectory (61% by 2022, 52% by 2025). Ukraine's public debt will remain manageable provided that the government tightens fiscal policy once economic activity rebounds. Since over 60% of its debt is denominated in foreign currencies, Ukraine's external debt service burden is vulnerable to exchange rate depreciations (IMF, 2020^[25]).

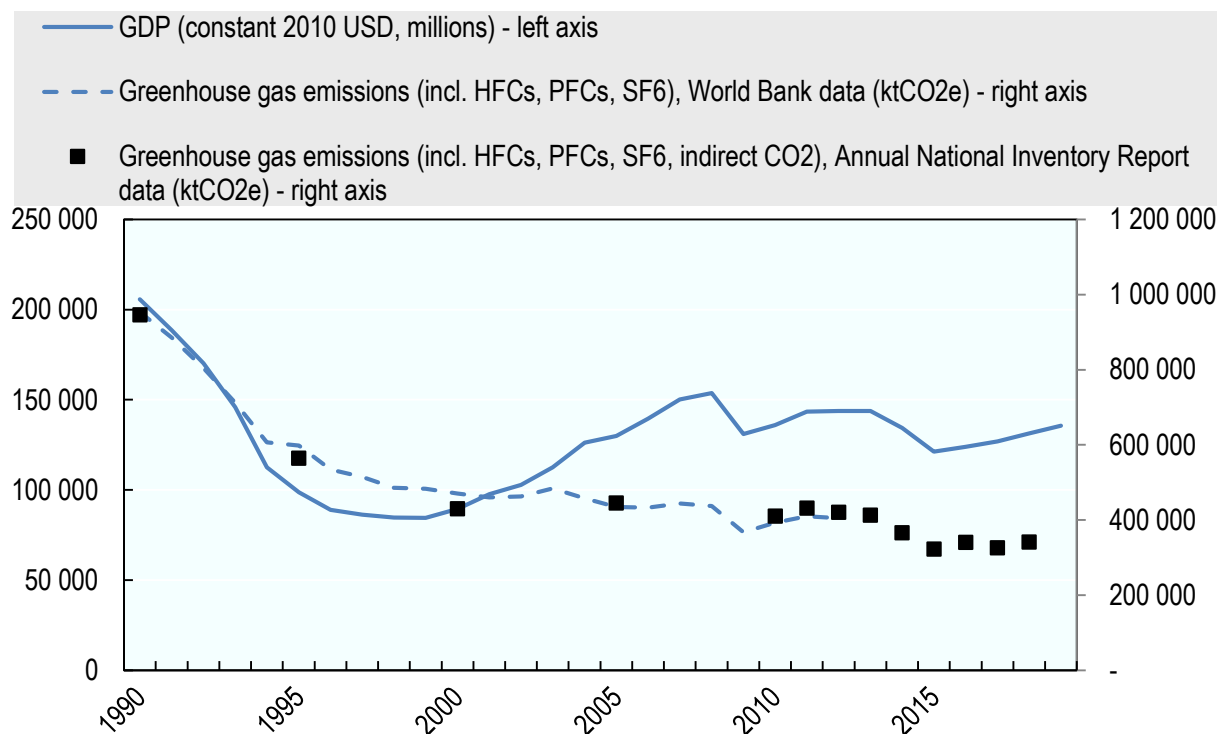
Climate change

As the most populous country and largest economy in the Eastern Partnership, Ukraine accounts for most of the region's greenhouse gas (GHG) emissions; its emissions are almost double those of the other five countries combined. As a share of global emissions, Ukraine emits just under 0.8%. Ukraine's GHG emissions declined by two-fifths following the breakup of the Soviet Union from their 1990 peak of 946 MtCO_{2e} to 564 MtCO_{2e} in 1995 (Figure 6.4). Following their initial rapid drop, Ukraine's emissions began to decline more gradually, reaching 341 MtCO_{2e} in 2018 (only a third of Ukraine's GHG emissions in 1990 and 39% lower than in 1995). Ukraine's GDP has charted a less predictable course, particularly over the

past two decades. From its pre-independence peak of USD 205.8 billion in constant 2010 USD in 1990, Ukraine's GDP shrank by almost three fifths to 84.4 billion by 1999. Over the past two decades, Ukraine's economy has experienced rapid periods of growth (2000-2008, 2009-2013, 2015-2019) followed by sharp declines linked to mostly external shocks (the Global Financial Crisis in 2008; the Ukrainian revolution and Russian military intervention in 2014; the COVID-19 pandemic in 2020). In real terms, Ukraine's 2019 GDP (USD 135.5 billion) is still 12% lower than its 2008 peak (USD 153.7 billion) prior to the Global Financial Crisis.

Ukraine's GHG reductions have continued both in periods of economic growth and contraction; consequently, Ukraine's economy is considerably less GHG intensive than before independence. While Ukraine emitted 4.6 kgCO_{2e} per USD (in constant 2010 dollars) in 1990, it generated only 2.6 kgCO_{2e} for the same economic output in 2018. Despite this improvement, Ukraine's economy remains more GHG-intensive than its EaP peers and significantly more so than the OECD average (0.35 kgCO_{2e} per USD in 2012). Ukraine's per capita emissions have dropped from 18.4 tCO_{2e} in 1990 to 7.7 tCO_{2e} in 2018, the second highest per capita emission rate among EaP countries, after Belarus (9.9 tCO_{2e} per capita in 2017) (World Bank, 2021^[11]).

Figure 6.4. GHG emissions and GDP of Ukraine, 1990-2019



Source: World Bank (2021^[11]), World Development Indicators (database), World Bank, <https://data.worldbank.org/indicator/EN.ATM.GHGT.ZG>; https://mepr.gov.ua/files/docs/Zmina_klimaty/2020/Ukraine_NIR_2020%20draft.pdf; Ministry of Energy and Environmental Protection of Ukraine⁴ (2020^[26]), Ukraine's Greenhouse Gas Inventory 1990-2018 (draft), https://mepr.gov.ua/files/docs/Zmina_klimaty/2020/Ukraine_NIR_2020%20draft.pdf

Energy (including fuel combustion from transport) accounts for 66% of Ukraine's GHG emissions, slightly less than in 1990 (77%). Energy industries are directly responsible for 45% of energy-related emissions, while fugitive emissions (18%) and transport (15%) account for most of the remainder. The share of GHG emissions generated from industrial processes and products use (IPPU), agriculture and waste increased

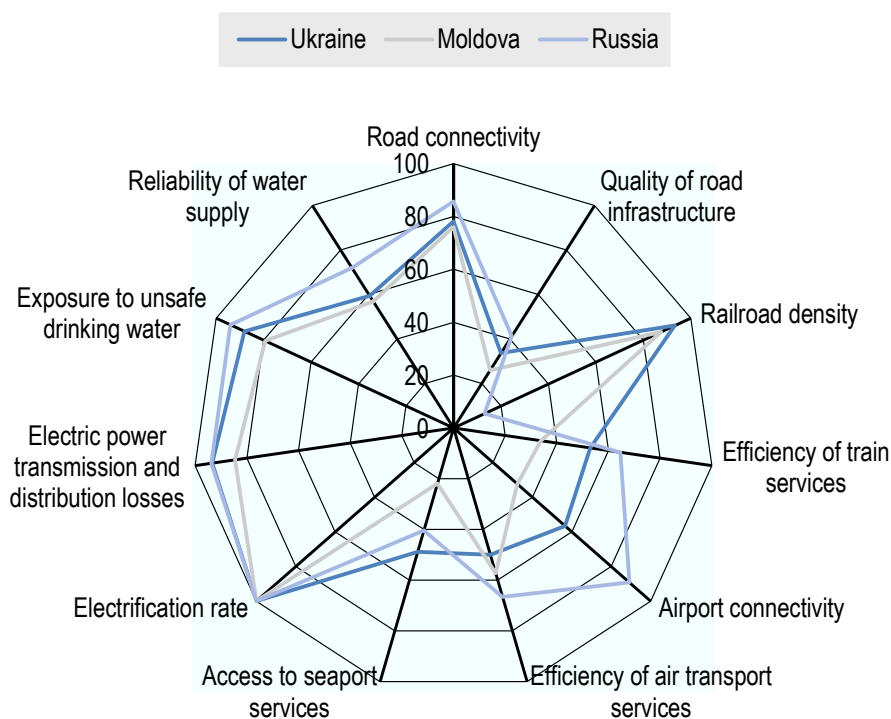
slightly between 1990 and 2018 (IPPU, 12% to 16%; agriculture, 9% to 13%; waste, 2% to 5%). In absolute terms, the decline in GHG emissions since independence has been steepest in the energy sector; emissions in 2018 are less than a third of their 1990 levels. Emissions from IPPU and agriculture both halved over the past three decades, while waste-related emissions remained about the same (Ministry of Energy and Environmental Protection of Ukraine, 2020^[26]).

The effects of climate change are already becoming evident in Ukraine. The average annual temperature in Ukraine increased by about 0.4°C per year between 1970 and 2012 while average precipitation declined slightly. Climate models predict that the average annual temperature could increase by a further 1.5-2°C between 2010 and 2070, while precipitation could decrease slightly in the country's south and increase elsewhere. As a result, the yield of winter wheat, a key crop for export and domestic consumption, could decrease by 6-11% in Ukraine by 2070 (Müller et al., 2016^[27]). Rising temperatures as well as increased incidence and intensity of both drought and periods of heightened precipitation could have sweeping impacts across Ukraine's economy. The risk of overflow from tailing ponds and sludge basins could increase, forest fires could intensify and become more common, and the mortality rate of cardiovascular and pulmonary diseases linked to higher temperatures and poor air quality could increase (Ministry of Ecology and Natural Resources of Ukraine, 2013^[28]).

Ukraine's infrastructure needs and current plans

The inadequate quality of Ukraine's infrastructure systems has been identified as a key structural bottleneck preventing the emergence of a more productive private sector and diversified exports (World Bank, 2017^[29]). Ukraine's rankings on infrastructure indicators in the World Bank's Logistics Performance Index suggest that infrastructure quality has been deteriorating over the past decade, both in absolute terms and compared to other countries. Ukraine ranked 74th globally in 2007 with an average infrastructure score of 2.35, but in the 2018 edition Ukraine placed 119th with a score of 2.22 (World Bank, 2019^[30]). In the World Economic Forum's 2019 Competitiveness Index, however, the quality of Ukraine's infrastructure scores relatively well. Its score (70.3) is well above the average for lower-middle income countries (60) and slightly above the Eurasian average (67.7) and most of its EaP peers (Armenia, 69; Georgia, 68; Moldova 66) (World Economic Forum, 2019^[31]). Overall, Ukraine's infrastructure performs better than its EaP neighbour, Moldova, but worse than Russia (Figure 6.5). Ukraine's rail and seaport services rate favourably compared to Moldova's, whereas Moldova outranks Ukraine on air transport services. Ukraine's electricity transmission and distribution system is on par with Russia's, but the reliability of its water supply and sanitation systems are closer in line with Moldova's.

Figure 6.5. Quality of infrastructure in Ukraine



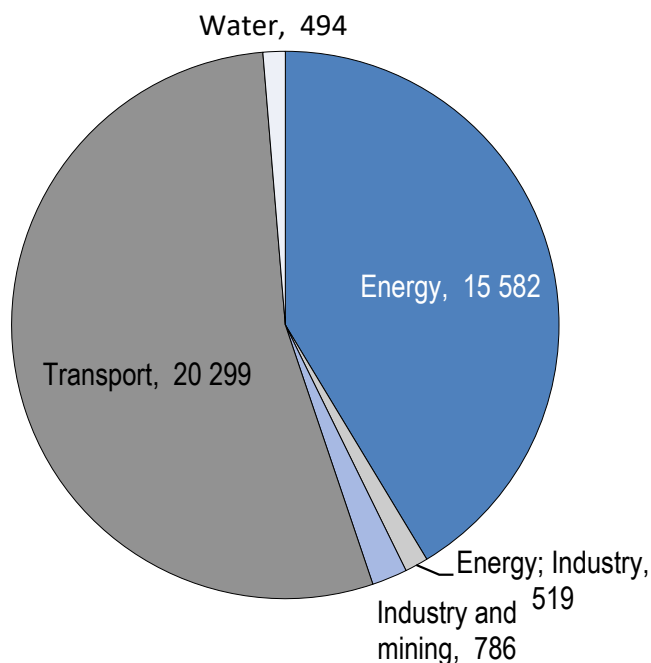
Source: World Economic Forum (2019^[31]), *The Global Competitiveness Report 2019*, World Economic Forum, http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf

Ukraine's public investment needs are immense. By one estimate, Ukraine needs to invest USD 100 billion over the next ten years. Despite lower labour costs, construction projects cost 22% more in Ukraine than in the European Union on average due to mismanagement of public investment and governance issues, including corruption. Tackling corruption, improving public investment management systems and improving infrastructure service delivery are mutually reinforcing policy objectives required for better private sector productivity and improved wellbeing (World Bank, 2017^[29]).

The OECD's database tracks 77 major planned or under construction infrastructure projects in Ukraine with a cumulative value of USD 37.0 billion. By value, transport projects account for the largest share (55%, USD 20.3 billion), followed by the energy sector (40%, USD 15.6 billion) (Figure 6.6). Only a handful of large-scale projects fall under the categories of industry and mining (2 projects worth USD 786 million) and water (4 projects worth USD 494 million). One project combines energy (biomass-fired power generation) and industry (food processing) components.

Figure 6.6. Investment projects in Ukraine, by sector

Planned and under construction, in USD million



Source: OECD analysis based on accessed databases as of June 2020.

Transport

Ukraine's transport infrastructure network is extensive, consisting of 13 seaports, 163 000 km of roads and 20 950 km of railway, 47.4% of which have been electrified. However, given the country's vast territory and low population density, access to quality service delivery is uneven. For instance, 23% of residents in rural and mountainous areas do not have access to regular bus services (Ministry of Infrastructure of Ukraine, 2017^[32]). The road networks of certain regions (Lviv *oblast*, Ternopol *oblast*) are twice as dense as in Kherson *oblast* or Mykolayiv *oblast* (OECD, 2018^[33]).

Several modal shifts are underway in Ukraine's transport sector. The majority of Ukraine's cargo, 182 billion tonnes-kilometres tkm in 2019, still travels by rail, accounting for 54% of total cargo turnover (or 78% excluding pipelines), but turnover has reduced in absolute terms (from 225 billion tkm in 2013) losing some of its modal share to road. Overall, road is the only transport mode to grow in absolute terms and as a share of total cargo turnover increased from 3% to 14% between 2013 and 2019 (or from 6% to 21% excluding pipelines), while cumulative cargo turnover decreased (from 451 billion tkm to 339 billion tkm) and the shares of all other transport modes declined. Transport via pipeline fell by almost half, from 197 billion tkm to 105 tkm, reflecting the shift's in Ukraine's energy supply chains. In passenger transport, rail and road have declined in both absolute and relative terms as passengers have shifted to air travel. While rail and road accounted for 52 billion pkm (54%) and 40 billion pkm (42%) respectively in 2003, passenger turnover reduced to 28 billion pkm (27%) for rail and 34 billion pkm (32%) by 2019. By contrast, air travel has expanded rapidly, from 3.3 billion pkm (3%) in 2003 to 30 billion pkm (28%) in 2019 (State Statistics Service of Ukraine, 2020^[34]).

Overall, Ukraine's transport infrastructure is in decline. The national road network has suffered from chronic underinvestment and, due in part to lax enforcement of truck weight limits, premature deterioration.

Approximately half of Ukraine's major national roads fail to satisfy road roughness requirements and nearly two-fifths do not meet strength requirements. Poor road quality contributes to Ukraine's high rate of fatalities from road accidents (almost 14 per year per 100 000 inhabitants compared to 12 in Poland, 9 in Hungary and Slovakia and 4 in the Netherlands). Due to these quality concerns and insufficient capacity to meet traffic growth, traffic across Ukraine is considerably slower than in the European Union, where the average traffic speed is between twice and three times greater (World Bank, 2017^[29]).

In 2020, the government embarked on a large-scale infrastructure investment programme amounting to UAH 125 billion (approximately USD 4.4 billion). The programme, dubbed "Big Construction", aimed to construct or rehabilitate 6 500 km of roads as well as several hundred public buildings (e.g. schools, kindergartens, stadiums, hospital emergency wards). It has, however, come under considerable criticism due to the programme's volume during the ongoing COVID-19 pandemic (Talent, 2020^[35]). The programme is set to continue in 2021 (President of Ukraine, 2021^[36]).

Ukraine's export industries rely heavily on its rail network, which performs better overall than its road system, with over 70% of non-pipeline freight traffic travelling by rail. However, the quality of Ukraine's rail assets and consequently service delivery is deteriorating due to insufficient maintenance and aging assets, particularly rolling stock, 70% of which dates from the 1980s. Ukraine's port infrastructure also needs urgent refurbishment or replacement; over 80% is considered obsolete or in a depreciated state. Over a tenth of berths are not in working condition, and sea ports lack adequate multimodal infrastructure (OECD, 2018^[33]).

The cumulative effect of these quality concerns is that transport and logistics costs for exporting grain from Ukrainian farms to Black Sea ports exceed similar service costs in France and Germany by as much as 40% (World Bank, 2017^[29]). Regulatory barriers also contribute to higher trade costs. According to the OECD's Trade Facilitation Indicators, poor border agency co-operation – both external and internal – and convoluted procedures are weak points in facilitating cross-border trade, but some progress has been made in recent years on streamlining procedures (OECD, 2020^[37]).

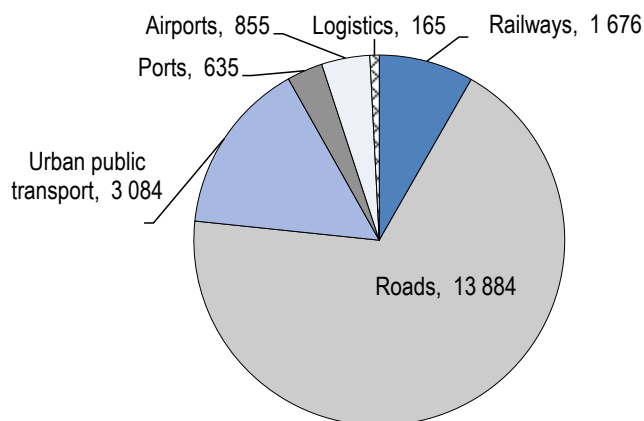
To address its transport infrastructure quality concerns, Ukraine's *National Transport Strategy 2030* proposes that annual expenditure on roads should rise to UAH 35-40 billion (40-60% higher than in 2016) and that 90% of transport assets should be renewed by 2030. It sets out improving road safety as a priority and aims to increase the quality of public roads so that 70% meet regulatory requirements by 2030. In terms of connectivity, it aims to bolster rail links between regional centres with a network of higher speed trains (160-200 km/h by 2025; 250-400 km/h by 2030). Decentralisation of planning and maintenance responsibilities and the liberalisation of the transport sector to attract private sector competition and investment are key components of the strategy. It sets an objective to increase the role of non-public ownership structures for rail transport carriers to 25% by 2025 and 40% by 2030 (Ministry of Infrastructure of Ukraine, 2017^[32]).

The *National Transport Strategy 2030* also sets a number of environment-related targets. Through increased investments in public transport, alternative fuels (50% of fuel use by 2030) and electric transport (75% of domestic traffic by 2030), Ukraine aims to reduce GHG emissions from mobile sources by 60% compared to 1990 levels.

Ukraine's transport infrastructure projects planned and under construction account for around USD 20.3 billion, mostly concentrated in the road sector (68%) (Figure 6.7). The majority of Ukraine's largest-scale transport projects are also in the road sector, including a new ring road for Kyiv, rehabilitation projects aimed at improving road safety and plans aimed at improving export corridors (Table 6.2). Urban public transport projects in Kyiv, Kharkiv and other major cities (USD 3.1 billion or 15%) and rail projects (USD 1.7 billion or 8%) account for most of the remainder. Other projects include improvements to Kyiv's Boryspil International Airport and the Black Sea ports of Kherson, Odessa, Olvia and Yuzhny. Projects shifting Ukraine's rail sector towards high-speed service and enabling a transition towards electric vehicles in the road sector are notably absent despite the targets set in *National Transport Strategy 2030*.

Figure 6.7. Transport projects in Ukraine, by sub-sector

Planned and under construction in USD million



Source: OECD analysis based on accessed databases as of June 2020.

Table 6.2. Hotspot projects in the transport sector in Ukraine

(a) Under construction					
Name	Sub-sector	Description	Project value (USD million)	Funding source	Type of investment
Kyiv Ring Road	Road	The 214-km ring road includes 65 km of existing roads and 149 of new construction linking 3 international and 4 national transport corridors around the city of Kyiv	6 418	Government of Ukraine, City of Kyiv	Greenfield
European Roads Ukraine II and III	Road	The project will rehabilitate stretches of strategically important highway around Kyiv, Lviv and in several other regions of Ukraine.	2 235	EIB	Brownfield
Kyiv Metro Line #4: Podilsko-Vyhurivska	Urban public transport	The project will create a new line to extend Kyiv's metro system to link the northeast and southwest of the city across the Dnieper river and include 16 stations and 20 km of track.	2 000	CRIG, CPCG, City of Kyiv	Greenfield
(b) Planned					
Name	Sub-sector	Description	Project value (USD million)	Funding source	Type of investment
"Go Highway" Project	Road	The project will link four of Ukraine's Black Sea ports to the Baltic Sea in northern Poland. The Ukrainian section consists of 1088 km of highway.	2 400	EU, Government of Ukraine	Greenfield
Boryspil Airport Development	Air	The project will increase the airport's capacity and improve security and passenger comfort.	726	EIB	Brownfield
Second Roads and Safety Improvement Project	Road	The project aims to improve road quality and safety on international highway M03.	562	IBRD, Government of Ukraine	Brownfield

Note: Refer to the Reader's guide for the present report's definition of 'hotspot' and other information on how the projects above were selected and prioritised. CPCG = China Pacific Construction Group; CRIG = China Railway International Group; EIB = European Investment Bank; IBRD = International Bank for Reconstruction and Development.

Source: OECD database as of June 2020.

Energy

Ukraine is the most energy-intensive economy in the Eastern Partnership and second only to Turkmenistan in the former Soviet Union. Its energy use per USD 1 000 of GDP (in USD at purchasing power parity) is 0.25 toe (tonnes of oil equivalent), over twice the global average (0.11 toe) (IEA, 2020^[38]).

Ukraine has achieved universal access to electricity and gas for its population, but major concerns about energy supply reliability and security remain. Ukraine has extensive infrastructure in the energy sector, including the third-largest gas storage facilities worldwide, but most of Ukraine's assets date from the Soviet era and have not been sufficiently maintained (EBRD, 2018^[39]). These shortcomings are reflected not only in its poor performance on the getting electricity metric of the Doing Business index (128th place worldwide), but also in high loss rates along its gas networks and its electricity transmission and distribution network (over 10% of generated power) (World Bank, 2017^[29]; World Economic Forum, 2019^[31]).

Ukraine is a net importer of energy. In 2018, Ukraine covered about 65% (60.9 Mtoe) of its total primary energy supply with domestic production thanks to its large nuclear generation capacity (22.1 Mtoe) and domestic production of coal (14.4 Mtoe), natural gas (16.5 Mtoe), biofuels and waste (3.7 Mtoe) and crude oil (2.3 Mtoe). Imports make up the remaining third of Ukraine's energy supply. Ukraine imports almost as much natural gas (8.5 Mtoe), coal (13.8 Mtoe) and crude oil (1.3 Mtoe) as it produces domestically. In terms of oil products, Ukraine's imports (10.2 Mtoe) far exceed its exports (297 ktoe). Ukraine also exports biofuels and waste (542 ktoe) and electricity (524 ktoe) (IEA, 2019^[40]).

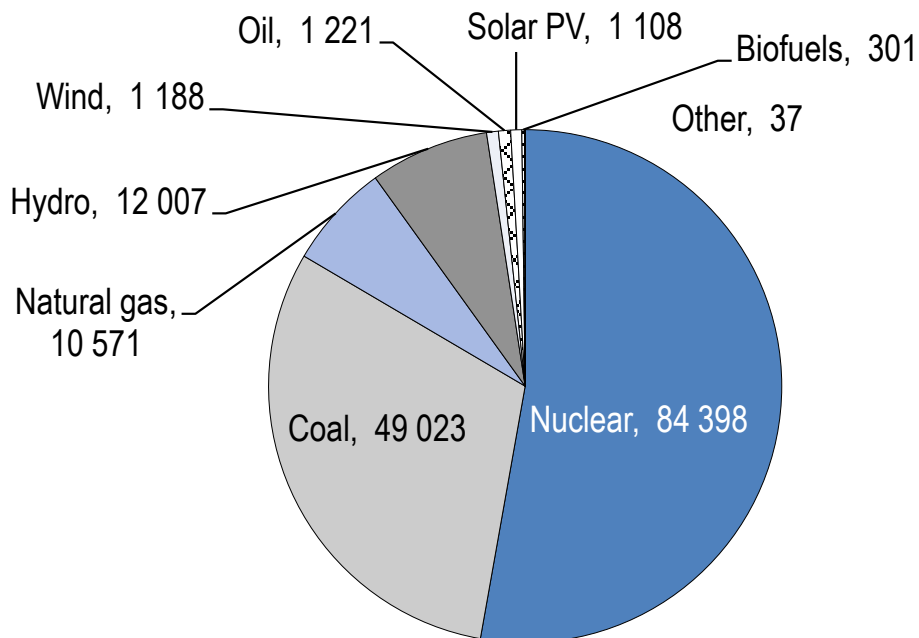
Major shifts have taken place in Ukraine's natural gas imports, which have historically come from Russia but are now predominantly from European Union member states. Ukraine could, however, become energy self-sufficient over the next decade if its conventional and non-conventional gas reserves, including its extensive shale gas reserves, were exploited (World Bank, 2017^[29]). Development of Ukraine's shale gas reserves via hydraulic fracturing ('fracking') has been met with criticism due to major environmental risks, including water supply and air contamination, costly and harmful waste disposal and increased seismic activity (CEE Bankwatch Network and National Ecological Centre of Ukraine, 2015^[41]). In the natural gas retail market for household customers, Naftogas's public service obligation (PSO) was cancelled in 2020, leading to increasing competition from other suppliers. An analogous PSO for district heating is scheduled for cancellation in 2021 (Pirani, 2020^[42]).

Ukraine generates 53% of its electricity from fifteen nuclear reactors located at four plants across the country, making it the world's 7th largest producer of nuclear energy (Figure 6.8). Energoatom, a large state-owned enterprise, operates all four of Ukraine's nuclear power plants (NPPs), including Zaporizhzhia NPP. Zaporizhzhia NPP, the largest NPP in Europe, consists of six 1000-MW reactors and on its own generates about a fifth of Ukraine's average annual electricity output.

Coal-fired thermal power plants account for a further 31% of Ukraine's power generation. Although historically Ukraine has benefited from large domestic reserves of coal, 89 of the country's 102 state-owned mines and a considerable share of national coal reserves are located in the temporarily occupied territories of Donetsk *oblast* and Luhansk *oblast*. Of the remaining 33 mines, only four of them are profitable (Energy Community Secretariat, 2019^[43]). Due in part to the conflict in eastern Ukraine, coal production has dropped by more than half (64.4 million tonnes in 2013 vs 24.2 and 26.3 million tonnes in 2017 and 2018) (State Statistics Service of Ukraine, 2020^[44]). Finally, natural gas, both imported and to a much lesser extent domestically produced, generates 6% of Ukraine's electricity, while hydroelectric power plants (7%), wind (1%) and solar PV (1%) account for most of the remainder.

Figure 6.8. Electricity generation by source

GWh, 2018



Source: IEA (2021^[45]), *Electricity Information 2020*, International Energy Agency, <https://www.iea.org/data-and-statistics>

Energy independence, in addition to improving reliability and sustainability of energy supply, is one of the six headline strategic objectives in the energy-sector development strategy that Ukraine adopted in 2017, *Energy Strategy of Ukraine for the period to 2035: "Security, energy efficiency, competitiveness"*. The strategy projects that Ukraine's total primary energy supply (TPES) will dip from 90.1 Mtoe in 2015 to 82.3 Mtoe in 2020 before growing to 96 Mtoe by 2035. The initial decline, brought about predominantly from reduced coal use but also less intensive use of oil products, will be counteracted as an increased supply of biomass, biofuels and waste (from 2.1 Mtoe in 2015 to 11 Mtoe by 2035), solar and wind energy (from 0.1 Mtoe to 10 Mtoe) and natural gas (from 26.1 Mtoe to 29 Mtoe) assets come online. The supply of nuclear energy is expected to increase from 23 Mtoe in 2015 to 28 in 2025 before returning to 24 by 2035 as older power plants are decommissioned (Ministry of Energy and Coal Industry of Ukraine, 2017^[46]). Addressing its energy security concerns, Ukraine expects to rely on a greater share of renewables in its TPES: from 4% in 2015, Ukraine aims to reach 12% by 2025 and 25% by 2035. The strategy also confronts the country's high energy intensity of GDP, which Ukraine aims to reduce from 0.28 to 0.13 toe per USD 1000 (OECD, 2020^[47]).

Compounding quality concerns with Ukraine's physical infrastructure assets, the state-owned enterprises (SOEs) that run much of the country's energy sector operate at low levels of productivity, lack sufficient transparency and benefit from preferential access to resources, preventing new market entrants (World Bank, 2017^[29]). The OECD reviewed Ukraine's energy sector SOEs with a particular focus on Naftogas and, based on its analysis, recommended that the government continue pursuing reforms begun in 2014. In line with OECD Guidelines on Corporate Governance of SOEs, this will require particular efforts to strengthen the state-owner's ability to professionally and effectively exercise ownership rights, while continuing to improve corporate governance practices within the company. These reforms can go a long way in potentially shielding the group from undue political interference. Additionally, without addressing risks of corruption and breach of integrity in certain areas of the hydrocarbons sector (including notably in gas distribution and supply as well as in licensing) and in the broader reform environment, the full benefits

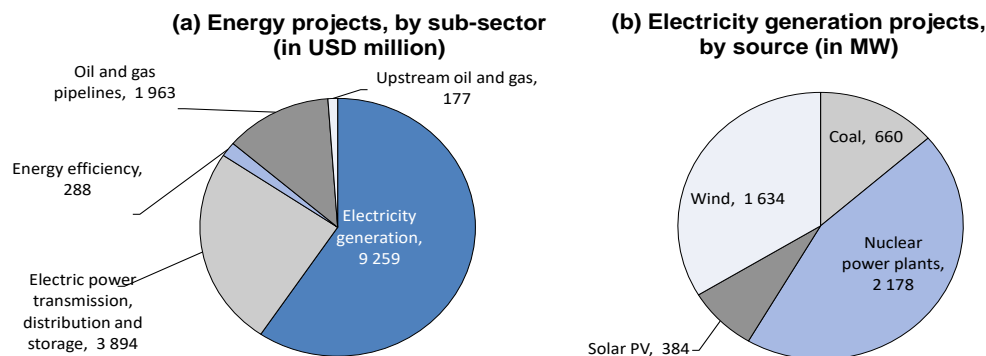
of improved corporate governance practices cannot be realised (OECD, 2019^[48]). Reforms to corporate governance in a few SOEs have already progressed to an advanced stage, but these remain the exception rather than the rule (OECD, 2020^[47]).

OECD analysis aimed at providing recommendations for the government's planned revisions of the *Energy Strategy of Ukraine to 2035* concludes that the strategy is broadly consistent with international commitments (e.g. Ukraine's energy objectives as laid out in the Sustainable Development Goals, the EU-Ukraine Association Agreement) but is inconsistent with existing energy policy objectives. For instance, although the strategy includes plans to liquidate underperforming state-owned coal mines by 2025, it does not lay out any measures to phase out Ukraine's coal-fired thermal power plants. Given that, according to the strategy, Ukraine seeks to integrate with the European Network of Transmission System Operators for Electricity (ENTSO-E) and the European power market by 2023, its continued support for aging, unreliable power plants could prevent effective integration (OECD, 2020^[47]).

According to the OECD's database of large-scale infrastructure projects planned and under construction, Ukraine's current energy investments are predominantly in new power generation projects (59%), with projects in electric power transmission, distribution and storage (25%) and natural gas pipelines (13%) accounting for much of the remainder (Figure 6.9(a)). In terms of new power generation capacity, a single nuclear power project, the addition of two reactors to the Khmel'nitsky NPP, accounts for 45% (Figure 6.9(b)). Construction began on the two reactors, Khmel'nitsky-3 and Khmel'nitsky-4, in the 1980s, but following the 1986 Chernobyl disaster Ukraine adopted a moratorium on new NPP construction in 1990. Although the moratorium was relatively short lived and was repealed shortly after independence, construction on the two reactors has not yet resumed, despite relatively advanced progress on construction (75% and 28% respectively) (IAEA, 2020^[49]). Following renewed interest, the project underwent a feasibility study and has sought and secured financiers (Table 6.3). Renewables are well represented among the power generation projects planned and under construction tracked by the OECD's database, with wind and solar photovoltaic projects accounting for 34% and 8% of new capacity respectively. In addition to nuclear and renewable power generation, Ukraine also plans to add new coal-fired power generation units to the Slavyansk power plant in eastern Ukraine. The proposed expansion of Ukraine's coal-fired generation capacity belies the government's strategic goal of reducing coal's share of the country's TPES in the coming decade. In terms of transmission distribution and storage projects, Ukraine plans to construct a large-scale 1000-MW hydropower pumped storage facility to bolster reliability of supply. The other tracked projects in this sub-sector are refurbishments of existing transmission and distribution infrastructure.

Figure 6.9. Energy projects in Ukraine, by sub-sector (in USD million) and electricity generation projects by source (in MW)

Planned and under construction



Source: OECD analysis based on accessed databases as of June 2020.

Table 6.3. Hotspot projects in the energy sector in Ukraine

(a) Under construction						
Name	Sub-sector	Description	Project value (USD million)	New capacity (MW)	Funding source	Type of investment
Ukraine Municipal Infrastructure Framework Loan	Electricity transmission and distribution	The project will refurbish and extend the life of critical urban infrastructure, including electricity transmission and distribution systems.	868	N/A	EIB	Brownfield
Slavyansk II	Coal-fired power plant	The project will add two new units (6A and 6B) to the Slavyansk coal-fired power plant in eastern Ukraine.	684	660	Donbasenergo;	Greenfield
Hydro Power Plant Rehabilitation Project	Hydroelectric power plant	This project will modernise seven existing hydroelectric power plants across Ukraine, improving efficiency and reliability.	665	N/A	EBRD	Brownfield
(b) Planned						
Name	Sub-sector	Description	Project value (USD million)	New capacity (MW)	Funding source	Type of investment
Khmelnytsky NPP – Units 3 and 4	Nuclear power plant	The project aims to complete construction of a third and fourth VVER-1000 reactor at the Khmelnytsky NPP.	4 000	2 178	Energoatom; Barclays; Skoda	Brownfield
Kaniv Hydropower Pumped Storage Plant	Pumped storage	The project will construct a pumped storage facility providing 1 000 MW of reserve capacity.	1 395		EIB, World Bank, EBRD, Deutsche Bank	Greenfield
Zophia Wind Project	Wind	The project plans to develop the wind farm in three phases: Zophia I (42.5 MW), Zophia II (300 MW) and Zophia III (450 MW).	1 120	792.5	NBT	Greenfield

Note: Refer to the Reader's guide for the present report's definition of 'hotspot' and other information on how the projects above were selected and prioritised. EBRD = European Bank for Reconstruction and Development; EIB = European Investment Bank; NBT = a Norwegian wind power developer.

Source: OECD database as of June 2020.

Industry, mining and water

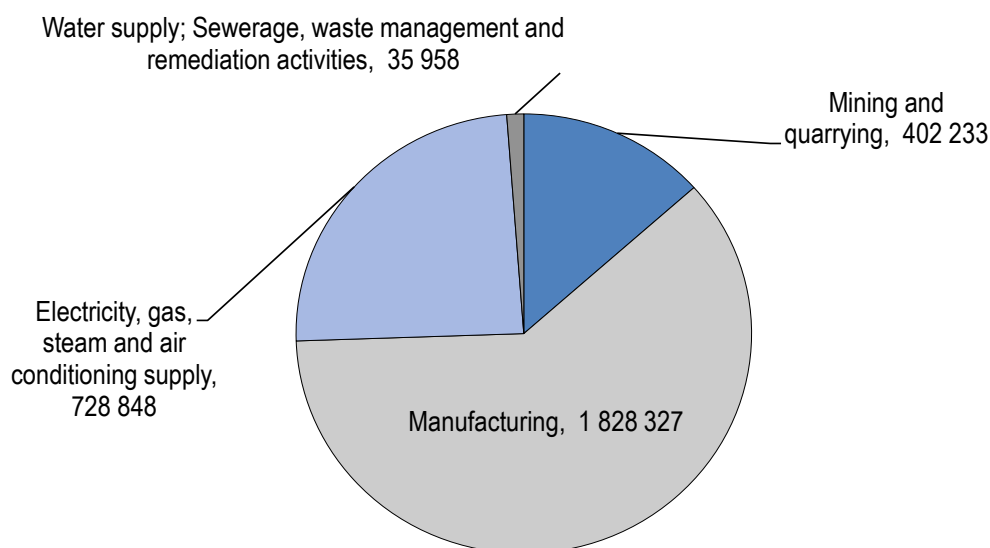
Over time, Ukraine's economy has shifted away from industry and towards services. Industry represented 39% of Ukraine's GDP in 1999 but by 2015 it had fallen to 24%, while services' share increased from 47% to 63% over the same period. Historically, coal mining has been a very important industry in Ukraine, particularly in the eastern Donbas region. In recent years, the ongoing armed conflict in eastern Ukraine, where much of the mining and heavy industry sectors are concentrated, has severely impacted these industries and former workers' employment prospects, since their skillsets are often misaligned with the demands of the labour market elsewhere in the country (World Bank, 2017^[29]). The Russian occupation of Crimea had a similar impact on iron ore mining in Ukraine, since the country lost *de facto* sovereign control over the Kerch iron ore basin, estimated to account for about 14% of Ukraine's reserves (Vorotnikov, 2015^[50]). A long-term strategy for the development of subsoil resources to 2030 was adopted in 2011 (Government of Ukraine, 2011^[51]), prior to the Maidan revolution, but its underlying assumptions no longer correspond to Ukraine's situation.

Mining continues to play an important albeit diminished role in Ukraine's industrial output (14%), overshadowed by the much larger manufacturing sector (61%). The manufacture of food products, beverages and tobacco products accounts for about a third of Ukraine's manufacturing sector, almost twice

as large by value as the manufacture of basic metals and fabricated metal products, the next largest category (Figure 6.10). Ukraine has made the development of small and medium enterprises (SMEs) a central part of its development goals. They employed 6.6 million people in 2017 and generated 61% of added value. By 2024, Ukraine aims to boost these figures to 9.3 million people and 74% respectively. The government also aims to increase industrial production by 4.5-7% annually between 2020 and 2024, placing particular emphasis on the manufacture of machines (7-10% annual growth between 2020 and 2024) (Government of Ukraine, 2017^[52]).

Figure 6.10. Industrial output by NACE* subsector

2019, million UAH



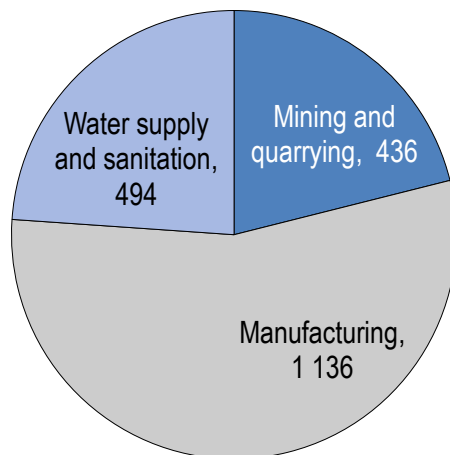
Note: UAH = Ukrainian hryvnia; ** NACE = Nomenclature statistique des activités économiques dans la Communauté européenne [Statistical Classification of Economic Activities in the European Community]

Source: State Statistics Service of Ukraine (2020^[44]), Output of industrial products by types, https://ukrstat.org/en/operativ/menu/menu_e/prom.htm

By number, water supply and sanitation (WSS) projects, particularly the rehabilitation and modernisation of existing systems, represent over half of the projects tracked in the OECD infrastructure database in the industry, mining and water sectors, but due to their smaller average value they cumulatively represent 24% of all projects' value (Figure 6.11). All of the WSS projects tracked by the OECD database are in urban settings, which points to a misalignment in Ukraine's WSS-related investments. Access to WSS services differs considerably across Ukraine, particularly between cities and rural areas, where socioeconomic class becomes a determinant of access to adequate WSS. For instance, in urban areas, over 90% of the population across all quintiles from richest to poorest have access to water and sewerage, while in rural areas access ranges from about 45% for the poorest quintile to about 67% for the richest quintile (World Bank, 2017^[29]). A single large-scale iron ore mining project and two manufacturing projects – a combined sunflower oil plant and biomass project and the modernisation of an existing steel mill – account for 21% and 55% of investments respectively.

Figure 6.11. Industry, mining and water infrastructure projects in Ukraine, by sub-sector

Planned and under construction in million USD



Source: OECD analysis based on accessed databases as of June 2020

Strengths and weaknesses of existing institutional set-up for sustainable infrastructure planning

Strategic planning and links between long-term goals, infrastructure plans and environmental considerations

Ukraine has established a hierarchy of policy planning documents, but some of its most important strategic documents (e.g. the Sustainable Development Strategy 2020, the Medium-Term Government Priority Action Plan until 2020) lack a defined status in the country's legal framework. There are also no requirements or processes for developing sectoral strategies, many of which set the government's objectives referenced throughout the present chapter (i.e. Transport Strategy 2030, Energy Strategy 2035) (OECD, 2018^[53]).

According to Ukraine's existing legal framework, the Government Action Plan identifies the priority tasks of an administration over its mandate, which is then broken down into annual Government Priority Action Plans. The current Budget Code requires an annual budget for the upcoming year and an indicative budget for the subsequent two-year period based on the Government Action Plan, but in practice the annual budget has been the main fiscal planning mechanism. Changes are currently underway, however, with the CMU adopting pilot medium-term spending projections, Future Directions of Budget Policy for 2018-2020 (OECD, 2018^[53]).

Consequently, Ukraine's infrastructure-related development strategies fall outside of its legal framework for strategic policy planning. To improve the coherence of its strategic planning and the links between long-term, medium-term and near-term plans, Ukraine should consider expanding its legal framework for strategic planning documents to include top-level long-term sustainable development strategies and sectoral strategies.

Ukraine has led the way among EaP countries, becoming the first to adopt a long-term low-emission development strategy to 2050, the *Ukraine 2050 Low Emission Development Strategy*, which sets mid-

century GHG emission reduction targets by sector. Ukraine does not, however, have a functional top-level development strategy to follow its Sustainable Development Strategy 2020. Although a draft Sustainable Development Strategy 2030 has been developed, no follow-up to the current 2020 strategy has been formally adopted. Ukraine would benefit from a guiding top-level sustainable development document to 2030 (like neighbouring Moldova) or 2050 (like Kazakhstan) aligned with both the SDGs, its long-term low-emission development strategy and its existing sectoral documents. Such long-term planning documents enable countries to look beyond shorter-term political and business cycles to articulate priorities in terms of economic and social development as well as, crucially, the reconciliation of these goals with environmental concerns.

Ukraine has been a party to the UNECE Convention on Environmental Impact Assessment in a Transboundary Context since 1999 and the related Protocol on Strategic Environmental Assessment since 2015. Ukraine has transposed both agreements into national legislation, but assessment procedures in practice continue to suffer from insufficiencies. Since 2019, one of the main work areas of the EU-funded EU4Environment programme, the successor to the EaP GREEN programme, is supporting reforms and improvements to the environmental assessment processes in Ukraine and other EaP countries. The programme is jointly implemented by the OECD, UNECE, UNEP, UNIDO and the World Bank.

Institutional set-up and decision making processes

Following the 2014 Ukrainian revolution, Ukraine has had five cabinets formed to address different priorities in Ukraine's shifting political landscape. As a result, the number, names and responsibilities of many of Ukraine's infrastructure-related ministry-level institutions have been in flux. In 2019, the Ministry of Economic Development and Trade absorbed the agriculture portfolio to become the Ministry of Economic Development, Trade and Agriculture. Also in 2019, the Ministry of Energy and Coal Mining and the Ministry of Ecology and Natural Resources merged to form the short-lived Ministry of Energy and Environmental Protection (August 2019 – May 2020) before splitting once more. The Ministry of Ecology and Natural Resources retained its earlier name; the Ministry of Energy dropped explicit reference to the coal mining industry in its name while still maintaining coal mining in its portfolio. The Ministry of Infrastructure, responsible for the transport sector, has remained constant throughout these changes, but the 2020 cabinet change led to the creation of a new ministry, the Ministry of Strategic Industries, whose remit will include industrial development. These regular reconfigurations of responsibilities and staff could impede effective policy making and complicate the state's ability to consolidate and implement sustainable policies.

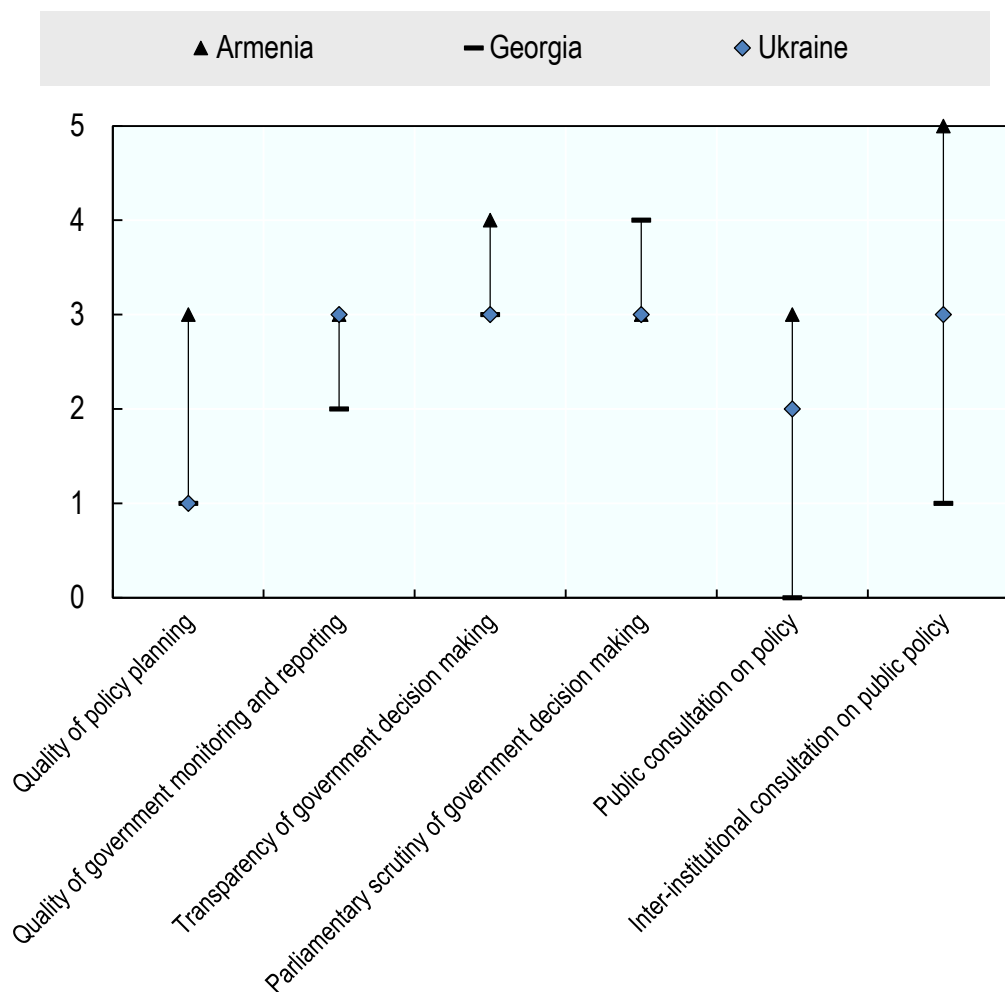
Ukraine's administrative instability and shortcomings in its strategic planning practices jointly lead to incoherent policy directions and implementation. On key policy issues like the state's push towards decentralisation, succeeding administrations have proposed and then retracted various versions of decentralised powers leading to slow and uneven progress towards an uncertain goal. Since there is no overarching plan to guide the prioritisation and sequencing of third-tier activities, such as regional infrastructure development and capacity building for subnational civil servants, stakeholders in the decentralisation process risk acting in an uncoordinated and even contradictory manner (OECD, 2018^[33]).

Ukraine's reforms implemented since 2015 have improved its public investment management system somewhat, notably introducing requirements in the country's Budget Code to base the selection of some infrastructure projects on clearly defined criteria and cost-benefit analysis. Further steps towards strengthening public financial management institutions could ultimately improve infrastructure and service delivery by improving the transparency, efficiency and accountability mechanisms in the use of public resources. Ukraine's prioritisation of reforms that help root out corruption and cultivate public trust in government should continue, since reducing corruption will reduce costly financial mismanagement and augment reform efforts across the government (World Bank, 2017^[29]).

Ukraine's performance on several indicators of the quality of its policy development and co-ordination processes is middling compared to its regional peers, Armenia and Georgia (Figure 6.12). Ukraine's monitoring and reporting procedures, for instance, are better developed than in Georgia and similar to those used in Armenia, but overall Ukraine lags behind its peers on most metrics. Ukraine has, however, demonstrated relatively strong coordination mechanisms between its centre-of-government institutions for the preparation of its Government Priority Action Plan (OECD, 2018^[53]). Such mechanisms should be expanded to the inter-ministerial coordination on other key policy issues, such as infrastructure development and green economy priorities.

Figure 6.12. Policy development and co-ordination indicators

Armenia (2019), Georgia (2018) and Ukraine (2018)



Source: OECD (2019^[54]), *The Principles of Public Administration: Baseline Measurement Report: Armenia*, SIGMA, OECD Publishing, Paris, <http://www.sigmaweb.org/publications/Baseline-Measurement-Armenia-2019.pdf>; OECD (2018^[55]), *The Principles of Public Administration: Baseline Measurement Report: Georgia*, SIGMA, OECD Publishing, Paris, <http://www.sigmaweb.org/publications/Baseline-Measurement-Report-2018-Georgia.pdf>; OECD (2018^[53]), *The Principles of Public Administration: Baseline Measurement Report: Ukraine*, SIGMA, OECD Publishing, Paris, <http://www.sigmaweb.org/publications/Baseline-Measurement-Report-2018-Ukraine.pdf>

List of relevant strategic documents

Table 6.4. Main strategic documents in force

	Status	Time Horizon	Sectoral Coverage	Main objectives
First Nationally Determined Contribution (NDC)	Submitted in 2015	2015-2030	Economy-wide	<ul style="list-style-type: none"> Target: Reduce GHG emissions (including land use, land use change and forestry) by at least 40% compared to 1990 levels by 2030 Main sectors for emission reduction: energy, industry, agriculture
Ukraine 2050 Low Emission Development Strategy	Submitted in 2017	2017-2050	Economy-wide	Target: Reduce GHG emissions by 47% ("energy efficiency" scenario), 67% ("renewable energy" scenario) or 66% ("modernisation and innovation" scenario) by 2050
Concept for Implementation of the State Policy on Climate Change up to 2030	Adopted in 2016	2016-2030	Economy-wide	<ul style="list-style-type: none"> Strengthen institutional capacity for the development and implementation of the country's climate Reduce GHG emissions, including through rate revisions of the tax on carbon dioxide emissions from fixed sources (introduced in 2011)
Sustainable Development Strategy 'Ukraine 2020'	Adopted in 2015	2015-2020	Economy-wide	<ul style="list-style-type: none"> Implement reforms allowing for Ukraine to apply for EU membership by 2020 Become a top 30 performer in the World Bank's Doing Business rankings Reach top 50 ranking in Transparency International's Corruption Perception Index
National Transport Development Strategy 2030	Adopted in 2017	2017-2030	Transport	<ul style="list-style-type: none"> Reduce GHG emissions from mobile sources by 60% (compared to 1990 levels) and total air pollutant emissions from mobile sources by 70% (compared to 2015 levels) Increase share of electric transport in domestic traffic to 75% by 2030 Increase share of alternative fuels to 50% by 2030
Energy Strategy of Ukraine for the period to 2035: "Security, energy efficiency, competitiveness".	Adopted in 2017	2017-2035	Energy	<ul style="list-style-type: none"> Increase the share of renewables in TPES from 4% in 2015 to 12% by 2025 and 25% by 2035 Reduce energy intensity of GDP from 0.28 to 0.13 toe per USD 1000 by 2035
National Renewable Energy Action Plan to 2020	Adopted in 2014	2014-2020	Energy	Increase the share of renewables in energy consumption to 11%
National Energy Efficiency Action Plan to 2020	Adopted in 2015	2015-2020	Energy	Achieve 9% energy savings of average final domestic energy consumption
Programme for the Development of Mineral Resource Base of Ukraine for the Period to the year 2030	Adopted in 2011	2011-2030	Mining	Further develop well-established mining industries (i.e. coal, iron ore) and diversify into other minerals
Concept of the State target programme for the development of airports for the period to 2023	Adopted in 2013	2013-2023	Transport	Modernise major airports in Ukraine (e.g. Kyiv-Boryspil, Odessa, Kyiv-Zhuliany, Kherson, Dnepetrovsk, Zaporizhzhia, Ivano-Frankivsk, Uzhhorod, Chernivtsk)

	Status	Time Horizon	Sectoral Coverage	Main objectives
SME Development Strategy 2016-2020	Adopted in 2015	2016-2020	Governance, industry	<ul style="list-style-type: none"> Enhance competitiveness of SMEs in both domestic and international markets Improve the skills of SMEs and develop a modern entrepreneurial culture Ensure the improvement of the technological ability of SMEs Aim to increase SMEs output by 10% annually by 2020 Increase the number of employees in SMEs by 15% <p>Increase the productivity of SMEs by 7%</p>

Table 6.5. Other relevant documents

	Status	Time Horizon	Sectoral Coverage
Priority Task Action Plan for 2020	Adopted in 2020	2020	Multi-sector
Export Strategy of Ukraine: Roadmap of Strategic Development of Trade	Adopted in 2017	2017-2021	Multi-sector
Strategy for Small and Medium-sized Enterprise Development in Ukraine until 2020	Adopted in 2017	2017-2020	Multi-sector
2030 National Strategy on Waste Management	Adopted in 2017	2017-2030	Waste
Main Foundations (Strategy) of the State Environment Policy through to 2020 / Main Foundations (Strategy) of the State Environment Policy through to 2030	Adopted in 2011, extended in 2019	2011-2020; 2019-2030	Multi-sector
Concept for the State Heat Supply Implementation	Adopted in 2017	Unclear	Heat supply

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Notes

¹ The EU Eastern Partnership (EaP) is a joint initiative for strengthening the relationships between the European Union, its member states and six countries (hereafter the EaP countries): Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine.

² Also known as the Revolution of Dignity and the Euromaidan Revolution.

³ Confirmed case and death figures are underestimates of actual case and death numbers. Methodology and testing rates vary widely, and international comparisons are necessarily flawed.

⁴ As of May 2020, the Ministry of Environmental Protection and Natural Resources. From August 2019 to May 2020, Ukraine's the independent Ministry of Environmental Protection and Natural Resources was merged with the Ministry of Energy and Coal Mining to create the Ministry of Energy and Environmental Protection.



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