SELECTED HIGH-IMPACT MEASURES

Financing options for “green” policy measures

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Low Carbon Ukraine

Implemented by
Berlin Economics

Supported by:
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
based on a decision of the German Bundestag

Motivation and project background

This policy proposal is part of a series which was elaborated in the framework of the project Low Carbon Ukraine (LCU) supporting more ambitious paths for selected energy and climate policy areas.

The idea to develop the present ten "Policy Proposals" arose in the course of LCU's support for the Ministry of Energy of Ukraine in setting up a National Energy and Climate Plan for Ukraine. While Ukraine's climate targets are partially very ambitious, we often observed a lack of underlying analysis and concrete policy measures to achieve those targets. For the most crucial topics, we provide a comprehensive analysis and propose concrete policy measures based on international experience.

Each Policy Proposal was written in a multi-stage process: a first draft of LCU experts or invited professionals was discussed over summer and early autumn 2020 with Ukrainian experts and stakeholders. Results of those discussions were taken into account when updating the Policy Proposals. It is important to note, that the presented results reflect the view of the authors and not necessarily the position of the BMU (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety).

We hope that the present analysis and proposals will contribute to a fruitful and constructive discussion and help Ukraine to develop ambitious, yet realistic energy and climate policies.

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Low Carbon Ukraine is a project with the mission to continuously support the Ukrainian government with demand-driven analysis and policy proposals to promote the transition towards a low-carbon economy. It is part of the International Climate Initiative (IKI) and is funded by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) on the basis of a decision adopted by the German Bundestag. The project is implemented by BE Berlin Economics GmbH.

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Executive summary

Within our Policy Proposal series, we propose ambitious measures to reduce and curb greenhouse gas emissions in a variety of sectors of the Ukrainian economy. Since the proposed measures are capital-intensive, this paper aims at the capital markets and the unlocking of private capital. Therefore, we propose an overview of tailor-made green financing schemes consisting of public and private funding. We elaborate on certain financial instruments typical for green measures, such as green bonds, and potential ways of their correct implementation in Ukraine.

- For the transport sector, we propose to implement project finance for public private partnership in order to finance the capital-intensive monitoring and control infrastructure for congestion charging in Ukrainian cities. The scheme allows for the cooperation of the public and private sectors.
- To cushion the impact of a coal phase-out on regional socio-economic indicators, a transition fund could be established to finance retraining programs, pension schemes etc. A mix of grants on the one hand and loans on the other could then channel funds to regions and projects useful for an equitable transition.
- To finance an increase of renewable electricity generation, project finance and on-balance sheet finance are considered. High capital costs due to high perceived risks of such investments lead to a higher cost of electricity from renewable energy. Therefore, steps to reduce the risks are needed.
- We propose the use of green bonds to support energy efficiency retrofitting of public buildings as they offer secure options for large-scale projects and attract private investors. Nevertheless, government expenses will still be needed to accompany green bond financing.
- Our financing approach to support steel companies investing in new technologies and upgrades of their existing installations includes a modernisation fund and a credit from a multilateral development bank backed by a potential increase in carbon tax proceeds to front-load the fund. Then, the fund could provide grants to cover part of the investment into green modernisation projects with the company financing the other part of its project itself.
- To cover the expenses for Ukraine's ENTSO-E integration, Ukrenergo has to apply on-balance sheet financing with loans from international credit donors and higher tariffs with which Ukrenergo refinances itself.

Background

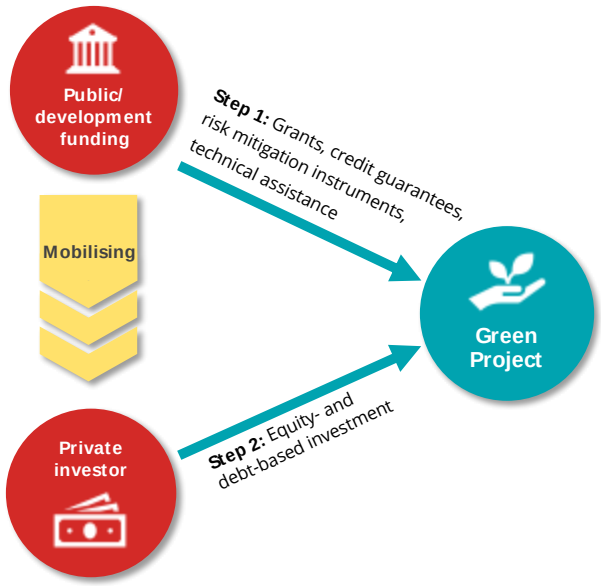
To conduct policy measures aimed at low-carbon, energy efficiency and renewable energy project, unlocking private capital is necessary.

In our Policy Proposal series, we propose several measures aiming at low-carbon, energy efficiency and renewable energy (RES) (hereinafter green) projects. Those green projects are capital intensive and cause a lot of upfront costs. Private investors are often hesitant to provide such capital-intensive investments because of low rates of return of long-term green investments and the associated risk (Sachs *et al.*, 2019). However, due to scarce public funds in Ukraine, the lion's share of climate financing will need to come from the private sector supported by public funding to mobilise and leverage private capital.

Ukraine suffers from a poor investment environment.

In Ukraine, capital costs are even higher and amortisation periods shorter than elsewhere due to a bad sovereign credit rating indicating a high risk for investors.[1] Furthermore, Ukraine suffers from an underdeveloped bond market and the contribution of banks and other financial institutions remains low.[2] In recent years prior to the Covid-19 crisis, however, stable economic growth since 2016 and the appreciation of the Hryvnia led the National Bank of Ukraine to loosen its monetary policy lowering the key interest rate from 18.0% in the beginning of 2019 to 6.0% as of today (September 2020).

Figure 1: Unlocking private capital



Public money should support the projects' cash flows.

The green measures we propose are all aimed at generating cash flows. To reduce the cost of capital for the projects, the cash flows must be improved, and their volatility reduced. Therefore, the government and development banks can start backing projects through market signalling, direct investment, risk mitigation instruments (such as RES auctions) and/or technical assistance.

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[1] The leading credit rating agencies rate Ukraine at B3 (Moody's), B (Fitch) and B (Standard & Poor's) with a stable outlook. The low speculative grade credit rating is due to a history of political instability, the conflict with Russian-backed forces in Donbas, weak institutional capacity, uneven application of the rule of law, high level of corruption and high external financing needs due to large government debt repayments. The significant impact of the Covid-19 pandemic even exacerbates the heightened macroeconomic and fiscal risks. https://www.fitchratings.com/research/sovereigns/fitch-revises-ukraine-outlook-to-stable-affirms-at-b-22-04-2020 (Accessed 28.09.2020)

[2] In January 2020, regulators approved the Strategy of Ukrainian Financial Sector Development until 2025. It aims at ensuring the sustained economic development and macro-financial stability, increasing the reliability and technological effectiveness of the financial system, reaching European standards on the financial market and increasing trust in the financial market. https://www.kmu.gov.ua/en/news/regulyatori-finansovogo-rinku-zatverdili-strategiyu-rozvitku-finansovogo-sektoru-ukrayini-do-2025-roku (Accessed 28.09.2020)

The proposed green measures involve different trade-offs between project economics and government support. Consequently, we present an overview of tailor-made financing mixes to unlock private investments for the measures.

We present tailor-made financing options to unlock private capital.

Financing policy measures

I. Congestion charge

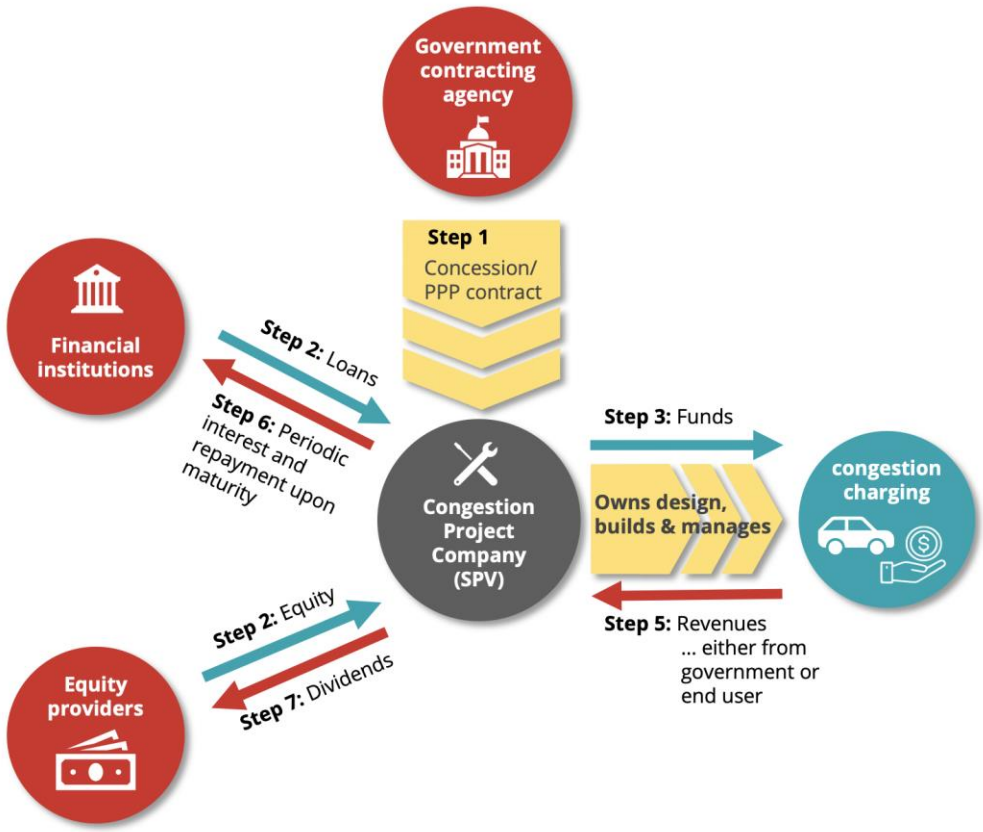
In the transport sector, a congestion charge could reduce road transport in Ukrainian cities and, thus, CO_2 emissions (Roth, 2021). External identification and sensing technology, such as electronic road pricing gantries, have relatively high capital costs and induce operating costs which is why the Ukrainian municipalities might be reluctant to finance them with public funds. In order to reduce the dependency on the Ukrainian state-dominated funding models for road projects (World Bank 2018), we propose project finance for public private partnerships (PPP) to enable cooperation between the public and private sectors (Figure 2).

In the transport sector, project finance for PPP can break the state-dominated funding models.

According to Sachs *et al.* (2019), PPP schemes have a key role for low-cost finance, de-risking green infrastructure projects and crowding-in private finance. At the beginning, the project company (special purpose vehicle) concludes a PPP contract with the local government. Under a concession agreement, the local government enables it to design, build, finance and operate the project. The project company is responsible for raising and providing the funds to develop overhead gantries and cameras for licence plate recognition and street signs.

In a PPP scheme, the local government concludes a PPP contract with a project company.

Figure 2: Project Finance for Public Private Partnership



Similar Ukrainian road projects have a debt-equity ratio of 70:30 to 80:20.

The sources of capital are equity and a larger debt slice. Equity refers to capital invested by sponsors of the PPP project and other private investors acquiring a stake of the project company, while debt is borrowed capital from banks and other financial institutions. Typically, similar Ukrainian road projects are financed with a debt-equity ratio of 70:30 to 80:20 defining the financial risks of the project (World Bank 2018). The rate of return expected by equity providers is higher than interest rates of debt financing so that if the equity share decreases, the leverage increases. This leads to a reduction of capital costs, but it increases the financial risk due to a higher debt slice that requires larger cash flow for debt servicing.

Capital costs would amount to around 10-11%.

To determine the financing costs of the project, we apply the weighted average costs of capital. Given the 80:20 to 70:30 equity-debt ratio, 13% rate of return for equity providers and 8% interest, we obtain 11% and 10% rate, respectively, which the project company is expected to pay on average to all its security holders to finance its assets. Note that in a co-financing scheme, the local government could provide grants for the project. This could help to overcome the highest level of risk during the construction phase when delays and cost overruns can occur.

Public bodies can participate in the revenue structure of the congestion charge in order to carry some of the risk.

The revenues of the project are a key consideration for the investors and the financial viability of the project must be ensured. For providing the congestion charge, the project company is either paid by the government or the road users depending on the specific payment structure. The payment structure also defines the two main risks in the project scheme that must be shared among the actors: traffic risk (how many vehicles enter the congestion zone) and revenue risk (factor of traffic volumes/congestion charges and collection/enforcement risk). The municipality can support the revenues by applying an availability-based payment structure (Climate Bonds Initiative, 2015). In this case, the project company is paid for making the project/facility available for use even if the congestion zone is not used as much as anticipated. Thus, the public agency, namely the municipal Department of Finance, bears the traffic and the revenue risk, and misjudgement can lead to pressure on the public agency's budget. The public involvement could be necessary in Ukraine because average income levels limit the affordability of the charges (World Bank 2018). However, as the public agencies are not authorised to make such long-term commitments, an amendment in budgetary legislation would be necessary. Furthermore, the staff is not yet capable to assess the associated long-term fiscal risks with the conclusion of such contracts, so the necessary know-how must be developed.

Project is financed based on future cash flows.

In project finance, the project company usually repays when the congestion charge is up and running, and with the profits gained so that the lender has no or very limited claim on sponsor's assets. That is, the project would be financed based on the projected future cash flows. Past experiences with congestion charges have shown that, after a while, congestion fees can be a consistent source of revenue.[3] After interest payments and the repayment of the face value, political earmarking should be considered to enhance public transport and infrastructure upgrades in the congestion charging zones.

Ukraine is currently working on PPP legislation, but it has not yet been put into practice on a large-scale.

The Law of Ukraine on PPP was adopted in 2010.[4] Since then, the government has declared its support for this law, but without pursuing it further on a larger scale. On 3 October 2019, Ukraine updated the law on concessions to improve the legal regulation of concession activity and harmonise legislation in the sphere of PPPs paving the way for future projects[5] (Kyiv Post, 2019). The new law comprises guarantees for the protection of PPP participants aiming, first and foremost, at concessionaires and creditors. As there are still obstacles for PPP in Ukraine, the secondary PPP legislation is currently being updated with the assistance of the World Bank. It is important to note that PPP schemes only work for the benefit of the public if the

[3] In Stockholm, for example, the upfront costs for the congestion charge were recouped after four years (Provonsha & Sifuentes 2018).

[4] https://mtu.gov.ua/files/for_investors/Law%20of%20Ukraine%20on%20PPP.pdf (Accessed 28.09.2020)

[5] In June 2020, the Ukrainian government competitively tendered the first PPP designed in accordance with best international practice. It is aimed at transforming the Kherson port into a hub for cargo hauling operations on the Dnipro river (IFC 2020).

negotiators are highly professional, ethical and the project development is thoroughly followed by fair and transparent procurement for the benefit of the public interest.

II. Coal phase-out

In Policy Proposal "A socially sustainable coal phase-out in Ukraine" (Zachmann, Temel, von Mettenheim, 2021).

Coal mining communities must be supported in case of a coal phase-out.

we propose accompanying social and structural measures for the coal phase-out. This would entail the closure of several of Ukraine's coal mines and related job losses. To avoid negative labour market effects, the structural change in the affected regions needs to be accompanied by well-designed policy measures.

A just transition similar to that of the EU could be used to cushion negative economic effects on.

We propose a transition fund to reduce the socio-economic costs of the coal phase-out by supporting education programs, re-training opportunities, expansion of pension schemes[6] and structural improvements. The fund should be established in close cooperation with a multilateral development bank, such as the European Investment Bank (EIB). Similar to the EU's Just Transition Mechanism[7], the scheme should provide grants, crowd-in private investment and enable a public sector loan facility backed by the EIB or other multilateral development banks.

The phase-out of coal subsidies could be used to provide grants.

Figure 3 presents the scheme of the fund. To begin with, a front-loading of the fund's resources will be necessary. To improve the cash flow, a substantial part of the financing is obtained from grants. The grants used to boost investment could be partly financed by phasing out coal subsidies (Zachmann, Temel, von Mettenheim, 2021). However, since the phase-out of those subsidies would extend over several years, it would be necessary to obtain a credit support from a multilateral development bank to provide the fund's initial funding.

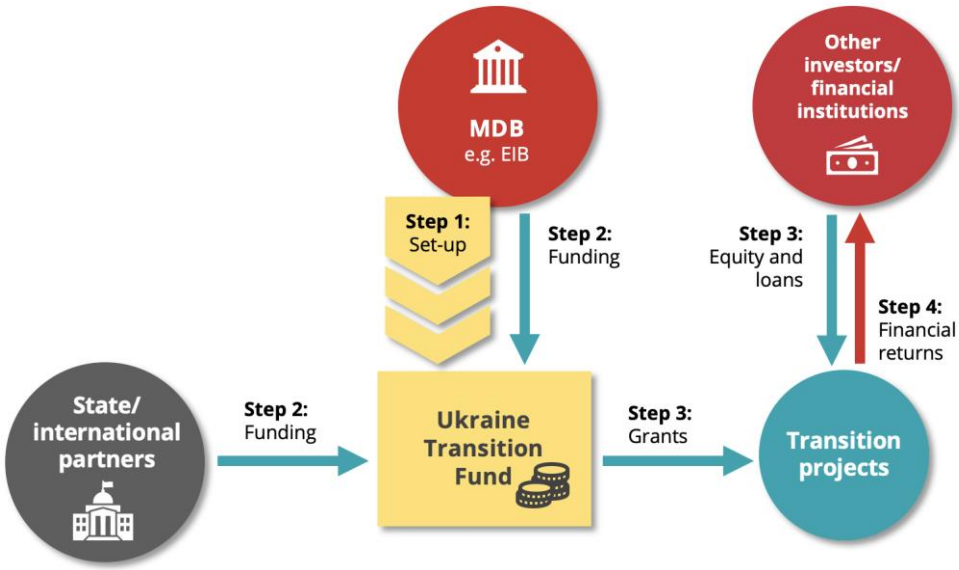
In cooperation with financial institutions, the fund should also provide loans. The fund should then reach social and economic projects.

Apart from that, the fund should leverage private capital from financial institutions that provide loans (incl. micro loans) and bank guarantees for business development. A loan requires periodic servicing of interest and repayment which means that it may be more suitable for low-risk projects that generate periodic cash inflows (Withana *et al.*, 2011). A competitive awarding of funding could be explored, where projects can apply stating the amount of co-financing they need. The use of grants for the project should always be accompanied by other financial contributions to ensure that the investments make sense commercially. Also, the fund should reach different social and economic projects implemented in the coal mining communities. On the local level, mining community stakeholders need to be informed on the funding and assistance programmes that are available for the respective community. The whole scheme would be designed and implemented in partnership between the Ukrainian state, regional authorities, NGOs, unions and other organisations.

[6] The expansion of pension schemes is subject to a successful implementation of the pension reform in Ukraine.

[7] https://ec.europa.eu/commission/presscorner/detail/en/fs_20_39 (Accessed 28.09.2020)

Figure 3: Transition fund



III. Integration of renewable energy

For increasing the RES share in power generation, investment needs of EUR 19 bn are needed.

In order to achieve a more ambitious share of renewable energy sources (RES) in Ukrainian power generation of 30% in 2030, investments in new RES capacities and flexible generators to balance RES fluctuations will be needed. Given high capital requirements, a cost-effective way to raise funds is particularly important. Wind and solar projects incur the dominant part of their lifetime costs upfront, at the construction stage, not during the operating phase. From an investor's perspective this means an increase of investment risks (Noothout *et al.*, 2016).

The introduction of a fixed feed-in-tariff (FIT) for RES generation acted as the initial driver for investment into this sector, with around EUR 8 bn invested until 2020. However, the eligibility of new plants for FIT support ended in 2019 and FIT levels were retroactively restructured in 2020. From 2020 on, support for new plants will be determined via competitive auctions. In Policy Proposal "A Cost-efficient Deployment of Renewables" (Stiewe, 2021), we show how Ukraine's RES auction design and support system can be improved in order to decrease risk premiums for RES investors.

To raise the funds for RES assets, either non-recourse project finance or on-balance sheet finance are common options.

According to FS-UNEP (2018), financing for RES assets of more than 1 MW can be subdivided into (a) non-recourse project finance (42% of all projects worldwide in 2017) and (b) on-balance sheet finance (56%). The share of green bonds and other finance options were negligibly small.

Project finance

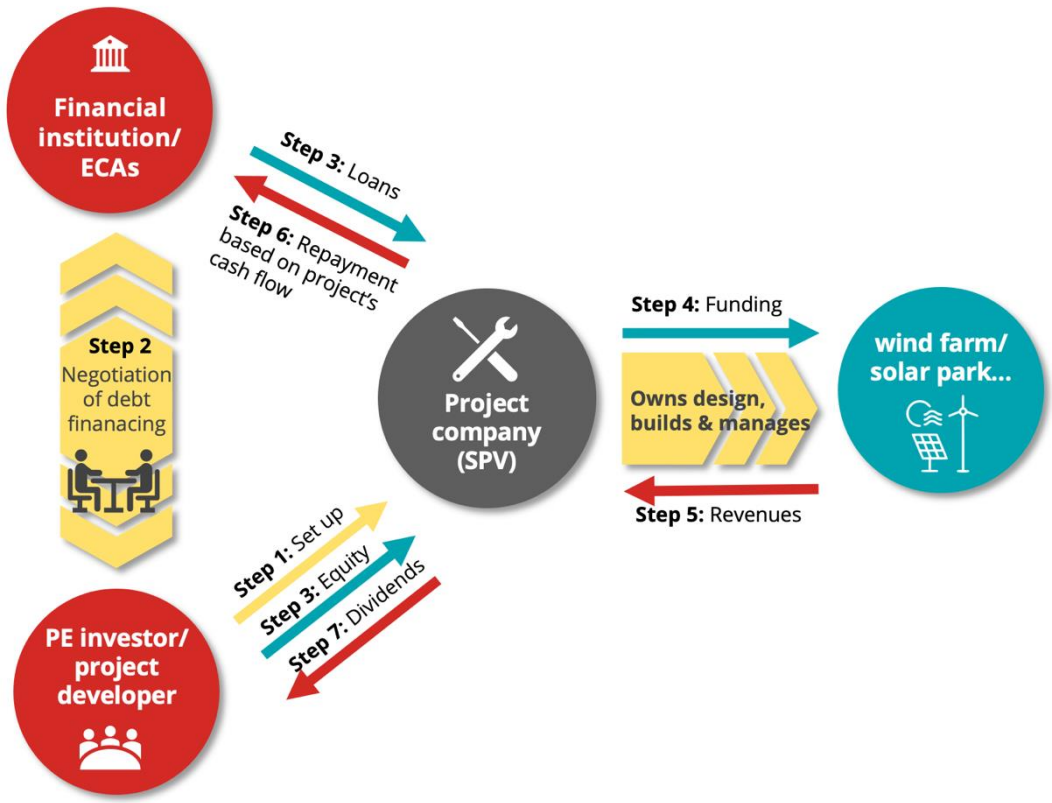
In the case of project finance, investors create a project company to incorporate the project. Figure 4 depicts a typical scheme for project financing. To begin with, the project company needs to negotiate building permits and power purchase agreements with the government. It is responsible for any further contracts and agreements concerning the RES project, such as supply contracts, off-take agreements, operating and maintenance contracts. It designs, builds and manages the RES project. In order to obtain additional funding, equity investors and financial institutions negotiate the debt financing conditions. RES projects are typically made up of a large debt slice from financial institutions, and a smaller equity slice from developers and other investors (FS-UNEP, 2018).

Project finance: a project company is responsible for the project and its funding.

In Ukraine, full-fledged non-recourse project finance (entitling the lender to repayment only from the profits of the project the loan is funding and not from any other assets of the borrower) is not possible due to the set-up of the current legislation that prohibits to prevent recourse to any assets of the borrower. However, financing a project company created specifically for RES generation with no other business activities/assets would essentially represent a non-recourse project finance transaction.

Current legislation prohibits non-recourse project finance. Solution: setting up a RES project company.

Figure 4: Project finance for renewable generation



The share of equity capital is at 30% while the debt slice accounts for 70% of the financing for Ukrainian wind and solar projects. The funding costs are quite high in Ukraine, given the country's political and economic risk in general and the risks specific to the RES generation sector where fixed FIT may be subject

The cost of capital (15%) is particularly high due to domestic risks.

to retroactive cuts and the risk of solvency of the Guaranteed Buyer[8] must be factored in. With a cost of debt of 20.5% in Hryvnia and an equity value of 13.5%, the weighted average cost of capital is set at around 15% taking into account the tax rate (Trypolska, 2019). Such capital costs are considered to be very high, as can be seen from the comparatively low capital costs in OECD countries, where they do not exceed 10%.

Risks can be reduced, e.g., by cooperating with export credit agencies in certain cases.

High capital costs lead to higher levelised cost of electricity for RES - and translate into higher auction bids. Further steps to reduce the risks are needed. For example, export credit agencies (ECAs) offering guarantees could be of use if private banks are unable or unwilling to finance certain projects due to market conditions. They take away some of the risks from the lenders and, thus, reduce the interest rate payable on debt (FS-UNEP, 2018).

On-balance sheet finance

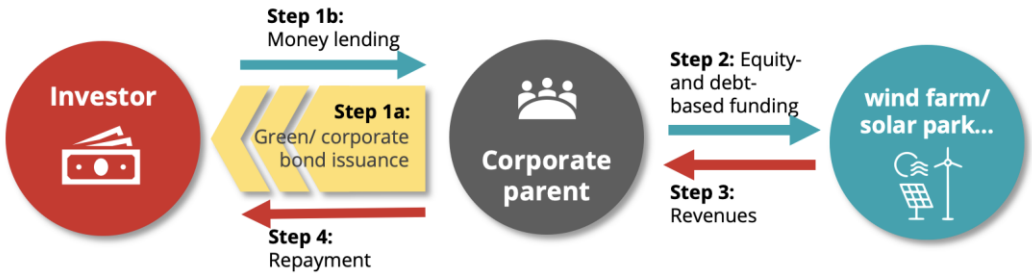
On-balance sheet finance is mostly conducted by independent power producers relying on debt-markets.

On-balance sheet financing is mostly conducted by utilities and independent power producers. The RES projects are financed from the owner's balance sheet. They, in turn, rely on debt markets to provide additional funding. Here, the package of equity is linked to the corporate developer of the project (not to the project vehicle itself), i.e., a project sponsor utilizes all assets and cash flows from the company to guarantee the credit provided by lenders.

Cost of capital amount to around 9%.

In November 2019, DTEK Renewables, DTEK's operating company managing its assets in the renewable energy sector, launched its first green bond worth EUR 325 m with a coupon rate of 8.5% and amortisation in 2024. For comparison, Italy based Enel issued EUR 1.25 bn 10-year bonds at a coupon rate of 1.4%.

Figure 5: On-balance-sheet finance for renewable integration



IV. Energy retrofitting of public buildings

We propose the use of green bonds to finance energy efficiency retrofitting of public buildings.

To improve energy efficiency in the Ukrainian building sector, we evaluate energy efficiency retrofitting of 50% of the public building stock until 2030 (Meissner, von Mettenheim, 2021). According to our estimations, investment needs amounting to app. EUR 10 bn are required until 2030 to achieve annual energy savings of up to 2,300 ktoe annually and related emission reductions of up to 5 Mt CO_2 annually from 2030 onwards. Therefore, we propose the use of green bonds, as they offer relatively secure options for large-scale projects.

[8] State owned enterprise responsible for payments to RES generators

A green bond is a fixed-interest security that serves to raise capital for activities aimed at reducing or preventing damage to the environment or climate. Compared to loans, green bonds can provide relatively cheap capital for specific green investment targets if well structured. Private investors get the chance to diversify their portfolios by tapping the green bond market.

Green bonds can provide relatively cheap capital for specific green investment targets.

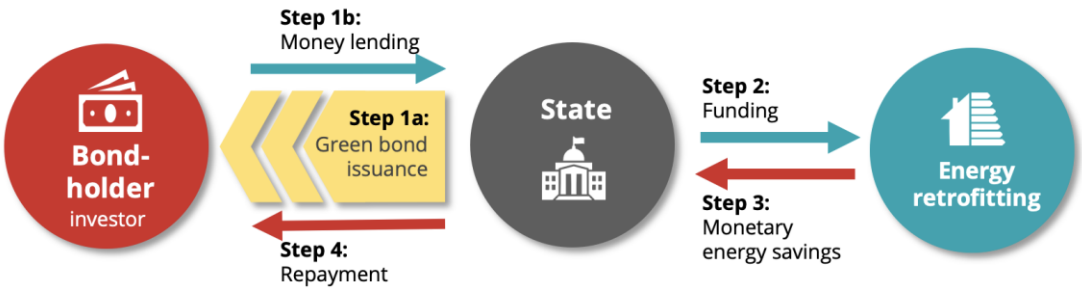
In the case of retrofitting public buildings, the state should be the issuer of the green bond while professional institutional investors should be the bond holders. The bond financing structure should cover EUR 8 bn while being accompanied by additional EUR 1.6 bn of governmental spending. The green bonds should be ring-fenced to the retrofitting of public buildings. Therefore, a clear definition of a retrofitting measure and the minimum target for an energy efficiency level must be established. Due to the outdated Ukrainian public building stock, energy efficient retrofitting could also be accompanied by structural non-energy-efficient renovations at the building.

The bond financing should cover most of the financing needs while being accompanied by governmental spending.

The balance of risk and return depends on the type of issuer, the strength of the economy and the cycle of the securities market. When it comes to domestic market Hryvnia denominated bonds, pricing should be similar to regularly issued bonds unless investors can gain some specific benefits from green bonds, e.g., if green bonds would be treated preferentially regarding the capital adequacy of banks. Using the government bond yield as a benchmark, Hryvnia-denominated bonds would yield around 12%. However, we assume Euro denominated bonds with a coupon rate of 7% and a lending period of 15 years through the reinvestment of bonds with a 5-year maturity. Thus, we obtain a Capex of EUR 19.6 bn. The debt can be serviced by monetary energy savings amounting to EUR 24 bn until 2059 (Meissner, von Mettenheim, 2021).

We assume Euro-denominated bonds with a coupon rate of 7%. Capex sums up to EUR 19.6 bn.

Figure 6: Green bonds for public buildings retrofitting



In June 2020, the amendments to the law on securities introducing green bonds were adopted.[9] However, it is still not possible for the state to extend its loans from the state budget to local budgets. Funding for locally administered buildings can only occur in the form of non-refundable subventions. At the same time, administrators of public buildings are not allowed to borrow. Moreover, the basis for calculating the expenses to support public buildings from public funds does not provide for the accumulation of monetary savings to be channelled to repay the investment. Therefore, a change in the budgetary legislation would be needed to use green bonds for public buildings that are owned by local authorities.

To use green bonds on municipal level, a change in the Budget Code must be conducted.

[9] https://zakon.rada.gov.ua/laws/show/738-20#Text (Accessed 28.09.2020)

V. Greening steel production

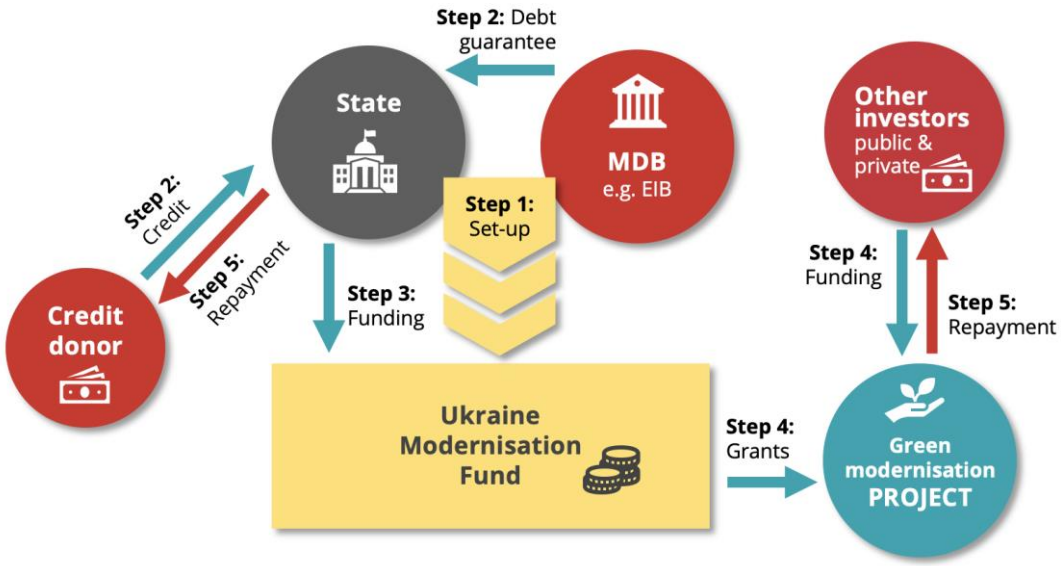
The Ukrainian steel sector must be modernised for decarbonising the production.

In Policy Proposal "Towards a decarbonisation of Ukraine's steel sector" (Saha, 2021), we aim at a stricter climate policy to maintain or re-establish the competitiveness of the Ukrainian steel industry through modernisation measures for emission intensive steel assets. The CO_2 emission intensity of the steel industry can be reduced in three broad dimensions: optimising production processes for lower emissions without hardware changes, retrofitting existing production infrastructure and replacing equipment with newer and different technologies.

A modernisation fund similar to that of the EU should be established using funds from a potential increase of the carbon tax.

Our financing approach to support steel companies investing in new technologies and upgrades of their existing installations is twofold. Firstly, we propose the establishment of a modernisation fund (Figure 7) similar to that of the EU. A potential increase of the carbon tax could be used to provide (Breuing, 2021). However, as suggested in the Policy Proposal, the increase of the carbon tax would be implemented only gradually until 2030, so the fund would need front-loading to enable early grant provision. Therefore, secondly, to kick-start the fund, a EUR or USD credit should be obtained from a credit donor as part of the national debt that may be backed by future revenues through the carbon tax. Ideally, the credit would be supported by a guarantee from a multilateral development bank (MDB) (e.g. EIB) in order to lower the borrowing costs. Then, the fund could provide grants to cover part of the investment into green modernisation projects with the company financing the other part of its project itself.

Figure 7: Modernisation fund



Cost of capital amount to around 8%.

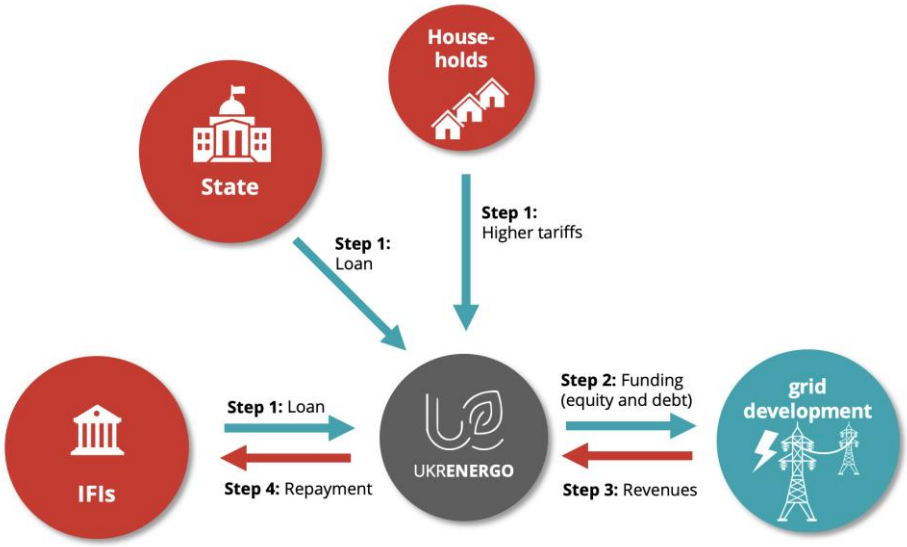
Currently, the capital costs for Ukrainian steel companies are quite high. Bonds from Metinvest, a Ukrainian steel company, have a coupon rate of 7.8% with maturity end in 2029 while ArcelorMittal, an international steel company, can tap the debt-market with a 4.2% coupon rate. Therefore, multilateral development banks should be approached to make credit available at improved conditions, meaning longer maturities and cheaper rate, for Ukrainian steel companies to unlock substantial investments.

VI. ENTSO-E integration

We support Ukraine's integration into the ENTSO-E synchronous area until 2023 (Zachmann, Feldhaus, 2021). It includes a number of technical, political, legal and administrative requirements. Ukrenergo, the national power company, estimates costs of EUR 357 m of which EUR 130 m are intended for the grid development, EUR 130 m for generation readiness to ensure reserves and automatic voltage control, EUR 92 m for development of communication channels for dispatching operations, and EUR 5 m for additional studies on the static and dynamic stability implementation of the operation handbook. However, our estimates suggest that the cost will be about twice as high (Zachmann, Feldhaus, 2021).

To finance Ukraine's integration into the ENTSO-E synchronous area, around EUR 360 m of investment is required.

Figure 8: On-balance sheet finance for grid development



Since project finance is more complex and typically more costly, corporate finance is the predominating financing approach for electric power (Roland Berger, 2011). Note that the option of private sector investment is not feasible as Ukrenergo is a state-owned company (subordinated to the Ministry of Finance) which is allowed to finance its investments either from public sources such as electricity tariffs or via borrowing from international financial institutions for priority reconstruction (World Bank, 2014). According to Ukrenergo[10], they are expected to cover EUR 222 m by themselves. The remaining EUR 138 m of their own projections shall be provided by development banks such as the European Bank of Reconstruction and Development (EBRD), EIB and Kreditanstalt für Wiederaufbau (KfW).[11] Therefore, the launch of credit lines for Ukrenergo from the development banks are needed. EBRD and Ukrenergo already finalised a 15-year sovereign-guaranteed loan of up to EUR 149 m to finance the procurement of 26 new transformers and the automation upgrade of 12 high voltage substations.[12] The loan is accompanied by app. EUR 50 m of Ukrenergo's own resources. For facilitating the power system integration with Europe, Ukrenergo also obtained a loan of USD 240 m (EUR 205 m) from the International Bank for Reconstruction

Corporate finance is the predomi-nating approach for grid development.

[10] https://www.usubc.org/files/ENTSOE%20presentation%20(002).pdf

[11] Note that EUR 222 mn and EUR 138 m sum up to EUR 360 m (not 357 m as shown above) but both figures are taken from the official documents from Ukrenergo.

[12] https://www.ebrd.com/work-with-us/projects/psd/ukrenergo-transmission-network-modernisation.html

and Development (IBRD), additional funding from the Clean Technology Fund amounting to USD 30 m (EUR 25 m) accompanied with additional funding from the Government of Ukraine and other borrowers.[13]

Ukrenergo repays based on its business revenues from general activities.

Ukrenergo repays when due based on business revenues from general activities of the company. The additional costs used to finance capital expenses are then added to the tariffs with which Ukrenergo refinances itself. At the same time, Ukraine's integration into the more competitive European electricity market has a potential of reducing electricity prices for Ukrainian consumers.

[13] It is important to note that Ukrenergo does not recognise the funding from IBRD as necessary for ENTSO-E integration and, therefore, not as part of the related costs.

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Annex

Table 1: National and international credit donors

International donors				*National Donors*	
Banks	Credit and financial institutions	Agencies, facilities, and funds	Programmes and projects	Banks	Agencies and ministries
EBRD	IFC	GIZ	E5P	Ukreximbank	SAEE
EIB	NEFCO	GCPF	EU Horizon 2020	Ukrgazbank	Minregion
NIB		GEF	SUDEP		
KfW		SECO and SDC	MPSF		
		SIDA			
		USAID			

Table 1 presents a list of international and national green creditors for Ukraine assembled by Sokolova et al. (2019). Sokolova et al. (2019) conclude that the Ukrainian sustainable development strategy pre-dominantly depends on international creditors providing loans.

Source: Sokolova *et al.* (2019)

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We are grateful for your feedback on this Policy Proposal. Please get in touch via info@LowCarbonUkraine.com.

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