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UKRAINE

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Global Environment Facility
FINTECC Ukraine

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ABBREVIATIONS AND ACRONYMS

ASIF	Agribusiness Sustainable Investment Facility
BAT	Best Available Technology
BREFs	Best Available Techniques Reference Documents
CHP	Combined heat and power
CLASP	Collaborative Labelling and Appliance Standards Program
COP	Conference of the Parties
CTCN	Climate Technology Centre and Network
CTOA	Climate Technology Opportunity Assessment
E2C2	Energy Efficiency and Climate Change, group at the EBRD
EE	Energy Efficiency
EETP	Energy Efficiency Technology Policies
EHSS	Environmental, Health and Safety Standards
EMS	Energy management systems
ESAP	Environmental and Social Action Plans
ETCs	Early Transition Countries
ETS	Emissions trading scheme
EUR	The official Currency of the EU
FAO	Food and Agriculture Organization of the United Nations
FINTECC	Finance and Technology Transfer Centre for Climate Change
FRM	Final Review Memorandum
GAP	Gender Action Plan
GEF	Global Environment Facility
GHG	Greenhouse gas
IEA	International Energy Agency
IED	Industrial Emissions Directive
IFIs	International Financial Institutions
M&S	Manufacturing and Services
MDB	Multilateral Development Bank
MEI	Municipal and Environmental Infrastructures
MEPS	Minimum energy performance standards
MPF	Mid-sized Projects Facility
MRV	Monitoring, reporting and verification
NEFCO	Nordic Environment Finance Corporation
NGOs	Non-governmental organizations
NIF	Neighbourhood Investment Facility
OCE	Office of the Chief Economist at the EBRD
PETER	Preparedness for Emissions Trading in the EBRD Region
PMT	Project Management Team
R&D	Research and development
RE	Renewable energy
SE	Sustainable energy
SEFFs	Sustainable Energy Financing Facilities of the EBRD
SEI	Sustainable Energy Initiative
SEMED	Southern and Eastern Mediterranean
SME	Small and Medium Enterprises
SRI	Sustainable Resource Initiative
STAP	Scientific and Technical Advisory Panel
TC	Technical Cooperation
TNA	Technology Needs Assessments
UKEEP	Ukraine Energy Efficiency Program
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization
USELF	Ukraine Sustainable Lending Facility
WIPO	World Intellectual Property Organization

EXECUTIVE SUMMARY

The GEF-funded FINTECC Ukraine Project (henceforth ‘Project’) is designed to kick start the market for climate technology investments in the country by piloting a performance-based financing mechanism, and developing and supporting climate technology transfer policies and technical assistance packages that support technology transfer. The Project will systematically address and remove key barriers along the market chain that influence investment decisions and are preventing penetration of these climate technologies in Ukraine. To do so, the Project will support the development of climate technology supply chains by blending projects and investments with a package of technical assistance and policy dialogue.

The Project focuses on climate technologies that may be available but are not widely diffused in Ukraine (i.e. with low market penetration) and where the supply chains are underdeveloped. The Project will consider a broad range of investments in technology deployment, manufacture and innovation/R&D. The targeted technologies have been selected based on three main criteria:

- Climate technologies with low market penetration in Ukraine;
- Possibility of horizontal application across various sectors of industry;
- Substantial greenhouse gas (GHG) emission savings compared to the existing regulatory and market standards in Ukraine.

Eligible technologies include energy production technologies, process energy efficiency technologies and energy efficiency technologies for buildings. Project investments will not target stand alone renewable energy technologies such as solar, hydro and wind technologies, as these technologies already have sufficient coverage under existing EBRD finance interventions in Ukraine.

The performance-based technology transfer financing mechanism (the “financing mechanism”) will use a dedicated allocation of USD 7 million provided by the GEF Trust Fund for performance based grants, and co-financing of USD 39,000,000 in loans and USD 190,000 in-kind from the EBRD. The incentive grant will be applied to a percentage of total eligible project costs. The level of the grant will be assessed and calibrated on a case-by-case basis, and will depend both on the technology proposed and the beneficiary. A pre-defined set of objective performance criteria will be used, including (i) market penetration, (ii) replication potential, (iii) GHG savings impact (using a combination of ex-ante and ex-post assessments, where practical and applicable, of GHG emission reductions), (iv) contribution to the development of the technology value chain, (v) level of technology innovativeness and (vi) level of energy/resource management in the beneficiary company to ensure that the benefits of the technology implementation are sustainable.

Technical assistance will be provided to identify, design and develop climate technology projects. An “Innovation Voucher” scheme will be available to increase R&D and innovation of climate technology products, processes and services. The Neighbourhood Investment Facility provides EUR 4 million channelled through the EBRD for technical assistance including the innovation voucher scheme.

The proposed incentive grant allocation for each individual climate technology project, together with a description of the scope of work and anticipated benefits, will be submitted for the EBRD’s approval as part of the underlying EBRD transaction in line with EBRD internal procedures. The Project is expected to involve 10 to 15 pilot climate technology projects that will support prime movers and help them to overcome existing market barriers to climate technology investments.

The Project will benefit from, and liaise with, the GEF-funded Regional project ‘*Finance and Technology Transfer Centre for Climate Change*’, which is designed to support the climate technology market in the Southern and Eastern Mediterranean, and Early Transition Countries. The Project will build on FINTECC Regional with individual activities and products tailored to the needs of Ukraine.

The Project is in full compliance with the EBRD’s *Strategy for Ukraine 2011-2014*; the EBRD’s *Initiative for Early Transition Countries*; the EBRD’s *Sustainable Energy Initiative Phase III*; the EBRD’s Sustainable Resource Initiative; and EBRD’s *Moving Towards an Energy Efficient and Low Carbon Economy and its Transition Impact*. Provision of GEF funds in the form of capital grants is in line with Financial Procedures Agreements between the GEF and the EBRD, and with the current EBRD governance structure of the GEF cooperation fund.

1 Project context

1.1 Energy use and energy efficiency in Ukraine

1. Ukraine has high-energy consumption and high GHG intensity throughout all economic sectors and, like other transition economies, has struggled to decouple emissions from economic development. This high carbon intensity stems mainly from the use of obsolete and out-dated capital stock in the power generation, industrial processing and agribusiness sectors, mistargeted energy subsidies, and buildings that are energy inefficient and in need of renovation. Ukraine is also highly dependent on energy imports, leading to energy insecurity that has worsened due to recent political and economic developments. These challenges threaten Ukraine's competitiveness, especially in the manufacturing and agribusiness sectors.
2. The economic and political context has prompted calls for Ukraine to address the climate change challenge and growth in GHG emissions by increasing investment in, and transfer of, energy efficient and renewable energy technologies and practices. Climate technology is defined here as equipment, materials, technological units, technical measures or other measures, which result in quantitative GHG reductions. The definition of a climate technology may differ depending on the "baseline case" chosen. For example, in Ukraine, implementation of natural gas fired boilers in district heating would not be recognized as a climate technology as this is a "business as usual" technology that does not generate additional GHG emission reductions compared with the baseline. However, in countries where normal practice is heating with traditional stoves (with efficiency 20-30%) implementation of natural gas fired boilers could be recognized as climate technology.
3. Technology transfer necessitates shifting from the current technologies towards cleaner and more climate resilient technologies. This shift will only be successful if the financial, technical, awareness, legal, regulatory and economic barriers that have led to the current low market penetration of GHG mitigation technology in Ukraine are addressed.

1.2 Sector, background and baseline

1.2.1 Macroeconomic outlook

4. Recent events in Eastern Ukraine and heightened economic and political concerns call for an analysis of the current macroeconomic and geopolitical situation in the country. On February 12, 2015 a new agreement between Ukraine and Russia on conflict resolution in Donbas was reached, however the risks remain high with a fragile hope for de-escalation of violence and settlement of the conflict. The toll of hostilities in the east, the on-going currency crisis, fiscal austerity measures and worsening trade relations with Russia on the real sector performance of Ukraine has been increasing over the course of 2014 and continues steadily into 2015. According to the latest real GDP growth breakdown, a decline in economic growth by about - 5% (real GDP/yoy) is forecast for 2015.
5. The approval of the fiscal budget law for 2015 is seen as an important step towards unlocking international financial aid. But given that the budget has significant risks, negotiations may not be easy. Ukrainian authorities will expediently approve the necessary conditionality requirements, while the financial aid program will be expanded for the required amounts. If these assumptions do not materialize, Ukraine may face a severe financial crisis in 2015.
6. A full summary of the geopolitical and macroeconomic context is provided in Annex 12. Importantly, the project will mitigate risks arising from the current and possible future situation in Ukraine as described in Section 2.6.

1.2.2 Legislative framework and policies

7. A number of energy efficiency, renewable energy and GHG reduction policies have been implemented in Ukraine. Basic laws for energy efficiency have been in place for more than a decade although the results in terms of climate technology transfer have been limited.

8. The privatisation and unbundling of state-owned energy assets in Ukraine has been underway for 20 years. While large reforms were reported in 2012, a number of obligation deadlines for Ukraine's membership of the European Energy Community have been missed (based on 'In-Depth review of the energy efficiency policy of Ukraine', 2013 Energy Charter Secretariat).
9. Energy efficiency and renewable energy policies in Ukraine include:
 - **The Energy Strategy of Ukraine until 2030.** The Ukraine government is currently updating its 2006 energy strategy that aims to improve overall energy efficiency and energy security. In particular it aims to: a) realise potential for energy efficiency and energy savings in industry and residential sectors; b) reduce dependency on energy import through expanding domestic gas and renewable energy sources; c) integrate with European energy networks; d) realise potential for energy security; e) set a national target to reduce GHG emissions by 20% and 50% below 1990 levels by 2020 and 2050 respectively; and f) implement a comprehensive programme of energy efficiency with reductions of energy consumption in the economy by 30-35% by 2030. However the strategy has a number of weaknesses: recommendations are general; financing issues remain unaddressed; concrete targets and timeframes are not sufficiently specified; and there is an absence of concrete incentives to reduce emissions.
 - **The Tax Code** that entered into force in 2011 included a number of instruments to promote renewable energy and energy efficiency including feed in tariffs (green tariff), tax exemptions and reductions to stimulate the use of energy efficient technologies and appliances as well as CO₂ taxation to stimulate GHG emissions reductions on the energy supply side.
 - A new **Law on energy efficiency/energy savings** is focusing on residential and public buildings. However, the law is largely unimplemented and minimally enforced.

These laws do not focus on technology transfer in the industry sector, do not stipulate minimum energy efficiency performance standards and do not mandate any Monitoring, Reporting and Verification (MRV) or enforcement activities. Since circa 2009, Ukraine has made a few abortive attempts to pass legislation to develop emissions trading, including basic MRV provisions, however no specific legislation has yet been passed.

1.2.3 Relevant energy efficiency projects

Related EBRD initiatives

10. **EBRD's Sustainable Energy Initiatives (SEI) 1, 2 and 3:** The EBRD's SEI combines project financing of specific energy efficiency or renewable energy investments with technical assistance to support project preparation, implementation and capacity building, as well as policy dialogue to support the development of enabling environments for sustainable energy. In Ukraine, the EBRD has invested EUR 1,809 million in energy efficiency finance for corporate energy efficiency, sustainable energy financing facilities, cleaner energy production, renewable energy and municipal infrastructure energy efficiency (see Figure 1). Projects have achieved primary energy savings of approximately 3.6 million tons of oil equivalent per year and, from 2006 until 2013, have led to 9,952 ktCO₂eq GHG emissions reductions from 95 projects.
11. **EBRD's Sustainable Resource Initiative (SRI):** This umbrella initiative promotes efficiency and innovation in three vital areas: energy, water and materials. The rapid growth in demand for resources, volatile prices and growing environmental concerns, including those about the impacts of climate change, have made resource efficiency a priority for all countries. The SRI is the EBRD's response to these resource challenges and provides necessary finance for energy efficiency, renewable energy and climate change adaptation projects. In addition, the SRI promotes water and materials efficiency, including through the promotion of recycling and the reuse of waste streams.

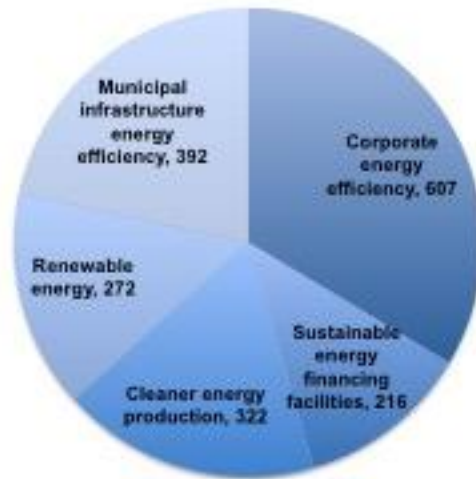


Figure 1 EBRD's Total SEI investment (EUR million) in Ukraine by business area (2006-2013)

12. **EBRD's FINTECC Regional:** The EBRD's FINTECC Regional project was established in 2013 with an initial focus on the Early Transition Countries (ETC) and Southern and Eastern Mediterranean (SEMED) countries. The project was designed to demonstrate the viability of climate technologies in the EBRD region through the combination of project financing for energy efficiency, renewable energy and water efficiency investments; technical assistance to support project preparation; implementation and associated market oriented capacity building; policy dialogue; and incentive grants to support the development of an enabling environment for technology transfer.
13. The FINTECC Regional project is generating outputs replicable across the EBRD region. The methodologies developed as part of the project will facilitate better access to information on availability and diffusion of technologies, thus allowing faster structuring of suitable financing products and creating business opportunities along the supply chains.
14. The FINTECC Regional project's incentive grant mechanism has proven to be particularly beneficial due to the following characteristics:
 - (i) Efficiency of funding utilization: The incentives grant scheme, compared with other mechanisms such as concessional loans, can support a larger number of projects. It does not require new administrative structures and has been fully streamlined into EBRD operations.
 - (ii) Fast implementation: Using existing project assessment structures, the EBRD managed to build very quickly a pipeline of eligible projects, and provide an interesting value proposition and propose best available climate technologies to be incorporated into investment programmes of companies. The incentive grant mechanism is a simple mechanism that can be easily introduced into financing structures, and is attractive even to small and medium-sized enterprises.
 - (iii) Low risk to clients: By supporting the introduction of technologies that have been deployed extensively in other countries, the associated technological risks for businesses are low. The technical assistance provided to the clients further ensures that the proposed climate technology is the most suitable solution in their specific context.

15. The FINTECC Regional project also leverages partnerships with other international organizations, which could be expanded to additional countries of the EBRD region. In particular the strategic partnership with the International Energy Agency (IEA) and cooperation with the Food and Agriculture Organization (FAO) can bring additional knowledge transfer benefits to local stakeholders. For example, the EBRD has engaged with the IEA and the FAO to jointly develop a methodology for assessment and monitoring of the climate technology market development. Development of the methodology aims to address the lack of data and its inconsistency by closing the information gap on market penetration of climate technologies and the status of markets in climate technology. The draft methodology was presented in June 2015 at a technical workshop and finalized taking into consideration specific feedback from the stakeholders in the ETC and SEMED region.
16. The FINTECC Regional project will also focus on the development of relevant tools and methodologies to assess feasibility and suitability of climate technologies and techniques in specific businesses. These methodologies are essential for successful integration of climate change mitigation and adaptation technologies in investment packages.
17. **Ukraine Sustainable Lending Facility (USELF):** As part of the EBRD's SEI initiative, USELF provides debt finance directly from the EBRD, development support to undertake technical and environmental due diligence, and training and capacity building for developers, investors, banks and other stakeholders. After a slow start due to the under-developed nature of the country's renewable energy sector, USELF has signed seven renewable energy projects through 2014. USELF has almost fully committed its initial allocation and, with a robust project pipeline remaining and on-going weakness in the commercial financing sector for renewable energy, Phase II was launched in 2014, which will enable USELF to continue strengthening the long-term sustainability of the sector. USELF coordinates with, and benefits from, the GEF-funded project '*Ukraine – Creating Markets for Renewable Power in Ukraine*'.
18. **Ukraine Energy Efficiency Programme (UKEEP):** Established by the EBRD in 2007, UKEEP is a credit line that provides targeted intermediated financing through six partner banks with technical support provided by UKEEP for projects that decrease energy consumption and generate renewable energy. A benefit of UKEEP is the independent technical consulting support provided by international and local experts for the enterprises, partner banks and vendors, funded by the Austrian Federal Ministry of Finance. To date UKEEP has implemented 80 projects that save approximately 1,100 GWh of electricity and reduce 480,000 tCO₂eq per year.
19. **Preparedness for Emissions Trading in the EBRD Region (PETER):** Established by the EBRD, PETER is assisting Ukraine with the development of carbon pricing policies. The project provides the government with (i) recommendations to improve the existing GHG taxation system (e.g. on optimising coverage, tax rates and revenue redistribution, improving MRV, developing a complementary domestic carbon offset market), and (ii) a roadmap for an improved GHG taxation system to full emissions trading, to which the government is committed by signing of the EU Association Agreement. The PETER project aims to develop a country-specific roadmap for full emissions trading schemes by helping the government of Ukraine to:
 - Understand costs and benefits of introducing domestic cap-and-trade regimes compared to other instruments of climate mitigation policies
 - Analyse cap-and-trade options, and criteria needed to link any domestic emissions trading scheme (ETS) with other emissions trading schemes, such as the EU ETS
 - Identify potential road maps towards implementation of a domestic cap-and-trade scheme and linking with external cap-and-trade schemes
 - Increase preparedness and provide practical tools to create a platform and structure for potential discussions with external partners on linking carbon markets.
20. Ukraine is considering and preparing for the introduction of an ETS. The design of an ETS is subject to further approvals and may replace the carbon tax scheme as a result of the signing of the EU Association Agreement.
21. The EBRD has also supported a number of projects through its direct lending operations, with direct lending in the corporate sector representing 27% of the total sustainable energy investments

of the EBRD in 2013. For example, between 2008-2012 the EBRD supported Astarta, a large sugar producer in Ukraine, through multiple loans for energy efficiency and renewable energy. The majority of energy efficiency investments adopted by Astarta had an IRR of more than 20% and the expected impacts will save 34,000 toe/year and will result in emissions reductions of 60,000 tCO₂/year.

Related initiatives led by other organisations

22. **UNIDO** leads two on-going relevant projects in Ukraine. The GEF-funded ‘*Improving Energy Efficiency and Promoting Renewable Energy in the Agro-Food and other Small and Medium Enterprises (SMEs) in Ukraine*’ (GEF ID 3917), due to end in December 2015, seeks to develop a market environment for introducing energy efficiency and enhanced use of renewable energy technologies in the agro-food and other energy intensive manufacturing SMEs in Ukraine. The other relevant UNIDO-GEF project (GEF ID 4784) is the ‘*Introduction of Energy Management System Standard in Ukrainian Industry*’, which provides policy and institutional support for the introduction of a national energy management system standard corresponding to ISO 50001.
23. **UNDP**’s GEF-funded ‘*Development and Commercialization of Bioenergy Technologies in the Municipal Sector*’ (GEF ID 4377), currently under implementation, seeks to establish a national programme for supporting municipal biomass projects and a supporting investment grant mechanism for biomass focusing on municipal use of biomass and bioenergy technologies. This project will also develop a capacity mechanism within the Ministry of Agricultural Policy.
24. Established by five Nordic countries (Denmark, Finland, Iceland, Norway and Sweden), **Nordic Environment Finance Corporation (NEFCO)** provides loans and equity financing at market conditions for energy efficiency and renewable energy projects. Contributions from the fund can also be provided as grants. Special funds are available on favourable terms for co-financing feasibility studies, aiming at contributing to the internationalisation of companies. Projects include modernisation of municipal district heating systems.
25. The above-mentioned projects and programmes complement the activities of the proposed Project in particular sectors and groups of technologies. To avoid duplication and promote synergy, these initiatives will seek to coordinate fully (refer to Section 4.4 for details). Additional climate change mitigation initiatives not listed above are summarized in Annex 6.

1.3 Barriers to climate technology transfer in Ukraine

26. A range of barriers hinders the development of markets for climate technologies in Ukraine. A recent study (World Bank, 2014) of 500 companies in the industrial and commercial sectors in Ukraine showed that the strongest barriers to deployment of energy efficiency technologies are financial (such as high upfront costs, lack of capital, and long pay back times), institutional, knowledge and technical barriers.
27. In developing the Request for CEO Endorsement, two market assessments were conducted in part to analyse the barriers and thereby shape the Project:
 - “*Analysis of incremental costs and barriers of selected climate technologies*” explored the incremental implementation costs associated with underdeveloped value chains of climate technologies, and barriers and factors affecting investment decisions along value chains. Exploration of value chains, including both economic activities and economic actors, was conducted following the market mapping approach as described in the Technology Needs Assessment guidebook “*Overcoming Barriers to the Transfer and Diffusion of Climate Technologies*.”¹
 - “*Market penetration of climate technologies study*” gathered and analysed market evidence of the market penetration of a basket of climate technologies in Ukraine. Data from available studies, experts and market intelligence from market players such as technology suppliers were used to assess and quantify the market penetration of selected climate technologies.

¹ Boldt, J., I. Nygaard, U. E. Hansen, S. Trærup (2012). *Overcoming Barriers to the Transfer and Diffusion of Climate Technologies*. UNEP Risø Centre, Roskilde, Denmark, 2012 (source: <http://www.tech-action.org/>)

28. The analysis of climate technologies’ market penetrations and their value chains confirmed the potential for a variety of climate technologies in the power and heat generation sectors, as well as a range of highly energy intensive sectors in Ukraine:
- Agro-industry: milk processing, distilleries, oil and fat production, snacks production, beverages and the sugar industry
 - Industry: chemical industry, glass production, machine building and pulp and paper
 - Mining
 - Oil and gas.
29. For technology and sector specific penetration and market potential please refer to Annex 14.
30. The EBRD’s experience also shows that decision-making by companies and the perceived risk of investments are affected by underdeveloped supply chains and limited competition, which result in higher capital and upfront costs, and longer payback times. As per the EBRD Ukraine Transition report 2014, lack of competition also limits productivity growth of firms that are active in the climate technology supply chains.
31. During the preparation of the full project, technology transfer barriers for specific climate technologies were analyzed. The major barriers to climate technology transfer in Ukraine are summarized in Table 1 below and details of technology transfer issues are provided in Annex 15.

Table 1 Barriers to climate technology transfer

Category	Barrier description
Financial	<p><i>Limited availability of finance</i> – Conventional finance sources, such as those provided by local banks, are often not available for financing technology transfer. Local banks often do not have the technical expertise to appraise low penetration climate technology projects that may have high upfront investment costs. The resulting high perceived level of credit default risk of these projects results in higher interest rates and unfavourable investment conditions for project developers.</p> <p><i>Project preparation costs</i> – Costs such as those of energy audits or feasibility studies that are a precondition for project implementation often needs to be financed separately. Sources of finance for such up-front costs are scarce.</p> <p><i>Transaction costs are usually high</i> – Climate technology projects are usually capital-intensive investments with high upfront costs, which is a barrier for all companies, but especially for SMEs. Transaction costs are further increased by the lack of experience with identifying and preparing such projects both within industry and in the financial sector. Transaction costs such as feasibility studies have to be factored into project costs and these are often high, especially for low penetration technologies.</p>
Policy, legal and regulatory	<p><i>Uncertainty, incoherence and a lack of enforcement in the legal and regulatory environment</i> – Whilst progress has been made towards the formulation of regulatory frameworks and energy efficiency planning, stakeholders still face a number of regulatory uncertainties. This situation combined with a lack of quality standards and regulatory enforcement provides little incentive for climate technology investments.</p> <p><i>Policies, subsidies and regulatory measures impede technology transfer</i> – An important factor affecting the financial viability of energy efficiency projects is the subsidies and low prices for oil, gas and coal. These low prices lead to such investments having higher payback periods than other countries. Other regulatory bottlenecks are, for example, complex permitting procedures in some industries.</p>
Capacity, awareness and technical skills	<p><i>Lack of awareness of energy efficiency potential and opportunities and data to identify and develop bankable climate technology projects</i> – There is a lack of awareness amongst project developers and in-house technical expertise within companies. In addition a lack of project feasibility funding (as a result of a lack of data and awareness). This leads to underestimation of the viability of projects. Typically, investment in climate technologies with low market penetration is perceived as inherently risky and as having incommensurate financial returns.</p> <p><i>Lack of familiarity with carbon market schemes and MRV</i> – Companies will face a number of new challenges due to upcoming regulatory changes, and the resulting uncertainties are an impediment to investment. In particular a lack of practical experience, understanding and technical expertise in the field of MRV methodologies severely constrains the private sector to operate effectively under carbon pricing schemes such as the proposed ETS.</p>

Category	Barrier description
	<p><i>Lack of reliable baseline information on best available technologies and market penetration</i> – There is limited availability of reliable information and baseline data on market penetration of different technologies and sectors. This limits the ability of policy makers to make well-informed decisions on desired policy changes.</p> <p><i>Lack of data shared between stakeholders</i> – Stakeholders do not possess sufficient knowledge of different technology options nor implementing climate technology projects and, while knowledge exists, it is possessed predominantly by technical experts and is not often transferred to the end-users, who typically lack the expertise in identifying and appraising viable investment projects.</p> <p><i>Undeveloped climate technology value chains</i> – There are only a small number of companies providing manufacturing, importing, engineering, facility management and service for low penetration climate technologies in Ukraine. Virtually no service exists for ‘turn key operations.’ This lack of competition between suppliers of climate technology goods and services results in higher prices and limited availability of technology.</p> <p><i>Limited skill set and motivation of staff in private enterprises to take on new roles associated with climate technologies</i> – Staff may be unwilling to take on new duties that they have not been trained for and see as unrelated to their core responsibilities.</p>
Institutional	<p><i>Lack of institutions and institutional capacity to organize, transform, develop and participate in emerging markets for energy efficiency and carbon markets</i> – Both government and non-governmental organizations often do not have the capacity to organize, transform and develop new markets for energy efficiency. There is also a lack of specialised climate technology and carbon market service providers.</p>

32. Financial barriers are considered the most significant barrier to climate technology transfer in Ukraine. Financing and incremental transaction costs in Ukraine are significantly higher than other countries, which is illustrated in Figure 2 showing the ranges of differences in project costs along the value chain for implementing a gas motor CHP project in Ukraine versus the Netherlands. The bars show the value chain (VC) incremental costs and their relative influence in % (weighed in proportion to the share of the cost category in overall project costs) difference of quantifiable project costs in Ukraine versus the Netherlands. The area shaded in yellow indicates the estimated range of non-quantified incremental cost caused by the influence of various barriers present in the Ukrainian market versus the situation in the Netherlands.

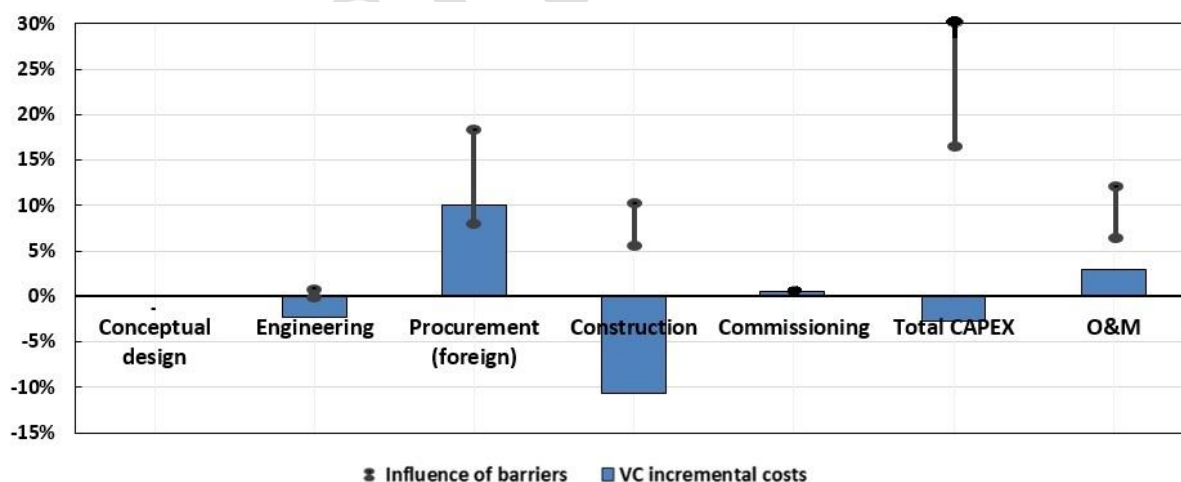


Figure 2 Relative variable cost comparison of gas motor CHP project in Ukraine compared to the Netherlands, with the indication of additional incremental costs range

33. Analysis reveals that financing a gas motor CHP project in Ukraine (with the exception of construction) is significantly (5-10%) more expensive compared to the Netherlands. This situation is similar for all technologies reviewed. In Ukraine it is often difficult to secure finance for climate technology projects as investors often face unfavourable finance terms such as high interest rates (30-40% pa. versus 5-20% in more advanced economies with mature climate technology markets such as the Netherlands), shorter loan periods (2-5 years versus 5-8 years) and thus unfavourable

return on investment. Many potential climate technology investment projects in Ukraine are economically unviable, which limits the growth of the climate technology market across the value chain (deployment, innovation and manufacturing).

34. The current political situation in Ukraine adds another layer of complexity and uncertainty to the barriers mentioned above. This situation has been accompanied by fluctuations in the national currency exchange rate and a reduction in exports to the Russian market. The project mitigates these specific concerns as described in Section 2.6.
35. In summary, analysis of climate technology transfer barriers in Ukraine reveals a challenging context for low penetration climate technology. Financial, regulatory, capacity-related and informational barriers interplay in a complex manner. These barriers are at risk of further intensification if the current economic and political situation escalates. The interconnectedness of the barriers described requires systematic intervention across financial, policy/regulatory, knowledge/information and technical interventions. As detailed in Section 2.1, the Project develops an innovative approach for catalysing climate technology transfer in systematic way, which addresses these significant barriers to climate technology transfer in the face of the difficult economic and political situation.

1.4 *Baseline project*

36. In the absence of the FINTECC Ukraine Project it is expected that the EBRD's existing activities in Ukraine will continue at a similar rate and on a comparable scale. The EBRD will continue to provide project financing, in particular for energy efficiency and renewable energy investments, as well as for some agribusiness investments, on a project-by-project basis or through intermediated financing (through local partner financial institutions).
37. However, a systematic approach combining policy measures with technical assistance and investments to increase climate technology transfer to address specific market barriers along climate technology value chains is not to be undertaken. In the absence of this Project, it is likely that proven technologies with low uptake in Ukraine will continue to suffer from low awareness of potential, perception of high-risk and high upfront investment costs combined with comparatively higher operational costs and thus markets for these technologies will likely remain underdeveloped.

2 Project design

2.1 Eligibility for GEF funding

38. The FINTECC Ukraine Project falls under GEF's Climate Change Mitigation Strategy 1, Program 2: Develop and demonstrate innovative policy packages and market initiatives to foster a new range of mitigation actions. In particular, one of the three areas of support under Program 2 involves demonstrating performance-based mechanisms linked to emission reductions.
39. The Project meets the following eligibility criteria for accessing funds from the GEF:
- **Demonstrated 'Global environmental benefits':** The GEF, as the financial mechanism for the UNFCCC, provides funds to cover those costs that are associated with transforming a project with national benefits into one with global environmental benefits. With respect to climate change mitigation, global environmental benefits refer to the sustainable reduction of greenhouse gas emissions^{2,3}.
 - **Demonstrated 'Incrementality' and 'Additionality':** Incremental cost funding is the fundamental principal upon which the GEF will fund projects. The GEF finances the incremental or additional costs associated with transforming a project with national/local benefits into one with global environmental benefits. The 'principle' of incremental cost funding ensures that GEF funds do not substitute existing development finance and baseline activities, and it must be shown that project activities would not take place in the absence of GEF involvement but provide new and additional funding to produce agreed global environmental benefits.
40. The GEF supports the testing of incentive mechanisms based on ex-post emission reductions assessments. The design and development of such financing mechanisms will be supported at a sector-, city-, or economy-wide level:
- a) Mechanisms to finance ex-post assessed emission reductions, based on an agreed upon baseline emission scenario;
 - b) Mechanisms that associate loan financing to a GEF grant where the grant would incentivize additional emission reductions and lower the loan cost for the country if additional emission reductions are achieved;
 - c) Mechanisms to enable national facilities to provide performance-based financing to financial institutions to support output-based climate change mitigation activities where the subsequent emission reductions would trigger concessional funding from the facility;
 - d) Technical assistance and capacity building.
41. Adopting this approach in Ukraine will help build capacity and policy frameworks needed to meet its mitigation targets in future international agreements. Projects should feature: flexibility of governments/municipalities to design and implement the mechanism; potential for scaling up; and results agreements and monitoring mechanism. Functional performance-based mechanisms depend on the quality of national and/or sectoral scenarios and MRV systems.

² Specifically those not covered by the Montreal Protocol.

³ For instance, regarding technology transfer, a global environmental benefit is the increased adoption of a low-carbon development path through technology transfer, market transformation, and enabling activities.

2.2 Incrementality and additionality

42. The Project will accelerate and enhance transformational effects and, through its incremental finance, incentives, policy dialogue and technical assistance activities, address market barriers and create an enabling environment for the acceleration of climate technology transfer. Without GEF funds it would be unlikely that the holistic approach to low penetration, high potential and best available climate technologies that this Project proposes could be trialled in the baseline scenario outlined above. This is because a key feature of climate technology financing is that investments for trialling novel approaches are risky and require groundwork to become operational. Overall, without funding from the GEF, the significant benefits of the proposed GEF project will not be realized, most notably:

- Targeted financial mechanism – including the trialling of a performance-based instrument based on ex-post assessments of GHG emissions reductions to incentivise climate change mitigation.
- Policy dialogue support packages – to explore ways to strengthen the enabling environment for the adoption of climate technologies, encourage technology transfer and extending climate technology value chains.
- Technical assistance – Workshops and dissemination of information to develop local capacity to identify, design and develop climate technology projects and to strengthen climate technology supply chains.
- Knowledge management and awareness – will build on knowledge activities prepared as part of the FINTECC Regional Project. Outputs will be industry sector and technology workshops and MRV information dissemination, lessons learned studies and increasing the level of publically available information.

43. Further details on the Project's incrementality and additionality are provided in Annex 7.

2.3 Global environmental benefits

44. Based on the EBRD's experience in the Region, and in Ukraine in particular, estimates indicate that the Project could generate direct emission reductions of up to 1.55 million tonnes CO₂eq over 10 years. These calculations are based upon a range of assumptions, notably: EBRD financing of approximately EUR 36 million (approximately USD 39,000,000 million) and USD 7 million in performance based grants and 10-year equipment lifetimes of the technology.

45. While estimating the market potentials is not feasible for a top-down indirect emissions reduction estimate because the Project interventions involve a wide variety of technologies, a bottom up estimate using a multiplication factor of 4 (for Credit and Guarantee facilities) gives indirect emissions reductions of up to 6.2 million tonnes CO₂eq.

2.4 Summary of key features of the Project

Project objective

46. The proposed project aims to develop and demonstrate an innovative policy and technical assistance package, and support development of performance-based financing mechanisms to increase investment in climate technologies in Ukraine. The Project will aim to contribute to achieving an energy efficient economy and increased energy security in Ukraine, while improving its energy self-sufficiency, in line with Energy Strategy of Ukraine 2030.

47. Supporting manufacturing and deployment of best available climate technologies in Ukraine will also increase competitiveness of Ukraine's private sector through higher operational efficiencies, and enhancing competition in the climate technology market through, for example, supporting development of manufacturing capabilities for production of climate technologies within Ukraine.

48. The Project will leverage the work of EBRD's PETER project that provides recommendations to improve GHG MRV processes that underpin carbon-pricing policies. This will be done through; MRV support to EBRD clients, and MRV process information dissemination through industry workshops and the FINTECC website.

Strategic approach of the Project

49. To achieve its objective the Project employs a three-pronged approach, systematically combining targeted investments with technical assistance and support for policy dialogue to target key barriers to the development of technology market chains (see Table 2) and facilitating the creation of a suitable regulatory and business environment for technology transfer:

- **Performance-based ‘Climate technology’ investments and incentives programme:** The project will pilot a **performance-based financing mechanism** that will blend a performance based grant, based on a combination of ex-ante and ex-post assessments (where practical and applicable) of GHG emission reductions, with **Bank financing**. Financing will target both vertical and horizontal technology transfer⁴ and ensure prompt and appropriate transfer and deployment of technologies. This programme will primarily target barriers to technology transfer related to the underdeveloped supply chains of climate technologies.
- **Technical assistance:** The Project will provide two streams of technical assistance. **Technology deployment support** will be provided to final users of technologies to assist with the identification of viable climate technology investments, their development and implementation. **Technical assistance for strengthening climate technology supply chains** will focus on the development of manufacturing capacity and the development of technology where these are underdeveloped in Ukraine. This technical assistance will be provided to private sector companies and local consultants in the field of technical service of selected low penetration technologies. An innovation voucher scheme will be used to promote and support climate technology design, deployment and services.
- **Policy dialogue:** The Project will assist the Government of Ukraine to **develop and adopt innovative policy packages** to strengthen the enabling environment for the adoption of climate technologies. Providing institutional, policy and regulatory support, the work will help the government improve existing legislative frameworks, set appropriate technology standards and create enabling environments to promote innovation, manufacturing and deployment of climate technologies. Policy dialogue supported by this Project will also encourage the development of partnerships and greater coordination.



Figure 3 FINTECC Ukraine strategic approach

⁴ Horizontal technology transfer involves long-term sharing of intellectual property, usually via a joint venture or cooperation between foreign direct investor and a domestic company in the host country; vertical technology transfer involves the relocation or sale of technology products without the sharing of intellectual property, usually by granting of sole production rights to one investor, or the simple sale of finished products to consumers in a new location

Table 2 Project approach to addressing the key barriers identified

Key Barriers	Actions integrated in the Project design	Components / Outputs
Financial		
<ul style="list-style-type: none"> Limited availability of finance 	<ul style="list-style-type: none"> GEF performance based grants and EBRD direct bank finance to support development of performance based financing. Innovation vouchers to support companies in all relevant aspects of innovation including R&D, testing, certification etc. 	Output 3.2, 2.2
<ul style="list-style-type: none"> Transaction cost are usually high 	<ul style="list-style-type: none"> GEF performance based grants counteract transaction costs. 	Output 3.2
<ul style="list-style-type: none"> Project preparation costs 	<ul style="list-style-type: none"> Technology deployment support to assist with the identification of viable climate technology investments through to development and implementation. 	Output 2.1
<ul style="list-style-type: none"> Limited availability of financial support for innovation 	<ul style="list-style-type: none"> Innovation vouchers to support companies in all relevant aspects of innovation including R&D, testing, certification etc. 	Output 2.2
Policy, legal and regulatory		
<ul style="list-style-type: none"> High degree of uncertainty in the legal and regulatory environment, anticipated MRV regulations and a lack of adequate regulatory frameworks to incentivize technology transfer 	<ul style="list-style-type: none"> Policy dialogue activities under Component 1 will be designed to encourage stability and certainty in the legal and regulatory environment for Climate technologies including adoption of international standards and labelling with strong relevance to the climate technology transfer and dissemination of MRV information via various mechanisms; 	Output 1.2, 4.2
<ul style="list-style-type: none"> Policies, subsidies and regulatory measures impede technology transfer 	<ul style="list-style-type: none"> Policy dialogue activities under Component 1 will leverage EBRD's existing policy dialogue activities in Ukraine and focus on policies to create enabling environments for climate technologies such as facilitation of eco-labelling and eco-design standards. 	Output 1.2
Capacity, awareness and technical skills		
<ul style="list-style-type: none"> Weak technical capacity to identify and develop bankable climate technology projects and lack of awareness of energy efficiency potential and opportunities 	<ul style="list-style-type: none"> Technology deployment support will be provided to final users of technologies to assist with the identification of viable climate technology investments through to development and implementation. Innovation vouchers to support companies in all relevant aspects of innovation including R&D, testing, certification etc. 	Output 2.1, 2.2,
<ul style="list-style-type: none"> Lack of familiarity with carbon market schemes and the impact of carbon pricing 	<ul style="list-style-type: none"> Capacity building for companies to strengthen MRV and the dissemination of MRV information will support the carbon pricing policy implementation process and address a lack of practical experience, understanding and technical expertise in the field of MRV methodologies. Links to the EBRD's PETER project and supporting information will be made available on the project website, and via knowledge building activities. Technical assistance in the field of MRV 	Output 4.2, 2.1
<ul style="list-style-type: none"> Information asymmetry among stakeholders 	<ul style="list-style-type: none"> Support for the preparation of industry standards, guidelines and assessment of technology baseline developed Industry sector and technology workshops and MRV information dissemination. Lessons learned studies to a) disseminate best practice; b) provide capacity building to policy makers, local experts and private enterprises. 	Output 4.1, 4.2

Key Barriers	Actions integrated in the Project design	Components / Outputs
<ul style="list-style-type: none"> Underdeveloped supply chains 	<ul style="list-style-type: none"> Technical assistance in support of innovation along the climate technology value chains aimed at increasing R&D and innovation of climate technology products, processes and services. This includes the distribution of innovation vouchers. 	Component 2
<ul style="list-style-type: none"> Limited skill set and motivation of staff in private enterprises to take on new roles associated with climate technologies 	<ul style="list-style-type: none"> Workshops, MRV information dissemination and practical experience alongside technical experts through innovation voucher schemes and assistance to companies to support, design and implement climate technology projects. 	Output 2.1, 4.2
Institutional		
<ul style="list-style-type: none"> Lack of institutions and institutional capacity to organize, transform, develop and participate in emerging markets for energy efficiency and carbon markets 	<ul style="list-style-type: none"> Technology deployment support to assist with the identification of viable climate technology investments through to development and implementation. Preparation of industry standards, guidelines and assessment of technology baseline. Industry sector and technology workshops and trainings. Lessons learned studies to a) disseminate best practice; b) provide capacity building to policy makers, local experts and private enterprises. Workshops and information dissemination in the field of technical service of GHG MRV processes (in conjunction with the PETER project) where technical expertise is limited in Ukraine. 	Components 1,2,3 & 4

2.5 Project design and relationship between components

50. The Project is composed of four interrelated components, and their associated subcomponents. The Project Components contribute, individually and in concert to achieving the Project objective of accelerating investments in climate change mitigation in Ukraine. The Components relate to each other as follows and as illustrated in Figure 4:

- Component 1 – Supporting the design of innovative policy packages to promote energy self-sufficiency and technology transfer** – The project will support institutional, policy and regulatory policy dialogue to assist the government in Ukraine to create an enabling environment for the adoption, innovation and increased capabilities for manufacturing of climate technologies. With a focus on legislation, regulation and procedures, Component 1’s objective is the removal of technical, legal and administrative barriers, particularly those associated with the adoption of policies and standards that encourage technology transfer. The policy dialogue assistance provided under Component 1 will be in part informed by, and aligned with, the technology investment projects selected under Component 3 and coordinated with the relevant technology transfer technical assistance provided under Component 2.
- Component 2 – Technical assistance along climate technology value chains** – A targeted technical assistance package will focus on: 1) assisting end users of technologies with the identification, development and implementation of viable technology investments; 2) strengthening climate technology supply chains through assistance to private sector companies and local consultants in the field of research and development, manufacture and technical service of selected technologies; and 3) further development of industry guidelines, methodologies, and technology baseline data developed as part of the FINTECC Regional Project. The technical assistance provided under Component 2 will be coordinated with the relevant policy dialogue assistance provided under Component 1 and will be directly aligned with the technology investment projects selected under Component 3.

- **Component 3 – Climate technology finance to support development of performance-based financing** – Climate technology finance support will facilitate investments into climate technologies using the direct financing operations of the EBRD. Performance-based grants and Bank financing will be based on criteria set by the Project and consistent with the Bank’s internal criteria and procedures. Policy dialogue under Component 1 may, and technical assistance packages under Component 2 will, be targeted at technologies receiving financial support.
- **Component 4 – Knowledge management and awareness** – In close collaboration with EBRD’s FINTECC Regional project a number of knowledge management and awareness activities will be undertaken to build industry networks and a knowledge base, and prepare relevant guidelines for the selected technologies. Activities will support the specific technologies targeted by investment projects and will be coordinated with Policy dialogue support under Component 1 and technical assistance under Component 2. The knowledge and awareness generated will, in turn, inform the technical assistance, policy dialogue, and investment projects. FINTECC may leverage its existing cooperation with organizations such as the Food and Agriculture Organization (FAO), the International Energy Agency (IEA), the World Intellectual Property Organization (WIPO) in delivering some of the capacity building activities.

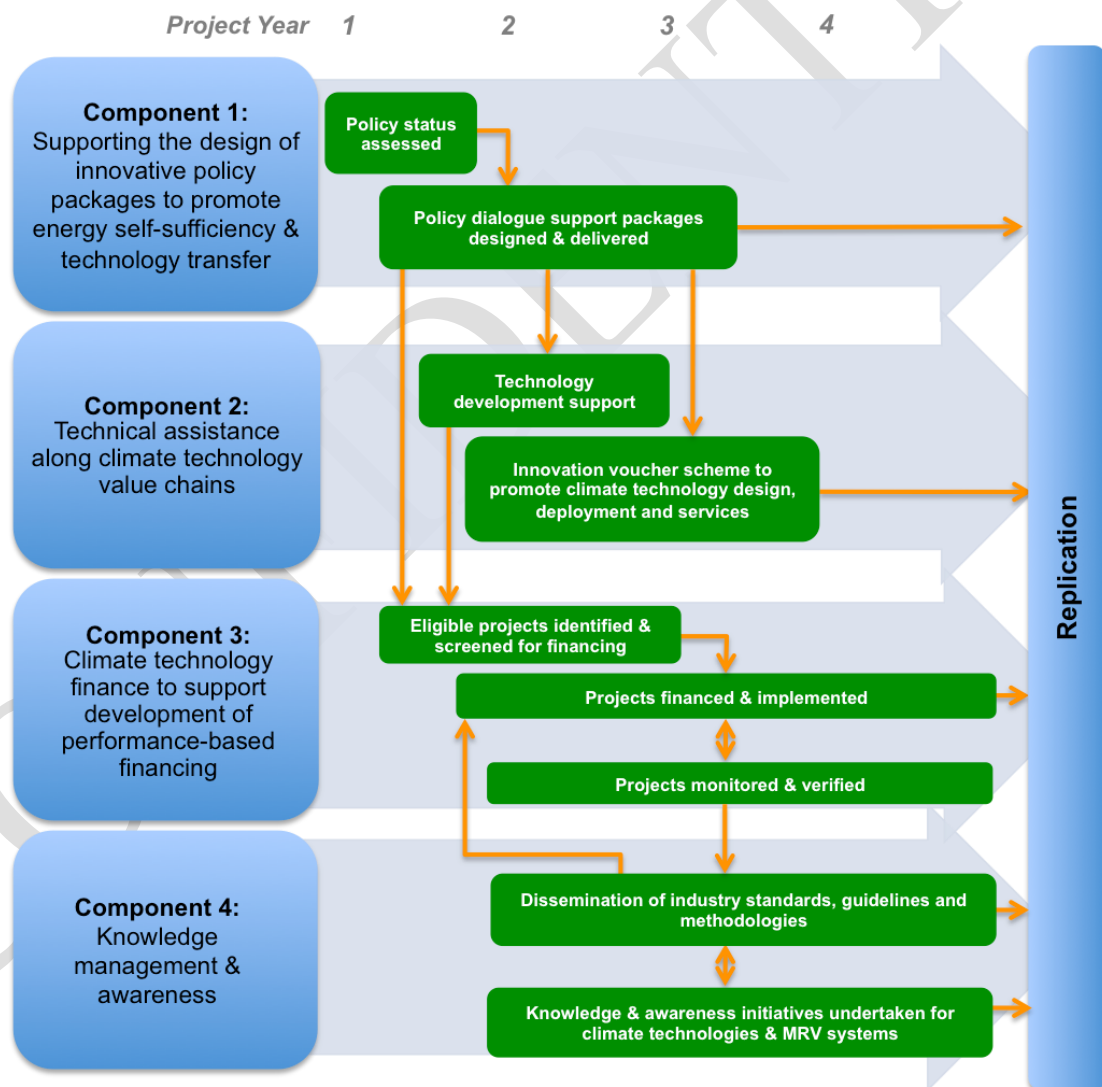


Figure 4 Relationships between FINTECC Ukraine’s Project Components

Component 1: Supporting the design of innovative policy packages to promote energy self-sufficiency and technology transfer

Financing: EUR 700,000 from co-financing, with USD 0 requested from the GEF TF

Outcomes: 1.1 Improved legislation, policy and standards strengthen enabling environment for technology transfer and improved energy self-sufficiency

51. Funded by the Neighbourhood Investment Facility (NIF) through the EBRD, Component 1 will provide institutional, policy and regulatory support to assist the Ukrainian government to design an effective policy framework for climate technology transfer. The work will help the government improve existing legislative frameworks, set appropriate technology standards and create enabling environments to promote innovation, manufacturing and deployment of climate technologies.
52. Specific outputs under Component 1 include:
Output 1.1 Assessment of policy status; and
Output 1.2 Policy dialogue support packages designed and delivered.

Output 1.1 Assessment of policy status

53. Support will be provided to the State Agency for Energy Efficiency in cooperation and dialogue with other relevant stakeholders, including Ministry of Economy, Ministry of Regional Development, and Verkhovna Rada Committee on Entrepreneurship and Industrial Policy.
54. The scope of work will include the following tasks:
- Review of existing legislation, policy and regulatory framework relating to the relevant climate technology with the aim of ensuring consistency with the requirements of EU Directives related to appliances, equipment and technologies, and in line with relevant Ukraine's obligations under the EU-Ukraine Association Agreement;
 - Identify priority regulations to be amended. This Task will help to structure the on-going policy dialogue with the Agency and other stakeholders on the essential upgrade of existing climate-technologies-related legislation.

Output 1.2 Policy dialogue support packages designed and delivered

55. The focus of the policy dialogue work will be on crosscutting climate technologies that have wide application in Ukraine. There may be an additional focus on development of standards for public procurement of climate technologies. The content of the policy dialogue support packages will be finalised during the project inception, allowing the Project to reflect the current needs of the Government and the activities of other stakeholders given the rapidly changing situation in the country.
56. Policy dialogue support will take into consideration:
- (i) relevant international best practice policy instruments to support climate technology deployment;
 - (ii) effective implementation and enforcement strategies;
 - (iii) relevant EU Directives and other amendments to primary or secondary legislation as required to enable deployment of climate technologies with specific reference to Ukraine's obligations under the EU-Ukraine Association Agreement and its membership of the Energy Community.
57. Preparatory activities, including stakeholder interviews, roundtable workshops, surveys and market studies, have resulted in a number of recommendations on the focus of the policy dialogue support package. The prioritization of policy dialogue interventions is undertaken in dialogue with relevant local policy stakeholders, while adhering to the key principles of the FINTECC Policy Intervention criteria (see Figure 5). Reflecting the most important needs of the country, the policy dialogue support packages will tentatively focus on:
- *Helping adoption of standards and legislation with strong relevance to the climate technology transfer:* Development of technical regulations in relevant areas including eco-design, voluntary and compulsory eco-labelling, and/or national standards for specific technology areas as agreed with the Agency and other government stakeholders.

- These activities can include transposition/adoption of EU directives with strong relevance to technology transfer such as 2010/30/EU Eco labelling Directive and 2009/125/EC – Eco design Directive.

58. The dedicated policy dialogue activities will run in parallel with the implementation of the investment projects.

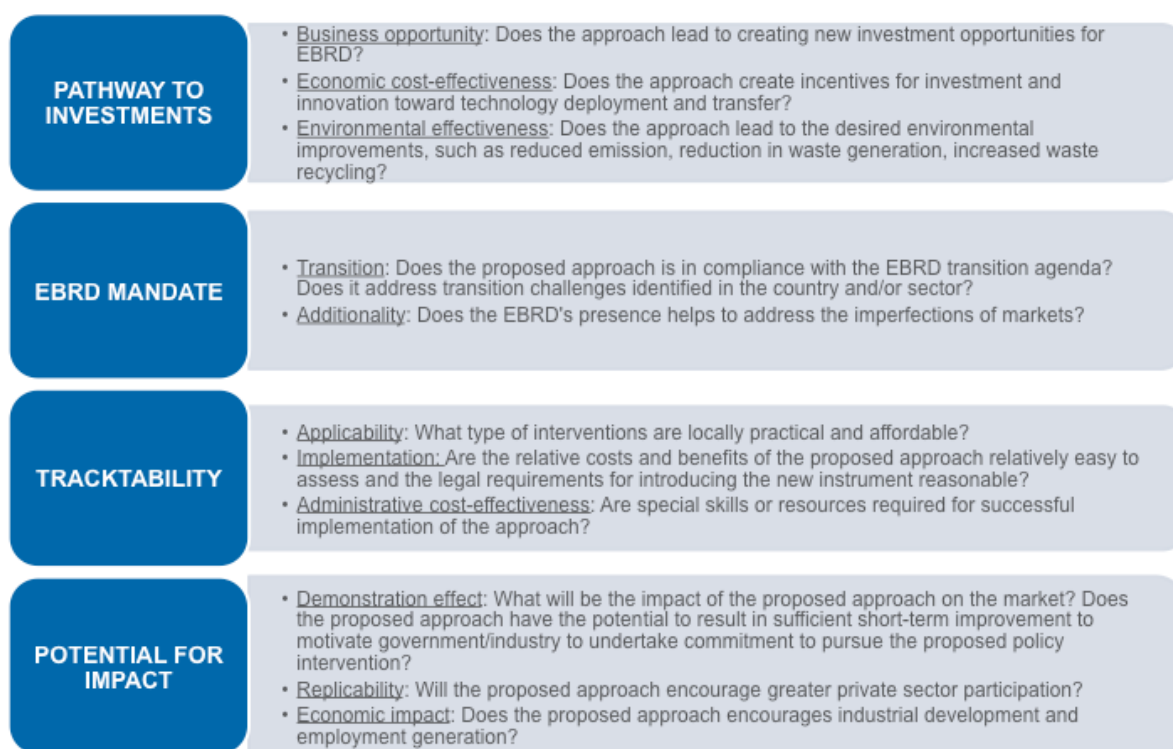


Figure 5 Key principles of the policy interventions

Component 2: Technical assistance along the climate technology value chains

Financing: EUR 2,800,000 from co-financing, with USD 0 requested from the GEF TF

Outcomes: *2.1 Identification, design and development of climate technology projects; 2.2 Innovation opportunities for climate technology design, deployment and services identified and developed*

59. Funded by the NIF through the EBRD, the technical assistance provided as part of FINTECC Ukraine will be provided along the climate technology value chains, thereby focusing on supporting both climate technology deployment and climate technology manufacturing.

60. Specific outputs under Component 2 include:

- Output 2.1 Technical development support;
- Output 2.2 Innovation voucher scheme to promote climate technology design, deployment and services.

Output 2.1 Technology development support

61. Technical assistance will be provided to enhance competitiveness of corporate enterprises through the introduction of best practice climate technologies and climate technology innovations. This will promote market transformation and transition by aligning the interest of technology suppliers and end-users. The technical assistance services provided would include one or more of the following services focussing on climate technology implementation to be carried out by the consultant(s) engaged by the EBRD, as and when required:

- Climate technology audits to identify climate technology investment opportunities
- Energy/Resource Efficiency Management Systems assessment and Energy Management
- Assessment of best practice and best available technologies
- Benchmarking and energy/resource management review, including gap analysis for ISO standards relevant for climate technology deployment
- Capital investment appraisal
- Development of performance indicators
- Development of MRV plans for the enterprises
- Market development assistance
- Dissemination of information
- Project Management Support
- Specific energy/resource optimisation analysis.

62. The NIF-funded consultant(s) provide these services by:

- Working with the technical staff of companies to identify resource efficiency investments, assessing the feasibility of the potential investments, and assisting the companies in reviewing/developing bankable investment programmes in energy and resource efficiency; and assessing opportunities for linkages to carbon market instruments.
- Supporting clients by optimising project management during the implementation of the energy/resource efficiency investments, and providing training services to ensure clients are able to implement and manage efficient energy/resource systems on a sustainable basis;
- Supporting the companies in assessing technical and economic potential of sustainable energy technologies across different sectors of the economy.

63. The consultant(s) will analyse and assess the energy/resource consumption of the selected companies or operations, with particular attention to areas where substantial savings can be made through introduction of climate technologies.

64. The consultant(s) will use all relevant studies produced by the companies and external consultant(s), if any. The output of each consultant will be a report analysing the energy usage within the operations, elaborating the potential energy/resource saving investments and providing a financial analysis of each larger investment, or a suite of smaller investments, which could be treated as one package. If the clients are satisfied with the result, the identified investment programme could form the basis for a lending operation.

65. The consultants may also provide training of staff on technical service of GHG MRV technologies where technical expertise is limited in Ukraine. Such training would be made available for technical experts in engineering service, facility management, project design and implementation. Building the capacity to develop and maintain climate technology will ensure the sustainability of the Project after its completion.

Output 2.2 Innovation voucher scheme to promote climate technology design, deployment and services

66. In complement with technical assistance and knowledge management services funded by the NIF, the NIF will also fund an Innovation Voucher scheme, which is an established mechanism for supporting SMEs to innovate. The scheme is intended to partially pay for an external expert to help Ukrainian companies identify and implement opportunities for innovation related to climate technology design, deployment and services.

67. EUR 1 million of NIF funding will be used to provide eligible EBRD clients (to whom these vouchers have been issued) with a range of services, including:
- R&D– technology design, customisation, applied research
 - Testing
 - Certification
 - Market research
 - Developing and protecting intellectual property
 - Innovation advice covering any part of the business related to climate technologies.
68. Voucher holders will be able to select from a large number of national and international suppliers of such services. A variety of Ukrainian stakeholders may be involved in the activity, including local universities, research institutes, local manufacturing and service companies, and business/industry associations.
69. The NIF-funded consultant will manage the voucher scheme. Management activities will include:
- Marketing the innovation voucher scheme and seeking expressions of interest
 - Checking eligibility of companies
 - Issuing of vouchers
 - Monitoring and verification of the work
 - Collection and analysis of metrics around the scheme (GHG emission reductions, IP value creation etc.)
 - Liaison with and reporting to EBRD on all of the above
 - Related record-keeping and administrative tasks.

Component 3: Climate technology finance to support development of performance-based financing

Financing: USD 39,190,000 from co-financing – corresponding to USD 39,000,000 in loans and USD 190,000 in-kind; with USD 7,000,000 requested from the GEF TF for performance based grants.

Outcomes: 3.1 Increased technology transfer; 3.2 Increased investment in climate technologies; 3.3 Reduced carbon efficiency gap

70. The Project aims at making investments that demonstrate low penetration technologies and practices in Ukraine. The climate technology finance support provided will help companies overcome the existing financial barriers while technical assistance and policy dialogue support packages will assist to overcome technical and policy/regulatory market barriers. The EBRD has considered various mechanisms for supporting climate technology transfer. Given the specific barriers and challenges of Ukraine, the selected approach is the one providing the highest flexibility to target advanced climate technologies with low market penetration. The mechanism will be finalized at the outset of the full project implementation.
71. The Project will pilot a GEF-funded performance-based ex-post incentive grant that will be blended with EBRD direct bank financing. Bank financing, in combination with the incentive grants, represents an effective mechanism to encourage investment in low penetration technologies through overcoming financial barriers such as the limited availability of conventional suitable financial products and the high transaction costs present in the Ukrainian market. The performance-based grants reward and incentivise projects, and are proven to be particularly effective in generating results.
72. The Project will support 10 to 15 pilot climate technology projects, encouraging early movers and helping them to overcome existing market barriers to climate technology investments.
73. Specific outputs under Component 3 include: Output 3.1 eligible projects identified and screened for financing; Output 3.2 projects financed and implemented; and Output 3.3 projects monitored and verified.

Output 3.1 Eligible projects identified and screened for financing

74. Assessment of eligibility for an investment will be undertaken for potential projects benefiting from the FINTECC Ukraine incentive grant and EBRD bank financing. This process will be fully streamlined into the existing operational model of the Sustainable Resource Initiative (SRI) of the Bank. Under this process, projects will be identified and screened for eligibility using criteria listed in Annex 5. A project is considered eligible for grant funding assessment of eligibility if it meets the following main pre-screening criteria:
- *Eligible recipients:* Recipients must be private sector enterprises (including private companies operating under concession in the area of municipal services). Recipients of the grant/incentive will be considered to be private sector clients of the EBRD and, as such, there must be an underlying project signed by the EBRD with the recipient in parallel to the allocation of the grant.
 - *Eligible sectors:* All private sector projects are eligible, including manufacturing, services, agribusiness, natural resources, communications and transport.
 - *Size of investment:* The Project will support investments of any size, but the incentive grant will only relate to eligible costs that are part of an underlying EBRD debt/equity transaction and will be capped per client at 25% of total investment (as consistent with FINTECC Regional Project). The level of the capital grant will be assessed on a case-by-case basis.
75. Investments in the supported climate technologies will need to result in energy savings and carbon emission reductions higher than those provided by other technologies potentially suitable for the particular operation. Project selection is at the full discretion of the EBRD, and will follow the internal checks and procedures applied to any other investment or financing project of the Bank. For examples of eligible technologies see Annex 4. The full description of the eligibility screening process and project appraisal is given in Annex 5.

Output 3.2 Projects financed and implemented

Overview of the design and establishment of incentive grant scheme

76. This mechanism will be structured based on the EBRD's extensive experience in financing technology modernization and innovation, leveraging private sector finance and promoting the introduction of best practice. The mechanism will complement other EBRD products in the market.
77. **Incentive grant:** The incentive grant will be applied to a percentage of total eligible project costs. The level of the grant will be assessed and calibrated on a case-by-case basis, and will depend both on the technology proposed and on the final beneficiary. A pre-defined set of objective performance criteria will be used, including (i) market penetration, (ii) replication potential, (iii) GHG savings impact (using a combination of ex-ante and ex-post assessments - where practical and applicable - of GHG emission reductions), (iv) contribution to the development of the technology value chain, (v) level of technology innovativeness, and (vi) level of energy/resource management in the company to ensure that the benefits of the technology implementation can be sustained over time. The full description of the criteria is given in Annex 2.
78. Eligible costs will be those related to design, supply, installation, engineering, and commissioning of eligible climate technology equipment and also include costs associated with specific administration requirements that have been identified as a barrier along the climate technology value chain, including cost of preparation of legal documents and permits. The in-kind costs of the company are excluded. It is envisaged that the incentive grant will cover on average 15% of total eligible costs related to implementation of climate technologies as part of an underlying EBRD transaction.
79. The proposed incentive grant for each individual climate technology project, together with a description of the scope of work and anticipated benefits, will be submitted for the EBRD's approval as part of the underlying EBRD transaction in line with the EBRD internal procedures.
80. The Project will be designed according to the EBRD guidelines on the use of non-TC funds. Accordingly, the incentive grant programme will be used to pave the way for market-based

solutions, thus eliminating the use of grant support in future. In line with the guidelines, the FINTECC Project will include an assessment of support needs related to climate technologies during the final year of the Project and, depending on the results, the Project will be either phased out or supported with other donor funds. Depending on the maturity of the market at the time, technologies with still very low market penetration may still stay eligible under FINTECC while technologies with higher market penetration may not be eligible for incentive grants anymore.

81. **Smart design of incentive grants and capital grants finance:** Common concerns when designing financial incentives schemes are ensuring sustainability and the potential for market distortion. These concerns are particularly acute when concessional finance and investment grants are used. Specific concerns are a) the potential to crowd out other finance providers, particularly those in the private sector, b) the presence of moral hazard, whereby project developers are cushioned from failure to the extent that they may fail to take appropriate precautions, and c) avoiding the creation of windfall profits by the provision of excessive risk-coverage. The Incentive Grant Calibration Framework was designed to be ‘smart’ and avoid the creation of such market distortions. To ensure the creation of a market in which competition is fair and equitable, the design of the incentive scheme followed a number of key criteria, also outlined in Annex 3. ‘Smart’ design of the financial incentive mechanism
82. Following identification and screening of projects, the following steps will be undertaken towards project financing and implementation:
- Step 1: Initial discussion between the EBRD and the Client and initial review of the investment plan.
 - Step 2: The EBRD communicates terms of potential financing.
 - Step 3: The EBRD and the Client discuss opportunities for technical assistance and financial incentives linked to the investment plan.
 - Step 4: The EBRD completes its due diligence and approves the financing together with associated technical assistance and incentives.
 - Step 5: Technical assistance (as outlined in Output 2.1) is released to assist with the feasibility assessments and implementation.
 - Step 6: The client implements the investment plan.
 - Step 7: The EBRD pays the incentive upon verification of implementation.
83. These steps are illustrated in more detail in Figure 7. Step 8 of the process involves projects being monitored and verified, which will be undertaken under Output 3.3 below.

Output 3.3 Projects monitored and verified

84. Project monitoring and verification, including audit of the installations, will be undertaken by international consultants. Where appropriate, the verification may be done in-house by EBRD specialists from the Energy Efficiency and Climate Change (E2C2) Department. Monitoring and verification activities will be desk based and documents reviewed will include the following: (i) “as built” project documentation prepared by technology supplier and/or the installer including “as-built” drawings, general schemes, technical description, technical specifications of equipment and receipts of all costs incurred in connection with an Eligible Project (in English or Ukrainian language); (ii) Commissioning Protocol, signed by the technology supplier or installation company (if different) and technical supervisor of the Recipient (with translation in Ukrainian or English, if applicable); and (iii) start-up test protocol, signed by the installer (with translation in Ukrainian or English, if applicable).
85. Climate technologies impact energy performance along with qualitative improvement of the systems and their operation. To reflect results achieved, the Recipient will report the following information to the EBRD one year after technology installation: (i) annual energy consumption per energy carrier (in MWh/year for electricity, in m³ per year for gas, in tonnes per year for other solid and liquid fuels and in GCal per year for heat); (ii) annual delivered specific energy use (e.g., in kWh/m² for energy related to building services; in kWh per unit of output in manufacturing operations); and (iii) other qualitative co-benefit indicators (better comfort, higher reliability of systems, increased awareness of climate technologies and climate change adaptation challenges

among decision-makers within the Client's company, information on initiatives started by the business to increase its resilience to climate change, etc.)

Component 4: Knowledge management and awareness

Financing: EUR 500,000 from co-financing, with USD 0 requested from the GEF TF

Outcomes: 4.1 Increased capacity, knowledge and awareness of climate technologies and MRV leading to replication and scaling up

86. Component 4 focuses on a number of information and knowledge sharing activities, building upon similar work and collateral established by FINTECC in other regions. This Component will help EBRD clients to identify and implement opportunities for innovation related to climate technology design, deployment and services.
87. This Component has two expected outputs: 4.1 dissemination of industrial standards, guidelines and methodologies; and 4.2 knowledge management and awareness initiatives developed for climate technologies and MRV systems.

Output 4.1 Dissemination of industry standards, guidelines and methodologies

88. A number of market assessment and knowledge sharing activities will be undertaken, building upon similar work and collateral already built by FINTECC in other regions. FINTECC is developing methodologies that aim to close the information gap on market penetration of technologies, climate resilience planning and climate technology investment definition, and delivering clear and consistent market intelligence. This approach ensures that data provides useful outputs for the purpose of structuring sustainable energy/resource financing projects and products. As such, lessons learned studies will be produced under Output 4.1 that will then be used to provide feedback and recommendations for on-going policy dialogue and technical assistance activities under components 1 and 2 and may inform the selection of future investment projects under component 3. Increasing the level of publicly available information and disseminating lessons learned under output 4.2 will help to create business opportunities along the supply chain from manufacturing, retail, and servicing of these technologies. In addition, the methodologies already developed within FINTECC will be tailored and applied within FINTECC Ukraine and will ensure that an up-to-date body of information is available with regards to the status of the climate technology market.
89. This approach to knowledge management is cost effective as it leverages existing knowledge and support from the Regional FINTECC framework. To maximise leverage, activities will, where possible, utilise support and information from other initiatives and link to other events and networks. The Project will also make use of methodologies prepared in conjunction with IEA and FAO as part of the FINTECC Regional Project.

Output 4.2 Knowledge management and awareness initiatives undertaken for climate technologies and MRV systems

90. Specific in-country visibility and knowledge sharing activities will be defined, developed and delivered in partnerships with other organizations and may include:
- (i) Industry sector and technology workshops. Particular attention will be paid to addressing needs along the value chain including R&D specialists and finance. Where possible intake and exit surveys will be undertaken to gauge the short-term results of the events on awareness and capacity.
 - (ii) Lessons learned studies to a) disseminate best practice; b) enable creation of long term partnerships and networks; c) provide capacity building to policy makers, local experts and private enterprises. Lessons learned studies will be commissioned and implemented, and the results will be disseminated through workshop events, as well as via the project website (FINTECC Ukraine's web portal will be integrated into the existing FINTECC Regional website). Target audiences will include policy makers, local experts and private enterprises.

(iii) Dissemination of information on MRV. In conjunction with EBRD’s PETER project and its work in the area of MRV methodologies, the Project will seek to provide information on MRV processes and regulations, which will increase the effective capacity of businesses to participate in the upcoming Ukrainian carbon market. MRV information, case studies and supporting documentation will be made available on the project website. Case studies will help to support Ukrainian business to understand the processes and costs for developing carbon market projects, and aim to build capacity to make use of carbon finance.

(iv) Preparation and dissemination of climate technology market assessment using methodology developed as part of an ongoing FINTECC Programme in cooperation with the International Energy Agency and Food and Agriculture Organization of the United Nations.

91. To maximize efficiency, all activities will be aligned with, and undertaken in close collaboration with, the EBRD’s FINTECC Regional project and regional dialogue on technology transfer.

2.6 Risks

Risks	Rating	Mitigation approach
Political	Medium - High	<p>Political (political changes) and macroeconomic (instability) risk can impact the technology transfer policy environment and, in a more severe case, national priorities and market conditions. The EBRD recognizes that Ukraine is a challenging country in which to operate and has intentionally targeted Ukraine in response to its need for sustainable energy initiatives.</p> <p>While the ceasefire agreement reduces the risk of increased political and social unrest, the situation remains fragile in Eastern areas of the country. As this situation could impact capital assets, the EBRD’s internal screening/review process considers the relative risk/reward profile of an investment and screens out high-risk projects. The EBRD also requires borrowers to put in place appropriate insurance of assets, in line with EBRD standard procedures.</p>
Regulatory	Medium	<p>The current situation has driven the Ukrainian Government to follow more sustainable and energy independent development pathways. While a new government may change priorities, commitment to energy independence and a reduction of energy intensity remains high on the Government’s agenda and will be supported by a new law on energy efficiency. The International Monetary Fund also requires Ukraine to phase out domestic subsidies for oil and gas as a requirement of the IMF grant support scheme. The risk that successive governments will not prioritize new investment in climate technologies remains low as long as; (i) the new laws on energy efficiency continue to be implemented, and (ii) government and other donor initiatives to improve energy efficiency and increase renewable energy are combined with effective MRV.</p>
Financial	Medium	<p>This is a moderate risk that will be mitigated by EBRD’s standard financing conditions and the incentive mechanism, and thorough technical support as part of project implementation.</p> <p>As a financial institution, the EBRD operates extensive risk assessments of all its transactions, covering credit, economic, environmental, implementation, legal, market, technological and integrity risks. The investments financed under Component 3 of the Project will be subject to standard approval processes within the EBRD.</p>
Environmental	Low	<p>The Environmental and Social Action Plans (ESAP) of the EBRD require that the projects funded by the EBRD be designed, constructed and operated in accordance with relevant national and EU standards and EBRD’s Performance Requirements and to mitigate any negative impacts from the project implementation. The ESAP includes measures for the beneficiaries to further develop, improve and implement its Environmental, Health and Safety Standards (EHSS) management system, to undertake additional environmental studies for obtaining permits and approvals for the implementation of the project as required under national and local requirements.</p>

Risks	Rating	Mitigation approach
Climate	Low	<p>The project aims to support the transfer of climate mitigation technologies, which will include consideration of the climate resiliency of the investments undertaken.</p> <p>The project also builds capacity in the area of climate technology assessments and climate technology investment pipeline development, both of which will consider climate risks.</p>
Operational / Capacity	Low	<p>Operational risk will be mitigated by the EBRD's extensive experience in the Region and in Ukraine in particular. The EBRD has significant experience in energy efficiency in Ukraine and has successfully piloted a range of energy efficiency financing models in neighbouring countries.</p> <p>The EBRD has developed close working relationships with in-country partners. Capacity risk will be mitigated by careful selection of stakeholders, partners and beneficiaries, as well as capacity building and technical assistance provided for project implementation. Close cooperation will be sought with in-country partners in relevant enterprises and in key ministries, which is a process already begun during project formulation. The project will also benefit from the lessons learned from EBRD's own portfolio and that of FINTECC Regional, including operational lessons and capacity development approaches. Finally, the post-implementation, verified emissions reduction based disbursement of grants has been designed to incentivize project developers to effectively implement their climate technology projects.</p>

3 Rationale for the Bank's involvement

3.1 Fit with the EBRD

92. The EBRD is the regional development bank for the Eastern European and Central Asia countries and is the largest financial investor in Ukraine. To date, the Bank has committed over EUR 7.4 billion (USD 9.76 billion) in 293 projects in Ukraine.
93. The EBRD shapes its strategy and operations around innovative ways of providing financing and reducing risk, in a manner that is sensitive to the different stages of transition towards establishing a market economy of each country. The EBRD's country strategy for Ukraine includes considerations such as the transition to a low-carbon economy, enhanced energy efficiency and security, promotion of commercialisation, competition and private sector involvement in infrastructure. The EBRD's existing and expanding portfolio of investment projects is well matched to the areas that are critical for climate technology transfer, as elaborated below.
- **Industry:** The EBRD works with large industrial energy users (in steel, chemicals and other sectors) as well as SMEs in Ukraine to promote best practice and encourage investments into industrial efficiency projects that would otherwise not be implemented.
 - **Agribusiness:** Of the EUR 1 billion in new funding channelled to Ukraine by the EBRD in 2014, almost a third was received by a variety of agribusiness clients across the country. The Bank has recently launched its 'Advice for Agribusiness' programme, aimed at Ukrainian SMEs. The programme, funded through the EBRD-Ukraine Stabilisation and Sustainable Growth Multi-donor Account, has a budget of EUR 750,000 to be used over the next three years. In 2011 the EBRD's new regional EUR 50 million Agribusiness Sustainable Investment Facility (ASIF) is also accessible to Ukraine and focuses on small-scale renewable energy, health and safety improvements, implementation of sustainable farming and energy efficiency and there is a budget of EUR 1 million for technical, financial and legal due diligence.
 - **Energy efficiency:** Through the SEI, EBRD has already invested EUR 1.3 billion in 60 sustainable energy projects in Ukraine with a total value of almost EUR 6 billion.
 - **Renewable energy:** The EBRD is active in increasing renewable energy use in the region through providing project finance, technical cooperation, and policy dialogue on regulatory frameworks through its SEI and the EBRD's Sustainable Energy Financing Facilities (SEFFs, small to medium loans in 15 countries).
94. Technology transfer in these sectors will be optimally achieved through the application of the EBRD's mandate – of helping to move countries closer to a full market economy through taking those risks that support private investors and do not crowd them out, all the while spreading sound banking principles, respect for the environment and adhering to good corporate governance.
95. The Project proposes a financial mechanism, which the EBRD, as a financial institution, is eligible and equipped to design and manage. The EBRD has developed a wide range of financial and operational instruments to support technology transfer that combine finance with targeted technical assistance funding and has a long track record of success in this area.
96. The EBRD has experience in designing and implementing programmes, and the necessary staff capacity in the Region to follow-up Project implementation:
- The Ukraine in country Energy Efficiency and Climate Change (E2C2) team includes a senior manager, a principal engineer as well as a programme manager who leads on policy dialogue – all of whom have been closely involved with the preparatory activities and with the development of this Project. With many years of in-country experience, these team members have excellent relations with industry and government, and a sound understanding of the potential under FINTECC.
 - The EBRD's headquarters-based E2C2 Team comprises 34 professionals with backgrounds in banking, finance, carbon markets, energy policy and engineering.
 - Bank-wide there are approximately 100 professionals based throughout the ETCs. In addition, EBRD has an extensive network of consultants in those countries.

97. The opportunity to support networked technical assistance in Ukraine tied with the FINTECC Regional Project is welcomed as a unique opportunity by the EBRD as it enables the EBRD to engage with a broad range of stakeholders (beyond governments, which are typically targeted by the EBRD's technical assistance activities) and because the platform could enable the Bank to form lasting relationships with non-governmental stakeholders in the Region.

3.2 Consistency with national priorities

98. The Project is consistent with Ukraine's 5th National Communication to the UNFCCC and its major focus on energy efficiency, aiming to both reduce GHG emissions and reduce the country's dependence on energy imports. The 5th National Communication also notes that there is a vast potential for increasing energy efficiency in the country. The National Communication presents a number of barriers to implementing policies and measures such as a lack of incentives for private investments, insufficient government financing and over optimistic planning.

99. The analysis of national policies and measures in Ukraine's 5th National Communication as well as the outcomes of recent national initiatives indicate a need for further improvement in policies and measures and in particular their financing and implementation. The Project and its finance mechanisms are consistent with these identified needs and will deliver substantial direct and indirect energy efficiency improvements in the target sectors. The Project is therefore aligned with the key priorities of the Government, namely to increase energy security, reduce GHG emissions and reduce the energy intensity of the Ukrainian economy.

100. This Project is fully consistent with the Energy Strategy of Ukraine 2030 that aims to achieve an energy efficient economy and places emphasis on increased renewable energy production. In addition the project is fully in line with the Comprehensive National Programme on Energy Conservation that aims to reduce energy-intensity through technological and structural changes.

101. The Ministry of Industrial Policy has approved a sectoral programme until 2017 that focuses on improving energy efficiency in energy intensive industries: ferrous and non-ferrous metallurgy, chemical industry and machine manufacturing. This programme aims to achieve a 50% reduction in energy use and an emission reduction of 22.6 MT CO₂eq.

102. It is to be noted that some of the provisions of these national initiatives have not yet been fully implemented.

103. A summary of major relevant policies and measures in Ukraine is provided in Annex 11.

3.3 Socioeconomic benefits and gender dimensions

104. The adoption of climate technologies is crucial for the overall socioeconomic development of the country and the Project has much to offer in that respect. Investment in climate technologies will reduce GHG emissions and is associated with resource savings and efficiency gains, increased productivity, competitiveness and profitability, and the enhanced ability of enterprises to survive and grow in the face of rising energy prices and a competitive international environment. These gains can lead to increased levels of employment and job security. Furthermore, participants in workshop programmes will benefit from enhanced technical capacity and knowledge, and hence increased job security, employability and income levels.

105. The Project will benefit Ukraine as a whole by assisting investments in technologies, developing local capacity and creating an enabling environment for these technologies and setting Ukraine on a sustainable growth trajectory leading to reduced energy dependence. The Project is consistent with the EBRD's mandate to support transition, economic growth and sustainable projects that will help to improve many people's quality of life across the EBRD's Region of operation.

106. Based on the EBRD's internal policy promoting gender equality of opportunities across its full range of investment and donor-funded activities, all Project activities and Components are fully gender inclusive. Gender equality is considered an integral part of sound business management and also key in the EBRD's activities to advance sustainable growth in its Countries of Operations. In January 2010 the Board of Directors the EBRD adopted the Gender Action Plan

(GAP)⁵, Strategic Gender Initiative, which identifies specific areas where the EBRD can best add value given its business area and mandate. Based on the EBRD's commitment to the 3rd Millennium Development Goal (to end poverty by promoting gender equality) and the Gender Working Group, which promotes equal opportunities and enhanced economic participation of women across sectors and projects.

107. Up to approximately USD 50,000 of Project funds is allocated to gender issues and gender equality across the entire Project. As part of this Project, there is a unique opportunity to use the innovation element to understand the link between gender balance and innovation in Ukraine, and to support the gender balance in high-value activities such as intellectual property generation. As such, participation of women will be particularly emphasised and supported in the application process for innovation vouchers. The consultants managing the innovation voucher will monitor and analyse participation of women in the scheme, and will report on lessons learned.

3.4 *Cost-effectiveness*

108. The Project involves a GEF grant of USD 7,000,000 and is expected to achieve direct GHG emissions reductions of 1,554,000 tonnes of CO₂eq per year over the 10-year lifetime of the investments. Therefore, the cost to the GEF of emissions reduction is under USD 4.51 per tonne (not including agency fee). The methodology for calculating these emission reductions is provided in Annex 9.

3.5 *Replicability and sustainability*

109. FINTECC Ukraine has been designed to generate sustained momentum for climate technology transfer and to produce replicable outputs through the following:

- ***Developing a novel mode of promoting technology transfer.*** The Project's replication strategy is to pilot a new funding window for climate technologies supported by performance-based incentives, with the intent of learning from the experience and promoting this learning for possible replication in other EBRD countries of operation.
- ***Fostering local confidence in climate technologies*** that have been proven elsewhere yet have low market penetration in Ukraine. This process involves promoting FINTECC projects as demonstration projects of viable climate technology investments. The Project's replication strategy is based in part on supporting those climate technologies that have high potential for replication in the country.
- ***Enhancing capacity in the sector,*** including through supportive policy conditions and technical capacity, which will further strengthen the basis for sustainability and replication. Specific in-country visibility and knowledge sharing activities will be defined, developed and delivered in partnership with other organizations. Lessons learned studies will focus on disseminating best practice, in addition to providing capacity building to policy makers, local experts and private enterprises.
- ***Dissemination and capacity building on MRV guidelines to increase private sector preparedness*** for the upcoming emission trading scheme implementation in Ukraine. Through dissemination of MRV information and technical assistance to clients, the methodology development and monitoring process will be transferred to local organizations such as statistical office or research institutes to be developed further and managed on on-going basis.
- ***Knowledge management activities are designed to support the evolving climate technology market*** by closing the information gap on market penetration of technologies, climate resilience planning, and climate technology investment definition, and to deliver clear and consistent market intelligence. Increasing the level of publicly available information is intended to create business opportunities along the supply chain from manufacturing, retail, through to servicing of these technologies.

⁵ The EBRD's Gender Action Plan is available from: <http://www.ebrd.com/downloads/sector/gender/genplan.pdf>.

- ***Stimulate demand for sustainable energy investments.*** The Project is based on a process of gradually building experience through planning, testing, monitoring and assessing progress with investments in climate technologies. This approach is designed to reduce financial risks and ensure viability by adjusting to market conditions and stakeholder potential. The approach is consistent with the Bank's mandate of helping to move countries closer to a full market economy through taking risks that support private investors without crowding them out, while spreading sound banking principles, respect for the environment and corporate governance.

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4 Project structure

4.1 Project management

Project Leaders

110. The Project will be led jointly by the E2C2 department in EBRD headquarters and the EBRD Ukraine office. The Project Leaders will include an E2C2 representative and a representative from the EBRD Ukraine country office. Support to Project leadership will be provided by local support staff.
111. Responsibilities of the Project Leaders include the day-to-day management of the operations of the Project, monitoring and benchmarking of the Project process, development of reporting to GEF on the project progress, to be the first point of contact for external communications regarding the Project, engaging in external marketing of the financing Programme, Networks and methodologies that are being developed, internal marketing of the proposed financing Programme and capacity building among Bankers related to climate technologies, internal coordination related to the Project, including management of the internal approval process of individual call-offs, as well as management of the consultants and their work including leading the procurement of consultants (with support of Project Team).
112. The Project Leaders will liaise with the national team as well as with the GEF Secretariat. The GEF and NIF Project funding will not be used to cover the EBRD's staff costs.

Project Team

113. The Project Team will be based at EBRD Headquarters and in the EBRD Ukraine country office. The Project Team will be composed of experts with a track record of supporting and implementing mitigation projects in Ukraine and the Region, including experts in policy dialogue, on sustainable energy financing tools, and technical experts on climate change mitigation technologies
114. Among the responsibilities of the Project Team are the provision of input into the ToRs for the work of Consultants, participation in consultant selection, review of the factual content and quality of outputs provided by consultants, assistance to consultants with identifying key stakeholders, participation in key meetings in Ukraine and the Region, ensuring that the undertaken activities are in line with EBRD procedures in the area of their expertise and responsibilities within EBRD (e.g. compliance with environmental strategies, policy dialogue strategies, etc.).
115. The Project Team will also engage with, and draw on, other units within the EBRD if the need arises – such as experts from Legal Transition Team, Communication Department and others. The Project Team will meet at the Project kick-off and then liaise regularly, and as and when needed.

Project Support

116. The EBRD has a pool of 34 specialists in the E2C2 Team based in HQ and a further 11 experts based throughout the EBRD Region to support the local operations of EBRD. The EBRD Ukraine office has 3 climate technology experts.
117. Investment projects will be generated by Ukraine in-country bankers supported by the E2C2 experts.
118. The verification of investments will be done by international consultants and reported back to the EBRD for review upon implementation of the investments. The Project Leader will continuously monitor the pipeline of projects.
119. Individual investment projects will have a separate team structure created to comply with EBRD internal approval procedures. These teams will involve experts from Credit, Environmental Department, Office of the Chief Economist, Legal Department, Banking, etc.

120. The following experts may be called upon to support FINTECC Ukraine as needed:
- 2 experts from HQ will support policy dialogue activities
 - Approximately 5 experts from the engineering unit will support the definition of eligible investments
 - Bankers from HQ and in Ukraine will take an active role in the business development activities for individual transactions benefiting from FINTECC.

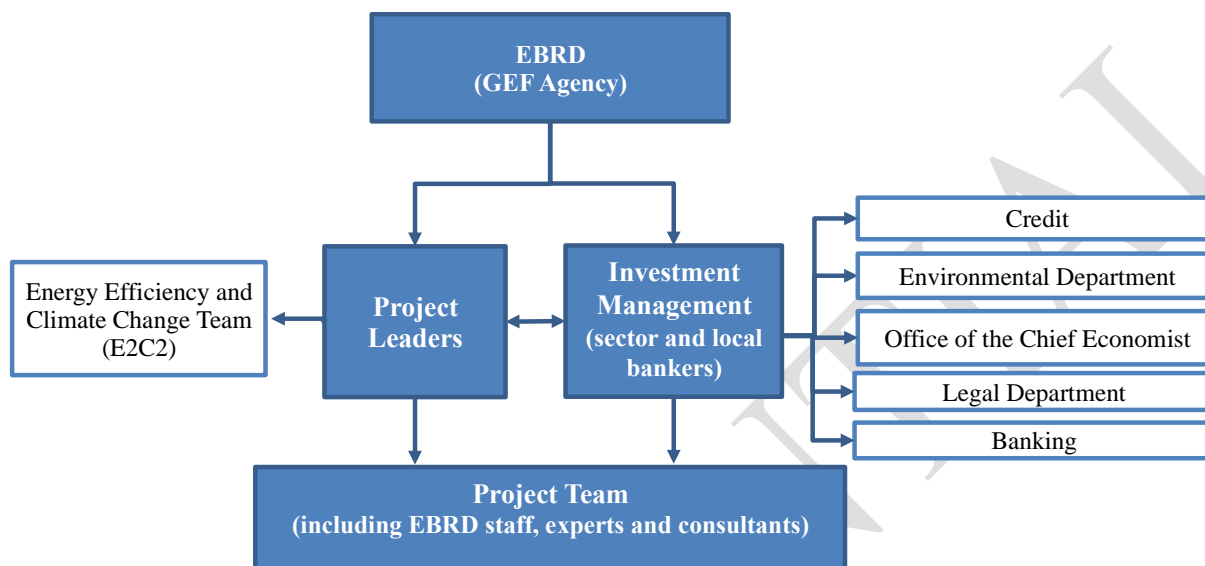


Figure 6 Project implementation arrangements

4.2 EBRD co-financing

121. The EBRD will provide the following **cash** contributions: a total of USD 39,000,000 made available for direct bank financing of climate technology projects.

122. The EBRD will provide the following **in-kind** contributions:

- A total of USD 190,000 in-kind contribution has been allocated to cover staff costs associated with FINTECC-linked activities on financing projects. This includes the overall cost of EBRD staff directly working on the development, implementation and promotion of the Project, including:
 - The extra work required by the bankers on developing transactions with climate technology focus (screening of pipeline and existing portfolio to identify climate technology investment opportunities, engagement with the clients and further development and internal approval of the climate technology aspect of the transaction);
 - Costs for staff and operations supporting the Project (legal support, fund management, processes, internal approval processes and establishment of internal project structure, preparation of relevant marketing materials); and
 - Activities associated with external promotion such as sourcing information for marketing materials, collecting relevant information from projects to be disseminated, and participation in external events to promote the Project.
- The NIF is providing EUR 4 million through the EBRD for EBRD-managed consultancy frameworks supporting the Project but not financed by the GEF. This includes consultancy frameworks for project development, assessment, policy dialogue and technical assistance components, including EUR 1 million of ‘Innovation Vouchers’ (details in Annex 16. Overview of Climate Technology Innovation Vouchers).
- A total of USD 560,000 from the EBRD is allocated as Project management costs.

4.3 Key stakeholders

123. The EBRD has identified a number of key stakeholders during the initial project scoping activities and at round table workshop events held in Ukraine.

124. Partnership and dialogue with relevant national and local public sector entities in Ukraine is considered critical for scaling-up investments in climate technology. The EBRD has already established close links with Government entities in Ukraine and will continue to foster these relationships through policy dialogue and networking (in addition to investment financing), under the Project. Representatives from relevant government departments (e.g. ministries, regulatory agencies and municipal enterprises) will be targeted for Network membership and engaged in the Network-based thematic discussions and outcome-oriented activities. Thematic discussions may take place in network meetings, on forums on the project website and activities and meetings between Government agencies geared towards consensus building around climate technologies and policy dialogue. In particular, the project will engage and coordinate with the following Government agencies:

- Ministry of Regional Development
- State Agency for Energy Efficiency
- Ministry of Ecology and Natural Resources of Ukraine
- The merging Ministry of Industrial Policy and Ministry of Economic Development and Trade.

Private sector

125. Given the Project's focus (in particular under Component 3) on private sector projects, the private sector is considered a key stakeholder. Private enterprises will play a key role in identifying, developing and implementing projects, and will benefit directly from the financing mechanism established. Through the EBRD's past and on-going investment activities, policy dialogue and consultations, and the EBRD's overarching transition mandate in Ukraine, it has been established that these stakeholders value the EBRD's role in promoting sustainable energy and climate resilience investments and look to continue to partner in the areas of climate mitigation and adaptation. The EBRD is committed to continue building up private and public-private partnerships to promote the adoption of best available technologies for mitigation, demonstrate new technologies, and build the capacities of these stakeholders in Ukraine.

Research institutions, regional thematic experts and institutes

126. During Project inception relevant expert stakeholders from academia and private research institutes and other thematic experts will be identified for the purpose of participating in knowledge management and research and innovation opportunities supported by the project.

NGOs, civil society and local communities

127. The knowledge produced in the Project will be accessible to NGOs, civil society and local communities in Ukraine, the EBRD Region of Operation and beyond for perusal and use in their own activities. The platform used will leverage the work undertaken under the FINTECC Regional project. Access to material will be granted on the basis of expression of interest by the stakeholder and there will be additional opportunity to give feedback on Project activities through the website. As such, the resources generated will benefit from, as well as enhance, the expertise of these groups regarding the challenges of climate change.

Public institutions and other non-governmental initiatives on mitigation themes

128. The EBRD will coordinate and network with European institutions, bilateral counterparts and international agencies working on climate technology transfer (see Section 4.4). The EBRD will ensure full coordination with existing initiatives in the country and region early on in the Project under Component 1.

4.4 Coordination with related initiatives

129. To avoid duplication and realize opportunities for synergy, the Project will conduct a review of complementary projects during the project inception phase and establish connections and synergies. However, the EBRD has already recognised synergies, established contact and initiated coordination with a number of programmes and projects regionally and nationally, whilst the coordination with others is outlined below.
130. This Project will coordinate with the FINTECC Regional project that works with eligible countries from the Region through Networks focused on technology transfer and builds on existing initiatives on technology transfer in the Region. To enable synergies and avoid duplication the EBRD has already – and will in the future – coordinate its efforts with initiatives undertaken by a range of non-governmental initiatives, including sector-specific organizations, IFIs and other GEF projects. The Project will also coordinate with and leverage lessons learned from the EBRD/GEF ‘Ukraine Renewable Energy Direct Lending Facility.’
131. Coordination with the UNEP-led ‘Climate Technology Centre and Network’ (CTCN) will be maintained and overlaps will be avoided in part due to the Project’s and the CTCN’s different geographical foci (country based and global, respectively), and the Project’s strong private sector-orientation (compared to the CTCN’s government-based approach). While the activities of FINTECC Ukraine take place at the national level, unlike the CTCN, FINTECC Ukraine’s approach is specifically tailored to the particular demands of the Ukrainian context, FINTECC’s experts will have specialized expertise in Ukraine and the ETC (Caucasus and Central Asia), in which the CTCN has no consortium members. The nature of interactions enabled by the projects also differs: while the CTCN deploys technical assistance to respond to ‘country requests’ using a dedicated ‘pool of experts’, the FINTECC Ukraine Project uses experts in a systematic approach by combining policy dialogue measures with technical assistance and investments to increase climate technology investments and catalyse the market for climate technologies.
132. The EBRD has already established contact and initiated coordination with the CTCN through its FINTECC Regional project. Potential links and overlap with the CTCN will be dealt with through regular formal coordination, participation in key meetings and general communication facilitated by UNEP. The EBRD will meet periodically to review project status, discuss upcoming activities, avoid duplication and to promote synergies between projects. Several channels of coordination have been identified on an indicative basis, such as creating a virtual link between the Project’s and CTCN’s websites, invitations to participate in, contribute to, and benefit from the Networks’ technology transfer dialogues and the Centre’s resources.
133. Synergies and avoidance of duplication of efforts will be sought during the early stages of the Project through established GEF inter-agency channels with the following GEF-funded projects:
- UNIDO-led *Improving Energy Efficiency and Promoting Renewable Energy in the Agro-Food and other SMEs in Ukraine and Introduction of Energy Management System Standard in Ukrainian Industry*. Strong coordination with the UNIDO’s Energy Management System project has been established during the preparatory phase.
 - UNDP’s *Development and Commercialization of Bioenergy Technologies in the Municipal Sector*.
134. The Project will also coordinate with the other relevant projects listed below:
- Equity, loans and loan guarantees provided by the EBRD to renewable energy developers for projects with good commercial prospects.
 - EBRD’s UKEEP: Provides loans up to USD 3 million from EBRD and free technical assistance for privately owned companies seeking to invest in renewable energy projects.
 - EBRD’s USELF: Provides loans from EUR 1 million and free technical advice for small and medium sized renewable energy projects.
 - NEFCO: Complements financing from other parties and/or financial institutions for eligible projects that have a Nordic company or institution as business partner.
 - Green Growth Fund: Provides direct and indirect (through financial intermediaries) financing for small-scale renewable energy projects usually not larger than EUR 50 million.

Annex 1. Project results framework

Project Strategy	Objectively Verifiable Indicators	Baseline (Start of Project in 2015)	Target (End of project)	Sources of Verification
Impact				
<i>Project Objective:</i> Contribute to increased investment in climate technologies in Ukraine, leading to an energy efficient economy and increased energy security in the country while improving its energy self-sufficiency, in line with Ukraine 2030 Strategy.	Tons GHG reduced or avoided Volume of investment mobilized for climate technology transfer over the Project lifetime (disaggregated between public and private investments)	0 – all GHG emissions reductions will be incremental 0 – all funding will be incremental	1,554,000 tonnes CO ₂ eq over 10 year equipment lifetimes 6 - Financial/performance based mechanism successfully demonstrated (on a scale of 1 to 10)	Project reports including: EBRD financial reports, annual and semi-annual Project progress reports, verification of investments, Project appraisals, market surveys
Outcomes				
1.1 Improved legislation, policy and standards strengthen enabling environment for technology transfer and improved energy self-sufficiency	Degree of support for low GHG development in the policy, planning and regulatory framework ⁶	1 – No policy or strategy for climate change in place (on a scale of 1 to 10)	3 – Policy/strategy proposed and consultations on-going (on a scale of 1 to 10)	Project reports including: Project inception report from consultants, annual and semi-annual project progress reports Reports submitted by climate technology recipients Workshop participant satisfaction survey
2.1 Identification, design and development of climate technology projects	Number of climate technology projects identified, designed and developed	0 – no projects with suitable technologies are in place (technologies with zero or very low market / sector penetration)	10 climate technology projects identified, designed and developed	
2.2 Innovation opportunities for climate technology design, deployment and services identified and developed	Number of innovation initiatives supported	0 – no scheme to support innovation in climate technologies	20 innovation vouchers disbursed	
3.1 Increased climate technology transfer	Number of projects funded	0 projects/institutions funded	10 pilot climate technology projects funded	

⁶ Assessed on a scale of 1-10 following the definition in Annex II of the GEF-6 Climate Change Mitigation Focal Area Strategy

Project Strategy	Objectively Verifiable Indicators	Baseline (Start of Project in 2015)	Target (End of project)	Sources of Verification
3.2 Increased investment in climate technologies	Volume of investment mobilized for climate technology transfer over the Project lifetime	USD 0 – all funding will be incremental	At least USD 46 million (USD 39 million EBRD loans, USD 7 million GEF-funded grants) invested with an additionally targeted USD 39 million leveraged as private equity and other parallel co-financing e.g. from local banks.	
3.3 Reduced carbon efficiency gap	Reduced energy consumption as a result of financed activities verified by audits	0 – no efficiency gains	100% of estimated GHG emissions reductions achieved	
4.1 Increased capacity, knowledge and awareness of climate technologies and MRV leading to replication and scaling up.	<p># Participants in workshops report on increase in their knowledge in surveys</p> <p># of lessons learned studies distributed</p> <p>Lessons learned studies produce recommendations for policy dialogue and technical assistance activities under components 1 and 2.</p> <p>MRV information dissemination mechanism used (depending on mechanism - # of registered users, # of times webpage is accessed or similar)</p>	<p>Little capacity knowledge and awareness of climate technologies and MRV systems</p> <p>No MRV information disseminated</p>	<p>3 Industry sector and technology workshops with 25 participants in each reporting increased knowledge and awareness (gender disaggregated)</p> <p>50 lessons learned studies distributed</p> <p>Lessons learned studies allow for recommendations to be made for policy dialogue and technical assistance activities under components 1 and 2.</p> <p>MRV information shared and disseminated to 50 users</p>	

Component / Outputs	Objectively Verifiable Indicators	Sources of Verification	Assumptions
Component 1: Supporting the design of innovative policy packages to promote energy self-sufficiency and technology transfer			
Output 1.1 Assessment of policy status	Assessment of policy status is available	Review document	Review of policy status will reveal recommendations for support packages
Output 1.2 Policy dialogue support packages designed and delivered	Policy dialogue support packages delivered	Project monitoring reports (semi annual and annual)	Policy dialogue support packages will strengthen the enabling environment for the adoption of climate technologies

Component / Outputs	Objectively Verifiable Indicators	Sources of Verification	Assumptions
Component 2: Component 2: Technical assistance to the private sector along the climate technology value chains			
Output 2.1 Technology development support	* Number of companies for which consultants have produced reports identifying a potential investment programme * # of people trained or participating in knowledge dissemination activities (gender disaggregated)	Project monitoring reports (semi annual and annual)	
Output 2.2 Innovation voucher scheme to promote climate technology design, deployment and services.	* # of companies supported * Resources made available to experts * Stakeholders involved in activities * R&D partnerships formed * Innovation plans implemented * Workshop programs developed * Technologies certified	Project monitoring reports (semi annual and annual)	
Component 3: Climate technology finance to support development of performance-based financing			
Output 3.1 Eligible projects identified and screened for financing	# pilot climate technology projects screened	Project audits (screening); Project monitoring reports (semi annual and annual)	Sufficient demand for climate change technology projects
Output 3.2 Projects financed and implemented	Volume of investment mobilized; # pilot climate technology projects funded	Project financial reporting	Macro economic conditions are such that investments are attractive
Output 3.3 Projects monitored and verified	MRV systems for emissions reductions in place and reporting verified data ⁷	Project monitoring reports (semi annual and annual)	
Component 4: Knowledge management and awareness			
Output 4.1 Dissemination of industry standards, guidelines and methodologies	Industry standards, guidelines and assessment of technology baseline disseminated through workshops and website	Published or digital standards and guideline materials available	Activities will support the specific technologies targeted by investment projects and will be coordinated with Policy dialogue support under Component 1 and technical assistance under Component 2.
Output 4.2 Knowledge and awareness initiatives undertaken for climate technologies and MRV systems	# of people participating in workshops (gender disaggregated) # of lessons learned studies from investment projects produced # recommendations from lessons learned for	Project monitoring reports (semi annual and annual); knowledge materials (documents, brochures, lessons learned studies etc.); evidence of awareness activities (meetings, workshops, media), Project	There is sufficient demand for lessons learned studies and MRV information

⁷ Assessed on a scale of 1-10 following the definition in Annex II of the GEF-6 Climate Change Mitigation Focal Area Strategy

Component / Outputs	Objectively Verifiable Indicators	Sources of Verification	Assumptions
	<p>policy dialogue and technical assistance activities to encourage technology transfer</p> <p>Mechanism for lessons learned studies and MRV information dissemination is operational</p>	<p>website and dissemination tools</p>	

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Annex 2. Summary of financial mechanism

Incentive grant calibration

The capital grant will be applied to a percentage of total eligible project costs. The level of the grant will be assessed and calibrated on a case-by-case basis, and will depend both on the technology proposed and on the final beneficiary. A pre-defined set of objective performance criteria will be used, including (i) market penetration, (ii) replication potential, (iii) GHG savings impact (using a combination of ex-ante and ex-post assessments - where practical and applicable - of GHG emission reductions), (iv) contribution to the development of the technology value chain, (v) level of technology innovativeness, and (vi) level of energy/resource management in the company to ensure that the benefits of the technology implementation can be sustained over time.

Table 3 Incentive grant calibration

MARKET IMPACT - EARLY MOVERS		
Market Penetration <i>(criteria are exclusive)</i>	There is estimated market penetration of less than 5% in the relevant sector in the country	9%
	There is estimated market penetration of more than 5% but less than 15% in the relevant sector in the country	4%
	The incremental Capex cost of the technology's deployment is demonstrably 20% or more, when compared with deployment costs in a country where market penetration is significantly higher. Reasons for incremental costs can include under-developed supply chains, and information or capacity gaps.	5%
Replicability of the Technology in the Market <i>(criteria are exclusive)</i>	The technology is specific to a sector with more than 5 players in the country.	8%
	The technology has horizontal application across industrial operations, across agricultural operations or in the built environment.	9%
Innovation <i>(criteria are exclusive)</i>	The technology is recognised as the first of its kind in the sector and has an important local component, e.g. with associated patent	12%
	The project has an important innovation component, first of its kind in the country, from a technological, contractual or implementation standpoint	5%
SUSTAINABILITY		
Management Practices <i>(criteria are exclusive)</i>	The company is committed to implementing an energy management system in parallel	2%
	The company is committed to implementing a resource management system in parallel	5%
	The company is committed to implementing an energy/ resource management system and a climate resilience plan	7%
	The company is committed to developing a robust MRV system in parallel	5%
Co-benefits	The project produces significant environmental or social co-benefits which are 10 per cent of more above local requirements or local established practice	4%

Annex 3. ‘Smart’ design of the financial incentive mechanism

The Incentive Grant Calibration Framework listed in Annex 2 detailing the breakdown of incentives is designed to be ‘smart’ and avoid creation of market distortions, create fair and equitable market competition and ensure climate technology market development. The design of the incentive scheme followed a number of key criteria outlined below:

- **Integration with the policy context:** The design of the incentive mechanism has taken into consideration the policy context and barriers, costs and risks to be overcome through the use of the incentive and ensures integration with the policy context and understanding the specific barriers, costs and risks that need to be overcome – changing political and policy context will be taken into consideration over the lifetime of the incentive mechanism;
- **Financial additionality as well as operational and policy additionality:** Special consideration was given to the additionality of the incentive scheme. Assessment proved investments would create ‘financial additionality’ as the scheme was essential for the targeted climate technology projects to exist and concluded that investments would not take place under commercial market conditions. ‘Operational and institutional’ additionality is achieved as the incentives will result in an investment that is better aligned with the institutions supporting it as the project provides both policy dialogue and technical support and;
- **Targeted use of incentive concessionality:** Concessionality under the investment framework was given careful consideration in order to provide just enough incentive for the investment to take place by specifically targeting the incremental costs of investment created by market barriers (versus countries with developed climate technology markets).
- **Transparency and predictability of the incentives:** institutional arrangements and local market context will impact on the transparency of green incentives as well as the extent to which the private sector views these as credible. Therefore, whilst incentives are required for new and immature technologies, they will be phased out as the technologies mature and where familiarity of the investments is developed as barriers are addressed by the project. A sunset clause for lowering subsidies as technologies become more cost competitive has been developed in a transparent manner to provide certainty for investors. The incentive will also be carefully tracked through monitoring and evaluation procedures of the project to increase transparency and provide a feedback loop to inform future design of FINTECC incentives.
- **Deep and informed engagement of stakeholders:** A cross cutting issue of the above key factors is strong local knowledge and engagement. Stakeholder engagement during the preparatory work has informed the design of the incentive scheme, this included meetings with Industry and agro-processing groups/companies and a large stakeholder FINTECC Ukraine Roundtable Event held in Kiev. The project will continue to provide stakeholder engagement activities and knowledge sharing through various activities outlined in Component 4.
- **Collaboration across and between FI’s, IFI’s and other projects:** To ensure approaches are complementary and create a coherent approach towards design, implementation and monitoring and evaluation of climate technology finance, the project outlines its approach in Section 4.4. In addition the financing mechanism was developed to be linked to, and aligned with, an emerging carbon pricing scheme (where applicable) and will build on lessons learnt from FINTECC Regional.

Annex 4. Eligible technologies

Eligibility of technologies is established by confirming that:

- (i) *Technology specification goes beyond standard practice:* The proposed technologies and practices go beyond regulatory requirements and standard practices in the country.
- (ii) *Alignment with best available techniques:* The technology to be supported is in line with best available techniques in relevant reputable databases and lists of technologies. Eligibility will refer to standards and databases identified in the previous experience of assessing and benchmarking investments related to energy efficiency and renewable energy. Sample of eligible publications of technologies include: EU BREFs developed as a supplement to the IPPC Directive, Energy Technology Solutions Public-private Partnerships Transforming Industry publication developed by Department of Energy in US in 2010, Energy Star databases of energy efficient technologies, etc.

In cases for which no recognised internal or external sources exist, the responsibility for establishing eligibility will be shared by relevant experts within the Bank.
- (iii) *Climate change mitigation impact:* Installation of the supported technology will result in climate change mitigation.

Table 4 Illustrative examples of potential eligible technologies

Climate change technologies	Description
CHP gas motors in the range of 2 - 6 MWel	Cogeneration or combined heat and power (CHP) with gas motors is the simultaneous production of electricity with the recovery and utilization heat. The gas engines CHP with the unit capacity ranging to 6 MWel were analysed both in Ukraine and in the reference country.
Back-pressure steam turbines of up to 15 MWel	Back-pressure steam turbines have traditionally been a popular technology for generating electricity and heat. Back-pressure steam turbines expand high-pressure steam through a turbine. The output steam is exhausted at a relatively low pressure suitable for onsite heat requirements (for the main production process). The steam for the turbine could be supplied by either natural gas or solid-fuel steam boilers.
Biomass boilers	Biomass boilers are solid fuelled systems that could provide both heating and hot water/steam. Boilers usually burn logs, wood/straw pellets, wood chips or other kinds of solid biomass.
Energy management systems	Energy management systems entail a systematic approach for the management of energy of an enterprise and including employing energy management practices, training of staff and metering, analysing and optimising energy use. Due to the projects focus on technology deployment only ASCMPC metering technologies will be eligible for incentive grants and bank finance, whilst their use will be supported by associated technical assistance to users aimed at monitoring and optimizing various energy resources use.

Annex 5. Relevant procedures

Project pre-screening, identification and appraisal

The projects benefiting from the FINTECC Ukraine incentive grant support will be fully streamlined into the existing operational model of the Sustainable Resource Initiative of the Bank. The project pipeline will be pre-screened by the in-house experts. Consultants will be deployed to Projects with high sustainable resource investment potential to identify such opportunities and provide their cost-benefits analysis. Any projects supported with FINTECC will also follow the three key guiding principles applied by the EBRD across its transactions: (i) sound banking principles, (ii) transition impact, and (iii) additionality.

Verification

The international consultants will undertake verification audit of the installation. The work of the international consultant will be desk based and it will cover the review of the following documentation:

- “As built” project documentation prepared by technology supplier and/or the installer and including “as-built” drawings, general schemes, technical description, technical specifications of equipment and receipts of all costs incurred in connection with an Eligible Project (in English or Russian language);
- Commissioning Protocol, signed by the technology supplier or installation company (if different) and technical supervisor of the Recipient (with translation in Russian or English, if applicable);
- Start-up test protocol, signed by the installer (with translation in Russian or English, if applicable).

The Consultants will also verify the actual eligible costs. These will be capped at the level estimated during the Project Identification Stage.

Monitoring and Results Framework

Climate Technologies impact energy performance together with qualitative improvement of the systems and their operation on a pre-agreed set of indicators

These indicators will be compared with the baseline.

Internal procedures and resources

The proposed Programme will be reviewed by the Operations Committee of the Bank to ensure compliance of the Programme with all relevant internal producers and consistency with overall EBRD approach. Individual projects associated with the Programme will follow the standard Bank approval procedures. The final review/Board document will contain a reference to the capital grant from the Programme.

FINTECC Ukraine Project Cycle

As illustrated in Figure 7, the FINTECC Ukraine Project Cycle will consist of the following steps:

Step 1: Initial discussion between the EBRD and the Client and initial review of the investment plan.

Step 2: The Bank communicates terms of potential financing.

Step 3: The EBRD and the Client discuss opportunities for technical assistance and financial incentives linked to the investment plan.

Step 4: The EBRD completes its due diligence and approves the financing together with associated technical assistance and incentives.

Step 5: Technical assistance is released to assist with the feasibility assessments and implementation.

Step 6: The client implements the investment plan.

Step 7: The EBRD pays the incentive upon achievement of a milestone (e.g. commissioning, implementation, down payment).

Step 8: The client reports on the savings/improvements achieved.

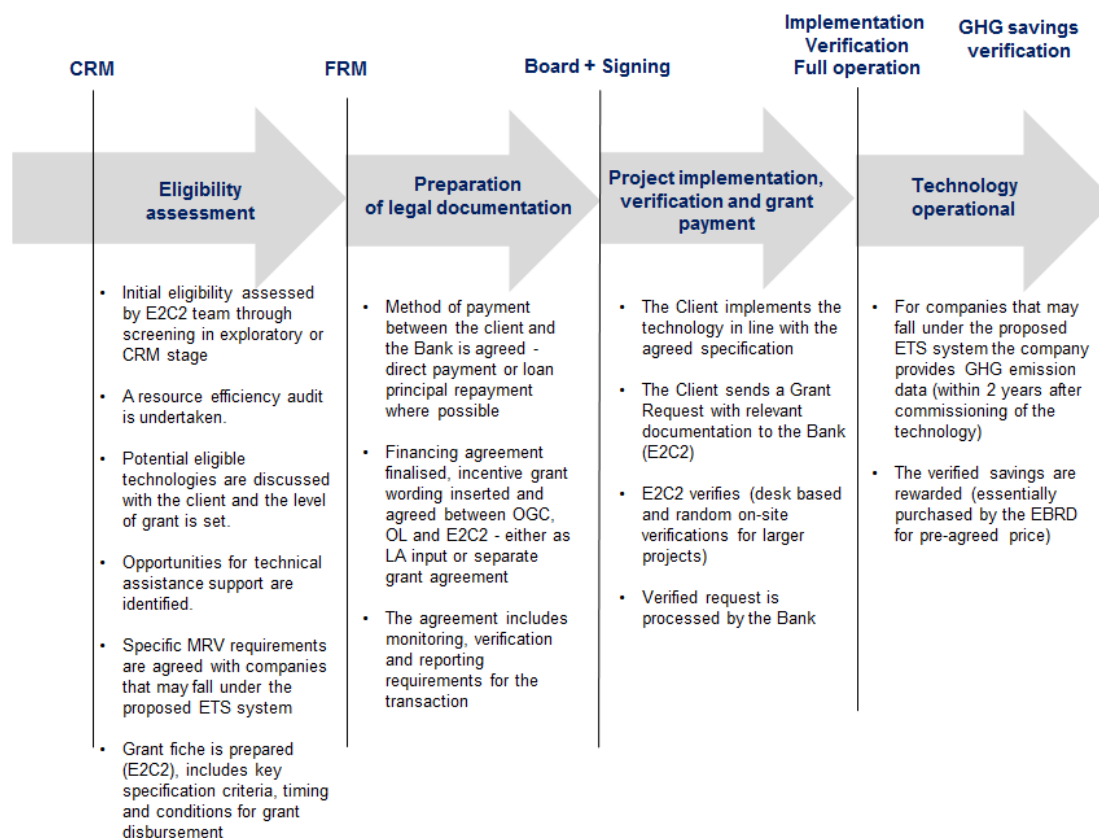


Figure 7 Indicative project approval process

Annex 6. Additional climate change mitigation initiatives in Ukraine

Below is a supplementary list of climate change mitigation initiatives led by the EBRD and others.

A. EBRD-led initiatives

Policy dialogue

The EBRD is very active in the area of climate change mitigation related policies in its Countries of Operations. The policy environment related to climate technologies is very country specific. During the preparatory phase of this Project a screening of policy needs was undertaken in order to deliver very specific targeted policy dialogue assistance inline with the objectives of FINTECC Ukraine as and when needed. The EBRD is committed to assist Ukraine implement a comprehensive regulatory framework vital to support climate technology investments.

In Ukraine, EBRD has extensively engaged in policy dialogue for an extended time in the following areas: the agribusiness grain sub-sector case; energy efficiency and renewable energy and; power and energy sectors among others. Engagement with the Ukraine Government has shown the presence of favourable conditions for reform and the Government is keen to collaborate with international partners, including the EBRD, on legal, regulatory and institutional changes to obtain finance to address the massive challenges posed by energy inefficiency, greenhouse gas emissions and high reliance on imported fuel. There is also a global and regional dimension to policy dialogue in this area through Ukraine's participation in various international organisations, accords and fora, which helps ensure that the issues remain on the country's policy agenda and, notwithstanding recent events, its desire to reduce its energy dependence on Russia. Also part of the regional dimension is Ukraine's membership of the European Energy Community and need to comply with its directives.

A summary timeline of these policy dialogue activities is outlined in Figure 8.

B. UNFCCC Technology Mechanism and the Climate Technology Centre and Network (CTCN)

The CTCN promotes the accelerated transfer of environmentally sound technologies for low carbon and climate resilient development at the request of developing countries. The CTCN provides technology solutions, capacity building and advice on policy, legal and regulatory frameworks tailored to the needs of individual countries. The CTCN focuses on provision of three core services:

- Providing technical assistance (at the request of developing countries) to accelerate the transfer of climate technologies;
- Creating access to information and knowledge on climate technologies; and
- Fostering collaboration among climate technology stakeholders.

The United Nations Environment Programme (UNEP) is host in collaboration with the United Nations Industrial Development Organization (UNIDO) and the support of a consortium of partners. The CTCN is guided by an advisory board meeting at least twice per year.

C. Other key initiatives

Energy Policy Cooperation - The INOGATE Programme supports energy policy cooperation between the European Union and the INOGATE Partner Countries⁸. An 'INOGATE Project' is any EU-funded regional energy project supporting energy policy cooperation in the INOGATE Partner countries in the topics of the areas of cooperation:

- Converging energy markets on the basis of the principles of the EU internal energy market;
- Enhancing energy security by addressing the issues of energy exports/imports, supply diversification, energy transit and energy demand;
- Supporting sustainable energy development, including the development of energy efficiency, renewable energy and demand side management;
- Attracting investment towards energy projects of common and regional interest.

⁸ Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkey, Turkmenistan, Ukraine, Uzbekistan. See http://www.inogate.org/index.php?option=com_inogate&view=projects&Itemid=75&lang=en

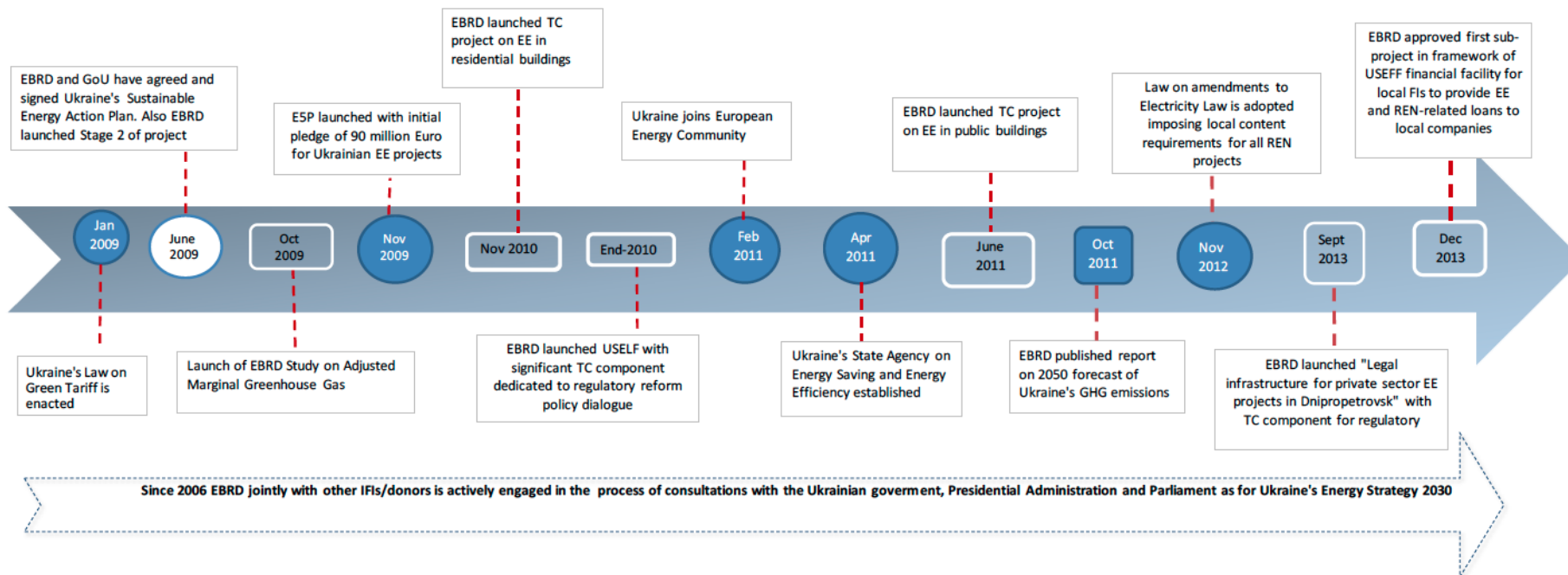


Figure 8 Timeline of policy dialogue activities

Annex 7. Summary of incrementality and additionality

A summary of the baseline, incrementality and additionality of this proposed Project is provided in the Table below.

Table 5 Summary of project incrementality

Category	Baseline without the Project	Incremental impact
Policy development and regulatory environment	<ul style="list-style-type: none"> Limited policy work; policy development for mitigation Development in individual countries without sufficient interaction between stakeholders/ policymakers from different countries. 	<ul style="list-style-type: none"> An enabling environment created which includes policy approaches developed and shared related to technology transfer for mitigation.
Capacity building	<ul style="list-style-type: none"> Ad hoc country-based capacity building programmes based on individual – mostly donor-funded – projects. These often do not target all stakeholders, particularly including relevant consultancy organizations in technical service and GHG MRV technologies as well as business entrepreneurs and potential investors where expertise is particularly limited in Ukraine for low penetration technologies Proven technologies that have not yet been brought to the market in Ukraine may be ignored. 	<ul style="list-style-type: none"> A systematic approach to capacity building for technology transfer for mitigation. Targeting key stakeholders from a variety of different backgrounds to ensure significant uptake of capacity building for mitigation. Workshops and dissemination of information on the technical service of GHG MRV technologies where technical expertise is limited. A focus on transferring proven effective mitigation technologies that have not penetrated the local markets in Ukraine. Evaluation and learning from experience.
Access to information	<ul style="list-style-type: none"> Country-based access to information or access to information predominantly on English-based websites that may not be applicable to the country contexts. No information shared amongst stakeholders from different countries and with investors about technology transfer possibilities. No information on level of market penetration of innovative climate technologies in the country. 	<ul style="list-style-type: none"> Regionally available and publicized information about mitigation technologies in Ukrainian. Information shared across sector boundaries and stakeholder types regarding mitigation technologies, where possible standardized and linked to international norms. Baseline information and progress indicators established for climate technology penetration of mitigation technologies. MRV information disseminated.
Level of investment and access to finance	<ul style="list-style-type: none"> Lack of access to finance for technologies proven in other countries either due to risk adverse lenders or equity investors. Investment in traditional technologies which may not be the most advanced in terms of climate impact (both for mitigation and adaptation). 	<ul style="list-style-type: none"> Finance available for traditional emission reducing technologies that have not yet been implemented in Ukraine, as well as for more advanced technologies that have been proven in other contexts. Pipeline developed and investment undertaken for more advanced mitigation technologies and technologies transferred to the Ukraine contexts.

Without GEF and NIF funds, the technology transfer rate of new mitigation technologies into new markets would be slower and there would only be continued demand for technologies that have already penetrated the market in Ukraine. Therefore, less GHG emissions would be reduced due to a number of reasons:

- It would be unlikely that the systematic approach to climate technology financing that this Project proposes to take – which combining policy measures with technical assistance and investments to accelerate the transformational effects and to ensure sustainable impact in the market – could be piloted. A key feature of climate technology financing is that investments for piloting ‘first mover’ approaches are risky and require groundwork to become operational. While financial institutions such as the EBRD can further leverage finance, there is a need for technical assistance funding for translating innovative concepts into practice and policy dialogue to encourage the formation of enabling market conditions for sustainable impact;
- The investments that are considered for incentive grants under FINTECC would not materialize or would be substantially delayed in the absence of the FINTECC incentive grant, or alternatively the technology would be implemented with specification not leveraging full climate change mitigation potential.
- The sharing of information among key stakeholders (including policy-makers, consultancy organizations, NGOs and entrepreneurs) from different countries would be unlikely to occur;
- The stakeholder capacity would be limited and would not involve addressing climate change mitigation in a comprehensive manner;
- The investment pipeline for climate change mitigation would be limited and;
- NIF funding for technical assistance support the incremental activities that build on the baseline and leverages financing from the EBRD and Project sponsors to yield GHG emissions reductions. GEF funding for investment also aids in reducing perceived technology risk by providing grants, which will help trigger investment.

Overall, without funding from the GEF and the NIF, the significant benefits of the proposed Project will not be realized, most notably:

- Policy dialogue activities (Component 1) to explore ways to strengthen the enabling environment for the adoption of climate technologies, encourage technology transfer and extending climate technology value chains;
- Technical assistance (Component 2) and knowledge management and awareness (Component 4) including workshops and information dissemination for the development of local capacity to identify, design and develop of climate technology projects and for strengthening climate technology supply chains; and
- Targeted financing addressing climate change mitigation (Component 3) including the trialling of a performance-based instrument based on ex-post assessments of GHG emissions reductions to incentivise climate change mitigation.

The indicators to be tracked under this Project and targets are provided in Annex 1.

Annex 8. EBRD's involvement in technology transfer

In many ways the EBRD is an obvious stakeholder in technology transfer development and promotion. The EBRD's detailed country strategies include consideration such as of transition to a low-carbon economy, enhanced energy efficiency and security, promotion of commercialisation, competition and private sector involvement in infrastructure. From an operations perspective, the sectors that are critical for climate technology transfer match up with the EBRD's existing and expanding portfolio of investment projects:

- **FINTECC Regional:** The Finance and Technology Transfer Centre for Climate Change aims to accelerate investment in, and incentivize deployment of, climate technologies with low market penetration in the ETCs and SEMED countries. The Project is expanding the EBRD Sustainable Energy Business Model to the area of climate technology transfer, combining technical assistance (for policy makers and projects) with financial support to kick-start the market for climate technology investments in the ETCs and SEMED countries. As part of FINTECC activities the EBRD has also undertaken training of local consultants in Armenia, with the plan to further roll out the trainings during the 2015 to Moldova. The cooperation with the IEA and FAO on the development of market monitoring and assessment techniques is well under way and the first expert session on climate technology policies was held in Paris in September 2014, and will be followed with a regional conference in Istanbul, planned for June/September 2015. As of 5th of March 2015 FINTECC committed a total support of USD 1.53 million to nine projects approved, with the support to be disbursed upon installation and verification of climate technologies. These approved projects are promoting mainly technologies in the built environment and small and medium enterprises such as light emitting diode (LED) lighting, building integrated solar-thermal, tri-generation, and energy management systems. The total climate change mitigation impact of the projects once implemented will be 112,000 ton CO₂ reduction over 10 years. USD 5.2 million out of the total climate change mitigation investments went towards deployment of best available climate technologies with very low market penetration, underdeveloped supply chains and high replication potential.

Other projects By Sector:

- **Industry:** with over 450 projects (with a total value of EUR 23.3 billion), the EBRD is the single largest investor in the manufacturing and services sectors in Eastern Europe and the CIS. Since 2011 the Bank has begun expanding its operations to the SEMED region (Egypt, Jordan, Morocco and Tunisia). Through its dedicated Energy Efficiency and Climate Change team and its Mid-sized Projects Facility (MPF) the Bank works with large industrial energy users (in steel, chemicals and other sectors) as well as SMEs to promote best practice and assist investments into industrial efficiency projects that would otherwise not be implemented.
- **Agribusiness:** the Bank is the largest agribusiness investor in the region, with a record EUR 945 million committed to agribusiness projects along the entire food supply chain in 2011. In 2011 the Bank's new EUR 50 million Agribusiness Sustainable Investment Facility (ASIF) was approved, beginning with 5 projects (in farming, dairy and biogas) in 2011 and more energy efficiency and environmental projects expected in the near future. The focus includes small-scale renewable energy, health and safety improvements, implementation of sustainable farming and energy efficiency and there is a budget of EUR 1 million for technical, financial and legal due diligence.
- **Renewable energy:** the Bank is active in increasing renewable energy use in the region through providing project finance, technical cooperation, and policy dialogue on regulatory frameworks. These operations are an important component of the Bank's Renewable Development Initiative (over 200 utility scale generation projects since 2003) and the Sustainable Energy Initiative (SEI), launched in 2006 (and reaching EUR 714 million invested in 28 stand alone renewable energy projects), and the Bank's Sustainable Energy Financing Facilities (SEFFs, small to medium loans in 15 countries). Up to date the bank has assisted both the development of large scale wind,

hydropower and biomass resources, including the modernization and addition of new hydropower facilities, and smaller and standalone renewable systems for households and small organizations.

Table 6 EBRD’s baseline investments in technology transfer under SEI1 and SEI2

	SEI 1 Period (2006 to 2008)	SEI 2 Period (2009 to 2011)
Finance volumes (EBRD finance only)	> EUR 1,500 million	> EUR 4,000 million
Number of projects	> 80	> 200
Country coverage of projects	20 of EBRD countries of operation	25 of EBRD countries of operation

- **Urban infrastructure:** Municipal and Environmental Infrastructure (MEI) is a key sector of EBRD activity that maps well onto national priorities and ongoing initiatives in the region. In April 2012, the EBRD recorded 250 projects, at a total project value of EUR 17.2 billion, in the areas of water and wastewater, public transport, urban roads and lighting, solid waste management, district heating and energy efficiency. Current foci and key challenges are the decentralisation of service responsibilities, the commercialisation of service providers and environmental improvement more generally. Examples of EBRD operations in the MEI sector include:
 - **Water/wastewater:** half of MEI operations in 2011 (17 projects) were concerned with improving resilience to climate change, cutting water leakage and reducing user consumption. Projects took place in Romania, Russia and in the ETCs (Armenia, the Kyrgyz Republic and Tajikistan).
 - **District heating and municipal infrastructure:** decentralised energy networks and municipal energy infrastructure such as heating and lighting are key sectors for EBRD MEI activities, with recent projects signed, amongst other in Kazakhstan, Russia, Romania and Montenegro.
 - **Urban transport:** the subsector with most MEI investments (EUR 357 million committed across 13 operations), urban low carbon transport includes compressed natural gas buses (Gaziantep, Turkey), modern trolleybuses (Bishkek, Kyrgyz Republic), a parking public private partnership (Wroclaw, Poland), as well as modal shifting and increasing fuel efficiency.

Technology transfer in these sectors would be optimally achieved through the application of the Bank’s mandate – of helping to move countries closer to a full market economy through taking those risks that supports private investors and does not crowd them out, all the while spreading sound banking principles, respect for the environment and corporate governance.

Annex 9. Greenhouse gas estimates

The overall objective of this Project is ‘to develop and demonstrate innovative policy and technical assistance packages and support development of performance-based financing mechanisms to increase investment in climate technologies in Ukraine.’ The Project will aim to contribute to achieving an energy efficient economy and increased energy security in Ukraine, while improving its energy self-sufficiency, in line with Ukraine 2030 Strategy. The Project is unlike conventional GEF projects in that there is a range of eligible technologies that will be invested in and the choice of these technologies will be demand led.

Component 3 – ‘Performance-based climate technology finance support’ – will involve the actual investment in mitigation measures, including energy efficiency and renewable energy measures. Components 1, 2 and 4 of the Project will also be important for stimulating and supporting the demand for technology transfer, which will be funded out of Component 3.

Component 3’s envisioned level of investment is based on the EBRD’s committed resources (co-financing) and an equity share from project developers (private companies and private companies operating under concession in the area of municipal services). The performance-based finance mechanism will blend a performance based grant utilising GEF funding with direct Bank financing.

Business-as-usual estimation

For most GEF-funded projects, the technologies to be used are clearly defined, therefore it is feasible to define the potential market and the business-as-usual trajectory of emissions growth/reductions. However, this Project involves investments for potentially many different technologies. Therefore, a different approach to emissions reduction estimation is necessary. In particular, the emissions reduction estimation must take into account that the choice of technology for investment is demand led.

In addition, all investments from the GEF and the EBRD – and subsequently equity investors/project sponsors – are likely to be additional. This is particularly because project-based finance for innovative/BAT climate technologies is minimal to non-existent in Ukraine due to extremely high interest rates and a range of other barriers.

For these reasons, the estimate of the business-as-usual emissions reductions is set at zero. Even though some technology would have been adopted within Ukraine, likely due to other internationally funded projects, the GEF/EBRD investments will still be additional to those other projects.

Direct emissions reductions

The Project will only estimate direct emissions reductions. Indirect top-down emissions are not estimated because the Project interventions involve a wide variety of technologies. While estimating the market potentials is not feasible for a top-down indirect emissions reduction estimate, a bottom up estimate is provided below.

GHG reductions due to energy efficiency measures

The total investments in energy efficiency measures will be USD 46,000,000 (USD 39,000,000 in EBRD loans and USD 7,000,000 in performance based grants from the GEF) and the lifespan of the Project investments will be 10 years.

The emissions reduction costs used for GHG reductions achieved are provided in Table 7 below. These are purely for illustration purposes, as there is no way of predicting which combination of projects and technologies will be finally supported.

Table 7 Emission reduction costs used for GHG reductions achieved (illustrative only)

Technology type	Total investment (USD)	Energy Savings Cost (USD/tCO ₂ /yr)	Total 10 year emissions reductions (tonnes CO ₂ e)
Gas-fuelled cogeneration	7,800,000	154	508,800
Biogas/ biomass fuelled cogeneration	7,800,000	329	237,000
Process improvements	9,750,000	262	372,000
Energy efficiency in commercial buildings	9,750,000	1,536	63,000
Resource efficiency management systems	3,900,000	104	374,000

The Energy Savings Cost is based on the EBRD's project development team's experience with these technologies in Ukraine.

Gas-fuelled cogeneration, resource efficiency management systems and process improvements: the average cost of these interventions was estimated using the results of energy audits conducted under the Energy Audits Programme funded by the Central European Initiative (CEI) Trust Fund⁹

Biogas/ biomass fuelled cogeneration and energy efficiency in commercial buildings: the average cost of these interventions was estimated by EBRD staff based using internal data on past projects in Eastern Europe.

Energy efficiency in commercial buildings includes more expensive measures, but still demonstrates commercial payback due to the energy cost savings and associated operational cost savings (albeit longer-term than the other technology types). Important motivations for supporting this type of investment are also to help mainstream the technologies, thus bringing the costs down in the long term, and since, due to the size of the sector, it has significant potential to contribute to increasing energy security.

Overall, the total direct GHG emissions reductions from the Project over the 10 year lifetime of the investments are estimated to be 1,554,000 tonnes CO₂eq.

Indirect emissions reductions

As noted above, indirect emissions reductions cannot be estimated using a top-down methodology because the Project interventions use a wide variety of technologies.

It is possible, however, to estimate emissions reductions using bottom-up methodology. Using a multiplication factor of 4 (for Credit and Guarantee facilities), the indirect emissions reductions would be 6,216,000 tonnes CO₂eq.

⁹ Impact assessment of Energy Audits Programme: Energy Audits Programme funded by the Central European Initiative (CEI) Trust Fund, Secretariat for CEI Projects.

Annex 10. Neighbourhood Investment Fund (NIF) technical assistance breakdown

The table below summarizes indicated breakdown of NIF-funded technical assistance and innovation vouchers. The number of assignments supported is tentative only.

Indicative budget for 48 months (from Q4 2015, EUR)		Total (EUR)
NIF Component 1: Supporting the design of innovative policy packages to promote climate technology transfer	Total policy dialogue support	700,000
	Provision of institutional, policy and regulatory support to assist the Ukrainian government to design an effective policy framework for climate technology transfer. The work will seek to help the government improve existing legislative frameworks, set appropriate technology standards and create enabling environments to help promote innovation, manufacturing and deployment of climate technologies.	700,000
NIF Component 2: Technical assistance along climate technology supply chains	Total technical assistance	1,600,000
	The technical assistance services provided would include one or more of the following services focussing on climate technology implementation and/or to be carried out by the consultant(s) engaged by the EBRD, as and when required: <ul style="list-style-type: none"> • Climate technology audits to identify climate technology investment opportunities • Energy/Resource Efficiency Management Systems assessment and Energy Management Training • Assessment of best practice and best available technologies • Benchmarking and energy/resource management review, including gap analysis for ISO standards relevant for climate technology deployment • Capital investment appraisal • Development of performance indicators • Development of MRV plans for the enterprises • Market development assistance • Dissemination of information • Project Management Support • Specific energy/resource optimisation analysis 7-10 technical assistance assignments will be undertaken per annum starting from the second year; at tentative cost of EUR 60,000 per assignment)	1,600,000
NIF Component 3: Supporting the Market in Knowledge management and innovation around climate technology	Total	1,700,000
	Knowledge management including: <ul style="list-style-type: none"> • Workshops; • Lessons learned programs; • Preparation and dissemination of climate technology market assessment; • Dissemination of information on MRV processes 	500,000
	Management of innovation voucher scheme	200,000
	Innovation Vouchers	1,000,000
Programme total		4,000,000

Annex 11. Summary of major relevant policies and measures in Ukraine

Major policies and measures	Examples/ Comments
Policy framework and cross-sectoral measures	<ul style="list-style-type: none"> National plan for the implementation of provisions of the Convention and its Kyoto Protocol (2005, updated 2009) Strategy of national policy for ecology until 2020 (2010) National action plan on environmental issues for 2009–2012 State environmental monitoring programme for 2008–2012
Policies and measures by sector	
<i>Energy</i>	<ul style="list-style-type: none"> Energy strategy of Ukraine until 2030 (2006) National energy programme until 2010 (1996) Law on power industry (1997, with amendments in 2010)
<ul style="list-style-type: none"> Renewable energy sources 	<ul style="list-style-type: none"> Law on alternative energy sources (2003) Law on alternative types of liquid and gaseous fuels (2000) Law on green tariffs (2008) Decree on measures promoting the use of alternative energy sources (2009) Ukraine's comprehensive State programme on construction of wind farms until 2010
<ul style="list-style-type: none"> Energy efficiency 	<ul style="list-style-type: none"> Comprehensive State programme on energy conservation until 2010 (1997, with amendments in 2000) Law on energy savings (1994, with amendments in 1999, 2005–2007 and 2011) Law on combined heat and power generation (2005, with amendments in 2010) State economic programme on energy efficiency for 2010–2015 (2010) Sectoral programme on energy efficiency until 2017 (2009) Sectoral programme on the increase of energy efficiency in buildings for 2010–2014
<i>Industrial processes</i>	<ul style="list-style-type: none"> State programme on industrial development for 2003–2011 (2003)
<i>Agriculture</i>	<ul style="list-style-type: none">
<ul style="list-style-type: none"> Husbandry and crop production 	<ul style="list-style-type: none"> The governmental programme on the development of Ukrainian village until 2015 (2007). The programme includes a number of sectoral sub-programmes, such as a sectoral dairy husbandry development programme until 2015 and a sectoral soil fertility programme for 2008–2015
<ul style="list-style-type: none"> Manure management systems 	<ul style="list-style-type: none"> Governmental support for the installation of utilities for biogas use from liquid manure management systems
<ul style="list-style-type: none"> Promotion of efficient farming 	<ul style="list-style-type: none"> Governmental subsidies and loans for the purchasing of modern, fuel-efficient farming equipment
<i>Land use, land-use change and forestry</i>	<ul style="list-style-type: none"> Governmental programme on forests of Ukraine for 2010–2015 (2009)

Annex 12. Ukraine macroeconomic and geopolitical analysis

The following section presents an excerpt from the “*Ukraine Macroeconomic Situation - February 2015*” and “*Ukraine’s Macroeconomic Situation Year End 2014*” by SigmaBleyzer.¹⁰

Geopolitical context

On February 12, a new agreement between Ukraine and Russia under the brokerage of Germany and France on conflict resolution in Donbas was reached, however the risks remain high with a fragile hope for de-escalation of violence and settlement of the conflict. The President of Ukraine has also proposed a UN peacekeeping mission for the region however its prospects remain unclear amid a possible veto and positive signs of implementation of the Minsk-II agreement.

Macroeconomic context

February Highlights:

- On Feb. 12, the International Monetary Fund mission announced a staff level agreement with the Ukrainian government on a new four-year USD 17.5 billion loan. The total international financial aid package will reach USD 40 billion for the period.
- Real gross domestic product declined by 15.2% in the fourth quarter of 2014, while the full-year decrease is estimated at 7%.
- The main causes of the economic contraction in 2014 will continue to effect real sector performance in 2015, but the negative contribution of falling domestic demand will take the lead this year.
- Fiscal data for January 2015 was rather disappointing, confirming the need for the 2015 budget law revision. Although amendments to the budget law were developed based on a revised macroeconomic forecast and were agreed with the IMF, the fulfilment of fiscal targets raises concerns.
- Consumer price inflation accelerated to 28.5% in January. Given more ambitious government plans for utility tariffs and other regulated prices adjustment, we revised our year-end inflation forecast to 30% in 2015.
- On Feb. 5, the National Bank of Ukraine abolished indicative rates and allowed the hryvnia to free float. Due to a combination of a number of adverse developments (delays with the implementation of the Minsk-II agreement, uncertainties related to the IMF program and announced external debt restructuring), the hryvnia lost almost half of its value in February and reached Hr 30/USD 1 by the end of the month.
- Another wave of hryvnia depreciation will help further improve Ukraine’s current account balance, but will aggravate difficulties in the banking sector and public finances, and will contribute to acceleration of inflation.
- Realizing that the benefits from weak domestic currency for Ukrainian producers and exporters are restricted by structural rigidities (i.e., a poor business environment), while the announced plan of reforms will take time to produce its first results, the National Bank of Ukraine tightened the foreign exchange market administrative regulations to contain hryvnia depreciation.
- The likely approval of the IMF program and an expected sizable first tranche disbursement should help stabilize the foreign exchange market of Ukraine.

¹⁰ For more information see: <http://www.kyivpost.com/content/business/sigmableyzer-report-on-ukraines-macroeconomic-situation-in-february-383113.html>

GDP and Growth Forecast

The toll of hostilities in the east, the on-going currency crisis, fiscal austerity measures and worsening trade relations with Russia on the real sector performance of Ukraine has been increasing over the course of 2014 and continues steadily into 2015. According to the latest real GDP growth breakdown, a decline in economic growth by about - 5% (real GDP/yoy) is forecast for 2015. Indeed, private consumption showed a 13.2% yoy decrease, reflecting lower real incomes, consumer credit squeeze and rising economic and political uncertainties. Investment declined by about 30% yoy, although its negative contribution to real GDP growth was partially offset by stronger inventory build-up. The latter should be mainly attributed to record high agricultural harvest this year and favourable base for comparison. With imports falling by a markedly higher rate than exports (32.2% yoy vs. 19.2% yoy respectively) in 3Q 2014, the contribution of net external demand to GDP was effectively positive.

Industry (year end 2014)

Although real sector indicators are likely to show marked deterioration in 4Q 2015, a stabilization of the pace of contraction in the industrial sector over October-November may signal that real GDP may bottom out this quarter. Thus, industrial production decreased by 16.3% yoy in November, the same rate as a month earlier. With many coalmines located at rebel-held territory and damaged during fighting, output production in the mining industry was down by 28.5% yoy in November.

This, coupled with transportation infrastructure damages, weighed on metallurgy and production of electricity, which are heavily dependent on coal supplies. At the same time, the reduction in fighting intensity allowed improving fossil fuel deliveries and, thus, slowing output decline in the respective industries to 20% yoy and 8.5% respectively. High agricultural harvest and improved access to the EU market supported Ukraine's food processing industry despite numerous Russia's trade barriers.

In contrast, Ukraine's machine building kept suffering from Russian trade restrictions, exacerbated by a notable slowdown of the Russian economy. Economic indicators for other sectors, however, continued to deteriorate. Thus, The decline in real value of retail sales and cargo transportation turnovers accelerated slightly to 8.7% yoy and 9.1% yoy respectively. Overall, real GDP is forecast to decline by about 7% in 2014.

Agriculture (year end 2014)

The record high agricultural harvest and improved access to the EU market supported Ukraine's food processing industry despite numerous Russia's trade barriers. The Growth in agricultural sector moderated to 5% yoy over January-November amid less favourable base effect.

Conclusions

The approval of the fiscal budget law for 2015 is seen as an important step towards unlocking international financial aid. But given that the budget has significant risks, negotiations may not be easy. According to the SigmaBleyzer baseline scenario, the Ukrainian authorities will expediently approve the necessary conditionality requirements, while the financial aid program will be expanded for the required amounts. Moreover, the first tranche disbursement will be sizable enough (around USD 5 billion) to improve market sentiments and ease financing concerns in case of Russia's request for early repayment of USD 3 billion bailout loan granted to Ukraine in late 2013. If these assumptions do not materialize, Ukraine may face a severe financial crisis in 2015.

Annex 13. Ukraine carbon pricing and proposed support to GHG MRV

The Project will support possible future carbon pricing in Ukraine through the dissemination of GHG MRV through technical assistance provided to the private sector and through FINTEC Ukraine's association with EBRD Ukraine's PETER project and its MRV activities. FINTECC Ukraine project activities will focus on measures to strengthen calculation methods, quality control, data collection and data increasing processing efficiency and capabilities for project clients.

In particular, Ukraine currently lacks standardized GHG reporting processes at the plant level. Plants submit emissions data in a form used for state statistical observations on air protection. Several challenges exist in this process, such as inconsistency of calculation methods, poor quality control in data collection; poor control systems; large number of submitting entities (approximately 11,000 entities in 2013 – while only around 300 were responsible for over 95% of emissions). Plant-level data on fuel production and consumption is also generated through a separate form, however this is unusable due to the use of different media (electronic, paper); complex format of forms; and a very large number of reporting enterprises.

Attempts to develop and pass MRV legislation for GHG emissions have been on-going since 2011, and proposals have been made by donor-funded projects to develop and pilot MRV systems for certain activities, listed below. Facilities undertaking these activities and emitting over 25,000tCO₂e/yr are likely to be included in a future domestic emissions trading scheme, or improved GHG tax scheme (see details below) – these entities will thus find MRV-related support useful. Smaller entities and entities in different sectors will likely need to wait longer for relevant MRV systems and regulation to be implemented, as such their incentive to conduct robust MRV is negligible. Activities proposed for MRV piloting over the next few years:

- Stationary Combustion of Fuels
- Production of Iron and Steel
- Production of Ferroalloy
- Metallurgical Coke (off-site metallurgical coke production)
- Production of Cement
- Production of Ammonia
- Production of Limestone
- Production of Nitric Acid
- Production of Adipic Acid.

The government of Ukraine has been considering the development of a robust carbon pricing system since approximately 2009. In 2011 Ukraine implemented a tax on greenhouse gas emissions (a part of a broader Environmental Tax) that has proved ineffective so far in reducing emissions, and needs improvements. Further, as part of its Association Agreement with the EU, Ukraine is now obliged to create a domestic emissions trading scheme with gradual approximation of relevant legislation to be completed by 1st November 2016. In 2013, the government of Ukraine requested the EBRD to provide support to improve the current GHG Tax system and use it as a transition mechanism towards emissions trading. A domestic offset scheme would also be developed to complement the tax/ ETS. Consultants appointed by the EBRD have provided some recommendations which are under consideration, and it is likely that any improved GHG tax/ ETS coverage will initially include stationary sources of pollution emitting over 25,000 tonnes CO₂e/yr, in the power, heat and manufacturing sectors – covering the activities for which MRV has been proposed above.

Annex 14. Technology and sector specific market potential and penetration

Technology:		Heat recovery systems
Description:		Waste heat recovery entails capturing and reusing the waste heat in industrial processes for heating or for generating mechanical or electrical work.
Penetration	Installed	<1% (except boilers). There are high levels of penetration in the steam and hot water boilers market (83-91%). Levels of market penetration for heat exchange technologies in Agro industry bakeries – (baking ovens only) is about 1.0 - 1.5%. In industry use is lower, metallurgy (metallurgical furnaces) <1.0%, cement industry (clinker kilns) - 0%, (basalt melting) furnaces - 0%, and brick production (drying furnaces) - 0%.
	Potential	Estimated energy savings potential for heat recovery systems as follows of savings 4.57 PJ, from which is: 0.70 PJ - coke, hard coal and brown coal; 1.85 PJ - natural gas; 2.02 PJ – electricity. Potential for heat recovery systems in steam and hot water processes across all sectors is quite high and estimated at 83 - 91%, Construction materials production (~3,500 enterprises) and bakery sector (>2,000 enterprises) show significant potential.
Conclusion:		Construction materials production, the bakery sector and steam and hot water systems across all sectors show significant potential for penetration of case specific heat recovery systems.

Technology:		Energy management systems (specifically the use of technical metering systems - ASCMPC and associated energy monitoring and management practices)
Description:		Energy management system is a system of tools used to monitor, control and optimize energy consumption. ISO 50001:2011 provides a framework of requirements.
Penetration	Installed	<p>According to market player data, ASCMPC systems cover approximately 75% of industrial enterprises. However, merely 30% of enterprises use the installed ASCMPCs to analyze energy consumption and take energy saving measures. Therefore, market penetration rate of the energy consumption technical control and metering systems may be evaluated as follows:</p> $MPR = n \cdot k = 0,225$ <p>where $n = 0,75$ - factor of the enterprises covered by ASCMPCs, $k = 0,3$ - factor of the enterprises, where ASCMPCs are utilized for energy consumption analysis and elaborating of corrective actions.</p>
	Potential	Based on calculations on market volume based on number of enterprises, average number of different measure points on enterprises, penetration rate. Therefore, the number of potential consumers of energy consumption technical control and metering equipment is 9,953, where the total number of metering points is equal to 174,747. In monetary equivalent, this is equal to about EUR 230 million $\pm 20\%$. Potential by enterprise size is as follows: Large enterprises – 382; Middle-size enterprises – 5,651; Small enterprises – 115,21.
Conclusion:		The estimation that only 23% of industrial enterprises utilise ASCMPC to analyze energy consumption indicates firstly, the need to encourage energy consumption monitoring and implementation of energy use reduction measures which may include providing capacity training in the appropriate use of these systems, secondly, penetration of ASCMPC systems can be installed in an additional 35% of the total potential market.

Technology:		Combined Heat and Power/Cogeneration
Description:		Combined Heat and Power (CHP) or Cogeneration is the simultaneous production of useful heat and electricity in the same installation. There are five principal types of CHP system, Gas turbine systems, Reciprocating engine systems, Back pressure steam turbine systems, Pass-out condensing steam turbine systems, Combined cycle systems.
Penetration	Installed	Est. 185 MWe total installed capacity of 185 predominantly in the mining sector followed by oil and gas.
	Potential	Est. 4,083 MW total potential capacity with an investment potential of EUR 4,083 million. The highest potential capacity is in the industry machine build sector (1,165 MW), followed by mining (1,038 MW), oil and agroindustry oil and fat sectors.
Conclusion:		Among (sub) sectors with the most important potential for installation of biogas-based CHP are the sugar industry, breweries and distilleries due to high levels of non-fossil fuel based feedstock. Despite the high share of enterprises with installed equipment for the biogas production cogeneration facilities are only used on a few of them.

Summarised implementation potential

The considerations above are summarized in the table below.

	PBP EU, years	PBP UA, years	Penetration EU	Penetration UA	Technology related CO2 reduction, t/MWh	CO2 reduction, mil t/year	Invest potential, bn EUR
1. Co-generation:							
· Gas engine CHP < 2 MW (piston)	6-10	1-2*	3**	1-20% (3)	0,97	8,77	1,147
· Gas engine CHP > 2 MW < 6 MW (piston)	6-10	1-2*	3	7% (3)	0,99	22,92	2,937
· Organic Rankine Cycle (ORC)	7-10	2-4*	2	n/a	1,17		
· Steam turbine CHP > 2 MW < 6 MW:	7-10	3-4*	3	1-6% (3)	1,17	104,41	1,856
2. Heat recovery:	0.5 - 10		2 - 3	<1% (except boilers)		effect is present	
3. Management systems, automation and practices	1-4		2 - 3	22.5% (1)		effect is present	0,229
Total						136,10	6,251

* Depending on feed in tariff

** Penetration legend:

1-‘introduction of new technology’;

2-‘increased acceptance of new technology’;

3-‘growing importance and application of technology’;

4-‘fully mature technology’.

The total assessed investment potential for the eligible technologies is estimated at EUR 6.25 billion. At that, the CO2 accountable reduction is estimated at 136 million tons per year, which means invested EUR 44 will reduce CO2 emission by 1t/year

Annex 15. Overview of climate technology transfer issues

Based on an assessment of market penetration of climate technologies and climate technology value chains in Ukraine technology-specific barriers to technology transfer have been identified.

Climate technology	Issue
CHP gas engines in the range of 2-6 MW	<ul style="list-style-type: none"> • The value chain for gas engines is not fully developed. There are no domestic producers in the range that was studied (2 – 6 MWe); however availability of the technology is not a bottleneck due to several foreign technology suppliers being active in Ukraine. • The prices for natural gas in Ukraine lead to high OPEX for gas engines running on natural gas, relative to the savings/ revenues of the generated electricity, which limits the number of natural gas-fired CHP projects. Projects are usually related to biogas production or realised in case clients have gas as a by-product. • Incremental costs are mainly associated with importing foreign technology into Ukraine (import duties, transport costs, importer margins). • A lack of specialised O&M companies (independent from suppliers) means low competition in this part of the value chain, which results in relatively high prices for maintenance. It also leads to customers trying to find alternative, cheaper, solutions that often lead to a decrease in the lifetime of the equipment and lower return on investment. • There is a lack of independent specialised expertise, particularly for legal and technical consultancy services. • Implementation requiring modification of existing production sites involves lengthy approval procedures, which also applies to the connection to the electricity grid
CHP back-pressure steam turbines up to 15 MW	<ul style="list-style-type: none"> • The technology of back-pressure steam turbines has historically been widely used in Ukraine. New installations where back-pressure steam turbine CHP is implemented are limited to biomass-fired projects. • The value chain is not fully developed; there are no Ukrainian manufacturers of steam-turbines in the range that was studied. However, availability of the technology is not a bottleneck due to foreign technology suppliers being active in Ukraine. • Incremental costs are mainly associated with importing foreign technology into Ukraine (import duties, transport costs, importer margins). • There is a lack of incentives for implementation of this technology and given the high CAPEX involved, the costs of financing are a key factor in investment decisions. At current interest rates, investment in back-pressure steam turbines are unrealistic. • Implementation requiring modification of existing production sites involves lengthy approval procedures, which also applies to the connection to the electricity grid, and it one of the barriers as well
Biomass boilers below 2MW and from 2 to 6 MW	<ul style="list-style-type: none"> • For small (below 2 MWth) biomass boilers, the value chain is relatively well developed with a large number of domestic manufacturers. Driven by government policy aimed at replacement of natural gas to alternative fuel and the high prices for natural gas, implementation is widespread. • Locally manufactured products are of lesser quality than BAT. • Small biomass boilers are often applied as a “standard” solution, however, servicing is an issue for clients. There are few O&M contractors, and these services are usually offered by the supplier. • For large (above 2 MWth) boilers, there is only one domestic supplier. Several foreign suppliers offer their products in Ukraine, but there costs involved with importing foreign equipment. • Other barriers for implementation of this technology include lengthy permitting approval processes, a lack of EPC contracts (which creates not only additional costs, but also risks) and a limited number of experienced O&M contractors. • The regulatory framework does not support biomass boiler technology and the regulation of heat supply can create uncertainty when external customers are involved. • There is also a lack of technical and legal expertise to develop large biomass-fired boiler projects and the quality of implemented projects is in many cases low.

Climate technology	Issue
	<ul style="list-style-type: none"> • A key barrier for all biomass boiler projects is the limited development of the biomass feedstock market, which suffers from a lack of reliable suppliers, inability to close long-term supply contracts and the risk of low biomass feedstock quality.
Energy management systems (EMS)	<ul style="list-style-type: none"> • Except for very large energy users, implementation of EMS in Ukraine is not widespread. • Many industrial companies are unaware of the benefits or have a preference to invest in quick wins by replacing old equipment by more efficient new equipment. • There are few parties in the market with a proven track record to implement EMS solutions according to standards. Within the value chain, there is limited co-operation and knowledge dissemination between stakeholders. • Implementation of EMS projects is not a capital-intensive project and involves a considerable labour component. • There are limited incremental costs on the one side, but a considerable lack of expertise and experience with market actors on the other side.

Annex 16. Overview of Climate Technology Innovation Vouchers

Climate Technology Innovation Vouchers

A Climate Technology Innovation Voucher is a voucher provided to a Ukrainian business, worth between EUR 5,000 and EUR 50,000, to partially or fully pay for an external expert to help the business innovate to adopt/ expand their manufacture or use of climate technologies. The voucher will pay for between 50% and 100% of incurred costs.

Services that can be accessed

- R&D– technology design, customisation, applied research
- Testing
- Certification
- Market research
- Developing and protecting intellectual property
- Innovation advice covering any part of the business related to climate technologies

Services can be provided by pre-selected organisations and experts, which include

- Universities and further education colleges
- Research and technology centres
- Technical consultancies
- Design advisers
- Intellectual property advisers

A list of pre-selected organisations and experts will be developed and made available on the FINTECC website.

Activities that are not eligible

- Purely theoretical research
- Standard business advice not related to innovation
- Any services not related to climate technologies
- VAT cannot be paid for using the vouchers
- Technologies that are widely used in the Ukrainian market

Eligible entities

To qualify for a FINTECC Innovation Voucher companies must be a Ukrainian EBRD client (either through direct investment, UKEEP or SBS). The business will demonstrably need help with innovating to either begin or upscale manufacture of climate technologies, or adopt or increase deployment of climate technologies.

Application process

The scheme will be run by an EBRD-selected consultant ('Managing Consultant'). The steps for beneficiaries will be:

- Application –register and apply online
- Applicant eligibility is assessed
- Offer is made to selected companies
- The company accepts the offer and receive a voucher
- The company contracts the work and gets it completed
- After the work is complete the company requests and receives a short report (following EBRD guidelines) from the supplier with a copy to the EBRD and the managing consultant.
- The managing consultant verifies the work.
- The company pays for the work and then redeems their voucher with EBRD.

Voucher availability

From Jan 2016 until full disbursement of available funding, or until end-2019, whichever is earlier.

To ensure sustainability of the initiative, the Managing Consultant will seek to transfer the scheme and/or the knowledge gained to a local institution.