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Greening Debt Capital Markets in the European Union's Eastern Partnership Countries and in Kazakhstan

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Foreword

This report presents the experience with the use of green bonds to fund low-carbon energy infrastructure and other climate-related projects in the five countries of the European Union Eastern Partnership (EaP), including Armenia, Azerbaijan, Georgia, Republic of Moldova and Ukraine as well as Kazakhstan. It draws on detailed assessments in the reviewed countries. In addition to individual country analyses, the report contains a regional comparative overview chapter that summarises the main findings and conclusions from the country analyses.

The six countries examined in this analysis are in the early stages of a low-carbon transition. Estimates in this report point to substantial investment needs in decarbonisation, potentially amounting to over EUR 100 billion by 2030, and concentrated in the industry and energy sectors. Bond markets can play an important part in funding this transition as they offer benefits of scale and long-term maturity unmatched by domestic bank lending.

This report is a product of the collaborative efforts of many people. Given the complexity of the analysis, it would not have been possible without the dedicated and unwavering work of the project's core team. The project was carried out by the GFA Consulting Group GmbH and Berlin Economics (both of Germany). Alexander Lehmann, Team Leader, managed national consultants and assembled a team of experts, who are due special thanks.

Initial country chapters were drafted and related country work was organised by: Artak Kyurumyan (Armenia), Javanshir Abdullayev (Azerbaijan), Nikoloz Alavidze (Georgia), Yerlen Zhangeldin (Kazakhstan), Iuri Cicibaba (Moldova), and Stanislav Dubko (Ukraine) with support by Alexander Lehmann. The country chapters benefited from in-depth interviews conducted with local stakeholders in the six countries including government officials, regulators, domestic and international financial experts.

The overview chapter summarising the main findings from the country analyses was drafted by Stanislav Dubko, Alexander Lehmann, Davide Parisse and Georg Zachmann under the guidance of Alexander Lehmann. Manuel von Mettenheim and Frank Meissner (both Berlin Economics) provided methodological support with modelling investment data needs and also contributed to the chapter. Nelly Petkova who managed the project on the OECD side provided further inputs to both country and overview chapters and edited the overall report.

The draft report was discussed during an Expert meeting on "Greening debt capital markets in the EU's Eastern Partner countries and Kazakhstan: The role for green bonds" held online on 9-10 June 2022 and additionally during an international Conference "Financing the Green and Net-Zero Transition in the EU Eastern Partnership Countries and Central Asia" organised by the OECD jointly with the European Commission in September 2023 in Brussels.

These debates were attended by representatives of key government offices, from the ministries of environment, economy, finance, national regulators, experts from central and commercial banks, green bond issuers, international finance institutions and international organisations. The events were also attended by private sector energy- and finance-related companies from the region, academics, consultants and non-governmental organisations. The project team is grateful for their insightful comments in discussions, for their openness and their willingness to debate.

The project was designed and its implementation overseen by Nelly Petkova of the OECD Environment Directorate, Finance, Investment and Global Relations (FIG) Division who also put together the final report and prepared it for publishing.

Special thanks go to Angela Bularga (DG NEAR, European Commission) for her overall support and thoughtful guidance on this work.

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All these contributions are gratefully acknowledged.

The views expressed herein are those of the authors only and can in no way be taken to reflect the official opinion of the European Union, its members, the Governments of the EaP countries or the EU4Environment implementing partners (OECD, United Nations Economic Commission for Europe, United Nations Environment Programme, United Nations Industrial Development Organization, and the World Bank).

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Abbreviations

AIX	Astana International Exchange
EaP	Eastern Partnership
EMDEs	Emerging market and developing economies
ESG	Environment, social and governance
FiT	Feed-in tariff
FMO	Dutch Enterpreneurial Development Agency
GHG	Greenhouse gas
GSSS	Green, social, sustainability and sustainability-linked
IFI	International finance institution
KASE	Kazakh Stock Exchange
KPI	Key performance indicator
LULUCF	Land use, land use change and forestry
NDC	Nationally Determined Contribution
NGFS	Network for Greening the Financial Sector
RE	Renewable energy
SBN	Sustainable Banking Network
SLB	Sustainability-linked bond
SPO	Second Party Opinion

Executive Summary

This paper summarises the experience with the use of green bonds to fund low-carbon energy infrastructure and other climate-related projects in the five countries of the European Union Eastern Partnership (EaP) and Kazakhstan. It draws on detailed assessments in the six countries which are part of the European Union's neighbourhood region, comprising Armenia, Azerbaijan, Georgia, Republic of Moldova and Ukraine, as well as in Kazakhstan.

The six countries examined in this analysis are in the early stages of a low-carbon transition and suffer from outdated energy infrastructure. Estimates in this report point to substantial investment needs in decarbonisation, potentially amounting to over EUR 114 billion by 2030, and concentrated in the industry and energy sectors. Bond markets can play an important part in funding this transition as they offer benefits of scale and long-term maturity unmatched by domestic bank lending.

In total, ten green bonds have been issued in Armenia, Georgia, Kazakhstan and Ukraine between 2019 and 2021. Issuers were from both the corporate and financial sector, were state-owned or private, and also included one international financial institution. In total about USD 2.2 billion was raised through these bonds, with the bulk coming from issues by two Georgian and two Ukrainian entities on international markets which underlined the strong interest at the time by investors in sustainability-related exposures in the region. The green bond issues on the local markets in Armenia and Kazakhstan raised relatively limited amounts, though demonstrated the local green finance framework and, in the case of an Armenian bank, the capacity to generate and refinance a portfolio of green assets.

The transactions discussed in the paper show encouraging interest by international and local investors in green financial instruments in the region. Investor appetite is matched by funding needs among local issuers and at least some of these issuers are in a position to comply with international standards for green bonds.

Since February 2022, Russia's invasion of Ukraine has led to profound investor risk aversion in the region. Yet, Ukraine and the international community have started to prepare for the post-war reconstruction. Many of the needed projects are likely to be eligible for green finance.

Over the medium-term, if regulators further build national green finance frameworks there is a potential to tap into the growing pool of institutional investment in this area. Specifically, the establishment of a national taxonomy of sustainable activities and designation of green bonds in local capital markets legislation would enhance the attractiveness of the instrument to potential issuers and investors. It is therefore encouraging that Georgia, Kazakhstan and Ukraine have developed their green finance regulation in alignment with international standards to foster the emergence of green bonds on local markets.

The underdevelopment of local bond markets is a more fundamental obstacle to green bond issuance than incomplete regulatory frameworks. International investors may also be deterred by risks in the local investment environment for renewables and the long-standing shortcomings in corporate governance in the region. Such issues will be a particular problem for green bonds which promise to investors transparency on the allocation and sustainability impact of funds raised, and should be addressed as a priority. At the same time, policy makers should prepare the inevitable adjustment through a phasing out of price distortions, such as fossil-fuel subsidies and tax rebates, and a more reliable investment regime for renewable energy sources.

Establishing a green bond market is often seen as one of the major steps that can enable the transition to a green economy. In more advanced markets, green bonds are also seen as a vehicle for an inter-agency and intra-governmental debate around issues related to financing the low-carbon transition. Bringing the financial and environmental communities together can raise the profile of climate and clean

energy policies in the national agendas, can improve cooperation between the two communities and can help find mutually beneficial solutions to problems which are currently inhibiting higher demand for green finance.

However, if bond markets do not function well and face various challenges and risks (e.g. currency risk, lack of underlying green assets) adding the “green” label to existing financial instruments will not solve the fundamental structural problems in the market. Experience from other regions shows that increased demand for green bonds can become a driver and source for the expansion of a bond market in a country more broadly.

Developing a green bond market should also be part and parcel of developing a green finance market more generally. In this context, governments in the EaP countries and Kazakhstan region can take a number of actions to facilitate the expansion of the green bond markets in their countries. These include, among others:

- **Developing relevant legislation and regulations** which set out a clear green bond framework which include green bond definition, standards, verification and enforcement system in order to ensure that policy support goes to the right investment opportunities. Such systems already exist and the international community can, and in certain cases, is already supporting the countries’ efforts. However, more needs to be done to make the region more attractive to investors. Experience from other countries shows that doing so requires the concerted efforts of key government and industry players as well as a strong leadership in the country.

- **Providing public support can help launch an effective green bond market**, particularly in less mature capital markets. Experience from other regions shows that governments can provide initial liquidity and trading volume by issuing sovereign/government-backed bonds as well as demonstrate the benefits of the instrument. In addition, governments can set targets for green bond issuance by public funds, state-owned enterprises and local governments to support the initial development of the market. adjusting fiscal policies and putting in place fiscal incentives (tax credit to investors, credit enhancement mechanisms for green bond issuances, subsidies for interest payments to green bond issuers) can help further develop the market.

- **Encouraging institutional investors** (pension funds, sovereign wealth funds, insurance funds) and changing legislation to allow these players to participate in the market can help develop the local investor base and create more funding opportunities domestically.

- **Preparing robust and credible project pipelines** that can be used as underlying assets for the green bond issuance by public entities will be crucial to get potential investors’ interest and trust. Donors can be instrumental in providing support to the countries to develop eligible assets.

The OECD jointly with the European Commission, donors and the IFIs active in the region can provide further technical support and work with the partner governments towards strengthening the regulatory and institutional basis that underpins the greening of the capital markets in the region.

Overview of green capital markets in the EaP Countries and Kazakhstan

1. Introduction

The purpose of this study is to determine the current use and future potential of green bonds in the five countries of the EU Eastern Partnership (EaP) region and Kazakhstan, and identify steps by local authorities and international partners that could promote the use of the instrument.

Evidence in this report was based on desk research and interviews of local stakeholders in the six countries, which were conducted between August and December 2021. Stakeholders included the authorities and regulators, and also past and potential issuers of green bonds and local and international investors seeking an exposure to the region. In addition, the authors conducted a modelling exercise to determine the climate-related investment need that could be funded through green bonds, yielding a comparable estimate of the potential size of green funding markets. Initial results of the analysis were presented at an online conference convened by the OECD in June 2022.

The work presented in this report has been carried out within the “European Union for Environment” programme. Besides EU funding, it also benefitted from financial support provided by Germany’s Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) through its International Climate Initiative. The OECD Environment Directorate managed the implementation of this project.

2. Debt capital markets as a source of green finance

The commitments made by emerging market governments in the area of climate change mitigation and adaptation imply that substantial investments will need to be undertaken over the coming decade. Investments will be concentrated in the area of low-carbon energy infrastructure, industry and residential property. The financing required for such investments will be well in excess of the resources available from budgetary funds and inflows of development finance.[1] The latest report from the UN’s Intergovernmental Panel on Climate Change documents that investment levels needed to meet mitigation targets are three to six times larger than current levels of financing flows (IPCC, 2022).

Policy makers in emerging markets therefore acknowledge that private sector investment, from both local and international financial markets, will need to play a key role in funding the needed low-carbon transition. This will require greater incentives for local banking systems, which are the predominant source of finance, to withdraw from exposures to climate risk and seek financing opportunities related to climate goals. However, only bond[2] markets offer the type of finance required for infrastructure projects, given the larger scale of individual financing transactions and the long-term maturity offered by a diverse set of investors.

Since about 2007, a number of bond instruments that are aimed at addressing climate and other sustainability challenges have emerged in advanced capital markets. These bonds are “labelled” capital market instruments. In addition to green bonds, this includes social, sustainability and sustainability-linked bonds (in their entirety captured under the acronym “GSSS” bonds). A common distinction of these bonds compared to standard or “plain vanilla” bonds is the issuer’s claim that some form of impact results at the level of the project, the issuer or even the economy. This claim appeals to the increasingly

[1] Climate Policy Initiative (2022).

[2] A bond is a fixed-income debt instrument which allows the bond issuer to raise money (debt) from bond holders against the obligation to repay the debt over a certain period of time and at a certain interest rate. Bonds are traditionally used to raise debt for big infrastructure projects which need a significant amount of financing which makes bond finance a natural fit for low-carbon infrastructure assets such as renewable energy infrastructure, which is characterised by high upfront capital costs and long-term income streams.

prominent class of investors whose portfolios are aligned with environmental, social and governance (ESG) criteria, or to those investors mandated to seek such impact. This class of bonds is therefore also attractive to emerging markets and developing countries (EMDEs).

There are four other claims that are made about GSSS bonds which appeal to policy makers:

- First, they can overcome the short-term maturities which are often a limitation in bank lending.
- Second, they can mobilise *additional* investors in local and international markets, thereby bridging part of the funding gap.
- Thirdly, issuers, and the market more broadly, gain transparency and reputation for sustainability goals which may facilitate subsequent issuance also by other entities.
- Finally, the structure inherent in a labelled GSSS bond tends to discipline the conduct of the issuer, thereby strengthening its convergence to climate and other sustainability goals.

GSSS bonds are a very recent innovation in capital markets and the empirical literature substantiating the veracity of these claims is still scarce (Cortellini and Panetta, 2021). This is particularly the case in the context of emerging markets and developing countries, where the underdevelopment of local capital markets and often poor corporate governance impose particular constraints.

The global issuance of GSSS bonds has increased sharply in recent years. Within the class of GSSS bonds, the category of green bonds is far and away the most prominent instrument. OECD (2021) is one of several surveys which documents that issuance has been heavily concentrated in advanced countries. Developing countries accounted for only about USD 226 billion out of a USD 1.7 trillion cumulative global issuance volume up to 2020.

In the case of green bonds, the issuer commits to a certain use of proceeds, as well as to report on the allocation and possibly the impact of the use of the funds that were raised (Box 1). The underlying terms and obligations of issuers of green bonds have been largely developed through voluntary industry standards, which only recently have been translated into regulation, most notably with the proposed EU green bonds standard.[3]

Compared to standard bond instruments, green bonds therefore impose a higher burden of transparency on the issuer and which appeal to a class of investors with a specific sustainability-oriented mandate. Therefore, green bonds will be issued successfully where the capital market and individual issuers meet certain governance criteria which are more demanding than for standard bonds. At the level of the capital market this relates to the quality of corporate transparency and governance. Also, there needs to be a distinct regulatory framework, importantly designating green or sustainable activities through a classification system or taxonomy.

Notwithstanding their general attraction to issuers and policymakers, green bond issuance poses at least three challenges which are particularly acute in the EMDEs:

- **While short-term bank credit is readily available, bond finance needs to be attractive in spite of the additional transaction costs which are more onerous for smaller issuers**. Issuers may also be deterred by the lack of liquidity in their own bonds or by illiquidity in the local bond market. Given the illiquidity any transactions in the secondary market may result in large price swings and hence make the initial primary issuance more costly (the so-called illiquidity premium).
- Secondly, **larger issuers in the EMDEs often seek financing packages that exceed what could be available within local markets**. For such issuers, only international bond markets

[3] The EU green bond standard is available at: https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/european-green-bond-standard_en.

offer sufficient funding volumes. Green bond issuance in international markets will typically only be an option for issuers with an established credit rating and issuance track record. Bond issuance will invariably be in foreign currency. Given the local currency revenue stream from climate and other sustainability projects this entails a greater currency mismatch for the issuer.

- A third and **important limitation relates to the nature of risks that bond investors may tolerate**. Exposures can be assessed on the basis of standard credit metrics or credit ratings, whereas technical risks in individual projects are more difficult to evaluate. Bond investors are not normally prepared to bear such technical risks related to a project's design or construction which are particularly high in smaller markets with an uncertain investment environment, or poor governance and regulation (Bayat-Renoux et al., 2020). Bond investors are therefore inclined to only finance assets that are already operational. In that case, the green bond becomes a refinancing of an existing asset or portfolio and earlier refinancing will need to be mobilised.

Alternative structures and recent bond market innovations

Green capital markets in the EU have largely developed on the basis of green bonds whose terms stipulate that the investor has recourse to the entire issuer balance sheet in the case of default, as would be the case for a traditional bond. Moreover, the use of proceeds is limited to projects that unambiguously fall within a taxonomy of sustainable activities. Both aspects may be overly restrictive in emerging and frontier markets.

The insufficient credit quality of the issuer could be addressed through alternative bond formats where in the case of a default the bond investor would have recourse to project assets or revenue streams. Structures such as project bonds or revenue bonds require establishing legally distinct entities or special purpose vehicles. This is costly and not necessarily straightforward under local law. These structures are therefore highly unusual. Legal uncertainty over the investor's recourse to a distinct balance sheet further raises uncertainty.

Bond finance designated for "general corporate purposes" could offer an alternative to the traditional "use of proceeds" green bond structure. Once there is no longer an attribution of the bond issue to a single taxonomy-compliant project a constraint would need to be placed on the conduct of the issuer itself.

One form of doing this are the so-called transition bonds, where the issuer commits to a certain path towards climate alignment, even though at present no projects that fit a green taxonomy would be funded. Financing is mobilised for projects that have a long-term role in decarbonisation or supporting the issuer on its path towards alignment with emission targets. Unlike in the case of green bonds, the issuer, not the specific project, defines the use of proceeds. The European Bank for Reconstruction and Development (EBRD) has defined a framework for such bonds in its capital market activities in the EECCA region. [4]

A second alternative could be sustainability-linked bonds. Again, bond proceeds are not allocated to specific projects, though the issuer makes certain commitments regarding future sustainability outcomes in the form of key performance indicators (KPIs). Should these be missed, the terms of the bond contract would be more onerous, say through a step up in the coupon rate, thereby disciplining the issuer. However, such a structure requires that the issuer has established a certain credibility and track record, and is known to the investor base. Unlike transition bonds, which remain marginal in international debt markets, sustainability-linked instruments have grown significantly. Large

[4] See "Framework for green transition bonds" available at: https://www.ebrd.com/work-with-us/sri/green-bond-issuance.html. See also CBI (2021).

sustainability-linked bonds have been issued by European companies and governments in emerging markets. A green bond issued in Ukraine in late 2021 also contained such a feature.

Both transition bonds and sustainability-linked instruments could in principle be attractive in the EaP countries and Kazakhstan region. A wider set of activities could be funded, and the issuer's medium-term convergence with climate targets would be supported. The attractiveness of such alternative bond formats to international investors would depend on the credibility and transparency of the issuer, and on mechanisms to enforce the initial terms of the bond. This would in any case be a crucial foundation of green bond issuance in the region.

Box 1. Green bonds: definition, industry standards and regulations

The green bond market developed initially based on the frameworks defined by a few large supranational issuers, such as the World Bank Group and the European Investment Bank. Since 2015, the market has primarily relied on the guidelines defined by the International Capital Market Association (ICMA)[1], which is an industry-led body. ICMA's Green Bond Principles (GBP) stipulate that the issuer of a green bond needs to adopt four practices[2]:

- *Use of Proceed:* an indicative list of project categories that captures the most commonly used types of projects supported
- *Process for Project Evaluation and Selection:* principles of transparent communication by the issuers to the investors, relating to sustainability objectives and selection of projects among others
- *Management of Proceeds:* principles of transparent communication by the issuers to the investors on how the proceeds are used during the whole period in which the bond is outstanding
- *Reporting:* principles to report qualitative and quantitative performance indicators and expected impact.

A green bond is any type of bond instrument where the proceeds will be applied to finance or re-finance new and / or existing green projects, on the basis of these four principles. In essence, therefore, a green bond is distinguished from a regular bond based on the issuer's commitment to use the bond proceeds in certain ways and offer to investors transparency on this allocation of funds raised. Complying with these internationally accepted standards generates the trust necessary for both investors and issuers.

It is important to point out that in the "use of proceeds" structure that is typical of green bonds the investor will have recourse to the entire balance sheet of the issuer should that issuer default. The investor is at the same level of seniority as any other bond investor (and the bond's credit quality is therefore the same).

A defining characteristic of the green bond is the list of eligible green activities for which bond proceeds can be used. These activities need to comply with a classification system, commonly known as "taxonomy". Most issuers have relied on the taxonomy defined by the Climate Bonds Initiative (CBI), which is the leading private sector organisation certifying green bonds. This CBI Taxonomy addresses both climate and other environmental objectives, though technical criteria are less specific than those adopted in regulation in the EU since 2021. Any green bond is issued on the basis of the issuer's specific green bond framework. This framework will typically be evaluated by a private sector verification provider in the form of a so-called second party opinion (SPO) and only some issuers choose a more rigorous certifiaction

In 2021, the EU Commission proposed a regulation that would establish the European Green Bond Standard, which was designed to address excessive leeway for "greenwashing", i.e. the misrepresentation of environmental qualities of a project to investors[3]. Projects funded through green bonds under this standard would need to fall within the European Taxonomy and verification providers would need to comply with higher standards of transparency and integrity, and address any conflicts of interest. According to the original proposal for this regulation, the standard would be voluntary, though it remained under negotiation in the EU institutions at the time of the writing of this report.

[1] Green Bond Principles, 2015 Voluntary Process Guidelines for Issuing Green Bonds (link).
[2] Full 2021 document available at this link: https://www.icmagroup.org/assets/documents/Sustainable-finance/2021-updates/Green-Bond-Principles-June-2021-140621.pdf.
[3] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en.

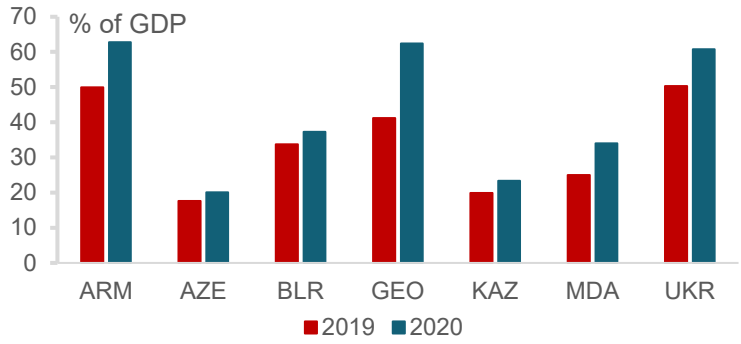
3. The challenge of the low-carbon transition in the EaP countries and Kazakhstan

The remainder of this report is focused on the six EU's Eastern Partner (EaP) countries and Kazakhstan. All six countries are signatories to the Paris Climate Agreement and have adopted reasonably ambitious government plans for alignment with the net-zero goals that are implied by that treaty. Kazakhstan and Ukraine also set net-zero targets for 2060. Clearly, the recent twin shocks of the economic downturn related to the COVID pandemic and the war in Ukraine have made the implementation of these decarbonisation goals more difficult.

Implications of the double shock of Covid and the war in Ukraine

The global economic downturn due to the spread of Covid-19 resulted in a significant increase in the public debt of many emerging economies, including those in the EaP countries and Kazakhstan.[5] The International Monetary Fund (IMF) and national statistics data show that public debt increased between 2019 and 2020 by an average of 25% in the six countries reaching more than 60% of GDP in Armenia, Georgia and Ukraine (Figure 1). This is relatively high for emerging markets which are vulnerable to recurring external shocks. Investment in climate mitigation and adaptation funded by public budgets was therefore more difficult already before the current crisis. Moreover, the significant rebound of the global economy in late 2021 led to an increase in energy demand and a steep increase of fossil-fuel prices.

Figure 1. Government debt as % of GDP, 2019-2020



Source: IMF database, Central Bank of Armenia, Ministry of Finance of Belarus, National Bank of Georgia, Ministry of Finance of Moldova, Ministry of Finance of Ukraine (obtained from tradingeconomics.com).

The Ukraine war and the ensuant sanctions have resulted in the loss of significant gas and oil export volumes from Russia – the world's largest energy exporter. This has increased incentives for quickly deploying alternative fossil-fuel supplies, possibly outpacing low carbon energy investments (including renewables) in the short-term.

Emerging market energy policies were thrown into disarray as the war has intensified tensions in an already tight market for fossil fuels with high commodity prices. In mid-2022, the EU countries were rapidly decoupling from Russian energy supplies as established supply networks were seen to be at risk.

Energy importers in the region, such as Georgia, Moldova and Armenia, experienced a significant adverse shock to their terms of trade. Moldova, which obtains its gas entirely from Russia, is now also

[5] Daly, Kevin; Gedmina, Tadas; Grafe, Clemens (2020).

at risk of a lack of supply should the gas transit through Ukraine get stopped.[6] In these countries the incentives to invest in alternative sources of energy supply and guarantee the security of energy supply are likely higher.

By contrast, energy exporters, such as Azerbaijan and Kazakhstan, experienced a considerable windfall from oil and gas exports. At the same time, these countries had to contend with greater competition as Russia began to redirect its fossil-fuel exports to Asia. Moreover, the war in Ukraine poses risks for energy transport routes even for these established exporters.[7] Belarus, which is a significant exporter of oil refined products, was included in the EU sanctions regime alongside Russia.

Fossil fuels in the EaP countries and Kazakhstan

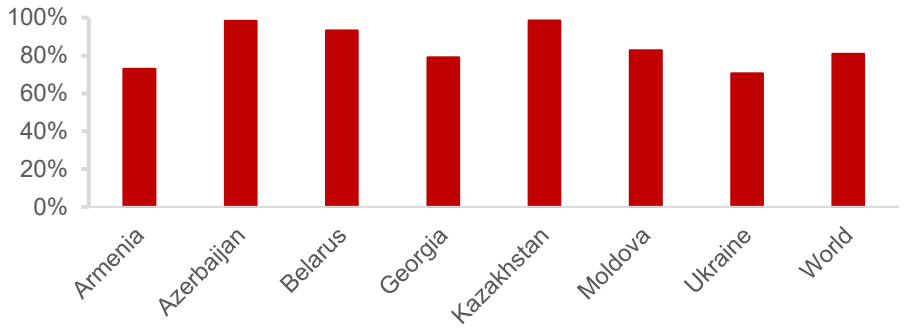
The six reviewed countries share a common history of a planned economy and the subsequent transition to the market system, which entailed a sharp recession in the 1990s. However, reforms in the energy sector have been on the whole inadequate. The share of state ownership remains high, the unbundling of supply and distribution incomplete, and support to fossil fuels through tax rebates and outright subsidies widespread. Azerbaijan, with more than 85% of exports accounted for by fossil fuels, and Kazakhstan, with more than 55%, remain key exporters of oil and gas, and have not diversified their economies.

As a result, the six countries are still characterised by outdated technology in the industrial sector and in electricity production, which until today relies excessively on fossil fuels. The share of fossil fuels in total primary energy supply in the six countries ranges from 71% (Ukraine) to 89% (Kazakhstan). At an average of 85%, this is above the world average of 81% (**Figure 2**). Accordingly, the carbon intensity of the six economies exceeds the world average (0.29 vs. 0.26 kgCO_2 per unit of GDP, see **Figure 3**).

[6] It is important to note that Moldova prepared contingency plans in previous years in order to replace Russian gas supply by building the Ungheni-Chisinau pipeline from Romania, enabling reverse flow via the Trans-Balkan pipelines and cooperating with Romania on storing gas. However, it is doubtful whether gas demand in the entire country (including Transnistria) could be covered without Russian supply via Ukraine.

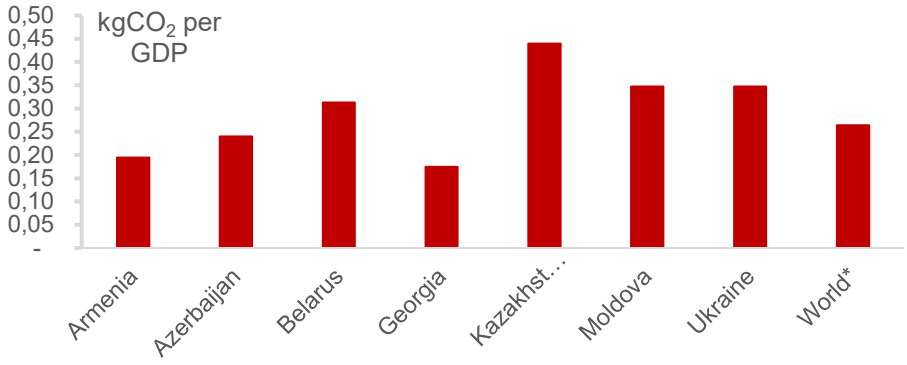
[7] In March 2022, Russia temporarily blocked the CPC oil pipeline from Kazakhstan to the Black Sea, cutting off Kazakh oil exports to the West.

Figure 2. Share of fossil fuels in total primary energy supply of the reviewed countries, 2019



Source: IEA World Energy Balance.

Figure 3. Carbon intensity of the reviewed countries, 2020



Source: IEA Data Services.
Note: *Data for 2019.

The six reviewed countries have been struggling to break away from state dominance in the energy sector. This is best illustrated in the context of the electricity sector. In Azerbaijan, almost the entire electricity supply is produced by state-owned companies. Moldova is a special case since electricity supply is heavily dominated by the Russian-owned Kurchurgan power plant in the breakaway region of Transnistria, which poses its own unique problems. Ukraine, Armenia, Georgia and Kazakhstan managed a partial privatisation of electricity generation companies. Given the high concentration of suppliers, market competition is often limited.

The high use of fossil fuels can further be traced back to ongoing market distortions through subsidies and preferential taxation of fossil-fuel consumption.[8] Figures from the IMF database of fossil-fuel subsidies show that support remains excessive in some economies in the region, though has been contained in others.[9] This encourages wasteful energy consumption, discourages the implementation of low-carbon production technologies and its economic costs can represent a significant burden on public finances. Narrowing the price gap between actual and efficient fossil-fuel prices would eliminate the adverse effects of subsidies, as the increase of energy prices for vulnerable households could be buffered through social policies.

[8] OECD (2018).

[9] IMF data on fossil-fuel subsidies https://www.imf.org/en/Topics/climate-change/energy-subsidies.

Carbon pricing became the centrepiece of decarbonisation strategies in the EU as this is an effective and low-cost means of achieving carbon reductions.[10] Therefore, it is of concern that the carbon prices observed in 2021 in the six countries are significantly lower than in developed economies. For instance, in Ukraine, the fixed carbon tax is slightly below 1 EUR/tCO_2. This is similar to Kazakhstan where the average 2021 allowance market price under the Kazakh Emissions Trading System (ETS) was 1 EUR/tCO_2. In contrast, the average EU allowance price in 2021 was above 50 EUR/tCO_2.[11]

Goals for decarbonising the six reviewed countries

The six countries submitted their Nationally Determined Contributions (NDC) under the Paris Agreement defining their GHG reduction targets until 2030, and all but Azerbaijan and Kazakhstan updated these commitments in the context of the COP-26 conference (see Table 1).

In the 1990s, the six countries already significantly reduced GHG emissions, largely due to the severe economic contraction following the collapse of the Soviet Union. As a result, some of the NDC targets, which are stated in comparison to 1990, appear ambitious but often in fact imply an *increase* in GHG emissions compared to today's levels. Even though the NDC targets of Moldova, Ukraine and Kazakhstan appear comparatively ambitious, the countries start from a still very carbon-intensive *status quo* today. Armenia and Georgia, on the other hand, expect an increase of GHG emissions until 2030. That said, Ukraine and Kazakhstan, as two major emitters in the region, committed to become climate neutral by 2060.

Table 1. GHG emissions by country, in Mt $CO_{2eq.}$

Country		Sectors covered	NDC target reduction 1990-2030	1990	2019	2030	Change 2019-2030
Armenia		excl. LULUCF	-40%	24.1	8.7*	14.5	+67%
Azerbaijan		excl. LULUCF	-35%	68.8	56.1*	44.7	-20%
Georgia	cond.	excl. LULUCF	-50%/-57%	41.9	16.4*	21.0/18.0	+28%/+10%
	uncond.		-35%	41.9	16.4*	27.3	+66%
Kazakhstan	cond.	incl. LULUCF	-25%	373.4	364.5	280.0	-23%
	uncond.		-15%	373.4	364.5	317.4	-13%
Moldova	cond.	incl. LULUCF	-88%	44.0	12.5	5.3	-63%
	uncond.		-70%	44.0	12.5	12.8	-9%
Ukraine		incl. LULUCF	-65%	882.9	312.6	309.0	-7%

Source: Updated NDCs, First NDCs for Azerbaijan and Kazakhstan, National Communication under the United Nations Framework Convention on Climate Change (UNFCCC), The Emissions Database for Global Atmospheric Research (EDGAR) for GHG emissions data without LULUCF.
Notes: *2018 data.

Improving the investment environment for mitigation-related measures

Given that energy supply in the reviewed countries is heavily reliant on fossil fuels, greater policy support to energy efficiency and the deployment of renewable energy (RE) would help to diversify and decarbonise the energy mix.

Globally, the share of wind, solar and biomass in the electricity mix has increased substantially, already making up 11% of the world's electricity generation in 2020. By contrast, the share in the six countries is significantly lower at only 1%, underlining the significant potential for an expansion.

[10] OECD (2016).

[11] CAP (2022).

To attract investment for new low-carbon generation technologies, RE support schemes could promote the integration of RE in the energy system through some form of preferential treatment. However, the liberalisation of the electricity markets of the six countries has not progressed sufficiently. The process through which a new RE supplier would enter the market is often unclear and private investment in renewables may not be attractive.

Even though targeted support schemes, such as Feed-in-Tariffs (FiT) and Feed-in-Premiums, are used in the EaP countries and Kazakhstan to attract RE developers, the development of RE capacity to date has been limited. The situation is different in Ukraine, where wind and solar capacity increased significantly since 2019 due to a generous FiT, which, however, also led to high implicit liabilities of the government. A smart RE support scheme design tailored to the country is key to award RE projects with the lowest average cost of electricity and, thus, minimise support expenditures.

4. Needs for climate mitigation-related investment spending and the likely shortfall

Financing needs in decarbonisation

Achieving ambitious green and climate-related goals will require the mobilisation of massive public and private resources. Climate finance, as well as other types of green investments, exhibit a clear "home bias", that is a tendency to prefer home markets over foreign investment opportunities given similar financial and risk characteristics. An assessment of financing needs resulting from the convergence of the six countries to the Paris Alignment goal is therefore crucial so that such flows can be allocated in line with the highest potential for climate mitigation.

UN IPCC (2022) report, for instance, provides estimates of the annual investment requirements in electricity supply to meet different climate pathways. Under a central scenario the region of Eastern Europe, Western and Central Asia would need to mobilise an additional USD 48 billion annually in the ten years to 2032. This is somewhat below the investment needs in South-East Asia or Latin America where strongly growing populations and energy intensity of consumption are likely to increase demand.

Simulations based on a simple investment model

To estimate with more granularity the opportunities for green bond financing in the reviewed countries, work for this report developed an investment model that provides a comparison across countries and individual sectors. This model identified capital expenditure needs that are clearly mitigation-related (e.g., excluding the renewal of fossil generation capacities and of outdated capital stocks without substantial mitigation effects), that are realistic from a macroeconomic perspective (e.g., do not exceed typical gross capital formation) and suitable to be at least partially funded by green bonds. Annex 1 sets out a more detailed methodology.

The analysis shows that between EUR 72.4 and 114.2 billion is needed for mitigation-related investments during the period 2022-2030 in the reviewed countries covered by this study. Table 2 displays the investment needs in individual sectors by country, and yields the following key results:

- **Electrification** of the economy will be one of the cornerstones in the process of decarbonisation. Interconnecting the energy consuming sectors, namely buildings (heating and cooling), transport and industry, with a low-carbon electricity system will play a crucial role in the coming years. In the six countries, the largest part of investment needs in the electricity sector will be for the integration of more RE capacity to meet increased electricity demand and/or replace existing coal- and gas-fired generation technologies. The capacity for solar and wind powered generation differ across countries, with Armenia and Kazakhstan showing more potential in solar power, for instance. Yet, RE generation technologies will need to be significantly increased in all countries. Georgia also has high potential for hydropower expansion which would result in particularly high GHG emission reductions due to relatively high capacity factors of hydropower plants. As set out in Table 2, the model suggests that in

the reviewed countries, within 9 years (2022-2030) EUR 35 billion of mitigation related investment in electricity and heat in the period up to 2030 could avoid on average 14% of national GHG emissions.

- The **industry sector** is often referred to as the "hard-to-abate" sector since it either lacks low-carbon technology or the needed technology is very expensive. Therefore, this sector requires the most investment in tangible assets such as machinery and transport equipment to decarbonise industrial subsectors. Total mitigation-related investment in the industry sector is estimated at between EUR 21 and EU 45 billion. Depending on the role of industry in the different economies, the investment needs vary among the countries. Due to relatively strong industry sectors in Kazakhstan and Azerbaijan, green investments in this sector make up around 45-65% of total mitigation-related investment needs. In the other reviewed countries, investments in the industrial sector range from 10% to 33%.

- GHG emissions in the **commercial and residential real estate sector** make up around 10% of total emissions in the reviewed countries. The countries are mostly characterised by an outdated building stock and lack of metering systems. Energy efficiency measures, such as insulation of the building's envelope or its engineering system, can reduce energy consumption significantly. Even though public buildings are only a small part of the total area, they can be considered as a testing ground that builds capacity that can subsequently be used for retrofitting of residential buildings on a large scale. The investment needs are at 10% (EUR 10-19 billion) of total mitigation- related investments and can save up to 2% of national GHG emissions.

- The **transport sectors** of the reviewed countries are dominated by natural gas and oil consumption. Direct electrification will be the main option in decarbonisation though indirect electrification, i.e. hydrogen and synthetic fuel production, could play a complementary role. Focusing only on the potential investment needs of rail and public transport the model suggests investment in mitigation-related measures at between EUR 6 billion and EUR 15 billion.

Table 2. Mitigation related investments 2022-2030 (bn EUR)

Country	Residential buildings	Public buildings	Electricity & Heat	Industry	Transport	Total	Annual percentage of 2019 GDP
Armenia	0.3 - 0.6	0.1 - 0.2	0.7	0.4 - 0.8	0.2 - 0.5	**1.7 - 2.8**	1.5% - 2.5%
Azerbaijan	0.4 - 0.8	0.3 - 0.5	1.6	1.7 - 3.6	0.5 - 1.2	**4.5 – 7.7**	1.1% - 1.9%
Belarus	1.0 - 1.7	0.1 - 0.2	2.2	4.1 - 8.8	0.7 – 2.0	**8.1 - 14.9**	1.6% - 2.8%
Georgia	0.4 - 0.6	0.1 - 0.1	9.1	0.7 - 1.5	0.2 - 0.7	**10.5 - 12.0**	7.1% - 8.1%
Moldova	0.3 - 0.6	0.04 - 0.1	1.0	0.5 - 1.1	0.2 - 0.5	**2.0 - 3.3**	2.0% - 3.3%
Ukraine[1]	3.6 - 6.4	2.0 - 3.7	16.5	3.2 - 6.9	2.1 - 6.1	**27.4 - 39.6**	2.1% - 3.1%
Kazakhstan	1.2 - 2.2	0.9 - 1.5	4.0	10.4 - 22.2	1.7 – 4.0	**18.2 - 33.9**	1.2% - 2.2%
Total	**7.2 - 12.9**	**3.5 - 6.3**	**35.1**	**21.0 - 44.9**	**5.6 - 15.0**	**72.4 - 114.2**	

Source: Authors' calculations as detailed in the Annex 1 and EIB (2021).
Note: * The calculations do not consider the substantial war-related investment needs in Ukraine.

Tapping into different sources of financing

A significant shift is needed in the allocation of financial capital to drive the goal of decarbonising the economy in the reviewed countries. Decarbonisation projects are often capital intensive and imply significant upfront costs. Private investors are hesitant to provide such capital-intensive investments, given the relatively low rates of return of long-term low-carbon investments and the high investment and other country-specific risks.

According to the IPCC (2022), green bonds could raise significant amounts of capital in support of projects with environmental/climate benefits.[12] The local and international debt markets could hence play a crucial role in all sectors, as shown in the indicative rankings in Table 3.

In order to scale up RE expansion, the six countries can draw on the bond market, including using potential securities dedicated to sustainable project finance. Renewable energy has emerged as a major recipient of such green bond proceeds.[13] Investment into residential buildings relies mostly on financing from households, which can be supported through fiscal measures. In Ukraine, for example, the Energy Efficiency Fund and the Warm Loans programmes are direct financing mechanisms to support owners of buildings that want to undertake energy-efficiency investments. For public buildings and public transport, green bonds issued by the state or municipalities could finance decarbonisation activities. They provide the ability to raise high volumes of funding for specific investment targets and address investors focussing on environmentally-friendly projects and can provide relatively cheap capital (compared to loans).[14]

Table 3. Potential sources for mitigation-related investment in the reviewed countries

		Residential buildings	Public buildings	Public transport	Industry	Electricity & heat
Equity	Households	+++				
	State		+++	+++		+
	Domestic companies				++	++
	Foreign companies				+	+
Debts	Loan	+++		++	++	++
	Bond backed	+	++	++	++	++

Source: Authors' own illustration.

In attracting portfolio capital into local green projects, the reviewed countries will need to rely in large part on foreign investors. Despite the diminished size of EU capital markets following Brexit, and as experience shows, EU investors play an important role in the inward investment of portfolio capital in emerging markets.

[12] IPCC (2022), Sixth Assessment Report. Impacts, Adaptation and Vulnerability, full report.

[13] IRENA (2020), Renewable energy finance: Green Bonds (Renewable Energy Finance Brief 03, January 2020), International Renewable Energy Agency, Abu Dhabi.

[14] Low Carbon Ukraine (2021), Energy efficiency in public buildings – 50% retrofitting target until 2030, Policy Note, available at: https://www.lowcarbonukraine.com/en/energy-efficiency-in-public-buildings-50-percent-retrofitting-target-until-2030/.

5. Capital market development in the EaP countries and Kazakhstan

The financial sector in the reviewed remains bank-dominated. There are efforts to foster the development of local capital markets, including the establishment of non-bank financial institutions, such as investment funds, insurance companies, venture capital and private equity funds, but thee are still at an early stage of development. Banks in the six reviewed countries not only provide the bulk of external finance to small and medium-sized enterprises (SMEs) and larger enterprises, but also act as providers of liquidity in the embryonic local capital markets. Moldova and Ukraine have a significant presence of foreign banks in local markets, while Georgia's two largest banks, which control considerable market shares, show reasonably high corporate governance standards also due to their listing on the London Stock Exchange. By contrast, banking system in Azerbaijan is still dominated by state-owned banks.

By contrast, bond markets remain very shallow and are largely based on issuance of and trading in government bonds. State bonds generally account for the deepest and most liquid market segment, and are seen as a springboard for the development of a yield curve over longer maturities. Several countries, including Georgia and Armenia, have adopted strategies to issue a certain share of state debt in local markets. The development of local markets through the issuance of government bonds is inevitably constrained by the higher funding costs in local markets and other priorities in sovereign debt management.

The underdevelopment of local bond markets in the reviewed countries represents a significant obstacle to the issuance of green bonds. Two of the eight green bond issues in the region were in the nature of a private placement, and four were supported by international and development institutions acting as "anchor investors". The financial systems in the six countries generally lack, with few exceptions, a meaningful bond market infrastructure or local investor base.

Corporate bonds, on the other hand, trade only rarely. Even where the technical and IT infrastructure in the local bond market is in place, trading volumes are insignificant. For example, corporate turnover in 2020 amounted to just 0.8% of GDP in Ukraine, 3.7% of GDP in Kazakhstan, 3.9% of GDP in Azerbaijan and 7.2% of GDP in Armenia.

Figure 4 displays the IMF index for access to finance from banks (left hand side), and financial markets (right hand side).[15] The role of capital markets as a source of finance in the six countries has not improved measurably, and remains well below that in Western Europe, or even other emerging markets. Figure 5 also shows that this broad assessment holds true across all dimensions of market development (capitalisation, access for a broad range of enterprises and liquidity or turnover), with the notable exception of Kazakhstan.

[15] See IMF (2016): Introducing a new broad-based index of financial development, IMF Working Paper 16/5.

Figure 4. Financial institutions and financial market access, EaP countries and Kazakhstan and peer comparison to 7 euro area countries, 2019

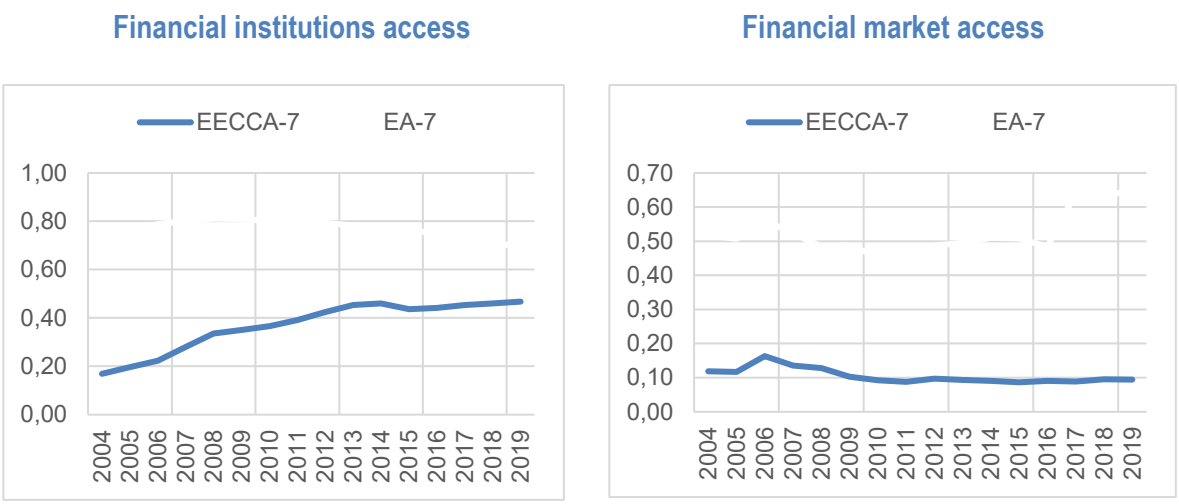
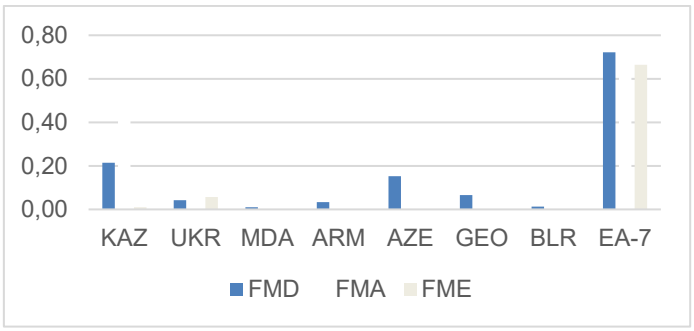


Figure 5. Financial market development in EaP countries and Kazakhstan and and peer comparison to 7 euro area countries, 2019



Source: IMF Financial Development Index, https://data.imf.org/?sk=F8032E80-B36C-43B1-AC26-493C5B1CD33B).
Notes: 1. FMD denotes financial market depth (based on stock and bond market capitalisation), FMA is financial market access (based on market capitalisation outside the top-10 and number of issuers) and FME is efficiency (based on turnover); all data are normalised within a 0-1 range.
2. The seven Euro area countries include: Germany, France, the Netherlands, Belgium, Italy, Spain and Austria.

Given this early state of bond market development any potential issuer of green bonds confronts several obstacles:

- **Bond market illiquidity**. In the illiquid local bond markets of the six reviewed countries, there are significant transaction costs. Investors are prone to apply an illiquidity premium in the primary issue, given the risk on an inability to trade.[16] There are therefore limited incentives to issue a corporate bond, let alone a more complex labelled instrument. Green bond issuance may well

[16] The illiquidity premium is applied by investors in the knowledge that any future sale would lead to large discounts due to an absence of buyers. This discount in turn will make the initial issuance more costly and less attractive for the issuer.

aggravate illiquidity, as ESG investors tend to hold such instruments to maturity (Fender et al, 2018).

- **Lack of institutional capital**. In local markets, there is a shortage of investors, such as pension funds and insurance companies, which could help make the primary issuance of green bonds more predictable. Few sources of long-term capital, such as pension funds or insurance companies have emerged. There are three notable exceptions to this observation. In Armenia, a local mandatory ("second-pillar") pension system was established in 2013 and as of mid-2021 had approximately USD 850 million under management. In Georgia, the State Pension Fund was established more recently in 2019 and by October 2021 the Fund already had about USD 576 million under management. Strong growth of wages and of the labour force that enrolled in the system were expected to underpin a further growth in assets. While the Georgian Pension Fund initially adopted a conservative investment policy it will ultimately also invest in corporate securities, subject to sufficiently high credit quality. Limits under local laws on the exposure to individual issuers and instruments will constrain any one exposure, though the Fund could be an important source of local investment demand. There is also a sizable pension fund in Kazakhstan which is managed by the Central Bank.

- **Inadequate access by international investors, clearing and settlement**. The participation of foreign investors in local bond markets is also extremely limited, in part due to the lack of good clearing and settlement processes. In bond markets of more established EMDEs, a foreign investor would acquire ownership of a security listed on a local exchange on the basis of a cooperation agreement between an international clearing house with a local counterpart. These agreements are rare for corporate bonds issued locally in the reviewed countries, given the multiple risks and legal complexities. [17]

- Lastly, **corporate governance and transparency generally remain poor in the EaP countries and Kazakhstan** and there are few issuers with publish credit ratings of sufficient quality. A recent assessment found the quality of non-financial disclosures particularly poor, and systems for internal control weak (EBRD, 2019). This is a particular problem for the issuance of green bonds which offer to the investor additional insights on the use by the issuer of funds raised and of impact in individual projects. This will limit the scope and scale of issuance.

6. Overview of green bond markets in the EaP countries and Kazakhstan

Green finance initiatives and regulatory context

The issuance of green bonds, and trading in such securities, generally develops on the back of dedicated regulatory framework for green finance. This typically comprises at a minimum a classification system or taxonomy of sustainable activities, disclosure rules and a definition of green bonds within capital market regulation. This is essential so that investors can identify a distinct asset class in local markets.

Only three of the reviewed countries have defined elements of such green finance regulation. A regulatory framework is now largely in place in Georgia and on the two exchanges in Kazakhstan. Ukraine also adopted a number of legislative acts that provide a clearer basis for green bonds issued by the state. By contrast, no distinct regulatory provisions were in place in Moldova or Azerbaijan at the time of preparing

[17] A notable exception is the Astana International Exchange (AIX) which has concluded an agreement with an international clearing house for post-trade services, though a similar agreement does not exist for KASE, the main exchange in the country.

this analysis. The leading local bank in Armenia issued two green bonds in 2021 and 2022, notwithstanding the absence of a local green finance framework.

Most governments have nevertheless signalled support to green finance in a number of programmatic financial sector strategies. Governments adopted roadmap documents which prescribe broad objectives for financial market development. For instance, sustainable finance has been addressed in some of these development strategies, such as in Kazakhstan and Ukraine, including green bonds and loans. Yet, only very few countries have translated such goals into new or updated legal acts that address specific green finance issues. An important orientation was also given in the form of the 2014 Association Agreements between the EU and Moldova, Georgia and Ukraine which foresaw an ongoing approximation of local legislation with EU financial sector rules, though obviously this is hampered by capacity shortfalls and the much more rudimentary capital market infrastructure in these countries.

The impact of reforms targeting green transition and creating potential for development of green finance instruments is most visible in Georgia, Ukraine and Kazakhstan. Measures included:

- introduction of programme documents such as recommendations and strategies concerning green finance instruments
- reforming of capital markets infrastructure
- development of proposals for ESG disclosure frameworks
- upgrades of the countries` legislative framework that both directly and indirectly addresses issues related to green finance and sustainable finance, in general.

So far there have been no incentives in fiscal or monetary policy for the issuance of green bonds in any of the six countries. There are no incentives from capital market regulators (e.g., in form of lower reserve requirements). However, rules developed for green bonds issuance in Kazakhstan reduce the issuance costs of green bonds, their admission to the market as well as the costs of publication of relevant annual reports.

Ukraine

Ukraine adopted its “Strategy for the Development of the Financial Sector” covering the period up to 2025[18] and including strategic areas such as financial stability, financial markets development and financial inclusion. The Strategy envisages specific actions as well as indicators of their implementation. Key directions are:

- reforming of the infrastructure of capital markets
- development of financial instruments supporting securitisations
- harmonising with international standards concerning investor protection and transparency in financial markets.

This document aims to enable the Ukrainian banking sector to support the country’s nascent green bond market. It prescribes the development of ESG disclosure documents as well as guidance on standards and policy for sustainable financing, such as loan standards.

The regulatory framework for green finance has also gradually taken shape. For instance, as of July 2021, green bonds are recognised as a specific class of debt instrument according to Article 18 of the Law of

[18] https://bank.gov.ua/en/files/gmzinByGCNNglWc.

Ukraine "On Capital Markets and Organised Commodity Markets"[19]. The Article gives a broad definition of eligible green projects and establishes disclosure requirements (both pre-issuance and post-issuance on an annual basis).

As prescribed in the Law, a procedure for selection and support of green projects financed by the state and local budgets has to be approved by an Order of the Cabinet of Ministers of Ukraine. This will also include a taxonomy for green projects and technical criteria for the selection of projects. The procedure is expected to foresee the use of external reviewers (both pre-issuance and post-issuance) that will qualify the performance of the bonds labelled as "green". However, this framework will only be applicable to green projects financed by the state or by the regional agencies / budgets (i.e. for the issuance of green bonds by the State or its bodies and municipalities). Until early 2022, there were no standards or requirements on green bonds issued on the stock exchange.

Kazakhstan

In Kazakhstan, a green finance framework is also being developed. Best-practice rules were first developed on the Astana International Exchange (AIX), which operates within a distinct legal regime but where liquidity remains limited. KASE is the country's main exchange where the bulk of capital market issuance happens and this exchange has recently caught up up in the development of a green finance framework.

The Astana International Financial Centre (AIFC) adopted the concept of a Green Financial System[20] in 2019, which set up a vision for the development of green finance and promoted capacity building among financial institutions, a disclosure and reporting framework. AIX has already developed in its rules of the exchange clear standards for the issuance and trading of green bonds.[21] These rules are limited to the core aspects of green bonds, such as a minimal taxonomy; procedures for the recognition of bonds that are to be listed as green; and standards for post-issuance reporting. In 2021 KASE listing rules similarly defined requirements for the issuance of green, social and other sustainability bonds, and this was also reflected in the capital markets law. The exchange also implemented procedures for the external review of bond proceeds.

The AIFC Green Finance Center was created in 2018 to promote the development of green finance in Kazakhstan and Central Asia. The Center assists potential issuers, investors, and market players in preparing the issuance of green bonds on the AIX. In particular, the second party opinion (SPO) is an additional cost which the Green Finance Centre reimbursed until 2021 for all issues listed on the AIX. A taxonomy for green loans and bonds, based on the AIFC model, was included in Kazakhstan's new Environmental Code, which was adopted by the government in late 2021. Further amendments to the Environmental Code are also under consideration, and these may provide for subsidies on green loan interest and green bond coupon payments.

Kazakhstan adopted the National Corporate Governance Code (covering aspects of mandatory annual ESG disclosures for issuers on Kazakhstan Stock Exchange (KASE) and government-owned companies). KASE became a member of the Sustainable Stock Exchanges Initiative in 2016, adopted a voluntary ESG reporting methodology in 2018 and introduced mandatory reporting in 2021. In 2021 86 out of 150 listed companies (57%) provided some type of ESG information. AIFC is set to publish a voluntary ESG-reporting guidance for AIX issuers and plans to adopt disclosure requirements in the future.

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[19] https://cis-legislation.com/document.fwx?rgn=11328.

[20] https://gfc.aifc.kz/uploads/Concept%20on%20introduction%20and%20development%20of%20green%20finance%20instruments%20and%20principles.pdf.

[21] AIX Business Rules, Section 13.

Georgia

In Georgia, a dedicated green finance regulatory framework is also well-advanced. The National Bank of Georgia (NBG), as the principal financial sector regulator and supervisor, joined other central banks in the International Network on Greening the Financial System (NGFS) in 2020, and has drawn on assistance from a number of international agencies.

Already in April 2019, the central bank published a roadmap for sustainable finance.[22] This addresses the need of raising finance for climate change mitigation, climate change adaption and other climate-related risks in the financial system, and the plan has been steadily implemented over the subsequent three years. The stated goal of this roadmap is to provide a credible, predictable and stable regulatory framework and prepare the market for the transition to a low-carbon economic model of development while mobilising green finance. The roadmap contains four pillars, namely:

- increased awareness and capacity building
- sustainable finance flows
- integration of ESG factors into risk management and decision making, and
- transparency and market discipline.

Amendments to the corporate governance code for banks were seen as critical in reflecting climate and other ESG issues in bank risk management and an update of the code in 2021 made this requirement reasonably detailed and specific. This built on the NBG's new ESG disclosure and reporting principles for banks of 2020. Greater consistency and transparency in green finance, as supported by these principles, is particularly important for the banking sector which accounts for 94% of financial system assets.

Countries without a green finance regime

At the time of writing of this report (April 2022), the other four countries in the scope of this study do not have a specific green finance framework.

- Armenia, however, stands out for having issued the largest volume of green bonds on a local market among the six countries, even though no distinct green regulatory regime has been defined. The government approved a capital market development programme though this does not address green bonds. Two green bonds were issued according to the regulations applied to regular bonds and, consequently, there is no legal obligation for a green bond issuer to disclose information on environmental or social impact of operations.

Green bond issues in the reviewed countries

Up to February 2022, a total of eight green bonds have been issued in the six reviewed countries studied here: two each in Armenia, Georgia, Kazakhstan and Ukraine. So far there have been no green bonds in Azerbaijan and Moldova (Table 4).

Green bonds in Armenia and Kazakhstan were issued on local exchanges, and these were therefore relatively small. In both countries international development agencies or local public investors played a key role in the issuance which were largely done in the form of a private placement, at least initially. By contrast, bonds issued on international markets by two Ukrainian energy companies and the main utility and transport companies in Georgia were much larger. These transactions underlined the difficulties in the local investment environment for green projects and attributing bond proceeds to newly generated assets.

[22] National Bank of Georgia (2019), Roadmap for Sustainable Finance in Georgia.

Between them, the eight transactions made between 2019 and 2021 highlight both the potential and the challenges of the green bond instrument in the region.

Ukraine

A first green bond in the region was issued in 2019 on the Irish stock exchange by DTEK Renewables, the largest renewable energy (RE) producer in Ukraine. The issue amounted to EUR 325 million, at a maturity of 5 years and a coupon rate of 8.5%. The bond issue was heavily oversubscribed, and investors were largely based in the UK, Switzerland and the EU, with fund managers taking the bulk of the allocations (92%).

The bond issue was assessed in a second party opinion by Sustainalytics[23]. This report described DTEK's green bond framework as "credible and impactful" and aligned with the four core criteria of the Green Bond Principles (GBP). In line with that assessment, proceeds from the bond were fully allocated by 2021 to renewable energy projects in wind and solar power generation.

Despite this initial success, the investment environment for Ukraine's renewables sector deteriorated considerably in the following years. Given ongoing government liabilities towards RE producers and a retroactive reduction in the feed-in tariff in 2020 investors no longer considered the renewable power regime to be reliable. This uncertainty also resulted in a stop in trading of the DTEK green bond in the secondary market. At that point, further green bond issuance by this sector became impossible until government support schemes became trustworthy again and cash flows of RE producers would be more predictable. DTEK's bond issuance also underlined that investors are not prepared to bear project-related construction and completion risks. DTEK's green bond essentially refinanced renewables projects that had already been commissioned. More expensive bridge financing was needed to cover the construction phase.

In November 2021, the Ukrainian transmission system operator Ukrenergo then raised USD 825 million, the largest green bond in the region, apart from green bonds issued in Russia, to date. It was placed in the German stock exchange with a 5-year maturity and a 6.875% coupon rate. The final demand for the bonds significantly exceeded the targeted amount, reflecting in part a state guarantee and the EBRD's commitment to take a significant share, acting as anchor investor.

As a first in the region, the Ukrenergo bond contained both a traditional "use of proceeds" green bond, and a sustainability-linked element as the coupon rate would be tied to the achievement of certain targets in the connection of renewable energy sources to the grid by 2030. A second party opinion by Sustainalytics again found the issuer's framework to be compliant with both green bond and sustainability-linked bond standards.[24] Yet, the translation of the SLB structure into penalties under the bond terms remained unclear at the time of issuance. Moreover, some market participants expressed concerns that proceeds from the issue were dedicated to the repayment of debt arising from contracts for the sale of electricity for fixed feed-in tariffs by RE generation facilities, and thereby yielded only an indirect climate-related impact.

Georgia

Two significant green bonds were issued by Georgian enterprises, also in international markets.

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23 https://www.sustainalytics.com/corporate-solutions/sustainable-finance-and-lending/published-projects/project/dtek/dtek-renewables-green-bond-second-party-opinion/dtek-renewables-green-bond-framework-second-party-opinion-26-9-2019-pdf.

24 https://ua.energy/wp-content/uploads/2021/10/Ukrenergo-Green-Sustainable-Framework.pdf, the Second Party Opinion is available here : https://www.sustainalytics.com/corporate-solutions/sustainable-finance-and-lending/published-projects/project/national-power-company-ukrenergo/ukrenergo-green-and-sustainability-linked-bond-framework-second-party-opinion/ukrenergo-green-and-sustainability-linked-bond-framework-second-party-opinion.

In July 2020, Georgia Global Utilities (GGU) issued a bond of USD 250 million at a short maturity of 2 years on the Irish stock exchange. A second party opinion[25] had found the issuer's green bond framework to be aligned with international standards. The report acknowledged in particular the scope to address risks in flood-prone areas and the potential to expand renewable energy generation, in particular from wind and hydropower. However, the bond was used to re-finance a number of companies in the portfolio of GGU, yielding at best an indirect climate-related impact. The bond remains compliant with the GGU framework which allows for refinancing to be labelled as green.

In June 2021, Georgian Railway (GR) then issued a USD 500mn, 7-year green Eurobond in the London market. This issue was met by very strong investor demand, leading to a 8.4 oversubscription as orders reached USD 4.2 bn (the Asian Development Bank and EBRD committed to an initial subscription as anchor investors). Three international investment banks and two local institutions managed the issuance process. GR had defined a green bond framework, which was assessed by S&P Global Ratings as being aligned with the Green Bond Principles (GBPs)[26]. In line with that framework, the bond proceeds were used to both refinance existing debt and to fund infrastructure projects. GR clearly achieved a considerable benefit to its financing costs from this green bond issue. The coupon rate of 4%, the lowest in the company's history, was in part attributed to the strong investor demand for a green issue (this represented a premium of 1% over the yield of an equivalent state bond). Given interest rates observed in the Georgian market in 2021, it was clear that the green bond and associated investor demand resulted in a lower coupon rate, with GR's previous positive performance also improving refinancing conditions.

Armenia

In November 2020, Ameriabank, Armenia's largest bank, issued the country's first green bond, which amounted to USD 50 million at 5 years maturity, with a fixed coupon of 3.05%. The bank had structured the bond in close cooperation with FMO, the Dutch Entrepreneurial Development Bank, which was also the sole investor in the transaction (making this in effect a "private placement").

Sustainalytics provided a second party opinion on Ameriabank's green bond framework, verifying the alignment with the GBP and other global market standards[27]. The bank's green bond framework committed to allocate bond proceeds to a number of activities (including RE, energy distribution, transport and energy efficiency), though in effect only existing RE projects benefitted and were refinanced. In June 2021, Ameriabank green bonds were admitted to trading at the local exchange in Armenia (AMX).

In February 2022, the bank then issued a second green bond, this time offering it for public placement on the local exchange. Crucially, this bond was offered in both foreign and local currency, USD 8 mln and AMD 3 billion, equivalent to USD 6.3 million, at the time, therefore appealing to a wide set of investors. Both components had a maturity of 27 months, and the coupon rate was differentiated between 3.5% for the USD bonds, and 9.5% for AMD bonds. This was based on the bank's original green bond framework[28] which commits to allocate proceeds to a number of low-carbon activities across Ameriabank's various business segments.

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25 https://mstar-sustops-cdn-mainwebsite-s3.s3.amazonaws.com/docs/default-source/spos/georgia-global-utilities-green-bond-framework-second-party-opinion.pdf?sfvrsn=c00092c7_3.

26 https://www.spglobal.com/_assets/documents/ratings/research/100108698.pdf.

27 https://www.sustainalytics.com/corporate-solutions/sustainable-finance-and-lending/published-projects/project/ameriabank-cjcs/ameriabank-cjcs-green-bond-framework-second-party-opinion/ameriabank-green-financing-framework-second-party-opinion-pdf.

28 https://ir.ameriabank.am/docs/default-source/default-document-library/gbf_ameriabank.pdf.

Kazakhstan

A first green bond was issued at the Astana International Financial Centre (AIFC) in August 2020 by the DAMU Entrepreneurship Development Fund (a subsidiary of the Baiterek Holding, a state-owned company). Even though the issue was very small (at 200 million KZT or ca. USD 500,000) and of relatively short maturity of three years, it was a first test of the green bond framework defined by the Astana exchange. The bonds were marketed by a local investment bank and purchased by two local institutional investors. The proceeds were on-lent to the local subsidiary of Sberbank, the Russian state-owned bank, which in turn funded a number of small solar plants. This pilot project was implemented with the support of the AIFC Green Finance Center, which provided the necessary consulting support, including a second party opinion.

In November 2020, the Asian Development Bank (ADB) issued two green bonds in a single transaction on the country's main exchange, the Kazakhstan Stock Exchange (KASE). Both bonds were at 2 year maturities and with near-identical coupon rates. This raised USD 32 million in total. Bond proceeds were used to finance ADB's portfolio of climate change adaptation and mitigation projects in the country (two solar power plants with a capacity of 50 MW and 100 MW, respectively). Both issues were oversubscribed by a factor of about two. Given the projects' payback of about 13 to 14 years, the 2 year maturity of the bonds provided no more than bridge-financing.

The largest green bond on the AIX exchange so far was that of Samruk Energy in November 2021 in the amount of KZT18.4bn (about US$ 42 millon), with a seven year maturity and a coupon rate of 11.40%.

Table 4. Green bond transactions in the reviewed countries up to 2021

	Amount	Maturity	Coupon	Public / private placement	Use of proceeds	IFI initial purchase
Georgia						
Georgian Railways JSC, 2021	USD 500 m.	7 yrs.	4%	London	Refinance existing debt and fund rail infrastructure	EBRD and ADB
Georgian Utilities, 2020	USD 250 m	2 yrs.	7.75%	Ireland	Refinancing of a number of assets	ADB
Armenia						
Ameriabank I, 2020	EUR 42 m.	5 yrs	3.05%	Private	RE and various other activities	FMO
Ameriabank II, 2022	USD 8m AMD 3 bn.	27 months	USD 3.5% AMD 9.5%	Yerevan Exchange	As before	
Kazakhtstan						
DAMU Entrepreneurship Fund, 2020	KZT 200 million	3 yrs	11.75	Listed on Astana exchange, though only one investor	Solar power	
Asian Development Bank, 2020 (2 parallel bonds issued at the same time)	USD 32 m.	2 yrs	10.1 %	KASE	ADB climate-related projects	
Samruk Energy	KZT 18.4 bn.	7 years	11.4 %	AIX		
Eurasian Development Bank	KZT 20 bn.	3 years	10.5 %	KASE		
Ukraine						
DTEK Renewables, 2019	EUR 325 m.	5 yrs.	8.5%	Ireland	RE projects	
Ukrenergo, 2021	USD 825 m.	5 yrs.	6.875% Variable for a sustainability-linked portion	Several European exchanges		EBRD: USD 75 m.

Source: Authors' compilation.

Support by the donor community and IFIs

The international finance institutions (IFIs) active in the region have provided extensive technical assistance to governments and their regulators in support of establishing a green finance framework.

Technical and financial support by the international agencies to individual commercial banks has also built up a portfolio of green bank loans and established lending capacity within these institutions to generate such assets. Most relevant in this context is the EBRD's Green Economy Financing Facility (GEFF) which to date has amounted to a total of approx. EUR 4 billion in all 26 eligible countries. Funds are disbursed through selected partner banks and on-lent for residential and commercial energy efficiency interventions.[29] Another example is the EIB's support in providing long-term credit lines for Kazakh SMEs and finance projects with climate change adaptation and mitigation objectives[30]. Here the final beneficiaries are required to comply with applicable national and EU legislation. These bank loan portfolios may subsequently be refinanced, or attract fresh funding, through green bonds.

IFIs have also supported inaugural green bond issues as so-called "anchor investors". EBRD, for instance, committed to purchase USD 75 million of the Ukrenergo green bond issue, and, jointly with the ADB, to the purchase of the Georgian Rail bond issue while ADB committed to the purchase of the Georgia Global Utilities bond in 2020.[31] The first green bond issued by Ameriabank was entirely purchased by the Dutch Entrepreneurial Development Bank FMO. Given the uncertain local and international demand in a primary issue and the untested green finance frameworks the presence of an anchor investor may clearly be decisive. In the case of EBRD, which remains the largest multilateral investor in the region, green bonds are identified as a key tool in supporting clients' projects under the Bank's 2020 strategy.[32]

Even though international agencies periodically issue bonds under their own name on local markets, including to raise local currency funding, the two green bonds issued by the ADB in 2020 were the only instance of such support, showcasing the green bond framework on the Almaty Exchange (KASE). Yet, these issues were relatively small and of short duration.

7. Evaluation of green bonds in the EaP countries and Kazakhstan

The eight bond transactions outlined above mobilised in total almost USD 2 billion within less than three years. It is encouraging to note that there is interest by international and local investors in sustainable financial instruments in the EaP countries and Kazakhstan. Investor appetite is matched by funding needs among local issuers of which at least some are in a position to comply with international standards on documenting the use of proceeds and account in other forms for sustainable activities at a project level.

Green bonds have a number of benefits over conventional bonds, even though these are often mis-characterised by market participants. From the perspective of the issuer, empirical research shows that any benefit in funding costs (a premium of the bond, also known as the so-called "greenium") is quite small, and in any case disappears in secondary trading (Larcker and Watts, 2019). In the highly illiquid local bond markets of the emerging and frontier economies it will be very hard to substantiate a benefit in funding costs, not least because there are rarely directly comparable non-green instruments. In the case of state-

[29] Link to the description of the investment: https://ebrdgeff.com/.

[30] Link to the description of the investment: https://www.eib.org/en/press/all/2016-305-eib-provides-eur-200m-to-support-smaller-climate-change-mitigation-and-adaptation-and-environmental-projects-in-kazakhstan-green-projects.

[31] See EBRD press release, available here: https://www.ebrd.com/news/2021/ebrd-backs-ukrenergos-eurobond-to-resolve-payment-crisis-in-ukraines-renewables-sector.html; and ADB press release here: https://www.adb.org/projects/documents/geo-54300-001-rrp.

[32] EBRD (2020): Green Economy Transition Approach 2021 – 2025.

owned companies (Ukrenergo and the two Georgian issuers), the coupon rate was at or slightly below the nearest comparable bond yield of government bonds issued in international markets.

While the benefit in funding costs is unclear, green bond issuers seem to have accessed a wider investor base. Green bond investors may be less prone to liquidity constraints, possibly due to a specific "ESG" investment mandate (Fatica and Panzica, 2020)[33]. In the context of the six reviewed countries, an expansion of the investor base was clearly evident in the two Georgian and two Ukrainian bonds issued in European markets. These issues showed significant oversubscription, and introduced new investors to these issuers.

In each of the four green bonds issued internationally issuers built on a pre-existing presence in bond markets. Maturities of the international bonds were longer than the maturities of the bonds these companies had issued previously, or which were refinanced, though this reflected primarily an improved credit quality. Given the size of these four transactions, it is clear that local markets, let alone local currency transactions, could not have been an alternative.

By contrast, the initial transactions in the local markets in Armenia and Kazakhstan were sold through private placement to key investors and state agencies, or required international institutions or development agencies to act as anchor investors. The Kazakh bonds were of only short duration, much shorter than the lifetime of the renewable projects that were financed. The two bonds issued by Ameriabank refinanced a portfolio of green projects which the bank had previously generated. The bonds gave greater transparency, and credibility to the bank's green lending activities, and opened an important additional funding tool for the bank. A challenge in capital market development is the pooling of financing of smaller projects. Such pooling through refinancing or even securitisation would require a uniform quality and transparency standard.[34]

Green bond investors clearly benefit from enhanced issuer transparency which is to be welcome in a region that is ripe with corporate governance problems. Transparency is enhanced through the second party opinion which summarised the initial evaluation of the issuer's green bond framework, and, possibly, in the form of subsequent allocation and impact reports. Whether green bonds deliver the impact investors seek, importantly the form of mitigation of carbon emissions, is unclear in empirical studies.[35] The entrenched corporate governance problems in the region are likely to complicate the issuer's accounting for allocation of proceeds and impact. The transactions in Georgia and of DTEK Renewables in Ukraine also underline the difficulty of generating a sufficiently large project portfolio soon after the initial issuance. Construction, completion and contractual risks are inherently higher in the six countries. Following the bond issue, the allocation of proceeds into projects with high impact within a short timeframe is less likely than in advanced markets. This, in addition, is complicated by the weak and often unpredictable investment environment for renewables, as was evident in the case in Ukraine and, to some extent, in Kazakhstan.

Notwithstanding these problems and the unclear financial benefit, regulators are still keen to develop green bond segments within their markets. Green bonds undoubtedly provide greater transparency of sustainable projects among individual issuers and visibility for national climate policies. Whether they mobilise additional finance over and above what would otherwise have been financed is unclear. In the case of Ukrenergo, for instance, bond proceeds were used to settle debts of the state-owned utility to other renewable operators. Georgia Utilities also showed an exceptionally high share of refinancing.

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[33] Fatica, S. and Panzica, R. (2020).

[34] Pooling risks through securitization is indeed one of the options that is currently being explored by international donors (e.g. the Green Climate Fund).

[35] Ehlers, T., B. Mojon and F. Packer (2020).

These benefits of green bonds need to be weighed against a number of costs and drawbacks. For the issuer, the additional transaction costs arising from a green, rather than standard, bond issue are relatively small. Green bond transaction costs emerge in establishing an issuer-specific green bond framework and having this evaluated by an external verifier in the form of a second party opinion. Therefore, the overall attraction of bond finance in the local market, green or otherwise, is likely decisive. Illiquidity is a general feature of bond markets in less developed financial systems, including the reviewed countries. It is particularly relevant for green or other labelled instruments, as two distinct bond instruments, and possibly two investor types, emerge.

8. Conclusions and policy recommendations

The six reviewed countries examined in this analysis still suffer from outdated energy infrastructure and are in the early stages of a low-carbon transition. Estimates in this paper point to substantial investment needs in decarbonisation, potentially amounting to over EUR 114 billion by 2030, and concentrated in industry and energy infrastructure. Even though several country commitments under the Paris Agreement do not set targets for a reduction in emissions from current levels, governments are broadly supportive of this agenda and Kazakhstan and Ukraine defined targets for climate neutrality.

Given the profound changes in energy markets following the Ukraine war, and the renewed commitment by Europe to become independent from fossil-fuel resources imported from the region, diversification and the transition from fossil-fuel energy sources has become even more urgent in the region. Above all, policy makers could prepare the inevitable adjustment through a phasing out of price distortions, such as subsidies and tax rebates, and a more reliable investment regime for renewable energy sources.

Bond markets can play an important part in funding this transition as they offer benefits of scale and long-term maturity unmatched by domestic banking systems. Green bonds in particular appeal to a rapidly growing class of investors focused on ESG aspects and sustainability impact of projects. Needless to say, green bonds can facilitate, though cannot by themselves catalyse, the emergence of low-carbon energy infrastructure. Bonds, whether green or otherwise, are rarely suitable for the construction phase of projects when operational risks are high. Additionality of any finance mobilized may be limited if past capital expenditures are refinanced. Traditional aspects of bond transactions will still be key for investors, importantly the credit risk in projects that are close to being fully operational, investor options to resolve any default and efficiency of trading in local bond markets.

As a novel financial instrument green bonds in the EaP region and Kazakhstan will suffer from higher costs for first-time issuers, an incomplete or untested regulatory framework and investor concern over issuer transparency. Four of the six countries have laid the foundation of a green finance framework that could also foster broader green bond issuance by private sector firms.

Efforts to develop the green bond segment in the six countries could build on the early experience reviewed in this paper. Apart from the ongoing steps in bond market development regulators should strengthen the green finance related aspects in regulation, and make such regulation more credible. This should include a clear designation of sustainable projects within a taxonomy, which should be compatible with those of major investing jurisdictions to the greatest possible extent. Such an ‘interoperability’ of classification systems would facilitate international capital mobility, and attract EU investors into exposures in sustainable assets in the region. Moreover, green bonds should be well defined under local capital market legislation and there should be full access to local markets for independent verification providers. Issuers, for their part, need to put in place robust commitments, in particular where verifiers assess sustainability-linked bonds.

Incentives, such as subsidies or reimbursements, could reduce issuer costs or provide for favorable taxation or regulatory regime for green bonds, though should be aimed at bridging market failures and not compromise the prudential mandate in capital market regulation. Green bond issuance by the state and

by state-owned enterprises could demonstrate that a green finance framework is operational, though sovereign debt management principles and a limit to state guarantees of corporate debt are paramount.

There has been encouraging experience of banks that built portfolios of green loans, often supported by technical assistance and blended finance from IFIs and development agencies. Among the six countries, only one bank in Armenia has succeeded in a green bond refinancing. The credibility of a bank's green lending criteria and uniform quality in green loan portfolios will be key. Even the limited local bond markets can be suitable for bank refinancing transactions, possibly with the initial support of international financial institutions or development agencies acting as anchor investors. Local institutional investors, such as pension funds, could also be engaged within their investment mandates.

Operators of energy and other infrastructure seeking much larger funding volumes will likely turn to international bond markets, as has been the case with the two green bond issues in Georgia and the two issues in Ukraine. Green bonds issued in international markets will diversify the investor base and raise transparency and credibility of large local enterprises on sustainability aspects, possibly benefiting other funding transactions. Benefits for local bond markets are limited, though issuers gain stronger sustainability credentials and regulators could consider cross-listings, as has been done in Ukraine for about 30 bonds.

References

Bayat-Renoux, F. et al. (2020), *Tipping or Turning Point: Scaling up Climate Finance in the Era of COVID-19,* Working Paper No.3, Green Climate Fund. https://www.greenclimate.fund/sites/default/files/document/gcf-working-paper-tipping-or-turning-point-scaling-climate-finance-era-covid-19.pdf.

Cortellini, G. and Panetta, I. (2021). Green Bond: A Systematic Literature Review for Future Research Agendas. *Journal of Risk and Financial Management* 14:589. https://www.mdpi.com/1911-8074/14/12/589.

CPI (2022), *Global Landscape of Climate Finance 2021*, Climate Policy Initiative. https://www.climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2021/.

Creed, A. and Horsfield, M. (2021), *Transition Finance for Transforming Companies: Avoiding Greenwashing when Financing Company Decarbonisation*, Discussion Paper, Climate Bonds Initiative. https://www.climatebonds.net/transition-finance-transforming-companies.

Daly, K. et al. (2020), *Post-COVID: Dealing with the Emerging Market Debt Overhang*, CEPR. https://voxeu.org/article/post-covid-dealing-emerging-market-debt-overhang.

EBRD (2019), *Transition Report 2019-20 – Better Governance, Better Economies*, EBRD. https://www.ebrd.com/news/publications/transition-report/transition-report-201920-better-governance-better-economies.html.

Ehlers, T. et al. (2020), *Green Bonds and Carbon Emissions: Exploring the Case for a Rating System at the Firm Level*, BIS Quarterly Review, 14 September 2920. https://www.bis.org/publ/qtrpdf/r_qt2009c.htm.

Fatica, S. and Panzica, R. (2020), *Green Bonds as a Tool against Climate Change*, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-22105-0 (online), doi:10.2760/24092 (online), JRC121894. https://publications.jrc.ec.europa.eu/repository/handle/JRC121894.

Fender I. et al. (2020), *Reserve Management and Sustainability: The Case for Green Bonds?*, BIS Working Papers, No 849, 30 March 2020, BIS. https://www.bis.org/publ/work849.htm.
ICAP (2022), *Emissions Trading Worldwide: Status Report 2022*, International Carbon Action Partnership. https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-2022-icap-status-report.

IPCC (2022), *Sixth Assessment Report*, Chapter 15, IPCC. https://www.ipcc.ch/assessment-report/ar6/.

Larcker, D. and Watts, E. (2019), *Where's the Greenium?*, Rock Center for Corporate Governance at Stanford University Working Paper No. 239, Stanford University Graduate School of Business Research Paper No. 19-14, Journal of Accounting and Economics, Volume 69, Issues 2–3, April–May 2020, 101312. https://ssrn.com/abstract=3333847 or http://dx.doi.org/10.2139/ssrn.3333847.

OECD (2021a), *Fossil-Fuel Subsidies in the EU's Eastern Partner Countries: Estimates and Recent Policy Developments, Green Finance and Investment, OECD Publishing, Paris.* http://dx.doi.org/10.1787/9789264284319-en.

OECD (2021b), *Scaling up Green, Social, Sustainability and Sustainability-Linked Bond Issuances in Developing Countries*, DCD(2021)20, OECD. https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DCD(2021)20&docLanguage=En.

OECD (2018), *Inventory of Energy Subsidies in the EU's Eastern Partnership Countries*, Green Finance and Investment, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264284319-en.

OECD (2016), *Effective Carbon Rates. Pricing CO_2 through Taxes and Emissions Trading Systems*, OECD. https://doi.org/10.1787/9789264260115-en.

Country Assessment: Armenia

Green bond opportunities: issuers and projects

Armenia's climate goals and the updated NDC

Armenian authorities consider that that there are no high-emitting sectors in the country. They believe that compared to peers and developed economies carbon emissions are relatively low because of de-industrialisation of the country after the collapse of the Soviet Union and the absence of any big chemical or other emission-intensive industries. However, mining industry and thermal power plants contribute to emissions and local environmental degradation. Armenia's levels of energy and emissions intensity are higher than in the European Union (EU) countries, but among the lowest across the countries in the region, given the absence of high-emitting sectors.

The Armenian Parliament ratified the Paris Agreement in 2017, and an updated Nationally Determined Contribution (NDC) was approved in May 2021 to cover the period 2021-2030. NDC targets a reduction of greenhouse gas (GHG) emissions by 40% until 2030 compared to the base year 1990. A key component of the document is the enhanced transparency and accountability framework to track progress in implementation of the commitments. That said, the NDC does not contain detailed estimates of investment needs.

Armenia currently relies on a Strategic Programme of Prospective Development, though this is by now slightly outdated. In September 2020, the Prime Minister presented the "Armenia Transformation Strategy by 2050". However, this document has not been operationalised and does not have clearly formulated measurable targets and programmes. The UN Sustainable Development Goals (SDGs) are also an integral part of the National Reform Agenda, and in 2020 Armenia published a report setting out implementation to date (Ministry of Foreign Affairs of the Republic of Armenia, 2020).[1]

A new Energy Strategy, Strategic Programme for the Development of the Energy Sector of the Republic of Armenia, setting the path for the sector's transition through 2040, was adopted by governmental decision in January 2021. The main objectives of the new Energy Strategy are the increased use of renewable energy (doubling the current share by 2030) and a further lifetime extension of the Armenian Nuclear Power Plant (ANPP) (GoA, 2021).

Several pieces of legislation regulate the sectors that have climate and environmental impact and may support the demand for green financing:

- The objective of the 2001 ***Law on Energy*** (Parliament of Armenia, 2001) is to establish government policies in the energy sector, including energy efficiency. After the first stage of reforms of the early 2000s, the Government of Armenia (GoA) started developing a new Law on Electric Energy that will take into account the requirements of relevant EU directives, including on electricity generated by thermal power plants.
- The 2004 ***Law on Energy Saving and Renewable Energy*** (Parliament of Armenia, 2004) further defines the state policy on energy savings and renewable energy and implementation that targets, economic and energy security, reliability of the energy system and creation of new production, including renewable energy.
- The Law on Transport, Law on Automobile Transport, Law on Railway Transport, Law on Automobile Roads regulate **the transport sector**, though these laws generally do not regulate energy efficiency and carbon emissions.
- The ***Law on Apartment Building Management***, does not have provisions related to retrofitting of residential buildings, replacement of heating and lighting systems and energy efficiency.

- In various regulations the Government of Armenia targets energy savings and energy efficiency in facilities supported with state funds, defines the labelling of energy consuming equipment, and approves the technical regulation on energy efficiency of newly-constructed housing apartment buildings.
- Armenia's mining sector is one of the cornerstones of the national economy, with 670 mines of solid minerals (including 30 metal mines) currently registered. The sector is regulated through the Code of Subsoil, most recently amended in 2020. Certain environmental aspects in the sector are dealt with in the Law on Environmental Impact Assessment (IEA). To obtain a right of subsoil use for extracting mineral resources, a preliminary and initial EIA must be conducted.

Investment needs in key sectors

Energy sector

The energy sector, and particularly electricity and heat generation, is among the most carbon intensive sectors in the country. Energy accounts for 70 % of Armenia's CO_2 emissions. To date, the energy mix in Armenia has been heavily reliant on nuclear power. Natural gas is the main source of fuel consumed in Armenia that constitutes 60% of primary energy and 85% of fossil fuels, though this has raised concerns over dependence on imports. More than 83% of CO_2 emissions from fossil fuel are from natural gas.

The GoA expects that over the next seven years investments in electricity generation will reach a total of USD 1.5 billion. The GoA is planning to invest USD 330 million to extend the life of the second reactor of the Armenian Nuclear Power Plant until 2026 and may possibly invest another USD 150 million to further extend its lifetime until 2036. To reduce dependence from imported natural gas the GoA is considering the construction of a new nuclear facility.

The GoA is targeting the production of 15% of total energy production (1.8 TWh) at solar stations by 2030 (GoA, 2021[1]). To achieve that goal, it will be necessary to build new solar power plants with a capacity of around 1 000 MW. The construction of solar power plants will also require an additional USD 70 million of government-guaranteed investment in the high-voltage grid. If prices prove competitive, the GoA could build additional 500 MW of wind power in 2025-40.

Should the GoA see a need for additional energy capacity, it may go forward with the construction of three hydropower plants, although building them is not considered the most cost-effective option. One possible way to finance such construction is to have the distribution company (Electricity Networks of Armenia or ENA) issue green bonds (as discussed further below).

Transport sector

The development of the transport sector is heavily funded by international financial institutions (IFIs).

The Asian Development Bank (ADB) is one of the main contributors, importantly through its Sustainable Urban Development Investment Program (ADB, 2020[2]), (ADB, 2021[2]). The environmental impact assessments are indispensable elements of this programme.

The European Union (EU) is also planning to assist in the completion of the north-south transport corridor (European Commission, 2021[3]). It intends to invest in the remaining segments of the north-south highway, including further supportive infrastructure and logistics. The overall EU investment is estimated at up to EURO 600 million, in the form of grants, loans, guarantees, blended finance.

Construction sector

Construction is a nascent market without an established local agency that would advocate energy efficiency (IFC, n.d.[4]). The commercial market until 2025 is estimated to grow to USD 280 million annual

turnover while the residential market is expected to grow to USD 330 million. There are no assessments of the green segment. According to an International Finance Corporation (IFC) analysis, the building stock is shrinking in the logistics sector and in multi-unit residential projects and growing very little in other sectors. Opportunities may lie in retrofits and less in new construction.

The majority of the 19 000 apartment buildings in Armenia were constructed during Soviet times (35-60 years ago) without consideration of energy efficiency. Energy consumption per m^2 in these buildings is 2-3 times higher compared to developed countries and varies between 200-320 kWh/m^2. Preliminary research indicates that efficient thermo-isolation of residential and commercial buildings could save up to 40% of heating costs.

Expected opportunities for green bond investment

Table 1 below presents the potential mitigation-related financing requirements that could be met through green-bond financing. These estimates were derived consistently for all reviewed countries included in the study (in addition to Armenia also Azerbaijan, Georgia, Kazakhstan, Moldova and Ukraine).[2] The estimates quantify investment needs that are:

- clearly mitigation-related (e.g., excluding the renewal of fossil-fuel generation capacities and of outdated capital stocks without substantial mitigation effects)
- realistic from a macroeconomic perspective (e.g., does not exceed typical gross capital formations), and
- eligible for at least partial funding through green bonds.

These sectoral investments are a subset of the total mitigation-related investment needs defined by Armenia's 2030 climate targets, and therefore lower than targets announced in policy in several countries.

The estimates underline significant investment needs in sectors that are relevant for green bond funding. The overall estimated additional investment need of up to EUR 2.8 bn in the period up to 2030 is about 2% of GDP per year, or 14% of gross capital formation. The electricity sector and mining would attract the bulk of such funding. Both sectors are dominated by private companies and generally draw on debt funding, including in bond markets. However, investors may be cautious committing to the mining sector as recently investors had huge USD 400 million loss as a result of a failure of a mining project. Specifically:

- The bulk of GHG emissions are produced in the **electricity and heat sector** which result from gas-fired thermal power plants. Installing 1 GW of new solar capacity requires EUR 0.7 bn and can save up to 1.2 Mt CO_2 or 12% of current national GHG emissions.
- In the **building sector**, which is characterised by a building stock in poor condition, thermal retrofitting of 0.8% of the residential and 1.5% of the public building stock annually would require EUR 0.4 - 0.9 bn cumulatively. Especially through the reduction of natural gas consumption for heating, 120 - 210 kt CO_2eq or 1.3 - 2.4% of national GHG emissions can be saved.
- Investments of EUR 0.4-0.8 bn would be necessary to significantly reduce GHG emissions in the Armenian **industry**.

  Adding around EUR 0.2 - 0.5 bn of investment in the **transport sector**, public city transport and rail transport can significantly contribute to reducing carbon emissions.

Table 4. Mitigation-related investments in selected sectors 2022 – 2030, EUR bn

	Lower bound	Upper bound
Residential buildings	0.3	0.6
Public buildings	0.1	0.26
Electricity sector		0.7

Transport sector	0.2	0.5
Industry	0.4	0.8
Total mitigation-related investments	**1.7**	**2.8**

Source: Authors' calculation.

Major providers of funding

Given a tight fiscal situation, the GoA generally expects a high grant element for loans received from IFIs. However, the actual level of implementation of projects funded with grants is low (Table 2) which may be an indication of weak project management capacity in the public sector. The Armenian National Investment Fund (ANIF) is the investment arm of the government that explores investment opportunities and invests on behalf of the government. However, ANIF does not have clearly formulated strategy and works on a project-by-project basis.

Table 5: Grants received from foreign governments and IFIs, USD thousand

	2018	2019	2020
Budget approved by the National Assembly	70 026	75 713	69 164
Budget after GoA reallocations	35 874	73 394	35 433
Actual	13 657	19 178	13 489
Level of execution compared to approved	**20%**	**25%**	**20%**

Source. Annual budget execution reports, using average exchange rate for the year.

A relative abundance of funding from IFIs may crowd out commercial lending and may discourage entities in public and private sectors from looking for alternative sources of funding from private investors, including through green bond structures. Many local companies have long-term relationships with banks and may not be ready to open up to bond financing.

A variety of international agencies have invested in or provided grants to most sectors in Armenia, including industry, infrastructure and financial intuitions (EBRD, 2019[5]). Armenian commercial financial institutions are interested in cooperation with IFIs and other international partners because credit lines are often coupled with technical assistance.

The EU is planning a EUR 1.6 billion support package for Armenia over the next 5 years (European Commission, 2021[3]). One of the flagship projects is related to investing EUR 120 million in a green Yerevan using "various instruments" such as grants, loans, guarantees, blending. The EU and other IFIs plan to invest in a "smart-city" package that will bring energy efficient solutions to the city, together with green mobility and investments in waste management.

The relative abundance of IFI funding may have discouraged bond market development. Unlike for a credit line, funds raised in a regular or a green bond need to be drawn down in their entirety upon issuance, even though the bank may not have sufficient projects to allocate this to and may therefore have costs in holding liquid funds. By contrast, an IFI credit line is often disbursed based on project progress and in case of efficient implementation there it is often possible to save on commitment charges (though approaches vary across IFIs).

The capital market context

The macroeconomic context and financial-economic indicators

Armenia's growth averaged over 6% per year in 2017-19, though after a sharp recession in 2020 is expected to be more subdued in the coming years (IMF, 2021[6]) Despite a historically high growth rate

Armenian economy is highly susceptible to external shocks and especially to fluctuations in the Russian economy, which is a key source of worker remittances, and the main trading partner. This vulnerability was evident in the crises of 2009 and 2015.

As a result of this vulnerability to external shocks, the Armenian currency, the dram (AMD), experience frequent and sharp depreciations. Trust in the currency was further eroded by an insufficient focus on low inflation on the side of the monetary authorities. The Armenian financial system is therefore highly dollarised, though some progress has been made recently in expanding the role of the AMD. Dollarisation will nevertheless constrain the potential of local currency bonds in financing green projects in the country.

Table 6: Dollarisation of the Armenian financial sector

	2017	2018	2019	2020[1]
Dollarisation in bank deposits[2]	56.1	52.6	45.8	43.8
Dollarisation in broad money[2]	46.5	43.5	38.3	36.6

Source: (IMF, 2015[7])
Notes:
1. Data for 2020 were actual data for the first half of the year.
2. Dollarisation in bank deposits – Ratio of foreign currency deposits to total deposits (percent). Dollarisation in broad money – Ratio of foreign currency deposits to broad money (percent).
3. Information on dollarisation as of 2015 is available from (IMF, 2015[7]).

The banking sector, which is comprised of 17 local banks, is clearly the most developed part of the financial system (CBA, n.d.[9]). Banking sector assets continue to grow strongly and were equivalent to 107.5% of GDP in early 2021.[3] By contrast, the securities market is underdeveloped and illiquid as a result of macroeconomic instability, and an as yet poorly developed legal and regulatory environment. Corporate bond market capitalisation, for instance, constituted only 7.2% of GDP (Armenian Stock Exchange, n.d.[8]) and the average maturity of bonds outstanding is only 2.5-3 years.

Market infrastructure and regulatory bodies

Market infrastructure and regulation are generally of a high standard, albeit within a market that lacks liquidity and depth.

The securities market is regulated by the Civil Code and a number of specific laws (the Law on Securities Market, Law on Central Bank, Law on Joint-Stock Companies, Law on Investment Funds, Law on Accumulated Pensions). The Law on Securities Markets in general complies with best international practice and regulates issues related, among others, to the issuance of securities and investment services.

The following agencies are involved in the regulation of the market:

- The Central Bank of Armenia (CBA) is the regulator and supervisor of the securities market. CBA regulates issues related to prospectus and reports by the issuers, securities tender offers, criteria for price manipulation, registration and licensing of the regulated market operator and reports and other issues. Different CBA decisions approve sample forms of financial statements to be issued by investment funds. CBA provides explanations regarding certain provisions of the laws.
- The Ministry of Finance (MoF) is relevant in terms of managing primary issuance of government bonds, though it is more limited in the formulation of legislation related to the securities market, supervision and other aspects of securities market development.
- Armenian Stock Exchange (AMX) is the only securities exchange in Armenia and provides a platform for trading and the auctions of government bonds. The authorities are negotiating the sale of a controlling share of AMX to the Warsaw Stock Exchange (IMF, 2020[9]). AMX approves its own rules and these are registered by the CBA. In January 2018, Armenia signed the IOSCO

Multilateral memorandum of understanding concerning consultation and cooperation and the exchange of information in securities and derivatives markets (WTO, 2018[10]) Companies listed and admitted to trading are required to submit to AMX quarterly and annual reports, as well as reports on any material events (Armenia Securities Exchange, 2020[11]), which is a proof of disclosure rules at the exchange being of a good standard. AMX does not take the responsibility for the content and accuracy of information published by market participants and issuers.

- The Central Depository of Armenia (CDA) performs the functions of a centralised custodian, a centralised register and a securities accounting system operator. The CDA has links to international clearing houses, though as yet this can only be used for government securities, while foreign investors would need to trade corporate bonds through linked accounts at foreign banks, which is risky and lengthy.

The government approved a capital market development programme in July 2020, as part of its ongoing arrangement with the IMF. The programme identifies three main areas for reform:

- establishing the foundation for market development, including reforms in securities taxation, on which the IMF is providing assistance (IMF, 2020), and
- strengthening the market infrastructure.

The programme does not address the issue of green bonds and does not use the term at all.

The local securities market

The securities market has expanded in recent years (Table 4) (Armenian Stock Exchange, n.d.[12]). Equity market capitalisation remains very low at only 2.6% of GDP, though there has been some growth in the corporate bond market. In early 2021, 21 issuers were listed on AMX and 105 debt securities were traded on the exchange. In recent months, the average number of trades was above 200 per month and the monthly volume of trades varied between AMD 2-4 billion (approximately USD 4-8 million). The observed market growth is in part due to lower reserve requirements for listed bonds by the CBA.

Table 7: Market value and trades (AMD billion) and number of transactions and bonds

	2018	2019	2020
Total Market value		1 040.7	1 535.1
Government bonds			
Value	583.1	675.2	953.9
Trades	59.0	57.0	77.3
Number of transactions	613.0	902.0	993.0
Number of bonds	32.0	34.0	33.0
Corporate bonds			
Value	151.0	216.6	446.3
Trades		29 605.3	32.1
Number of transactions	1 578.0	2 005.0	2 432.0
Number of bonds	69.0	84.0	96.0
Equity		148.9	
Market cap	145.7	148.9	134.9
Trades	2.1	2.2	1.7
Number of transactions	101.0	65.0	38.0
Number of equities	10.0	10.0	10.0
Repo			
Trades	5.0	13.1	27.3
Number of transactions	183.0	332.0	797.0
Pension funds (net asset value)	157.4	251.2	369.4

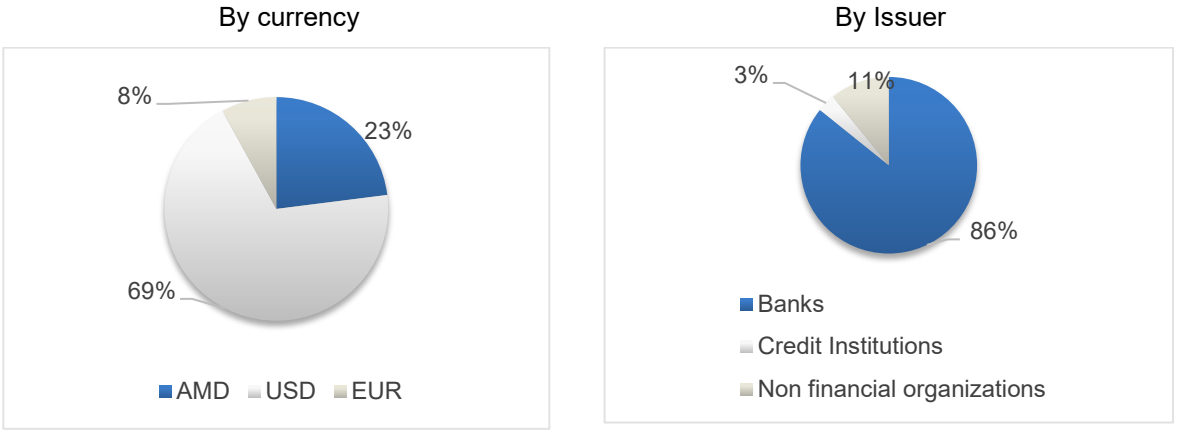
Source: Armenian Stock Exchange (n.d.).

Corporate bonds

In early 2021, there were about 100 corporate bonds listed on the AMX, which had been issued by a small set of banks, financial institutions and enterprises. Banks are the main issuers of corporate bonds. Banks are in a favorable situation in the bond market as they convert their depositors to bondholders. The fact that only 10.9% of listed bonds were issued by non-financial organisations underlines that few companies are prepared to offer the transparency and governance standard that is required for capital market finance. Some of the largest corporate bonds were issued by "Zangezur Copper Molybdenum Company" CJSC (USD 50 million, 3 year, 7.5% coupon), "UCOM" CJSC (USD 5 million, 3 year, 7.5% coupon), a telecommunication company and "ASCE Group" OJSC (USD 15 million 10 year, 7%), an Armenian steel casting enterprise issued bonds.

As in the rest of the financial system, USD-denominated instruments have been used extensively. Most AMD-denominated bonds have a maturity of 3 years, though in one instance extended to a maturity of 10 years. In mid-2021, USD-denominated corporate bonds comprised 69% of outstanding bonds, 8% in EUR, and only 23% were denominated in AMD (Figure 1). This currency composition of capital market finance with dominance of foreign currency-denominated bonds will constrain issuers with a local currency revenue stream, such as local utilities.

Figure 6: Structure of corporate bonds listed on AMX as of 30 June 2021



Source: Author's calculations based on data from Armenia Securities Exchange (n.d.) www.amx.am.

The government bond market

By contrast, the government bond market is relatively liquid. In late 2020, the size of the domestic debt was approximately AMD 997.6 billion, or 16.1% of GDP, most of which is in the form of government debt securities. The government regularly places bills, notes and bonds in the local market. The primary issuance process and liquidity in the market have improved considerably since the auctions were moved from the Central Bank to the AMX. The average number of trades with government debt securities varied from 65 to75 and the monthly volume of trades varied between AMD 1.9-5.1 billion (approximately USD 4-10 million). Seven local banks act as primary dealers of government securities.

Institutional investors

Armenia stands out for a number of sizable local institutional investors, which are partly foreign-owned, and can draw on foreign expertise and networks. The country established a mandatory ("second pillar") pension fund in 2013. At the end of June 2021 there were AMD 412.6 billion (approximately USD 850 million) under management of two asset managers, Amundi-ACBA Asset Management CJSC and C-

Quadrat Ampega Asset Management Armenia LLC (CBA, n.d.[13]). In addition, there are two other local asset managers.

The volume of Pension Funds assets are increasing steadily. It is expected that in the coming years the volume of Pension Funds' assets will be increasing on average of about USD 200 million, annually. While the Pension Funds could, in principle, be a source of local investment demand and long-term funds for green assets, allocations into private corporate bonds are minimal as yet, and subject to limitations and credit risk criteria under the Pension Law.

The green finance framework

Armenia does not have a specific green finance framework. However, the authorities are looking into individual aspects of green capital market activities and expect the demand for green bonds and relevant regulation to come from the private sector.

As yet, green bonds in Armenia are issued according to the regulations applied to regular bonds. For a green bond issuer there is no legal requirement to disclose information on environmental or social impact of operations.

There are also no fiscal or monetary incentives for issuing green bonds. Green bonds do not enjoy any preferential treatment from fiscal measures (e.g., in the form of interest rate subsidy, or cashback of principal amount). Also, there are no incentives from monetary authorities or in supervision (e.g., in the form of lower reserve requirements). The Central Bank recently changed reserve requirements in a way that favours local currency lending, which implicitly results in a disincentive for the issuance of foreign currency bonds. There is also ongoing work by the CBA on standards for Environment, Social and Governance (ESG) risk disclosure, building on standards in the leading banks. This may encourage a greater alignment of financial institution business with sustainability objectives.

Several financial institutions have extended green loans based on their own internal rules, guidelines or processes, and in these institutions loan officers have key performance indicators (KPI) related to green targets of projects or borrowers. This was the basis for the first green bond issued by the country's largest bank (see below).

By contrast, entities operating in the real sector have less knowledge, experience and requirements of green financing and most do not have specific mechanisms or methodologies to track green spending. In the public sector there appears to be little information or public capacity building on green finance. In July 2021, the government's Business Support Center (BSC) invited interested parties to submit Green project proposals within the framework of "Scaling up green finance practices in Armenia" (BSC, 2021[14]), and the Center subsequently organised a discussion on green financing (BSC, 2021[15]).

Armenia's first green bonds

In November 2020, Ameriabank issued the country's first green bond in the amount of USD 50 million (equivalent to EUR 42 million) at a 5 year maturity, and with a fixed coupon of 3.05% (Ameriabank, 2020[16]), (FMO, 2020[17]), (FMO, 2020[18]). This was the first ever green bond in the local financial market. The bank had structured the bond in accordance with the internationally recognised International Capital Market Association (ICMA) Green Bond Principles (the GBP) (ICMA, n.d.[19]) and in close cooperation with FMO, the Dutch Entrepreneurial Development Bank, which was also the sole investor in the transaction (making this in effect a "private placement").

Sustainalytics (2020[20]), an independent provider of sustainability research, provided the Second-Party Opinion on this green bond framework (Ameriabank, 2020[16]) verifying the alignment with the GBP and other global market standards (Sustainalytics, 2020[20]). An external consultant also confirmed the bank's green bond framework was aligned with the Sustainable Development Goals (SDG). The bank's green

bond framework committed to allocate proceeds to a number of projects (including renewable energy, energy distribution and transport, and energy efficiency), though in effect only renewable energy projects benefitted and were refinanced. In June 2021, Ameriabank green bonds were admitted to trading at the local exchange (AMX) (Armenia Securities Exchange, 2021[21]), (Armenia Securities Exchange, 2021[22]).

The additional cost of issuance related to the green bond was approximately USD 70 000 (half of which was covered by the investor). These additional costs were related to assuring compliance with environmental sustainability requirements and avoiding impressions of greenwashing. In addition, it was necessary to assure green processes and methodologies within the bank to ensure that funds would indeed be allocated to green projects.

In February 2022, Ameriabank issued a second green bond, this time offering it for public placement on the local exchange. Crucially, this bond was offered in both foreign and local currency, USD 8 mln and AMD 3 billion, equivalent to USD 6.3 million, at the time, therefore appealing to a wide set of investors. Both components had a maturity of 27 months, and the coupon rate was differentiated between 3.5% for the USD bonds, and 9.5% for AMD bonds. This was based on the bank's original green bond framework which commits to allocate proceeds to a number of low-carbon activities across Ameriabank's various business segments.

Other green projects and potential bond issuers

Energy security in the context of a high dependence on external energy sources is a strong incentive for energy savings and energy-efficiency projects. Households need to get access to affordable and clean energy, while business aim at lowering energy costs to improve productivity, competitiveness and growth. Even though the projects that are generated may potentially be suitable for subsequent green bond financing, there is an abundance of donor funding on concessional terms which is more attractive than capital market finance.

Support for the Armenian energy sector is likely to be offered by the European Bank for Reconstruction and Development (EBRD), the World Bank, Asian Development Bank and other funds, such as Green Climate Fund (GCF):

- The World Bank country partnership framework for Armenia envisages the construction of 55 MW of solar PV generation (from 6 MW in 2018 to 61 MW in 2022), and as a result, reduction of GHG emissions by 148 000 tonnes CO_2 (Bank, 2019[25]). he country partnership framework also envisages saving of additional 20 GWh/year between 2018 and 2023 (from 16.80 GWh/year in 2018 to 36.80 GWh/year in 2023).
- EBRD's Green Economy Financing Facility (GEFF) provides financing through local participating financial institutions, such as Ameriabank, ArmSwissbank, Inecobank, ACBA leasing, others (GEFF, n.d.[23]). GEFF provided a USD 12.5 million loan to Ameriabank and a USD 2.5 million loan to ArmSwissBank (GEFF, n.d.[24]).
- In 2011, IFC helped Armenia to enhance power grid and look for new renewable energy sources (IFC, 2011[25]). In 2012, IFC partnered with Byblos Bank in Armenia and extended a USD 10 million loan to fund energy-efficiency projects with a goal to make residences energy efficient, to save power and reduce GHG emissions (IFC, 2012[26]).
- In November 2020, the GCF approved a USD 116 million grant to fund the "De-risking and scaling up investment in energy efficient building retrofits" project in Armenia (which is to be implemented by UNDP) and a USD 18.7 million grant to finance the "Forest resilience of Armenia, enhancing adaptation and rural green growth via mitigation" project (to be implemented by FAO) (UNFCCC, 2021[27]).

This abundant funding is increasingly matched by lending capacity and stronger standards within Armenia's key banks:

- In 2019, Ameriabank became the first EBRD partner in Armenia to receive a USD 12.5 million loan under the GEFF to sub-lend to SMEs and corporates for green investments (EBRD, 2018[31]). Ameriabank created a process for green projects which are evaluated from the perspectives of economic and environmental sustainability and CO_2 emissions. An internal taxonomy defining exclusion criteria for the purposes of its green bonds consists of the following categories, and there is a separate list of prohibited activities that cannot be financed under agreements with partner IFIs.
- In February 2019, ArmSwissBank and the EBRD signed two loan agreements for a total amount of EUR 10 million to fund projects under "SME Development" and GEFF programmes (Hovhannisyan, 2019[32]). Under the GEFF the bank offers loans with maturity of up to 7 years to fund energy saving projects on favourable terms. The EBRD has announced that it is prepared to significantly step up its funding in this sector. Armswissbank considers the financing of energy efficient and "green" projects as a strategic priority (Armswissbank, n.d.[33]). At present, Armswissbank is financing 36 solar power projects, which are to create about 9.4 MW capacity and will result in reduction of CO_2 emissions of about 4 193 tons.

Both banks actively look at further transactions in the local bond market to refinance these portfolios.

Conclusions

Armenia was among the first countries in the EaP region to issue a green bond. There are two green bonds in Armenia, both issued by the banking sector and both issued by the same bank, Ameriabank. There have been no corporate green bonds in Armenia so far.

Ameriabank's experience with preparing and issuing two green bonds is highly valuable as it provides insights into challenges and opportunities of using this instrument in a small market. Despite the fact that the green finance framework and governance infrastructure are not very well developed in Armenia, Ameriabank managed to organise the process on its own and make two successful green bond issuances.

Given the level of development of the financial and banking sector in the EaP region, in general, and in Armenia, in particular, financial corporates/banks are among the most likely issuers of green bonds. Ameriabank's previous experience with green lending, financing specific green projects and understanding the green technologies market in Armenia has been key in negotiating with and convincing investors to fund their green bonds. Ameriabank staff members were trained in energy efficiency in buildings, transport and renewable energy lending and a dedicated sustainability team built up at the Bank. The project pipelines proposed to investors have been credible and the selection process transparent. The first successful bond led to a second one.

Ameriabank is also the first commercial bank in Armenia to have issued green bonds, with both private (the first bond) and public (the second one) placements. While the first bond had one investor, the second green bond was issued on the Yerevan Exchange and attracted more investors. When comparing the financial terms of the two bonds it becomes obvious that when issued in foreign currency (USD or EUR), the bonds can raise larger funds, have longer maturity and lower cost of capital. The coupon rate is much lower (about 3%) for Eurobonds vs more than 9% for the bond issued in local currency. This situation reflects the risks perception that investors have about local currency transactions. At the same time, issuing at the local exchange has allowed the issuer to increase the investors' base and educate potentially green-minded investors of the green finance opportunities that exist in the country. One can only hope that more banks in the country will follow Ameriabank's example.

At the same time, the government of Armenia and the Securities Regulator can do more to strengthen the regulatory and governance framework which can incentivise potential issuers to consider issuing green bonds and help potential investors better understand the funding needs in the country. Some of these regulatory improvements include developing a green bond framework, green taxonomy, ESG disclosure

and reporting requirements for the corporate and financial sector, financial and tax incentives for potential investors. One way for the government to show its commitment to transition to a low-carbon economy is to consider sovereign green issuance in the future. This will send a signal to the market and encourage domestic issuers to make use of the capital market instruments to finance their green investments.

References

ADB (2021), *Armenia: Sustainable Urban Development Investment Program – Tranche 1*, Asian Development Bank, Mandaluyong, https://www.adb.org/projects/42417-033/main; https://sudipyerevan.am/en/. [3]

ADB (2020), *Armenia: Sustainable Urban Development Investment Program – Tranche 1*, Asian Development Bank, Mandaluyong, https://www.adb.org/projects/42417-023/main. [2]

Ameriabank (2020), *Ameriabank Successfully Placed Its First Ever Green Bond, 26 November 2020*, Ameriabank, Yerevan, https://ameriabank.am/IR/news/ir-releases/detail/ameriabank-successfully-placed-its-first-ever-green-bond. [18]

Armenia Securities Exchange (2021), *Green Bonds Were Admitted to Trading at AMX for the First Time, 25 June 2021*, Armenia Securities Exchange, Yerevan, https://amx.am/en/34/information-centre/35/newsroom/item/2324/green-bonds-were-vadmitted-to-trading-at-amx-for-the-fisrst-time. [24]

Armenia Securities Exchange (2021), *Rules on Securities Listing and Admission to Trading (New Edition), Approved by Supervisory Board of Open Joint Stock Company on 30 October 2020 (ՀՖՖ-01/074L), Registered by the Central Bank of Armenia on 27 November 2020,*, Armenia Securities Exchange, Yerevan, https://cda.am/en/34/information-centre/35/newsroom/item/2321/ameriabank-cjsc-s-bonds-will-be-listed-on-armenia-securities-exchange. [23]

Armenia Securities Exchange (2020), *Rules on Securities Listing and Admission to Trading (New Edition), Approved by Supervisory Board of Open Joint Stock Company on 30 October 2020 (ՀՖՖ-01/074L), Registered by the Central Bank of Armenia on 27 November 2020*, Armenia Securities Exchange, Yerevan, https://amx.am/en/document?id=832. [13]

Armenian Stock Exchange (n.d.), *Armenian Stock Exchange*, Monthly Bulletins, Armenian Stock Exchange, Yerevan, https://amx.am/en/9/trading/13/monthly-bulletins. [14]

Armenian Stock Exchange (n.d.), *Armenian Stock Exchange Website*, Armenian Stock Exchange Webpage, https://amx.am/. [10]

Armswissbank (n.d.), *Our Mission*, https://armswissbank.am/bank-projects/?lang_ui=en (accessed on 16 June 2021). [33]

Bank, W. (2019), *Country Partnership Framework for the Republic of Armenia, Report No.123902-AM, 28 February 2019*, World Bank, Washington DC, https://documents1.worldbank.org/curated/en/523501552357219076/pdf/armenia-cpf-fy19-fy23-february-27-final-update-3-4-19-03062019-636876792405788612.pdf. [25]

BSC (2021), *Call for Proposals: Green Projects, 28 July 2021*, Business Support Center, [16]

http://bsc.am/en/news/call-for-proposals-green-projects.html.

BSC (2021), *Opportunities and Investments of "Green" Financing, 10 August 2021*, Business Support Center, https://www.facebook.com/events/817727685844096/. [17]

CBA (n.d.), *Banks*, Central Bank of Armenia, Yerevan, https://www.cba.am/en/sitepages/fscfobanks.aspx. [9]

CBA (n.d.), *Investment and Pension Fund Managers*, Central Bank of Armenia, Yerevan, https://www.cba.am/en/SitePages/investfundmanagers.aspx. [15]

EBRD (2019), *Armenia Country Strategy 2019-2024, Section 6, Approved by the Board of Directors on 27 November 2019*, European Bnk for Reconstruction and Development, London, https://www.mineconomy.am/media/12565/EUROPEAN%20BANK.pdf. [6]

EBRD (2018), *EBRD and GCF support Armenian green investment", 19 October 2018*, https://www.ebrd.com/news/2018/ebrd-and-gcf-support-armenian-green-investment.html (accessed on 11 June 2021). [31]

European Commission (2021), *Joint Staff Working Document: Recovery, Resilience and Re-form: Post 2020 Eastern Partnership Priorities, High Representative of the Union for Foreign Affairs and Security Policy, Brussels, 2.7.2021, SWD(2021)186 final*, European Commission, Brussels, https://ec.europa.eu/neighbourhood-enlargement/sites/default/files/eap_joint_staff_working_document_2021_en.pdf. [4]

EU 4Climate (2021), *NDC Preparation and Implementation in EaP countries - Comparative Analysis of the First and the Updated NDCs in Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova and Ukraine,* Technical Document, November 2021. EU4Climate. file:///S:/Data/Petkova/2021/Green%20bonds/EU4Climate-ND-%2520study_2021.pdf.. [20]

FMO (2020), *Ameriabank's Green Journey*, FMO, The Hague, https://annualreport.fmo.nl/2020/annual-report-2020/cases-and-stakeholder-interviews/stakeholder-interviews/ameriabanks-green-journey.

FMO (2020), *FMO Supports Ameriabank in Successfully Placing its First Ever Green Bond, 27 November 2020*, FMO, The Hague, https://www.fmo.nl/news-detail/ea0cd0af-7742-4d48-a70e-b797ad14fddf/fmo-supports-ameriabank-in-successfully-placing-its-first-ever-green-bond. [19]

GEFF (n.d.), *Financing Partners*, reen Economy Financing Facility, https://ebrdgeff.com/armenia/financing/. [26]

GEFF (n.d.), *GEFF Webpage*, https://www.ebrd.com/news/2018/ebrd-and-gcf-support-armenian-green-investment.html; https://ebrdgeff.com/ebrd-deepens-green-finance-in-armenia/. [27]

GoA (2021), *GoA Decree №48-L of 14 January 2021 on Approving the Strategy of Develop-ment of the Energy Sector until 2040 (available in Armenian)*, Govrenment of Armenia, Yerevan, https://www.arlis.am/DocumentView.aspx?DocID=149279. [1]

Hovhannisyan, A. (2019), *ArmSwissBank and EBRD sign 10 million euro loan agreements aimed at SME development and green economy financing, 20 February 2019*, ArmInfo Financial Portal, https://finport.am/full_news.php?id=37410&lang=3 (accessed on 11 June 2021). [32]

ICMA (n.d.), *Green Bond Principles*, International Capital Market Association, Zurich, [21]

https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/green-bond-principles-gbp/.

IFC (2012), *IFC helps Byblos Bank Armenia Provide Mortgages and Energy Efficient Loans", 27 March 2012*, https://pressroom.ifc.org/all/pages/PressDetail.aspx?ID=21829 (accessed on 11 June 2021). [29]

IFC (2011), *IFC to Help Armenia Enhance Power Grid and Renewable Energy Sources, 19 March 2011*, International Finance Corporation, https://pressroom.ifc.org/all/pages/PressDetail.aspx?ID=25676 (accessed on 11 June 2021). [28]

IFC (n.d.), *Green Buildings Market Intelligence - Armenia Country Profile, International Finance Corporation*, https://edgebuildings.com/wp-content/uploads/2017/09/Armenia-Green-Building-Market-Intelligence-EXPORT.pdf (accessed on 16 June 2021). [5]

IMF (2021), *Third Review Document*, International Monetary Fund, Washington DC. [7]

IMF (2020), *Republic of Armenia: Third Review under the Stand-By Arrangement and Modification of Performance Criteria - Press Release; Staff Report; Staff Supplement; and Statement by the Alternate Executive Director for the Republic of Armenia, Country Report No. 2*, International Monetary Fund, Paris, https://www.imf.org/en/Publications/CR/Issues/2020/12/16/Republic-of-Armenia-Third-Review-under-the-Stand-By-Arrangement-and-Modification-of-49961. [11]

IMF (2015), *Republic of Armenia: Selected Issues: Is There Scope for Further Dedollarization Policies?*, International Monetary Fund, Washington DC, https://www.elibrary.imf.org/view/journals/002/2015/066/article-A001-en.xml. [8]

MB Consulting CJSC and Armenbrok OJSC (2021), *Armenian Banking Sector 2020*, MB Consulting CJSC and Armenbrok OJSC, Yerevan, https://amcham.am/wp-content/uploads/2021/05/MB_Consulting_Armenian_Banking_Sector_2020.pdf. [35]

Ministry of Foreign Affairs of the Republic of Armenia (2020), *Sustainable Development Goals - Voluntary National Review Report*, Ministry of Foreign Affairs of the Republic of Armenia, Yerevan, https://www.mfa.am/en/press-releases/2020/06/17/arm_dev/10310, https://sustainabledevelopment.un.org/memberstates/armenia. [34]

Parliament of Armenia (2004), *Law on Energy Saving and Renewable Energy*, Unofficial Translation, Parliament of the Republic of Armenia, Yerevan. https://policy.asiapacificenergy.org/sites/default/files/Law%20on%20Energy%20Saving%20and%20Renewable%20Energy.pdf.

Sustainalytics (2020), *Second-Party Opinion - Ameriabank CJCS Green Bond Framework*, Sustainalytics, https://mstar-sustops-cdn-mainwebsite-s3.s3.amazonaws.com/docs/default-source/spos/ameriabank-green-financing-framework-second-party-opinion.pdf?sfvrsn=67f677f8_3. [22]

UNFCCC (2021), *Report of the Green Climate Fund to the Conference of the Parties*, United Nations Framework Convention on Climate Change, Glasgow, https://unfccc.int/sites/default/files/resource/cp2020_05E.pdf (accessed on 11 June 2021). [30]

WTO (2018), *Trade Policy Review: Report by Armenia, 3 October 2018, WT/TPR/G?379*, World Trade Organization, Geneva, https://www.wto.org/english/tratop_e/tpr_e/tp479_e.htm. [12]

Notes

[1] UN published Armenia's 2020 SDGs Implementation Voluntary National Review Report, 17 June 2020 (Ministry of Foreign Affairs of the Republic of Armenia, 2020[1]).

[2] Consistency across countries was ensured through a simplified approach based on structural data from the statistical offices of the six countries and relevant secondary literature. In case of insufficient or outdated sectoral breakdowns, we complement the analysis with own appraisals based on information on capital stocks (such as buildings and electricity generation capacities). This approach allowed to obtain a plausible order of magnitude of "green" investments in each of the addressed sectors in each of the countries.

[3] Ameriabank, Ardshinbank, Armbusinessbank and ACBA Bank were the largest banks with total assets of AMD 1 091 bln, AMD 921 bln, AMD 899 bln and AMD 494 bln, respectively. Total market shares by assets of these banks rounded to 51.25% (MB Consulting CJSC and Armenbrok OJSC, 2021[10]).

Country Assessment: Azerbaijan

Green bond opportunities

Azerbaijan remains a highly carbon-intensive economy due to the slow pace of modernisation of energy systems. Azerbaijan's per capita CO_2 emissions in 2018 stood at 7.88 CO_{2te} and were the second highest in the region after Kazakhstan amounted to 14.84 CO_{2te} (Climate Watch, n.d.). Extensive subsidies to fossil-fuel consumption have held back the transition to low-carbon technologies and sources of energy (OECD, 2021[1]). Energy use in buildings remains high and oil and natural gas account for over 83% of electricity generation. Renewable energy, mostly hydropower, accounts for another 17% of energy generation.

Several key international agreements guide the country's efforts towards a low-carbon transition. In October 2016, the Milli Mejlis (Parliament of Azerbaijan) ratified the Paris Agreement with a commitment to achieve by 2030 a 35% reduction of the greenhouse gas (GHG) emissions compared to the1990 base year. This national target is defined in Azerbaijan's Intended Nationally Determined Contribution (INDC) prepared for the Paris Climate Summit (see Box 1 for more specific measures). The Ministry of Ecology and Natural Resources has been working together with other stakeholders on the preparation of the National Action Plan to meet these INDC sectoral targets, though as of mid-2021 these measures had not yet been approved.

Azerbaijan is a major oil producer in the region with new production and export volumes providing up to 90% of the country's export revenues. In recent years, attention has turned to gas production. The European Union (EU) invested significant efforts into diversifying its oil and gas supplies and hence the commitment to the Caspian as an alternative source of its gas. The Southern Gas Corridor pipeline infrastructure linking the Caspian gas producer to the Italian gas hub is expected to bring 10 bn m^3/year of gas to Europe. It will account for 2.5% of gas consumed in the EU.

However, these long awaited gas supplies from Azerbaijan to Europe might face a new challenge – the energy transition towards a carbon-neutral economy, which diminishes the role of fossil fuels in the EU energy mix. In the context of the recently adopted EU Green Deal and a specific methane emissions strategy, Azerbaijan will need to ensure a low GHG footprint for its natural gas in order to be a viable partner of the EU. Otherwise, in the long term, all previous efforts and investments into the new gas pipeline infrastructure will become stranded assets.

The issue of methane emissions is, therefore, of pivotal importance for Azerbaijan to maintain market access to European buyers. To date, the hydrocarbon industry has mostly worked to reduce emissions from gas flaring from the upstream oil and gas sector.

Azerbaijan was able to significantly reduce gas flaring between 2012 and 2015, particularly in comparison with other Caspian peers (Carbon Limits, 2013). As a result, Azerbaijan has a low "flaring intensity" (i.e. flaring per unit of oil production) around 28 ft^3/barrel, a figure comparable to advanced hydrocarbon producers such as Norway and Saudi Arabia. However, according to the World Bank, flaring, venting and leaking of related methane emissions have been on the increase since 2017.

Azerbaijan's electricity sector reliability still needs to be improved, and the country will require incremental generation capacity to satisfy needs in agriculture and in rebuilding of post-conflict areas of Karabakh. At the same time, methane emission reduction can help in providing better power reliability since Azerbaijan's electricity sector is increasingly dominated by natural gas at the expense of oil products (Belyi, A. et al., 2021[1]).

Table Error! Main Document Only.. **Objectives for sectoral mitigation measures in the 2015 INDC**

Objectives for sectoral mitigation measures in the 2015 INDC	
Energy sector and energy end-use sectors	▪ Replacement of existing technologies in electricity and thermal energy production with modern technologies ▪ Reconstruction of the distribution networks and transmission lines ▪ Application of new and modern environmental-friendly technologies in oil and gas processing, production of fuel in line with EURO-5 standards in a new refinery complex by 2019 and strengthening the capacity of staff ▪ Modernisation of gas pipelines, gas distribution system and other measures to decrease losses up to 1% by 2020 and ensure the volume of reduction in compliance with international standards by 2050 ▪ Based on adopted strategy, accumulation of gases emitted to the atmosphere during oil-gas production, prevention of gas leakages during oil-gas processing and at distribution networks ▪ Implementation of building isolation works and application of modern lighting systems ▪ Massive use of control and measurement devices in electrical, heat energy and natural gas systems, application of energy-efficient bulbs, use of modern energy-saving technologies in heating systems, use of biomass, solar power, electric and heat energy, wind power, heat pumps and geothermal energy in all sectors of economy, as well organisation of public awareness programmes on energy use
Transport sector	▪ Use of environmentally-friendly forms of transport ▪ Enhancement of the use of electric vehicles at public transportation ▪ Electrification of railway lines and transition to alternative current system in traction ▪ Improvement and expansion of the scope of intellectual transport management system ▪ Development of metro transport and increase of several metro stations
Agricultural sector	▪ Collection of methane gas from manure of livestock and poultry, use of alternative sources of energy and modern technologies
Waste sector	▪ Development of modern solid waste management system in big cities of the country ▪ Land Use, Land-Use Change, and Forestry (LULUCF) sector ▪ Planting new forest areas, water and land protecting forest strips (windbreaks), urban and roadside greenery as well as further improvement of the management of pastures and agricultural lands
Supporting measures for mitigation	▪ Development of legislative acts and regulatory documents on energy ▪ Implementation of awareness activities on energy efficiency

Source: (Government of Azerbaijan, 2015[1]).

Investment needs in key sectors

Since 2018, Azerbaijan has started a number of reforms aimed at the development of a sustainable, efficient and market-oriented energy sector. In this regard, a number of strategic documents have been approved and are being implemented. These laws and decrees are in line with the overall “Azerbaijan 2030: Socio-Economic Priorities” (President of the Republic of Azerbaijan, 2021[3]), where turning Azerbaijan into a clean, environmentally-conscious and green country is defined as one of five main government priorities. The main target is to increase renewable energy and to contribute to an ecological balance. More specifically:

- In May 2021, the President approved the Law on “Using Renewable Energy Sources in Energy Production".

- In July 2021, the President approved the Law on “Rational Use of Energy Resources and Energy Efficiency”. This built on the 2019 Presidential Decree on “Accelerating Reforms in the Energy Sector of the Republic of Azerbaijan”, which aimed at accelerating institutional reforms in the energy sector, in order to improve activities based on international experience, attract private investment and create a competitive environment in the sector.
- In January 2021, a Presidential Decree established the “Karabakh Revival Fund” which is in charge of the restoration of the Karabakh region. One of the functions of the fund is to attract resources by issuing bonds. The strategy for the Karabakh region calls for a creation of a “green zone” as well as “smart” towns and villages.

The government has also created the regulatory and financial basis for the promotion of energy efficiency. According to the recent Law on Efficient Energy Use the government applies the following tools:

- providing subsidised loans
- providing grants for the implementation of energy efficiency measures and state programmes, technical and financial supports through a new Energy Efficiency Fund which is envisaged to be established soon (AzerNwsAz, 2021[4])
- promotion of renewal energy production based on a guaranteed off-take price for the purchase of renewable energy produced by private companies.

In 2021, renewable energy generation accounted for 17 % and the target of 30% of total energy production by 2030 is considered to be well within reach. Targets for power installation in wind, solar and hydro power have been defined, amounting to 925 MW by 2030. Related projects are undergoing feasibility studies, with a number of significant projects in the implementation phase, as for instance:

- the 200 MW Solar PV project, based on a power purchase agreement with Masdar Company of the United Arab Emirates (150 000 tonnes CO_2 mitigations potential, with an estimated cost of Euro 140 million)
- the 240 MW Wind Power project, based on a power purchase agreement with the ACWA Power Company (350 000 tonnes CO_2 mitigation potential, and an estimated cost of Euro 200 million)
- the 280MW Khudaferin and Giz Galasi hydro power plants, which are designed to be used jointly by Azerbaijan and the Republic of Iran (350 000 tonnes CO_2 mitigation potential, and an estimated cost of Euro 200 million).

According to a 2020 study by the Energy Charter Secretariat, Azerbaijan has significant energy efficiency potential, for instance, an estimated 2 billion cubic meters (m^3) of natural gas in the power sector, or 1.3 Mtoe in industry (Energy Charter Secretariat, 2019[5]). The energy sector was already defined in 2015 INDC as the main contributor to CO_2 emissions and as a key sector for mitigation actions. In February 2020, the President of Azerbaijan approved the Agreement with the European Bank for Reconstruction and Development (EBRD) on contribution to the Eastern Europe Energy Efficiency and Environmental Partnership (E5P) Fund signed in November 2019. Thus, Azerbaijan became eligible for grant financing for projects in the field of energy efficiency and environmental protection in the municipal sector.

The oil and gas sector remains the largest sector of Azerbaijan economy, and there is significant potential to increase efficiency of oil and gas use and reduce the country’s GHG emissions. The United Nations Development Program (UNDP) in cooperation with the national oil company SOCAR implemented a four-year project on low-carbon practices in end-use sectors. A number of pilot projects were implemented within this cooperation. In part due to this cooperation, there has been a notable reduction of gas flaring (Belyi, A. et al., 2021[2]). In addition, there have been improvements in the energy performance and

insulation of buildings belonging to SOCAR, and in the energy performance of the company's vehicles fleet.

Table 2 presents the potential mitigation-related financing requirements that could be met through green-bond financing. These estimates were derived consistently for all six countries included in the study (in addition to Azerbaijan also Armenia, Belarus Georgia, Kazakhstan, the Republic of Moldova and Ukraine), based on a methodology detailed in Annex A. The estimates quantify investment needs that are:

- clearly mitigation related (e.g., excluding the renewal of fossil generation capacities and of outdated capital stocks without substantial mitigation effects)
- realistic from a macroeconomic perspective (e.g., do not exceed typical gross capital formations), and
- eligible for at least partial funding through green bonds.

These sectoral investments are a subset of the total mitigation-related investment needs defined in official climate targets. Overall, in the five sectors studied, mitigation related investments eligible for green bond funding amount to EUR 4.5-7.7 bn, equivalent to 1-2% of GDP and 4-7% of gross capital formation annually:

- In industry, additional mitigation related investments could be between EUR 1.7 bn and EUR 3.6 bn by 2030. This is equivalent to approximately 20% to 35%, respectively, of total sectoral investments.
- Currently, more than 90% of electricity is generated by gas-fired thermal capacities while wind, solar and biogas only play a minor role. The installation of new renewable capacities requires EUR 1.6 bn. Together with the avoidance of new gas-fired installations, 3 Mt of CO_2 can be saved which would make up 4% of current national GHG emissions.
- The building sector is characterised by an old building stock and a high share of illegal constructions. Annual thermal retrofitting of 0.8% of the residential and 1.5% of the public building stock would require EUR 0.7 - 1.3 bn cumulatively. Through energy savings of 1-1.7TWh, 0.3 - 0.5% of national GHG emissions can be saved.
- Adding around EUR 0.5 - 1.2 bn investment needs in the transport sector, total mitigation related investments sum up to EUR 4.5 to 7.7 bn until 2030.

Table Error! Main Document Only.. **Sectoral mitigation-related investments suitable for green financial instruments, 2022 – 2030, in EUR bn**

Sector	Lower bound	Upper bound
Residential buildings	0.4	0.8
Public buildings	0.3	0.5
Electricity sector	1.6	
Transport sector	0.5	1.2
Industry	1.7	3.6
Total mitigation-related investments	**4.5**	**7.7**

Source: Authors' own calculations.

Capital market context

Total credit to the private sector amounted to 29% of non-oil GDP in 2019, which is very low, even in a regional comparison. The banking sector suffered a severe crisis in 2015-16 following a currency

devaluation that impacted bank capital and private sector debt levels (11 banks closed in 2016). Levels of non-performing loans remain high, impeding credit provision.

Supervisory powers were moved from a separate agency back to the Central Bank in 2019. Following inspection of banks, the Central Bank appointed temporary administrators in four banks in April 2020 and revoked their licences shortly thereafter. Some banks still have been under-capitalised for prolonged periods, or continue to operate on questionable business models. State banks control a significant share of the market. Indicators of financial inclusion, such as accounts held at banks by individuals or small and medium-sized enterprises' (SMEs) access to credit are also poor (IMF, 2019[3]).

The local financial market is dominated by banks. The capital market remains underdeveloped, and local market infrastructure rudimentary. Given the state ownership of the oil and gas sector, and abundant tax and other revenues from that sector, the fiscal accounts have traditionally shown a structural surplus (government gross debt stood at only 21% of GDP at end-2020, with considerable assets parked in the National Oil Fund, SOFAZ). There has, therefore, been limited need for the issuance of bonds by the government in either the local or the international markets. So far, the state has relied on numerous domestic retail investors and over the years, a number of state bonds have been financed by such investors. The existence of local retail investors is one of the features of the local capital market in Azerbaijan.

At end 2020, outstanding government securities were only AZN 1.7 bn. (USD 1 bn), equivalent to 2.3% of GDP (Central Bank of the Republic of Azerbaijan, 2021[5]),[3] The primary issuance of government bonds and bills was about AZN 1.3 bn in 2020, accounting for 83% of all securities newly listed on the Baku Stock Exchange in that year (Central Bank of the Republic of Azerbaijan, 2021[5]). Even though the issuance process is reasonably transparent, there is limited predictability in the issuance plans of the government, as the government adapts primary issuance to demand by banks. Liquidity in the government bond market is also low with only Euro 260 million in transactions in the secondary market in 2020. Repo-transactions by commercial banks with the central bank were almost entirely conducted through government securities and provided some additional liquidity.

Levels of capitalisation and liquidity in the local government bond market in Azerbaijan are exceptionally low, even compared to other oil-dependent countries in the region. The sovereign bond market is normally the foundation of any local bond market. It provides a yield curve of debt securities of the highest credit quality in the country and thereby the basis for bond issuance by other sectors. The state's primary issuance activities would also normally build an infrastructure in the local market, such as primary dealers and trading systems, which is largely absent in Azerbaijan. The absence of predictable issuance plans further undermines the benchmark function of state-securities.

Given the scarce trading in government bonds corporate bond issuance has also not been attractive. Over the course of 2020 there were AZN 1 billion in primary transactions and AZN 1.7 bn in secondary trading on the local corporate bond market. Primary issuance was largely in foreign currency, trading almost entirely in local currency (Central Bank of the Republic of Azerbaijan, 2020[6]).

Most recently, over the course of 2021, there have been a number of additional corporate bonds issued, the largest of which have been the State Mortgage and Credit Guarantee Fund (AZN 251 million), two local banks, and the state gold mining company AzerGold. Despite the recent interest by new issuers, this low level of liquidity is likely to further deter other issuers going forward. Both government and private sector bonds were issued at maturities of up to 5 years, and at the end of the period these bonds were refinanced by the issuers. A substantial USD 100 million bond is expected to be issued by the SOCAR State Oil Company, which would boost market confidence.

Demand for capital market financing is further held back by still problematic corporate governance practices and transparency and the extensive role of the state in funding the corporate sector. In terms of

supply of funds, the main investor base in the capital market are local banks. There is no private pension fund in Azerbaijan, while the government pension fund is not active in the market, and foreign investors are scarcely represented.

Market infrastructure and regulation

The local bond market remains underdeveloped despite a reasonably well-developed regulation and infrastructure.

The bond market is regulated according to the Civil Code and the Law on Securities Market (Central Bank of the Republic of Azerbaijan, 2015[10]), as well as regulations of the Central Bank of Azerbaijan (CBAR), the Baku Stock Exchange (BSE) (Baku Stock Exchange, n.d.[11]) and the National Depository Centre (NDC) (National Depository Centre of the Republic of Azerbaijan, n.d.[11]). The primary issuing of securities is registered in the NDC, trading is conducted by brokerage companies on the BSE and clearing is completed in the payment system AZIPS supervised by CBAR. According to existing legislation, issuers of bonds need to disclose issuing prospectus, financial reports and corporate governance structure.

The Baku Stock Exchange became a member of the World Federation of Exchanges in February 2020. The Istanbul Exchange is a shareholder, and there are preparations for the cross-listing of securities. The listing rules of the Exchange were reformed based on international best practice. As the common practice is, there are stock and bond market segments within a basic and standard market. Issuers without a listing agreement with the Baku Stock Exchange and whose securities were not actively traded were removed.

The supervision of capital market activity was moved back to the Central Bank in November 2019. The recently approved Capital Market Strategy has 4 main strategic targets:

- improvement of the legal framework
- modernisation of market infrastructure
- support to market development
- improvement of capital market supervision.

Several specific measures were taken recently that may stimulate market activity, including the reduction in fees charged by the National Depository Centre, new bond issuing rules, and a reduction in clearing times. Amendments to the Tax Code that could promote more listings are under discussion, and discussions of international clearing are ongoing.

Green finance framework

To date, no green bonds have been issued in Azerbaijan or by Azeri companies in international markets. There is no approved separate legislation on green bonds, loans or other financing tools. That said, the government acknowledges the potential of green bond issuance.

There has been some development of green lending within the banking sector. In 2007, the EBRD launched a USD100 million credit line facility to a number of participating financial institutions in Georgia, Armenia and Azerbaijan for on-lending to energy-efficiency and renewable energy investments in residential and industrial sectors (GEFF/EBRD, n.d.[4]). Loans in Azerbaijan were provided via three partner financial institutions: AccessBank, DemirBank, MuganBank, which also benefited from advisory services, training and marketing support. However, in 2019-20, EBRD disbursements were very small, and only 2% of the outstanding portfolio was directed to financial institutions (EBRD, n.d.[5]). In addition, the International Finance Corporation (IFC) provided a credit line to Bank Respublika for energy-efficiency

projects in 2013 (IFC, 2013[10]) and the UN-sponsored Green Growth Fund (GGF) provided technical assistance and a credit line to MuganBank.

Conclusions

The government of Azerbaijan has set targets on climate mitigation under the Paris Agreement and made a number of high-level commitments in domestic legislation and other acts. These are gradually implemented and operationalised in local regulation and public investment government spending. For instance, the government has established an Energy Efficiency Fund for financing of green projects. Public investment in the Karabah region is to have high standards in sustainability. A key agenda remains to diversify the economy, also in light of the low-carbon transition with major trading partners in Europe, the main export destination for oil and gas. This may render a large part of the country's hydrocarbon reserves unviable. Pricing incentives, the phasing out of fossil-fuel subsidies, and a clear policy framework for renewables would be key in raising energy-efficiency standards.

The role of the state in the real and financial sector remains extensive and corporate governance and transparency in enterprises often poor. The banking sector, which in other countries promotes capital market development and is a bond issuer in its own right, still has a number of governance problems, even though recent efforts in supervision are beginning to bear fruit. In part due to these factors, Azerbaijan's capital market remains very small and illiquid, even though regulation and infrastructure appear sound. The market is unlikely to develop in the absence of broader reforms, also in the real sector and securing investor rights.

According to the government's socio-economic priorities for 2030 the green economy is one of the main priorities and support to development of green bond market would be welcomed by the government (President of the Republic of Azerbaijan, 2021[11]). However, the above structural barriers will make the development of green financial instruments in the local debt capital market very difficult.

Green bonds as yet do not exist, nor is there much interest among the principal financial sector participants to explore this instrument. In the absence of a clear classification (taxonomy) and corporate transparency within potential issuers the introduction of this instrument would add little value to market development, nor to sustainability practices within issuers. That being said, SOCAR State Oil Company and AzerGold mining company are existing issuers in the bond markets and trade on the back of state guarantees. Both could be issuers of bonds that are linked to sustainability or transition objectives.

In the near-term, banks will be the primary financing source for green projects in the corporate sector, but could be supported by funding and advice from international agencies. The SME Development Centre and the Alternative Energy Agency could be additional state-backed intermediaries of funding and perhaps seek funding in the bond market in due course.

Bibliography

AzerNwsAz (2021), “Azerbaijan to Establish Energy Efficiency Fund”, *AzerNwsAz*, https://www.azernews.az/oil_and_gas/182439.html. [4]

Baku Stock Exchange (n.d.), *Web-site of the Baku Stock Exchange*, https://www.bfb.az/en. [11]

Belyi, A. et al. (2021), *Azerbaijan’s Opportunities and Challenges in Flaring and Methane Emissions”, 25 May 2021*, Natural Gas World, https://www.naturalgasworld.com/azerbaijans-potential-and-challenges-in-flaring-and-methane-emissions-ggp-86571. [2]

Carbon Limits (2013), *Associated Petroleum Gas Flaring Study for Russia, Kazakhstan, Turkmenistan and Azerbaijan*, Final Report, European Bank for Reconstruction and Development. https://www.ebrd.com/downloads/sector/sei/ap-gas-flaring-study-final-report.pdf.

Central Bank of the Republic of Azerbaijan (2021), *Capital Market*, Central Bank, Baku, https://www.cbar.az/page-190/capital-market?language=en. [17]

Central Bank of the Republic of Azerbaijan (2021), *Listed Securities*, Central Bank, Baku, https://www.bfb.az/en/listinqde-saxlanilan-qiymetli-kagizlar. [8]

Central Bank of the Republic of Azerbaijan (2021), *Statistical Bulletin 07/2021, No 7/256*, Central Bank, Baku, http://ttps://uploads.cbar.az/assets/bb0bef475503c1dc9c538487d.pdf. [7]

Central Bank of the Republic of Azerbaijan (2020), *Summary of the Securities Market Indicators (January - December 2020)*, Central Bank, Baku, https://uploads.cbar.az/assets/Hesabat%20IV%20(eng).pdf. [9]

Central Bank of the Republic of Azerbaijan (2015), *Law of Securities Market*, Central Bank, Baku, https://www.cbar.az/page-220/laws. [10]

Climate Watch (n.d.), *Historical Gas Emissions*, https://www.climatewatchdata.org/ghg-emissions?breakBy=regions&calculation=PER_CAPITA&end_year=2018&regions=ECA%2CEUU%2CAZE%2CBLR%2CGEO%2CHUN%2CKAZ%2CMDA%2CPOL%2CRUS%2CUKR%2CBGR&start_year=1990. Accessed 1 November 2021).

EBRD (n.d.), *Project Summary Documents*, European Bank for Reconstruction and Development, London, https://www.ebrd.com/work-with-us/project-finance/project-summary-documents.html?1=1&filterCountry=Azerbaijan. [14]

Energy Charter Secretariat (2019), *In-Depth Review of the Energy Efficiency Policy of the Republic of Azerbaijan, Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects*, Energy Charter Secretariat, https://www.energycharter.org/fileadmin/DocumentsMedia/IDEER/IDEER-Azerbaijan_2020.pdf. [5]

GEFF/EBRD (n.d.), *aucasus Energy Efficiency Financing Facility – Azerbaijan, Green Economy Financing Facility*, European Bank for Reconstruction and Development, London, https://ebrdgeff.com/azerbajan/. [13]

Government of Azerbaijan (2015), *To the United Nations Framework Convention on Climate Change (UNFCCC) on the Intended Nationally Determined Contribution (INDC) of the Republic of Azerbaijan*, [1]

https://www4.unfccc.int/sites/submissions/indc/Submission%20Pages/submissions.aspx.

IFC (2013), *IFC Helps Azerbaijan's Bank Respublika Boost Investments in Energy Efficiency*, International Finance Corporation, Washington DC, https://pressroom.ifc.org/all/pages/PressDetail.aspx?ID=16253. [15]

IMF (2019), *Republic of Azerbaijan: 2019 Article IV Consultation-Press Release; Staff Report; and Statement by the Executive Director for Republic of Azerbaijan, IMF Staff Country Reports*, International Monetary Fund, Washington DC, https://www.imf.org/en/Publications/CR/Issues/2019/09/18/Republic-of-Azerbaijan-2019-Article-IV-Consultation-Press-Release-Staff-Report-and-Statement-48684. [6]

National Depository Centre of the Republic of Azerbaijan (n.d.), *Web-site of the National Depository Centre*, https://mdm.gov.az/en/ana-sehife/. [12]

OECD (2021), *Fossil-Fuel Subsidies in the EU's Eastern Partner Countries: Estimates and Re-cent Policy Developments, Green Finance and Investment*, OECD Publishing, Paris, https://doi.org/10.1787/38d3a4b5-en. [16]

President of the Republic of Azerbaijan (2021), *Order of the President of the Republic of Azerbaijan on approval of "Azerbaijan 2030: National Priorities for Socio-Economic Development"*, President of the Republic of Azerbaijan, Baku, https://en.president.az/articles/50474. [3]

Country Assessment: Georgia

Green bond opportunities

The challenge of energy transition

Georgia is richly endowed with renewable energy resources, in particular hydropower. As yet, total primary energy supply (TPES) relies heavily on fossil fuels as it is dominated by mostly imported natural gas (47% of TPES in 2019) and oil products (27%). Domestic energy production relies on hydropower, biomass and some coal (GeoStat, 2021[1]). Due to Georgia's relatively high share of domestic hydropower in the energy mix (15% of TPES), the country's CO_2 intensity is below the global average (IEA, 2020[2]). The country will also face significant environmental physical risks stemming from global climate change, such as changing water discharges of rivers which can in turn lead to changing hydropower potential.

Domestic pricing and subsidies still provide incentives for fossil fuels with an estimated 0.09% of GDP in direct budget transfers and tax expenditure provided to both producers and consumers of fossil fuels (OECD, 2021[3]).

The transition to a low-carbon economy in line with policy targets therefore remains a daunting agenda. The focus in supporting the transition of the energy sector is on increased energy efficiency and renewable energy deployment. The government is also supporting sustainable forest management (IEA, 2020[2]). The government has made efforts to develop national strategies, policies and measures to combat climate change, adapt the national economy to climate variations, and protect the environment. Georgia's main commitments to reduce carbon emissions are the following:

- In May 2021, Georgia published its updated Nationally Determined Contribution (NDC) under the Paris Agreement (UNFCCC, 2021[4]). Georgia commits to an unconditional limiting target of economy-wide emissions of greenhouse gas (GHG) emissions of 35% below 1990 levels by 2030, or conditionally by up to 57% once international support has materialised.
- Georgia has further developed a 2030 Climate Change Strategy and 2021-2023 Action Plan (CSAP), which serves as an underlying strategy combined with a short-term action plan.
- In the course of 2021, the Ministry of Environmental Protection and Agriculture will finalise the Long-Term Low Emission Strategy of Georgia (LT-LEDS) with the support from the European Union and the United Nations Development Programme (UNDP). This national strategy will focus on transforming the economy and reducing GHG emission until 2050 (UNDP, 2021[5]).

Incentives for green projects

As demand for electricity continues to exceed local production capacity, import of electricity has become a vital factor of growth in the country. A significant increase in demand has been fuelled by cryptocurrency mining, which is estimated to account for up to 15% of Georgia's total power load. In 2019, electricity imports exceeded exports during summer, even though traditionally this is a time of excess power supply channelled to the region.

With about 26 000 rivers of a total length of 60 000 km, water is an abundant natural resource with a high potential for hydro energy in Georgia. Among these rivers, approximately 300 rivers are considered to be vital for energy production with the total annual potential capacity of 15 000 MW, which is equivalent to about three times the current total installed generation capacity (IEA, 2020[2]). Notwithstanding this significant potential, the construction of hydro power plants (HPPs) has slowed in recent years as the

model of power purchase agreements had been given up by the government and an alternative market-based model was slow to materialise.

In late 2019, the Government of Georgia adopted the Law on Energy and Water Supply compliant with the EU's Third Energy Package which paved the way for the opening of electricity and gas markets (Energy Community Secretariat, 2020[6]). The introduction of market-based schemes based on this law could support the future development of renewables in the electricity market.

In 2020, a concept for the electricity market was adopted, but the opening of the market was postponed until January 2022. In July 2020, Georgia already set a feed-in premium at up to USc 1.5 per kWh hydropower plants with higher than 5 MW installed capacity. Thus, producers sell their electricity in the market and receive a feed-in premium in the case the market price is below USc 5.5 per kWh, namely the difference between USc 5.5 per kWh and the market price but no more than USc 1.5 per kWh.

As yet, Georgia lacks a support scheme for renewables other than hydro power. Currently, wind and solar make up only 0.5% and 0.1%, respectively, of total installed capacity while the potential would be at around 34% for both generation technologies (GNERC, 2021[7]). Wind energy in particular could potentially contribute to electricity generation and, thus, reduce Georgia's dependence on imports in the winter months when hydro generation significantly drops and thermal capacities are not sufficient to meet demand. According to Georgia's Ten-Year Network Development Plan (TSO, 2021[8]), country plans to double its generation capacity to meet an electricity demand increase from 12.3 TWh in 2020 to 35.1 TWh in 2031. Georgia envisages significant increases in hydropower (2.3 to 4.3 GW), wind (0.02 to 1.4 GW) and solar capacities (0.005 to 0.5 GW). Through these measures, the country aims to once again become a net exporter of electricity.

Expected opportunities for investment potentially financed by green bonds

To estimate the opportunities for green bond financing in a consistent manner across all six countries covered in this study, and given that no such estimates are contained in Georgia's updated NDC, Table 1 identifies investment needs that are:

- clearly mitigation-related (e.g., excluding the renewal of fossil generation capacities and of outdated capital stocks without substantial mitigation effects)
- realistic from a macroeconomic perspective (e.g., does not exceed typical gross capital formations), and
- eligible for at least partial funding of green bonds (see Annex A for a methodology).

In Georgia, this kind of mitigation-related investment sums up to EUR 10.0 - 11.1 bn in the period up to 2030. This is equivalent to up to 8.7% of GDP or 33% of gross capital annually.

Table Error! Main Document Only.. **Sectoral mitigation-related investments eligible for green bond funding 2022 – 2030, Georgia**

	Lower bound	Upper bound
Residential buildings	0.4	0.6
Public buildings	0.1	0.1
Electricity sector	8.9	
Transport sector	0.2	0.7
Industry	0.4	0.8
Total	**10.0**	**11.1**

Source: Authors' own calculations.

- The bulk of this investment volume would be required in the electricity and heat sector. Currently, Georgia's electricity system is dominated by hydropower. Given a projected increase of total electricity generation from currently 12 to 35 TWh (TSO, 2021[8]) in 2030, investments in the development of renewable energy sources will sum up to a substantial bill of EUR 8.9 bn. Compared to an increase of gas-fired thermal power plant utilisation, the development of renewable energy sources in Georgia allows for avoiding 11 Mt of CO_2 in 2030, which corresponds to 65% of current total national GHG emissions.
- In the building sector, annual thermal retrofitting of 0.8% of the residential and 1.5% of the public building stock would require EUR 0.5 - 0.7 bn, cumulatively. Through the reduction of gas consumption of 0.6 - 1 TWh in the building sector, 0.7 - 1.2% of national GHG emissions can be saved.
- Investments of EUR 0.4 - 0.8 bn would be necessary to significantly reduce GHG emissions in the Georgian industry.
- Adding around EUR 0.2 - 0.7 bn of investment in the transport sector, public city transport and rail transport can significantly contribute to reducing carbon emissions.

Sources of financing

In financing renewable energy and other climate-related projects, Georgia, at present, relies, to a large extent, on bilateral donors and international financial institutions.

- The European Bank of Reconstruction and Development (EBRD) Green Economy Financing Facility (GEFF) is a credit-line facility of up to USD 54 mln to domestic financial institutions to on-lend to residential and commercial clients investing in energy efficiency and renewable energy projects.
- The European Union is planning a EUR 100 million support package for Georgia for 2021-24 (EC, 2021[9]). One of the flagship projects is related to improved air quality for 1 mln people in Tbilisi. The 2021 European's Commission Joint Staff Working Document envisages "various instruments" such as grants, loans, guarantees and blending. This flagship project will contribute to investment in green and sustainable urban transport in Tbilisi.
- Given their limited capacity, Georgian institutions responsible for climate policy also receive extensive technical and financial support from donors and international financial institutions (IFIs). This support includes the preparation of national communications and regular updates for the United Nations Framework Convention on Climate Change (UNFCCC) (IEA, 2020[2]). Furthermore, IFIs have implemented several projects improving energy efficiency in public buildings partly financed by the Municipal Development Fund under the Ministry for Infrastructure and Regional Development.

In terms of domestic financing sources, the Georgian Energy Development Fund (GEDF) is a joint-stock company that is fully owned and funded by the government. Its mission is to promote the realisation of the country's energy potential, including by developing renewable energy sources. GEDF is a profit oriented state-owned agency that actively participates in and finances energy projects. The Fund cooperates with private companies and attracts financing form the private financial sector. The Fund functions as a project developer, project promoter, service provider (e.g. engineering consultancy for project scoping, obtaining necessary permits and licences) and project manager. The Fund also functions as a Public Equity Fund (OECD, 2019).

A key problem for private debt finance has been the limited size and variable quality of projects in the country, in particular in the renewables sector. Banks have generated some green portfolios (with support

by IFIs) and according to disclosures required by recent regulation in the case of the two largest banks these amounted to between 1% and 3% of total loan portfolios. These projects have not yet been relevant for the bond market.

The substantial mitigation-related investment needs underline the challenge of creating new mechanisms to raise funds from private investors, in particular in local and international capital markets. This will inevitably require policy reforms for mobilising finance for economic growth that is sustainable, though also disclosing and managing climate-related risks.

Capital market context

Financial market structure

The Georgian financial sector is relatively large in a regional comparison, at about 108% of GDP (IMF, 2021[10]). Georgia's 15 banks account for 94% of sector assets, with the largest two, TBC and Bank of Georgia, accounting for over 70% of banking assets. Microfinance institutions are important in individual regions and in lending to the smallest enterprises. In aggregate, they account for only 4% of sector assets, and have declined in importance since more stringent regulation was adopted. The significant share of the largest two banks has given rise to concerns over their impact on competition, and support for alternative capital market financing to emerge. Yet, both banks adopt relatively high corporate governance standards, also due to their listing on the London Stock Exchange, and both run sizable investment banking businesses that have supported mid-sized enterprises entering the local capital market.

The persistently high dollarisation has declined somewhat, though remains a vulnerability of the financial system. In mid-2021, over 50% of bank loans were denominated in foreign currency, and a similar imbalance is clear in capital market issuance (NBG, 2021[11]). Periods of high risk normally led to a flight by depositors into foreign currency assets. Funding options in local currency and aimed at infrastructure projects with local currency revenues remain at short maturities (loan maturities to businesses are roughly five years for foreign currency, compared to only 3.5 years in lari or GEL). This is the outcome of a history of variable inflation and repeated external shocks to the economy. In recent years the National Bank of Georgia has strengthened its inflation targeting regime, and also contained the use of foreign currency in the financial system through a number of administrative measures, such as a ban on foreign currency-lending to households, or higher capital requirements on foreign currency loans to unhedged corporate borrowers.

The local bond debt market

In September 2021, total capitalisation of bonds issued by Georgian entities stood at GEL 15.5 billion (USD 4.96 billion or 29% of GDP). This included the state Eurobond (GEL 1.6 bn), and corporate eurobonds issued by six Georgian enterprises and banks over GEL 6.6 billion (Tvaliashvili, A, n.d.[12]).

Within the local market, and in terms of securities denominated in GEL, the government treasury market accounts for the bulk of capitalisation and trading. The local government bond market is already fairly efficient in terms of primary issuance and trading processes and it provides a supportive context for private sector issuance in the local market.

The government has extensively drawn on concessional lending from international donors and agencies and issued only one Eurobond in international markets. Domestic treasury bonds and bills are only a limited financing source for the government (accounting for less than 9% of the total at end-2018) and incurred a much higher interest rate. Nevertheless, the government's last debt management strategy set the

important new objective of expanding the domestic issuance of government securities, in addition to the traditional objective of covering government financial needs and minimising costs. Domestic borrowing, while more costly, is seen to reduce exchange rate risk for the government and to support domestic capital market development. In addition, the system of primary dealers, which handles the government's auctions of state debt, is to be further reformed (Ministry of Finance, 2020[13]).

The investor base in the domestic government bond market is dominated by a small number of domestic commercial banks, while significant domestic institutional investors are absent. Foreign investors have been able to access the local bond market through an international clearing company (Clearstream) since 2018, and their exposure stood at about 10% of the state debt market in September 2021 (Tvaliashvili, A, n.d.[12]). Low liquidity is a significant barrier to a further market development. While the local bond market in state debt is reasonably liquid at 1- and 2-year maturities, there is only limited turnover for the five-year benchmark bond and only intermittent issuance at small volumes at a 10-year maturity in the past years. Apart from the government, Georgia's bond market is dominated by issuance by international organisations, such as the European Bank for Reconstruction and Development (EBRD), which account for about one third of market capitalisation.

There has been a steady increase in GEL-denominated corporate bonds in recent years, and these surpassed foreign currency bonds in 2019. A bond issued in October 2019 was the first floating rate instrument to be linked to the local interest rate benchmark index. Several of the Eurobonds listed by Georgian banks and corporates abroad are also listed on the Georgian stock exchange, even though due to the large minimum transaction size only few transactions are recorded.

Excluding the large corporate Eurobonds only GEL 1.1 billion (USD 350 million) had been issued by Georgian entities, either in Georgia, or in GEL on foreign exchanges. The limited issuance size is a key constraint in attracting foreign investors. Eight entities had issued local currency bonds, and another eight local bonds denominated in foreign currency. Most of the local currency bonds are held to maturity by local banks, as these instruments benefit from a repo facility at the National Bank of Georgia. Lack of liquidity therefore remains the key impediment to market development.

The investor base

The development of the local bond market will benefit from a relatively strong local investor landscape. This includes the two largest banks which are each affiliated with investment banking and asset management firms under their respective holdings, and the new state pension fund.

The Georgian Pension Fund was established as a second (mandatory) pillar of retirement saving when the Pensions Law came into effect in January 2019. The Fund initiated investments shortly thereafter. In October 2021, Fund's assets stood at GEL 1.8 billion (USD 576 million), and this is increasing by approximately GEL 600 million every year, to roughly double by end-2023. The relatively strong recovery in Georgia in 2021, when growth is expected to exceed 7%, and the associated wage increases have underpinned inflows to the Fund. The number of participants has also increased steadily, while only few of the members which were at first obligated to enroll have opted out.

At present, all assets under management are invested in cash and deposits. While this has given a steady return above inflation, the cash and deposit market will be too limited, given the size and growth of the fund. The fund therefore expects to invest in all types of securities subject to the two constraints defined in the Pensions Law: a limit on the proportion acquired for any single issuer and single issue, and a minimum credit rating no less than two notches below that of the sovereign (currently B+).

The Pensions Law, and the investment policy that is approved by the National Bank, foresee a widening of the investment allocation, including to local corporate bonds. In the first few years only a single allocation

will be offered under which only up to 20% of assets can be invested in foreign currency denominated securities. Subsequently, more risk-oriented portfolios will be offered. The Fund began to invest in local government bonds in 2021 and is expected to absorb a large part of government issuance at long maturities, in particular of the longest duration ten-year bond. As pension funds are typically long-term 'buy-and-hold' investors the entry of the Georgian Pension Fund may well reduce liquidity in the local secondary market. Yet, given this greater demand and hence higher valuation of state bonds, other investors may shift into riskier private sector bonds at the same time. Local corporate bonds will initially account for a very small allocation of invested pension fund assets.

The Pension Fund investment policy foresees a mandate for 'responsible' investment. However, Environment, Social and Governance (ESG) issues are not the primary consideration but will be fleshed out in some high-level principles as certain activities will be excluded. The Fund management expects to look at all types of securities, including any green bonds, and will support any wider efforts in local market development.

Capital market regulation

Regulation of the local market is transparent, at a relatively high standard and enforced effectively by the National Bank of Georgia (NBG). Georgia is, in principle, committed to adopt EU directives and regulation under the terms of its 2015 Association Agreement with the EU. This commitment applies to legislation already in force, and to that being adopted in the EU on a rolling basis. This commitment is not followed strictly, as some EU legislation is overly complex, applies to instruments and markets not relevant in Georgia, or draws on secondary legislation and enforcement that cannot be applied to Georgia. Nevertheless, the National Bank has gradually upgraded the regulatory framework applying to capital markets.

Significant recent steps included:

- An Investment Funds Law which adopts key principles from EU directives, and provides greater clarity on establishing pooled investments.
- A Law on Financial Collateral, Netting and Derivatives, which is crucial in hedging foreign currency and inflation risks.
- A Securities Market Law which improves transparency and investor protection.
- A Covered Bonds Law which will improve portfolio funding and refinancing, and will make pricing more efficient.
- A Law on Securities Holdings.
- The Derivatives Law adopted in December 2019 which creates the legal framework for financial collateral and enables the private sector to hedge risks associated with interest rates and exchange rates.
- International Organization of Securities Commissions (IOSCO) membership which will facilitate cooperation with other capital market supervisors.

A number of measures in the banking sector will also make capital market financing more attractive. This includes the stricter regulation of microfinance institutions, the new 2018 Corporate Governance Code for Banks, and a number of measures on green finance (which are reviewed below).

The green finance framework

Even though green finance is at an early stage in Georgia a regulatory framework is quickly being defined.

The NBG as the principal financial sector regulator and supervisor joined other central banks in the International Network on Greening the Financial System (NGFS) in 2020, and has drawn on assistance from international agencies, such as the OECD, and the Green for Growth Fund. It is one of only two countries in the region to have joined the Sustainable Banking Network, hosted by the International Finance Corporation (IFC), where Georgia's development of a sustainable financial system is ranked in a medium stage (IFC, 2020[14]).

Already in April 2019, the central bank published a Roadmap for Sustainable Finance (NBG, 2019[15]), which addresses the need of raising finance for climate change mitigation, climate change adaption and other climate-related risks in the financial system. The stated goal of this roadmap is to provide a credible, predictable and stable regulatory framework and prepare the market for the transition to a low-carbon economic model while mobilising green finance. The roadmap contains four pillars, namely:

- increasing awareness of capacity building
- sustainable finance flows
- integration of ESG factors into risk management and decision making, and
- transparency and market discipline.

Amendments to the Corporate Governance Code for Banks were seen as critical in reflecting climate and other ESG issues in bank risk management. A first amendment in 2018 already reflected these considerations, and a second update in 2021 made this requirement more detailed and specific.

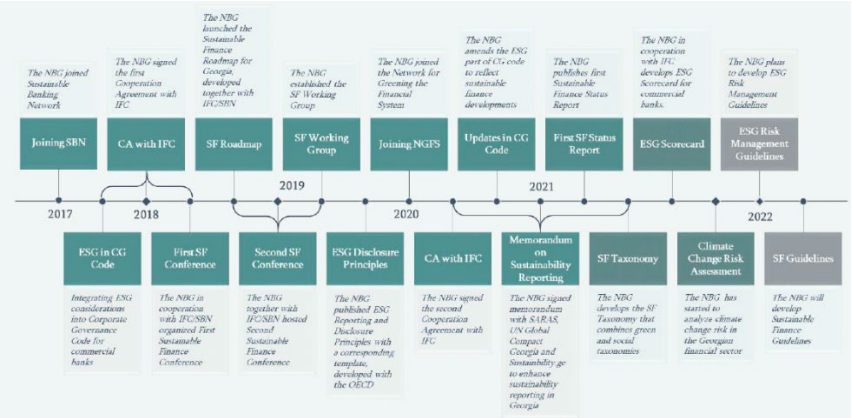
This built on the NBG's new ESG disclosure and reporting principles for banks of 2020, which had been developed based on assistance from the OECD.[3] Greater consistency and transparency in green finance, as supported by these principles, is particularly important for the banking sector which accounts for 94% of financial system assets. Other financial market participants in Georgia are also encouraged to adopt these principles. Adoption by the Pension Fund and microfinance institutions, which are key lenders to the SME sector, would be particularly important. Based on the NBG's principles, banks reported their ESG risks and exposures for the first time in 2021. Based on 2020 loan data commercial banks had issued the equivalent of USD 123 million in loans that could be clearly labelled as green, equivalent to roughly 6% of total lending volumes, and about 7% of total loan stocks could be labelled in this way (NBG, 2021[16]). The two largest banks which dominate the local market subjected a significant share of their lending to ESG screening, though only a small share of loans outstanding could be classified as green (1.2% in the case of Bank of Georgia, and a slightly higher share of 3.6 % for TBC) while for one bank (Procredit Bank) green lending seemed a more integral business line, with 16.6% of the loan portfolio classified as such.

These figures are regarded as under-estimates as a large number of banks did not report their exposures but are understood to have developed green portfolios. Most of the international financial institutions active in Georgia have extended green financing facilities to the local banking system. This is typically coupled with technical assistance and based on these efforts a large number of Georgia's 15 banks should have the relevant capacity and skills to extend loans in the areas of energy efficiency in particular. A refinancing of green certified buildings could be an option for a bank's green bond issuance, possibly based on the new covered bond legislation.

So far, the implementation of the NBG's 2019 Roadmap and Action plan have progressed as planned (Figure 1). A working group of regulators, banks and capital markets was convened to share standards and best practice more widely in the local sector. The NBG has also signed a memorandum with the local accounting agency and other bodies to strengthen sustainability reporting. Two key measures under the

NBG's Roadmap remain outstanding and could be more challenging: first, a taxonomy (classification) of sustainable activities is needed to guide sustainable finance flows, including in support of climate objectives. This could further strengthen banks' green lending if taxonomy-aligned loan portfolios benefit from certain incentives or better refinancing opportunities. The ability to repo green bonds that are aligned with the new taxonomy could set an important incentive and would be key in determining the attractiveness of such bonds. Second, the complex task of ESG risk management, adopting climate scenarios and stress testing bank portfolios still lies ahead. This will require translating global climate scenarios into quantitative tools for local risks, in particular those arising from the growing threat of soil and coastal erosion in Georgia.

Figure Error! Main Document Only.. **Key steps in the implementation of the NBG sustainable finance framework**



Source: (NBG, 2021[16]).

Green bond issuance to date

While the implementation of green finance principles in the banking sector has made good progress, these principles have as yet not been translated into the regulation of capital market issuance, trading and investment. However, two significant green bonds were recently issued by Georgian enterprises in international markets. This underlines that there is, in principle, interest by international investors in sustainable assets in Georgia, and capacity by Georgian firms to demonstrate alignment with such principles:

- In July 2020, Georgia Global Utilities (GGU) issued a bond of USD 250 million on the Irish Stock Exchange. A second party opinion of a major international assessment company had previously found the issuer's green bond framework to be aligned with international standards (the Green Bond Principles) (Sustainalytics, 2020[17]). The report acknowledged in particular the scope to address risk in flood-prone areas, and the potential to expand renewable energy generation, in particular from wind and hydropower. Nevertheless, the bond that was subsequently issued based on this framework was of a relatively short 2-year duration and was used to re-finance a number of companies in the portfolio of GGU, yielding at best an indirect climate-related impact.
- In June 2021, Georgian Railway (GR) successfully issued a USD 500 million, 7-year Green Eurobond in the London market. This issue was met by strong investor demand, leading to a 8.4 oversubscription as orders reached USD 4.2 bn (two IFIs, Asian Development Bank and EBRD, committed initial subscription as anchor investors). The coupon rate of 4%, the lowest in the company's history, was in part attributed to this strong investor demand for a green issue (this

represented a premium of only 1% over the yield of an equivalent state bond). Three international investment banks, and two local institutions (Galt & Taggart and TBC Capital) managed the issuance process. Clearly, the nature of the company, which is state-owned, and the previous access by the issuer to international bond markets helped in the success of the issue. As in the case of GGU, GR had defined a green bond framework, which was assessed by S&P Global Ratings as being aligned with the Green Bond Principles (S&P Global Ratings, 2021[18]). In principle, this opinion by S&P confirmed the alignment of the framework with the four criteria of the Green Bond Principles, regarding the use of proceeds, the process for project evaluation, the management of proceeds and the reporting. In the bond issue proceeds were used to refinance existing debt and to a number of infrastructure projects.

While both green bond issues were successful, they were done by relatively large companies for which the local bond market would not have offered sufficient depth. Also, both issuers were companies that were dominant in their respective sectors. In the case of Georgian Railways, which is state-owned, the existing yield on state debt provided a convenient pricing benchmark. Having previously issued in international bond markets, both were known to international investors, and the companies were well-prepared to engage such investors.

Both issues also showed some weaknesses, which underline the limitations of the instrument in an emerging market setting. In both cases the proceeds of the bonds were used to refinance existing outstanding debt. In the case of GR, bond proceeds would at first be used to refinance outstanding and more expensive debt liabilities and the issuer would only subsequently account for new investment projects that fitted the stated purpose in rail track and rolling stock (though the company in any case operates largely electrified track). Attribution of new projects to bond financing was therefore weak at best.

Conclusions and recommendations

Green bonds could become a promising additional financing instrument for public and private entities in Georgia. Banks and local utilities in particular could benefit from such an additional financing instrument.

The local bond market is well regulated with many key rules resembling those in Europe. The new state Pension Fund could become a significant institutional investor which could underpin liquidity and the success of primary issues. The local government bond market is fairly liquid and foreign investors are already engaged. It provides a benchmark yield curve and the infrastructure for issuance and trading is well-established. This has also attracted several large corporate issuers into the market which seek funding at longer durations and in larger sizes than can be mobilised by the banks.

A further incentive could be the emerging green finance framework which now features rules for ESG risk management and disclosure and capacity building in the sector. The green bond frameworks of two large Georgian companies have been confirmed as aligned with international standards, even though the green bonds that were subsequently issued in international markets did not necessarily mobilise additional investment.

A new financial instrument typically suffers from costs for first-time issuers, and the lack of a clear regulatory framework and full transparency. A number of measures could therefore help define a more conducive environment in which local green bonds could emerge:

- implementation of the 2019 Energy Law and setting of clear incentives and feed-in tariffs for renewables operators, including in the hydropower sector

- further development of the local bond market, in particular through proactive efforts of the state to foster liquidity in GEL-denominated securities
- the Regulator should complete the green finance framework, importantly by implementing the new green taxonomy, setting incentives for dedicated green financing instruments, and through monitoring good ESG risk management practices and disclosure in banks
- review of the rules for covered bonds issuance with a view to facilitating the refinancing of banks' green loan portfolios.

References

EC (2021), *Joint Staff Working Document: Recovery, Resilience and Reform: Post 2020 Eastern Partnership Priorities, Brussels, 2.7.2021 SWD(2021) 186 final, High Representative of the Union for Foreign Affairs and Security Policy*, European Commission, Brussels, https://eeas.europa.eu/sites/default/files/swd_2021_186_f1_joint_staff_working_paper_en_v2_p1_1356457_0.pdf. [9]

Energy Community Secretariat (2020), *Annual Implementation Report 2020, 1 November 2020*. [6]

GeoStat (2021), *Energy Balance of Georgia, 2021 Statistical Publication*, National Statistics Office of Georgia, Tbilisi, https://www.geostat.ge/media/42219/Publication-of-Energy-Balance_2020-ENG.pdf. [1]

GNERC (2021), *Integration of Renewables – Case of Georgia, Presentation at the ECRB-MEDREG Workshop, 15 April 2021*, Georgian National Energy and Water Supply Regulatory Commission, https://www.energy-community.org/events/2021/04/WS_ECRB-MEDREG.html. [7]

IEA (2020), *Energy Policy Review, EU4Energy*, IEA, Paris, https://iea.blob.core.windows.net/assets/24da4104-6971-4cde-99d3-630f455ae2c3/Georgia_2020_Energy_Policy_Review.pdf. [2]

IFC (2020), *Necessary Ambition: How Low-Income Countries are Adopting Sustainable Finance to Address Poverty, Climate Change, and Other Urgent Challenges, Investigation of National Approaches to Sustainable Finance in International Development Association (IDA)*, Sustainable Banking Network, https://www.ifc.org/wps/wcm/connect/5f89213d-afc8-40d7-bfd9-9d63812c7428/SBN_Necessary_Ambition_Report_2020_final_webversion.pdf?MOD=AJPERES&CVID=nbZPky5. [14]

IMF (2021), *Georgia Financial Sector Assessment Program: Technical Note - Selected Issues in Banking Supervision, IMF Country Report No. 21/222, September 2021*, IMF, Washington DC, https://www.imf.org/en/Publications/CR/Issues/2021/09/29/Georgia-Financial-Sector-Assessment-Program-Technical-Note-Selected-Issues-in-Banking-470366. [10]

Ministry of Economy (2021), *Georgia - Security of Supply Statement in Electricity Sector*, Ministry of Economy of Georgia, Tbilisi, http://www.economy.ge/uploads/files/2017/energy/security_of_supply_statement_electricity/secu [19]

rity_of_supply_statement_electricity_2021_eng.pdf.

Ministry of Finance (2020), *Annual Report on 2020 Public Finance Management Reform Action Plan*, Ministry of Finance of Georgia, https://www.mof.ge/images/File/strategia/2021/03-06-2021/Annual%20Action%20Plan%20Report,%202020%20PFM.pdf. [13]

NBG (2021), *Financial Sector Review, Analytical Tables and Charts, December 2021*, National Bank of Georgia, Tbilisi, https://nbg.gov.ge/fm/%E1%83%9E%E1%83%A3%E1%83%91%E1%83%9A%E1%83%98%E1%83%99%E1%83%90%E1%83%AA%E1%83%98%E1%83%94%E1%83%91%E1%83%98/%E1%83%90%E1%83%9C%E1%83%92%E1%83%90%E1%83%A0%E1%83%98%E1%83%A8%E1%83%94%E1%83%91%E1%83%98/%E1%83%90%E1%83%9C%E1%83%90%E1%83. [11]

NBG (2021), *Sustainable Finance in Georgia, Status Report 2021*, National Bank of Georgia, https://nbg.gov.ge/en/financial-stability/esg-reporting-and-disclosure. [16]

NBG (2019), *Roadmap for Sustainable Finance in Georgia, April 2019*, National Bank of Georgia, https://www.ifc.org/wps/wcm/connect/4fe8c7b6-3ae7-4672-9dfb-491d8dc2e053/Georgia+sustainable_finance_roadmap_eng.pdf?MOD=AJPERES&CVID=mFYwIAe. [15]

NGB and OECD (2020), *ESG Reporting and Disclosure Principles, February 2020*, National Bank of Georgia and OECD, https://old.nbg.gov.ge/uploads/esg/nbg_principles_on_esg_disclosure.pdf. [20]

OECD (2021), *Fossil-Fuel Subsidies in the EU's Eastern Partnership Countries: Estimates and Recent Policy Developments (forthcoming)*, OECD, Paris. [3]

OECD (2019), *Role of National Environmental Funds in Promoting Green Investments*, ENV/EPOC/EAP(2019)15, GREEN Action Task Force, Discussion Note. OECD, Paris. https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/EPOC/EAP(2019)15&docLanguage=En.

S&P Global Ratings (2021), *Green Framework Alignment Opinion - Georgian Railway Green Bond Framework, 26 May 2021*, S&P Global Ratings, https://www.spglobal.com/_assets/documents/ratings/research/100108698.pdf. [18]

Sustainalytics (2020), *Second-Party Opinion - Georgia Global Utilities Green Bond Framework, 20 April 2020*, Sustainalytics, https://mstar-sustops-cdn-mainwebsite-s3.s3.amazonaws.com/docs/default-source/spos/georgia-global-utilities-green-bond-framework-second-party-opinion.pdf?sfvrsn=c00092c7_3. [17]

TSO (2021), *Ten-Year Network Development Plan of Georgia 2021-2031*, Transmission System Operator JSC "Georgian State Electrosystem", http://ttps://www.gse.com.ge/sw/static/file/TYNDP_GE-2021-2031_ENG_NEW.pdf. [8]

Tvaliashvili, A (n.d.), *Fixed Income – Regional Market Watch, Financial Markets, 05.10.2021*, TBC Capital, https://static.tbccapital.ge/uploads/files/FixedIncome-September2021.pdf. [12]

UNDP (2021), *Paving the Way to a Climate-Proof Future*, UNDP Georgia, https://www.ge.undp.org/content/georgia/en/home/presscenter/pressreleases/2021/low-emission-development-strategy.html. [5]

UNFCCC (2021), *Georgia's Updated Nationally Determined Contribution*, Government of Georgia, [4]

https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Georgia%20First/NDC%20Georgia_ENG%20WEB-approved.pdf.

Country Assessment: Kazakhstan

Introduction

Establishing a green securities market widens financing opportunities, and thereby underpins the low-carbon transition. It is in this context that the OECD has launched the project on Greening Debt Capital Markets in the Eastern Partnership (EaP) countries and Kazakhstan. Kazakhstan is one of the first countries in the region to have issued a green bond in 2020 and the government has also put in place new legislation that provides incentives to issuers of green bonds but also is more generally developing its policy and regulatory framework to stimulate higher demand for green finance.

The main objective of the OECD project is to assess the role that green bonds can play in financing long-term green investments in the markets in the region. This country assessment does so by examining the issuers and projects for which green bonds might be suitable, the context in local debt capital markets, as well as the local regulatory framework for green finance.

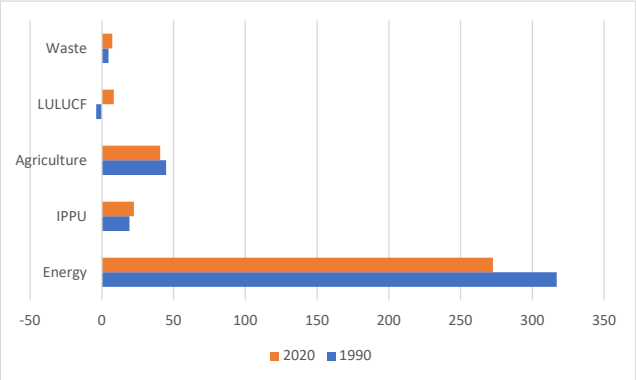
Green bond opportunities: issuers and projects

The challenge of Kazakhstan's energy transition

Kazakhstan is the country with the highest levels of greenhouse gas (GHG) emissions in Central Asia and an exceptionally high energy and carbon intensity in a global comparison (EBRD, 2017[1]). Despite a declining trend over the past few years, these levels remain very high. For example, national net GHG emissions in 2020 stood at 351.4 $MtCO_{2eq}$ (Figure 1) which was 12.6% lower than the 2018 level and 8% lower than the 1990 level while CO_2 emissions per capita amounted to 18.73 tonnes CO_{2eq} per person. This emission reduction was mostly due to the impact of the COVID-19 pandemic (President of the Republic of Kazakhstan, 2023). Electricity and heat production and buildings were, by large, the most significant sources of GHG emissions in Kazakhstan in 2019.

The country will face significant environmental physical risks stemming from climate change, importantly water shortages and desertification. The high dependence on fossil-fuel exploration and production will also expose the economy and its financial sector to significant transition risks as key trading partners embrace the low-carbon economy. The rapid economic growth that Kazakhstan experienced between 2000 and 2019 (before the COVID-19 pandemic started) was driven mainly by the rapid increase in the extraction of natural resources, in particular oil, gas, uranium and copper. A recent (PAGE, forthcoming) study shows a significant presence of government support measures for fossil-fuel production and consumption. In 2020, total subsidy measures amounted to USD 5.7 billion or 3.3% of GDP which still represents a major drop compared to the 2018 level which peaked at USD 8.3 billion or 4.6% of GDP. By the end of 2021, fossil-fuel consumer subsidies significantly increased again and reached USD 11.9 billion or 5.7% of GDP with most of the government support going to electricity and oil consumers (about 33% of the total each) (IEA, 2022). While this increase may be partially attributed to fluctuations in energy prices during the COVID-19 crisis, fossil-fuel subsidies remain significant and are among the highest in the region which suggests that Kazakhstan has a long way to go in its energy sector reforms.

Figure Error! Main Document Only.. **Greenhouse gas emissions by sector, Kazakhstan, 1990 and 2020, million tonnes of CO_{2eq}**



Source: (President of the Republic of Kazakhstan, 2023).
Note: IPPU - Industrial processes and product use, LULUCF – land use, land use change and forestry.

At the same time, over the recent years the Government of Kazakhstan has made a number of commitments to reduce fossil-fuel dependence (AIFC, 2019[2]):

- The National Development Strategy "Kazakhstan – 2050" defined the transition to a low-carbon economy and power generation from alternative and renewable sources as strategic goals of the country. The document also set the strategic target for the energy sector to achieve at least 50% of alternative and renewable energy sources in the country's total energy consumption.
- The Green Economy Concept is the country's key policy framework, constituting a long-term plan for a transition to a green economy across all sectors of the economy through resource optimisation, new technologies and production methods, renewable energy use and ecosystem management. It defines the following sectors for this transition: sustainable use of water resources; development of sustainable efficient agriculture; energy saving and increase of energy efficiency; power generation; waste management; reduction of air pollution; and conservation and effective management of ecosystems.
- Kazakhstan's first Nationally Determined Contribution (NDC) under the Paris Agreement targets a reduction in economy-wide emissions of greenhouse gas (GHG) emissions of 15% from 1990 levels by 2030, or up to 25% subject to access to international climate finance. Recent policy statements also envisage a significant expansion of renewable energy sources, which are to account for 50% by 2050 (Kuandyk, A., 2021). In addition, in December 2020, at an UN-sponsored conference, Kazakhstan pledged to achieve carbon neutrality by 2060 (Climate Ambition Summit, 2020[3]). To substantiate the pledge, in February 2023, the Government of Kazakhstan adopted the Strategy for Achieving Carbon Neutrality until 2060 (President of the Republic of Kazakhstan, 2023).
- In July 2021, the new Environmental Code of the Republic of Kazakhstan came into force, which seeks to adopt the best practices of the countries in the Organisation for Economic Co-operation and Development (OECD) and the countries of the European Union. This Code increases the liability of industrial enterprises for environmental pollution and also provides for the introduction of a waste management hierarchy and the construction of energy waste disposal plants.

Incentives for green investment projects

The government has sought to encourage renewable energy production over a number of years. Already in 2013, the Financial Settlement Center of Renewable Energy (RFC) was established at Kazakhstan Electricity Grid Operating Company (KEGOC) Joint-Stock Company, the energy system operator. KEGOC was designed to support renewable energy generation as the RFC became a centralised purchaser of electric energy generated from renewable resources. Since then, RFC has signed off-take contracts with investors which guarantee a fixed rate tariff for 15 years, with a commitment to purchase the total volume of electricity produced. Beginning in 2016, renewable energy projects were included in the government list of investment projects, and a number of incentives were provided to investors, such as for example, the exemption from customs duties of imported equipment. In 2017, the government launched the mechanism of auction tenders for renewable energy facilities which made the project selection process more competitive and transparent. Simultaneously, off-take tariffs have been partially indexed to both currency fluctuations and domestic inflation. In 2020, renewable energy projects were included in the government's list of priority projects.

Despite these policy efforts, renewable energy generation remains very low, at only 3% of electricity production. Providers are held back by exclusionary practices on the side of the largest energy utilities, and failure to provide access to the grid to small scale renewable energy producers. Limited grid capacities, a cap on energy tariffs for wind and solar power plants, which was recently further reduced, and high investment risks for the green projects in Kazakhstan have all discouraged investment. Renewable energy therefore remains an expensive energy source when compared with fossil-fuel based sources. Given the fact that many of the power plants in Kazakhstan are on the point of becoming obsolete, renewable energy sources may in fact become quite competitive (PwC, 2021[4]).

Expected opportunities for green bond investment

Estimates produced on the basis of Kazakhstan's first NDC already envisaged substantial investment needs related to renewing the capital stock and accompanying emission reductions of up to USD 140 billion between 2016 and 2030, primarily in the power sector, which could be equivalent to up to 5% of GDP per year (AIFC, 2019[2]). Even though a second NDC was not available at the time of the writing of this report and is yet to be prepared, it is likely that similar investment volumes are required going forward, also in light of the newly more ambitious targets for renewable energy.

Table 1 below presents the potential mitigation-related financing requirements that could be met through green-bond financing. These estimates were derived consistently for all six countries included in the study (in addition to Kazakhstan also Armenia, Azerbaijan, Georgia, Moldova and Ukraine).[3] These sectoral investments are a subset of the total mitigation-related investment needs defined by Kazakhstan's climate targets, and therefore lower than any targets announced in policy documents in the six countries. The main sectors included in the investment need estimation are: residential buildings, public buildings, electricity, transport and industry.

In Kazakhstan, this kind of mitigation-related investment sums up to EUR 18.2 - 33.9 bn in the period up to 2030, representing up to 2.2% of current 2020 GDP, or 9% of annual gross capital formation. Relative to GDP these estimated mitigation-related investments that are potentially suitable for green bond financing are nearly twice the equivalent figure in the European Union (EU). Specifically, the following opportunities arise in these key sectors:

- A significant share of GHG emission reduction can be achieved in the electricity and heat sector. The electricity sector is characterised by high shares of coal and natural gas in electricity production. However, high-capacity utilisation for solar generation makes renewable energy a

lucrative alternative. The installation of 4.5 GW of renewable electricity capacity until 2030 would require investments of about EUR 4 bn. Annual electricity generation from these new capacities will amount to approximately 1 TWh and enable emission reductions of 8.6 Mt CO_2 representing 2% of current national CO_2 emissions.

- In the buildings sector, thermal retrofitting of 0.8% of the residential and 1.5% of the public building stock annually, a reasonable pace of renewal for the coming decade, would require EUR 2.1 - 3.7 billion, cumulatively. This measure could save 0.9 - 1.5 Mt CO_2 representing 0.2 - 0.4 % of national GHG emissions.
- Adding around EUR 1.7 - 4 bn of investment in the transport sector, public city transport and rail transport can further significantly contribute to reducing carbon emissions.
- Industry, on the other hand, will see more sizable investment opportunities due to its large contribution to national GDP (33%) and its related gross capital formation. We assess that a mitigation consistent renewal of the capital stock could allow for investments of up to EUR 22.2 billion potentially suitable for green bond financing.

Table 1. Mitigation-related investments in selected sectors 2022 – 2030, EUR bn

	Lower bound	Upper bound
Residential buildings	1.2	2.2
Public buildings	0.9	1.5
Electricity sector		4.0
Transport sector	1.7	4.0
Industry	10.4	22.2
Total mitigation related investments	**18.2**	**33.9**

Source: Authors' calculation.

Sources of financing

These substantial investment needs underline the challenge of creating new mechanisms to raise funds from private investors, in particular in local and international capital markets. As yet, it is not possible to present a full picture of climate finance flows (AIFC, 2019[2]).

Investors from ten countries, as well as large financial institutions such as the European Bank for Reconstruction and Development (EBRD), Asian Development Bank (ADB), Asian Infrastructure Investment Bank and the Development Bank of Kazakhstan, are currently working in the green energy sector. Large oil companies such as Eni, Total-Irene have already implemented projects in Kazakhstan and have announced plans for the further development of renewable energy projects.

A study by (PWC, 2021) shows that in the past ten years, the cumulative volume of investments in renewable energy projects in Kazakhstan was about EUR 1.28 billion.

About 30% of the total cost of renewable energy projects in the country is financed from the companies' own funds. The principal domestic source of financing has been the Development Bank of Kazakhstan which between 2014 and 2020 allocated EUR 165.6 million to five renewable energy projects with an installed capacity of 295 MW.

However, the bulk of external financing was sourced from international development institutions.

- The Eurasian Development Bank has invested EUR 206.4 million in 9 renewable energy projects.
- Between 2011-2020 the EBRD invested EUR 324.2 million in green projects in Kazakhstan.

- The Asian Development Bank started financing this sector in the country for the first time in 2019 and has allocated EUR 42 million for construction of two solar power plants (Kursiv, 2021[5]).

Domestic investors have accounted for roughly 41% in total installed renewable energy capacity, though this was largely in small capacity projects. Foreign investors accounted for the bulk of large-scale stations, with the top four investor countries (China, Germany, Italy and the United Kingdom) accounting for 40% of total installed capacity.

Capital market context

Local capital market developments

Kazakhstan has a reasonably well-developed local capital market. Within the non-European Union emerging Europe region only Turkey and the Russian Federation exhibit a higher market capitalisation; among the central European EU countries only Poland exceeds the market depth in Kazakhstan (EBRD, 2018[6]). In October 2020, total capitalisation of the Kazakhstan Stock Exchange (KASE), which is the largest of the two exchanges in the country, amounted to EUR 64 billion or 46% of GDP, of which the capitalisation of the equity market accounted for EUR 35.4 billion (ARDFM, 2020[7]). KASE features a wide range of securities and other financial instruments available to investors, including 138 issuers of shares, three issuers of Global Depository Receipts (GDRs)[3]; 261 issues of corporate bonds (of which 43.8% were Eurobonds and 66.5% bonds of the quasi-public sector). As Table 2 shows, trading in securities is concentrated in government and corporate bonds, while equities are highly illiquid. Corporate bond trading has been roughly steady in the past three years.

Table 2. Market activity on KASE in 2020

Market sector	Volume, KZT bn	Volume, USD mln	Average daily number of deals	Average daily volume of deals, USD mln	Average volume of one deal, USD mln
Securities Market	**7 878**	**18 788**	**835**	**76.4**	**0.1**
Equities	238	573	795	2.3	<0.1
Corporate bonds	2 691	6 389	13	26	2
State securities	4 651	11 124	8	45.2	6
International Financial Organisation bonds	274	646	1	2.6	4
Investment funds securities	20.3	48.2	18	0.2	<0.1
Global Depository Receipts (GDRs)	3.4	8.1	<1	<0.1	0.2
Foreign currency (spot)	**11 607**	**28 092**	**397**	**114.2**	**0.3**
Money market	**98 501**	**239 351**	**446**	**973**	**2.2**
Repo transactions	88 569	214 913	431	873.6	2
Foreign currency swap	9 932	24 438	15	99.3	6.8
Derivatives	**<0.1**	**<0.1**	**1**	**<0.1**	**<0.1**
TOTAL	**117 986**	**286 231**	**1 677**	**1 164**	**0.7**

Source: (KASE, 2021[8])

Issuers and investors in the local private sector bond market

There has been consistent growth in corporate bond issuance since 2016. Bond issuance has been encouraged by the relative efficiency of the process of issuing and registering bonds, as well as by the simplified nature of requirements for registration of bond issue prospectuses. This has increased the liquidity and attractiveness of bonds. Of the 261 corporate bond issuers that were included in the official list of KASE in 2021, 59.4% came from the financial sector, 22.3% from energy, 11.3% from industry, 5.4% from non-core consumer goods. The volume of trading in corporate bonds on the KASE secondary market has also increased since 2016. Trading at the Astana International Exchange (AIX) is only a fraction of the trade taking place at KASE.

At the same time, the growth of the local bond market is largely the result of an increase in the volume of borrowings from second-tier banks and quasi-government organisations. A number of governmental decrees and incentives have further encouraged corporate bond issuance. Crucially, bond coupons payable by private Kazakh enterprises are now subsidised under the State Programme for Support and Development of Business ("Business Road Map 2020") under certain conditions and following specific administrative procedures (ARDFM, 2020[7]).

There is a reasonable presence of foreign institutional investors in the Kazakh equity market (EBRD, 2021[9]). By contrast, the foreign presence in the local bond market is sparse, also due to the fact that KASE as yet cannot offer international clearing and settlement of private securities. The National Bank of Kazakhstan (NBK) manages the pension assets of the Unified Accumulative Pension Fund (UAPF) though it is not invested in local corporate bonds, given the investment constraints defined under law. The National Oil Fund, which is also managed by the NBK, has no assets in local currency as it is a tool to sterilise the effect of currency inflows on the real exchange rate.

The capital market infrastructure and regulation

Over recent years, Kazakhstan has significantly revised its capital market infrastructure and regulation.

In recent years, the regulation of the stock market has been significantly liberalised by simplifying formal requirements as much as possible and creating a more streamlined regulatory system. The authorities emphasised that, liberalisation measures would not compromise investor protection. On the contrary, the authorities aimed to establish a favourable legislative and regulatory environment for investors, including minority investors, while gradually moving towards a more focused risk-based supervision of the financial market.

To optimise and simplify procedures for issuers to enter the stock market, the following further measures have been adopted:

- reduction of the terms for consideration of documents submitted for state registration of the issue
- reduction in the number of licensing procedures
- reduction of the package of documents submitted to the authorised body for state registration of the issue of non-government equity securities and changes in the prospectus for the issue of equity securities.

The market “ecosystem” is now essentially composed of the following:

- The **Kazakhstan Stock Exchange** (KASE), which is responsible for conducting and clearing trades. KASE is a universal exchange in Kazakhstan, serving the equity, bond, money and foreign exchange markets, as well as the market in derivatives. KASE remains the main exchange, though an alternative exchange has developed in Nursultan (see below).

- The **Central Depository**, provides a unified accounting system of securities and settlements on them, as well as centralised maintenance of the system registers of securities holders. The Central Securities Depository is the only organisation in Kazakhstan which maintains a system of registered holders of securities and depository activities (nominal holding top level). The presence of a single administrator for accounting and confirmation of rights to valuable paper allows to form a single database on owners of securities, expands the range of financial services and products provided to security holders and potential investors, reduces customer costs by reducing tariffs for accounting services for rights to securities and registration of transactions with them, simplifies procedures for registering transactions with securities, and also reduces the time registration of transactions on the unorganised securities market.
- A **trade repository** (based at the Central Depository), which is responsible for collecting and processing information on transactions with financial derivatives instruments in the unorganised market.
- 37 brokerages and (or) dealer organisations.
- 19 asset management companies, 55 asset managers investment funds.
- 9 custodian banks, including subsidiaries of foreign banks.

Astana International Financial Centre (AIFC)

The Astana International Financial Centre (AIFC) was established at the end of 2017. As set out in Kazakh constitutional law, one of the tasks of the AIFC is the development of the securities market of the Republic of Kazakhstan, ensuring its integration with international capital markets.

AIFC operates within a constitutionally separate jurisdiction within Kazakhstan, based on English common law principles and independent adjudication. Astana International Exchange (AIX), as the second exchange in Kazakhstan, operates within the AIFC regime. The Exchange is regulated by the Astana Financial Services Authority, an independent regulator established within the AIFC. Members of the exchange therefore have a number of benefits:

- a special legal regime based on the principles of English law and the best international practices
- independent regulation in accordance with recognised international standards to ensure fairness, transparency and efficiency of the financial market, protect the interests of investors and clients of financial services and minimise systemic risk
- tax preferences for AIFC participants in the form of exemption from corporate income tax until the end of 2065
- a simplified visa and labour regime.

AIX shareholders are AIFC, Goldman Sachs, Shanghai Stock Exchange, Silk Road Fund, and NASDAQ. NASDAQ also provided the trading platform for AIX, with an industry-standard system with rapid settlement through a system of over 20 local and international trading members.

Despite these various benefits and a state-of-the-art regulation and technology at AIX, KASE as yet remains the primary market for securities trading in Kazakhstan, including for NBK liquidity operations (total trading volume on AIX in 2022 was only USD 173 million).

The green finance framework

In Kazakhstan, a green finance framework is being actively developed. Best-practice rules were first developed on the Astana International Exchange, which operates within a distinct legal regime but where

liquidity remains limited. KASE, as the country's main exchange where the bulk of capital market issuance happens, has recently caught up in the development of a green finance framework. It is important however that the authorities make sure that the various regulatory initiatives that are being put in place should not contradict each other and should not create unnecessary confusion.

Rules at KASE and in the wider economy

Within KASE, the green bond framework is less developed than at AIX but work is progressing. Kazakhstan's new Environmental Code of July 2021 commits the government to design a taxonomy of green projects covering eight categories: renewable energy, energy efficiency, green buildings, pollution prevention and control, sustainable use of water/waste, sustainable agriculture, clean transport, transitional activities.

Based on the new Environmental Code, the Agency for Regulation and Development of the Financial Market (the Regulator) has developed rules to regulate the green finance market, which came into force in November 2022. Rules for registration of non-government bonds determine the procedure for state registration of green bonds, social bonds and bonds related to sustainable development. Requirements also clarify the disclosure in prospectuses of information on the use of proceeds from green bonds, adhering to internationally recognised principles and standards.

Moreover, the Agency is working on recommendations for Environment, Social and Governance (ESG) disclosure by listed companies and a number of other initiatives to promote sustainability concepts in the local market, including with support from international organisations and local business consultants.

KASE is also in the process of drafting procedures for verification and independent assessment of the use of proceeds. A list of approved verification providers will be published, and three private sector organisations have already committed to provide this service at a discount, among them Standard & Poor's and PricewaterhouseCoopers. Green bond issuance will therefore be supported by significant incentives that will reduce the costs of assessment, admission and publication of annual reports.

In 2021, KASE listing rules defined requirements for the issuance of green, social and other sustainability bonds, and this was also reflected in the capital markets law. The Exchange also implemented procedures for the external review of bond proceeds.

In addition, Kazakhstan adopted the National Corporate Governance Code (covering aspects of mandatory annual ESG disclosures for issuers on Kazakhstan Stock Exchange and government-owned companies). KASE became a member of the Sustainable Stock Exchanges Initiative in 2016, adopted a voluntary ESG reporting methodology in 2018 and introduced mandatory reporting in 2021. In 2021, 86 out of 150 listed companies (57%) provided some type of ESG information.

Rules at the AIX offshore exchange

Rules within Astana International Financial Center (AIFC) are more consistently and holistically designed. In late 2019, AIFC with support from the EBRD adopted the Concept of a Green Financial System for Kazakhstan (AIFC, 2019[2]). This document set out the vision for the development of green finance in Kazakhstan, centred around the AIFC, which would promote capacity building, a disclosure and reporting framework, and other aspects in the regulation of green finance, including special tax incentives for financial firms registered with AIFC. Some of the institutions in the AIFC ecosystem target not only green finance but also Islamic green finance.

Within the AIFC, AIX has already developed in its rules of the exchange clear standards for the issuance and trading of green bonds. While these rules are limited to the core aspects of green bonds (on only four pages) among others the following aspects are defined (AIX, n.d.[10]).

- a minimal taxonomy with a specific set of activities that can be funded by such bonds
- procedures for the recognition of bonds that are to be listed as green, including an application process for issuers, disclosures and reporting on the use of proceeds
- standards for post-issuance reporting.

In June 2022, AIX introduced the ESG-labelled bond rules covering the rest of sustainable bond products.

A Green Finance Center (GFC) was created in 2018 to promote the development of green finance in Kazakhstan and Central Asia. GFC assists potential issuers, investors, and market players in preparing for the issuance of green bonds on the AIFC Stock Exchange. For instance, the second party opinion (SPO) is an additional cost which the Green Finance Centre reimbursed until 2021 for all issues listed on the AIX. This support is seen as consistent with the mandate of the exchange in regulating the market. In addition, the AIFC Green Finance Center, acts as a regional think tank, provides strategic and business advice on green finance and sustainable development to government, quasi-government organisations and entrepreneurs.

GFC also works closely with the government and has been the main driver behind a number of important initiatives related to the development of a green finance framework. One such initiative is the development of a national green taxonomy and related subsidy scheme for green projects. The green taxonomy of Kazakhstan was initially developed and introduced into the Kazakhstan's Environmental Code by GFC and adopted in 2021. The development of the taxonomy was carried out taking into account the specifics of the Kazakh market and complying with the national social goals and priorities set in the following documents: Strategy "Kazakhstan 2050", national projects of the Republic of Kazakhstan, Entrepreneurial Code, Addresses of the President of the Republic of Kazakhstan. The experience with developing a taxonomy by the European Union, China and the Russian Federation was also considered and the final document is seen to be in line with the EU taxonomy and international standards.

The subsidy scheme for green projects, adopted by the Government Decree, was introduced via the National Entrepreneurship Development Project for 2021-2025 (earlier known as the “Roadmap for Business 2025” State Programme). The main requirements for issuers who may wish to benefit from this support measure include: maximum green bond size of KZT 3 billion, bond maturity of 5 years, maximum green loan size of KZT 3 billion, loan term of 5 years with a final rate of 6% for issuers, the rest being covered by the subsidy programme. Green projects identified to be funded through the subsidy programme should meet the requirements of the national green taxonomy and should be subject to an external review verifying the greenness of the project. In addition, the Decree allows for the provision of guarantees to green bonds under the following conditions: maximum green bond size of KZT 5 billion, guarantee term of 5 years and a guarantee size of up to KZT 2.5 billion. These support measures are expected to increase interest in using the green bond and green loans instruments as a main source of green finance.

In June 2022, AIX also published a voluntary ESG-reporting guidance for AIX issuers.

Green bond issuance to date

As part of the sustainable finance market in Kazakhstan (GFC, n.d.), by the end of 2022, six green bonds had been issued in the country:

- A first green bond was issued at AIX in August 2020 by the DAMU Entrepreneurship Development Fund (a subsidiary of the Baiterek Holding, a state-owned company). Even though the issue was very small (at KZT 200 million or ca. USD 500 000) and of relatively short maturity of three years,

it was a first test of the green bond framework defined by the Astana Exchange. The United Nations Development Programme (UNDP) supported the issuance process and costs. In addition to subsidising part of the Fund's green bonds coupon rate, UNDP also provided technical support in the selection of green projects. The bond was marketed by a local investment bank and purchased by two local institutional investors. The proceeds were on-lent to the local subsidiary of Sberbank, the Russian state-owned bank, which in turn funded a number of small solar plants. This pilot project was implemented with the support of the AIFC Green Finance Center, which provided the necessary consulting support, including a second party opinion.

- In November 2020, the Asian Development Bank (ADB) issued two green bonds in a single transaction on the country's main exchange, the Kazakhstan Stock Exchange (KASE). Both bonds were at 2-year maturities and with near-identical coupon rates. This raised USD 32 million in total (about USD 23 million and USD 9.1 million). Bond proceeds were used to finance ADB's portfolio of climate change adaptation and mitigation projects in the country (two solar power plants with a capacity of 50 MW in Kyzylorda and 100 MW near the city of Shu in the Zhambyl region, respectively). Both issues were oversubscribed by a factor of about two. Given the projects' lifespan and payback of about 13 to 14 years for these two renewable projects, the 2-year maturity of the bonds provided no more than bridge-financing.
- The largest green bond on the AIX exchange so far was that of Samruk Energy (100% subsidiary of the Sovereign Wealth Fund "Samruk-Kazyna" JSC) issued in November 2021 in the amount of KZT18.4 billion (about USD 42 million), with a seven-year maturity and a coupon rate of 11.40%. "Halyk Finance" JSC acted as a bookrunner and a lead manager of the placement. An independent assessment on the bond's compliance with green bond principles (Second Party Opinion) was provided by GFC.
- The Eurasian Development Bank (EDB) successfully placed an issue of three-year green bonds at Kazakhstan Stock Exchange (KASE). The value of the placed bonds was KZT 20 billion (USD 47.05 million) and the coupon rate was 10.5% per year. The placing complied with the principles of green bonds. Investor demand exceeded the volume of the bonds placed. The investors were local Kazakh banks, financial companies, investment companies, as well as private investors. EDB plans to use the funds raised to finance ESG projects in Kazakhstan. The Bank has also developed a Policy for the Issuance of Green and Social Debt Instruments allowing to place bonds for ESG projects and report to investors on the use of attracted funds.
- "KEGOC" JSC placed its first green bonds in December 2022 with a total volume of KZT 16.1 billion (about USD 36 million) with a margin of 3%. The securities were placed as part of the first bond issue of the second KZT 35 billion bond programme of the company with a maturity until 2035. The bid-to-cover[3] amounted to 70.2%, which reflects the increased interest of investors in KEGOC's bonds. The investors included banks with 50.4% of the total number, and other institutional investors with 49.6%. The funds raised are intended to finance investment projects: Rehabilitation of 220-500 kV overhead power lines at KEGOC's branches and West Kazakhstan Electricity Transmission Reinforcement Project (construction of power grid facilities). An independent assessment on the bond's compliance with Green Bond Principles (Second Party Opinion) was provided by GFC (KEGOC, 2022).

One interesting observation that comes out of this discussion is the relatively high cost of the capital raised through the green bonds issued in Kazakhstan. The coupons on the bonds generally vary between 10 and 12%. Compared to other issuances in the region mostly done on international exchanges (e.g. 3% in Armenia, 4% in Georgia), these are the highest rates in the region. A possible explanation for this is the fact that unlike other countries' issuances all green bonds in Kazakhstan were issued on the national exchanges. Given the shallow depth of the capital market in Kazakhstan and the stage of development of

its governance infrastructure but also the lack of a diversified (foreign) investor base this point is not so surprising. This observation is also evidenced by the fact that the coupon rate of one of Armenia's green bonds, placed on the domestic exchange, was also high and issued at about 10%. Solving issues related to the cost of capital related to green bonds is beyond the green bond market alone and should be dealt with in the context of overall local capital market development. It should be noted though that Kazakhstan is the only country which, despite all challenges, has made a conscious choice and effort to develop its own domestic market and bring investors home. On the other hand, working closely with other international exchanges can open new avenues and help diversify the investor base faster.

Major findings and recommendations

Kazakhstan is one of the most energy and carbon intensive economies in the region, highly dependent on fossil-fuel exploration and production. To achieve its climate-related commitments and transition to net-zero, the government will need massive investments particularly in the buildings sector, electricity and heat generation, transport and industry.

Green public and private sources of finance are slowly emerging with some new green financial products offered by the banking sector and the local capital market. While the domestic capital market is relatively well developed it is not very active in providing green debt to the real sector. At the same time, compared to other countries in the region, Kazakhstan has issued the largest number of green bonds (6) so far and this country's experience provides some interesting lessons for others to learn from.

Some of the major findings and recommendations include the following:

- Kazakhstan has put in a place an advanced green finance framework with direct implications for the green bond market, including, among others Green Bond Rules, Green Taxonomy, incentive measures and subsidies to support green bond issuers. However, most of these initiatives have been driven by institutions outside of the government and particularly by AIFC Green Finance Centre. In order to incentivise both potential issuers and investors to make a better use of this instrument, the Government and the market Regulator need to get more significantly involved in these policy-development and regulatory processes and send a clear signal to the market that scaling up green investments is an important national priority and all market actors need to start adjusting their business strategies to meet government requirements. While some efforts have been made, more is needed to speed and scale up green investments in the country.

- Given the structure of the economy (heavy industry, a lot of state-owned enterprises but also many small and medium-sized enterprises (SMEs) and the green investments that need to be made in the next few decades, both financial and non-financial corporates as well as SMEs and municipalities are potential significant green bond issuers and players on the market. Market standards such as the Green Taxonomy and Green Bond Rules bring clarity to the market and facilitate the green bond issuance process. Further work and guidelines on ESG reporting and disclosure requirements for both the banking sector and the real economy companies can provide yet another signal to issuers.

- Green financing for SMEs and municipalities will require special attention by the government. SMEs are an important player in the economy with a significant environmental footprint but they alone are not in a position to raise debt on the capital market due to the small size of their financial

needs. Instead instruments and financial schemes specifically designed to meet their funding needs should be developed (one such possible arrangement is through project aggregation).

- While many green infrastructure investments take place at a municipal level, municipalities in Kazakhstan are often seriously indebted and raising new debt is constrained by the fact that they have reached their borrowing limit capacity. One way to avoid further indebtedness is to have the government take on debt in its capacity of a sovereign and issue sovereign green bonds whose proceeds can be further allocated to municipal green investment projects. Indeed, given Kazakhstan's experience with issuing such bonds it may be worth considering sovereign green issuance in the near future. This will definitely send a signal to the market and show the government's commitment to meeting its own green and climate-related objectives.

- To diversify the investor base, the government and the Regulator may consider working more closely with other international exchanges and achieve joint issuance on several exchanges.

- Diversifying the investor base particularly targeting ESG committed investors will require good quality green underlying assets. The low level of green finance (few green loans and few bonds) in the country seems to suggest the lack of good bankable projects that can attract investors' attention. In this context, the government and all other institutions active in the country in this field, including also donors and international finance institutions, may wish to think of developing special capacity-building measures to support issuers to design high quality projects and prepare credible green bond frameworks and programmes.

References

AIFC (2019), *Concept on Introduction and Development of Green Finance Instruments and Principles*, Astana International Financial Centre, Nur-Sultan, https://gfc.aifc.kz/uploads/Concept%20on%20introduction%20and%20development%20of%20green%20finance%20instruments%20and%20principles.pdf. [2]

AIX (n.d.), *AIX Business Rules, Section 13*, Astana International Exchange, Nur-Sultan, https://gfc.aifc.kz/uploads/AIX-Business-Rules.pdf. [10]

ARDFM (2020), *Stock Market Development Report. As of 1 October 2020*, Agency for Regulation and Development of the Financial Market of the Republic of Kazakhstan, Almaty. [7]

Climate Ambition Summit (2020), *Statement by Kassym-Jomart Tokayev, President of Kazakhstan*, Climate Ambition Summit 2020, https://www.climateambitionsummit2020.org/index.php#ambition. [3]

EBRD (2021), *The Investor Base of Securities Markets in the EBRD Region*, European Bank for Reconstruction and Development, London, https://www.ebrd.com/news/events/investor-base- [9]

of-securities-markets.html.

EBRD (2018), *Local Currency and Capital Markets Development (LC2) Strategy 2019 – 2024. European Development Bank. LC2 Strategy*, European Bank for Reconstruction and Development, London. [6]

EBRD (2017), *Strategy for Kazakhstan as Approved by the Board of Directors at its Meeting on 5 July 2017*, European Bank for Reconstruction and Development, London, https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwiq0JzLjoPzAhUUDWMBHQNrCsEQFnoECAUQAQ&url=https%3A%2F%2Fwww.ebrd.com%2Fdocuments%2Fstrategy-and-policy-coordination%2Fstrategy-in-kazakhstan.pdf&usg=AOvVaw3quFgnN7QJU1sEVL70Q0RP. [1]

GFC (n.d.), *Sustainable Finance Market in Kazakhstan*, Sustainable Finance Analytics, Green Finance Center, https://gfc.aifc.kz/en/sustainable-finance-analytics. (accessed on 20 March 2022).

IEA (2022), *Energy Subsidies Database 2010-2021,* International Energy Agency, Paris, https://www.iea.org/topics/energy-subsidies.

KASE (2021), *KASE Website*, Kazakhstan Stock Exchange, https://kase.kz/en/. (accessed on 20 March 2022). [8]

KEGOC (2022), K*EGOC Places Green Bonds Totaling KZT 16.1 Billion*, Press Releases, 22 December 2023, KEGOC, https://www.kegoc.kz/en/press-center/press-releases/160327/.

Kursiv (2021), *"The Accumulated Volume of Investments in the Renewable Energy Sector in Kazakhstan will Exceed USD 1.8 Billion"*, Kursiv, https://kursiv.kz/news/otraslevye-temy/2021-04/nakoplennyy-obem-investiciy-v-vozobnovlyaemuyu-energetiku-kazakhstana. [5]

President of the Republic of Kazakhstan (2023), *Order of the President of the Republic of Kazakhstan No 121 of 2 February 2023 on Approval of the Strategy for Achieving Carbon Neutrality of the Republic of Kazakhstan until 2060*, President of the Republic of Kazakhstan, Astana.

PwC (2021), The RES Market in Kazakhstan: Potential, Challenges and Prospects, PricewaterhouseCoopers, London, https://www.pwc.com/kz/en/publications/publications-new/esg.html. [4]

PAGE (forthcoming), *Fossil Fuel Subsidies in Kazakhstan: Estimates and Reform Modelling*, Draft Report of 15 August 2022, Partnership for Action on Green Economy.

Country Assessment: Moldova

1. Introduction

The Republic of Moldova (herein Moldova) has the lowest per capita carbon footprint among the EaP countries and Kazakhstan which stood at 3.661 CO2e per capita in 2018 (Climate Watch, n.d.). Even so, in its updated Nationally Determined Contribution (NDC), Moldova has set itself more ambitious targets for the reduction of greenhouse gas (GHG) emissions, aiming at a 70% reduction below its 1990 level under the economy-wide unconditional target. In aggregate, the government expects this target to require financing of about EUR 8.3 billion by 2030, of which we estimate a significant share to be suitable for private debt financing, including potentially green bonds.

At the same time, there are significant challenges in mobilising private sector climate investments. The financial system is dominated by banks and the capital market is heavily underdeveloped. Some infrastructure in the local bond market is in place but trading volumes are small with only very few transactions undertaken each day. There are only few companies that have the required scale, suitable governance and sufficient transparency to be candidates for bond market financing. Adoption of climate risk standards and disclosure is even less common.

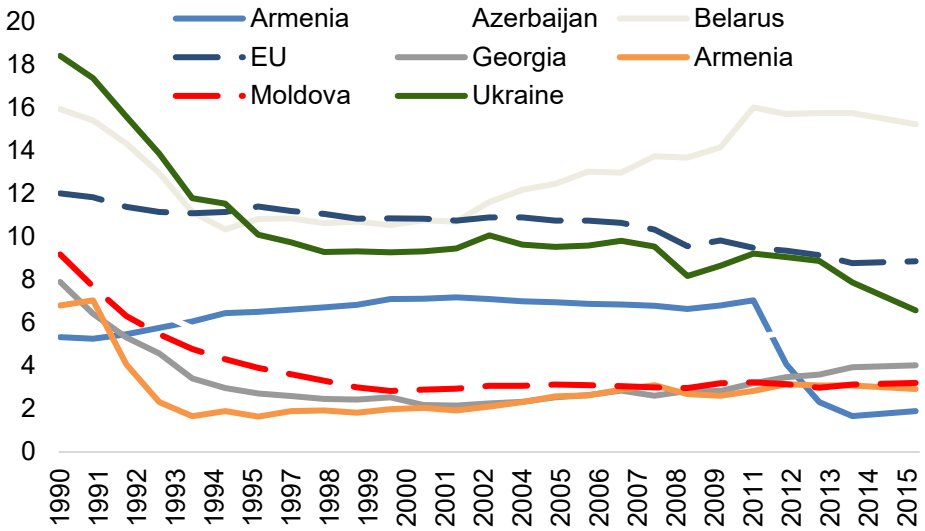
International partners support the further development of the government bond market, and there is significant potential in expanding the cooperation between the local exchange with that in Bucharest as the liberalisation of the trading of Lei-denominated securities outside the country could make the capital market finance more attractive. Two small recent bond issues by the capital city and one other municipality are promising in opening up longer term funding for energy efficient infrastructure investment, albeit drawing mainly on domestic retail investors.

The bulk of private debt finance in support of low-carbon investments is likely to originate in the banking sector, where a significant agenda in establishing green lending criteria remains.

Moldova is lagging behind other countries on green investments. Energy intensity was approximately 5.75 times above the EU-28 average in 2018. Energy intensity in terms of CO_2 emissions per unit of GDP is higher than in other countries in the region. Renewables still have a very low share in energy generation, and green investment projects have been slow to materialise.

Currently, Moldova contributes as little as 0.026% to GHG emissions. It has the lowest per capita footprints amongst the EaP countries and Kazakhstan (about 3.8t CO_2e per capita in 2016, Figure 1.1). The key sectors responsible for emissions are energy (31%), transport (16.3%), agriculture (16.7%) and waste (10%).

Figure 1. Error! Main Document Only.. **GHG emissions (tonne/capita)**



Source: European Commission.

2. Green bond opportunities

3. *The challenge of Moldova's energy transition*

Moldova is aiming to reduce its GHG emissions by 70% below its 1990 level of 45.3 Mt CO_{2e}, economy-wide unconditional target, according to the updated Nationally Determined Contribution (Government of Moldova, 2020[1]). This would require 17.9 Mt CO_{2e} or 43.5% GHG emission savings from current 13.81 Mt CO_{2e} 2019 level. The 70% target could be increased up to 88% conditional on supportive international low-cost financial resources, technology transfer and technical cooperation. The updated aim is more ambitious compared to the 64-67% in the First NDC, which makes Moldova the fourth country to submit a more ambitious second NDC to the United Nations Framework Convention on Climate Change (UNFCCC).

Climate change is also anchored in the National Development Strategy "Moldova 2030". Moldova was one of the first countries in the world to start developing a Low Emissions Development Strategy until 2030 (Government of Moldova, 2016[2]), which was adopted on 30 December 2016. The implementation of the NDC is also supported through the Low Emission Development Programme and related Action Plan, which has been updated to reflect the higher ambition in the revised NDC. The main objective of the Programme is to mobilise and enable private and public actors to reduce GHG emissions from their economic activities (EU4Climate, 2021).

At the same time, the Energy Strategy (Government of Moldova, 2013[3]) envisions climate change mitigation until 2030. The National Designated Authority in the climate change area is the Ministry of Environment and Natural Resources, which oversees the Climate Change Office.

4. *Sectoral investment needs to meet the ambition in the NDC*

Table 1.1 shows the sectoral unconditional and conditional targets until 2025 and 2030 defined under the new NDC. The energy and buildings sector would require significant investments to reach the ambitious targets. This section details the main investment projects in order to identify potential opportunities for green bond financing.

Table 1. Error! Main Document Only.. **Sectoral unconditional and conditional targets as a share of 1990 GHG emission level**

Sector	Unconditional targets 2025	Conditional targets 2025	Unconditional targets 2030	Conditional targets 2030
Energy	83	87	81	87
Transport	56	58	52	55
Buildings	76	78	74	77
Industry	34	37	27	31
Agriculture	48	50	44	47
Land and forest	-33	195	10	391
Waste	16	19	14	18
Total	71	83	70	88

Source: (Government of Moldova, 2016[2]), Low Emission Development Strategy until 2030, updated in 2019.

Clean energy sector

According to government plans, the energy sector needs at least USD 1.6 billion worth of investments. The specific objectives for the energy sector are unconditional and conditional reductions of GHG emissions until 2030 by 81% and up to 87%, respectively, compared to 1990 levels. The total investments needed to reach these objectives are USD 1.6 billion and USD 1.2 billion for unconditional and conditional targets, respectively. The main investments foreseen in the energy sector are:

1. construction of 400 MW wind capacity and 200 MW photovoltaic capacity
2. use of generators (50 MW) on biogas to produce electricity and heat
3. implementation of distributed electricity generation (20 MW)
4. installation of 8 100 condensing natural gas boilers with a power of 24 kW each
5. reduction of energy losses in the system of transmission and distribution of thermal energy and its production (by 27.9 ktoe).

The energy system of Moldova faces many crucial weaknesses. These result from (1) limited own fossil-fuel and hydro resources requiring the import of up to 77% of the necessary energy resources; (2) the continuing dependence on Russian natural gas, which accounts for about 30% of the country's energy balance; and (iii) the fact that 70-75% of energy equipment is outdated.

The current legal framework for this sector is reasonably reliable. Moldova has been adopting several European Union (EU) regulations and directives and will also adopt the targets of the EU Green Deal as a requirement under its 2015 Association Agreement. At the moment, the main development strategies and legal framework relies on the Energy Strategy of the Republic of Moldova until 2030 (Government of Moldova, 2013[3]), the National Development Strategy "Moldova 2030" (Government of Moldova, 2018[4]), the Law on the Promotion of the Use of Energy from Renewable Sources (Parliament of Moldova, 2016[5]) and the Law on Energy Efficiency (Parliament of Moldova, 2018[6]). Moldova has taken several measures to implement the EU *acquis* on electricity, including through the adoption of the Law on Electricity (Parliament of Moldova, 2016[7]). The activities of the electricity transmission and distribution systems have been legally separated from the generation and supply activities. Additionally, the rules of the electricity market were updated, with the objective of promoting competition in the electricity market and transparent relations between the participants of the electricity market to ensure competitive prices for electricity for end consumers.

The legal framework for renewable energy is also in place. The Decision of the Board of Directors of the National Agency for Energy Regulation (ANRE) No. 375/2017 approved the methodology for determining

the fixed tariffs and prices for electricity produced by eligible producers. Its implementation will result in the application of support schemes to produce electricity from renewable sources. It will also promote efficient investments in renewable sources ensuring transparency in the process of determining, approving and adjusting fixed prices and tariffs for electricity produced from renewable sources by eligible producers. Nonetheless, the share of renewable energy is miniscule in Moldova. The value of the current production of renewable energy related to climate is estimated at only USD 286 thousands, while the potential energy production is estimated up to USD 150 million annually.

In summary, the main issues for the energy sector are:

6. The low payment capacity of consumers and the relatively high cost of capital have made investments in energy sector unattractive.
7. The availability of electricity generation sources (Ukrainian and Moldovan thermal power generation) that produce energy at prices lower than a new installation limits the interest of investors in the construction of new power plants in the country.
8. The favourable legal framework for the development of renewable sources is created, but tendering of the construction of new capacities has not been launched so far and the high costs of renewable energy technologies and the low payment capacity of electricity consumers are major obstacles to the expansion of renewable energy sources.

Transport

The transport sector requires at least USD 3.1 billion worth of investments, according to the government's Low Emissions Strategy. The specific objectives for the transport sector are unconditional and conditional reductions of GHG emissions until 2030 by 52% and up to 55%, respectively, compared to 1990 levels. The total investments to reach these objectives are USD 3.1 billion for unconditional targets, and no additional financing is required to achieve the conditional objective. The investment projects and objectives are based on the following assumptions on: (i) 2 491 TJ of biodiesel and 1 127 TJ of bioethanol sold annually; (ii) 9 344 km of improved quality public roads built; (iii) amount of fuel used by rail transport reduced by 20% or 16 TJ; (iv) fuel consumption used in the road transport sector reduced by 1% or 311 TJ by promoting hybrid passenger vehicles.

The government's Energy Strategy has defined the main objectives in the transport sector until 2030. Planned measures to reduce the environmental impact of the transport sector are:

9. replacement of traditional fuels (gasoline and diesel) with compressed natural gas and liquefied petroleum gas and, at the same time, dilution of traditional fuels with bio-fuels
10. increasing the efficiency of burning car fuel by limiting the age of imported vehicles
11. elaboration and implementation of national standards and norms for environmental protection in accordance with EU standards
12. implementation of Directive 2009/33 / EC on the promotion of clean and energy efficient road transport vehicles (European Parliament and the Council, 2009[8]) as well as Directive 94/63 / EC on the control of emissions of volatile organic compounds (European Parliament and the Council, 1994[9])
13. encouraging the use of environmentally-friendly means of transport and promoting public transport as well as zero-emission modes of transport (cycling, walking).

The car fleet of Moldova has increased in the past few years. However, the number of new and less polluting vehicles has also become larger. This was promoted by a law banning the import of cars, minibuses, trucks and buses that have been in operation for more than 10 years. Recently, this restriction was eliminated, but higher excise duties have been introduced for transport with operating age exceeding

10 years. Also, since 2020, the imports of means of transport equipped with electric motors have been exempted from a value-added tax (VAT).

The modernisation of rail transport is also crucial. The process of restructuring of the railway sector must be supported by the rehabilitation of the existing railway network ensuring adequate funding, according to the government's Low Emissions Strategy. On air transport, EU regulations for flights from Moldova to the EU and vice versa are also valid. Therefore, the aviation sector is the first sector in Moldova to be included in the trading scheme of EU emission certificates.

In sum, the main issues in reducing GHG emission from the transport sector are:

14. poorly developed infrastructure for charging electric vehicles is a significant barrier
15. underdeveloped rail transport
16. high pre-operational capital costs for public transport infrastructure projects.

Residential, commercial buildings

The buildings sector needs at least USD 2.2 billion of investments. The specific objectives for buildings sector are unconditional and conditional reductions of GHG emissions until 2030 by 74% and up to 77%, respectively, compared to 1990 levels. The total investments to reach these objectives are USD 2.2 billion and USD 800 million for unconditional and conditional targets, respectively. The main investment projects planned in the buildings sector are: (i) 5.86 million m^2 of usable area of rehabilitated buildings with increased thermal resistance; (ii) 9.02 million m^2 of habitable surface with rehabilitated heating systems from the urban housing fund; (iii) 720 thousand thermostatic valves installed in public buildings with rehabilitated heating systems; (iv) 6.5 million replaced incandescent bulbs; (v) 250 MW installed capacity of biomass thermal power plants; (vi) ca. 2.7% of the heat demand by 2030 produced by heat pumps; (vii) 389 111 solar packages with 20 vacuum tubes in the panel (intended for 2-3 people) installed.

The government targets energy consumption close to zero for all new buildings from 2021 onwards. From a regulatory perspective, the Law on Energy Performance of Buildings (Parliament of Moldova, 2014[10]) establishes the priority directions of state policy in the field of energy efficiency of buildings. It stipulates that the new public buildings should have energy consumption close to zero after 30 June 2019, and all new buildings' energy consumption should be almost zero after 30 June 2021. Also, the Law on Labelling of Energy Impact Products, Household Appliances and Other Energy Impact Products (Parliament of Moldova, 2014[11]) must be labelled and display standard information on energy consumption. In addition, the Law on Energy Efficiency (Parliament of Moldova, 2018[6]) establishes as an objective the annual renovation of a certain amount of surface of state public buildings. The annual renovation rate is 1% of the total area of buildings in the public domain of the state. One of the main issues is that the allocation of financial resources to the public sector is insufficient. Also, the funds attracted from development partners, which take the form of preferential loans, are not accessible to all local public authorities.

Industry

Industry needs at least USD 200 million worth of investments, according to the government's Low Emissions Strategy. The specific objective for the industry sector is unconditional and conditional reductions of GHG emissions until 2030 by 27% and up to 31%, respectively, compared to 1990 levels. Total investments to reach these objectives are USD 200 million and additional USD 10.6 million for unconditional and conditional targets, respectively. The main investment projects and objectives planned in the industrial sector are: (i) energy management system and National Standard SM ISO 50001: 2012 implemented in over 40 enterprises; (ii) over 76 260 tcc of reduced energy and fuel; (iii) decrease the

intensity of CO_2 emissions in cement production to 475 tCO_2 /t by 2030 compared to 800 tCO_2 /t in 1990; (iv) reduce total fuel consumption used to produce glass in 2030 to around 430.1 TJ/year.

Renovation and energy management measures are crucial. The ways toachieve the energy efficiency targets are set out in the National Energy Efficiency Action Plans for every three years comprising the industrial sector as well. The plan provides for the following measures: (i) development of a set of instruments for financing, on preferential terms, for energy-efficiency measures; (ii) facilitating the access of enterprises from the industrial sector to attractive financing instruments; (iii) technical assistance to enterprises to help them increase the energy efficiency of their operations.

In sum, the main issues for the industrial sector are:

17. investments in mitigating GHG emissions should have reasonable returns
18. high degree of moral and physical wear and tear of existing machinery and equipment and limited financial support to modernise them
19. historical debts and VAT refunds of factories from glass, brick, sugar industries, which have resulted in long-term litigation
20. price regulation of some industrial products of social character such as dairy and bakery, which prevents the accumulation of revenue in order to invest in modernisation and implementation of EU standards.

Other green infrastructure

Other sectors need at least USD 1 155 million worth of investments. The investments would be in the agriculture and forest sectors and are mainly focused on the proper management of land. However, the waste sector requires significant investments in green infrastructure. The specific objective for the waste sector is unconditional and conditional reductions of GHG emissions until 2030 by 14% and up to 18%, respectively, compared to 1990 levels. The total investments to reach these objectives are USD 250 million and additional USD 47.4 million for unconditional and conditional targets, respectively. The main investment projects and objectives planned in the waste sector are: (i) construction of regional solid waste landfills and transfer stations in six regions; (ii) construction of mechanical-biological treatment centres for Chișinău and Balți municipalities; (iii) recovery of biogas from the landfill for solid household waste in Ţânţăreni; (iv) improving the wastewater treatment of Chișinău municipalities by adding sludge treatment (under anaerobic conditions) to the water-canal stations in the city.

Significant support from development partners for waste projects is expected. The Waste Management Strategy of the Republic of Moldova for the years 2013-2027 (Ministry of Environment of Moldova, 2013[12]) is mainly focused on the development of the infrastructure and services necessary for adequate protection. In June 2020, the Parliament ratified the financing contract between Moldova and the European Investment Bank on the implementation of the "Solid Waste in the Republic of Moldova" Project worth EUR 25 million. Also, in 2019, the European Investment Bank (EIB) made available a loan of EUR 100 million for the improvement of solid waste management services in the country.

The main issues for the waste sector are:

21. lack of infrastructure for planning, organising and implementing an integrated waste management system at all levels
22. lack of landfills for final storage of waste constructed and operated in accordance with environmental standards
23. insufficient funding for the development of wastewater treatment infrastructure at both state and private level

24. poor infrastructure for waste collection, transport and disposal, especially in rural areas.

Main financing resources

According to the government's own projections, and based on the above sectoral targets, Moldova will require financing of about USD 8.3 billion in the period up to 2030 to reach its unconditional climate targets (Table 1.2). Also, the authorities would need to attract additional USD 2.6 billion to meet the conditional target of up to 88%. The financial support to implement the updated NDC unconditional and conditional targets are mainly focused on development banks and the Green Climate Fund. The government of Moldova is planning to support the unconditional targets by implementing efficient incentives and redirecting public investments to less emission intensive activities. Therefore, the authorities are relying on external finance for the bulk of green infrastructure investments. It should be borne in mind that the authorities have been less successful in absorbing available funds until now. For example, the development partners' commitments to support the implementation of adaptation in Moldova amounted to about EUR 1 117 million during the 2014-19 period. Nonetheless, only EUR 357 million (32%) were disbursed as of 2019 year-end.

Table 1. Error! Main Document Only.. **Financing needs per sector**

Sector	Unconditional targets (USD million)	Conditional targets (USD million)	State-owned entreprises (USD million)	Private entreprises (USD million)
Energy	1 612	1203	718	294
Transport	3 116	0		
Buildings	2 280	804		
Industry	200	11	6	170
Agriculture	873	548		
Land and forest	33	10		
Waste	250	47		
Total	8 364	2623		

Source: (Government of Moldova, 2016[2]), Low Emission Development Strategy until 2030, updated in 2019.

State-owned enterprises will participate in two large infrastructure investments. "Moldelectrica" is responsible to set up the infrastructure through which Moldova will import energy from Romania. The EBRD and EIB are the main financing sources for the USD 717 million project, and the cost of investments will be included in the energy tariff. At the same time, "Chișinău Glass Factory" plans to reduce the total energy consumption by 2030 that would require USD 6.44 million worth of investments. The enterprise will contribute with USD 2.34 million from its own retained earnings while the rest of the amount will be borrowed from development banks.

There are significant challenges in engaging private sector climate investments. In addition, there is an enormous need to provide capacity building and technical assistance to the private sector of Moldova. Therefore, the authorities plan to attract private enterprises in only 4 projects. The government plans to launch public auctions for:

25. 40 new high-efficiency heating power plants with a total installed electrical capacity of 20 MW
26. photovoltaic power plants of 200/400MW (unconditional/conditional)
27. biogas power plants of 50/75 MW (unconditional/conditional).

Private enterprises will be able to recoup their investments via energy tariffs. At the same time, the French company Lafarge is aiming to use alternative fuels (biomass and household solid waste) in the cement kiln

to recover the energy from waste in cement production. The company will finance itself the USD 170 million project.

Expected opportunities for green bond investment

As the Low Emission Development Strategy until 2030 looks into total investments in the corresponding sectors but does not distinguish between investments that are eligible for green financial instruments (such as renewable energy investments) and other investments that most likely will not be eligible (e.g., replacement investments in industry) we provide a bottom-up calculation of the sectoral mitigation related investments that might be eligible for green financial instruments.

Using a consistent methodology across all six reviewed countries (as set out in Annex A), we estimate the narrower subset of investment needs, which are:

28. clearly mitigation related (e.g., excluding the renewal of fossil generation capacities and of outdated capital stocks without substantial mitigation effects)
29. realistic from a macroeconomic perspective (e.g., does not exceed typical gross capital formations), and
30. eligible for at least partial funding of green bonds.

Table 1. Error! Main Document Only.. **Sectoral mitigation-related investments suitable for green bond funding 2022 – 2030, EUR billion, Moldova**

	Lower bound	Upper bound
Residential buildings	0.3	0.6
Public buildings	0.04	0.1
Electricity sector	1	
Transport sector	0.2	0.5
Industry	0.5	1.1
Total	**2.0**	**3.2**

Source: Authors' own calculations.

As set out in Table 1.3, this kind of mitigation related investment that is directly relevant to potential funding in the debt capital markets sums up to EUR 2 – 3.2 billion until 2030. This is equivalent to 2 – 3.3% of GDP or 8 - 13% of gross capital formation on an annual basis. A significant share of GHG emission reduction can be achieved in the electricity and heat sector. Currently, only 18% of electricity production is generated domestically which originates mostly from natural gas-fired combined heat and power plants. Assuming the integration of 1 000 MW of wind and solar capacities by 2030, total investments of about EUR 1 billion are required. Emissions will decrease by approximately 1 Mt CO_{2eq}, which corresponds to 8% of current national GHG emissions. Investments of EUR 0.5 - 1.1 billion would be necessary to significantly reduce GHG emissions in Moldova's industry. In the building sector, annual thermal retrofitting of 0.8% of the residential and 1.5% of the public building stock would require EUR 0.3 - 0.7 billion cumulatively. This can save 0.5 - 0.9 TWh or 0.8 - 1.5% of national GHG emissions. Adding around EUR 0.2 - 0.5 billion of investment in the transport sector, public city transport and rail transport can significantly contribute to reducing GHG emissions.

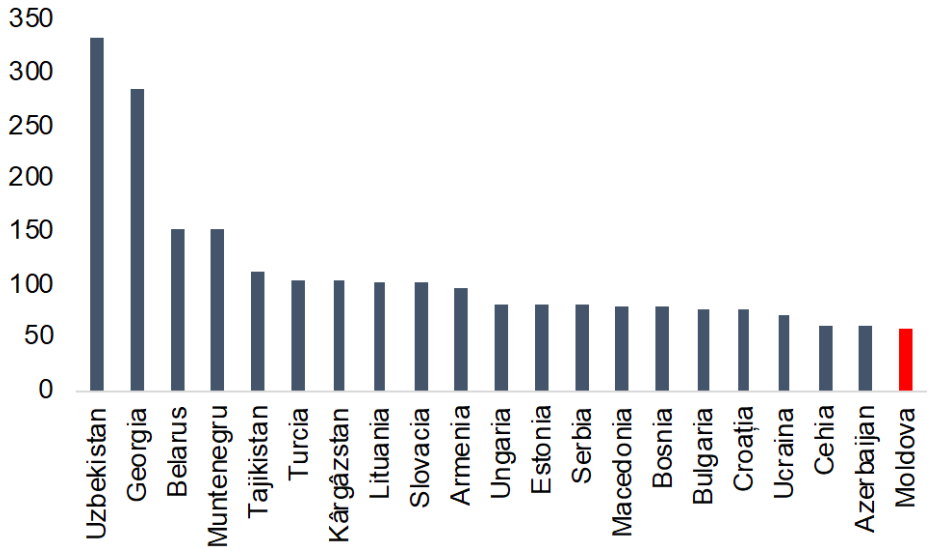
Capital market context

Local capital market in the domestic financial system

The financial system in Moldova is dominated by banks but they lack long-term resources to finance investment projects. The capital market is heavily underdeveloped. Currently, the types of instruments available in the capital market are very limited. The majority stakes in companies are usually held by a small number of shareholders. Therefore, the minority equity stakes in enterprises are not attractive to investors, which leads to a limited number of transactions due to the lack of offers of shares. Consequently, the non-existent trading on the regulated market of municipal or corporate bonds and the illiquidity of government bonds are preventing potential issuers to contemplate placing bonds to finance their long-term investments.

Total assets of the banking system stood at MDL 108.75 billion, or 52.7% of GDP in June 2021. At the same time, the excess liquidity in banks was 3.05% of GDP (MDL 6.3 billion) in the first quarter of 2021. These funds need to be sterilised by the central bank and underline that loan activity has been anaemic. Further evidence of the impediments in the credit market lies in the relatively low loan to deposit ratio of the banking system (Figure 1.2). This is due to the lack of alternative investments that could absorb liquidity, the high share of the informal economy in which enterprises lack valuable collateral, and an underlying reluctance of banks to take significant credit risks as government bonds offer attractive and safe returns. Therefore, it is unlikely that the banks will need bond funding as they are essentially financed through deposits only and some loans from the international institutions.

Figure 1. Error! Main Document Only.. **Loan to deposit ratios for May 2021 (%)**



Source: (Vicol, D.and Ghilețchi, S., 2021[13]).

The capitalisation of shares available for trading on the Moldovan Stock Exchange was only 1.16% of GDP (MDL 2.4 billion) in January 2021. The amount of total domestic debt was MDL 34.3 billion at the end of June 2021 (equivalent to 16.5% of GDP). However, government securities issued on the primary market were only MDL 19.6 billion (9.5% of GDP) while the rest of outstanding debt were largely non-traded government securities issued to capitalise the central bank following the 2014 banking fraud. The market for corporate bonds denominated in local currency is essentially non-existent. However, Trans-Oil, a

private large agricultural corporate, issued two Eurobonds, with the first and larger one, in April 2019, raising USD 300 million at a 12% coupon rate. Also, in April 2021, Trans-Oil issued a USD 400 million Eurobond at 8.45% buying back its previously issued bond.

Bond market infrastructure has been upgraded and a Bloomberg bond trading platform has been in place since late 2019. The monthly trading volume has been small, averaging only MDL 22 million while the number of transactions oscillating between 0 and 15. Turnover for the period January - October 2020 (calculated as the ratio of total volume of monthly transactions relative to the total volume of government securities) was only 1.4%. Therefore, the further development of the electronic bond trading platform could have a significant impact on the transparency of the price formation process as a valid reference for a more dynamic secondary market. In addition, the authorities in collaboration with the Central Securities Depository and the support of USAID Financial Sector Transparency Activity are planning to launch a government securities retail platform. The scope of the platform includes primarily the direct purchase of government securities by retail investors and the sale of government securities by retail investors to primary dealers, prior to maturity. Considering that the primary issuance process is controlled by a handful of banks, the retail platform should both increase the liquidity of government securities market and lower transaction costs.

The Government is issuing treasury notes of up to 12 months and bonds of up to 7 years, and these follow a predictable schedule. At the same time, both the National Bank of Moldova and the Ministry of Finance publish the issuances calendar and results. The auctions can be both competitive and non-competitive. Currently, there are 9 primary dealers for government bonds. The government securities issuances jumped in 2020, and the Ministry of Finance plans to sell 11.7% of GDP worth of government securities in 2021 increasing the amount of up to 13.3% by 2023. Also, the authorities are planning to reduce the share of treasury notes in the primary issuance from 88% in 2021 to 78% by 2023 focusing on the effort to lengthen the average maturity of government debt. At the same time, the Ministry of Finance has become more vocal about the need to extend the maturity of bonds (they recently issued a 7-year bond). It is therefore considering Eurobond issuance (included in the Medium-Term Debt Management Strategy (Government of Moldova, 2020[14]) and development of retail bonds.

Moldovan banks held 85.3% of government securities as of June 2021. Insurance companies are usually the other main group of investors. In the absence of private pension funds or other large institutional investors, banks are likely to remain the principal purchasers of government securities. The Law on Alternative Collective Investment Undertakings (Parliament of Moldova, 2020[15]) and the Law on Voluntary Pensions (Parliament of Moldova, 2020[16]) are crucial cornerstones for the development of institutional investors and bond markets. However, the small size of the economy is holding back the emergence of these type of funds.

The role of international investors in the local government securities is minimal and their ownership share was less than 0.05%. International clearance is a top priority for the Central Depository and could raise the participation by international investors in the local market. The Depository is analysing partnerships with both Euroclear and Clearstream, and it is planning to launch one partnership within two years. The lack of interest from foreign investors might delay its implementation. Finally, Moody's is the only credit rating agency covering Moldova, underlining the scarce investor interest. The 2021 rating is B3 stable and the strengthening of country's governance and institutional profile might lead to an upgrade.

Recently, two municipalities issued bonds which have also been admitted for secondary market transactions on the Stock Exchange. The Ministry of Finance approval of the issuance (keeping debt service below 30% of the municipality's income) and the government guarantee lowered the risk premium of municipal bonds and attracted significant interest. Chișinău municipality will seek to issue a MDL 65

million (EUR 3.2 million) 7-year municipal bond to fund the modernisation of electric trolley buses, which can be considered as green.

The capital market infrastructure and regulation

The framework for the government bond market is well developed. The Ministry of Finance plans the government security issuances according to the budget financing needs. It is also responsible for the liability management trying to find the proper equilibrium between short-term treasury notes and medium-term government bonds given market appetite.

The National Bank of Moldova (NBM), as a state agent, places government securities on the primary markets through tenders on behalf of the Ministry of Finance. The central bank (NBM) is also the main regulatory body for the government bond market, including the over-the-counter (OTC) market. The NBM has reinforced its governance since the banking fraud at the end of 2014. The central bank has absorbed the capacity-building and technical expertise offered by development partners. Given the state of operation of the government market it appears that the Ministry of Finance in tandem with the National Bank of Moldova would, in principle, have the capacity to manage a potential green bond issuance, and the associated disclosures.

The government bond trading infrastructure is relying on OTC markets, the 'E-bond' trading platform and the Central Depository. Investors can sell or buy government securities via their dealers who place, buy or sell orders on the platform. Subsequently, the dealers, once the price and volume are agreed, would send a message to the Central Depository for clearing procedures. Unfortunately, some dealers are still contacting other dealers via phone and place orders on E-bond platform after agreeing the terms, thereby circumventing the regulated market and its greater transparency. However, this can be explained by the limited number of actual transactions. The current infrastructure based on the central depository has the potential to become a bridge between investors on the local market and open the doors for foreign investors, if needed. The Moldovan Stock Exchange runs a multilateral trading facility (MTF) in addition to the regulated market. This is the trading venue where eventually corporate and municipal bonds will be traded. In 2021, the venue was used for trading MDL 708.9 million worth of medium-size companies' shares.

By contrast, the corporate bond market infrastructure needs capacity building. The National Commission for Financial Markets (NCFM) has been regulating non-banking financial markets including corporate and municipal bonds, equity, insurance and micro-lending markets. However, the central bank is expected to take over the responsibilities for insurance and micro-lending in 2023 given its greater institutional capacity. Therefore, the NCFM will eventually oversee only equity and corporate and municipal bond markets. The NCFM's expertise to maintain a well-functioning corporate or municipal bond cannot be assessed given the absence of these instruments on the markets. Unfortunately, the Commission has less financial and technical support than the central bank, and it is likely that a potential private sector green bond issue in the local market would require considerable capacity building within the NCFM as oversight body.

Otherwise, there are few barriers in the legislation that regulates government and corporate bonds. The prohibition on issuing corporate or municipal bonds in foreign currency is deterring the enthusiasm of potential issuers, given the still very high share of dollarisation in the financial system. Both corporates and local authorities can access loans in foreign currency from international financial institutions, but they cannot issue foreign-denominated bonds. These limitations are also unfavourable to foreign investors and the Moldovan diaspora who still do not trust the stability of the local currency in the absence of a liquid secondary market.

Going forward, the NCFM's development strategy (Parliament of Moldova, 2018[17]) envisages a number of measures to further develop the non-banking financial market:

31. reshaping the regulatory framework to harmonise it with the EU's *acquis communautaire* by transposing 11 EU directives and complementary implementing acts on authorisation and operation, governance, risk management, capital requirements
32. reconfiguring the capital market infrastructure by defragmenting the stock market (regulated market and multilateral trading system - MTF), redefining and diversifying market players according to EU standards
33. strengthening the capital market monitoring functions by revising reporting by capital market participants and initiating the real-time monitoring system of some market actors
34. managing a fund to compensate investors in financial instruments
35. elaboration and implementation of the principles of corporate governance among the capital market entities
36. advocacy of fiscal measures to redirect capital to long-term investments, especially corporate and municipal bonds
37. elaboration and implementation of the regulatory framework related to corporate bond issues by joint stock companies and limited liability companies, including their admission and circulation on the regulated market or within the MTF.

The Ministry of Finance also aims to develop the government securities market through the following measures:

38. extension of the maturity of government securities issued on the market and the gradual increase of the share of long-term bonds in circulation
39. continuation of the issuance of government bonds with a maturity of 2 years, with fixed and variable interest rate, 3 and 5 years, with a fixed interest rate, and 7 and 10 years, with a fixed interest, depending on market demand
40. continuation, in the medium term, of the reopening operations to consolidate and expand the yield curve
41. more active liability management of operations including buy back or switch operations
42. development of a retail government bond programme through an electronic platform
43. reform of the system of primary dealers to deal with anti-competitive practices.

At the same time, there is significant potential in integrating the financial market of Moldova with the Stock Exchange in Bucharest. The authorities are trying to sort out a number of technical aspects of such an integration, relating to contractual and commission issues, in particular. However, the National Commission for Financial Markets would need to adjust its regulation as at present Lei-denominated securities cannot be traded abroad.

The green finance framework

Given the unavailability of corporate bonds and Eurobonds coupled with the illiquidity in the secondary markets for government bonds there have been few incentives to develop a green finance framework dedicated to bonds. There is a long-term aspiration to become an EU member and the Moldova-EU Association Agreement (European Parliament, 2014[18]), targets the alignment with standards in the EU body of regulations and directives (the *acquis).*

There are only a few companies that have embedded environmental and social aspects in their operations. Environment, Social and Governance (ESG) standards are mainly transferred from foreign parent companies to their subsidiaries in Moldova. For example, Lafarge Moldova, which is part of the LafargeHolchim conglomerate, tries to follow group-wide ESG standards. Similarly, Victoriabank, owned by Romanian Banca Transilvania, is considering the group's commitment to responsible growth and applies some ESG criteria, but it is not a focus. Finally, Fitch's credit rating of Trans-Oil contains an ESG score for the company. However, the integration of ESG factors intro regulatory reporting is not at all common. Similarly, the authorities have not yet developed a local taxonomy which would designate sustainable activities, including in the use of potential green bond proceeds.

The government's *Low Emission Development Strategy until 2030* establishes the main coordination and implementation framework. The National Commission of Climate Change is the national coordinator of project elaboration. At the same time, the Ministry of Agriculture, Regional Development and Environment is responsible for the monitoring of programmes and projects implementation. Consequently, there is already a framework for coordination between the principal agencies in the government which could serve to put in place a green financing framework and identify potential green projects. These agencies could also design the necessary infrastructure to give access to the relevant independent verification of issuers, if needed.

Conclusions and recommendations

In its updated NDC, Moldova has set an ambitious target for a reduction of its GHG emissions by 70% below its 1990 level under the economy-wide unconditional target, and up to 88% under a conditional target. This is considerably more ambitious than the first NDC of 2016.

These plans give rise to significant financing needs. Moldova will need financial support worth USD 8.3 billion until 2030 to reach the above unconditional target and an additional USD 2.6 billion to meet the conditional target. According to the estimates presented earlier, a significant share of this projected investment volume is suitable for bond and other private debt finance. The government is planning to support the unconditional targets via setting efficient incentives, redirecting public investments to less emission-intensive activities and attracting financial support from development banks and the Green Climate Fund. That being said, Moldova has had a mixed record of absorbing external financing and there are increasing risks for missing the targets specified in the second NDC. The private sector involvement in the National Action Plan is tiny, and the authorities plan to attract financing for only three energy and one industrial projects.

The potential role of green bonds will be limited, also because the local capital market remains underdeveloped. The financial system is dominated by banks. There is no trading on the regulated market of municipal and corporate bonds and the market for government bonds is highly illiquid. This will discourage potential issuers to contemplate placing bonds to finance their long-term investments. Also, the authorities have not developed a green finance framework that could create the basis for potential green bonds. However, the National Commission of Climate Change and the Ministry of Agriculture, Regional Development and Environment are collaborating efficiently and could design the necessary infrastructure for green finance.

Several recommendations could lead to a more efficient bond market and eventually define a green financing environment:

44. creation of a second pillar (mandatory) system of individual pensions, which would be a significant supportive factor in the development of an institutional investor base

45. designing tax incentives for long-term investments, pillar 2 and 3 pension contributions and making tax treatment across financial instruments and banking deposits more uniform
46. raising the financial education of Chief Financial Officers which could redirect some of the banking excess liquidity towards green instruments
47. integration of the Moldova Stock Exchange with Bucharest Stock Exchange which could expand liquidity and trading and motivate more companies to launch Initial Public Offerings (IPOs) followed by corporate green bonds (two large Moldovan enterprises have already issued Eurobonds, and future issues could also be green)
48. preparing Moldova to launch a dual-tranche Eurobond EUR 500 million and MDL 1 billion Eurobonds under English law, which could also be a green bond
49. offering technical expertise to the local administrations and municipalities to issue green municipal bonds
50. adopting a taxonomy of sustainable activities, and guidelines for the ESG risk disclosure by banks.

References

Climate Watch (n.d.), *Historical Gas Emissions*, https://www.climatewatchdata.org/ghg-emissions?breakBy=regions&calculation=PER_CAPITA&end_year=2018&regions=ECA%2CEUU%2CAZE%2CBLR%2CGEO%2CHUN%2CKAZ%2CMDA%2CPOL%2CRUS%2CUKR%2CBGR&start_year=1990. Accessed 1 November 2021). [18]

European Parliament (2014), "Association Agreement between the European Union and the European Atomic Energy Com-munity and their Member States, of the One Part, and the Republic of Moldova, of the Other Part of 30 August 2014", *Official Journal of the European Union*, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22014A0830(01)&from=EN.

European Parliament and the Council (2009), "Directive 2009/33/EC of the European Parliament and the Council of 23 April 2009 on the Promotion of Clean and Energy-Efficient Road Transport Vehicles", *Official Journal of the European Union*, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0033&from=EN. [8]

European Parliament and the Council (1994), "European Parliament and Council Directive 94/63/EC of 20 December 1994 on the Control of Volatile Organic Compound (VOC) Emissions Resulting from the Storage of Petrol and its Distribution from Terminals to Service Stations", *Official Journal of the European Union*, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31994L0063&from=EN. [9]

EU 4Climate (2021), *NDC Preparation and Implementation in EaP countries - Comparative Analysis of the First and the Updated NDCs in Armenia, Azerbaijan, Belarus, Georgia,* Republic *of Moldova and Ukraine*, Technical Document, November 2021. EU4Climate. file:///S:/Data/Petkova/2021/Green%20bonds/EU4Climate-ND-%2520study_2021.pdf.. [19]

Ghilețchi, E. (2019), *Why Capital Market in Molodva does not Work?*, Expert-Grup.

Government of Moldova (2020), *Government Decision No. 56/2020 on Medium-term Debt Management Strategy (2020-2022)*, Ministry of Finance of the Republic of Moldova, Chisinau, https://mf.gov.md/sites/default/files/2020-2022%20Ro.pdf. [14]

Government of Moldova (2020), *Updated Nationally Determined Contribution of the Republic of Moldova*, Government of Republic of Moldova, Chisinau, https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Republic%20of%20Moldova%20First/MD_Updated_NDC_final_version_EN.pdf. [1]

Government of Moldova (2018), *Government Decision No. 1 083 of 8 November 2018 on the Draft Law to Approve the Nation-al Development Strategy "Moldova 2030"*, Government of Republic of Moldova, Chisinau, https://gov.md/sites/default/files/document/attachments/intr40_12_0.pdf. [4]

Government of Moldova (2016), *Government Decision No. 1 470 of 30 December 2016 on the Approval of the Low Emission Development Strategy of the Republic of Moldova by 2030 and the Action Plan for its Imple-mentation*, Government of Republic of Moldova, https://www.legis.md/cautare/getResults?doc_id=114408&lang=ro. [2]

Government of Moldova (2013), *Government Decision No. 102 of 5 February 2013 on the Energy Strategy of the Republic of Moldova until 2030*, Government of Republic of Moldova, http://lex.justice.md/viewdoc.php?action=view&view=doc&id=346670&lang=1. [3]

Lupușor, A. (2019), *Municipal Bonds – An Instrument to Develop Local Communities?*, Expert-Grup, https://www.expert-grup.org/en/biblioteca/item/2064-obligatiunile-municipale-instrument-de-dezvltare-a-comunitatilor-locale. [20]

Ministry of Environment of Moldova (2013), *National Waste Management Strategy of the Republic of Moldova (2013-2027)*, Ministry of Environment of Republic of Moldova, https://serviciilocale.md/public/files/deseuri/2013_01_24_NATIONAL_WASTE_MANAGEMENT_STRATEGY_2013-27_ENG.pdf. [12]

Parliament of Moldova (2020), *Law No. 198 of 20 November 2020 on Voluntary Pension Funds*, Parliament of the Republic of Moldova, Chisinau, https://www.legis.md/cautare/getResults?doc_id=124466&lang=ro. [16]

Parliament of Moldova (2020), *Law No. 2 of 6 February 2020 on Alternative Collective Investment Undertakings*, Parliament of the Republic of Moldova, Chisinau, https://www.legis.md/cautare/getResults?doc_id=120967&lang=ro. [15]

Parliament of Moldova (2018), *Law No. 129 of 13 July 2018 on the Approval of the Development Strategy of the Non-banking Financial Market for the Years 2018-2022 and of the Action Plan for its Implementation*, Parliament of the Republic of Moldova, Chisinau, https://www.legis.md/cautare/getResults?doc_id=105492&lang=ro. [17]

Parliament of Moldova (2018), *Law No. 139 of 19 July 2018 on Energy Efficiency*, Parliament of the Republic of Moldova, Chisinau, https://www.legis.md/cautare/getResults?doc_id=105498&lang=ro. [6]

Parliament of Moldova (2016), *Law No. 10 of 26 February 2016 on Promoting the Use of Energy from Renewable Resources*, Parliament of the Republic of Moldova, Chisinau, https://www.legis.md/cautare/getResults?doc_id=106068&lang=ro. [5]

Parliament of Moldova (2016), *Law No. 107 of 27 May 2018 on Electric Power (as Amended on 21 May 2020)*, Parliament of the Republic of Moldova, Chisinau, https://cis-legislation.com/document.fwx?rgn=87104. [7]

Parliament of Moldova (2014), *Law No. 128 of 11 July 2014 on Energy Efficiency of Buildings*, Parliament of the Republic of Moldova, Chisinau, https://cis-legislation.com/document.fwx?rgn=71248. [10]

Parliament of Moldova (2014), *Law No. 44 of 27 March 2014 on Labelling of Energy Impact Products*, Parliament of the Republic of Moldova, Chisinau, http://extwprlegs1.fao.org/docs/pdf/mol137961.pdf. [11]

Vicol, D.and Ghilețchi, S. (2021), *Liquidity Yes, Loans No. Do the Banks have too Much Cash?*, IPRE, http://ipre.md/2021/04/20/nota-analitica-nr-3-2021-lichiditate-da-creditare-ba-au-bancile-prea-multi-bani/. [13]

Country Assessment: Ukraine

Transition to a greener, low-carbon and resource-efficient model of economic development is an objective which Ukraine has translated into its national strategies and policies. The ambitious targets of reducing greenhouse gas (GHG) emissions to 35% of the 1990 level by 2030 and to get to net-zero emissions by 2060 require active promotion of investment in the reduction of emissions, primarily through carbon pricing, large-scale modernisation of the energy sector and implementation of other measures, calling for an unprecedented mobilisation of both public and private resources. Ukraine, as many other EaP countries, faces significant challenges in financing the transition to a low-carbon future. Its financial sector remains bank-dominated, which leads to high cost of funds for investors in GHG reduction. After a period of rapid development between 2004 and 2008 the local capital market shrank and the capitalisation and liquidity of Ukrainian bonds issued by non-state entities remains low. Government bonds are currently dominating the local bond market with over 95% of all transactions, one of the reasons being virtually non-existent repo market in Ukraine. Consequently, common features of a bond such as a cash management tool have not been fully used. As the long-awaited pension reform is still not implemented, local institutional investors have not yet emerged. The first green bond from the EaP region issued internationally originated in Ukraine in 2019.

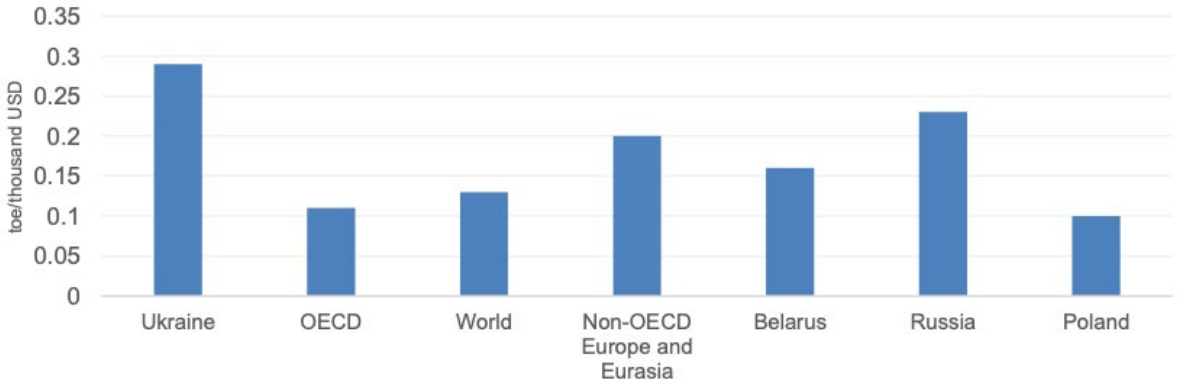
The Government of Ukraine has recently announced ambitious plans to foster development of the local capital markets. However, some important difficulties are to be overcome, mostly related to unstable political environment and unpredictable economic developments, in order to ensure that local capital markets can develop and mature. Ukraine recognises the importance of following the trend of greening debt capital markets worldwide and has already started to develop a legislative framework for green bonds.

Green bond opportunities: issuers and projects

The challenge of energy transition in Ukraine

Energy sector reform remains a key priority in promoting Ukraine's sustainable development. For many years the industry has lacked transparent, competitive and clear market rules, and suffered from monopolies and over-regulation. The system of cross-subsidies and budgetary appropriations inhibited the rise in retail energy prices, caused huge expenditure of state funding and created unequal conditions for market participants. The Government of Ukraine has already made significant efforts aiming to harmonise the energy sector with the European Union (EU) norms and standards, liberalise and form integrated natural gas and electric power markets with a transparent and competitive pricing and adequate consumer protection systems. However, further progress is constrained by the lack of sufficient investment to finance modernisation and introduction of new technologies at fuel and energy facilities. Ukraine remains one of the least energy efficient countries compared the members of the International Energy Agency (IEA). Despite increasing energy efficiency in recent years, Ukraine continues to consume nearly three times the OECD average per unit of GDP (see Figure 1).

Figure Error! Main Document Only.. **Energy intensity of GDP, 2010-18**



Source: (IEA, n.d.[1]).

High level of subsidies to fossil-fuel production and consumption continue to distort costs and prices in the energy sector. Ukraine has put in place the largest number of support measures among the Eastern Partnership (EaP) countries and the size of fossil-fuel subsidies (USD 2.2 bn in 2019) is also the largest among the EaP countries, including as a share of GDP (2.3%) (OECD, 2021[2]). While the cumulative value of subsidies surpassed USD 5 billion in 2012 it had declined by more than 50% by 2019. However, the size of subsidy remains significant which suggests that Ukraine still has a long way to go in its energy sector reforms. Energy sector and Industrial Processes and Product Use (IPPU) are therefore the most important sources of carbon emissions in Ukraine.

Substantial investment is needed to drastically improve energy efficiency. The International Finance Corporation (IFC) in 2016 estimated investment needs in energy-efficiency improvements and other green projects at USD 73 bn in the period to 2035 (IFC, 2016[3]). Ukraine's new draft National Energy Efficiency Action Plan estimates investment needs at USD 55 bn until that year. Given the distribution of investment needs across public and private sectors and key actors in the economy, a significant part of this amount could in principle be financed through private sources, by banks or in capital markets.

Ukraine's second NDC

Ukraine's Nationally Determined Contribution (NDC) (EBRD, n.d.[4]) defines the government's expectations of aggregate investment needs over the course of the transition. On 30 July 2021, the Cabinet of Ministers of Ukraine approved an ambitious second version of this document. It contains a commitment that greenhouse gas (GHG) emissions are not to exceed 35% of 1990 emissions by 2030. This reduction by 65% relative to 1990 levels is considerably more ambitious than the previous target of 40%.

According to this document, a reduction of GHG emissions over the next ten years will be achieved through a number of complex solutions, including:

- modernising and upgrading of energy infrastructure and industrial enterprises
- developing renewable-energy sources, increasing the share of renewable energy in total energy consumption
- introducing energy-efficiency measures in more sectors of the economy
- promoting thermal modernisation of buildings
- ramping up organic agriculture and resource efficient agricultural practices

- promoting the use of electric vehicles and upgrading transport fleets
- introducing more efficient waste management
- accelerating reforestation schemes and reforming forest management.

The total associated investment costs are estimated at EUR 102 bn by 2030. This corresponds to an average annual investment of around EUR 12.5 bn until 2030 or approximately 8% of GDP. A substantial share of this investment volume would, however, also be required to implement existing climate-related legislation and legislation expected to be adopted soon (according to the reference scenario in the second NDC[3]) and the additional investment needed for meeting these additional cost is estimated at around EUR 32.5 bn. A significant share of the latter is clearly mitigation related (e.g., renewables and energy-efficiency measures) and might hence be eligible for green financial instruments. Ukraine's second NDC details a number of targets in the key sectors as set out in Box 1.

Box Error! Main Document Only.. Industry and sector-specific objectives and targets set out in Ukraine's second NDC

1. **Energy Sector**
   - By 2030, power consumption in Ukraine is projected to grow by 30% over the next decade, exceeding 150 TWh
   - Power production should be increased to 190 TWh (including transportation losses and actual power consumption in the energy sector)
   - By 2030, emissions caused by energy and heat production sectors should not exceed 25% of the 1990 level
   - By 2030, the required investment amount is estimated at the level of EUR 26 bn, most of which (EUR 20 bn) will be needed for new generation capacity
   - In 2030, the structure of power production will be dominated by nuclear energy (90 TWh), renewable energy sources (including large hydropower plants) will provide about 60 TWh, existing coal-fired power plants 25 TWh, the remainder will be provided by existing and new gas generation and production for self-consumption of industry
   - Investments in the period from 2021 to 2030 should be directed to the construction of 15 GW of new wind, solar and bioenergy facilities, as well as to increase energy generation from biomass by boilers and thermal power plants
   - The share of renewable energy sources (RES) in total production should be about 30% (as compared to 12.4% in 2020), combined with existing nuclear generation. Almost 80% of power production in 2030 should be carbon-free
2. **Heating Sector**
   - By 2030, the share of renewable energy sources that enable heaters should increase from 14% today to about 18% in 2030 with increase in heat produced from biomass and biogas by 30% (up to 6 TWh in 2030)
3. **Housing and utilities sector**
   - Energy-efficiency interventions to residential buildings should proceed at the level of addressing 1.3% of the total volume of buildings in Ukraine annually, from today until 2030
   - Construction of new buildings with close to zero energy consumption
   - Replacement of low-efficiency boilers with high-efficient ones

- Introduction of a large-scale construction of new buildings with close to zero energy consumption
- Reducing the share of individual heat supply
- Increase of the share of district heating, especially of biomass

4. **Transport sector**
   - By 2030, the share of electric vehicles should increase to reach about 15% of newly registered cars
   - By 2030, battery-powered electric vehicles share will increase up to 3% of all passenger vehicles
   - Development of low-carbon public transport, rail and water transport should be a priority.
5. **Agricultural sector**

In Ukraine, the contribution of the agricultural sector to GHG emissions is less significant than the world average, where this sector ranks third in the world in terms of GHG emissions after the metallurgical industry and the energy sector. The main objectives of the agricultural sector in Ukraine are:

- transition to better fertilizers
- increase of the share of organic land up to 3% by 2030
- increase of use of biogas
- increase of territories of forest areas by 1 million hectares by 2030.

6. **Industry**
   - reduction of carbon consumption and energy consumption per unit
   - modernisation of industrial enterprises in accordance with the best available technologies (BAT)

Expected investment needs to meet the 2nd NDC

As mentioned above, the Ukrainian government estimates that investments in corresponding sectors will increase from about EUR 70 bn in the reference scenario to about EUR 102 bn. This increase by about EUR 33 bn stems from increasing investments in the electricity and heat supply and the industrial sector.

The main share of overall investment equal to EUR 37 bn will be directed to the industrial sector. The main source of financing will be private investment by companies funded by debt. During the last five years industrial companies (except for the mining and energy sectors) have been investing on average EUR 2.5 bn annually in capital expenditures.

The second largest investment of EUR 26 bn will be required in the energy sector, including EUR 20 bn for the construction of 15 GW of renewable energy (solar, wind and bioenergy) generation facilities. Average annual investment in the sector during 2010-18 was EUR 1.4 bn, so investment volumes will have to double in the period leading up to 2030. Private capital investment supported by borrowings should play a major role. The government may support private investment by implementing the scheme of auction based fixed feed-in tariff[3] for the long-term purchase of power. An additional EUR 8 bn is planned to be invested into energy transmission systems which are to be financed through a combination of transmission tariff increases and government backed borrowing.

EUR 16 bn will be required in the sector of residential and public buildings, including EUR 13 bn for thermal modernisation of buildings and EUR 3 bn for replacement of inefficient boilers. It is expected that a major part of the investment will be done by households with support of dedicated grant programmes, e.g. offered by the State Energy Efficiency Fund for multi-family residential buildings. However, so far, the State Energy

Efficiency Fund financed jointly by the state and international donors (European Union and Germany) secured only around EUR 175 mn of grant funding which would enable investment of around EUR 350 mn (with a 50% grant component). Another state supported grant programme for the residential sector "Warm loans" launched at the end of 2014 have enabled projects for the total amount of EUR 300 mn with EUR 100 mn of state funded grants provided to households. These amounts clearly fall well short of the investments needed.

EUR 2.3 bn will be required in the agricultural sector to be partly financed by government support programmes and own capital investments of agricultural companies. An additional EUR 3 bn will be needed for the sector of land use, land-use change and forestry.

Investment of EUR 2.8 bn is expected to be directed to the transport sector as government spending in the form of subsidies or tax reliefs. Additional EUR 2 bn will be invested in the waste sector with the government playing a role in the regulation of tariffs.

Sectoral mitigation related investments that might be eligible for green financial instruments

The NDC specifies *total* investments in the corresponding sectors but does not distinguish investments that are eligible for green financial instruments (such as RES investments) and other investments that most likely will not be eligible (e.g., replacement investments in industry). We, therefore, provide a bottom-up calculation of the sectoral mitigation-related investments that might be eligible for green financial instruments (see Table 1 below, and the methodology as explained in Annex A). These sum up to between EUR 27 bn and 40 bn.

Table 1. Sectoral mitigation-related investments suitable for green financial instruments, 2022 – 2030, in EUR bn

Sector	Lower bound	Upper bound
Residential buildings	3.6	6.4
Public buildings	2.0	3.7
Electricity sector	16.5	
Transport sector	2.1	6.1
Industry	3.2	6.9
Total mitigation-related investments	**27.4**	**39.6**

Source: Authors' calculation.

Most of the investment (from 42% to 60% from the overall investment) will be needed in the electricity sector, followed by buildings (residential and public), industry and transport sector.

Sources of financing

According to 2020 official statistics (State Statistical Service of Ukraine, n.d.[5]), 9% of capital investments in Ukraine were funded by the state budget, 10% from local (public) budgets, 67% were private investments of enterprises and organisations while 7% were financed through bank loans.

In the future, it is likely that private investment (including from retained profits) will be the key source of funding for the investment required by the second NDC, as budget resources and overall inefficiency of the public sector will remain constrained. However, given the decentralisation reform implemented in

Ukraine in the recent years, it is likely that local governments (which have obtained a higher degree of independence in investment decisions allowing to draw on additional sources of funding for their local budgets) will increase their share in financing in capital investments in Ukraine.

It is likely that a significant part of investments could be derived from debt finance, which could potentially include bond funding in local and foreign debt markets, once such markets are a viable alternative.

Capital market context: facilitating green bond issuance?

In order to utilise this potential, expanded bond issuance will have to be supported by a favourable investment environment suitable for enabling projects that are of sufficient size, quality and transparency. Carbon pricing, mostly through taxation of GHG emissions and an emissions trading scheme (ETS), could set important incentives. As yet, such instruments are not used in Ukraine, or do not significantly alter incentives (the tax on GHG emissions in Ukraine was recently raised to EUR 1 per tonne of CO_2 while in the EU emissions trading scheme this price stood at EUR 63.70 in late 2021). Establishing a proper framework for issuance of green bonds (taxonomy of green projects, reporting requirements and standards, creation of infrastructure allowing for monitoring, verification and technical audit of green projects) is also essential for tapping international investors.

Local capital market developments

The capitalisation and liquidity of Ukrainian bonds and equities issued by non-state entities remains low, also by regional standards. Government bonds are currently dominating the local bond market with over 95% of all transactions on the organised stock market being performed with government securities. Volumes of trading in securities in the capital market of Ukraine, apart from trading in government bonds, are negligibly small (see Table 2).

Table 2. Key indicators of the stock market in Ukraine, 2020

Indicator	EUR bn	% of GDP
Volume of trading in stocks	1.2	0.9%
Volume of trading in bonds, including	27.9	20.5%
Government bonds	*26.8*	*19.7%*
Corporate bonds	*1.1*	*0.8%*

Source: Authors' calculation based on (National Securities and Stock Market Commission, 2021[6]).

Municipal bonds issuance is on the rise but still limited to just a few issuers. Given the scarce local investor base and absence of large institutional investors, currently there is limited appetite for bonds in the local market. However, most of the interviewed market participants expect the local bond market to grow in the coming years with some of the perspective issuers having a good potential to offer projects suitable for green financing. Potential issuers of green bonds could be in the public sector or among financial institutions which have aligned their activities with international trends. For instance, the state-owned Ukrgasbank has proclaimed itself as green bank and may be interested to issue green bonds in the future to finance or refinance its portfolio of green investments.

Fewer than ten Ukrainian companies have been able in the last few years to access the international bond markets by issuing Eurobonds. Such companies include large private companies like Metinvest Holding, MHP Group, Kernel Group, DTEK. The state-owned companies Ukrainian Railways and Ukravtodor (road

maintenance agency) issued Eurobonds in 2021. Some other state-owned companies, such as Naftogaz (oil and gas) and Ukrposhta (national postal service company) as well as some state-owned banks (Ukrgasbank, Ukreximbank) are currently also considering new Eurobond issues. Some of these companies have suitable green projects and may issue green bonds internationally in the future.

Notably, DTEK Renewables (a company with the DTEK Holding group) issued the first Ukrainian green bond in 2019 to fund renewable energy projects, though for the time being it is not planning similar issuances. In November 2021, the National Power Company Ukrenergo made its debut issue of five-year green and sustainability-linked Eurobonds worth USD 825 million mainly with the purpose to repay outstanding debts to renewable energy producers.

Private sector interest is now diverging between equity and bond markets. In 2020, there were 71 issues of shares for the amount of UAH 33.0 bn (EUR 0.98 bn) and 96 issues of corporate bonds for the amount of UAH 33.0 bn (EUR 0.98 bn). Compared to 2019, the volume of issued shares decreased by 52% while the volume of issued bonds has increased 3 times.

Two main factors explain the contraction in Ukraine's equity market, which has shrunk from 28.6% of GDP in 2010 to 3.4% of GDP in 2018. First, many joint stock companies used the possibility of squeezing out minority shareholders under the 2017 Law on Joint Stock Companies. This led to a sharp decrease in publicly traded companies – e.g. the number of securities in the stock index at the Ukrainian Exchange (one of the local stock exchanges) fell to 6 from 15, with none of these 6 stocks being traded on a daily basis due to very low liquidity in the market. Second, a consolidation took place in the financial sector where equity issuance had been used to meet regulatory capital requirements.

Government and municipal bond market

The government and municipal bond market, by contrast, has been highly dynamic. Government bonds are currently the core of the local bond market in Ukraine. Up to 98% of all transactions on the organised stock market are performed with government securities. Over the past year, the monthly volume of organised trading in securities ranged from UAH 17.2 bn (EUR 0.5 bn) to UAH 42.7 bn (EUR 1.3 bn).

A key factor in this growth has been the presence of foreign investors since settlement of accounts held at the Central Depositary operated by the National Bank of Ukraine (NBU) became possible in 2019 via a link established with Clearstream. The occasional appreciation of the hryvnia has played a role in fuelling investor interest. This is not withstanding the still sub-investment grade sovereign credit rating of the country.[3] Also, investors in government bonds are exempted from the tax on interest payments which is not the case for private bond issuance.

Municipal bond capitalisation stood at UAH 3.9 bn (EUR 116 mn) in 2020, 5 times higher than in 2019. While this increase has been remarkable, only a limited number of cities (mainly, Kyiv, Kharkiv and Lviv which have a long-standing credit history of issuing bonds) are active in this market. With one exception there was no issuance of municipal bonds between 2013 to 2017 as municipalities preferred to finance their budget deficits with bank loans. However, the recently implemented decentralisation of fiscal responsibilities has raised interest among municipalities in attracting external financing for project implementation.

Private sector bond issuance

As mentioned above, Ukraine's private bond market has shown significant growth in 2020. Yet, it should be kept in mind that the majority of bonds issued in the corporate sector have been used for intra group funding or tax optimisation purposes and not for new investments. Investor demand for corporate bonds in Ukraine has been constrained by the high level of defaults of bond issuers recorded in the aftermath of

the financial crisis of 2008-09. The local credit rating agency "Credit-Rating Ltd." recorded 136 defaults on 876 rated issues of bonds between 2007 and 2011 with the number of defaults peaking in 2009 (Credit-Rating Ltd, n.d[4]). An ineffective judiciary complicates the protection of investor rights and the recovery of claims. The Verkhovna Rada (the Parliament of Ukraine) and the National Securities and Stock Market Commission (NSSMC) have introduced a number of changes to the primary and secondary legislation related to bond issuance, mainly related to situations following an issuer's default. In particular, the mechanism of meetings of bondholders was introduced with bondholders involved in any management decisions related to disposal of the issuer's assets. Yet investor confidence has still not fully recovered.

Only a limited number of leading large corporations (mainly state-owned or nation-wide private companies) that demonstrate reliable corporate governance, transparent financial reporting and absence of defaults, can issue bonds on the local and international capital markets. Some issuers which correspond to this profile are now starting to enter the local market.

The share of bonds issued by banks in the total amount of registered issues is below 1%. Only five banks currently have bonds outstanding (in the amount of EUR15.3 mln equivalent). This is due to the high level of liquidity in the local banking system with most banks not in need of additional funding.

Barriers to bond market development

A number of factors constrain the development of the corporate bond market in Ukraine:

- a history of macroeconomic instability and defaults and high level of dollarisation of the economy, which discouraged local currency (UAH) issuance
- the uneven approach to taxation of operations, as income from government bonds is exempted from taxation, whereas income from corporate bonds is taxed at the personal income tax (18%+1.5%), further discouraging the use of the local bond market by private issuers
- regulatory restrictions on the ratio of the bond issuance to the authorised capital of the issuer (25% of the authorised capital)
- the high yield on risk-free government bonds, with the liquidity situation on the local money market aggravated by unsupportive treasury management
- access of foreign investors to the local corporate bond market is impeded by a lack of clearing and settlement procedures, and other requirements, in contrast to the more straightforward procedures in the government bond market
- a requirement of the Law of Ukraine on Capital Markets and Organised Commodity Markets (in paragraph 4 of Article 19) that international financial institutions set the nominal value of bonds issued in Ukraine in domestic currency only. It does not take into account that the institutions' income is usually generated in foreign currency, that investment will be made in facilities in Ukraine, that financing will be converted to hryvnias, and that the institutions could face high foreign exchange risk and that hedging could prevent the implementation of green projects
- lack of institutional investors: a pension reform has not been implemented and private pension funds have not yet emerged. Insurance business is underdeveloped and insurance companies have limited capacity to invest in securities. This creates further uncertainty of the success of any primary issuance
- credit and borrowing markets are bank-dominated, as other non-bank participants have not entered these markets given the restrictions in the repo market.

As in many emerging markets, illiquidity reinforces market underdevelopment. As investors demand a premium for bonds which are only thinly traded few issuers see a benefit in bond funding. Liquidity in bond markets is typically associated with stability of demand. Yet, there is almost no secondary market for

corporate bonds currently (most issues are purchased by arrangers/underwriters and held to maturity). Some barriers for development of the local bond market lie beyond the capital market. Ongoing governance problems and uncertainty over the path of key economic reforms, poor investment climate making companies reluctant to expand businesses due to high level of risks and inefficient judiciary system remain fundamental problems for the development of the capital market in Ukraine.

The capital market policy framework and regulation

The infrastructure of the Ukrainian capital market is reasonably well developed. Table 2 shows that in all parts of the capital market ecosystem there is a sufficient number of market participants.

Table 2. Key participants in the Ukrainian capital market

Type of intermediary	Description
International rating agencies	**Standard and Poor's** **Moody's Investors Service** **Fitch Ratings** The above rating agencies are recognised by the NBU. They assign credit ratings to large cities and their bonds using both Ukrainian national and international rating scales. The above rating agencies do not have registered offices in Ukraine.
Domestic rating agencies	**Credit-Rating Ltd** **IBI – Rating Ltd.** **Expert Rating Ltd.** **Standart-Rating Ltd.** **Rurik Ltd.** The above rating agencies are recognised by the NSSMC of Ukraine. They assign credit ratings to all types of issuers (financial institutions, corporates and municipalities) and their bond issues using national rating scales.
Stock exchanges	**Perspectiva** **PFTS** **Ukrainian Exchange** **Ukrainian Interbank Currency Exchange** In 2019 up to 99% of all transactions with securities were performed at stock exchanges Perspectiva and PFTS.
Brokers	204 intermediaries are included in the register, including 56 banks.
Depository institutions	175 intermediaries are included in the register, including 48 banks.

Source: Authors' compilation.

There are three principal regulatory authorities in Ukraine's capital market:

- The National Securities and Stock Markets Commission (NSSMC) is the principal regulator of the capital market, conducting regulatory and supervisory functions, tasked with ensuring proper and efficient functioning of the securities market, including by protecting the rights of investors.
- The National Bank of Ukraine (NBU) is the regulator of the banking sector as well as the sector of non-bank financial institutions (NBU took over supervision of this sector in 2020), tasked with ensuring price and financial stability, with the goal of contributing to Ukraine's sustainable economic development. NBU has regulatory powers allowing it to issue legislation related to the banking system and financial market without obligatory inter-ministerial conciliation procedure.

- The Ministry of Finance which, in the field of capital market, manages public debt and state-guaranteed debt, also acting as an issuer of government bonds of Ukraine.

The NBU and the NSSMC have developed and approved the Strategy for the Development of the Financial Sector of Ukraine until 2025 (Ministry of Finance et al., 2021[5]). The Strategy contains 5 strategic areas:

- financial stability
- microeconomic development
- financial inclusion
- development of financial markets, and
- innovative development.

Each strategic area contains strategic objectives and the indicators of their implementation. In particular, the Strategy 2025 provides the following actions for the capital markets development:

- development of financial instruments that support securitisations
- ensuring the implementation of the stock market state regulation in accordance with the international standards, in particular:
  - ► the requirements of the European acts which aim to strengthen investor protection and improve the functioning of financial markets making them more efficient, resilient and transparent, such as the Second Markets in Financial Instruments Directive – MiFID II (OJ of the EU, 2014[9]), MiFI Regulation, European Market Infrastructure Regulation (OJ of the EU, 2012[10]), (OJ of the EU, 1998[11]), Settlement Finality Directive, and the Financial Collateral Directive (OJ of the EU, 2002[12]).
  - ► the standards of the International Organization of Securities Commissions (IOSCO), which represent best practice
  - ► increase of the institutional and financial independence of the Ukrainian stock market regulator
- reforming the infrastructure of capital markets, in particular:
  - ► modernisation, consolidation and development of exchange, settlement and clearing infrastructure of organised commodity markets and capital markets
  - ► improvement of the institute of financial sector intermediaries and rating agencies in accordance with European requirements such as EU Regulation No. 462/2013 on credi rating agencies (OJ of the EU, 2013[13])and Directive 2013/14/EU (OJ of the EU, 2013[14]).
- improving corporate governance.

Since July 2021 significant changes have been enacted in the main legislative act governing the market of securities in Ukraine – the Law “On Securities and Stock Market”. In particular, new requirements have been introduced for agreements concluded with respect to professional activities in the stock market: brokerage, dealership, underwriting, securities management. The changes also included introduction of green bonds as a new class of bonds in Ukraine (reviewed in the next section).

The green finance framework

Despite the still limited market activity a policy framework for green finance has been gradually taking shape.

The regulatory framework for green bonds

As of July 2021, green bonds are recognised as a specific class of debt instruments in accordance with Article 18 of the Law of Ukraine "On Capital Markets and Organised Commodity Markets" (President of Ukraine, 2020[6]) (see the relevant Article in Annex B). The Article gives a broad definition of eligible green projects, ensures targeted allocation of revenues from green bonds, establishes additional requirements related to disclosure of information (both pre-issuance and post-issuance on annual basis).

As prescribed in the Law, a procedure for selection and support of green projects financed from the state and local budgets has to be approved by an Order of the Cabinet of Ministers of Ukraine. The text of the Order is currently being drafted by the Ministry of Environmental Protection and Natural Resources of Ukraine. The procedure will also include a taxonomy for green projects and technical criteria for the selection of projects. The procedure shall foresee use of external reviewers (both pre-issuance and post-issuance) for green bonds issues. However, this framework will only be applicable to green projects financed from the state and local budgets (i.e. for the issuance of green bonds by the State or its bodies and municipalities).

It is expected that by the end of 2021, the NSSMC will prepare and approve by its decisions additional requirements to the issuers of green bonds related to the transparent use of proceeds and impact monitoring in line with the above mentioned Article 18 of the Capital Markets Law. In addition, the NSSMC has recently adopted non-binding recommendations for issuance of green bonds (National Securities and Stock Market Commission, 2021[16]) prepared with technical assistance from the International Finance Corporation. The document addresses the key features of green bonds to be issued in Ukraine: compliance of the financed project with an internationally recognised taxonomy; targeted use of proceeds; the issuer's reporting on the impact of the project on the environment; use of an external reviewer of green bonds; availability of the issuer's own policy regarding issuance of green bonds.

Currently, there are no standards or requirements related to the issuance of green bonds established by stock exchanges (in Ukraine there are four stock exchanges, though two – Perspectiva and PFTS – account for nearly the entirety of the local capital market).

Ukraine does not have a sizable asset management sector. Standards applied in the local asset management industry do not include the recognition of climate risks in asset management, and the disclosure of climate impact to end-investors.

The private sector 'ecosystem' consisting of supporting service providers for independent review, verification, certification or rating of green bonds (Second Party Opinions) has not yet been established in Ukraine.

The wider enabling environment for green bonds is also constraining. No preferential tax treatment (e.g. tax relief or abolition of the state duty for the issuance of bonds) and no subsidies for covering additional costs related to green bonds (e.g. verification costs) are currently available in Ukraine. In late 2021, the Ministry of Finance of Ukraine was considering a draft regulation on the development of the green bond market. An action plan may include preferential tax treatment for green bonds as well as preferential capital requirements for banking operations with green bonds.

The broader framework for green finance

The National Bank of Ukraine (NBU) is also taking steps toward developing a green finance framework in Ukraine. In 2020, the NBU became a member of the Sustainable Banking Network (SBN) – a voluntary community of financial sector regulatory agencies and banking associations from emerging markets coordinated by the IFC. The membership commits members to improving Environment, Social and

Governance (ESG) risk management and assisting the increase in capital flows to activities with positive climate impact. In January 2021, NBU also joined the central banking Network for Greening the Financial System (NGFS). The NGFS seeks to develop recommendations on the role that central banks may play in recognising financial sector climate risks, and mobilising finance for climate change mitigation.

Recently, NBU adopted an internal roadmap document for the development of the banking sector over the next three years which could support the greening of Ukraine's bond market and included the following pillars related to sustainable finance:

- Development of a policy for sustainable financing
- Development of guidance on standards for sustainable financing
- Development of ESG disclosure documents (applicable to green loans).

The State Agency of Energy Efficiency and Savings (SAEE) has also advocated supportive regulation and considers the following steps would develop the support green bonds issuance:

- Development of secondary legislation for green bonds issuance
- Creation of a platform to assist project preparation by municipalities and provision of external review services
- Introduction of legislative incentives for issuance of green bonds.

Transparency and disclosure rules

Under Ukrainian law currently there is no legal obligation for local companies to disclose information on environmental and social impact of their operations or to make commitments on specific key performance indicators (KPIs) linked to their operations. Only few Ukrainian companies have started to publish such information. Green bonds would depend on such transparency in corporate accounts.

In March 2020, the Code of Corporate Governance and its key requirements and recommendations was approved (NSSMC, 2020[7]), (TCFD, n.d.[8]). The Code was developed in cooperation with Ukrainian and international experts and applies best practice and developments in corporate governance. It complies with the OECD Corporate Governance Guidelines, current Ukrainian legislation and generally accepted standards of ethical conduct.

Ukrainian companies willing to demonstrate a high level of corporate governance are invited to follow recommendations, specified in the Code of Corporate Governance. This Code encourages joint stock companies to share environmental and social reporting to ensure adherence to sustainable development goals. Widespread implementation of best corporate governance practices may be supported by future legislative requirements that impose representations and disclosures by financial markets in case of issuance of green bonds.

In January 2021, the Ministry of Finance of Ukraine approved the Code of Corporate Governance of the state-owned National Power Company "Ukrenergo" (Ministry of Finance of Ukraine, 2021[19]), which became the first example of the implementation of such best practices in Ukraine.

Green bonds would require comprehensive reporting and a definition of sustainable activities. Ukrainian legislation covers ESG reporting only partially. For example, it provides for certain procedures to ensure companies' environmental compliance.

- First, Ukrainian companies apply to the competent authority with the reports related to assessment of potential environmental impact of certain planned activities (1) prior to their performance, (2) in case of substantial changes related to them and (3) as a part of post-project monitoring. Competent

authority, after public hearings with local publicity, assesses the impact and allows performance of certain activity or prohibits it.

- Second, Ukrainian companies also apply to the competent authority for adoption/amendment of zoning documentation at the local level and the strategic environmental assessment with the engagement of domestic stakeholders.
- Third, the newly adopted Ukrainian legislation on monitoring, reporting and verification of GHG emissions also envisages disclosure of certain information related to GHG emissions.

External auditing of ESG by independent third parties is not common in Ukraine. The standards from the Task Force on Climate-Related Financial Disclosures (TCFD, n.d.[8]), which sets a high bar for the disclosure of risk are not a part of the current Ukrainian legislation.

Green Bonds in Ukraine

In 2019, DTEK Renewables, the largest renewable energy producer in Ukraine, became the first Ukrainian company to issue a green bond in a foreign jurisdiction. This demonstrated the capacity of Ukrainian issuers to comply with international standards in documenting the use of proceeds and account for their allocation. The bond of EUR 325 million at maturity of 5 years and a coupon rate of 8.50% was issued on the Irish Stock Exchange and highly oversubscribed by investors mainly from the United Kingdom, Switzerland and the European Union. By type, fund managers took the bulk of the allocations (92%), with the remaining 8% going to banks. This built on the company's earlier bonds issued in European markets.[3] Proceeds from the bond were fully allocated to renewable energy projects in wind and solar power generation (EUR 205 mln allocated in 2019 and EUR 120 mln in 2021).

The bond issue was assessed in a second party opinion of Sustainalytics as credible and impactful and aligned with the four core criteria of the Green Bond Principles, relating to the use of proceeds, project evaluation, management of proceeds and reporting (Sustainalytics, 2019[9]) (A first annual impact report was issued in 2020).

For the time being, DTEK Renewables is not considering issuing further green bonds as the fixed feed-in tariff for renewable power is no longer considered secure (due to indebtedness of the government to the renewable energy producers in Ukraine and a retroactive reduction in that tariff). This uncertainty in the investment and tariff regime for renewables has also resulted in a halt in trading of the DTEK green bond in the secondary market. Any further issuance of green bonds in this sector is very unlikely until government support schemes become trustworthy again and cash flows of renewable energy producers become stable and predictable.

This bond issue also underlined that investors are not prepared to bear construction and completion risks. This green bond for renewables generation facilities could only be issued after the commissioning of the assets. Bridge financing was required (covering all construction costs) before the project could be refinanced with bonds.

On 2 November 2021 (Interfax, 2021[21]) (Interfax-Ukraine) reported that Ukrenergo has raised USD 825 mln with the placement of 5-year "green" Eurobonds at 6.875%. Ukrenergo operates main and interstate power lines, as well as centralised scheduling of the country's integrated power system.

The final demand for the company's Eurobonds was about USD 2.1 billion. The placement was organised by BNP Paribas, Deutsche Bank, Goldman Sachs and Ukreximbank. The placement was supported by the Cabinet of Ministers which provided Ukrenergo with state guarantees of up to 22.8 billion hryvnias (USD 865 mln) for the issuance of Eurobonds to repay debts for electricity produced from renewable energy sources (RES). The Ministry of Energy of Ukraine together with Ukrenergo and SE "Guaranteed Buyer" ("GarPok", one of the participants in the wholesale electricity market) must ensure the direction of

borrowed funds to repay debts arising from contracts for the sale of electricity for “green” tariff concluded between GarPok and RES generation. With this, Ukrenergo expects to ensure full repayment of debts to “green” electricity producers through the issuance of Eurobonds and own funds.

Types of green bonds relevant in Ukraine

The suitability of a green bond for Ukrainian issuers will depend on whether the specific structure is supported by relevant legislation and given current market conditions. Standard ‘use of proceeds’ from bonds should meet both criteria. Project bonds where debt recourse is possible only to the project’s assets and balance sheet cannot be currently used in Ukraine as the legislation does not allow the use of such bonds in order to avoid a recourse to the assets and balance sheet of the issuer of bonds. However, project companies may be set up to emulate this debt structure.

Issuance of debt by the government and local authorities is subject to budgetary legislation (the Budget Code of Ukraine and relevant secondary legal acts). It may be necessary to introduce changes to the budgetary legislation in order to allow issuance of green bonds of various types by these issuers.

It should be noted that currently there is no market for securitised debt in Ukraine, and therefore green bonds that use this structure are unlikely to emerge. Such a market did exist at some point when banks issued mortgage-backed securities (first by “Ukrgasbank” in 2007) and financial institutions refinanced their mortgages through a state agency. Yet, these products have disappeared from the market. Therefore there are no asset classes with cash flows suitable for securitisation.

Potential issuers of green bonds

The government and municipalities

The government is well established in local and international bond markets. However, currently all issuance of bonds is done to finance the budget deficit and no plans to issue green bonds have been announced by the Ministry of Finance. Other emerging markets demonstrate that central governments and municipal entities can be important catalysts for the green bond market.

Municipalities may be perceived as one of the most creditworthy groups of potential issuers of bonds in Ukraine. Over the last 20 years, around 20 municipalities have issued bonds and there were no cases of irreparable municipal defaults (in some cases there were some forced restructurings of municipal bonds, including re-profiling of the debts of the city of Kyiv linked to the restructuring of the sovereign debt in 2015).

However, low credit ratings of the municipalities based on the international scale (Ukrainian municipalities normally receive credit ratings that are one notch lower than the sovereign ceiling) remain a restraining factor for international investors and a barrier for issuance of bonds.

Many market participants agree that municipalities implementing infrastructure projects (energy efficient renovation of public buildings, district heating companies and water supply companies) are a very promising group of potential issuers of green bonds. However, the lack of institutional capacity at the municipal level to prepare projects would be a significant constraint in the near term.

Non-financial corporate issuers

As with conventional fixed-debt instruments, the potential for issuance of green bonds lies with large Ukrainian companies and financial institutions that are transparent and creditworthy enough to attract investors’ attention.

Table 3 outlines potential issuers and green projects that may be considered for pilot issuance of green bonds by Ukrainian companies.

Table 3: Potential issuers and projects in individual sectors

Sector	Potential issuers	Potential green projects
Agriculture	Agricultural holdings listed on foreign stock exchanges	• Production of energy from biomass or waste • Energy-efficiency projects • Building of new industrial facilities/buildings according to international green certification norms
Transport	Transport and transport infrastructure companies of national importance	• Technical and infrastructure upgrade for railways, airports, and seaports • Development of environmentally-friendly modes of city transport (tram, rapid tram, trolleybus, metro, light rail, monorail, etc.)
Energy	Companies managing assets in coal production, thermal energy generation and distribution	• Alternative energy projects
Construction	Construction companies, developers	• Construction of green buildings according to international green certification norms • Rehabilitation or major renovation of buildings for improving their energy efficiency
Banking	Banks (e.g. state-owned Ukrgasbank that positions itself as a green bank)	Projects implemented by the bank's clients: • Clean energy generation • A range of low carbon and energy-efficiency projects

Source: Authors' compilation.

Potential issuers will have to demonstrate high level of corporate governance, transparent financial reporting and absence of cases of unfair treatment of their creditors (or cases of stressed debt restructurings) in the past in order to consider issuing bonds on the local and international capital markets.

In the near future, until the local bond market develops and local institutional investors that adopt sustainability principles in their investment policies, it is more likely to see only green bonds issued by Ukrainian companies in the international markets. The recent loosening of controls on capital movements by NBU and plans to waive all restrictions on such flows by 2025 already facilitated the direct issuances of foreign debt securities (like Eurobonds) by Ukrainian issuers. In another market liberalisation step this year NSSMC allowed many of these Eurobonds to be traded in the local market and through this dual listing expanded liquidity and the attractiveness of bond issuance.

As of late, there have been a dozen of Eurobond issuers in Ukraine, including large private companies like Metinvest Holding, MHP Group, Kernel Group, DTEK. Several state-owned companies, such as Ukravtodor (road maintenance agency), Ukrainian Railways, National Power Company Ukrenergo, Naftogaz (oil and gas), National Postal Service Company Ukrposhta, have already issued or consider issuing Eurobonds. Private issuers are expected to come to the market very soon, including leading Ukrainian corporates involved in exports of iron ore and metals, various agricultural and related products, and potentially leading Ukrainian retailers and private banks. It is likely that new issuers that have not tested the Eurobond markets in the past will emerge.

Many of the above companies may consider financing green projects, among which energy-efficiency and fuel-switch projects in iron ore, metals and energy sectors; biomass-to-energy and irrigation projects in agriculture.

The emergence of local institutional investors would be assisted by the anticipated pension system reform under which significant amounts of individual savings would be accumulated and channelled to the capital market.

Banks

The banking sector remains the core of Ukraine's financial market. The banking system consists of 73 banks (down from 180 at the end of 2013) and the National Bank of Ukraine. In April 2021, the regional network of banks consisted of approximately seven thousand branches. Banks are not only the main investors in securities, but also the main professional participants in the securities market.

The banking system has undergone a significant "cleansing" between 2014 and 2019. Many private banks had to be liquidated, some were nationalised, thus increasing the role of the state-owned banks in the banking system. The current Banking Sector Development Strategy foresees privatisation of some of the state-owned banks.

NBU data show that liquidity and capitalisation of the banking sector remains very high. Banks are showing good profitability even in the current environment of anaemic growth of the Ukrainian economy and limited opportunities for expanding lending activities. Given the recent decrease in the yield of government bonds as sovereign risk becomes more moderate, banks may increase the volume of investments in corporate bonds. Lending remains not very attractive to banks due to NBU requirements on collateral and ongoing credit risk challenges. By contrast, corporate and municipal bonds could be attractive for banks if such securities are included in the NBU's list of eligible collateral, as this would make these instruments much more liquid.

Notably, the state-owned Ukrgasbank considers itself a trend-setter in green finance in Ukraine, having financed about 14% of green energy capacity in the country. The cooperation of the bank with the IFC involved developing a green classification scheme, and support to certain lending facilities. Ukrgasbank claims that 30% of its portfolio can be considered green. The bank has considered issuing a green bond itself but the benefits to issuers are not clear, while high country risks and uncertainty about how to track impact could be problems for investors.

Conclusions and recommendations

Ukraine has impressively stabilised following the 2020 recession induced by the pandemic. The long running consolidation of the banking sector and elimination of connected lending practices has further reduced risks, even though there are ongoing governance problems. In this context, bond market activity has expanded, led by issuance of and trading in government bonds.

This provides a foundation for making the corporate bond market a much more central source of financing the low-carbon transition in Ukraine. Policy targets are now clear and underline the scale of the challenge. A green finance framework is now being put in place, though as an immediate priority the authorities need to ensure alignment of the local framework to relevant European regulations including the EU taxonomy for sustainable activities. It is necessary to include the requirements to issuers of green bonds related to external review of compliance of green bond issues with the international standards. Secondary legislation should provide for disclosure of all necessary information, including reporting on the use of proceeds and impact assessment. These requirements are paramount for creating trust of investors and for avoidance of greenwashing.

On this basis, private sector interest in green bonds will likely increase. The first green bond issued by one of the largest renewable energy producers demonstrated that local corporates can offer the needed

transparency, even though the listing in a foreign market had only limited benefits for development of the local market. Municipalities could be issuers, though this would require information sharing and capacity development measures on the municipal level to enable local authorities to prepare and implement green projects.

Issuance of green bonds in the corporate sector could be assisted by harmonisation of taxation for different types of bonds with extension of regime of preferential treatment of Government bonds to green bonds issued by all types of issuers in Ukraine.

Some banks may have developed green portfolios which could be refinanced with proceeds from green bonds. However, at the moment banks lack internal capacity to identify and assess green projects. A focused effort to develop such capacity could be incentivised and supported by the National Bank of Ukraine.

Success of the instrument will depend on the existence of a reliable investment environment that generates projects of a sufficient quality that could be refinanced in the local bond market. In this context the regime for renewables tariffs needs urgent attention. It is necessary to restore investors' trust in the viability and security of support schemes offered by the Government for renewable energy producers.

Ukraine may also consider designing incentives (including subsidies and tax incentives) for the development of low-carbon technologies. Funding of such expenses could be provided primarily from the revenues of the CO_2 tax (whose rate may be increased further), emissions trading scheme, and other carbon pricing tools which could be channeled to a special purpose fund. As for taxation, it is necessary to take into account efficiency costs and the further related decrease in private investment. Such support measures may make investment into low-carbon technologies more attractive and funding for such investment may be partially raised by the issuance of green bonds.

References

Credit-Rating Ltd (n.d), *Statistics of Defaults and Dynamics in Changes of Ratings on Debt Instruments Used by Ukrainian Issuers for the Period 2004-2011*, Credit-Rating Ltd, https://www.credit-rating.ua/img/st_img/Defaults/2012/Rezume.docx.pdf. [7]

EBRD (n.d.), *Support to the Government of Ukraine on Updating its Nationally Determined Contribution (NDC), C40502/8492/47661, Report 3/ Modeling Report*, European Bank for Reconstruction and Development, London, https://mepr.gov.ua/files/images/2021/29042021/Modeling%20Report%203.pdf. [4]

IEA (n.d.), *Energy Intensity*, International Energy Agency, Paris, https://www.iea.org/reports/sdg7-data-and-projections/energy-intensity (accessed on 20 October 2021). [1]

IFC (2016), *Climate Investment Opportunities in Emerging Markets - An IFC Analysis*, International Finance Corporattion, Washington DC, https://www.ifc.org/wps/wcm/connect/59260145-ec2e-40de-97e6-3aa78b82b3c9/3503-IFC-Climate_Investment_Opportunity-Report-Dec-FINAL.pdf?MOD=AJPERES&CVID=lBLd6Xq. [3]

Interfax-Ukraine (2021), *"Ukrenergo Places 5-Year "Green" Eurobonds for $ 825 million at 6.875%",* [21]

2 November 2021, Interfax-Ukraine, https://ua.interfax.com.ua/news/economic/777128.html.

Ministry of Environmental Protection and Natural Resources of Ukraine (2020), *Analytical Review of Ukraine's Second NDC*, Ministry of Environmental Protection and Natural Resources of Ukraine, Kyiv, https://mepr.gov.ua/files/images/2021/29042021/%D0%9F%D1%80%D0%BE%D1%94%D0%BA%D1%82%20%D0%86%D0%BD%D1%84%D0%BE%D1%80%D0%BC%D0%B0%D1%86%D1%96%D0%B9%D0%BD%D0%BE%20%D0%90%D0%BD%D0%B0%D0%BB%D1%96%D1%82%D0%B8%D1%87%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B3%D0%BB%. [22]

Ministry of Finance et al. (2021), *Strategy of Ukrainian Financial Sector Development until 2025*, https://bank.gov.ua/en/files/gmzinByGCNNglWc. [8]

Ministry of Finance of Ukraine (2021), *Code of Corporate Governance of the Ukrenergo National Power Company*, Ministry of Finance of Ukraine, Kyiv, https://ua.energy/wp-content/uploads/2021/02/Kodeks-korporatyvnogo-upravlinnya_zatverdzhenyj.pdf. [19]

National Securities and Stock Market Commission (2021), *Annual Report of the National Securities and Stock Market Commission*, National Securities and Stock Market Commission of Ukraine, Kyiv, https://www.nssmc.gov.ua/en/document/?id=12530000. [6]

National Securities and Stock Market Commission (2021), *Recommendations for the Implementation or Financing of Environmental Projects through the Issuance of Green Bonds, 31 August 2021*, National Securities and Stock Market Commission of Ukraine, Kyiv, https://www.nssmc.gov.ua/en/document/?id=12504480. [16]

NSSMC (2020), *Resolution №118 of the National Securities and Stock Market Commission of Ukraine on the Code of Corporate Governance: Key Requirements and Recommendations*, National Securities and Stock Market Commission, Kyiv, https://www.nssmc.gov.ua/en/document/?id=10687172. [17]

OECD (2021), *Fossil-Fuel Subsidies in the EU's Eastern Partner Countries: Estimates and Recent Policy Developments, Green Finance and Investment*, OECD, Paris, https://www.oecd.org/publications/fossil-fuel-subsidies-in-the-eu-s-eastern-partner-countries-38d3a4b5-en.htm. [2]

OJ of the EU (2014), *Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on Markets in Financial Instruments and Amending Directive 2002/92/EC and Directive 2011/61/EU*, Official Journal of the European Union, Brussels, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32012R0648&from=EN. [9]

OJ of the EU (2013), *Directive 2013/14/EU of the European Parliament and of the Council of 21 May 2013 Amending Directive 2003/41/EC on the Activities and Supervision of Institutions for Occupational Retirement Provision*, Official Journal of the European Union, Brussels, https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:146:0001:0033:EN:PDF. [13]

OJ of the EU (2013), *Directive 2013/14/EU of the European Parliament and of the Council of 21 May 2013 Amending Directive 2003/41/EC on the Activities and Supervision of Institutions for Occupational Retirement Provision, Directive 2009/65/EC*, OJ of the European Union, Brussels, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013L0014&from=fr. [14]

OJ of the EU (2012), *Regulation (EU) No 648/2012 of the European Parliament and of the Council* [1

of 4 July 2012 on OTC Derivatives, Central Counterparties And Trade Repositories, Official Journal of the European Union, Brussels, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32012R0648&from=EN. [10]

OJ of the EU (2002), *Directive 2002/47/EC of the European Parliament and of the Council of 6 June 2002 on Financial Collateral Arrangements*, Official Journal of the European Union, Brussels, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32002L0047&from=EN. [12]

OJ of the EU (1998), *Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on Settlement Finality in Payment and Securities Settlement Systems*, Official Journal of the European Union, Brussels, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31998L0026&from=EN. [11]

President of Ukraine (2020), *Law of Ukraine on Capital Markets and Organised Commodity Markets*, President of Ukraine, Kyiv, http://LINK TBC. [15]

State Statistical Service of Ukraine (n.d.), *State Statistical Service Official Website, State Statistical Service of Ukraine*, http://www.ukrstat.gov.ua/. [5]

Sustainalytics (2019), *DTEK Renewables Green Bond Second Party Opinion*, Sustainalytics, https://www.sustainalytics.com/corporate-solutions/sustainable-finance-and-lending/published-projects/project/dtek/dtek-renewables-green-bond-second-party-opinion/dtek-renewables-green-bond-framework-second-party-opinion-26-9-2019-pdf. [20]

TCFD (n.d.), *TCFD Website, Task Force on Climate-related Financial Disclosures*, https://www.fsb-tcfd.org. [18]

World Bank (n.d), *World Bank Database*, https://data.worldbank.org/indicator/CM.MKT.LCAP.GD.ZS?end=2018&locations=UA&start=2010&view=chart. [23]

Annex A. Ukraine

Extract from the Law of Ukraine "On Capital Markets and Organised Commodity Markets"

Article 18. Green bonds

7. The issue of the green bonds can be carried out by an entity which implements or finances an environmental project (green project).

   The proceeds obtained from issuance of green bonds shall be used for financing and\or refinancing of the costs of the green project. If green bonds are issued by the State of Ukraine, the proceeds obtained from issuance of green bonds shall be used in accordance with the Budget Code of Ukraine.

8. Green project – is a project in the field of alternative energy, energy efficiency, minimisation of waste generation, utilisation and processing of waste, introduction of environmentally-friendly transport, organic farming, conservation of flora and fauna, water and land resources, adaptation to climate change, as well as other projects aimed at protecting the environment, implementing environmental standards, reducing emissions into the environment.

   The procedure for selection and support of green projects financed from the state and local budgets is established by the Cabinet of Ministers of Ukraine taking into account the requirements of the Law of Ukraine "On the State Aid to Business Entities".

9. For the purposes of this Law:

   1) entities which implement green projects are:

      Council of Ministers of the Autonomous Republic of Crimea, territorial community represented by a representative body of local self-government, subject to a decision on the implementation of the green project – from the date of entry into force of such a decision;

      The state of Ukraine represented by its bodies, subject to a decision on the implementation of the green project – from the date of entry into force of such a decision;

      Legal entity of private law, including for projects implemented in accordance with a public-private partnership agreement;

   2) entities which finance green projects are:

      Specialised financial institution, established by the Cabinet of Ministers of Ukraine or other specially authorised body – in cases and in the manner prescribed by law, which determines its legal status;

      Legal entities of private law, including banks, other financial institutions;

      International financial organisations.

10. The entity implementing a green project, for whose financing the green bonds were issued, should not take any action, which may result in early termination, revocation or other loss of rights to the green project and\or their encumbrance.

11. Emission of several green bonds issues can be carried out for the implementation of one green project, provided that the total nominal value of such issues does not exceed the estimated cost of the green project, which should be determined in the decision on implementation of such a project.

    The entity financing green projects may conduct one green bonds issue for the purposes of financing several green projects.

12. The entity implementing or financing a green project is obliged to ensure the targeted use of the proceeds that will be obtained from investors to finance and\or refinance the costs of the green project.
13. If a green bond issuer is an entity implementing the green project, the decision on the bonds issue or the bonds prospectus (offering memorandum) shall, in addition to the requirements of this Law, include a description of the project, its technical and economic parameters, implementation period, assessment of environmental impact expected from the project implementation.
14. If a green bonds issuer is an entity financing green projects, the decision on the bonds issue or the bonds prospectus shall, in addition to the requirements of this Law, include a description of the projects that will receive funding from bond issue proceeds, the procedure for evaluation and selection of projects for financing, the procedure for assessment of the environmental impact expected from the projects implementation.
15. Annual report of an issuer of green bonds shall contain, in addition to the requirements of Article 126 of this Law, information on the current status of the green projects, as well as the amount of proceeds obtained from issuance of green bonds and the amount of funds utilised for implementation or financing of green projects.
16. The decision on the bonds issue or the bonds prospectus may stipulate that the sources of repayment of green bonds and payment of income on them shall be the revenues (if available) form the commissioned facility, financed by or implemented with the funds obtained from issuance of green bonds, as well as other revenues defined by the decision on the bonds issue or the bonds prospectus.

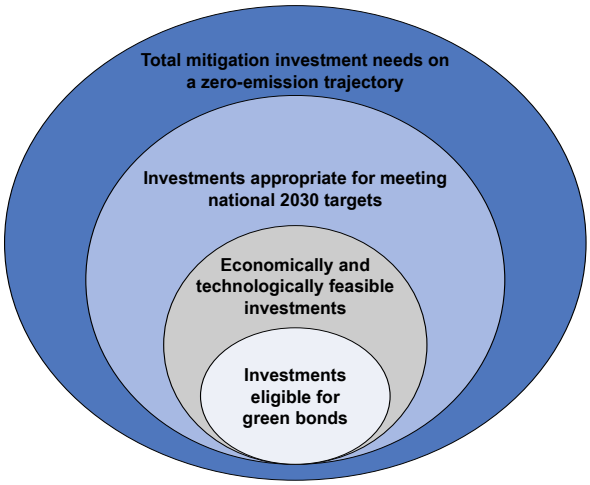
Source: (President of Ukraine, 2020[6]).

Annexes

Methodology used in estimating sectoral mitigation-related investments suitable for green financial instruments

In our analysis, we conduct a consistent assessment of mitigation related investments in Armenia, Azerbaijan, Georgia, Kazakhstan, Republic of Moldova and Ukraine that are eligible for at least partial funding by green financial instruments. We estimate the amount of national investments by sector that is, investments based on international experience and which are economically feasible. Thereby, deduced sectoral investments are a subset of the mitigation investment needs for meeting 2030 climate targets.

Annex A Figure: Context of investments needs, schematic presentation



Source: Authors' own presentation.

Our analysis is disaggregated into four key sectors (buildings, electricity, transport, industry) that will require high investment volumes to realise a low-carbon transition. Thereby, we focus on the most important low-carbon investment opportunities in each sector, that can be realistically financed by green financial products:

1. In the *buildings sector*, retrofitting of residential and public buildings consisting of thermal modernisation of the building envelope, replacement of building-related electrical equipment, such as lighting, and installation of solar heating are typical measures to decrease GHG emissions.
2. Investment needs in the *electricity sector* consist of retrofits and/or upgrades of existing generation capacities, installation of new conventional electricity generation capacities, grid expansion, installation of storage units, investments into flexibility options and the installation of new renewable energy sources. To determine the investment needs in the electricity sector, we focus on the planned installation of renewable energy sources.
3. The *industry sector* consists of several sub-sectors which differ among the six countries. First, we define the most important industries based on the gross value added. Based on the sub-sectors' gross capital formation and energy consumption, we derive total sectoral investments in equipment

that reduces energy consumption and/or GHG-emissions and the total investments in the industry sector.

4. In the *transport sector*, we focus only on the analysis of the potential investment needs of rail and public transport. Passenger car purchases are excluded because they are unlikely to be financed through green financial instruments. In terms of road freight transport, we assume that no significant green investments will take place before 2030.

To ensure consistency across countries we use a simplified approach based on structural data from the statistical offices of the six countries (such as building space, sectoral value added, power system) and relevant secondary literature. In case of insufficient or outdated sectoral breakdowns, we complement the analysis with own appraisals based on information on capital stocks (such as buildings and electricity generation capacities). This approach allows us to obtain a credible order of magnitude of “green” investments in each of the addressed sectors in each of the countries.

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EU4Environment
Green Economy in Eastern Partner Countries

Greening Debt Capital Markets in the European Union's Eastern Partnership Countries and in Kazakhstan

This report presents the experience with the use of green bonds to fund low-carbon energy infrastructure and other climate-related projects in the five countries of the European Union Eastern Partnership (EaP), including Armenia, Azerbaijan, Georgia, Republic of Moldova and Ukraine as well as Kazakhstan. It draws on detailed assessments in the reviewed countries. In addition to individual country analyses, the report contains a regional comparative overview chapter that summarises the main findings and conclusions from the country analyses.

The study was prepared with the financial support of the European Union within the "European Union for Environment" (EU4Environment) Programme.

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