Policy Insights

Strengthening the Role of Private Finance in Infrastructure Development in Eastern Partner Countries

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BETTER POLICIES FOR BETTER LIVES

Foreword

Given the scale of infrastructure investment required over the coming decades, Eastern Partner (EaP)[1] countries, like most countries around the world, are seeking to mobilise more private finance for infrastructure development. Strengthening the role of the private sector in infrastructure offers an opportunity to scale up investment in quality infrastructure and help realise efficiency gains in their operation but it is difficult to achieve. The complex nature of public-private interaction requires considerable attention from policy makers for defining the modalities of private involvement, reflecting the long-term costs in the budgetary process and adequately sharing the associated risks between the public and private co-contractors.

This report seeks to provide the countries in the Eastern Partnership region with evidence-based analysis to help them more effectively and efficiently mobilise private finance to address the twin challenge of both upgrading existing infrastructure and developing new infrastructure that can underpin sustainable and inclusive growth.

To this end, this report provides an assessment of EaP countries' infrastructure financing frameworks. The assessment considers:

- the current levels of infrastructure investments and needs;
- the enabling policy, legal and regulatory frameworks for private financing of infrastructure;
- the current suitability and capacity of the financial system for financing infrastructure;
- institutional capacities for developing quality investments and mobilising finance; and
- broader economic and political factors affecting the availability and cost of financing.

Such an exercise can provide a basis for identifying opportunities for expanding and/or diversifying sources of private finance. It can also help to identify impediments that inhibit the flow of private financing for infrastructure investment. Finally, it provides a comparative perspective across the region, promoting knowledge exchange among EaP countries and between EaP and OECD countries.

The report uses data from national statistics agencies, international organisations and a survey of EaP governments in early 2020. The survey includes qualitative assessments by national authorities on aspects of the financial system, infrastructure governance and quantitative data on the most relevant available indicators.

[1] Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova and Ukraine

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Table of Contents

Foreword **3**

Acknowledgments **4**

Acronyms and Abbreviations **9**

Executive Summary **10**

1. Introduction **13**

Infrastructure investment as a force multiplier during economic recovery 13
Creating conducive framework conditions for infrastructure investment 15
Developing infrastructure as an asset class 16

2. Investment Levels and Priorities for Infrastructure Development **20**

Infrastructure investment levels are comparatively low in EaP countries 20
The cost of meeting infrastructure needs in the EaP countries 22
The most urgent investment needs are within the transport and energy sectors 23
Transport sector 26
Energy infrastructure 28
Water supply and sanitation management 31
Digital infrastructure 33
Private participation in infrastructure development remains limited 34
Private and foreign participation in infrastructure play an uneven role in the EaP countries 34
The majority of private and foreign direct investments in infrastructure take place within the framework of PPPs 37
Most EaP countries rely on international donors and development banks for infrastructure finance 39
Domestic sources of infrastructure financing 44

3. Leveraging the Potential for Private Finance in Infrastructure Development **46**

Building an enabling policy framework for infrastructure governance 46
Project pipelines could be developed to improve the quality of infrastructure planning 47
Improving infrastructure governance quality can help attract private investment 48
EaP countries have dedicated PPP laws and units, but the quality of governance could be improved 50
Way forward: Improving infrastructure governance 54
Addressing infrastructure investment risks and obstacles in the EaP countries 56
Macroeconomic investment environment 57
Political risks 61
Way forward: Mitigating risks 65
Strengthening financial sector development and the capacity for infrastructure investment 66
Banking systems in the EaP countries 71
Institutional investors 75
Securities market 79
Way forward: Increasing the capacity of the financial system for infrastructure investments 85

4. Conclusion and Recommendations **88**

References **90**

Tables

Table 1.1. Taxonomy of instruments for infrastructure financing 18
Table 1.2. Risk profile and returns for selected infrastructure assets 19
Table 2.1. Multilateral Development Banks as Infrastructure Investors 42
Table 3.1. Delivery methods in different infrastructure sectors 50
Table 3.2. International good practices for PPP projects 53
Table 3.3. Governance frameworks for infrastructure investment in EaP countries 55
Table 3.4. Key macroeconomic indicators for the Eastern Partner countries, 2018 58
Table 3.5. Sovereign credit ratings for the EaP countries 84
Table 4.1. Recommendations 89

Figures

Figure 2.1. Level of infrastructure investment in EaP countries (% of GDP) 20
Figure 2.2. Gross fixed capital formation (% of GDP) 21
Figure 2.3. Infrastructure Quality Index 2019 24
Figure 2.4. Share of population living in urban areas (% of total population) 25
Figure 2.5. Health impact of air pollution in the EaP countrie 29
Figure 2.6. Electricity production (% of total) 30
Figure 2.7. Carbon intensity (kg CO2/GDP 2010 USD) 31
Figure 2.8. Share of the population without access to safe drinking water (% of total) 32
Figure 2.9. Share of the population without improved sanitation facilities (% of total population) 32
Figure 2.10. Digital infrastructure, 2018 33
Figure 2.11. ICT price basket, 2017 (% GNI per capita) 34
Figure 2.12. Private and foreign investments in infrastructure in the EaP countries (mln USD) and the number of projects 35
Figure 2.13. Sectoral composition of greenfield and brownfield investments into infrastructure with private and foreign participation (mln USD) 36
Figure 2.14. Number of investments and divestitures in the EaP countries 37
Figure 2.15. PPP Capital Stock in 2017 (% of GDP) 38
Figure 2.16. Official development financing disbursed for infrastructure projects (constant USD 2018 millions) 40
Figure 2.17. Sector distribution of development financing for infrastructure (% of total) in 2018 41
Figure 2.18. Infrastructure investments by multilateral development banks (EUR million) 42
Figure 2.19. Direct participation of institutional and foreign private investors in infrastructure projects 45
Figure 3.1. Regulatory framework scoreboard for PPPs in the Eastern Partner countries by the World Bank 53
Figure 3.2. IMF forecast of GDP (y-to-y percent change) 57
Figure 3.3. Exchange rates of EaP currencies in relation to USD 60
Figure 3.4. OECD FDI Restrictiveness Index 62
Figure 3.5. Credendo's country risk assessment 63
Figure 3.6. Control of corruption 64
Figure 3.7. Banking sector and institutional investors' assets (% of GDP) in 2019 67
Figure 3.8. IMF Financial Development Index 68
Figure 3.9. IMF Financial Institutions Index 2018 69
Figure 3.10. Financial Markets Index 2018 70

Figure 3.11. Financial openness index 71
Figure 3.12. Non-performing loans to gross loans (% share) 73
Figure 3.13. Real interest rates in the EaP countries 74
Figure 3.14. Syndicated Loan Issuance volume to GDP (%) 75
Figure 3.15. Institutional investors' assets (% of GDP) 76
Figure 3.16. Insurance companies' gross written premiums (% of GDP) 78
Figure 3.17. Stock market capitalisation (% of GDP) 80
Figure 3.18. Government and corporate bonds in circulation by currency (% of total bonds in circulation) 82
Figure 3.19. Foreign currency reserves in the EaP countries 83

Boxes

Box 1.1. Building Back Better: A Sustainable, Resilient Recovery after COVID-19 13
Box 1.2. Infrastructure as an asset class 16
Box 1.3. Infrastructure finance instruments 17
Box 2.1. Responding to the infrastructure challenge in cities with shrinking populations in the United States 25
Box 2.2. Priority transport infrastructure projects in the EaP 26
Box 2.3. Air pollution is a significant threat to public health in the EaP countries 28
Box 2.4. IFC Pilot projects to develop Ukraine's Road Infrastructure 37
Box 2.5. Multilateral Development Banks as Infrastructure Investors in the EaP 41
Box 2.6. National Development Banks channel financing to priority projects 43
Box 3.1. Monitoring the Energy Strategy of Ukraine until 2035 47
Box 3.2. Regulatory Asset Base Model as an alternative to PPPs 49
Box 3.3. OECD Principles for Public Governance of Public-Private Partnerships 51
Box 3.4. International good practices for PPPs 53
Box 3.5. OECD Draft Recommendation on the Governance of Infrastructure 55
Box 3.6. Improving the Practice of Transport Project Appraisal 56
Box 3.7. Macroeconomic snapshots of the EaP countries 58
Box 3.8. Georgia's Anaklia Port – A case of construction and political risk 64
Box 3.9. Development finance can catalyst private sector finance through blended finance techniques 65
Box 3.10. Banking sector reform in Ukraine 72
Box 3.11. Accelerating the development of the renewable energy sector: the case of Ukraine Sustainable Energy Lending Facility (USELF) 75
Box 3.12. Promoting infrastructure investment by institutional investors 76
Box 3.13. Building the domestic debt market for local currency issuances in Ukraine 81
Box 3.14. An enabling environment for green bonds 84
Box 3.15. Public Infrastructure Funds can facilitate increased private investment 86

Acronyms and Abbreviations

ADB – Asian Development Bank

AIIB – Asian Infrastructure Investment Bank

BEEBPS – Business Environment and Enterprise Performance Survey

CEE – Central and Eastern Europe

EaP – Eastern Partnership

EBRD – European Bank for Reconstruction and Development

EIB – European Investment Bank

ESG – Environmental, social, governance

ETF – Exchange Traded Fund

EU – European Union

FDI – Foreign direct investment

GDP – Gross domestic product

GNI – Gross national income

GFC – Global financial crisis

IFI – International financial institution

IMF – International Monetary Fund

MDB – Multilateral development bank

NPL – Non-performing Loan

PPP – Public-private partnership

OECD – Organisation for Economic Co-operation and Development

RAB – Regulatory asset based model

SOE – State-owned enterprise

TEN-T – Trans-European Transport Network

UN – United Nations

USD – United States dollar

WEF – World Economic Forum

Executive Summary

The gap between current levels of infrastructure financing and estimated future needs confronts most countries, and the six countries of the Eastern Partnership (EaP) are no exception. In EaP countries, governments have set targets of 2-5% of GDP for annual investments into infrastructure. However, to maintain their existing infrastructure while meeting future needs that take into account climate change, urbanisation, and changes in transport and energy production, most countries will need to invest closer to 5-7% of GDP in infrastructure, according to OECD estimates (OECD, 2020[1]). The most accurate comparative estimates of infrastructure investment in the EaP countries suggest that infrastructure investment levels fell short of this benchmark (World Bank, 2019[2]). Beyond the need to upgrade existing infrastructure to improve quality of life and economic prospects, EaP governments face the challenge of building environmentally sustainable energy and transport infrastructure to mitigate climate change and adapt to its effects. The carbon intensity of EaP countries remains high, and renewable energy sources account for only a small share of domestic electricity production.

Public investment alone will not be sufficient to bridge the infrastructure financing gap. EaP governments should consider different ways to increase private and foreign participation in the financing and delivery of infrastructure projects to complement public spending and help realise efficiency gains in the operation and management of infrastructure. Levels of *private* financing of infrastructure projects in more advanced economies tend to be around 2% of GDP. In the EaP, only Armenia reaches this level; private finance hovers under 1% in the other countries. In Azerbaijan and Belarus, the levels of private finance in infrastructure are negligible (World Bank, 2019[2]).

In EaP countries, private investment is most common in the electricity sector. Especially Armenia, Georgia, and Ukraine have attracted notable private and foreign investment to develop power generation infrastructure. For example, Georgia has attracted close to USD 800 million in hydropower projects since 2010, and Ukraine has nearly six-folded the share of electricity produced from renewables since 2015. Overall, the EaP region has attracted close to USD 8 billion in energy infrastructure related investments with private participation since 2010. Despite such achievements, private investment is dwarfed by financing from multilateral development banks (MDBs), which play an indispensable role in developing infrastructure in the EaP countries. MDB infrastructure investments in the region have totalled over USD 28 billion since 1990, and their influence extends beyond financing to include improvements in quality standards and the facilitation of private investment.

Public-private partnerships (PPPs) have gained prominence in many countries as a mechanism to attract private and foreign investment. Most private and foreign investment into infrastructure in the EaP countries takes place under PPP frameworks. In the region, over 90% of completed PPP projects are in Armenia, Georgia and Ukraine. Formal regulatory frameworks for PPPs vary significantly across the region in terms of consistency with international best practice. In the most comprehensive international survey to date, Armenia achieved the region's highest score regarding its procurement framework, but the country had major deficiencies in contract management (World Bank, 2018[3]). The regulatory frameworks for PPPs are relatively well developed in Belarus and Moldova, but PPP projects have been relatively scarce.

The main obstacles to increased private financing of infrastructure include the uneven development of the domestic financial systems, financial actors' lack of expertise and appetite to invest in alternative assets like infrastructure, macroeconomic instability, and an investment environment that discourages long-term investments because of potential interest rate risks, concerns over property rights, and high political risks. Mobilising higher levels of private finance to infrastructure projects goes hand in hand with efforts to build an enabling environment for *all* investments. Structural impediments to private and foreign investment, like the lack of a level playing field between private/foreign companies and SOEs and restrictions on FDI in protected sectors hinder private investment in all sectors but are particularly important to infrastructure, given the complexity and project lifecycle of infrastructure-related investments. Addressing fundamentals such as these will be essential to creating better conditions for investment in infrastructure.

The ongoing COVID-19 crisis is the third economic shock to hit the EaP countries this century, following the Global Financial Crisis and the economic and political shocks of 2014-15. So far, the financial sectors have weathered the crisis reasonably well, and exchange rate volatility has not reached the levels observed during previous crises. The capacity of local financial sectors to provide infrastructure financing is limited, though, especially because of the small role of institutional investors and underdeveloped capital markets. In the emerging markets of Central Europe, institutional investors hold assets equivalent to 20-25% of GDP; in the EaP region, that number is less than 5%. Furthermore, equity markets in EaP countries are virtually non-existent. The importance of institutional investors is growing. This is particularly true of pension funds: recent pension reforms have established them as an integral part of the social security system. Regulatory frameworks limit direct investments in alternative assets by institutional investors in some EaP countries, and the limited availability of financing instruments like infrastructure project bonds complicate the process.

In the long-run, increasing the capacity of domestic financial systems and foreign investors to provide infrastructure finance will depend on efforts to improve the provision of financing and de-risking instruments, while simultaneously improving the quality of infrastructure governance at all stages – from planning and operations to building an enabling environment for all investments. The following recommendations can help EaP governments to strengthen the potential of private finance to support infrastructure development:

- *Improve the quality of infrastructure governance*: EaP governments should set out their strategic goals for infrastructure development in dedicated strategy documents. Governments could do more to develop robust, publicly available project pipelines that list investment opportunities for private investors. Some EaP governments have lists of priority projects and their cost estimates attached to infrastructure strategies, but more could be done to offer detailed and up-to-date information to potential investors through interactive project pipelines. The quality of infrastructure planning could also be improved through the adoption of project preparation funds, which provide funds for feasibility assessments and long-term infrastructure planning. EaP governments could also follow OECD guidelines to improve regulatory frameworks for PPPs and create level playing field conditions for infrastructure investment by addressing overall trade and investment restrictions, improving SOE governance frameworks and ensuring adequate competition.

- *Offer risk mitigation instruments to enable long-term investments*: Investments in foreign currency carry a significant currency risk, and volatile exchange rates discourage long-term investments. EaP governments could do more to promote government-backed de-risking instruments, establishing dedicated guarantee funds to support PPP investments, and promoting blended finance approaches that involve the government and MDBs. EaP governments could also work with MDBs to offer risk mitigation instruments for infrastructure projects. Improving the provision of de-risking instruments should go hand in hand with building an enabling environment for all investments, which means continuing efforts to build a level playing field, enforce property rights, and tackle corruption at all levels of government.
- *Build the capacity of domestic financial systems to support infrastructure investment*: EaP governments could develop equity markets with a focus on infrastructure by supporting the development of equity instruments that mobilise private capital for infrastructure equity investments. Countries could also establish co-financing instruments and partnerships to invest in project equity together with private investors. The establishment of dedicated infrastructure funds or infrastructure development banks could increase the efficiency of public investment. EaP governments could promote debt-financing diversification through the development of capital markets. One of the key ways to do this would be to enhance the frameworks for syndicated lending and the development of infrastructure debt securities, such as infrastructure bonds and green bonds. The above measures should be accompanied by maintaining credible and transparent investment commitments by EaP governments.

1. Introduction

Infrastructure investment as a force multiplier during economic recovery

The quality of infrastructure underpins everything from quality of life to the long-term competitiveness of an economy. Critically, as the world seeks a path to recovery from the COVID-19 pandemic – the most severe global economic and health crisis of the century – infrastructure investment could have a significant multiplier effect. According to OECD estimates, each dollar invested into infrastructure will increase long-term output by more than the original investment. A public investment stimulus of 0.5% of GDP can raise output by 1.6% on average in large advanced economies. Moreover, the lower the initial public capital stock, the higher the rate of return, which means that the benefits of increased infrastructure investment could be particularly significant in Eastern Partner countries. (OECD, 2016[4]). The multiplier effects of infrastructure investments can be particularly important in times of economic crisis. Recent research suggests that the welfare gains from public infrastructure investments, if chosen wisely and executed effectively, can be substantial. According to an IMF estimate, the multiplier effect is up to 0.8, which means that every dollar invested raises domestic welfare by that amount (Ganelli and Tervala, 2016[5]).

EaP governments could consider infrastructure investments as an integral part of their recovery plans to strengthen resilience against external shocks, and to support short-term growth and long-term competitiveness, while addressing deficiencies in current infrastructure and adopting more environmentally sustainable solutions (see Box 1.1). In the short run, priority should be given to increasing the level of government investment into infrastructure projects. In the long run, the governments of EaP countries could seek to increase the role of private participation in the financing of infrastructure projects to complement government spending and financing from IFIs, which play a crucial role throughout the region.

The role of the private sector in delivering and managing infrastructure assets in EaP countries occurs mainly through divestitures of state-owned assets, particularly parts of the electricity grid and natural gas networks. The private sector's role in developing renewable energy infrastructure has also become increasingly prominent, especially in Ukraine, which has developed 40 new solar and wind power plants since 2010. Foreign investors play an active role in these projects, and relatively well-developed PPP frameworks facilitate their participation. In the short-term, the role of foreign investments (other than from MDBs) is likely to be constrained due to the COVID-19 crisis. Global FDI flows are expected to fall by 30% in 2020, the recovery will likely take years, and the effect on emerging economies will probably be even more negative (OECD, 2020[6]). Even the short-term outlook is mired in uncertainty, and recovery to pre-crisis levels of FDI is likely to take years. Therefore, the development of domestic financing sources is an increasingly important priority.

Box 1.1. Building Back Better: A Sustainable, Resilient Recovery after COVID-19

"Build back better" should be the underlying principle of infrastructure investments in the aftermath of the COVID-19 crisis. Continuing business-as-usual investment patterns leaves societies exposed to global environmental emergencies, such as climate change and

biodiversity loss, which in the long run are likely to cause more damage than the current global pandemic. Recovery packages and new infrastructure should be geared towards increasing resilience by building more inclusive, net-zero greenhouse gas emission solutions that take into account the long-term well-being of citizens and the environment on top of short-term economic growth. On a practical level, the EaP governments could consider:

- Screening the stimulus packages for their long-term impact across sustainability indicators, prioritising actions that combine job and output growth with long-term resilience by avoiding locking in emissions-intensive infrastructure.
- Building pipelines of "shovel-ready" sustainable infrastructure projects that can be implemented quickly.
- Increasing the ambition of long-term environmental objectives and ensuring that stimulus packages are aligned with those outcomes. The carbon intensity of EaP countries has steadily decreased but still remains significantly above the OECD average, as the next chapter discusses.
- Actively supporting the development of green finance to improve resilience by encouraging longer-term horizons for financial decisions. The potential for public finance to catalyse private investment could be utilised by increasing lending authority and creating opportunities for co-investment with the private sector.
- Designing public procurement processes that value resilient, low-carbon and innovative solutions. Bids could be ranked based on costs and emissions over an asset's lifetime.
- Providing specific training support for industries affected by the current crisis and longer term de-carbonisation.

The crisis and possible public investments to boost recovery should also be used as an opportunity to fasten the paradigm shift towards smart infrastructure, which the OECD defines as "initiatives or approaches that effectively leverage digitalisation to boost citizen well-being and deliver more efficient, sustainable and inclusive urban services and environments as part of a collaborative, multi-stakeholder process". Better use of data can help urban planners to use resources more efficiently through a better understanding of the state of the existing stock and users' needs. For example, digital monitoring of transport infrastructure use and smart grids can help to use resources more efficiently, which is an essential component in greening the region's energy and transport infrastructure.

Source: (OECD, 2020[7])

Note: For a comprehensive study on financing environmentally sustainable infrastructure, see "*Financing Climate Futures: Rethinking Infrastructure*", (OECD, 2018[8]). Smart cities are discussed in length in "*Smart Cities and Inclusive Growth*," (OECD, 2020[9]).

The role of domestic financial sectors in providing funds for infrastructure development is limited. Their effect is mostly indirect, through the purchase of government bonds. Their capacity could be enhanced through the adoption of financial instruments, such as specific infrastructure bonds or green bonds. Ukraine has led the way: the country issued its first green bonds in November 2019. The market for institutional investors, such as pension

funds and insurance companies, is still in its infancy but is gradually developing. EaP countries could consider developing financial sector instruments as a way to link growth between the region's financial sectors and their role in providing infrastructure financing.

Creating conducive framework conditions for infrastructure investment

The EaP countries can offer investors attractive opportunities across different network sectors, ranging from renewable energy to transport and municipal infrastructure. However, to tap the full potential of private investment, offering financial instruments that facilitate private participation is not enough.

Mobilising higher levels of private finance to infrastructure projects goes hand in hand with efforts to build an enabling environment for *all* investments. Structural impediments to private and foreign investment, like the lack of a level playing field between private/foreign companies and SOEs and restrictions on FDI in protected sectors hinder private investment in all sectors but are particularly important to infrastructure, given the complexity and project lifecycle of infrastructure-related investments. Addressing fundamentals such as these will be essential to creating better conditions for investment in infrastructure.

An accompanying supportive institutional environment of PPP units, procurement entities and privatisation authorities with adequate staff and well defined responsibilities play an essential role in fostering private participation into infrastructure development (OECD, 2015[10]). The *OECD Compendium of Policy Good Practices for Quality Infrastructure Investment*, (OECD, 2020[11]) highlights good practices from OECD countries that pertain to different aspects of infrastructure investment in different project stages. One of the key insights is the need for consistency. The strategic direction and commitment to investments should be preserved even when governments change.

The fundamentals of infrastructure governance are largely in place in the EaP countries, at least in terms of formal frameworks (see Chapter 3 for a discussion on infrastructure governance). However, a gap between the formal institutions and regulatory frameworks, on the one hand, and the informal practices of private and public sector actors, on the other, characterises the wider investment environment and complicates infrastructure investments. Issues relating to the rule of law and corruption undermine contract enforcement and property rights, which are vital for infrastructure investments. The time required to enforce contracts is particularly long in Armenia and Moldova, and the cost requirements are high in Moldova and Ukraine, while the quality and integrity of the judicial process continues to leave much room for improvement, particularly in Azerbaijan, Belarus, Moldova and Ukraine (OECD, 2020[12]).

In parallel, procurement practices in most EaP countries do not create a level playing field between private/foreign companies and preferred local companies and SOEs. An assessment of EaP procurement practices done for the OECD SME Policy Index 2020 highlighted significant improvements in the establishment of e-procurement systems across the region but noted remaining issues relating to the lack of transparency of award criteria and limited institutional capacity of contracting officials to carry out their duties (OECD, 2020[12]).

Finally, it should be noted that SOEs play an important role in developing and managing infrastructure across the EaP region, and improvements to SOE governance would be important to improve the quality of infrastructure delivery and opportunities for private participation in infrastructure projects.

Developing infrastructure as an asset class

At the core of mobilising private finance are efforts to develop infrastructure as an asset class (see Box 1.2). It is important to start with a distinction between funding and financing of infrastructure. Taxpayer revenues or user fees ultimately fund infrastructure, while private finance can include any private investment into infrastructure. Private finance can include SOEs that operate infrastructure and borrow on capital markets, privatisation of infrastructure assets, PPPs or Greenfield investments in infrastructure assets. Infrastructure assets have some distinct characteristics that shape their risk profile both generally and in the local context of the EaP countries.

Box 1.2. Infrastructure as an asset class

The OECD is working closely with other international organisations to support the G20 initiative on creating collaborative approaches to crowd in private capital, especially from large institutional investors to bridge the infrastructure gap. A roadmap for the initiative centres on three over-arching objectives: improving project development, improving the investment environment, and promoting greater standardisation. The objectives are divided into work streams that reflect obstacles to the development of a global infrastructure market, where infrastructure assets would be easy to invest in and easy to trade:

- *Contractual standardisation*: greater standardisation of contracts and documents related to bidding and procurement processes would reduce costs and complexity of infrastructure investments, particularly for international investors.
- *Financial standardisation*: the lack of standardised funding contracts and covenants can lead to unnecessary complexities that hamper investments, especially by large institutional investors with diversified asset portfolios.
- *Project preparation*: poor project preparation and lack of project pipelines can lead to under-utilisation of the potential for private investment and the inefficient implementation of infrastructure construction priorities.
- *Bridging the data gap*: clear and timely data are vital for the establishment and functioning of efficient markets that facilitate investment and trade in infrastructure assets.
- *Financial engineering, risk allocation and mitigation*: accurate risk assessment, availability of securities and diversification instruments, like blended finance techniques, are essential to bring private investment into infrastructure assets.
- *Regulatory frameworks and capital markets*: appropriate legal and regulatory frameworks underpin the investment climate for infrastructure assets. In emerging markets, such as the EaP countries, it is important to ensure the development of deep and liquid financial markets to promote financing in the local currency.
- *Quality infrastructure*: environmental and social sustainability underpins the success of long-term infrastructure investments, but the lack of international parameters and definitions limits the scope for joint-action to support the development of sustainable infrastructure.

Source: (OECD, 2018[13])

Some of the key characteristics that set infrastructure apart from other asset types are:

- *Capital intensity and longevity*: Infrastructure assets often have high up-front costs and in many cases, they do not generate positive cash flows in the early stages of development, marking the need for an investment environment that encourages long-term investments, while minimising expropriation risks and ensuring general economic stability.
- *Economies of scale and externalities*: Many infrastructure assets involve natural monopolies such as highways and water supply that have increasing returns to scale. While such assets often bring tangible benefits to large populations, the costs are often concentrated, and charging users directly is often neither viable nor desirable, making some infrastructure assets less attractive to private investors (see table below).
- *Heterogeneity, complexity and presence of a large number of parties*: Complex legal arrangements often surround infrastructure assets to ensure appropriate sharing of payoffs and risks. The complexity of legal arrangements has the effect of reducing the liquidity of infrastructure assets, again underscoring the need to create an enabling environment that facilitates long-term investment.
- *Opaqueness*: Infrastructure sectors often lack clear benchmarks to measure investment performance, and the information required for investment is often scattered and difficult to access. As a result, infrastructure investment often requires precise knowledge of the local context, making infrastructure assets less appealing to retail investors.

While infrastructure as an asset class has some distinct qualities that set it apart from other assets, different infrastructure assets vary significantly from each other in terms of expected risks and returns for investment. Contracted power generation is considered relatively low-risk and low-return in comparison to telecommunications and merchant power generation, which carry significantly higher risks but also higher potential returns (JP Morgan Asset Management, 2015[14]). The differing risk profiles of different infrastructure sectors reflect differences in access to markets by potential competitors and the risk of capital depreciation. For example, barriers to entry in the railroad sector are relatively high, limiting the risks for private investors, while competition in the telecommunications sector is often much more intense. At the same time, telecommunications technology can often break down, requiring expensive repairs and upgrades. Different delivery models, different levels of private participation and the availability of financing mechanisms in different infrastructure sectors reflect the varying risk and return profiles (see Box 1.3 for details on different types of infrastructure financing instruments).

Box 1.3. Infrastructure finance instruments

The table below describes modes of investment, dividing types of investment into broad asset categories (fixed income, mixed, equity), followed by the main financial instruments in each asset category. Complicating the picture, investors can be both creditors and equity holders, and some investments, especially some PPP contracts, can often have debt-like characteristics. The main market channels follow the finance instruments. Private investors invest into infrastructure projects essentially through two main channels: by investing directly into stand-alone infrastructure projects or by investing through corporate balance sheets and other balance sheet based structures. The nature of the selected infrastructure

asset, risk allocation, regulatory and tax considerations and the type of investor all affect the choice for the most appropriate investment instrument. Small investors are mostly limited to capital pool channels and corporate investments while investors with larger assets can more easily invest directly into individual projects. Of the listed financial instruments mirroring broader capital markets, bond and loan financing are the most common and important for infrastructure projects with private participation. Debt instruments have historically accounted for up to 90% of the total capitalisation of infrastructure projects.

Table 1.1. Taxonomy of instruments for infrastructure financing

Modes		Infrastructure Finance Instruments		Market Vehicles
Asset category	Instrument	Infrastructure Project	Corporate balance sheet/other entities	Capital pool
Fixed income	Bonds	Project bonds Municipal, sub-sovereign bonds Green bonds, Sukuk	Corporate bonds, green bonds Subordinated bonds	Bond indices, bond funds, ETFs
	Loans	Direct/co-investment lending to infrastructure project, syndicated project loans	Direct/co-investment lending to infrastructure corporate Syndicated loans, securitised loans, CLOs	Debt funds (GPs) Loan indices, loan funds
Mixed	Hybrid	Subordinated loans/bonds, Mezzanine finance	Subordinated bonds, convertible bonds, preferred stock	Mezzanine debt funds (GPs), Hybrid debt funds
Equity	Listed	YieldCos	Listed infrastructure & utilities stocks, closed funds, REITs, IITs, MLPs	Listed infrastructure equity funds, indices, trusts, ETFs
	Unlisted	Direct/co-investment lending to infrastructure project equity, PPP	Direct/co-investment lending to infrastructure corporate equity	Unlisted infrastructure funds

Source: (OECD, 2015[15])

Because of their distinct risk and return profiles, different types of infrastructure assets attract investors, who seek to diversify their portfolios (see Table 1.2). For example, unlike most project debt, with infrastructure loans risks are concentrated in the early stage of investment, during the construction phase. After the construction phase, the default rate on infrastructure debt is significantly lower than is the case with other project bonds. The lopsided risk characteristics underscore the role of public policy interventions in mitigating the initial investment and construction risks to enable private investment. Overall, the global recovery rate for infrastructure bonds (83%) is higher than is the case with other project bonds (78%). Infrastructure assets can also have attractive returns on investment. During 2010s, unlisted infrastructure equities in emerging markets have offered both higher returns and lower risks than global equities. However listed emerging markets infrastructure equities have underperformed by having higher risks and lower returns than other global equities (Global Infrastructure Hub, 2020[16]).

Table 1.2. Risk profile and returns for selected infrastructure assets

Sector	Relative risk	Average expected return (%)	Capital depreciation potential
Social infrastructure	Low	5-8	Low
Contracted power generation	Low	6-10	Low
Regulated utilities	Low-medium	8-10	Low-medium
Toll roads	Low-medium	8-12	Low-medium
Airports	Medium	10-15	Medium
Seaports	Medium	11-16	Medium
Freight rail	Medium-high	12-16	Medium-high
Telecommunication infrastructure	High	12-18	High
Merchant power generation	High	14-20	High

Source: Adapted from (JP Morgan Asset Management, 2015[14])

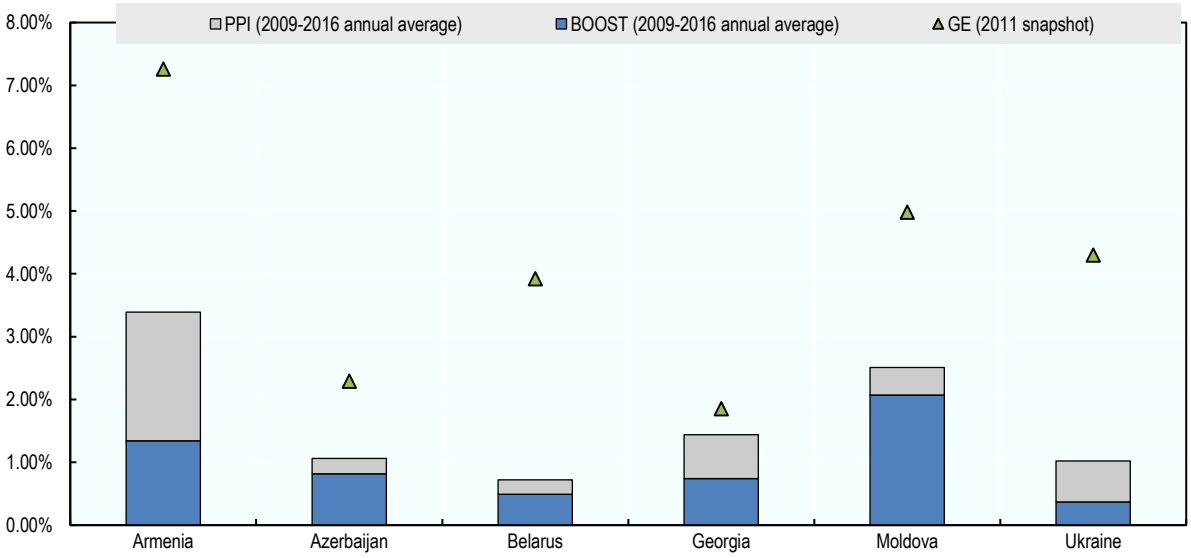
The EaP region faces many obstacles in increasing the prominence of private finance, but recent years have seen increasing attempts to mobilise private investors to bridge infrastructure gaps and meet the region's infrastructure needs, which are discussed in the next chapter. The investment environment is fraught with political and economic risks. Exchange rates are volatile and interest rates high, which discourages long-term investments. Improvements are needed across the board to improve the quality of infrastructure governance to identify priority projects and create a transparent investment environment. Broader structural reforms to establish and consolidate rule of law and a playing level field are vital to assure investors that their investments are safe from expropriation risks and that the investment environment is predictable beyond the short term. Private and foreign investment has the potential to be an important piece in the puzzle of how to upgrade the region's infrastructure to meet current and future needs, but it can only be part of the solution to the bigger problem of a gap between current levels of investment and future needs.

2. Investment Levels and Priorities for Infrastructure Development

Infrastructure investment levels are comparatively low in EaP countries

Estimating levels of infrastructure investment is far from straightforward since investments are spread across different government ministries, agencies, and private and public sector companies. Definitions of infrastructure also vary across countries. Accounting for different measures and definitions, one of the most detailed cross-country estimates of combined private sector and public sector investment shows two sets of estimates on infrastructure investment (see Figure 2.1 for the estimates and figure note for the different methodologies). Considering that one is likely an overestimate and the other an underestimate, the infrastructure investment levels are unlikely to exceed 5% of GDP in any EaP country (World Bank, 2019[2]). According to the World Bank estimate, in the 15 old EU member states, infrastructure investment rates since 2000 have been between 3% and 4%, while in the countries that joined the EU after 2004, the investment rates stand at around 5% of GDP.

Figure 2.1. Level of infrastructure investment in EaP countries (% of GDP)

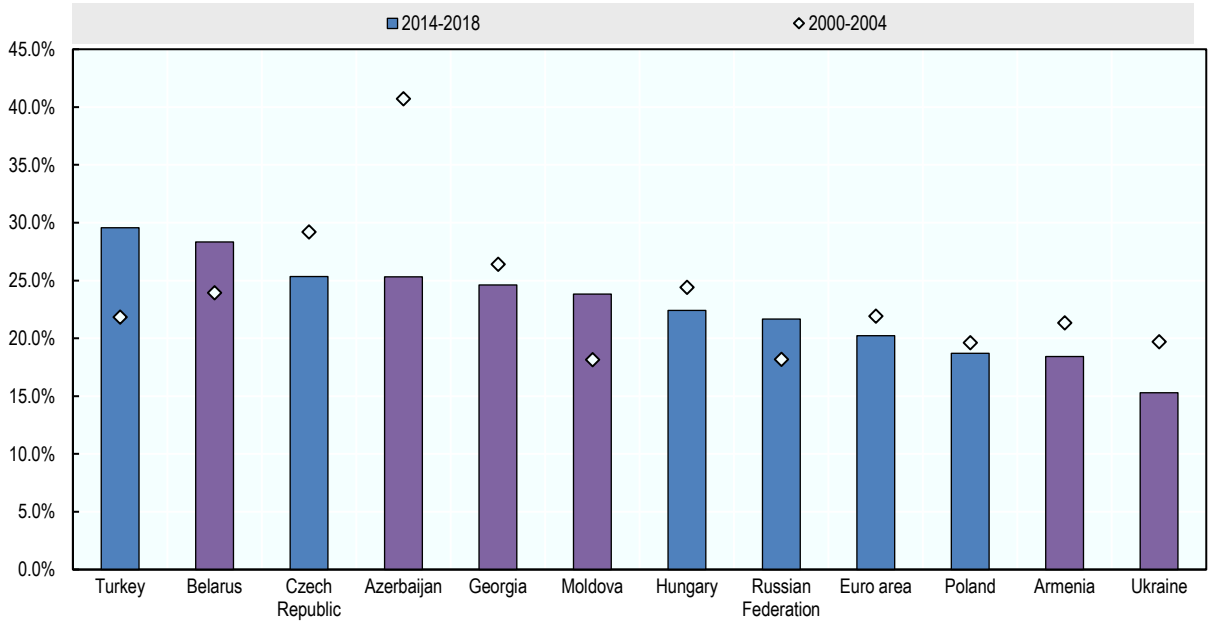


Note: The estimates on infrastructure spending draw on three different datasets. The World Bank Private Participation in Infrastructure (PPI) dataset combines private investment commitments (not materialised investments). The World Bank BOOST Public Expenditure Database measures central government investments into infrastructure. However, it excludes investments by SOEs. The combined BOOST and PPI investments are likely to be an underestimate of the actual infrastructure levels. The adjusted data from World Bank's Whole Public Sector (GE) provides data on central government investments and investments done by SOEs as a snapshot of 2011. The GE database is likely an overestimate as it also covers non-infrastructure investments into mines and other fixed assets despite adjustments to limit the inclusion of non-infrastructure assets.
Source: Adapted from (World Bank, 2019[2])

General government investment and overall capital stock formation levels further reflect divergence within the region regarding investment in capital assets. Of EaP countries, investment levels (both government investment and fixed capital formation levels) are low

in Armenia and Ukraine, but in the rest of the region, the investment levels are comparable to Central European members of the European Union (Figure 2.2). In Armenia and Ukraine, the average central government investment levels in the 2010s have not recovered to reach levels before the Global Financial Crisis. The effect of low investment levels is reflected in the relatively low value of the public capital stock. The stock of public capital includes other government-owned assets apart from infrastructure, but low levels of public capital suggest public investment needs. Except for Azerbaijan and Ukraine, the general government capital stock is low relative to GDP when compared to peer countries – and in Ukraine's case, it has been falling over the last two decades. Investments in capital stock are an important factor in increasing productivity, but public investment (like other investments) is subject to diminishing returns. When the ratio of public capital to GDP rises too high, the marginal benefit of further accumulation declines, and a very large public capital stock may entail heavier tax burdens, to sustain investment and maintain existing capital stock. Estimates vary, but recent research suggests that the optimal level of public capital stock in OECD countries ranges between 50% and 80% of GDP (Fournier, 2016[17]). In OECD countries, actual levels range from 30 to 60%, with highest levels of existing capital stock and investment in Canada, Norway, New Zealand, and the United States.

Figure 2.2. Gross fixed capital formation (% of GDP)



Note: EaP countries are coloured in purple
Source: World Bank World Development Indicators (World Bank, 2020[18])

Globally, private participation in infrastructure markets has increased during the past decade although the volume of private investments in the primary markets has stagnated especially in advanced economies. In 2010, the total investments with private participation amounted to USD 322 billion of which 36% were in secondary markets (the trade of existing infrastructure assets). In 2019, the total volume of infrastructure markets had grown to USD 513 billion, while the share of secondary markets had increased to 75%. The volume of primary investments into greenfield and brownfield investments declined by 4% from USD 156 billion to USD 106 billion. Majority (77%) of primary investments took

place in high-income countries, but the investment patterns are shifting. Private investments in the mature European markets have declined, while the share of emerging markets has grown. Asia Pacific region and the renewable energy sector have been the most successful in attracting private investment during the past decade (Global Infrastructure Hub, 2020[16]).

The cost of meeting infrastructure needs in the EaP countries

The key strategy documents that outline the priorities of infrastructure investment set key performance indicators, e.g., percentage increases in the share of the population with an improved water access or kilometres of new railroads built. In some EaP countries, they also set investment targets for different sectors, offering an indication of the level of investment needed to meet the region's infrastructure needs. Armenia's infrastructure strategy sets investment targets in the energy, transport, and water sectors, totalling 2.4% of GDP in annual investments by 2025. Of the target, 1.4% is earmarked for the transport sector, 0.7% for the water sector, and 0.3% for the energy sector. In Belarus, the overall infrastructure investment target for years 2021-2030 is USD 50.5 billion, which would total 8% of GDP in annual investments based on 2019 figures of Belarus's GDP. The figures for Armenia and Belarus, however, are not comparable because of different definitions of infrastructure. The Armenian infrastructure development strategy lists four categories of investment: drinking water, irrigation, transport and energy. The Belarusian equivalent does not include separate water or irrigation categories but instead lists in their place social and municipal infrastructure, which represent a significant proportion of the country's real estate market. The annual investment targets in proportion to GDP are largest in the municipal sector, with 3.4% of GDP, followed by the transport sector, with 2.8%, the social sector, with 1.1%, and the energy sector, with 0.8%.

It is estimated that to sustain steady economic growth, overall investment rates of 25% to 30% of GDP are required, and more specifically, public investment in infrastructure projects should be in the range of 5% to 7% of GDP (Groce and Gatti, 2014[19]). Putting the figures into global context, OECD estimates that the global infrastructure needs add up to USD 95 trillion from 2016 to 2030, meaning an annual investment of USD 6.3 trillion, which is roughly 7.5% of global GDP. Most investments are required by the transport (43%) and energy (34%) sectors. Considering the impact of climate change, further investments are needed to mitigate the effects of environmental degradation. To limit the global temperature rise to 2°C, annual investments in infrastructure should reach USD 6.9 trillion (8% of global GDP). Estimates of the need for infrastructure investments vary, but even conservative assessments show a gap between the level of actual investments and investment needs. The gap between estimates of investment trajectories and needs is around 0.5% of world GDP, according to one estimate (McKinskey, 2016[20]).

The optimal investment level depends on number of factors, from the quality of the existing capital stock, the level of ambition with respect to the quality of infrastructure countries want to develop, and their goals in adopting more environmentally sustainable energy and transport infrastructure. A World Bank study suggests that in a minimum spending scenario, low- and middle-income countries need to invest roughly 2% of their GDP annually to achieve some progress in the implementation of the United Nation's sustainability goals by 2030 (Rozenberg and Fay, 2019[21]). In the maximum spending and maximum progress scenario, the level of infrastructure investment would reach 8% of GDP, but this is probably far above optimal levels. Smart planning that increases the use of existing infrastructure, smart policies that increase efficiency in urban planning, and good governance of infrastructure projects can significantly bring down the level of

required investments to around 5% of GDP annually (for OECD guidelines on governance of infrastructure projects, see Box 3.5.).

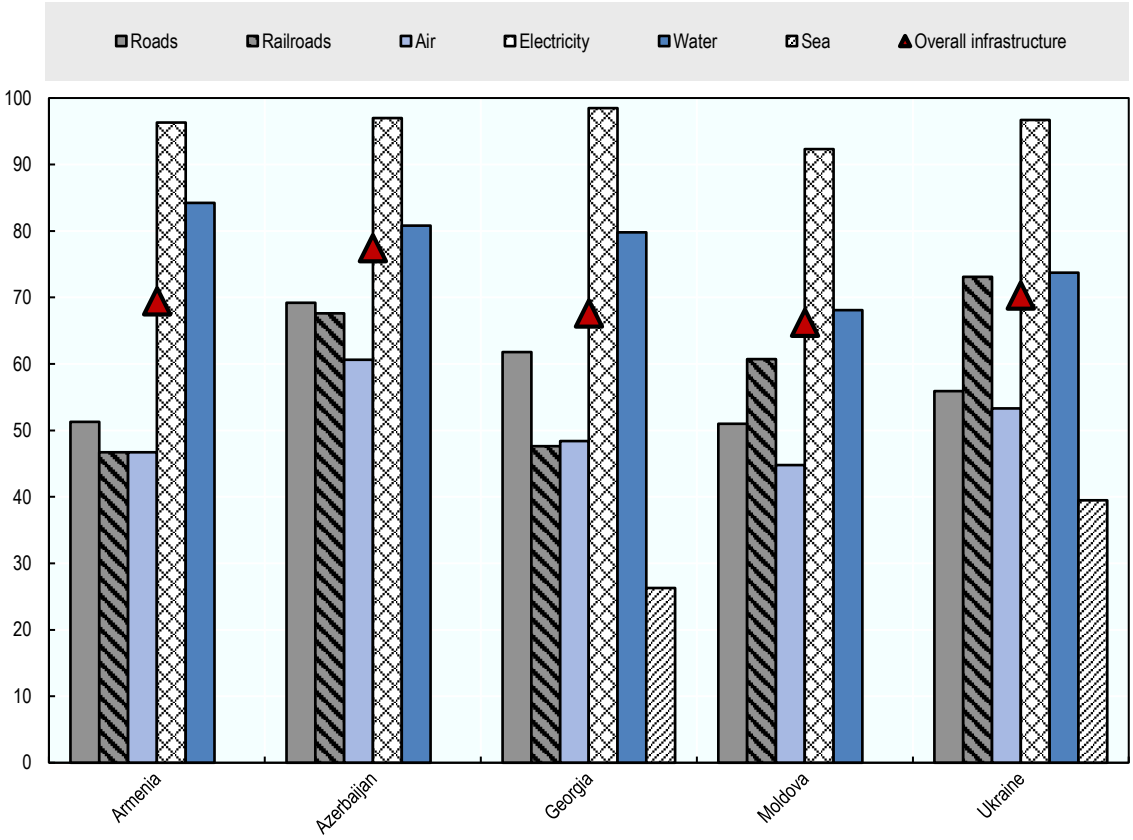
Regardless of the optimal level of infrastructure investment, the generally low levels of investment in EaP countries and deficiencies in existing infrastructure point to a wide gap between existing and optimal levels of investment. Among EaP countries, the Global Infrastructure Outlook has estimated the infrastructure gap only for Azerbaijan. Its infrastructure gap is projected to be less than 0.5% of GDP, but considering that Azerbaijan's infrastructure investment levels are highest among the EaP countries and its infrastructure assessed to be of relatively high quality, the gap is likely to be much wider in the rest of the region.

Debt financing is often a reasonable option for infrastructure, as it allows the spread of construction costs over an asset's lifetime. The government debt levels of most EaP countries are relatively low, but the main challenge is access to finance. Enhancing the efficiency of domestic financial markets to provide finance for infrastructure development can be part of the solution, especially in the medium-to-long run. In the European Union, the private sector financing of infrastructure is far more prominent in old than new member states. In old member states, private sector participation rates have been above 2.5% of GDP, while in new member states the rates have stayed under 1.5% (EIB, 2013[22]). Armenia is the only EaP country with a significant proportion of private financing of infrastructure (over 2%), while in the rest of the region, the private share does not exceed 1%. In Azerbaijan and Belarus the share of private sector finance is very low (World Bank, 2019[2]).

The most urgent investment needs are within the transport and energy sectors

The quality of existing infrastructure in the EaP region varies significantly across countries and sectors, reflecting diverging levels of economic development. In the WEF infrastructure index, Azerbaijan has the highest score for the overall quality of its infrastructure. Azerbaijan is ranked 38th out of 141 countries in the index, Ukraine 57th, Armenia 60th, Georgia 73rd, and Moldova 76th. Belarus is not included. Compared to other middle-income countries, the EaP countries have a relatively high level of utility infrastructure, but the quality of transport infrastructure is relatively low, with the exception of railroads, which are of relatively good quality across the region.

Figure 2.3. Infrastructure Quality Index 2019



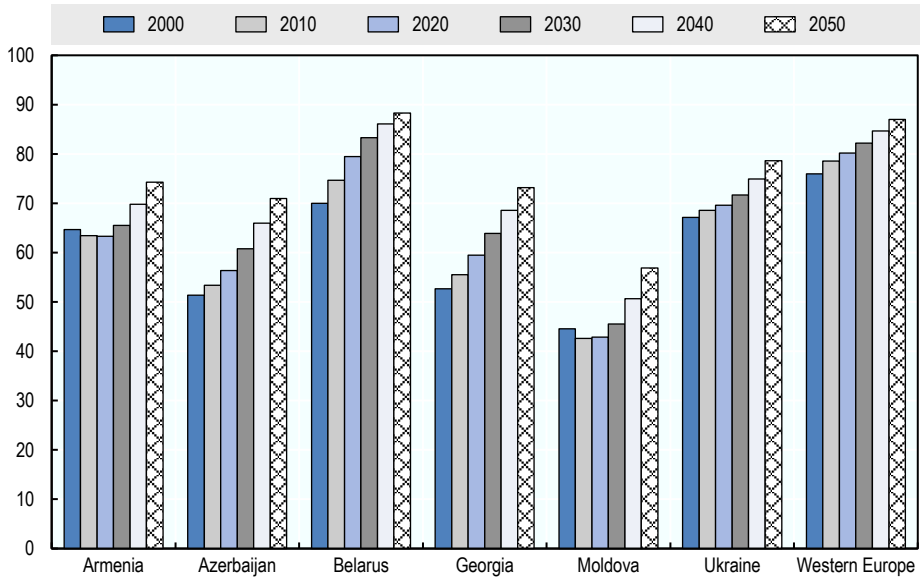
Note: Scores are on the scale 0 (worst) to 100 (best); Belarus is not included in the report. *Source*: World Economic Forum Global Competiveness Report 2019 (World Economic Forum, 2019[23])

Infrastructure needs in the EaP countries are not uniform and one of the underlying factors explaining the divergence is the uneven pace of urbanisation. In Belarus, 80% of the population live in urban areas, which is comparable to the average in Western European countries. In contrast, Moldova is one of only two European countries where more than half of the population lives in rural areas. Rural areas are more likely to suffer from poor quality of infrastructure, e.g., lack of access to proper sanitation facilities. Further, from the perspective of financing infrastructure development, rural areas are the most problematic. On one hand, the investment needs are apparent in the light of basic development indicators. On the other hand, low population density and remote locations raise the cost of provision substantially and reduce the revenue potential: fixed costs are high but the user base is relatively narrow. The EaP countries have successfully improved access to clean water, sanitation and the quality of electricity supply for their populations, but the remaining proportion who lack those basic needs often reside in remote areas. Such investments are often unlikely to be attractive to private investors, and from the point of view of public investment, the same resources could in many cases benefit a larger number of people in an urban area and would spur more economic activity, increasing subsequent tax revenues.

Shrinking populations and urbanisation underpin the future infrastructure needs in the EaP countries. The UN estimates that the region's total population will fall from the current 74.3 million to 64.6 million by 2050. Only Azerbaijan's population is expected to grow,

while those of Moldova and Ukraine are expected to decline by 20% by mid-century. Depopulation primarily affects rural areas and smaller cities. UN estimates suggest that in Armenia, Azerbaijan, Georgia, Moldova, and Ukraine, the pace of urbanisation will increase significantly towards 2050. In Moldova and Ukraine, the projected increase in urbanisation is mainly a reflection of the increasing concentration of (shrinking) national populations in cities, while the sizes of the largest cities are not expected to grow. In contrast, Baku, the capital of Azerbaijan, is expected to continue its rapid growth. The EaP governments need to balance investment into infrastructure in the most important cities, where returns are likely to be highest, with the need to maintain adequate quality of infrastructure in rural areas (see Box 2.1).

Figure 2.4. Share of population living in urban areas (% of total population)



Source: UN Estimates and Our World in Data

Box 2.1. Responding to the infrastructure challenge in cities with shrinking populations in the United States

Ageing and shrinking populations in EaP countries (with the exception of Azerbaijan) pose a challenge to policymakers, especially outside the capital cities. Shrinking user base means that the cost per user goes up and some infrastructure assets are not used at their full capacity. At the same time, decommissioning infrastructure is often expensive both politically and economically. A landmark study on responses to shrinking populations in US cities points to different ways cities can respond to the challenge:

- Shrinking cities can adopt a “triage” approach to infrastructure by systematically evaluating the cost of maintenance and decommissioning of local infrastructure

assets. Especially some redundant roads and bridges can be decommissioned without jeopardising the transport needs of the local community.

- Better data and asset management practices can help cities to accurately understand the current state and future needs of their infrastructure assets.
- Cities can pool resources and try to repurpose some infrastructure assets. For example, nearby cities if possible can combine waste water management.
- When decommissioning infrastructure, recycling materials can reduce the costs.
- Flexible solutions reduce risks. While the general demographic trends point to declining populations on the national level, predicting population changes on the local level can be difficult. Therefore, lock-in investments pose a bigger risk in areas with declining populations. For example, railroads cannot be easily moved, while bus routes can be rerouted.

Source: (Hoornbek and Schwarz, 2009[24])

Transport sector

In the survey, the EaP governments highlighted the transport sector—especially road infrastructure—as a priority area for investment. In many parts of the region, even key intercity and cross-border roads are of insufficient quality. Azerbaijan has a notably higher quality of transport infrastructure than the other EaP countries. It scores particularly highly regarding the efficiency of its train services, ranked as the 11th best in the world in the WEF infrastructure index. The gap between Azerbaijan and the other EaP countries is notable; Ukraine, second-best in the region, is ranked 34th. Armenia and Georgia have the lowest scores in terms of transport infrastructure. In the case of Armenia, its main issue is its low level of road connectivity. In the largely mountainous country, many rural areas in the south are served only by unpaved dirt roads, which are subject to weather disruptions, especially during the winter months. In Georgia, the low quality of port infrastructure is the main issue underlying the country's low score in the index. Internal connectivity is also weak, with one third of secondary and half of local roads in poor condition (World Bank, 2018). Despite achieving higher overall scores in terms of the quality of transport infrastructure, Moldova and Ukraine have the region's poorest road infrastructure. Ukraine is ranked 114th, and Moldova 129th. Their dismal ratings on underlie the need for significant investments to upgrade road networks in both countries (World Economic Forum, 2019[23]).

The EU's Eastern Partnership Transport Panel, a collaboration between the EaP governments, the EU, the World Bank, and civil society representatives, compiled an indicative Investment Action Plan to help decision-makers in the region to prioritise strategic investments in transport infrastructure (Box 2.2.). The plan identifies priority investments of approximately EUR 12.8 billion up to 2030, of which EUR 7.5 billion is allocated to road infrastructure projects. The plan includes 27 ongoing projects across the region. The undisbursed investments related with the ongoing projects total EUR 4.4 billion (EU Eastern Partnership Transport Panel, 2019[25]).

Box 2.2. Priority transport infrastructure projects in the EaP

Armenia is a landlocked country with transport connections via the north-south road corridors to Georgia and Iran - vital for access to Black Sea ports. Projects to upgrade the road connections between the northern Armenia city of Vanadzor and Georgia, and between the city of Gyumri and the Armenia capital, Yerevan, are ongoing. The linkage projects amount to EUR 203 million in remaining investment. Only one major road connects the southern part of the country to the capital, a mountainous road in poor condition. Reconstruction to a highway standard with a potential greenfield project to create a shortcut through the mountains in Kajaran would cost around EUR 450 million. In total, the prioritised transport projects would cost EUR 732 million. The Armenian Development Strategy 2014-2025 sets the target for public investments into transport infrastructure to reach 1.4% of GDP by 2025, of which 1.25% is aimed at road construction and maintenance.

Azerbaijan plays a key role in connecting the South Caucasus to Central Asia. The port in Baku acts as a major transport hub with freight connections to ports in Aktau, Kazakhstan, and Turkmenbashi, Turkmenistan. Azerbaijan's role as a transport corridor was enhanced by the opening of the Baku-Tbilisi-Kars railway in 2017, connecting Azerbaijan and Georgia with the Turkish railway network. The TEN-T investment plan prioritises the creation of 6 logistics centres and the completion of remaining signalling, telecommunications and electrification along the railway. The total cost of prioritised projects would be EUR 2.1 billion.

Belarus has road infrastructure in relatively good shape compared to Ukraine and Russia, but the influence of Soviet central planning, which prioritised connections between Belarusian cities and the rest of the Soviet Union, rather than between countries, overshadows the highway system. An ongoing project to complete a ring road around Minsk is expected to reduce traffic congestion in and around the capital. In total, the priority projects would cost EUR 1.2 billion. Belarus's infrastructure development strategy sets the target of USD 17.1 billion in transport infrastructure investments for the period 2021-2030.

Georgia is centrally located in the South Caucasus, making it a vital link in transport corridors in the region, connecting Armenia to Russia, and Azerbaijan to Turkey. A longstanding plan to construct a deep sea port in Anaklia could turn Georgia into a major transport hub in the Black Sea region. However, the construction plans were suspended in January 2020. The east-west road network needs upgrading, and the mountainous terrain adds to the project's price. A highway to connect Tbilisi and Kutaisi would cost EUR 1 billion. Overall, the priority investments would cost EUR 3.4 billion.

Moldova suffers from decades of underinvestment and lack of maintenance in its road structure. An upgraded core road corridor that would cut through the country would cost EUR 337 million. Overall, the prioritised projects would cost EUR 917 million. The construction of the M2 ring road around the capital, Chisinau, the M5 Balti-Criva highway, and the upgrade of roads connecting Moldova to Romania are among the most important short-term projects for a country considered one of the poorest in Europe.

Ukraine has eight cities with populations above 500 000, but the internal road networks are in a very bad condition. The lack of appropriate infrastructure is highlighted by the level of traffic congestion. In a recent global ranking of 600 cities across the world by the level of traffic congestion by TomTom, four Ukrainian cities were among the fifty most congested cities in the world, with Kyiv ranked as the 12th most congested city in the world (TomTom, 2020[26]). Major investments would focus on upgrading the highway between

Kyiv and Odessa, and upgrading the ports along the Black Sea and Dnieper river. The overall investments would total EUR 4.5 billion.

Source: Survey of the EaP governments, (EU Eastern Partnership Transport Panel, 2019[25])

Energy infrastructure

Nearly 100% of the population in the EaP countries has access to electricity, but the reliability and cost of electricity supply remain problematic in some countries and especially in the rural regions. Moldova has the region's lowest score for the quality of the electricity supply in the WEF infrastructure index, ranking 110th. Reliability issues are particularly cumbersome for businesses that rely on steady supply of electricity. According to the World Bank/EBRD Business Environment Survey, firms in EaP countries, other than Georgia, experience less than one power outage per month, which is comparable to Central European average. In Georgia, electricity supply is less reliable, and firms experience over two power outages on an average month.

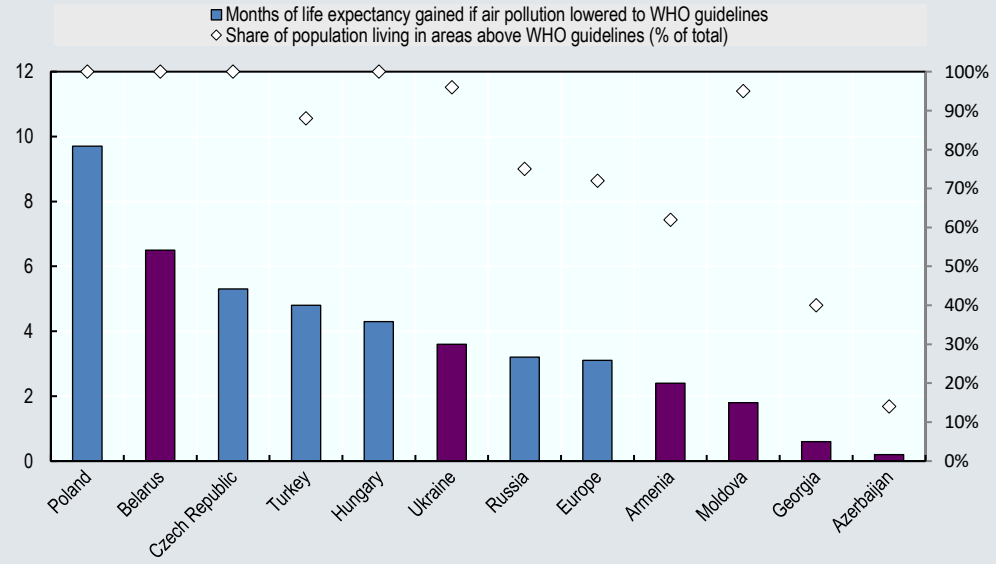
Box 2.3. Air pollution is a significant threat to public health in the EaP countries

Air pollution exacerbates the negative health effects of cardiovascular problems, obesity and other diseases. According to the Institute for Health Metrics and Evaluation, almost 9% of deaths globally and 4% of deaths in western Europe in 2017 were attributable to air pollution as a risk factor. Use of fossil fuels, old cars, wood burning by households and technologies without adequate filtering of emissions result in high levels of outdoor air pollution, which exposes the populations in the EaP countries to significant health risks. High levels of air pollution and resulting health problems underline the need for significant investments into clean energy infrastructure and low-emission transport solutions.

According to the University of Chicago's Air Quality Life Index, over 90% of the populations of Belarus, Moldova, and Ukraine live in areas where the levels of air pollution exceed WHO guidelines. In Azerbaijan and Georgia, the situation is markedly better. Countries in Central and Eastern Europe suffer significantly more from the effects of poor air quality compared to western European countries. According to the index, Belarus has the second worst air quality in Europe after Poland, lowering the overall life expectancy of its population by over 6 months. Overall, air quality has improved significantly in Europe over the last 20 years. Europeans on average are now exposed to 41% less to small particles, increasing overall life expectancy by over nine months. The improvements have been even more significant in the most polluted areas. In the

industrial heartland of Poland, the Silesian province, life expectancy increased by over two years during the past twenty years due to improved air quality.

Figure 2.5. Health impact of air pollution in the EaP countrie



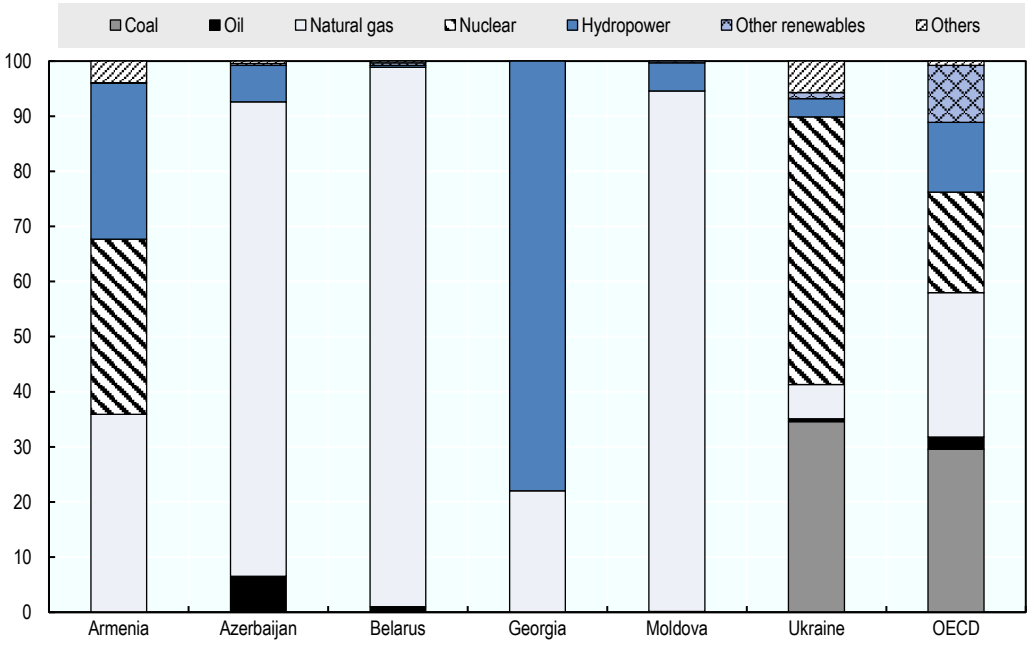
Note: EaP countries are coloured in purple
Source: (University of Chicago, 2020[27])

The EaP countries are all signatories to the Paris climate agreement, which seeks to limit global temperature rise this century to 2 degrees Celsius above pre-industrial levels. However, the level of investment in renewable energy remains low in EaP countries. Armenia and Georgia produce a significant proportion of their electricity using hydropower, and Armenia and Ukraine produce much of their electricity with nuclear power, reducing the use of carbon-intensive energy sources like coal. The use of other renewables, though, remains small-scale, with only Ukraine producing more than 1% of its energy with them (in 2019, renewables accounted for 9% of electricity production). Encouragingly, the construction of solar and wind power plants has increased in Ukraine, and the rest of the region has much potential in their utilisation as well (IJGlobal, 2020[28]). In addition to wind and solar power, extensive natural gas utilisation underlines potential for the increased use of biogas, since the existing infrastructure can be used in the use of gas from agriculture and waste management.

In the future, the existing natural gas network potentially will be part of the increased use of hydrogen to power industry, transport and electricity production. A recent study argues that by mid-century, an extensive and interconnected hydrogen infrastructure could be constructed in the EU mainly on the basis of existing pipeline networks, with three-quarters based on existing and one quarter on new pipelines (Buseman et al., 2020[29]). The conversion of natural gas infrastructure to the use of hydrogen could be a relatively low cost step in comparison to other renewables. Neither hydrogen nor any other energy solution will alone be sufficient for the transition to a low-carbon economy, but the example

of hydrogen illustrates how some of the solutions can build on existing infrastructure in the EaP countries.

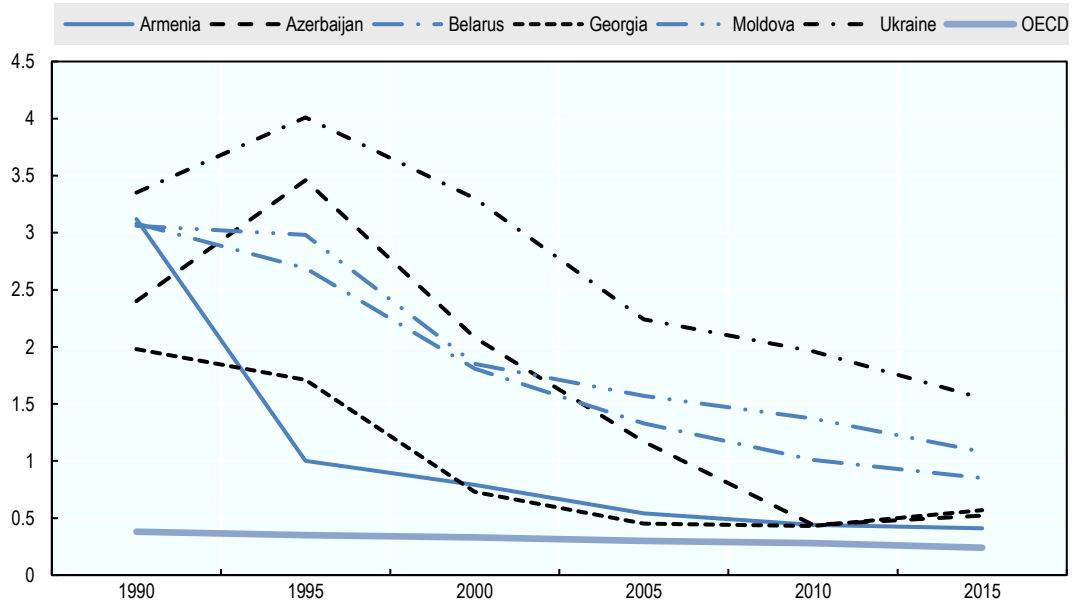
Figure 2.6. Electricity production (% of total)



Source: World Bank Development Indicators, 2015

The energy efficiency and carbon intensity of the EaP countries has gradually improved, but the EaP economies remain significantly more carbon-intensive than OECD countries (see Figure 2.7). In the early 1990s, the region entered the transition, starting from a highly polluting and energy intensive economic model under the planned economy. The dramatic decline in output at the start of the transition was accompanied by a significant drop in total CO2 emissions. In the process, greenhouse gas emissions and economic growth were largely decoupled, and when the economic growth resumed, greenhouse gas emissions remained on a lower level, showing that rising emissions were not an inevitable consequence of economic growth. The steady decline in the carbon intensity continued across the region until the early 2010s. Nevertheless, over the past decade, the trend has levelled out in Armenia, Azerbaijan, Belarus, and Georgia, suggesting that continued progress will require further investments in energy efficiency and sustainable energy infrastructure. Further progress will also be difficult to the extent that earlier rapid reductions in carbon intensity reflected underlying structural changes associated with the transition (particularly the faster growth of services and the declining share of industry in GDP) that have largely run their course.

Figure 2.7. Carbon intensity (kg CO2/GDP 2010 USD)

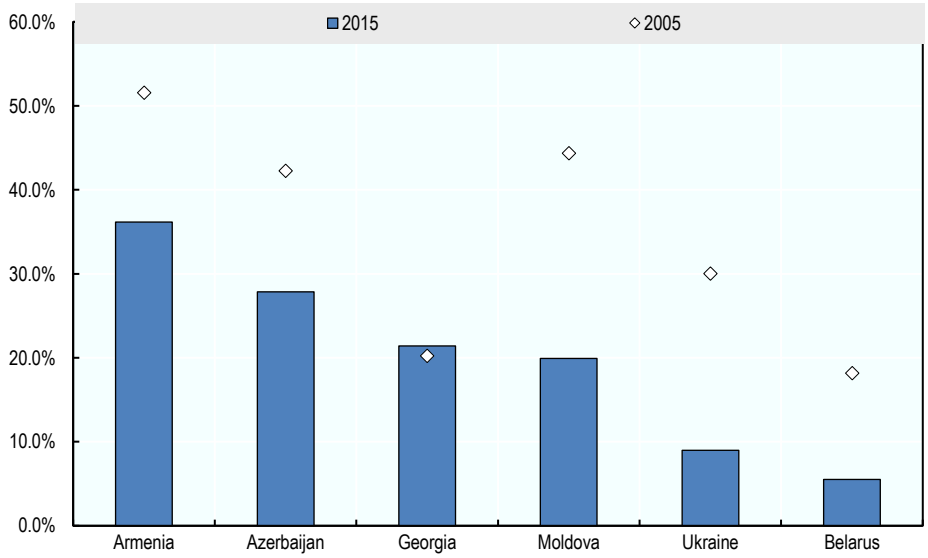


Note: CO2 Emissions from fuel combustion only (excluding e.g. agriculture). Emissions are calculated using IEA's energy balances and the 2006 IPCC Guidelines.
Source: International Energy Agency.

Water supply and sanitation management

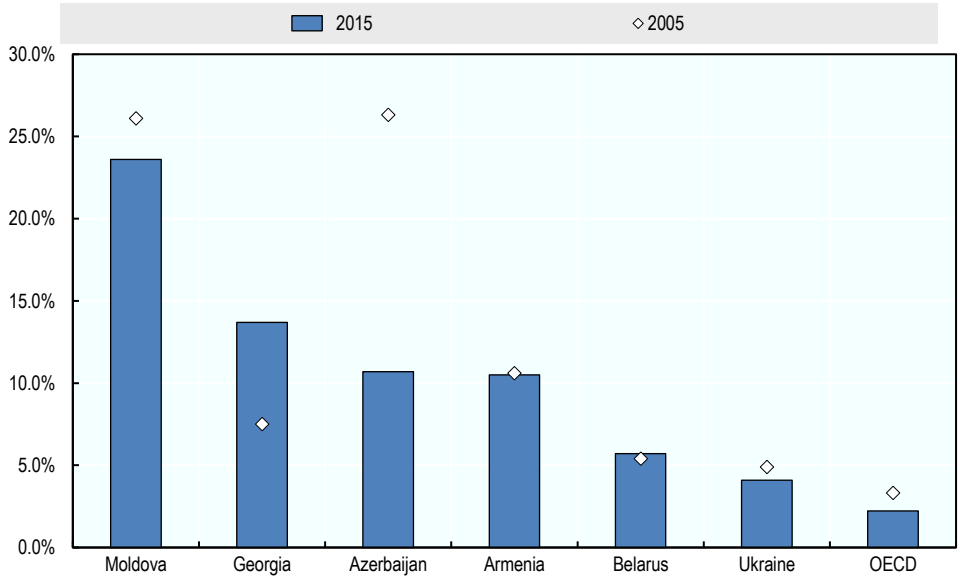
Most people in the EaP region have access to running water, with the exception of some rural areas, but (as with electricity) reliability of supply is problematic in some places. In the 2019 Doing Business survey, the share of firms reporting insufficiencies in water supply is relatively high in Georgia (16.2% of firms) and Ukraine (7.6% of firms) (World Bank, 2020[30]). In the European Union, the highest share is in the Czech Republic, where 5.2% of firms experienced problems with water supply. In the rest of the EaP countries, the share of firms facing water shortages is below 5% (the lowest is Armenia, at 2.2%). While most people have access to running water, large sections of the population in most EaP countries lack access to clean drinking water. The situation notably improved across the region (with the exception of Georgia) from 2005 to 2015, but over 20% of the population in Armenia, Azerbaijan, Georgia and Moldova continued to lack access. The high share of the population who lack sanitation facilities also highlights the need for infrastructure development. In Moldova, close to a quarter of the country's population lack proper sanitation. Belarus and Ukraine are the closest to the OECD average. Azerbaijan managed to improve access to sanitation substantially from 2005 to 2015, reducing the share of population without proper sanitation access from over 25% to 10%. Private investment in water and sanitation infrastructure through PPPs has gained some traction in EaP countries in recent years. For example, Armenia signed a PPP contract in 2016 with a French company over the water management systems in five localities.

Figure 2.8. Share of the population without access to safe drinking water (% of total)



Note: Safely managed drinking water is defined as an "Improved source located on premises, available when needed, and free from microbiological and priority chemical contamination."
Source: OECD calculations based on Our World in Data

Figure 2.9. Share of the population without improved sanitation facilities (% of total population)

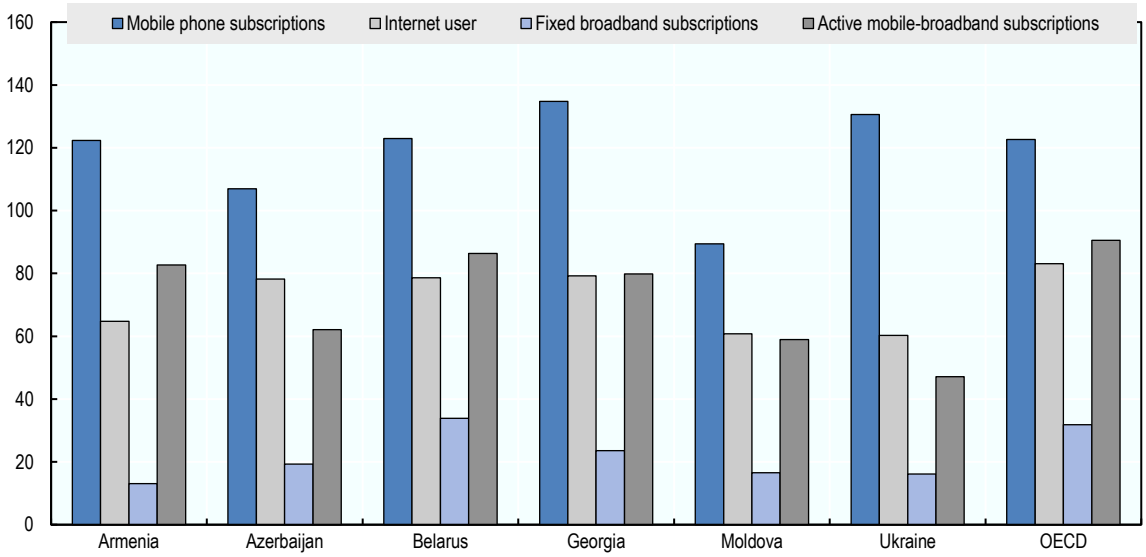


Note: Improved sanitation facilities are designed to ensure hygienic separation of human excreta from human contact. Improved sanitation facilities include flush/pour flush (to piped sewer system, septic tank, pit latrine), ventilated improved pit (VIP) latrine, pit latrine with slab, and composting toilet.
Source: Our World in Data

Digital infrastructure

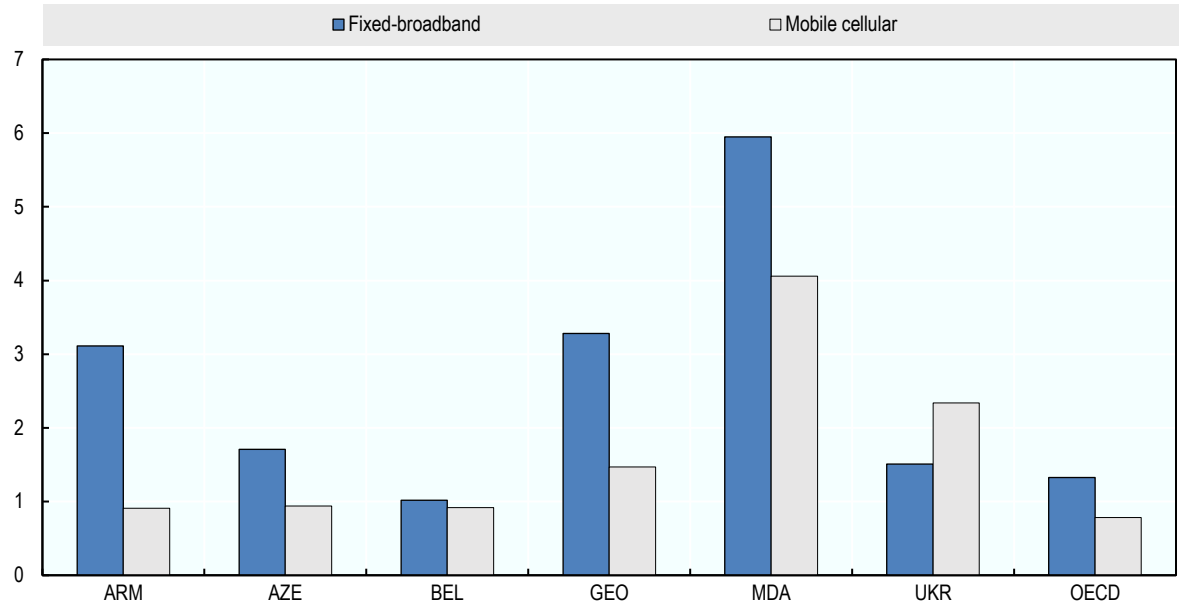
The number of fixed broadband subscriptions is below the OECD average in all EaP countries except Belarus, and internet penetration ranges from 52% of the population in Ukraine to 78% in Azerbaijan. However, a larger share of the population do reside in areas that are covered by broadband or cellular connection. Therefore, limited penetration ratios are not necessarily reflective of infrastructure deficiencies. In Ukraine, only 23% of the population have an active mobile-broadband subscription, while in other EaP countries more than 40% of the do (Raja and Leuca, 2019[31]). Broadband and mobile cellular subscription are generally affordable compared to the OECD average in USD terms, but when recasting costs in terms of GNI per capita, access becomes more costly in some countries (Figure 2.10). In fact, a recent survey conducted by the World Bank found that in addition to lack of access to digital infrastructure, many households report high costs of digital devices and high access fees as impediments to digitalisation (Raja and Leuca, 2019[31]). All six EaP countries participate in EU4Digital, an initiative that aims to extend the European Union's Digital Single Market to the EaP region.

Figure 2.10. Digital infrastructure, 2018



Note: Data are expressed in units per 100 inhabitants.
Source: UNDESA, UN E-Government survey.

Figure 2.11. ICT price basket, 2017 (% GNI per capita)



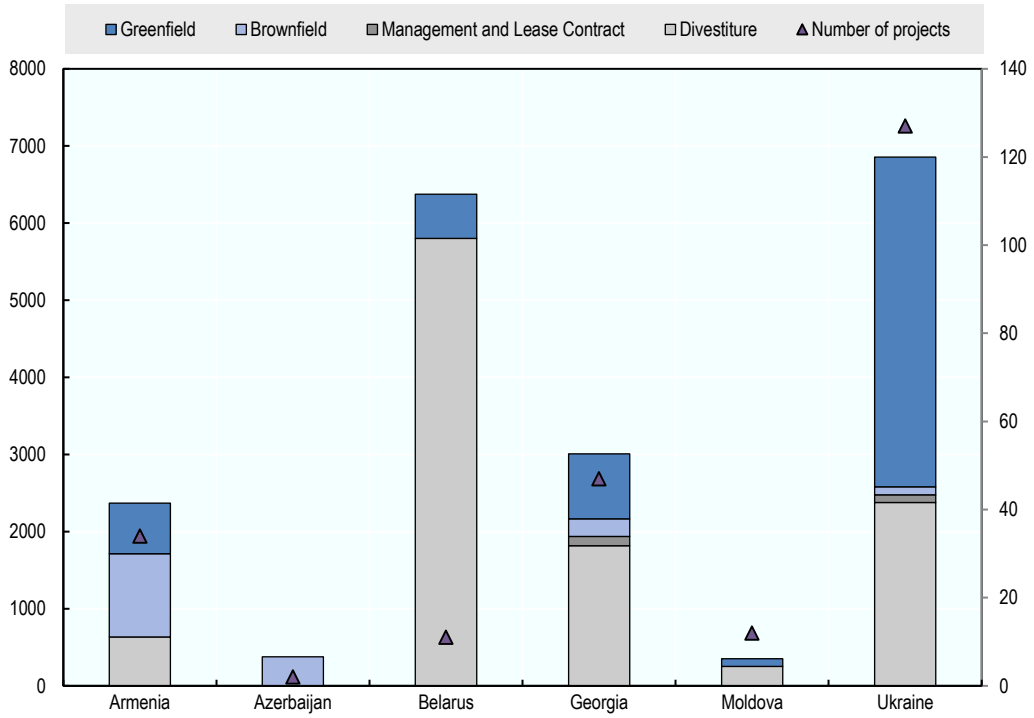
Note: Data are expressed as percentage of GNI per capita.
Source: ITU, ICT Price Basket.

Private participation in infrastructure development remains limited

Private and foreign participation in infrastructure play an uneven role in the EaP countries

Private and foreign participation in infrastructure projects in the EaP countries is most prominent in the energy sector, through green- and brown-field investments and divestitures, especially of electricity grids. Armenia, Georgia, and Ukraine have a diverse set and relatively large number of projects, whereas in Azerbaijan and Moldova, infrastructure projects with private and foreign participation are limited in number and the value of investments. In Azerbaijan, private investment is most prevalent in road infrastructure. In Belarus, the number of projects is low, but the high value of divestitures of parts of the natural gas network push up the total value of the projects significantly. The most high-profile example involved Russia's Gazprom purchasing parts of the natural gas transit network in a deal worth 2.5 billion USD. Russian state companies play an active role in other parts of the EaP region as well. In Armenia, the Russian railways modernised parts of the Armenian railway network and operates train services under a concession agreement, which is valued at 575 million USD.

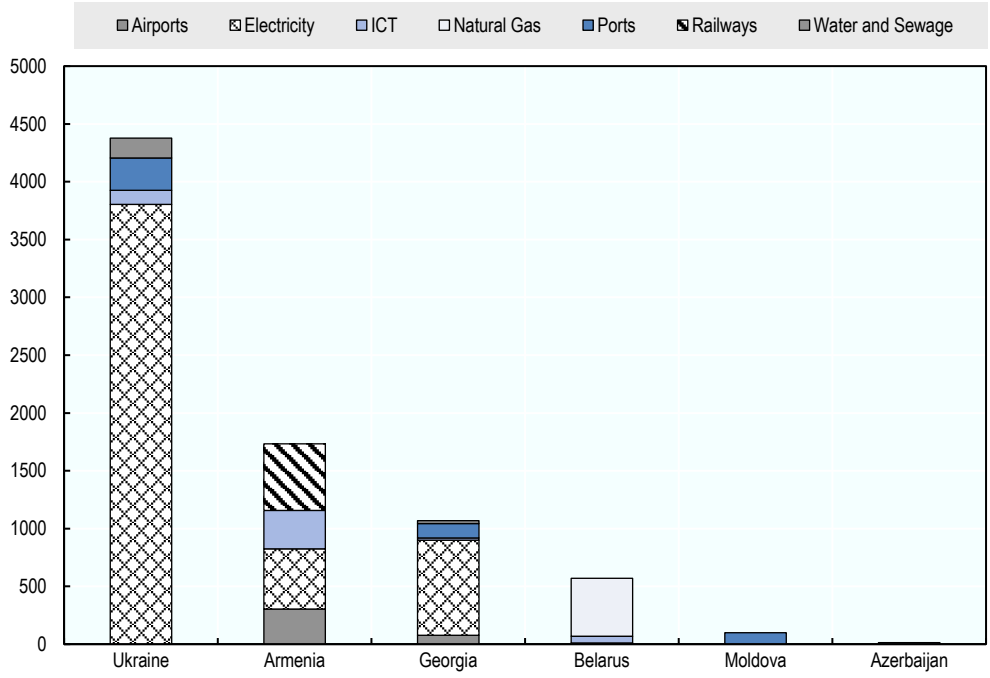
Figure 2.12. Private and foreign investments in infrastructure in the EaP countries (mln USD) and the number of projects



Note: Some individual projects listed in the database are not taken into consideration in the graph, because the value of investments have not been publicly listed.
Source: OECD calculations based on World Bank Private Participation in Infrastructure database

In terms of greenfield investments to develop new infrastructure assets and brownfield investments to develop existing ones, most investments have been directed to the development of electric power plants. In 2019, an Italian energy company invested over USD 300 million into a new gas-operated power plant outside of the capital Yerevan, the largest greenfield investment in Armenia's history. In Georgia, investments into hydropower have amounted to almost USD 800 million since 2010. In Ukraine, most investments into electricity production have been in solar and wind, totalling USD 3.8 billion since 2010. However, the relatively low value of investments and narrow sectoral focus in most of the region highlights the EaP countries' limited experience in developing infrastructure assets in collaboration with the private sector and foreign investors. However, some EaP countries are actively seeking to encourage wider private participation through pilot projects. In 2019, Ukraine undertook two pilot concession projects to develop the port infrastructure in Kherson and Olvia. The concessions were awarded to a Swiss-Georgian and a Qatari company, respectively. The EBRD and IFC provided technical assistance for the projects. The agreements regarding the concessions were signed in 2020, and the total investments will amount to USD 144,4 million.

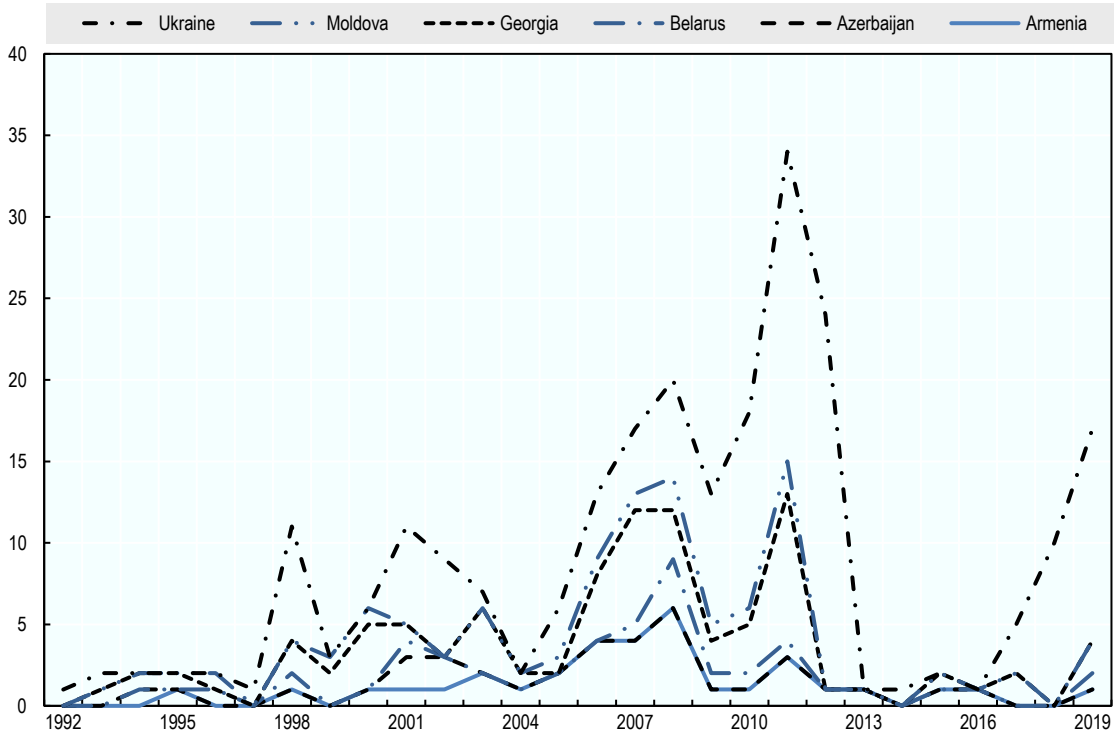
Figure 2.13. Sectoral composition of greenfield and brownfield investments into infrastructure with private and foreign participation (mln USD)



Note: The data covers investments from 1990 up to 2019
Source: OECD calculations based on World Bank Private Participation in Infrastructure database.

Trends in the number of investments and divestitures involving the domestic private sector or foreign investors show how investment activity peaked before the global financial crisis. Investment activity started recovering in Ukraine in the second half of the 2010s, and the rest of the region saw modest upticks in activity in 2018 and 2019, but the investment activity has shown signs of notable recovery only in Ukraine. There are many reasons for this. Before the global financial crisis, the EaP countries benefitted, together with other emerging markets, from fast-rising commodity prices and an influx of foreign capital at a time when investor optimism was high. In the aftermath of the crisis, the relatively high-risk infrastructure assets attracted less attention from international investors, and this has been especially the case since the second downturn in the EaP region in 2014 and 2015. The effect of the COVID-19 crisis on infrastructure investments is not yet visible in the data, but it is expected that the resulting economic downturn will affect infrastructure investments negatively.

Figure 2.14. Number of investments and divestitures in the EaP countries



Source: (World Bank, 2020[32])

The majority of private and foreign direct investments in infrastructure take place within the framework of PPPs

Ninety-seven percent of infrastructure investments with private and foreign participation into greenfield and brownfield projects in the World Bank private participation in infrastructure database (USD 7.6 billion) are under public-private partnerships (PPPs) (World Bank, 2020[32]). Armenia, Georgia, and Ukraine account for 67 of the 74 completed PPP projects. Azerbaijan, Belarus and Moldova have hosted only individual PPP projects, and in the case of the former two, none have been carried out during the past 15 years. However, the IMF Investment and Capital Stock database paints a slightly different picture, underlining the limits of available data. According to IMF estimates, the total value of the PPP capital stock in the EaP countries amounted to over 17 billion USD in 2017. In both datasets, many of the listed deals and assets belong to foreign state-owned companies, further reducing the utility of the datasets as a clear measure of private sector involvement in infrastructure projects.

Box 2.4. IFC Pilot projects to develop Ukraine's Road Infrastructure

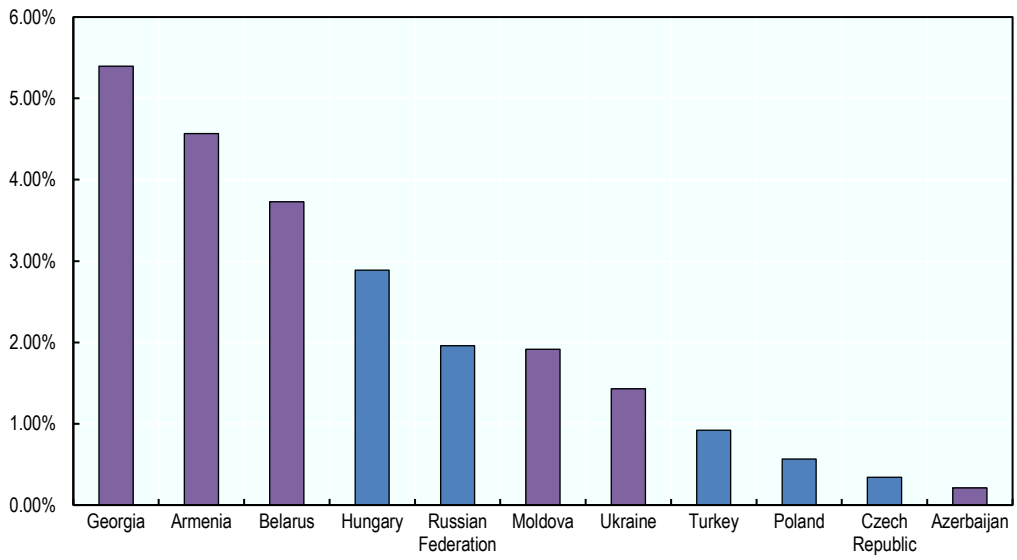
Nearly 90% of Ukraine's road infrastructure is in poor condition and requires at least USD 6 billion in annual investments for five years to be improved, according to Ukraine's State Road Agency. A joint-study by IFC and Global Infrastructure Facility (GIF) reviewed over 2000 road segments, identifying 21 potential PPP projects with a medium-term private

investment potential of USD 9 billion. Six pilot projects were selected, and they should be completed by 2023, paving the way for further PPP projects that could help to rehabilitate and maintain over 4500 kilometres of state roads.

Source: (IFC, 2020[33])

In proportion to the size of the national economy, the PPP stock is notably large in Armenia, Belarus, and Georgia. In the case of Belarus, the figures are not accurate. Russia's Gazprom acquired the ownership of the Belarusian natural gas network in two deals in 2007 and 2011. The investments are included in the IMF PPP capital stock despite involving state actors and not considered a PPP project in Belarus. Ukraine, despite having a relatively large number of PPP projects across varied sectors has the second lowest share (after Azerbaijan) of PPP stock in proportion to the country's GDP. The level of PPP stock in the EaP countries is comparable and even higher than in some of the peer economies in Central Europe, Russia, and Turkey.

Figure 2.15. PPP Capital Stock in 2017 (% of GDP)



Note: EaP countries are coloured in purple
Source: OECD calculations based on IMF Investment and Capital Stock Dataset

Ukraine has employed PPPs in infrastructure development far more frequently than the other EaP countries. Overall, 42 projects have reached financial closure, totalling USD 3.6 billion in investments. Recently, PPPs have played a prominent role in the development of renewable energy infrastructure. The most notable developments in the field include the DTEK Botievo Wind Farm (completed in 2012), the Syvash Wind Power Project (under construction), and the Active Perovo Solar Plant (2011), which total 1.3 billion USD in total investments (PPP Konwledge Lab, 2020[34]). However, the rapid rise of the renewable energy production is a result of a controversial feed-in renewable energy tariff, which was ended in July 2020 as a cost saving measure during the Covid-19 crisis. The tariff enabled a significant rise in renewable energy production, but critics allege that it was economically unsustainable and disproportionately benefitted the politically connected owners of

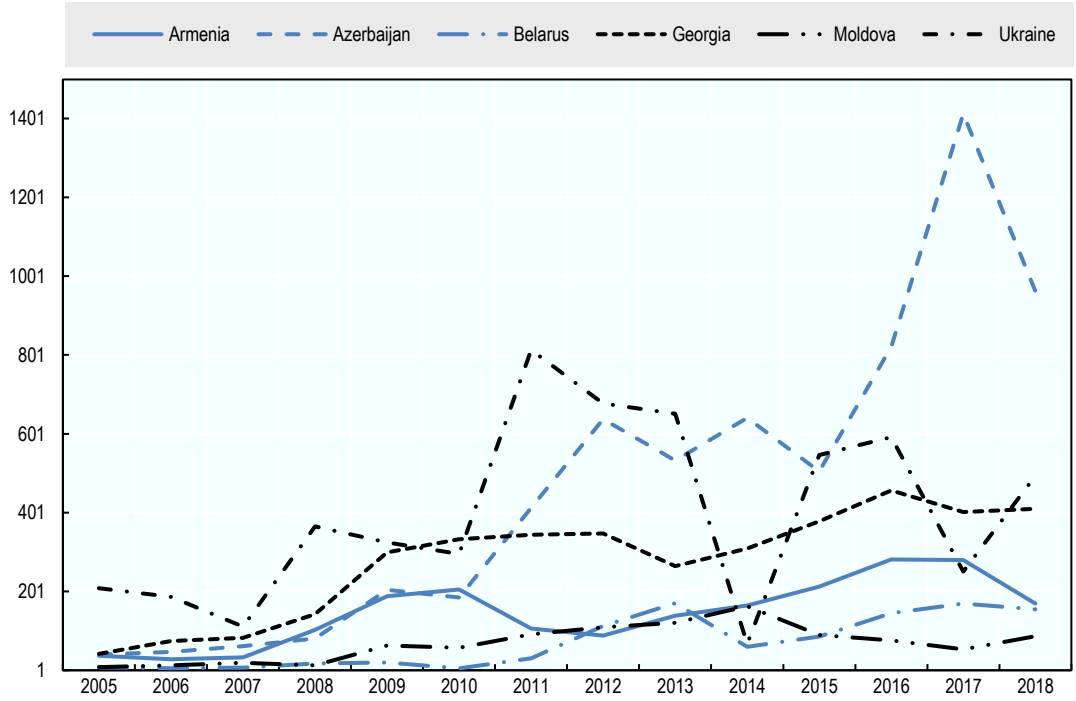
selected energy companies. Ukraine is currently implementing reforms to switch to an auction-based system, where energy producers bid prices on an electronic platform (KPMG, 2019[35]).

Armenia and Georgia have also undertaken a significant number of PPP infrastructure projects. In Georgia, the most notable projects have been in electricity production. By far the most financially significant project in the country has been the Shuakhevi 187MW Hydropower plant, worth USD 417 million and completed in 2015. In Armenia, PPPs have been used to develop a wide range of projects from railways, telecommunications, airports, and water and sewage treatment facilities.

Most EaP countries rely on international donors and development banks for infrastructure finance

In most of the EaP countries, international financial institutions and international donors have an essential role in providing finance for infrastructure development through both development aid and commercial finance. In the survey of EaP governments, the role of multilateral development banks is mentioned as the main source of finance for infrastructure projects in Moldova and as essential across the region. The volume of development aid for infrastructure increased in the 2010s, while the total volume has fluctuated and its origin has changed notably across the region. In the case of Ukraine, financing for infrastructure came to a near halt in 2014 due to Russia's illegal annexation of Crimea and military aggression in Eastern Ukraine. At the same time, the institutions of the European Union, which had played a relatively limited role in providing development aid for infrastructure development before 2014, became the largest contributors. In terms of bilateral development aid, financing from Germany and Japan are particularly important across the region, while neighbouring countries often contribute to the development of transport infrastructure in their regions. Romania has supported Moldova in upgrading parts of the road network that connects the two countries, and Poland has done the same in Ukraine.

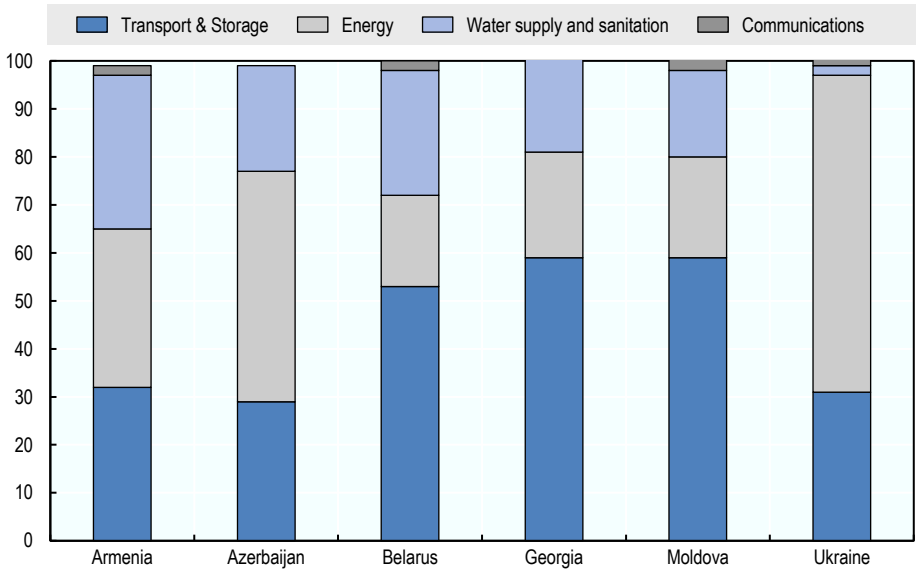
Figure 2.16. Official development financing disbursed for infrastructure projects (constant USD 2018 millions)



Note: The figures include both multilateral and bilateral development assistance
Source: (OECD, 2020[37])

In terms of sectoral contributions, development financing is most important in the transport and energy sectors. In Belarus, Georgia and Moldova, over half of development financing in 2018 was provided for the development of transport sector, mainly roads. In Azerbaijan and Ukraine, energy sector received the largest share. In Ukraine, most of the funds were aimed at improving energy efficiency by improving energy conservation and demand side efficiency (29% of total financing), improvements of electricity grids (12%), and development of renewable energy infrastructure (11%). In Azerbaijan, most of the energy-related financing was aimed at the development of gas distribution networks.

Figure 2.17. Sector distribution of development financing for infrastructure (% of total) in 2018



Source: (OECD, 2020[37])

In most EaP countries, the major development banks are the leading financiers of infrastructure projects. Their total infrastructure investments across the region reach close to USD 30 billion, representing 40% of their total investments in the EaP countries. On top of their financial contributions, the development banks play an important role in facilitating the spread of sound financial practices across the region. Especially in some of the smaller EaP countries, their role in infrastructure development is indispensable. In Moldova, they are the main providers of infrastructure finance.

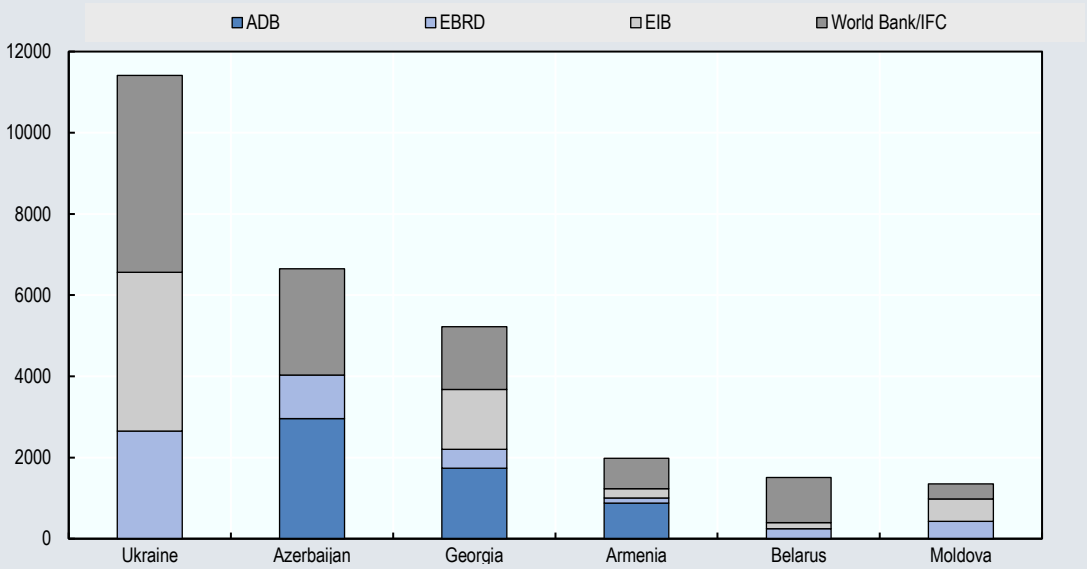
Like the multilateral development banks, domestic development banks can help to bridge the gap between needed and available funds in areas where private finance is scarce, like in some sectors of infrastructure development. In the EaP region, only Belarus has a national development bank. The National Development Bank of Belarus was established in 2011 with three main goals: financing long-term and capital-intensive investments, supporting SMEs with special credits, and providing concessional export credits to support investments of over USD 1 million by exporting companies. It should be noted that the bank's lending practices have been questioned as it has largely financed inefficient state-owned enterprises, highlighting the importance of ensuring high level of corporate governance in the design of development banks (Gattini and Borysko, 2018[38]).

Box 2.5. Multilateral Development Banks as Infrastructure Investors in the EaP

Multilateral development banks, especially the European Bank for Reconstruction and Development (EBRD) and the World Bank, are major investors in infrastructure projects in the Eastern Partner countries. While the EBRD is the largest investor in the EaP

countries, the World Bank is the most important in terms of investments into infrastructure, with an investment portfolio of EUR 11.2 billion across the region. Ukraine has attracted by far the most investment from multilateral development banks: EUR 11.4 billion in infrastructure projects, which is over 40% of the overall infrastructure investments across the EaP countries. Other international development banks, such as the Asian Infrastructure Investment Bank, Japan Investment Bank for International Co-operation, Black Sea Trade and Development Bank, and the Islamic Development Bank, operate in some of the countries, but their overall investments are relatively small compared to the largest international investors in the region listed in the table below.

Figure 2.18. Infrastructure investments by multilateral development banks (EUR million)



Source: OECD calculations based on project information from (Asian Development Bank, 2020[39]), (EBRD, 2020[40]), (European Investment Bank, 2020[41]), (World Bank, 2020[42])

Table 2.1. Multilateral Development Banks as Infrastructure Investors

	EaP	Armenia	Azerbaijan	Belarus	Georgia	Moldova	Ukraine
Asian Development Bank Projects (ADB)	91	59	71	N/A	61	N/A	N/A
ADB Total Investments	€7,515 million	€1,230 million	€3,855 million	N/A	€2,430 million	N/A	N/A
ADB Infrastructure Investments	€5,575 million	€875 million	€2,960 million	N/A	€1,740 million	N/A	N/A
European Bank for Reconstruction and Development (EBRD) projects	889	180	168	126	239	131	454
EBRD Total Investments	€27,110 million	€1,400 million	€3,350 million	€2,745 million	€3,600 million	€1,325	€14,690 million

EBRD Infrastructure Investments	€4,985 million	€125 million	€1,070 million	€245 million	€460 million	€430 million	€2,655 million
European Investment Bank (EIB) projects	81	16	4	7	27	23	42
EIB Total Investments	€10,200 million	€410 million	€100 million	€530 million	€1,930 million	€830 million	€6,400 million
EIB Infrastructure Investments	€6,320 million	€235 million	N/A	€150 million	€1,480 million	€550 million	€3,905 million
World Bank projects	433	118	69	35	101	102	82
World Bank Total Investments	€24,850 million	€1,840 million	€3,680 million	€1,840 million	€2,760 million	€1,840 million	€12,890 million
World Bank Infrastructure Investments	€11,240 million	€745 million	€2,620 million	€1,110 million	€1,545 million	€370 million	€4,850 million
Total projects	1,494	373)	312	168	428	256	578
Total investments (share in brackets)	€69,675 million	€4,880 million (7%)	€10,985 million (16%)	€5,115 million (7%)	€10,720 million (15%)	€3,995 million (6%)	€33,980 million (49%)
Total infrastructure investments (share in brackets)	€28,120 million	€1,980 million (7%)	€6,650 million (24%)	€1,505 million (5%)	€5,225 million (19%)	€1,350 million (5%)	€11,410 million (41%)

Source: OECD calculations based on project information from (Asian Development Bank, 2020[39]), (EBRD, 2020[40]), (European Investment Bank, 2020[41]), (World Bank, 2020[42])

Box 2.6. National Development Banks channel financing to priority projects

International examples highlight the role that national development banks play in assisting emerging markets to fulfil their commitments under the Paris Agreement of emerging economies. A new OECD case report on two of these banks, the Brazilian Banco Nacional de Desenvolvimento Econômico e Social (BNDES) and the Development Bank of Southern Africa (DBSA) shows how they have pioneered green finance in their countries. The BNDES is a systematically important player with assets amounting to 13% of Brazil's GDP in 2017. The BNDES provides 70-80% of the country's total infrastructure financing. Both banks operate under a mandate that prioritises environmental sustainability. In 2016, the BNDES announced that it would no longer provide funds to conventional thermal power plants, and the DBSA is aiming to meet a target of providing a minimum of 35% of its lending to climate finance by 2022. In 2017, 45% of the DBSA's new loan commitments were green, while 22% of the BNDES's disbursements were to green projects.

The BNDES and DBSA are aiming to play a bigger role in the green transition beyond providing finance to environmentally sustainable infrastructure projects. They are seeking to mobilise and crowd-in private finance through blended finance structures and to bring capital in local currency by improving the risk-return profiles of green infrastructure projects.

Source: (Development Bank of the Republic of Belarus, 2020[43]) & (OECD, 2019[44])

Domestic sources of infrastructure financing

In the EaP countries, domestically financed infrastructure developments are financed from the budgets of the central government through different ministries and state agencies or indirectly through state-owned enterprises. Domestic banks engage in infrastructure financing through long-term loans to the public and private sectors, mainly contractors. However, the role of domestic banks is limited; they frequently play a subsidiary role to multilateral development banks. For example, in Ukraine, the majority of the funds for capital investments come from the organisations and enterprises that are responsible for the project. During 2014-2018, the average share of self-financing amounted to 70%, while 7% of external financing came from banks (World Bank, 2020[32]). There are examples of bank loans provided directly to infrastructure development: loans from a state-owned bank and a foreign bank financed the construction of a ferry complex to provide a border crossing across the Danube river between Ukraine and Romania.

The financial systems of the EaP countries are heavily centred on banks, but the market for insurers and pensions funds is gradually developing, increasing the pool of potential institutional investors as a source of financing for infrastructure development. This will take considerable time, however. According to a survey of EaP governments, institutional investors currently play a marginal role in infrastructure financing (OECD, 2020[45]). There are no explicit obstacles to prevent institutional investors from contributing to infrastructure, but according to the survey, such activities are not recorded in publicly available statistics, and they are highly unlikely to involve significant sums. The absence of institutional investors from infrastructure investment is reflective of the still-developing financial markets in the EaP countries and post-communist countries more widely. Even in mature markets, institutional investors' participation in infrastructure investments is still in early stages, so it is no surprise it is so rare in post-communist economies.

Figure 2.19. Direct participation of institutional and foreign private investors in infrastructure projects

Source: Global Infrastructure Hub InfraCompass (Global Infrastructure Hub, 2020[46]) and Survey of EaP governments.

The second part of the report explores obstacles to private participation in infrastructure and the capacity of the local financial systems to provide increased levels of financing. It draws on OECD research to suggest broad guidelines for developing increased private participation.

3. Leveraging the Potential for Private Finance in Infrastructure Development

Building an enabling policy framework for infrastructure governance

Delivering high-quality infrastructure and attracting private investment to fund it depend on a correspondingly high quality of infrastructure governance. The process of developing infrastructure—from conception to construction and operation—is fraught with challenges. Poor governance often adds to the failures to meet timelines and/or budgets. According to one recent study, more than one-third of the resources spent on infrastructure investments are lost because of inefficiencies, and on average, better infrastructure governance could make up more than half of the losses (IMF, 2020[47]). Poor governance may lead to poor project selection and thus wasteful investments in unnecessary infrastructures. The successful development of infrastructure is a multi-step process, which starts with the identification of the infrastructure needs and a vision of how best to address them. The OECD has identified key challenges that governments need to address in different stages of an infrastructure project to maximise value for money, effectiveness and sustainability.

Planning stage

a. *Developing a strategic vision for infrastructure*: a long-term plan on the national level sets clear targets and steps for meeting those targets. This brings clarity to the co-ordination between public and private sector actors and encourages development of high quality infrastructure.

b. *Managing threats to integrity*: governments should holistically map corruption vulnerabilities at every stage of infrastructure projects. OECD research on corruption suggests that infrastructure projects are particularly prone to corruption (OECD, 2014[48]). Extractive industries, construction, transport and storage, and the IT sector account for nearly 60% of corruption involving foreign bribery cases.

c. *Choosing the appropriate delivery method*: governments need to weigh carefully the political, economic, and strategic considerations when choosing the appropriate delivery method. Balancing between political legitimacy and economic efficiency is particularly important in the development of infrastructure projects, in which private sector participants play a leading role in the operational stage of an infrastructure asset, potentially charging user fees. Private sector involvement during the construction stage is rarely controversial, but the cultural acceptance of future fees paid to a private owner varies largely across different countries and sectors.

Building an enabling regulatory framework

d. *Ensuring good regulatory design*: effective regulatory design and delivery are essential to ensure the sustainability and affordability of infrastructure throughout its life cycle.

e. *Engaging stakeholders in a consultative process*: governments should pursue broad-based consultations that facilitate genuine dialogue between

stakeholders, including end users, to ensure the legitimacy and sustainability of infrastructure projects.

f. *Co-ordinating infrastructure investments between government bodies:* governments should establish robust co-ordination mechanisms that incorporate all levels of government, including sectoral and regional views.

g. *Guarding affordability and value for money:* governments must ensure the cost effectiveness, sustainability and accessibility of the investment envelope.

h. *Generating, analysing and disclosing useful data:* best infrastructure policies are evidence-based. Governments should ensure that there is a system in place that guarantees the collection, analysis, and use of data to improve the quality of infrastructure governance.

Effective monitoring and evaluation in the operational stage

i. *Ensuring the infrastructure asset performs through its life cycle*: governments should establish clear monitoring systems and responsible institutions.

j. *Guaranteeing the resiliency of public infrastructure*: infrastructure should be designed and built to be resilient in the face of technological disruptions and environmental degradation.

Project pipelines could be developed to improve the quality of infrastructure planning

In the EaP countries, high-level strategic documents outline the key priorities for infrastructure development. Belarus has a single, unified infrastructure strategy (currently formulating a strategy up to 2030). This document outlines the main priorities in infrastructure development, identifies areas where investment is needed, and outlines priority projects (Government of Belarus, 2017[49]). In Armenia, a broader socioeconomic development strategy includes priorities for infrastructure development (Government of Armenia, 2014[50]). In other EaP countries, instead of a single, top-level strategy document, branch ministries have their own strategy documents for different infrastructure sectors. For example, Ukraine has separate top-level energy and transport strategies, which are complemented by sub-sector strategy documents. In the case of transport, four different strategies cover ports, airports, railroads and roads. Other EaP governments could consider following Belarus's example in outlining strategically important infrastructure development priorities in a single infrastructure development strategy. At the same time, the strategy documents should have a robust evaluation framework, transparent and appropriate key performance indicators, and clear cost estimates of the most important projects (see Box 3.1. for OECD Monitoring of Ukraine's Energy Strategy).

Box 3.1. Monitoring the Energy Strategy of Ukraine until 2035

In 2017, Ukraine adopted the Energy Strategy of Ukraine until 2035 to promote a comprehensive approach to energy sector reform. The goal of the strategy was to improve energy efficiency, security, competitiveness, and integration with the EU energy markets. The strategy outlines six main goals, which are divided into sectoral policy goals. The

energy strategy was adopted together with an accompanying action plan, which identifies a concrete list policy deliverables for implementation of the first stage of the strategy.

The OECD Monitoring of the strategy and the action plan highlights deficiencies in the evaluation framework as the key problem with the documents. The key performance indicators for the monitoring of the strategy are not clearly aligned with the strategy's goals, and the responsibility for the monitoring of the action plan and the strategy are not clearly allocated to responsible authorities. Furthermore, costing and timeline of tasks related to the implementation of the strategy are not thoroughly considered and outlined, undermining the implementation of the strategy's key goals.

Source: (OECD, 2020[51])

High-level strategic documents are the starting point for a comprehensive infrastructure development, but on practical level, clear project pipelines are essential to lay out the roadmap for the implementation of a strategic vision and to inform potential private investors. Belarus's infrastructure strategy to 2030 identifies 100 priority projects, outlining the government bodies responsible for the project's implementation, the goal, and the details of the project (Government of Belarus, 2017[49]). The document compiles priority projects across different sectors and includes cost estimates for the listed projects. However, the document is not updated to reflect the current stage of the projects. In Ukraine, similar static project pipelines are attached to sectoral development strategies, but a unified project pipeline has not been introduced. According to a survey of the EaP governments, Armenia is planning to introduce a project pipeline, but it is not yet available (OECD, 2020[45]). Publicly available project pipelines could help bring clarity to international investors, especially considering the plethora of bodies at different levels of government involved in the planning of infrastructure and the decisions of appropriate delivery methods.

In addition to developing national project pipelines, EaP governments could consider participating more actively in international project pipelines to attract foreign investment. The Global Infrastructure Hub maintains a digital project pipeline, where governments can bring the awareness of international investors to their infrastructure projects by listing them on the platforms that seeks to make infrastructure projects more readily accessible to private investors. Most EaP governments are using the platform, but they list only individual projects. Armenia and Belarus are the most active, each listing four different projects on the platform as of August 2020. Some examples from the EaP countries include the construction of social infrastructure like kindergartens, road infrastructure, trams, and waste management facilities (Global Infrastructure Hub, 2020[46]).

Improving infrastructure governance quality can help attract private investment

Leveraging private finance for the delivery of infrastructure requires delivery models that offer an acceptable distribution of risk-adjusted returns for public and private partners. The selection of the delivery model depends on the nature and sector of the project and the type of investor. Effective infrastructure delivery models depend on the existence of clearly defined legal and regulatory frameworks that give all stakeholders predictability and a clear understanding of their respective roles and responsibilities, rights, obligations, and expectations.

Public-private partnerships (PPPs) and concessions represent internationally common delivery options in the context of seeking to mobilise private financing for infrastructure.

In concession agreements, a private sector (or foreign state-owned) operator enters into an agreement with the public sector on the management and investment into infrastructure for a fixed time. Such agreements have been applied in the United Kingdom, France, and Chile to deliver major infrastructure programmes across a range of sectors from roads, ports, and water treatment plants to social infrastructure like hospitals and prisons. Usually, the design, engineering, financing, construction, operation and maintenance are bundled into a single long-term contract with a private partner, often spanning 20 or 30 years. Well-designed and executed PPPs and concessions can promote innovation in service delivery and lower life-cycle costs. However, weaknesses in the institutional environment can hamper the success of PPP projects and expose private investors to risks, such as expropriation, legal change, corruption and inefficiency, among others (World Bank, 2018[3]).

Box 3.2. Regulatory Asset Base Model as an alternative to PPPs

A Regulatory Asset Base model (RAB) is a mechanism that assesses the value of assets used for a regulated function. It can be used with different delivery methods. RAB seeks to incentivise private investment by establishing a secure payback mechanism with guaranteed revenue and price caps. The RAB model was developed in the UK to provide assurances to investors in privatised utilities. In the UK, the RAB model has been used in public transport, gas and electricity distribution, and water infrastructure. Most recently, the RAB model has been considered as part of the construction of new nuclear power plants (Forsdick, 2019[52]).

The main concern with the RAB model is that it can lead to excessive capital expenditures and risks the intentional inflation of the base on which the returns are calculated. However, compared to the contractual complexity of most PPP arrangements, especially given the uncertainties related to the long duration of PPP contracts, the RAB model can offer a more flexible framework for the management of private sector participation in infrastructure projects.

Source: (Makovsek and Veryard, 2016[53])

Private actors participate directly in the delivery of infrastructure in all EaP countries and in nearly all sectors; natural monopolies are the exception, most notably electricity transmission, which is managed and delivered by the public sector. In contrast, some sectors are wholly or partially privatised, like electricity distribution and broadband services. In other sectors, state-owned enterprises and private companies operate in tandem. This is especially the case in power generation, where private companies have made significant investments. In some sectors, like road construction, the role of private companies is limited to the construction stage through traditional procurement mechanisms.

Different forms of PPPs are used in the EaP countries. They have used concession agreements only in the transport sector. In Armenia and Georgia, foreign private companies operate some of the country's airports. In Georgia, the Turkish-based TAV Airports Holding entered into a concession agreement with the Georgian government in 2005 to run and modernise the Tbilisi airport. The company oversaw the reconstruction of an unused runway and an upgrade of terminal facilities. Ukraine is planning to introduce concession agreements to run four of its regional airports. Armenia is also using a concession arrangement to manage its railway network—the only EaP country to do so. South

Caucasus Railways, an Armenia-based subsidiary of the Russian railways has wholly operated Armenia's rail network under a thirty-year concession agreement since 2008.

Table 3.1. Delivery methods in different infrastructure sectors

Sector	Armenia	Azerbaijan	Belarus	Georgia	Moldova	Ukraine
Electricity transmission	SOE	SOE	SOE	SOE	SOE	SOE
Electricity distribution	**Privatised**	SOE	SOE	**Privatised**	SOE and **privatise companies**	**Private companies** and SOEs
Power generation	SOEs and **private companies**	SOEs	SOE	SOEs and **private companies**	SOE and procurement for renewables	SOEs and **private companies**
Railroads	**Concession agreement with Russian railways**	SOE	SOE	SOE		SOE
Motorways			**Traditional procurement, PPP**	**Traditional procurement**		**Traditional procurement, concession agreements**
Roads			**Traditional procurement**	**Traditional procurement**		Local
Airports	National: **concession agreement with foreign private company**		SOEs	National: SOE and **concession agreements**		National: SOEs (plans to introduce **concession agreements**)
Ports			SOE	**PPP and privatised**		SOE, **concession agreements, private operators**
Water supply				SOE		SOEs
Waste water					SOE and **private companies**	Local
Broadband						**Private sector**
Hospitals				SOE and **privatised**		Municipal ownership, state ownership, **private companies**
Schools				Public sector and **privatised**		Municipal ownership, **private companies**

Note: Emboldened mark delivery methods with private sector participation
Source: (OECD, 2020[45])

EaP countries have dedicated PPP laws and units, but the quality of governance could be improved

Regulatory frameworks for PPPs vary widely across the world. In a World Bank overview of the regulatory and legal frameworks for PPPs in 135 economies, 68% of the surveyed countries had stand-alone PPP laws. All EaP countries do. In contrast, only 41% of OECD economies have stand-alone PPP laws. In mature economies, PPPs are often regulated as part of the laws and regulations covering general procurement. Still, some OECD

economies, such as Canada and the United Kingdom, have specific guidelines and standardised contracts for PPPs. Stand-alone PPP laws bring clarity to the regulatory framework, especially in emerging markets, but their presence or absence does not determine the quality of the regulatory and legal framework. It is most important that when PPPs are used, the process is transparent and predictable, aiming to maximise value for money by establishing a level playing field for all bidders (see OECD principles for PPP governance). Armenia is in the process of streamlining the relevant legislation by separating procurement and PPP laws as part of a wider reform of legislative frameworks that affect investment. In 2019, Armenia adopted the law on Public-Private Partnerships to clarify the legislative requirements that affect PPPs during different stages of a project. The government has initiated the development of a public investment management system, which will seek to ensure the efficient use of public funds in infrastructure investments. The government is working with the World Bank to develop better ways to identify potential infrastructure projects.

Most countries have dedicated PPP units (88% in the World Bank survey). All the EaP countries have established dedicated PPP units; Azerbaijan's is the newest, being created in 2019. Their roles and functions vary. Some are independent government agencies, while others are parts of ministries or departments. In most countries, PPP units have an advisory role to the procuring government body (77%) rather than a direct procurement role (4%) (World Bank, 2018[54]). EaP countries also have dedicated PPP units that mostly operate under the ministry of economy. These units seek to identify opportunities for PPP agreements in different spheres of the economy and act as co-ordinating bodies between the government agencies/ministries and the private sector. The PPP units also monitor ongoing PPP projects, and in the case of Ukraine, prepare laws and regulations that affect PPPs (OECD, 2020[45]).

Box 3.3. OECD Principles for Public Governance of Public-Private Partnerships

Through Public-Private Partnership (PPPs) agreements, private sector participants deliver and fund public services using a capital asset and by sharing the associated risks. The OECD has developed recommendations for the effective use of PPPs in the delivery of public services:

Establishing clear, predictable, and legitimate institutional frameworks that are supported by competent and well-resourced authorities

1. Political leaders should raise public awareness of the relative costs, benefits and risks of PPPs and conventional procurement. All stakeholders, including end-users should be included in the design and quality control of PPP projects.
2. The role of relevant institutions should be clearly defined and maintained. Procuring authorities, PPP units, Central Budget Authorities, auditors, and sector regulators should have clear mandates and sufficient resources to ensure effective procurement and accountability.
3. Regulatory frameworks that affect PPPs should be clear, transparent, and enforced.

Maximising value in the selection of PPPs

4. Governments should set and pursue strategic goals regarding infrastructure development on the highest political level. PPPs should not be a subject to any institutional, procedural or accounting bias.
5. Prospective infrastructure projects should be assessed for their key characteristics and risks to determine the investment method with most value for money. A procurement option pre-test can help governments to determine whether to investigate PPPs as a further option.
6. Risks should be defined, identified, measured and allocated to the party most able to carry and mitigate them.
7. Procuring authorities should be ready for the operational phase of a PPP, which requires vigilance and effort similar to the pre-project phase.
8. In the event of renegotiation, the public sector should only consider compensations to the private sector partners if conditions have changed due to discretionary public policy decisions.
9. The government should ensure a level playing field and a sufficient amount of competition throughout the tendering process.

Using the budgetary process transparently to minimise fiscal risks and maintain the integrity of the procurement process

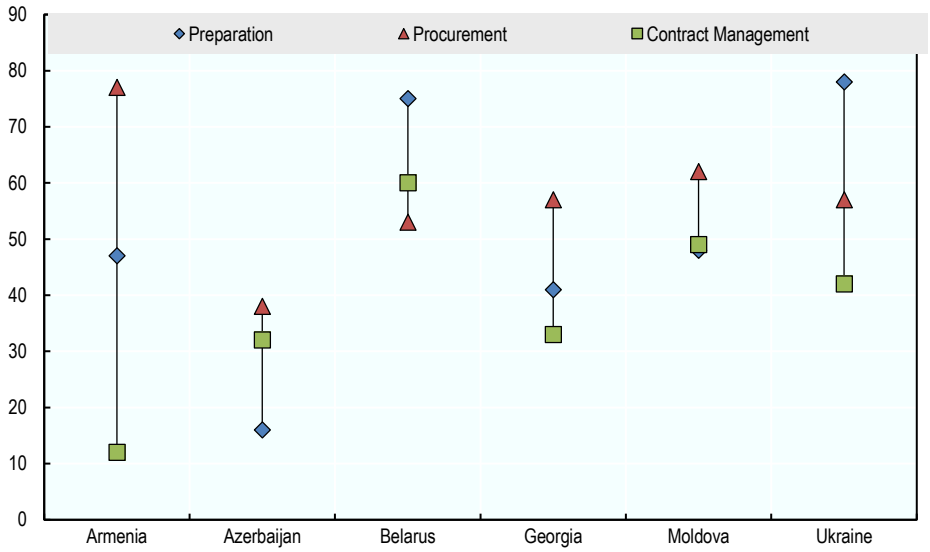
10. The Central Budget Authority should ensure that the PPP project is affordable within the framework of wider fiscal policy.
11. Transparency should be maintained throughout the budgeting process. All costs and contingent liabilities should be disclosed.
12. The government should maintain the integrity of the procurement process by guarding against waste and corruption.

Source: (OECD, 2012[55])

The effectiveness of the PPP units and wider infrastructure planning could be improved by the introduction of project preparation funds, which are used to finance feasibility studies and technical assistance to prepare future investments. Currently, project preparation funds have not been adopted in the EaP countries.

Overall, according to an assessment by the EBRD and the World Bank, the quality of regulatory frameworks for PPPs varies widely among EaP countries (World Bank, 2018[3]). The assessment, which measures the regulatory frameworks across three different areas: preparation, procurement, and contract management standards. Based on these metrics, Belarus has the highest quality regulatory framework for PPPs. However, most EaP countries, including Belarus, have notable deficiencies in the quality of procurement frameworks. Such deficiencies undermine a level playing field, which is an important precondition for higher private sector participation in the delivery of infrastructure projects. The award of procurement contracts, in particular, is not sufficiently transparent. Only Armenia and Ukraine publish the award notices alongside grounds for selection. EaP governments should continue working to introduce more transparency to procurement to encourage genuine competition and wider private sector participation.

Figure 3.1. Regulatory framework scoreboard for PPPs in the Eastern Partner countries by the World Bank



Note: Scores from 0 to 100 with higher score indicating greater compliance with internationally recognised good practices. For details on international good practices, see the box below.

Source: Adapted from Procuring Infrastructure Public-Private Partnerships (World Bank, 2018[3]).

Box 3.4. International good practices for PPPs

The regulatory and legal frameworks vary significantly across different countries with some countries clearly separating between PPPs and other forms of procurement, while in others PPPs are treated as a dimension of wider procurement policy. The World Bank (2018) report on PPPs recognises good practices in different stages of the PPP process:

Table 3.2. International good practices for PPP projects

Preparatory Stage of PPPs	Procurement Stage of PPPs	Contract Management Stage
A central government budget authority should approve financial implications of the project	Bid evaluation committee should consist of qualified professionals	The procuring authority ought to have a clearly defined monitoring and evaluation system and a contract management team to manage the implementation of the PPP contract with relevant information made public online
PPP projects should have a specific accounting/reporting framework	The procuring authority should publish the procurement notice online and allow potential bidders at least 30 days to submit proposals	Foreign companies that are part of the PPP should be able to repatriate the incomes generated by the PPP project
PPP projects should be assessed and prioritised in the context of wider national public investment plans	Foreign companies should not be barred from taking part in PPP procurements	Any modifications to the contract or changes to the structure of the private partner ought to be regulated

Assessment results of PPPs and tender documents should be made publicly available online	The tender documents should transparently set the selection criteria, and the procuring authority should organise a pre-bid conference to disseminate information	Dispute resolution mechanisms should be in place, and specific circumstances (e.g., setbacks in implementation, refinancing, changes in law) should be accounted for with the grounds of a termination of contract and its consequences clearly laid out
The PPP project should be adequately justified in the light of socioeconomic, fiscal, financial, environment and risk assessments	Award notice of the winning bidder and the grounds for selection should be made publicly available	
The procuring authority should draft and make the draft contract publicly available before approval	A pause period after the intended award of the contract should be allowed for other bidders to challenge the award decision	
To guarantee consistency and efficiency, the procuring authority should have PPP model contracts	The signed PPP contract and amendments should be publicly available	

Source: adapted from (World Bank, 2018[3])

Way forward: Improving infrastructure governance

Good governance and strategic vision beget effective management of infrastructure projects. This in turn establishes the foundation for increasing the private sector's participation in funding, construction and operation. The EaP governments have the fundamentals in place: strategy documents outline the vision and priorities for infrastructure development; dedicated PPP units work as bridges between the public and the private sector in the delivery of infrastructure projects; and project pipelines outline planned infrastructure projects (see Table 3.3). The EaP governments could consider the following:

- Plan infrastructure development holistically, following the OECD's key principles for infrastructure governance (see Box 3.5.).
- Refine existing governance frameworks by adopting infrastructure strategies that outline an all-governmental strategic vision for the development of infrastructure across different sectors. Similarly, the existing project pipelines could be improved by merging sectoral pipelines into a frequently updated, publicly available, and interactive central project pipeline.
- Establish project preparation funds to improve the efficiency of infrastructure planning. (See Box 3.6 for discussion on improving the practice of project appraisal for transport projects.)
- Guarantee that sufficient funding backs project pipelines.
- Ensure that infrastructure project pipelines are aligned with economic development goals and citizens' needs.
- Apply robust evaluation systems to ensure that pipeline projects represent value for money and are environmentally sustainable.
- Enhance information disclosure, data collection and sharing of best practices to improve infrastructure planning.
- Follow OECD principles on the public governance of PPPs, especially regarding the measures to maximise value.

Table 3.3. Governance frameworks for infrastructure investment in EaP countries

	All-governmental infrastructure strategy	Publicly available project pipeline	Dedicated PPP unit	Project preparation fund	National Development Bank
Armenia	Yes	In development	Yes	No	No
Azerbaijan	Yes	No	Yes	No	No
Belarus	Yes	Priority project pipeline part of the infrastructure strategy	Yes	N/A	Yes
Georgia	N/A	N/A	Yes	No	No
Moldova	No	No	Yes	No	No
Ukraine	No	Sectoral pipelines available	Yes	No	No

Source: (OECD, 2020[45])

Box 3.5. OECD Draft Recommendation on the Governance of Infrastructure

The OECD's Network of Infrastructure and PPP Senior Officials of the Public Governance Committee (PGC) developed the Draft Recommendation on the Governance of Infrastructure. The Draft Recommendation reflects the experience, needs and aspirations of the global infrastructure governance at large.

To ensure the efficient use and allocation of resources, the Draft Recommendation develops ten comprehensive policy recommendations:

1. develop a long-term strategic vision for infrastructure;
2. guard fiscal sustainability, affordability, and value for money;
3. ensure efficient and effective procurement of infrastructure projects;
4. ensure systematic and effective stakeholder engagement;
5. co-ordinate infrastructure policy across levels of government;
6. promote a legitimate, coherent, efficient and predictable regulatory framework;
7. implement a whole of government approach to manage threats to integrity;
8. undertake evidence-informed infrastructure decision making;
9. make sure the asset performs throughout its life; and
10. strengthen critical infrastructure resilience.

The recommendations take into account high-level policy directions in order to underline the specific work areas for Member and non-Member States adhering to the projects (Adherents). The Draft Recommendation on the Governance of Infrastructure will be a basis for OECD reviews and an available Toolkit that Adherents would be able to use in order to plan, make decisions, and monitor the delivery of public infrastructure.

Source: *OECD Draft Recommendations on the Governance of Infrastructure* (OECD, 2020[56])

Box 3.6. Improving the Practice of Transport Project Appraisal

Effective use of available funds is vital and starts with an effective selection of infrastructure projects. Cost-benefit analysis (CBA) is a vital tool for making good decisions on what projects to focus on. However, in practice, it can be difficult to assess the value for money of infrastructure projects in decision-making, and the choices of what projects to pick often involves political considerations where value for money is only one aspect. ITF and the OECD have looked at the issue regarding transport transports and developed some key insights on how to improve the practice of project appraisal.

The experience of OECD countries highlights the importance of recognising the real world complexity of infrastructure projects. CBA needs to be sufficiently broad and factors should not be excluded on the grounds of a poor understanding of their impact, but the uncertainty regarding, e.g. the societal impact, should be acknowledged during project planning. CBA analysis should also be adapted to national development goals. In one example, France has since 2007 implemented a project evaluation procedure where each project is assessed against project goals, and the project is assessed against alternative ways of meeting those goals. The impacts of competing project proposals are then ranked according to three pillars that reflect sustainable development: the economic impact, the social effects, and the environmental effects. Each pillar is then divided into sub-factors (e.g. employment, vulnerable groups, redistributive effects, human capital, access to essential goods/services, territorial cohesion for the social effects).

Source: (ITF, 2011[57])

Addressing infrastructure investment risks and obstacles in the EaP countries

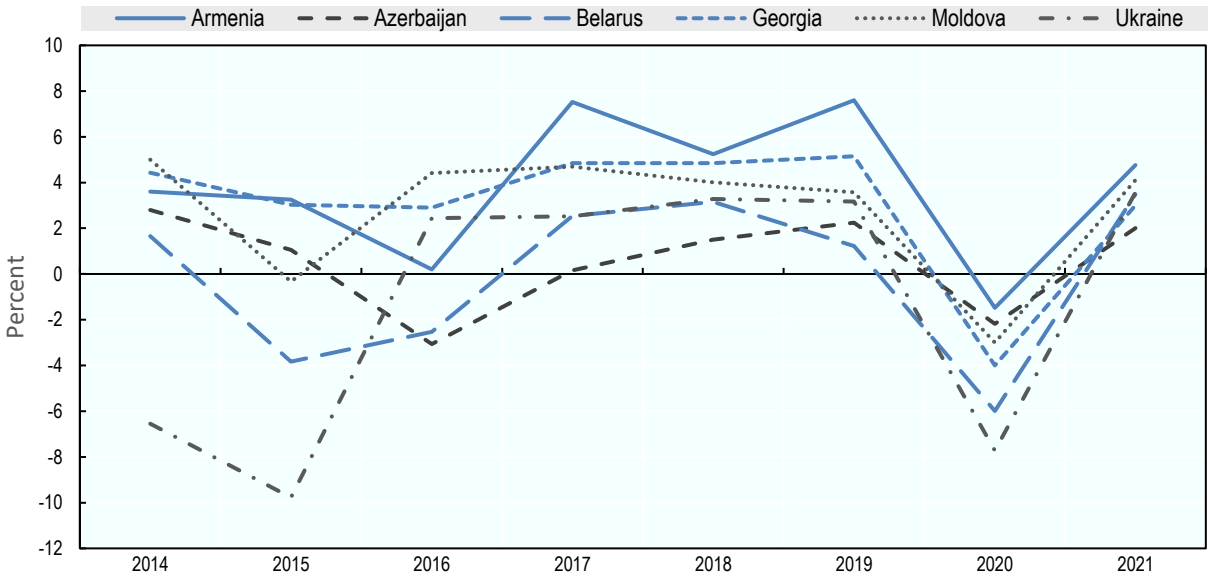
Infrastructure comprises immovable assets with high sunk costs and pronounced lock-in effects: a motorway cannot be dismantled and sold, nor can it easily be repurposed. Therefore, one of the defining features of infrastructure investment is the need to identify and price the full risks of the project before its initiation. Large infrastructure projects are intricate undertakings in any country. They often involve numerous subcontracts and suppliers, which exposes projects to delays and cost overruns, making risk assessment difficult. Assurances given in the financing agreement may not hold. In the case of new technologies, operators may not always be up to the task of running the infrastructure assets professionally. When things do not go as planned, or parties fail to honour their contractual obligations, the result can be lengthy arbitration or court processes (Weber, Staub-Bisang and Alfen, 2016[58]).

All of these factors make infrastructure assets difficult to invest in directly and divest from securely. This must be taken into consideration when assessing infrastructure as an asset class in the EaP countries. Barriers to private sector investment into infrastructure in EaP countries can broadly be separated into general market risks associated with infrastructure as an asset class, general investment risks within the EaP countries, and specific EaP risks and barriers to infrastructure investment.

Macroeconomic investment environment

The public health impact of the COVID-19 crisis in the first half of 2020 was not as severe in the EaP countries as in Western Europe. However, the pandemic is yet to run its course, and the economic impact has already been severe, chiefly because of the global economic slowdown, which, according to OECD forecasts, could lead to a 6% fall in global output in 2020, and take at least two years for recovery. The negative effect on the EaP countries is exacerbated by the fall in global commodity prices. This especially affects the petrochemical exporters, Azerbaijan and Belarus, and the rest of the region is hit indirectly through the fall in remittances from and trade with Russia (OECD, 2020[59]). The IMF forecasts the steepest economic decline in Ukraine (7% of GDP) followed by Belarus (5%), and the least severe decline in Armenia (1.5%). Both the IMF and EBRD expect a v-shaped recovery and higher than 5% GDP growth in 2021 in Armenia, Georgia, Moldova and Ukraine. The IMF forecasts a slightly slower recovery, anticipating 3% growth in 2021 for Belarus and 2% in Azerbaijan.

Figure 3.2. IMF forecast of GDP (y-to-y percent change)



Source: (IMF, 2020[60])

The EaP economies are relatively small and vulnerable to external shocks. The COVID-19 crisis is the third major economic shock to hit the region in a little more than a decade, following the global financial crisis of 2008-09, and the commodity price drops in 2014-15, which coincided with Russia's seizure and unilateral annexation of Crimea and the beginning of the war in Eastern Ukraine. The economic recovery in the second half of the decade was uneven, with growth more or less stalling in Azerbaijan, Belarus and Ukraine, compared to Armenia, Georgia and Moldova. The second half of the 2010s were also marked by notable government deficits across the region.

Box 3.7. Macroeconomic snapshots of the EaP countries

Armenia relies heavily on industry and agriculture, which accounted for 25% and 15% of GDP (respectively) in 2017. It joined the Eurasian Economic Union in 2015 and depends heavily on Russia for trade and remittances. Following near-stagnation in 2016, GDP growth accelerated to 7.5% in 2017. A peaceful revolution and change of government took place in 2018 and the pace of economic growth slowed considerably for a time, but the momentum for structural reforms has significantly increased.

Azerbaijan is the only EaP country dominated by the oil and gas industry. As such, the country is heavily dependent on the sector, which accounted for 90% of total exports in 2018. The construction of the Southern Gas Corridor between Azerbaijan and Europe should further increase the volume of energy exports to Europe.

Belarus has an economy closely integrated with Russia. Until recently, Belarus has benefitted from preferential rates on Russian crude oil, which is refined at two oil refineries and exported to western markets at a considerable profit. The oil revenues have allowed the country to prop up large state-owned enterprises, which generated nearly one-third of value added in 2016. The recession in 2015-16 was followed by a modest recovery, but increased political tensions with Russia and disputes over the price of oil are casting a shadow over short-term growth prospects.

Georgia lies at the centre of regional transit corridors, and is the only country in the South Caucasus to have open borders with all of its neighbours. Transport services accounted for 25% of its commercial service exports in 2017, and Georgia is considered to have significant potential to become a regional trade hub. Its economy remains reliant on relatively small industrial (23% of GDP) and agricultural sectors (7% of GDP).

Moldova relies on the export of agricultural products such as vegetables and wine, which make up 26% of its total exports. Over 65% of Moldova's exports go to the EU. Its economy is also highly dependent on remittances (of which over 40% come from the EU, and about 30% from Russia).

Ukraine is by far the largest of the EaP countries, both in terms of population and economic output. It generates 45% of the region's GDP. Its economy contracted sharply in 2014-15 as a consequence of Russia's occupation of Crimea and the war in Eastern Ukraine. The country continues to rely heavily on industry and agriculture, which account for 24% and 10% of its GDP (respectively). Ukraine's agriculture has a potential for further growth as about a third of the world's highly fertile black soil is located there.

Sources: Unless otherwise specified in the text, figures are from (World Bank, 2020[60]) and (ITC, 2019[62])

Table 3.4. Key macroeconomic indicators for the Eastern Partner countries, 2019

Indicators	Unit of measurement	Armenia	Azerbaijan	Belarus	Georgia	Moldova	Ukraine
GDP growth*	Percentage, y-o-y	7.6	2.2	1.2	5.1	3.5	3.2
Inflation**	Percentage, average	1.4	2.6	5.6	4.9	4.8	7.9
Government balance[1]**	Percentage of GDP	-1.8	5.6	2.4	-0.9	-1.1	-2.2
Current account balance*	Percentage of GDP	-7.2	9.1	-2	-5	-9.7	-2.7
Exports of goods and services*	Percentage of GDP	38.5	49.2	66.4	54	30.5	41.2
Imports of goods and services*	Percentage of GDP	52.9	36.9	66.9	62.9	55.2	49
FDI net inflows*	Percentage of GDP	.1.9	3.1	2	7.2	5	3.8

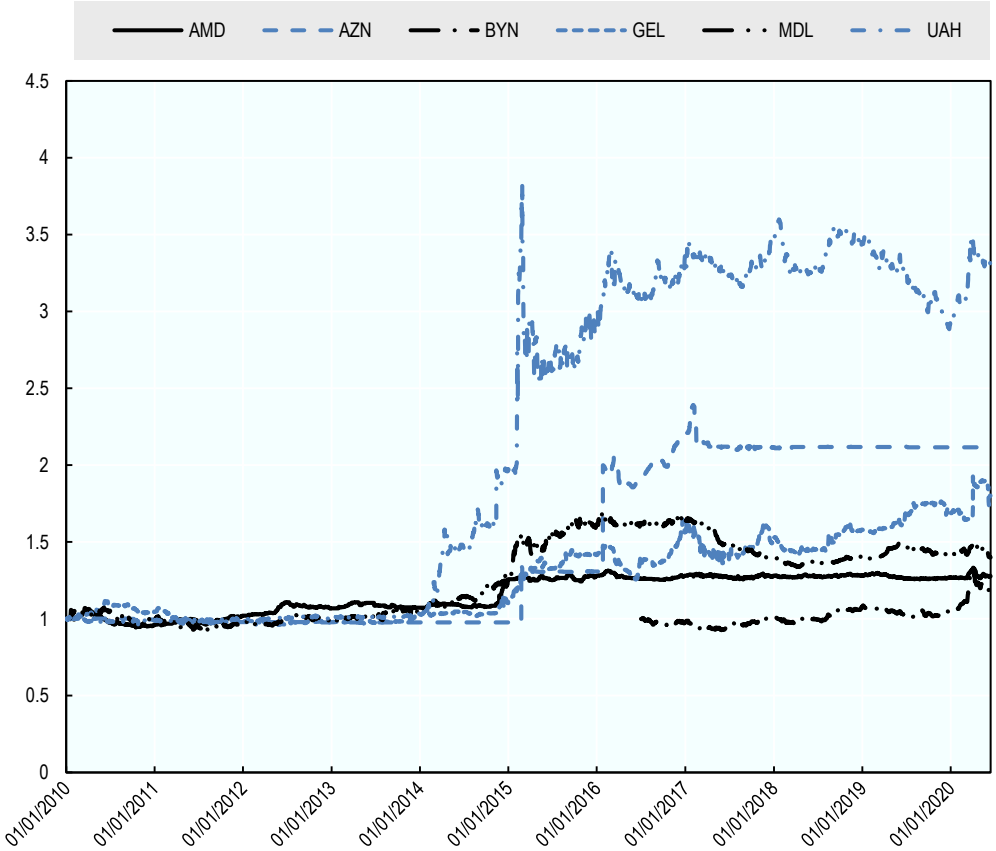
General government gross debt**	Percentage of GDP	51.3	18.8	47.8	44.9	29.7	60.2
Domestic credit to private sector*	Percentage of GDP	59.9	23.1	29.4	66.6	24.9	30.1

[1]*General government net lending/borrowing.*
[2]*Modeled ILO estimates.*

*Source: *World Bank* (2020[60]), *World Development indicators; **IMF* (2019b[63]), *World Economic Outlook, both accessed in December 2019. Originally published in* (OECD, 2020[56]).

The EaP countries are vulnerable to fluctuating commodity prices, and their economies remain undiversified, in terms of both products exported and trading partners. All countries had less diversified trade baskets in 2017 than comparable economies in the EU, like Czech Republic or Poland. The reliance on commodity exports manifests in volatile exchange rates in parts of the EaP region during the past decade. The first half of the 2010s saw relatively stable exchange rates. During the second half of the decade, countries faced notable currency devaluations. The most dramatic example of this was in 2014, when the Ukrainian hryvnia briefly dropped to a quarter of its value in relation to the US dollar. The exchange rate for the hryvnia and other regional currencies remained volatile throughout the second half of the decade, except Azerbaijan, which has maintained a fixed peg to the US dollar.

Figure 3.3. Exchange rates of EaP currencies in relation to USD



Note: Value 1 represents the exchange rate between USD and the local currency on January 1, 2010. Increasing values denote currency depreciation in relation to the dollar. Belarus introduced new currency, new rouble
Source: (OANDA, 2020[64])

Changes in interest or exchange rates can be detrimental to an infrastructure project if it relies heavily on financing in foreign currency, as do the majority of large infrastructure projects in the EaP countries with private participation. In OECD countries, most of the project finance debt is issued in local currency to minimise currency risk. The currency risk is present in projects where there is a mismatch between the project revenues and financing flow because of exchange rate fluctuations. In the EaP countries and other emerging markets, most of the debt is issued in foreign currency, exposing lenders to significant currency risk. According to the IJGlobal transaction database, which contains information on 160 infrastructure project related transaction in the EaP countries from 2003 to 2020, the vast majority of transactions were made in foreign currency (IJGlobal, 2020[65]). Of the total value of 126 USD billion in recorded transaction, 80% were made in USD, 18% in EUR and 1% in Japanese yen, meaning that local currencies accounted for less than 1% of total transactions.

A fixed interest rate for the entire duration of the loan can mitigate interest rate risk for borrowers. However, the interest rate risks are harder to mitigate in the case of long-term projects, since commercial banks rarely negotiate fixed rates for periods longer than 10 years. Exchange rate risk poses a challenge when the loans taken out for the project are in

a different currency than the revenue. For example, if a toll road is financed using loans in foreign currency, the operator may be unable to meet its debt obligations if the value of the local currency, paid by road-users, falls. It would be advisable to finance the project in the same currency as the revenue stream, but this is not always possible, especially if the available liquidity through the local banking system is limited. One instrument to alleviate the exchange rate risk is a guarantee from the public sector, but the guarantee is then subject to political risk (Weber, Staub-Bisang and Alfen, 2016[58]).

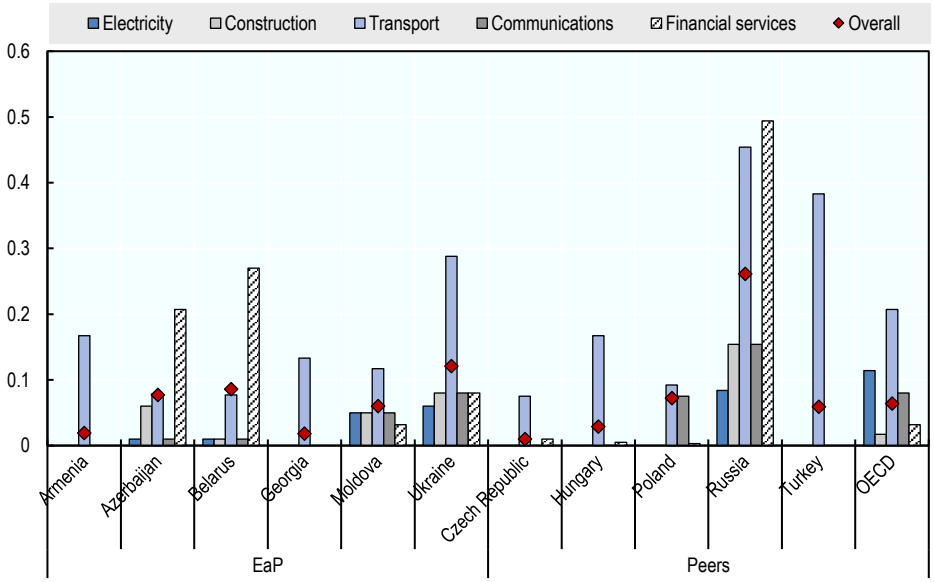
Political risks

The economic linkages between the EaP countries and major western European markets have become stronger during the last decade. The trade flows of Azerbaijan, Georgia, Moldova, and Ukraine have redirected towards the European Union since 2015. In 2017, Ukraine's total trade with the EU accounted for 40% of total exports, compared to 24% in 2009. The trend is likely to be reinforced as the effects of the Deep and Comprehensive Free Trade Area agreements—signed in 2014 with Moldova Ukraine and in 2016 with Georgia—reduce remaining frictions to trade. Georgia also signed a free trade agreement in 2018 with China and is currently negotiating one with India (OECD, 2020[12]). Trade frictions with Russia have also contributed to this reorientation of trade in all three countries.

With increased linkages to international markets, the region's ability to attract foreign investment is growing. Despite recent increases in FDI inflows, the uncertain geopolitical outlook undermines investor confidence. This is particularly the case in Ukraine, where FDI inflows in 2018 were only 23% of 2008 levels. As with trade, FDI inflows have redirected from Russia to the EU (OECD, 2020[12]). Beyond geopolitics, risks related to political risk, governance, and corruption are among the key factors undermining long-term investments into the EaP countries, especially for international investors.

In terms of regulatory frameworks, the infrastructure sectors in the EaP countries are relatively open to foreign investment. The OECD FDI Restrictiveness Index, which assesses statutory restrictions on FDI in 22 sectors, shows that the statutory obstacles are relatively low in the EaP countries and largely comparable to the OECD average, albeit with some exceptions. In Ukraine, the statutory restrictions to investments in transport sector are somewhat higher than the OECD average, and the financial sectors in Azerbaijan and Belarus are relatively closed off to foreign investment.

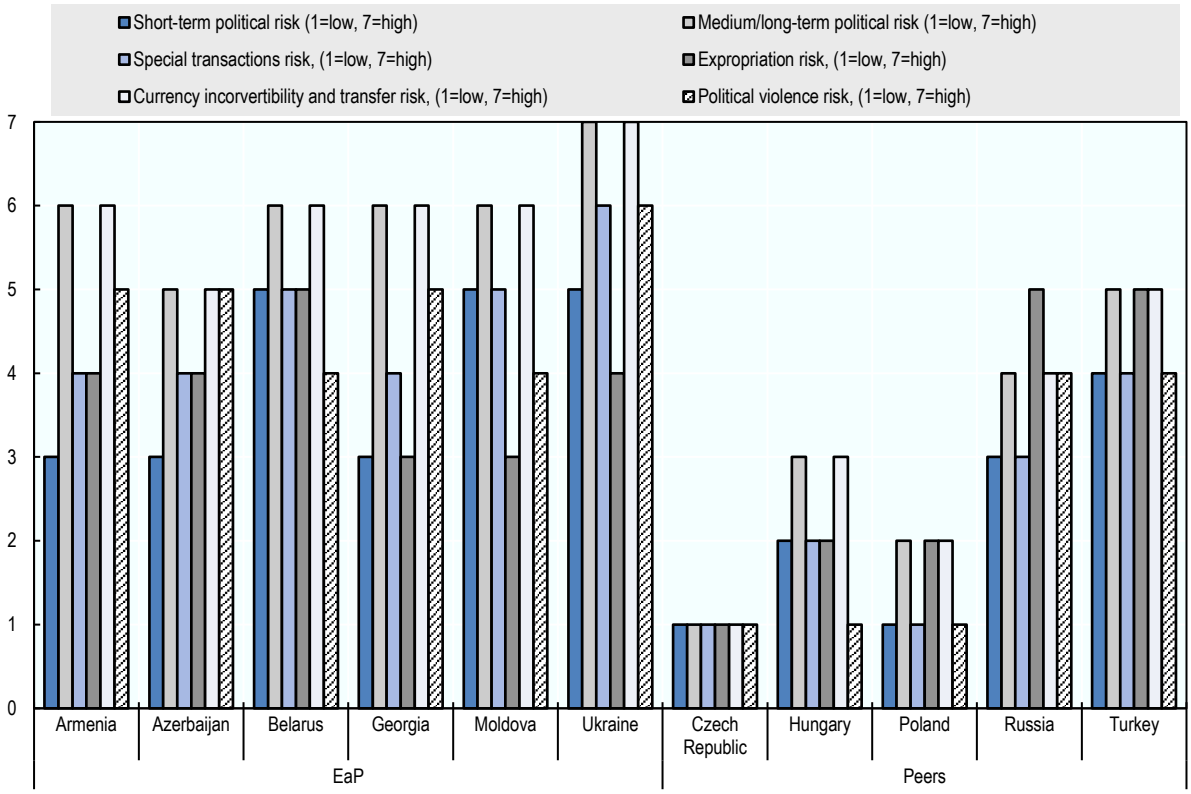
Figure 3.4. OECD FDI Restrictiveness Index



Source: (OECD, 2018[66])

In contrast to the statutory restrictions to FDI, risks related to political/geopolitical risks and quality of governance, especially the prevalence of corruption, are much higher in the EaP countries than in emerging markets within the OECD and in some aspects higher even than in Russia. International observers consider political risks high across the region with possibly negative implications for foreign investors. Frequent episodes of political instability and the overlap between business and politics exposes investors to expropriation risks. The adverse effects are pronounced in infrastructure sectors, where long-term profitability is linked to sustained investment plans and priorities that ideally would not be subject to pressure from changes in daily politics or competition between local elites.

Figure 3.5. Credendo's country risk assessment

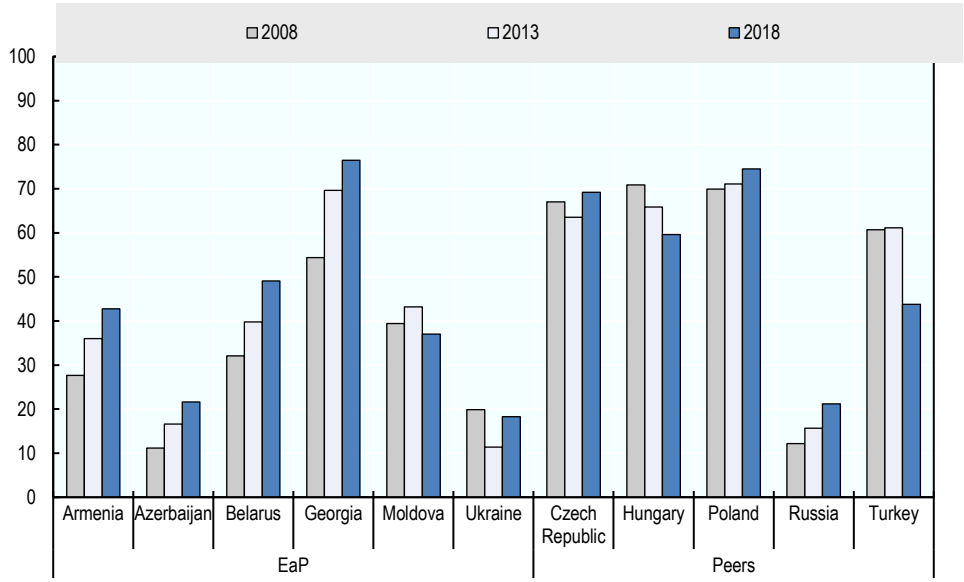


Note: Credendo is export credit agency of Belgium
Source: (Credendo, 2020[67])

The perception of high political risk constrains the potential for investment by making investors more hesitant, and this tends to be reflected in higher interest rates, which limit the potential investor base. As a result, many large institutional investors, like pension funds, are less likely or prohibited from making large investments into the region, limiting the potential investor base.

Therefore, it is extremely important that EaP countries continue to build an enabling investment environment by strengthening the rule of law and independence of the judiciary, and redoubling efforts to root out corruption. Georgia has made significant progress over the past decade in reducing corruption, and Armenia, Azerbaijan and Belarus have also advanced. The situations in Moldova and Ukraine remain problematic, according to the World Bank's Control of Corruption index, which is based on the survey of country risk experts, representatives of international organisations, and business leaders. Since the index is based on survey answers, the results are not entirely comparable between countries and regions, but they do illustrate the magnitude of the problem in parts of the EaP and how reforms can lead to even quick progress if backed by sustained political commitment (World Bank, 2018[68]).

Figure 3.6. Control of corruption



Source: World Bank Governance Indicators (World Bank, 2018[68])

To mitigate the negative effects of political risk, the EaP governments have adopted risk mitigation mechanisms to attract foreign investment. Armenia has bilateral investment treaties with 40 countries, Azerbaijan with 49, and Ukraine with 65. The treaties guarantee investors of fair treatment and protection from expropriation. Both countries are also members of the International Centre for Settlement of Investment Disputes, and there have been a number of cases in which international investors have won arbitration awards from the two governments. Still, while risk mitigation instruments can alleviate some of the negative effects of the flaws in the broader investment environment, they are not a substitute for sound institutional framework and a level playing field.

Box 3.8. Georgia's Anaklia Port – A case of construction and political risk

In 2016, Georgia made a decision to build the country's first deep-water port on the Black Sea in Anaklia. The Anaklia Development Consortium, a joint Georgian-American venture, was established to construct the port, and the construction began in 2017 with the intention to finish the project by the end of 2020. However, the project quickly descended into controversy and infighting between the Georgian government and the contractor. The construction lagged behind schedule, and the government eventually cancelled its contract with the consortium in January 2020, citing the contractor's inability to deliver on its promises. Furthermore, in 2019, the government of Georgia brought fraud charges against the head of the consortium and a private bank involved in the project. The consortium retorted that the charges were politically motivated and accused the Georgian government of deliberately undermining the project. Despite a bipartisan support for the construction of the port and backing from western governments, the future of the project is now unclear,

and the controversy surrounding the project has emerged as a major issue in Georgian domestic politics.

Source: (Hess and Otarashvili, 2020[69])

Way forward: Mitigating risks

To foster more active private sector participation in infrastructure projects, the EaP governments could focus on a dual strategy. The long-term potential for private investment is only increased by building an enabling environment for all investments. That means guaranteeing the independence of the judiciary as an impartial enforcer of contracts, assuring the transparency and integrity of infrastructure governance, and doing much more to root out corruption. At the same time, the current untapped potential for increasing private sector investment could be better realised by wider adoption of risk mitigation instruments. Private investors turn away from investments where the expected returns do not match the risk profile of the investment. Through de-risking instruments, the public sector can limit the risk exposure of private investors. However, de-risking should be used in a targeted manner, and not as a blanket check to attract private investment for the sake of private investment into projects that are not economically feasible (Makovšek, 2018[70]).The EaP governments could consider the following:

- supporting alternative infrastructure financing models through the use of financial structures and vehicles that include governmental de-risking instruments (minimum payments by contracting authority, default guarantees, refinancing guarantees, exchange rate guarantees);
- leveraging the capabilities of national and multilateral development banks to de-risk projects (MDBs can for example finance high-risk components in a larger infrastructure project to reduce the risk burden on private investors);
- making (quasi-)equity contributions with the aim of enhancing financing and risk profiles of infrastructure projects;
- establishing dedicated guarantee funds to support the development of PPPs;
- alleviating currency risk by promoting local currency investments and hedging instruments;
- setting up governance frameworks for project development that enhance the management of commercial, financial and legal risks; and
- promoting blended finance approaches that involve the government, NDBs, MDSs, and/or development finance institutions (see Box 3.9. for how MDBs can crowd-in private investment through blended finance).

Box 3.9. Development finance can catalyst private sector finance through blended finance techniques

Blended finance is the strategic use of development finance for the mobilisation of additional finance towards sustainable development. Blended finance techniques can

include, for example, guarantees and technical assistance. Development actors can use credit guarantees to limit the risk exposure of private sector investors and increase the capacity of private financiers to tailor blended financing techniques to take into account the needs of the local context and specific sectors. Blended finance can be used at different stages of the value chain, and their effective use is dependent on taking into account the underlying business models and respective revenue streams.

The OECD has developed five key principles that underline effective and sustainable use of blended finance techniques for governments to follow:

1. *Anchor blended finance use to a development rationale: development finance in blended finance should be used to maximise development outcomes and impact*: before using blended finance, governments and donors should set clear impact targets that the blended finance techniques are aiming to achieve. Projects that incorporate blended finance techniques should follow the highest standards of corporate governance, planning and integrity to set a positive example for the wider economy.
2. *Design blended finance to increase the mobilisation of commercial finance*: blended finance can act as a pathfinder by bringing commercial financing to projects and sectors where commercially available funds are insufficient. In an early stage, concessions are often unavoidable but as markets mature, the volume of public contributions should decline.
3. *Tailor blended finance to local context*: blended finance techniques can support the development of local financial markets by seeking opportunities to work together with local financial actors. Furthermore, blended finance should be aligned with national development goals.
4. *Focus on effective partnering for blended finance*: in a key component, participants in blended finance should carefully assess and balance the risk allocation between development and commercial parties.
5. *Monitor blended finance for transparency and results*: at the start of the project, all parties should agree on a shared evaluation and monitoring framework, which includes clearly defined key performance indicators.

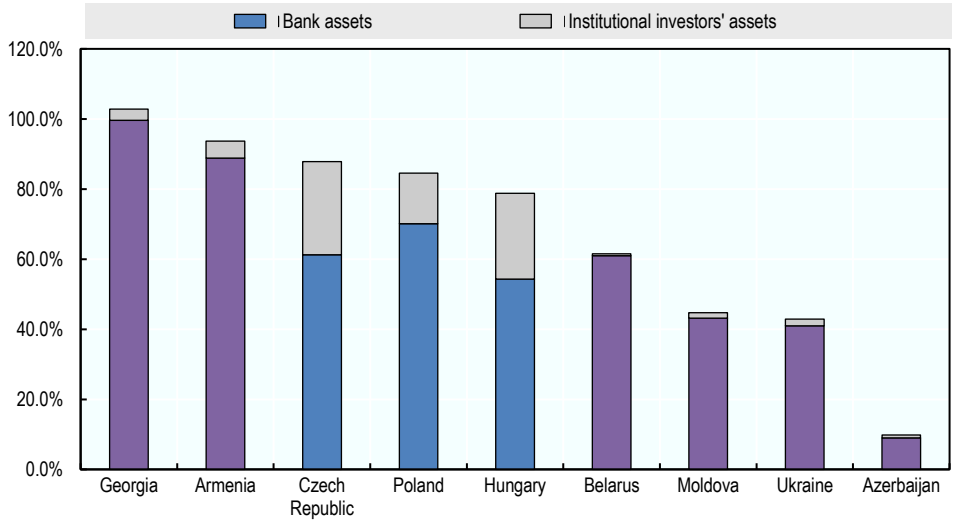
Source: (OECD, 2018[71])

Strengthening financial sector development and the capacity for infrastructure investment

Financial sectors in the EaP countries are characterised by the dominance of banks, high levels of dollarisation, and low resilience to shocks. These factors undermine the ability of domestic financial systems to provide infrastructure finance, which is often large in scale and have a long time span. In terms of the overall assets, the banking sectors in the EaP countries are relatively well-developed, holding assets that are, proportional to GDP, comparable to emerging markets in Central Europe. State-owned banks continue to play a leading role in EaP banking sectors, particularly in Belarus. The overall macroeconomic dependency on Russia and on commodity markets exposes the region's banking sectors to shocks and fluctuations in external markets (EIB, 2018[72]). In contrast to the banking

sectors, capital markets are simply under-developed and the institutional investor base is narrow. Pension funds', insurance companies' and asset management firms' role in the financial markets remain in its infancy (see Figure 3.7 for banking sector and institutional investors' assets). However, the importance of institutional investors has gradually been growing. Recent reforms in parts of the region (Armenia and Ukraine) have increased the importance of pension funds.

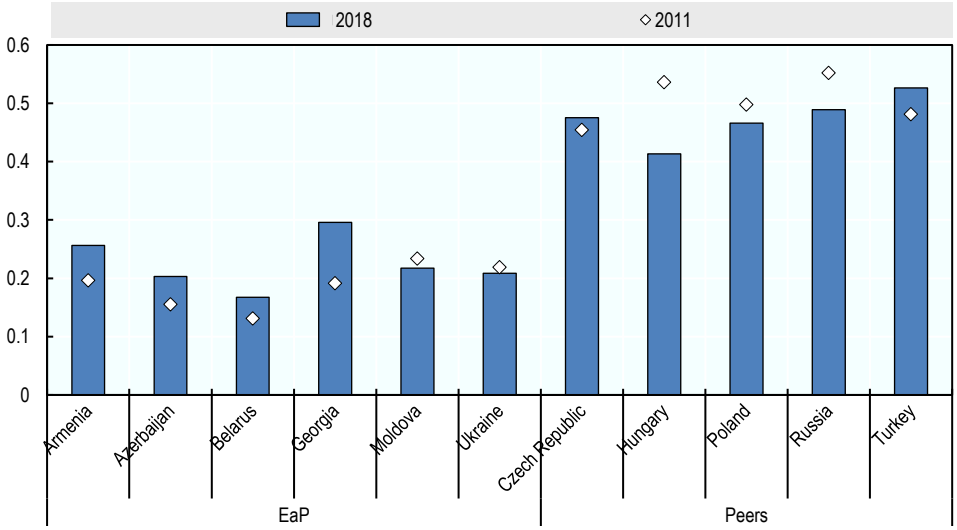
Figure 3.7. Banking sector and institutional investors' assets (% of GDP) in 2019



Note: Institutional investors' assets include the assets of pension funds, insurance companies, and asset management companies. Bank assets for EaP countries are coloured in purple.
Source: Survey of EaP governments for institutional investors' assets, OECD calculations, IMF figures for banking sector assets.

In terms of the development of the financial system, the IMF highlights how the financial systems in the EaP countries are significantly less developed than in emerging markets in Central Europe, Russia, and Turkey (Figure 3.8). The financial system is the most developed in Georgia. From 2011 to 2018, the financial systems of Armenia, Azerbaijan, Belarus and Georgia developed notably, while the banking crisis in Moldova and Ukraine lowered those countries' scores.

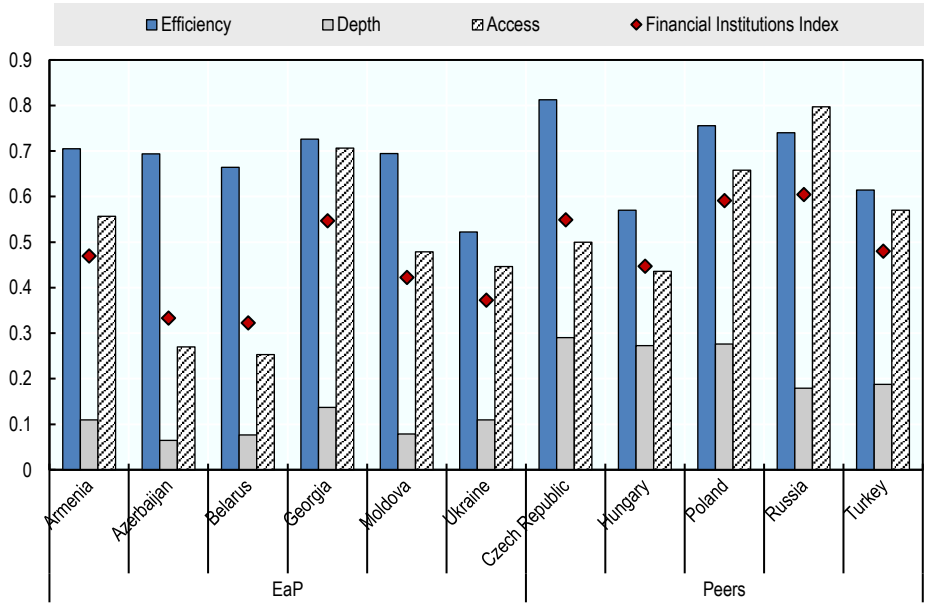
Figure 3.8. IMF Financial Development Index



Note: The scores are on scale 0 (least developed) to 1 (most developed). The index is a relative ranking of countries on the depth, access, and efficiency of their financial institutions and markets. The score is an aggregate score that combines the separate Financial Institutions and Markets indexes.
Source: (IMF, 2020[73])

The IMF Financial Development index is a composite of two sub-indexes, the financial institutions index and the financial markets index. The former is focused on banks and institutional investors; the latter look at the development of the securities market. In the financial development index (Figure 3.9), the scores for the EaP countries are comparable or only slightly lower than in the CEE countries. Georgia and Armenia have the highest scores, and Georgia's score for the quality of the institutional framework surpasses Hungary's. The best ratings come from indicators that measure interest rate margins and liquidity ratios. The lower scores reflect the relatively small role of non-bank financial institutions and underdevelopment of capital markets.

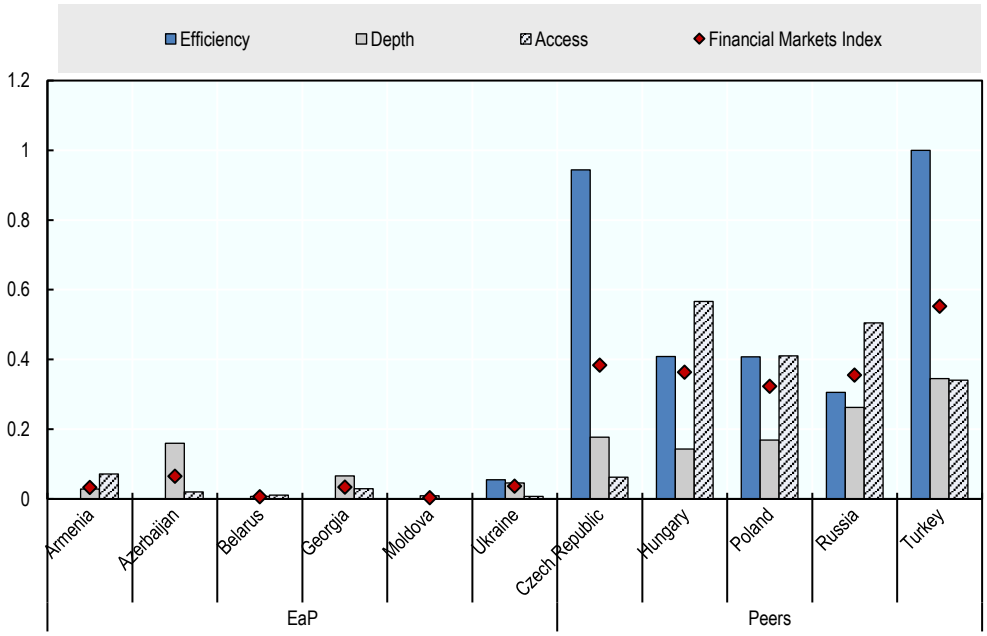
Figure 3.9. IMF Financial Institutions Index 2018



Note: The financial institutions index is an aggregate of the depth, access and efficiency indexes. Depth is measured through data on bank credit to the private sector (% of GDP), pension fund assets to GDP, mutual fund assets to GDP, and insurance premiums to GDP. Access is measured through data on bank branches and ATMs per 100,000 adults. Efficiency is based on data on banking sector net interest margin, lending-deposits spread, non-interest income to total income, overhead costs to total assets, return on assets and return on equity.
Source: (IMF, 2020[73])

The financial markets development index, which focuses on the securities market, highlights the uneven development of the financial sectors in the EaP countries (Figure 3.10). While the financial institutions, especially banks, are relatively developed, securities markets in the EaP countries remain very small and stock markets virtually non-existent. The gap between the EaP countries and their peer economies is illustrative. The small market size of the EaP countries is undoubtedly one of the underlying reasons for the gap, and unfortunately one of the most difficult to overcome. Foreign emerging market investors mostly invest into larger markets, and domestic capital for equity investors is limited given the small size of institutional investors. Retail investors, on the other hand, rarely invest in equity, partially because of the high deposit interest rates, which have remained above 6% in most of the EaP countries in recent years.

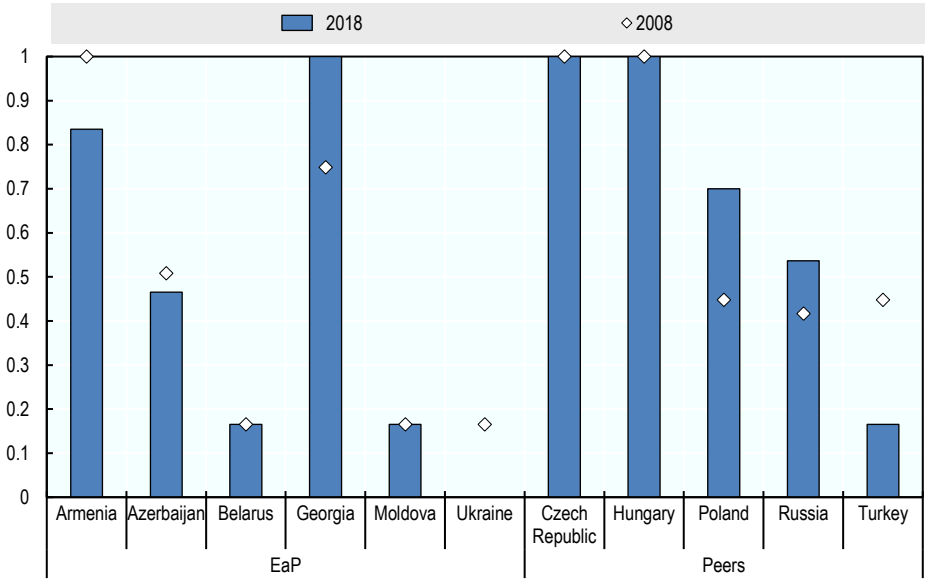
Figure 3.10. Financial Markets Index 2018



Note: The Financial Markets Index is an aggregate of access, depth and efficiency indicators. The access compiles data on the percent of market capitalisation outside of top 10 largest companies and total number of issuers of debt (domestic and external) per 100,000 adults. Efficiency measures stock market turnover ratio (stocks traded to market capitalisation). Depth compiles data on stock market capitalisation to GDP, stocks traded to GDP, international debt securities of government to GDP, and total debt securities of financial and nonfinancial corporations to GDP.
Source: (IMF, 2020[73])

The financial markets of the EaP countries are a mix of relatively open ones, like Armenia and Georgia, and ones like Belarus, Moldova and Ukraine with significant restrictions on cross-border transactions with capital. The capital controls can limit the capacity of international investors to invest in infrastructure projects in the region, especially using local currency. The same controls can also limit the entry of foreign banks into the local banking sector. Presence of foreign banks in emerging markets is often considered beneficial for the development of the local financial sector and thus indirectly for the capacity of the financial system to provide funds for infrastructure development. At the same time, capital controls can help enforce monetary policy autonomy and financial stability (Herrala, 2020[74]). Poland, which is widely considered a success story in creating a healthy banking sector during the transition, opened its banking sector to foreign investment more gradually than other countries in the region. It limited entry by foreign banks by requiring them to collaborate with Polish banks by buying equity stakes and sharing expertise. At the same time, institution building was prioritised, and robust financial supervision was established. Poland's approach succeeded in creating a banking sector, which was large enough to provide sufficient credit but not too large to threaten financial stability (Piatkowski, 2018[75]). Therefore, while complete capital market liberalisation might not be desirable, the benefits of existing controls should carefully be weighed against the potential of increasing the volume of cross-border finance for infrastructure development.

Figure 3.11. Financial openness index



Note: Values on scale 0 (closed) to 1 (open). KAOPEN is based on the binary dummy variables that codify the tabulation of restrictions on cross-border financial transactions reported in the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER).
Source: (Chinn and Ito, 2020[76])

Banking systems in the EaP countries

Banks dominate the financial markets of the EaP countries. Bank assets account for over 80% of total financial sector assets in all EaP countries (up to 96% of financial sector assets in Azerbaijan). The ratio of deposits to GDP has notably grown in most of the EaP countries before the global financial crisis. The 2008-2009 financial crisis exposed severe vulnerabilities in the banking sectors of the region. In the early 2000s, many banks had borrowed heavily in foreign currency. Unhedged borrowing and weak regulatory frameworks resulted in significant weakening of banks' balance sheets when the crisis hit. A second shock affected the banking sectors of the EaP countries in 2014-2015, when the fall in global commodity prices led to a significant contraction in Russia. The downturn, Russia's seizure of Crimea, and aggression in Eastern Ukraine resulted in a banking crisis in Ukraine in 2015, exposing systemic mismanagement and corruption in the banking sector. During the crisis, nearly half of Ukraine's banks, representing third of the country's banking assets, went bankrupt (Sadowski, 2017[77]). Separately, a major fraud scandal of major Moldavian banks, resulting in the loss of over USD 1 billion, triggered a banking crisis in Moldova. The falling commodity prices caused a downturn also in Azerbaijan and Belarus, and Armenia and Georgia were affected indirectly through the spill-over effects of falling remittances and plummeting demand from the Russian market.[2] Armenia, in particular, was also affected by the fall in other commodity prices, such as gold and copper (IMF, 2018[78]).

[2] Belarus was a special case: it is an oil *importer* but refined petroleum products are its principal exports. These have long relied on preferential rates for Russian crude oil refined at two Soviet-era refineries. As a result, the drop in oil prices actually *lowered* Belarus's terms of trade quite sharply.

Box 3.10. Banking sector reform in Ukraine

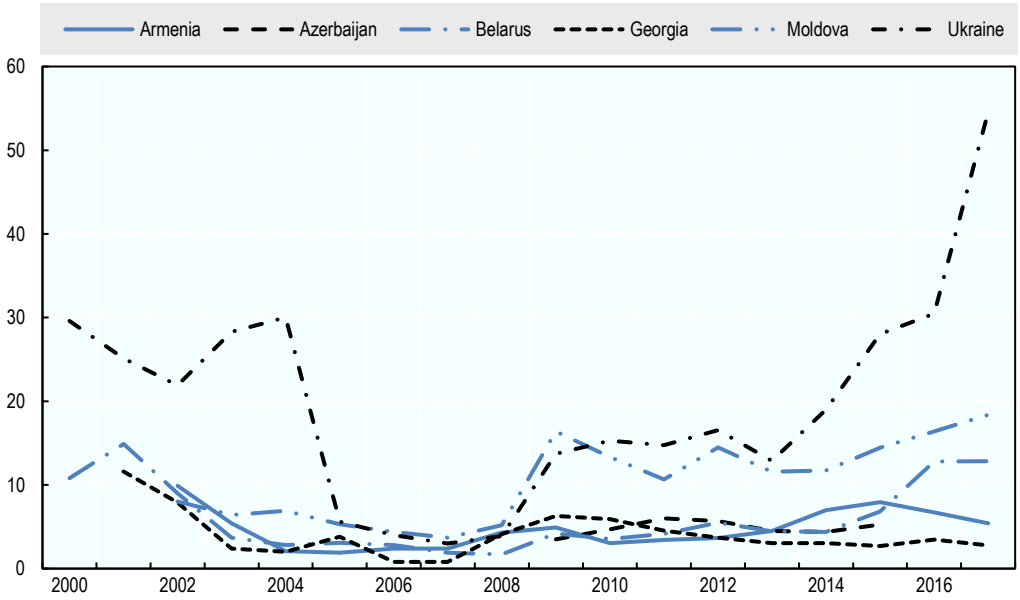
Russia's occupation of Crimea and support for separatists in Eastern Ukraine triggered a major economic and financial crisis, which resulted in an ongoing restructuring of Ukraine's banking sector. At the beginning of 2014, 180 banks operated in Ukraine. Ukraine's banking sector was characterised by lack of transparency. The ownership structure and balance sheets of a large number of banks had been murky for years. By late 2015, the National Bank of Ukraine had declared 62 banks insolvent. Following mergers and nationalisation of insolvent banks, including the country's largest private bank, PrivatBank, the sector has consolidated significantly. As of November 2020, 74 banks were operating. The government adopted a comprehensive programme for reform of the financial sector from 2015 to 2020. The reforms have successfully improved transparency of the banking sector, improved the regulatory efficiency of the National Bank of Ukraine, with a stabilising effect. However, the share of non-performing loans has remained high, and in January 2020, before the economic impact of the COVID-19 pandemic, the share of non-performing bank loans remained at 48%. In January 2020, the National Bank and the Government of Ukraine adopted the Strategy of Ukrainian Financial Sector Development until 2025, which emphasises five key policy areas: increasing stability of the financial system, promotion of macroeconomic development and growth, development of financial markets, expansion of financial inclusion, and the introduction of innovations to the financial sector.

Source: (Government of Ukraine, 2020[79])

The wave of external shocks in the mid-2010s resulted in exchange rate adjustments and moves toward liberalised exchange rate regimes. The large foreign exchange liabilities and deposits created structural imbalances, which caused banks to seek external financing. In many cases, governments had to intervene and inject liquidity to help banks to shore up their balance sheets. However, weak lending standards and a high level of non-performing loans, especially in Ukraine and in Moldova, continue to undermine the resilience of the region's banking sectors. The banking sectors in Armenia and Georgia weathered the crisis more effectively. Both countries had lower levels of non-performing loans before the crisis and better regulatory frameworks (IMF, 2018[78]). In most countries, some of the smaller non-viable banks were liquidated or merged with larger banks. In Ukraine, the largest private bank (PrivatBank) was nationalised in 2016 when regulators uncovered losses of over USD 5.5 billion. In Azerbaijan, the government pumped USD 530 million into the state-owned International Bank of Azerbaijan, which filed for bankruptcy in 2017 and subsequently underwent restructuring (EIB, 2018[72]).

Public investment helped to mitigate some of the effects caused by the external shocks, but public debt levels have consequently increased across the region. Dollarisation levels stabilised after the initial surges during the early stage of the crisis as greater exchange rate flexibility, higher interest rates and macro-prudential measures (e.g., reserve requirements on foreign exchange deposits) helped to restore investor confidence in local currencies (EIB, 2018[72]). Nevertheless, the share of non-performing bank loans remains high especially in Ukraine and Moldova (typical share of NPLs in OECD countries are around or lower than 5%) (Figure 3.12).

Figure 3.12. Non-performing loans to gross loans (% share)

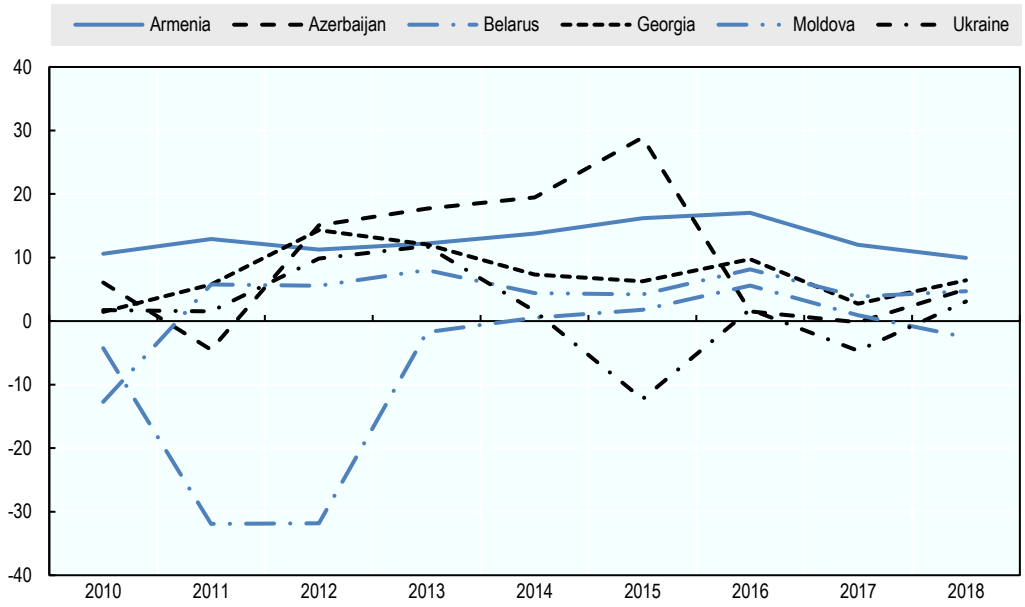


Source: (World Bank, 2020[18])

Constraints and potential for infrastructure investment

Structurally low savings rates, volatile inflation, and exchange rate fluctuations have incentivised local savers to opt for more stable foreign currencies. Usually banks in the region lack derivative instruments to hedge against the related currency risk, which means they have to bear the risks themselves or pass them down to their clients in the form of higher interest rates. The weak property rights and difficulties in contract enforcement further exacerbate this dynamic. The EaP countries have high interest rates and a comparatively large proportion of loans that require collateral compared to other countries (EIB, 2018[72]). Interest rate volatility adds to an unpredictable investment climate in some EaP countries. Armenia, Georgia, and Moldova have successfully maintained relatively steady interest rates throughout the 2010s, although in the case of Armenia, real interest rates have been notably higher than other EaP countries towards the end of the decade. Interest rates also stabilised in the rest of the EaP region in the second half of the decade during the recovery that followed the economic downturns in 2014 and 2015.

Figure 3.13. Real interest rates in the EaP countries

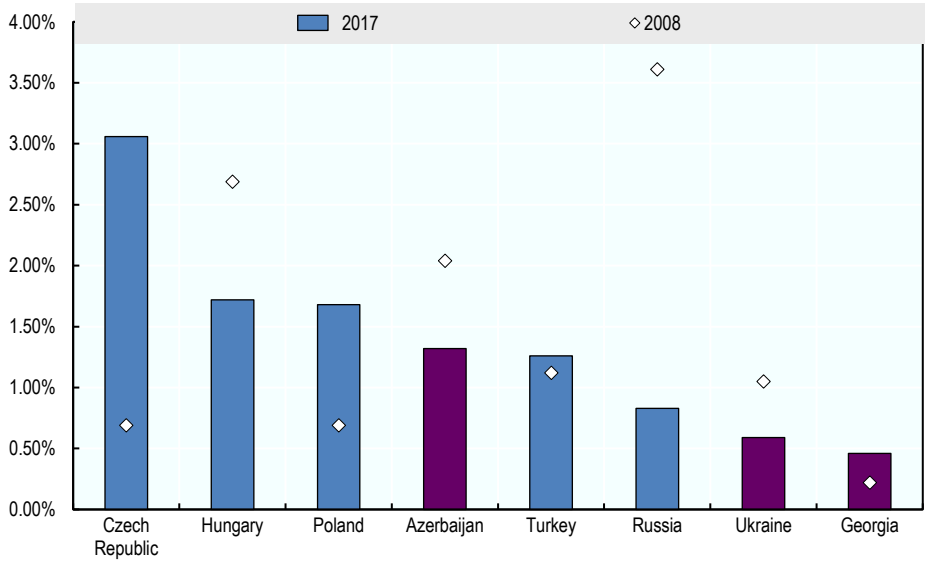


Note: Real interest rate is calculated by subtracting inflation from the bank lending rate.
Source: (IMF, 2020[80])

The above factors contribute to a high share of short-term loans in many of the EaP countries. In Ukraine, which has the highest share of short-term term loans, 53.2% of all loans had a maturity of less than a year in March 2020. In Georgia, 73% of loans have maturity of under 5 years, in Azerbaijan 72% and in Moldova, the figure is 58%. In Moldova 17.5%, in Azerbaijan 10.5% and in Georgia 7.2% of loans had a maturity of over 10 years, while in Ukraine only 3.3% of loans had a maturity of over 5 years (OECD, 2020[45]). The combination of short-termism and high interest rates in bank loans are particularly problematic for infrastructure investments and underline the need for continued development of a stable banking system.

At the same time, the banks in some of the EaP countries have experience in more advanced lending techniques such as syndicated loans, where a group of lenders work together to offer funds for a borrower/project. Azerbaijan, in particular, has a comparatively high volume of syndicated loans, while in the rest of the region they play only a relatively small role (see Figure 3.14). Similarly, banks in some of the EaP countries have experience with project finance, where lending is based on projected cash flow from the infrastructure development rather than the balance sheet of the developer. In Ukraine, renewable energy projects have attracted notable investments from international investors through project finance. The largest project is the development of a 500 MW wind farm, which has received over USD 500 million in finance from international investors (OECD, 2020[45]).

Figure 3.14. Syndicated Loan Issuance volume to GDP (%)



Note: No data for Armenia, Belarus, and Moldova. EaP countries are coloured in purple.
Source: (World Bank, 2020[81])

Box 3.11. Accelerating the development of the renewable energy sector: the case of Ukraine Sustainable Energy Lending Facility (USELF)

Established in 2009, USELF combines the EBRD's commercial financing with dedicated technical assistance support, and concessional grant co-financing. The facility has pioneered project finance for smaller scale renewable energy projects, such as solar plants and wind farms. The facility was launched with the aim of providing financing and technical assistance to renewable energy projects to demonstrate their economic potential; encourage and support policy dialogue and institutional capacity building that foster a favourable regulatory environment for the investments; and build capacity among project developers and encourage a vibrant private sector for renewable energy investment.

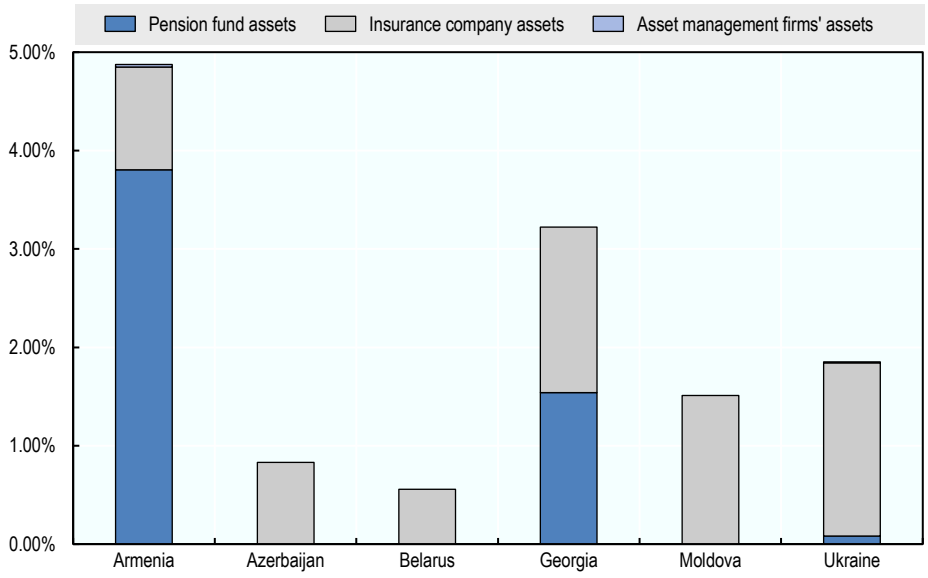
Source: (Ukraine Sustainable Lending Facility, 2020[82]).

Institutional investors

Institutional investors play only a marginal role in the financial markets of the EaP countries, though their role has been increasing over the past decade. In OECD countries, the total assets of investment funds, insurance companies and pension funds can exceed over 100% of GDP. In post-communist OECD countries, the overall assets of institutional investors tend to be under 30% of GDP. In the EaP countries, their assets do not exceed 5% of GDP. Asset management firms, in particular, are practically non-existent in the EaP financial markets, reflecting the small size of the local equity markets. Georgia and Moldova do not have any domestic asset management firms. While Armenia and Ukraine have a reasonably high number (29 in Armenia and 356 in Ukraine), their assets remain

negligible for infrastructure investment. Ukraine's asset management firms hold under USD 15 million in assets. Pension funds have only a small role in the EaP financial markets, since the majority of citizens in the region receive their pensions either directly from the state budget or indirectly through state-managed pension funds, which in turn receive funds directly from the state budget. However, pension system reforms are currently taking place in the region. Armenia has already established a multi-tier pension system with mandatory and voluntary pension funds. Ukraine is planning to implement similar reforms (OECD, 2020[45]).

Figure 3.15. Institutional investors' assets (% of GDP)



Source: OECD calculations based on a survey of EaP governments

The institutional investors are not currently engaging in infrastructure financing directly. Their role is poorly recorded by publicly available data and it is indirect, through purchases of government bonds. The main obstacles, identified in a survey of the EaP governments, relate to lack of appetite, limited capacity, and limited expertise of institutional investors to pursue the investments infrastructure assets require. However, considering the potential growth of institutional investors, especially pension funds, their ability to provide funds directly to infrastructure development should not be neglected. The EaP governments could make sure that regulatory regimes facilitate investment into alternative assets, like infrastructure, and promote the provision of financing instruments, like infrastructure project bonds.

Box 3.12. Promoting infrastructure investment by institutional investors

Institutional investors in OECD countries manage assets of up to USD 84 trillion. Most of this will remain unavailable to infrastructure investment due to the need for diversified, dividend paying portfolios. Nevertheless, the share of assets invested in infrastructure is too low. An OECD survey of large pension funds suggests that less than 1% of the pension fund assets were invested into infrastructure equity in 2017. However, the OECD survey found a significant level of interest in increasing the level of investment, especially into

sustainable infrastructure. The OECD database of environmentally sustainable infrastructure projects in the G20 countries shows that institutional investors invest into sustainable infrastructure through intermediated unlisted project equity more than through other available channels. This means that institutional investors prefer to invest through dedicated infrastructure funds and other externally managed vehicles rather than issuing debt or investing directly into an infrastructure project. Private sector involvement often involves public sector intervention, especially the offering of risk mitigation techniques. The most prevalent techniques are loans, co-investments and cornerstone stakes (i.e., co-investment with a majority share held by the public sector).

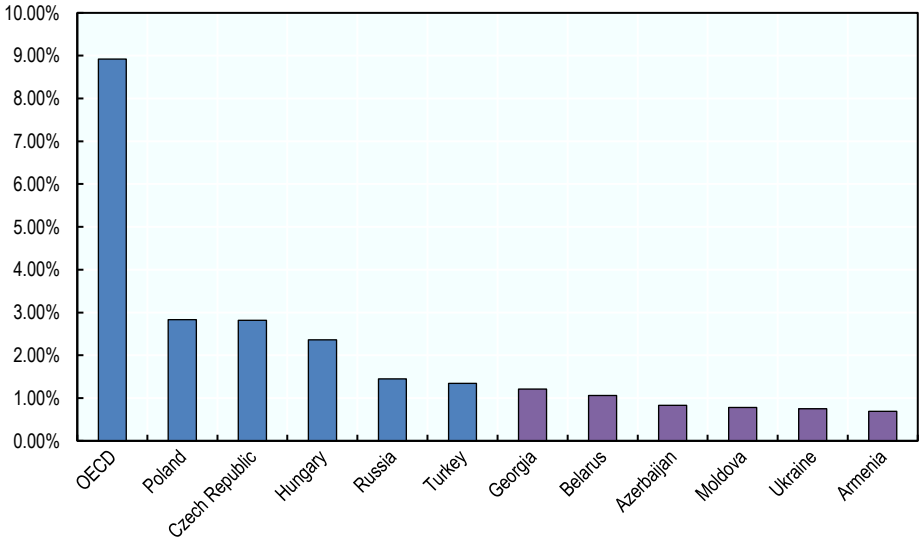
Source: (Röttgers, Tandon and Kaminker, 2017[83])

Insurance companies

Insurance companies represent the largest institutional investors in the EaP countries (with the exception of Armenia, where the pension funds play a bigger role). In Armenia, Belarus and Moldova, insurance companies manage assets ranging between USD 140 and USD 186 million, which is under 1% of their GDP. In Georgia, the insurance company assets amount to 1.6% of GDP (USD 270 million), and in Ukraine, 2% of GDP (USD 2.3 billion). The insurance sector is small in comparison to countries in Central and Eastern Europe and much smaller than in most of the OECD. In parts of the EaP region, market fragmentation has hindered the development of the insurance market. Seven private insurance companies operate in Armenia, 21 in Azerbaijan, eight in Belarus, 13 in Moldova, 14 in Armenia, 17 in Georgia, and 214 in Ukraine. In comparison, in the much larger European markets, the number of insurance companies tends to be smaller: France has 260 insurance companies and Poland only 50. In Ukraine, the number of insurance companies has steadily declined during the last few years, down from 361 in 2016, but the large number of insurance companies means that most insurers hold small assets.

In Azerbaijan and Ukraine, insurance companies can invest into alternative assets, including infrastructure, but at least in Azerbaijan they do not. In contrast, in Armenia, insurance companies are not allowed to invest in alternative assets, such as infrastructure objects. In Moldova, infrastructure assets are not included in the list of permitted asset categories that insurers can invest in with their technical reserves. In Ukraine, a law from the early 2000s outlines a special list of categories for insurers to invest in to support the development of the national economy. The list includes the development of tourism, transport, and telecommunications infrastructure. However, the law does not stipulate any specific benefits for investing into the listed asset categories (OECD, 2020[45]).

Figure 3.16. Insurance companies' gross written premiums (% of GDP)



Note: Insurance spending is defined as the ratio of direct gross premiums to GDP, which represents the relative importance of the insurance industry in the domestic economy. EaP countries are coloured in purple.
Source: Survey of the EaP governments and OECD statistics

Pension funds

Pension funds have undergone major reforms in EaP countries in recent years with the merger and establishment of new funds and reforms to the pension systems, which are seeking to establish pension funds as an integral part of the social security system, where pensions have largely been paid directly from the state budget. With the exception of Armenia, the pension fund assets remain limited in the EaP countries. In Armenia, three private pension funds held combined assets of USD 522 million in December 2019. Most of the pension fund assets are concentrated in one mandatory fund. In Georgia, pension funds are quickly becoming more important. The government of Georgia established a new public pension fund in 2019, and in June 2020, the fund had assets equivalent to USD 245 million. In addition, three private pension funds operate in the country, but their user base and assets are limited. In 2019, around 16 000 customers participated in the private pension funds, contributing in total USD 1.5 million. In Azerbaijan, Belarus, Moldova, and Ukraine, pension fund assets are under 1% of GDP. Ukraine is planning to increase the role of pension funds. Currently, the majority of pensioners receive their pensions through the Pension Fund of Ukraine, which is directly financed through the state budget, and does not invest funds into the Ukrainian economy. According to the reform plans, within the next two years, an accumulative state pension fund is going to be established. At the same time, the market for private pension funds has quickly evolved in Ukraine but remains fragmented. By the end of 2019, 63 private pension funds with 878 300 participants operated in Ukraine, managing total assets of USD 126 million. Both the number of participants and the assets significantly increased from 2018 to 2019: users by 16% and assets by 9.8%.

As pension funds grow, their potential for infrastructure investment increases. They are natural investors into medium- to long-term securities, which include can include infrastructure equity, project bonds, and bonds or equity of infrastructure corporates. In

many European countries, during the second half of the 20th century, pension funds played an active role in investing into national development. Private pension funds generally invest less into national development and rather opt for high returns in the capital markets. EaP governments face a trade-off between regulated pension funds that invest into national development projects and face lower returns on capital and allowing pension funds invest freely to maximise their returns. The former approach can be beneficial from the perspective of infrastructure development but increase the investment risks, while the latter can allow broader diversification but also channel large segment of investments into foreign equity markets.

In Armenia, Georgia, and Moldova (where pension funds are not operational), pension funds are barred from investing into alternative assets, such as infrastructure objects. In Ukraine, the legal status of infrastructure objects is ambiguous since infrastructure are neither on the list of approved nor forbidden assets for private pension funds. In Armenia, pension funds are only allowed to invest into publicly traded securities. However, they may still invest into infrastructure indirectly through the purchase of bonds or shares in infrastructure corporations or other publicly traded securities, as well as non-publicly traded units or shares in infrastructure funds (up to 10% of their assets), which account for the majority of infrastructure investment by institutional investors globally.

Securities market

In the EaP countries, bond markets are relatively well developed, but stock markets are shallow. The underdevelopment of the securities market is intertwined with the investor base. The small size of institutional investors limits the demand for the medium- to long-term securities that infrastructure securities most often represent.

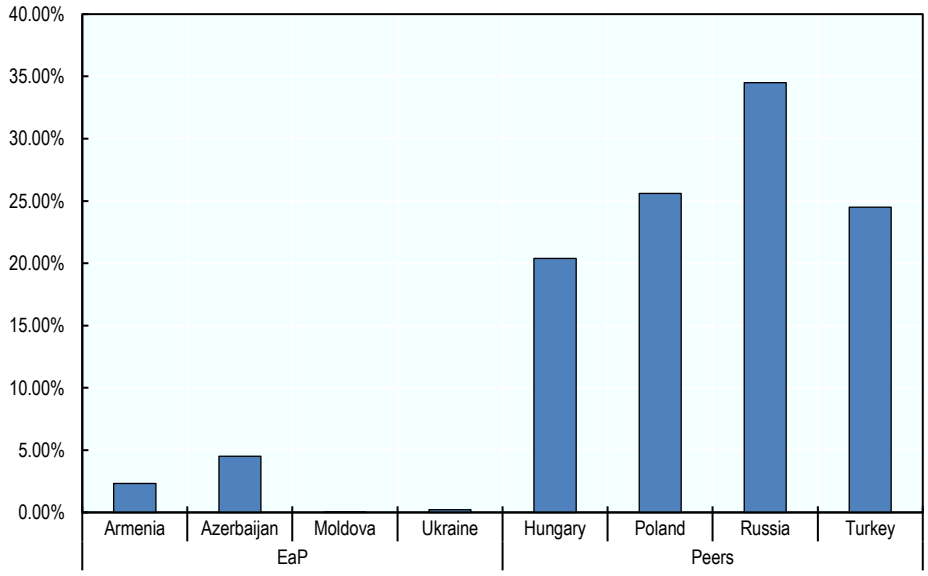
Stock markets in the EaP countries

Stock market capitalisation rates, which measure the valuation of publicly traded company shares, remain on a very low level across the EaP region in proportion to the region's GDP. Azerbaijan has the proportionally largest stock market, but even there the stock market capitalisation was only 4.5% of GDP in August 2020, followed by Armenia, where the stock market capitalisation rate was 2.31% at the end of 2019. In the rest of the region, market capitalisation rates are under 0.5% of GDP. The rates are significantly lower than among the peer group of emerging economies, where capitalisation rates are still much below the OECD average 107% in 2018. In Ukraine, the stock market is still recovering from the economic crisis of 2014. At the end of 2014, stock market capitalisation in Ukraine was 21.7% of GDP, but in 2015, the stock market capitalisation collapsed from 460 billion to UAH 63 billion, and the decline has continued since. The overall trading volumes are low across the region and only record individual transactions daily (OECD, 2020[45]).

Some infrastructure corporates are listed on the EaP stock exchanges. In Armenia, one engineering/construction company is listed on the local stock exchange. In Azerbaijan, one telecommunications company, which specialises in telecommunication satellites, is listed on the local stock exchange. Several energy and telecommunications companies are listed on the Ukrainian stock exchange. From the perspective of infrastructure investment, the potential of publicly traded equity as a source of infrastructure financing is currently limited in the EaP region. Trading volumes are small and infrastructure-specific financing instruments are not available. Listed or unlisted infrastructure equity funds and/or investment trusts are not currently available to domestic or foreign investors in the EaP

countries. This setup makes direct purchases of construction/energy companies' shares as the only indirect finance mechanism of infrastructure projects for equity investors.

Figure 3.17. Stock market capitalisation (% of GDP)



Note: No data on Georgia and Belarus. 2019 figures for Armenia, Moldova, Hungary, Poland, and Turkey. 2018 figures for Ukraine and Russia.
Source: OECD calculations based on a survey of EaP governments; data from (World Bank, 2020[81]).

Bond Markets

In bond markets, investors buy debt obligations either directly from the issuing corporation or government in the primary bond market or debt securities on the secondary market. Bond markets are relatively well developed in the EaP countries in comparison to the equity markets. Overall, the combined market for corporate and government bonds amounts to 13.2% of GDP in Armenia, 18% in Azerbaijan, and 22.5% of GDP in Belarus. In Armenia, the bond market consists mainly of government bonds (86% of the total). Similarly, in Azerbaijan, government bonds account for 79% of the total bond market. In Belarus, the government bond market is significantly smaller (24% of the total).

In terms of government bonds, Armenia has USD 1.41 billion of government bonds in circulation (10.4% of GDP), Belarus USD 4.2 billion (6.7% of GDP), and Ukraine USD 42.7 billion (28.5% of GDP). Despite these large amounts, the investor base is relatively narrow. Domestic banks hold around 80% of government bonds in Armenia and Moldova. In Armenia and Ukraine, the majority of government bonds in circulation are in local currency, which mitigates currency risk (see Box 3.13. for how Ukraine has built up a market for local currency government bonds).

Box 3.13. Building the domestic debt market for local currency issuances in Ukraine

During the 2014-2015 economic crisis, the level of public debt nominated in foreign currency skyrocketed in Ukraine. By the end of 2015, the level of publicly guaranteed debt reached 79% of GDP (from approximately 40% before the crisis), and 70% of the debt was denominated in foreign currency, which exacerbated the economic effect of the crisis when the Hryvnia devalued dramatically. Ukraine was forced to restructure its foreign debt obligations and request funding from external partners to overcome the crisis. High borrowing costs reflected the political and economic instability. In 2015, Ukraine raised approximately USD 400 million in Hryvnia-denominated debt at a weighted-average interest rate of 17%. In 2016, over half of debt auctions failed because of lack of demand or bids that were too low.

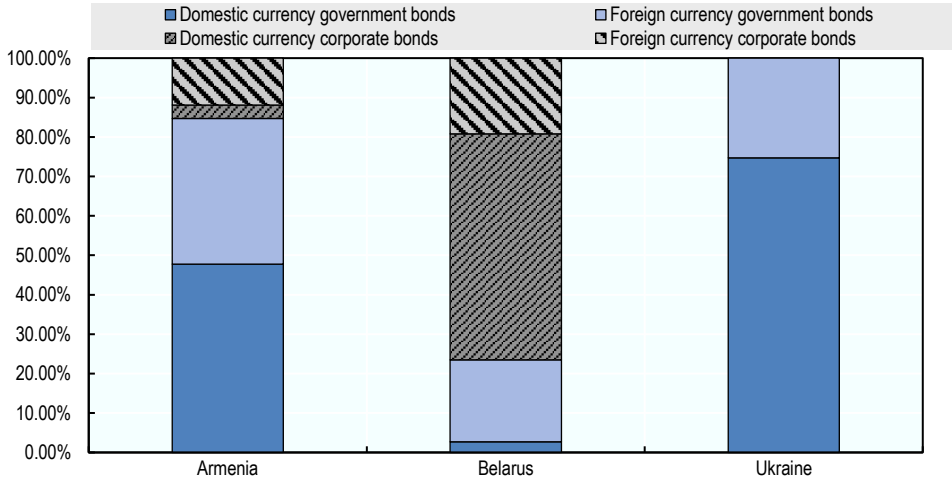
Ukraine worked with World Bank's Government Debt and Risk Management (GDRM) Program to build a more effective bond market. GDRM identified the disparity between what was offered and what investors demanded as one of the root causes for Ukraine's poor track record in attracting investors. In a related problem, Ukraine issued multiple small batches of bonds with different maturities. For example, in 2016, 75% of all outstanding UAH bonds were in a time window of less than 35 days, causing unnecessary fragmentation, which hampered secondary bond markets. Furthermore, the investor base was small, consisting mostly of domestic banks, which were funded by households and corporations. The absence of institutional investors, pension funds, and insurance companies meant that there was no natural demand for medium- or long-term securities.

Starting in 2017, Ukraine's debt office started a routine: calling interested banks on the Monday of every week and issuing bonds the following day. This practice established predictability and a clear issuance calendar to the bond market. The consultations with market participants helped increase the market's efficiency by increasing the issuance of bonds on market rates, pushing up their demand notably. The measures helped to bring down the share of unsuccessful UAH bond auctions from 63% in the first half of 2016 to 19% by the end of 2017. Higher certainty of the outcomes helped build a more reliable issuance calendar, which contributed to the positive feedback loop, where the government could rely on bond markets as a source of funding and banks assumed a more active role in buying bonds. At the same time, Ukraine reached out to international investors and built the necessary legal and regulatory frameworks for issuing UAH bonds to international investors. Because of the reforms, Ukraine's non-resident UAH-denominated bond portfolio increased from practically zero to 12% by July 2019.

The Ukrainian bond market has become significantly more efficient. The size of bonds has increased and the participation of international investors has widened the market, helping to broaden the demand and bring down the costs of bond issuance.

Source: (World Bank, 2019[84])

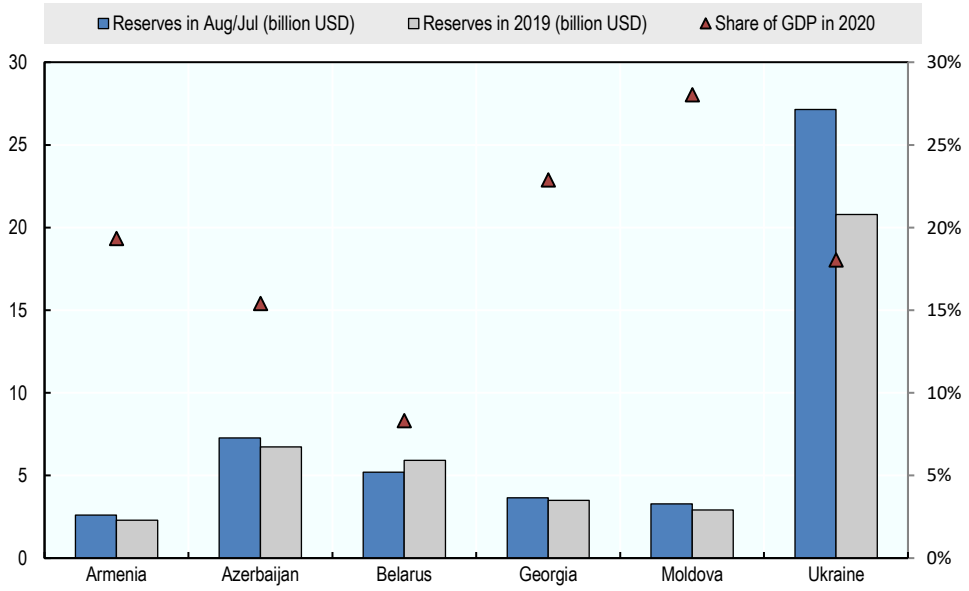
Figure 3.18. Government and corporate bonds in circulation by currency (% of total bonds in circulation)



Note: Armenia (31.12.2019), Belarus (1.4.2020), Ukraine (1.3.2020)
Source: Survey of the EaP governments

Local currency bonds are generally considered to be less risky than foreign currency bonds, but recent research suggests that the risk gap for emerging markets has steadily narrowed since 2000 (Amstad, Packer and Shek, 2018[85]). One of the preconditions for reducing the currency exchange rate risk is the presence of sufficient foreign currency reserves. In August 2020, EaP countries had foreign currency reserves that amounted to over 15% of their GDP except for Belarus, where reserves were under 10% of GDP. Despite the ongoing economic crisis and depreciations in the value of local currencies, the EaP countries have largely maintained their foreign currency reserves. Many of them, especially Ukraine, managed to increase substantially the size of their foreign reserves in 2019 ahead of the COVID-19 crisis. Amidst the crisis, international investors have withdrawn—especially equity investments—from emerging markets, resulting in an unprecedented capital flight. This capital flight has far surpassed the scale of the Global Financial Crisis (OECD, 2020[86]). In the EaP countries, the effects of capital flight hit in late March, which was reflected in the rapid depreciation of the local currencies. A month later, in April, the values of local currencies stabilised, and they have to a degree rebounded since. Because of the swift rebound, the foreign currency reserves of EaP central banks have remained on a relatively stable level.

Figure 3.19. Foreign currency reserves in the EaP countries



Source: (CEIC Data, 2020[87])

Despite the macro-prudential policies that have maintained relative financial stability during the COVID-19 crisis, international credit rating agencies rate the EaP government bonds within the non-investment grades. Low credit ratings have two main effects. First, they limit the demand for the EaP government bonds by many large international institutional investors, especially pension funds, which control large assets and invest into relatively low-risk assets. Second, the low credit ratings are then reflected by high interest rates. The interest rates for five-year government treasuries is around 7% in Armenia and Moldova and over 10% in Ukraine. In comparison, the yield on 10-year government treasuries of Poland was 1.3% in August 2020. The high yields on the EaP government bonds attract international investors who are willing to accept the higher risks associated with the bonds in return for the much larger return on investment (compared to the near zero yield of government treasuries in western Europe and North America). In June 2020, Belarus raised USD 1.2 billion in foreign currency bonds with maturity periods of 5.7 years and 10.7 years; interest rates were 5.86% for the former and 6.38% for the latter. The sale of the Belarusian government bonds demonstrates that despite economic crisis the EaP governments continue to be able to raise money from international investors. However, the high interest rates limit the economic feasibility of debt financing for projects where the return on investment is expected to be relatively low.

Table 3.5. Sovereign credit ratings for the EaP countries

	S&P	Moody's	Fitch	TE
Armenia		Ba3	BB-	16
Azerbaijan	BB+	Ba2	BB+	48
Belarus	B	B3	B	26
Georgia	BB	Ba2	BB	45
Moldova		B3		25
Ukraine	B	B3	B	26

Note: TE grading scale: 0 (in default) to 100 (prime).
Source: (Trading Economics, 2020[88])

EaP governments raise money from international investors to fund general government spending, but the potential for infrastructure-specific bonds remains largely untapped. In 2019, Ukraine became the first EaP country to introduce green bonds. Green bonds and sustainable investing have quickly become important trends in the wider financial markets that the EaP governments could attempt to utilise. Passive funds (index funds and ETFs) overtook active funds for the first time in 2019 in the size of their overall assets of the USD 41 trillion-fund markets. ESG funds, funds that invest according to sustainable environmental, social and governance principles, have bucked the trend. In spring 2020, amidst economic crisis, the ESG funds attracted over USD 70 billion in net investments, bringing the global ESG fund assets to over USD 1 trillion (Riding, 2020[89]). After 2017, ESG funds have quickly risen in size due to increased public demand and the availability of tailored investment instruments, such as green bonds. A wider availability of green bonds could help the EaP countries attract a new set of investors who are interested in combining the potentially high returns of emerging markets with ESG principles. In 2019, green bonds were issued for the first time in Ukraine, and specific legislation to regulate green bonds was introduced in 2020.

The potential of green bonds and other financial instruments to attract foreign investors is tied to the development of domestic bond markets. Currently, banks play an oversized role both in the government and in corporate bond markets, underlining the limited development of an institutional investor base. At the same time, the lack of domestic credit agencies undermines the ability of corporations and sub-national government entities to issue bonds, especially to international investors. Out of the EaP countries, only Ukraine has domestic credit rating agencies—five in total.

Box 3.14. An enabling environment for green bonds

Bonds are a natural way to finance infrastructure projects, which are characterised by high upfront capital costs, long maturity, and often inflation-linked revenue streams. The market for green bonds has emerged during the 2010s and grown exponentially from just USD 3 billion in 2011 to over USD 800 billion by 2020. Over USD 200 billion was issued in green bonds in 2019 alone. The market has quickly evolved as governments around the world have seized on the opportunity to attract investment into environmentally sustainable infrastructure projects. The Paris region was the first sub-national public entity to issue

green bonds in 2013, and Poland the first country to issue sovereign green bonds in 2016. Of the EaP countries, Ukraine was the first to introduce green bonds in 2019.

The OECD has identified key preconditions that underlie effective markets for green bonds. Those preconditions include robust domestic capital markets, the presence of institutional investors with the capacity to invest in green bonds, and a broader enabling environment for investment. The OECD has also identified the following as main obstacles to the development of a market for green bonds:

1. *General challenges to bond market development*: the underdevelopment of a domestic institutional investor base, underdevelopment of a credit rating system, lack of benchmark yield curves, lack of risk mitigation instruments, and insufficient market liquidity.
2. *Lack of awareness of the benefits of green bonds and existing international guidelines and standards*: since green bonds remain a nascent part of the international financial markets, the awareness by investors and governments in some countries remains limited.
3. *Lack of local green bond guidelines*: in cases where countries want to establish green bond markets in local currency, the lack of clear guidelines and definitions for green bonds hampers the development of the market.
4. *Costs of meeting green bond requirements*: the verification and certification of green bonds to ensure their sustainability is often expensive, limiting the ability of smaller corporate or public entities to issue green bonds.
5. *Lack of green bond ratings, indices and listings*: green credit ratings, which assess the environmental credentials and credit ratings of bonds, add transparency, helping investors. However, even in mature markets, only a small number of credit agencies, stock exchanges, and index companies offer green credit ratings.
6. *Barriers for investment by international investors*: While international green investors are becoming increasingly prominent part of the financial markets, the fragmentation of the local green bond market remains an obstacle to the sector's development. Limited disclosure requirements and limited capacity to assess the environmental impact hampers the ability of institutional investors to distinguish between green and non-green bonds.

Source: (OECD, 2017[90])

Way forward: Increasing the capacity of the financial system for infrastructure investments

For domestic banks and institutional investors to play a more active role in financing infrastructure projects, the growth of the financial sector should be supported together with the provision of finance vehicles that facilitate investment into infrastructure. Regarding the former, the equity markets in EaP countries remain particularly underdeveloped. Trading volumes and frequency on local stock exchanges are low. Pension fund, insurance companies, and asset management firms hold very limited assets, although their size has grown in most EaP countries in recent years. Still, bond markets are relatively well-developed, even if infrastructure-specific bonds remain scarce. To increase the capacity of

the local financial systems to provide financing for infrastructure projects, EaP governments could:

Develop equity markets with a special focus on infrastructure development

- Enable infrastructure project companies to list on stock exchanges
- Support the development of capital market instruments that can mobilise private capital for equity investments in infrastructure projects
- Set up incentives for promotion of equity investment in infrastructure
- Establish co-financing instruments, platforms and partnerships for mobilising private capital to invest in infrastructure project equity.
- Consider direct government equity participation in infrastructure projects. Equity participation by the government can assure other investors of the government's support for the implementation and operation of the project especially in politically sensitive and strategically important projects. Establish government infrastructure development banks or funds that can invest in the equity of infrastructure projects

Diversify debt financing through the development of capital markets

- Promote the development of a domestic bond market for infrastructure financing
- Strengthen the enabling frameworks for syndicated lending
- Promote the use of infrastructure project bonds and green bonds
- Use credit enhancement to attract bigger volumes of private debt for infrastructure projects

Promote long-term, reliable funding basis

- Diversify funding sources and provide public financial support to enable innovative financing approaches
- Provide stable, transparent and long-term credible commitments to investors
- Reallocate taxes between different levels of government to support infrastructure investment

Box 3.15. Public Infrastructure Funds can facilitate increased private investment

Public infrastructure funds (PIFs) are a "specific type of infrastructure financing fund that uses public resources to leverage much larger amounts of private financing for infrastructure development." Some PIFs focus on structured financial products like risk mitigation instruments or credit enhancements. PIFs can have different objectives. Some are used to enhance the quality of infrastructure governance by creating a one-stop shop outside the civil service with the capacity of implementing projects independently. Others focus market failures by attracting private investors to provide financing for well-structured projects. In the context of EaP countries, PIFs could represent one option to address a number of market failures that inhibit private investment into infrastructure. These market

failures include limited long-term local currency financing to infrastructure projects due to underdeveloped capital markets, relatively high interest rates, and limited access to global financial markets.

4. Conclusion and Recommendations

Infrastructure lays the foundation for long-term economic development, and the multiplier effect of infrastructure investments could be particularly important now, as the EaP countries, together with the rest of the world, face an unprecedented economic crisis. In the short-run, the EaP governments could increase public investment into infrastructure projects to stimulate economic growth. In the long run, public investment alone is not sufficient to bridge the infrastructure financing gap. Deficiencies in the existing infrastructure stock are most apparent in the transport infrastructure sector. Armenia foresees the need to invest 1.4% of GDP annually in transport infrastructure; Belarus has estimated its transport sector need at 2.4% of GDP (Government of Armenia, 2014[50]). Armenia has set a target of government investments into infrastructure reaching 2.4% of GDP by 2025, and Belarus is planning to spend around 3.6% of GDP through this decade (Government of Belarus, 2017[49]). In other EaP countries, the investment needs are not estimated in proportion to the size of the economy. The OECD estimates suggest that governments should invest up to 5% of GDP annually into infrastructure to build environmentally sustainable energy and transport infrastructure to meet and mitigate the effects of climate change and environmental degradation. The EaP countries remain carbon-intensive and produce only a fraction of their energy with renewables.

Given the right conditions and frameworks, private investment help address the long-term financing needs that sustainable infrastructure will require. Currently, private participation in the EaP countries is most prevalent in the electricity sector. According to World Bank estimates, private and foreign investments into PPP projects in the EaP countries amount to USD 7.6 billion. However, the share of private investment is dwarfed by the investments made by multilateral development banks, which play an indispensable role in the region's infrastructure development. The MDBs' infrastructure investments total over USD 28 billion. The MDBs also play an important role in supporting the private sector participation in infrastructure developments. One of the primary ways the EaP countries can encourage further private investment is by leveraging the capital of public financial institutions to mobilise private financing through the provision of credit enhancement and risk mitigation.

The main obstacles to private investment in infrastructure reflect the deeper structural problems that affect economic activity and investment across different sectors. The EaP countries are relatively small, high-risk emerging markets. Corruption, weak property rights, poor governance, and low resiliency to macroeconomic shocks discourage investors from making long-term investments. At the same time, the financial markets are unevenly developed and excessively bank-centric. The banking sectors in the EaP countries hold assets that are comparable to Central European emerging markets like the Czech Republic, Hungary, and Poland, but institutional investors are only nascent. Further, the uneven development harms the region's securities markets. Bond markets are relatively well developed, but equity markets are virtually non-existent. However, the institutional investor base is growing. Recent pension reforms have paved the way for pension funds that hold and mange significant assets independently, increasing the appetite for long-term bonds. First among the EaP countries, Ukraine introduced green bonds in 2019. Other EaP governments could follow Ukraine's example in promoting finance instruments that can facilitate both domestic and foreign investment into infrastructure projects.

Merely introducing a wider selection of targeted infrastructure finance and risk mitigation instruments is not enough. To maximise the potential of private investment, governments

need to combine their efforts to support the development of local financial system with wider efforts of creating an enabling investment environment and improving the quality of infrastructure governance.

Table 4.1. Recommendations

Infrastructure governance	Risk mitigation instruments	Financial sector development
Refine existing governance frameworks by adopting infrastructure strategies that outline an all-governmental strategic vision for the development of infrastructure across different sectors	Support alternative infrastructure financing models through the use of financial structures and vehicles that include governmental de-risking instruments	Enable infrastructure project companies to list on stock exchanges
Existing project pipelines could be improved by merging sectoral pipelines into frequently updated, publicly available, interactive, central project pipeline	Leverage the capabilities of national and multilateral development banks to de-risk projects	Support the development of capital market instruments that can mobilise private capital for equity investments in infrastructure projects
Establish project preparation funds to improve the efficiency of infrastructure planning.	Make (quasi-)equity contributions with the aim of enhancing financing and risk profiles of infrastructure projects	Set up incentives for promotion of equity investment in infrastructure
Guarantee that sufficient funding backs project pipelines.	Establish dedicated guarantee funds to support the development of PPPs	Establish co-financing instruments, platforms and partnerships for mobilising private capital to invest in infrastructure project equity
Ensure that infrastructure project pipelines are aligned with economic development goals and citizens' needs	Alleviate currency risk by promoting local currency investments and hedging instruments	Consider government equity participation in infrastructure projects
Apply robust evaluation systems to ensure that pipeline projects represent value for money and are environmentally sustainable	Set up governance frameworks for project development that enhance the judicious management of commercial, financial, and legal risks	Establish government infrastructure development banks or funds that can invest in the equity of infrastructure projects
Enhance information disclosure, data collection and sharing of best practices to improve infrastructure planning.	Promote blended finance approaches that involve the government, NDBs, MDSs, or development finance institutions	Promote the development of a domestic bond market for infrastructure financing
Follow OECD principles on the public governance of PPPs, especially regarding the measures to maximise value		Strengthen the enabling frameworks for syndicated lending
Plan infrastructure development holistically, following OECD's key principles for infrastructure governance		Promote the use of infrastructure project bonds
		Use credit enhancement to attract bigger volumes of private debt for infrastructure projects
		Diversify funding sources and provide public financial support to enable innovative financing approaches
		Provide stable, transparent and long-term credible commitments to investors
		Reallocate taxes between different levels of government to support infrastructure investment

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Given the scale of infrastructure investment required over the coming decades, Eastern Partner (EaP) countries, like most countries around the world, are seeking to mobilise more private finance for infrastructure development. Strengthening the role of the private sector in infrastructure offers an opportunity to scale up investment in quality infrastructure and help realise efficiency gains in their operation, but it is difficult to achieve. The complex nature of public-private interaction requires considerable attention from policy makers for defining the modalities of private involvement, reflecting the long-term costs in the budgetary process and adequately sharing the associated risks between the public and private co-contractors.

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