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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT AND  
INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT  
ON

A PROPOSED LOAN IN THE AMOUNT OF EUR 279.7 MILLION (US\$300 MILLION EQUIVALENT)  
TO THE REPUBLIC OF TÜRKİYE  
FOR A SECOND ENERGY EFFICIENCY IN PUBLIC BUILDINGS PROJECT (P500777)

AND

A PROPOSED LOAN IN THE AMOUNT OF EUR 46.7 MILLION (US\$50 MILLION EQUIVALENT)  
WITH CO-FINANCING FROM THE  
MOLDOVA GROWTH, RESILIENCE AND OPPORTUNITIES FOR WELL-BEING (M-GROW) PROGRAM TRUST FUND  
IN THE AMOUNT OF US\$4.5 MILLION  
TO THE REPUBLIC OF MOLDOVA  
FOR A SUSTAINABLE TRANSITION THROUGH ENERGY EFFICIENCY IN MOLDOVA PROJECT (STEEM) (P500560)

AS PHASE 1 OF THE MULTIPHASE PROGRAMMATIC APPROACH  
OF THE SCALING-UP ENERGY EFFICIENCY IN EUROPE AND CENTRAL ASIA (E3) PROGRAM  
WITH AN OVERALL FINANCING ENVELOPE OF US\$1.46 BILLION EQUIVALENT  
(UP TO US\$1.11 BILLION EQUIVALENT FOR IBRD AND  
UP TO US\$350 MILLION EQUIVALENT FOR IDA)

May 29, 2024

Energy and Extractives Global Practice  
Europe And Central Asia Region

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## CURRENCY EQUIVALENTS

Exchange Rate Effective April 30, 2024

Currency Unit = Turkish Lira (TRY)

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TRY 32.380 = US\$1

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US\$0.03088 = TRY 1

Currency Unit = Moldovan Leu (MDL)

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MDL 17.65 = US\$1

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US\$0.05667 = MDL 1

Currency Unit = Euro (EUR)

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EUR 0.93214 = US\$1

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US\$1.0728 = EUR 1

MDL 18.93 = EUR 1

FISCAL YEAR

January 1 - December 31

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## ABBREVIATIONS AND ACRONYMS

AIIB	Asian Infrastructure Investment Bank
AM	Accountability Mechanism
ASA	Advisory Services and Analytics
BETF	Bank-Executed Trust Fund
BOC	Breach of Contract
BPIE	Buildings Performance Institute Europe
C2E2	the Copenhagen Centre for Energy Efficiency
CAPP	Clean Air Priority Program
CCAP	Climate Change Action Plan
CCDR	Country Climate and Development Report
CCM	Compliance Carbon Markets
CERC	Contingent Emergency Response Component
CIF	Climate Investment Funds
CITR	Currency Inconvertibility and Transfer Restriction
CNED	National Center for Sustainable Energy
CO2	Carbon Dioxide
COP	Conference of the Parties
CPF	Country Partnership Framework
CTF	Clean Technology Fund
CUC	Urbanism and Construction Code
DA	Designated Account
DES&SUP	energy audit-design-supervision
DH	District heating
dMRV	digital MRV
DPO	Development Policy Operations
E&S	Environmental and Social
E3 MPA	Energy Efficiency in Europe and Central Asia Multiphase Programmatic Approach
EBRD	European Bank for Reconstruction and Development
ECA	Europe and Central Asia
ECARES	MPA on scaling-up Renewable Energy in ECA
EDGE	Excellence in Design for Greater Efficiencies (IFC)
EE	Energy Efficiency
EEP2	Second Energy Efficiency in Public Buildings (Türkiye)
EIRR	Economic Internal Rate of Return
EIRR	Economic Internal Rate of Return
EMDEs	Emerging Markets and Developing Economies
EPC	Energy performance certificate (for buildings)
ERC	Emission Reduction Credits
ESA	Energy Service Agreement
ESCO	Energy Service Company
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESMAP	Energy Sector Management Assistance Program
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plans
ESRS	Environmental and Social Review Summary
ESS	Environmental and Social Standards
ESSA	Environmental and Social Systems Assessment

ETA	Energy Transition Accelerator
EU	European Union
EU-IPA	European Union – Instrument for Pre-accession Assistance
EVO	Efficiency Valuation Organization
EXP	Expropriation
FIRR	Financial Internal Rate of Return
FM	Financial Management
FY	Fiscal Year
GCF	Green Climate Fund
GDCA	General Directorate for Construction Affairs (Türkiye)
GDP	Gross Domestic Product
GEF	Global Environment Facility
GFDRR	Global Facility for Disaster Reduction and Recovery
GHG	Greenhouse gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GRS	Grievance Redress Service
GW	Gigawatt
HOA	Homeowner Association
HVAC	Heating, Ventilation and Air Conditioning
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IEA	International Energy Agency
IFC	International Finance Corporation
IFI	International Financial Institution
IFR	Interim Unaudited Financial Report
IMF	International Monetary Fund
IPF	Investment Project Financing
IPMVP	International Performance Measurement and Verification Protocol
JSCB	Joint Stock Commercial Bank
kWh	Kilowatt-hours
LICs	Low-income Countries
LMP	Labor Management Procedures
LTRS	Long-term Renovation Strategy
M&E	Monitoring and Evaluation
M&V	Measurement and Verification
MAB	Multi-family Apartment Building
MCT	Middle East, Central Asia, Türkiye, Afghanistan and Pakistan
MENR	Ministry of Energy and Natural Resources
MEPIU	Ministry of Energy's Project Implementation Unit (Moldova)
MFD	Maximizing Finance for Development
MFD-EP	MFD-Enabling Project
MICs	Middle-income Countries
MIGA	Multilateral Investment Guarantee Agency
MJ	Mega Joules
MoCT	Ministry of Culture and Tourism
MoE	Ministry of Energy (Moldova)
MoE	Ministry of Energy
MoEUCC	Ministry of Environment, Urbanization and Climate Change (Türkiye)
MoFA	Ministry of Forestry and Agriculture

MoFSP	Ministry of Family and Social Policy
MoJ	Ministry of Justice
MoNE	Ministry of National Education
MoYS	Ministry of Youth and Sports
MPA	Multiphase Programmatic Approach
MRV	Monitoring, Reporting and Verification
Mt	Megatons
MTR	Mid-Term Review
NAP	National Adaptation Plan
NDC	Nationally Determined Contribution
NECP	National Energy and Climate Plan
NEEAP	National Energy Efficiency Action Plan
NH	Non-Honoring
NHSFO	Non-Honoring of Sovereign Financial Obligations
NHSOE	Non-Honoring of Financial Obligation by a State-Owned Enterprise
NZEB	Nearly Zero Emissions Building
O&M	Operations and Maintenance
OECD	Organization for Economic Cooperation and Development
OHS	Occupational health and safety
OM	Operation Manual
P4R	Program-for-Results
PCE	Private Capital Enabled
PCM	Private Capital Mobilized
PDO	Project Development Objective
PIU	Project Implementation Unit
PLN	Polish Zloty
POM	Project Operations Manual
PPP	Public Private Partnership
PPSD	Project Procurement Strategy for Development
PrDO	Program Development Objective
PRI	Political risk insurance
PUMREP	Public and Municipal Renewable Energy Project
PV	(solar) Photovoltaic
R2E2	Armenian Renewable Resources and Energy Efficiency Fund
RBCF	Results-based Climate Finance
RE	Renewable Energy
RETF	Recipient Executed Trust Fund
ROIs	Returns on Investment
SCALE	Scaling Climate Action by Lowering Emissions
SDG	Sustainable Development Goal
SEP	Stakeholder Engagement Plan
SFB	Single-Family Building
SME	Small And Medium Enterprise
SOE	State-Owned Enterprise
SPC	Shadow Price of Carbon
SREEPB	Seismic Resilience and Energy Efficiency in Public Buildings Project
STEEM	Sustainable Transition through Energy Efficiency in Moldova
STEM	Science, Technology, Engineering and Math
STEP	Systematic Tracking of Exchanges in Procurement

T&D	Transmission and Distribution
TA	Technical Assistance
Tbc	to be confirmed
tCO2e, tCO2eq	ton of carbon dioxide equivalent
TE	Termoelectrica
TF	Trust Fund
TJ	Terajoule
TOR	Terms of Reference
TWh	Terawatt-hours
UKEP	Utility Knowledge Exchange Platform (Bank)
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
UzPSB	Uzbek Industrial and Construction Bank
VCM	Voluntary Carbon Markets
WB6	Western Balkans
WCD	War And Civil Disturbance
WTEA	Walk-through Energy Audits



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**DATASHEET**

**BASIC INFORMATION**

Project Beneficiary(ies) Turkiye	Operation Name Second Energy Efficiency in Public Buildings under the E3 MPA			
Operation ID P500777	Financing Instrument Investment Project Financing (IPF)	Environmental and Social Risk Classification Moderate		

**Financing & Implementation Modalities**

<input checked="" type="checkbox"/> Multiphase Programmatic Approach (MPA)	<input type="checkbox"/> Contingent Emergency Response Component (CERC)
<input type="checkbox"/> Series of Projects (SOP)	<input type="checkbox"/> Fragile State(s)
<input type="checkbox"/> Performance-Based Conditions (PBCs)	<input type="checkbox"/> Small State(s)
<input type="checkbox"/> Financial Intermediaries (FI)	<input type="checkbox"/> Fragile within a non-fragile Country
<input type="checkbox"/> Project-Based Guarantee	<input type="checkbox"/> Conflict
<input type="checkbox"/> Deferred Drawdown	<input type="checkbox"/> Responding to Natural or Man-made Disaster
<input type="checkbox"/> Alternative Procurement Arrangements (APA)	<input type="checkbox"/> Hands-on Expanded Implementation Support (HEIS)

Expected Approval Date 25-Jun-2024	Expected Closing Date 31-Dec-2030	Expected Program Closing Date 29-Dec-2034
Bank/IFC Collaboration No		

**MPA Program Development Objective**

To increase energy efficiency savings in participating countries of the Europe and Central Asia (ECA) region and develop enabling policies and programs for the scale-up of energy efficiency.

**MPA FINANCING DATA (US\$, Millions)**



MPA Program Financing Envelope	3,854.50
--------------------------------	----------

**Components**

Component Name	Cost (US\$)
Energy efficiency investments in central government buildings	296,000,000.00
Technical assistance and implementation support	4,000,000.00

**Organizations**

Borrower: Republic of Turkiye  
 Implementing Agency: Ministry of Environment, Urbanization and Climate Change

**MPA FINANCING DETAILS (US\$, Millions)**

<b>MPA Financing Envelope:</b>	3,854.50
<b>of which Bank Financing (IBRD):</b>	1,110.00
<b>of which Bank Financing (IDA):</b>	350.00
<b>of which Other Financing sources:</b>	2,394.50

**PROJECT FINANCING DATA (US\$, Millions)**

**Maximizing Finance for Development**

Is this an MFD-Enabling Project (MFD-EP)? Yes  
 Is this project Private Capital Enabling (PCE)? Yes

**SUMMARY**

<b>Total Operation Cost</b>	<b>300.00</b>
<b>Total Financing</b>	<b>300.00</b>
<b>of which IBRD/IDA</b>	<b>300.00</b>
<b>Financing Gap</b>	<b>0.00</b>

**DETAILS**



**World Bank Group Financing**

International Bank for Reconstruction and Development (IBRD)	300.00
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**Expected Disbursements (US\$, Millions)**

WB Fiscal Year	2024	2025	2026	2027	2028	2029	2030	2031
Annual	0.00	15.00	30.00	45.00	60.00	60.00	60.00	30.00
Cumulative	0.00	15.00	45.00	90.00	150.00	210.00	270.00	300.00

**PRACTICE AREA(S)**

**Practice Area (Lead)**

Energy & Extractives

**Contributing Practice Areas**

Climate Change

**CLIMATE**

**Climate Change and Disaster Screening**

Yes, it has been screened and the results are discussed in the Operation Document

**SYSTEMATIC OPERATIONS RISK- RATING TOOL (SORT)**

Risk Category	Rating
1. Political and Governance	● Moderate
2. Macroeconomic	● Substantial
3. Sector Strategies and Policies	● Moderate
4. Technical Design of Project or Program	● Moderate
5. Institutional Capacity for Implementation and Sustainability	● Moderate
6. Fiduciary	● Moderate
Financial Management Risk rating from Specialist: ● Moderate as of 2023-12-01T16:24:03Z	● Moderate



Procurement Risk rating from Specialist:

● Moderate as of 2024-03-26T00:00:00Z

**7. Environment and Social**

Environment Risk rating from Specialist:

● Moderate as of 2024-04-05T16:06:24Z ● Moderate

Social Risk rating from Specialist:

● Moderate as of 2024-04-05T16:06:24Z

**8. Stakeholders**

● Moderate

**9. Overall**

● Moderate

**Overall MPA Program Risk**

● Substantial

**POLICY COMPLIANCE**

**Policy**

Does the project depart from the CPF in content or in other significant respects?

Yes  No

Does the project require any waivers of Bank policies?

Yes  No

**ENVIRONMENTAL AND SOCIAL**

**Environmental and Social Standards Relevance Given its Context at the Time of Appraisal**

E & S Standards	Relevance
ESS 1: Assessment and Management of Environmental and Social Risks and Impacts	Relevant
ESS 10: Stakeholder Engagement and Information Disclosure	Relevant
ESS 2: Labor and Working Conditions	Relevant
ESS 3: Resource Efficiency and Pollution Prevention and Management	Relevant
ESS 4: Community Health and Safety	Relevant
ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Not Currently Relevant
ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Not Currently Relevant
ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Not Currently Relevant
ESS 8: Cultural Heritage	Relevant



ESS 9: Financial Intermediaries

Not Currently Relevant

NOTE: For further information regarding the World Bank’s due diligence assessment of the Project’s potential environmental and social risks and impacts, please refer to the Project’s Appraisal Environmental and Social Review Summary (ESRS).

**LEGAL**

**Legal Covenants**

**Sections and Description**

Loan Agreement (LA), Schedule 2, Section I.A.1(b). The Borrower, through the Ministry of Environment, Urbanization, Climate Change (MoEUCC), shall maintain, throughout Project implementation, a Project Implementing Unit (“PIU”) with functions and responsibilities acceptable to the Bank, for the implementation of Part 1 and Part 2 of the Project.

LA, Schedule 2, Section I.A.2. The Borrower, through MoEUCC, shall maintain at all times qualified staffing, budgetary resources, and authority necessary and appropriate for the satisfactory implementation of the Project.

LA, Schedule 2, Section I.B.1. The Borrower, through MoEUCC, shall maintain throughout Project implementation, a Project Operations Manual (POM).

LA, Schedule 2, Section I.C.1. The Borrower, through MoEUCC, shall select Subprojects all in accordance with beneficiary and Subproject eligibility criteria and procedures acceptable to the Bank, as set forth in the LA and further detailed in the POM, unless otherwise agreed to by the Bank in writing and thereafter set forth in the POM.

LA, Schedule 2, Section I.C.2. To qualify for financing under Part 1 of the Project, prior to the start of each respective Subproject, the Borrower, through MoEUCC, shall issue to each Subproject beneficiary (e.g., hospital) a project initiation letter, and obtain the signature of the authorized representative of the respective Subproject beneficiary (e.g., building administrator) to the project initiation letter which shall outline the building renovation processes and procedures, and the respective parties’ roles, responsibilities and obligations in connection with the renovations.

LA, Schedule 2, Section I.E.1 and 2. The Borrower shall, through MoEUCC, ensure that the Project is carried out in accordance with the Environmental and Social Standards and the Environmental and Social Commitment Plan, in a manner acceptable to the Bank.

**Conditions**

Type	Citation	Description	Financing Source



## I. STRATEGIC CONTEXT

### A. Regional Context

**1. Recent supply shocks in the natural gas markets have led to a significant hike in prices across the Europe and Central Asia (ECA) region given its overreliance on imported natural gas.** The ECA region was severely impacted by the successive waves of the COVID-19 pandemic and the recent geopolitical developments, which contributed to an unprecedented energy crisis, placing energy security and affordability in jeopardy. The supply shock in the natural gas markets consequently led to a significant hike in regional prices given ECA's dependence on imported natural gas. Even before 2022, the strong post-COVID-19 recovery had driven energy demand up globally in the second half of 2021 while gas supply and storage remained constrained especially in the ECA region, resulting in exceptionally high natural gas prices. A spike of wholesale electricity prices across Europe ensued, especially where gas fired generation sets the benchmark price, as well as steep rises in heating costs. These price hikes exposed European consumers to price volatility, negatively affected energy-dependent sectors of the economy, pushed inflation to multi-decade highs, and affected vulnerable households, in a region where energy poverty remains high.<sup>1</sup> Although Central Asia is not as dependent on gas imports, it was not spared an energy crisis, as it experienced significant blackouts in power and heating services during the winter of 2022-23, arising from chronic underinvestment and the harshest winter conditions in decades.

**2. Energy efficiency has proven to be a critical driver in the response to the energy crisis and the transformation of the energy sector in the ECA region.** The energy crisis highlighted the urgency for countries in the ECA region to transform their energy sectors, reduce dependency on imported fossil fuels, and enhance energy security and affordability, through the acceleration of the clean energy transition, including energy efficiency (EE) and scaling up renewable energy (RE). The International Energy Agency (IEA) notes that among single energy resources, EE has made the greatest contribution to meeting energy demand since the 1970s, as such measures are typically lowest-cost options. Within the World Bank's US\$20.9 billion EE portfolio (FY2010-23) investments in efficiency across all sectors, including energy, water, and urban have been highly cost effective at 0.48 US\$/kWh saved, a fraction of the 5-10 US\$/kWh for new energy supply.

**3. Achieving the required pace and scale of the energy transition – expanding clean energy and phasing down fossil fuels – in line with the SDGs and the Paris Agreement by mid-century is neither attainable nor affordable without a significant and urgent scaling up of EE to restrain the growing energy demand.** Currently, low-income countries (LICs) and middle-income countries (MICs) account for about 60 percent of global energy demand<sup>2</sup>. Because these countries represent an overwhelming majority of future demand growth, they have the greatest need and potential for EE gains. It is thus critical for developing countries to urgently undertake massive investments in EE, to reduce the huge capital requirements of the energy transition and thus make it more affordable for citizens. The IEA's net zero scenario, which outlines the most economically efficient pathway, shows that EE measures would represent about 40 percent of the investments required through 2050. Globally, EE investments needed to achieve the Paris Agreement will need to double (estimated at about US\$200 billion annually in LICs and MICs, excluding China), to achieve an annual 4 percent reduction in energy intensity (IEA, 2022); this doubling of EE is also a core pillar of SDG7 – universal access to affordable, modern, clean and sustainable energy.

**4. Scaling up EE has the potential to facilitate more efficient allocation of resources across the global economy,**

<sup>1</sup> 34 percent of the population in ECA spend 10 percent or more of their average monthly expenditure on energy, a typical threshold for energy poverty. According to World Bank estimates, an additional 4.3 million residents in the ECA region fell into poverty in 2021 when energy prices soared.

<sup>2</sup> The World Bank's definition of LICs and MICs is in line with that of the IEA's emerging markets and developing economies (EMDEs), which include Africa, Developing Europe, Eurasia, Latin America, the Middle East and South and Southeast Asia, including India and China. IEA. [https://iea.blob.core.windows.net/assets/6756ccd2-0772-4ffd-85e4-b73428ff9c72/FinancingCleanEnergyTransitionsinEMDEs\\_WorldEnergyInvestment2021SpecialReport.pdf](https://iea.blob.core.windows.net/assets/6756ccd2-0772-4ffd-85e4-b73428ff9c72/FinancingCleanEnergyTransitionsinEMDEs_WorldEnergyInvestment2021SpecialReport.pdf)



**potentially boosting economic output by US\$18 trillion through 2035.**<sup>3</sup> EE improvements can deliver benefits across the whole economy, with direct and indirect impacts on economic activity—measured by GDP—through contributions to productivity, employment, trade balances and energy affordability. When the global energy crisis hit in 2022, the reduced energy demand from accumulated EE improvements over the last two decades saved advanced economies around US\$680 billion in 2022, equivalent to 15 percent of the total annual energy bill, demonstrating the critical role EE for energy affordability and security, and economic growth. With the legacy of centralized economies in ECA, the region hosts some of the most energy intensive economies in the world, and the recent energy crisis re-emphasized the urgency and opportunity to achieve EE at scale. With this backdrop, 18 countries in ECA pledged to double the rate of EE by 2030 at the COP28 meetings held in Dubai<sup>4</sup> in December 2023.

**5. After more than three decades of the World Bank experience with designing and implementing EE programs, a standard playbook of interventions has emerged which, when coupled with higher levels of country ambition and innovations, has created opportunities for a scaled-up, regional approach.** There are well-documented market failures and barriers that have inhibited EE and have made its scaling up difficult in the past. The World Bank’s global and ECA EE portfolio has shown successful models to overcome such barriers (through a combination of innovative financing and delivery model, strong policies and regulations, robust institutional and market development, financial incentives, and credible information sharing), and there is now a need to achieve impact at a larger scale through a more programmatic approach. In addition, important technological and digital innovations, such as heat pumps, near-zero energy buildings (NZEBS) and building automation, have created new opportunities for countries to leapfrog to high efficiency systems and practices. These developments, coupled with more ambitious climate goals calling for scaled-up, national programs, provide opportunities to scale up EE, while boosting market demand which can bring in new suppliers, help lower costs and channel the massive inflow of private capital needed to realize the vast EE potential. In addition, the further harmonization of policies, technical standards, documents, and templates will help create more predictability for equipment suppliers, commercial banks, service providers and others to build more resilient supply chains, facilitate interregional trade and create further economies of scale.

**6. The proposed Energy Efficiency in ECA (E3) Multiphase Programmatic Approach (MPA) aims to leverage the lessons learned from decades of EE operations in ECA to achieve impact at scale, maximizing the leverage of private capital.** The E3 MPA seeks to mobilize complementary funding by countries, other development partners, and the private sector to help scale-up EE in participating ECA countries. A programmatic approach underpinned by replicable project design customized for ECA would allow the Bank to deploy its financing, along with relevant IFC and MIGA instruments, more quickly and flexibly to address the most persistent common barriers to scaling up EE in ECA. A regional approach would not only help develop more harmonized systems and scale, but also foster learning and knowledge sharing among participating ECA countries and build a regional EE market that can help spur new local industries and employment opportunities. The E3 MPA has been prepared in parallel to a separate regional MPA on scaling-up Renewable Energy in ECA (ECARES MPA, P176375, approved on March 28, 2024). These two ECA energy MPAs are designed to be fully complementary: while the ECARES MPA will focus on accelerating clean energy supply, the E3 MPA will focus on scaling up demand-side energy saving. Jointly, the ECA regional energy MPAs will enhance energy security and affordability and contribute to decarbonization of the economies in the ECA region.

**7. The E3 MPA integrates key elements of the World Bank’s *Evolution Roadmap*, to deliver solutions and impact at scale through a One World Bank Group approach.** The E3 MPA seeks to accelerate the scale up of EE in ECA through the concerted efforts of the World Bank, IFC and MIGA to improve the enabling conditions necessary for private capital mobilization for EE at scale, contributing to energy security and affordability. Governments play a critical role in helping improve the enabling environments and facilitate investments. Because the EE investment needs are massive and largely

<sup>3</sup>IEA, 2014. Capturing the Multiple Benefits of Energy Efficiency. Paris: IEA/OECD (<https://www.iea.org/reports/capturing-the-multiple-benefits-of-energy-efficiency>).

<sup>4</sup> These include: Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Croatia, Georgia, Kosovo, Kyrgyz Republic, Moldova, Montenegro, North Macedonia, Poland, Romania, Serbia, Tajikistan, Ukraine and Uzbekistan (see <https://www.cop28.com/en/global-renewables-and-energy-efficiency-pledge>).

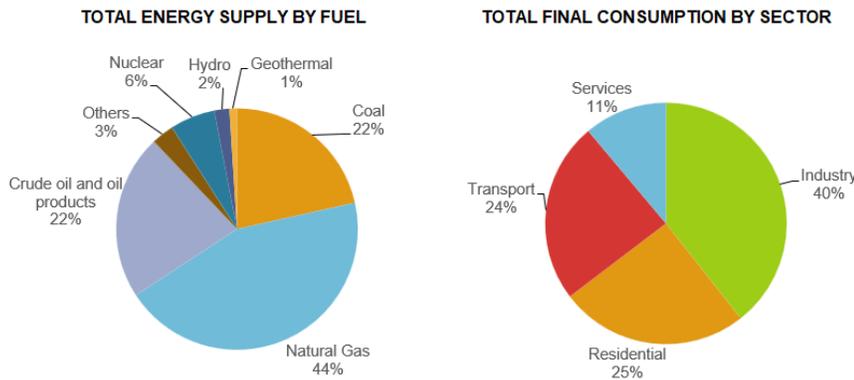


cost-effective, the scaling-up of EE in the ECA region presents key opportunities for private sector participation. Having a medium-term regional vision and financial commitment by the World Bank Group can help foster new supply chains on key material and equipment and bring in new service providers, which can help drive down costs making such investments more affordable. The E3 MPA also aims to enable ECA countries to be beneficiaries of, as well as contributors to, the knowledge generated among countries that seek to accelerate the energy transition.

### B. Sectoral and Institutional Context

8. **About 88 percent of the total energy supply of ECA-countries is fossil fuels-based**, of which nearly half is natural gas (44 percent), as well as oil and coal (22 percent each) (Figure 1). The share of RE is higher in power generation, with 62 percent of power generated from fossil fuels and the remaining 38 percent from clean energy, including hydropower (19 percent). But the transition to cleaner fuels for space heating has been slower, with 83 percent still reliant on fossil fuels. In terms of total final energy consumption, industry accounts for 40 percent, followed by residential (25 percent), transport (24 percent) and commercial and public services (11 percent).

Figure 1. Regional energy supply and demand profile in ECA



Note. 'Others' include biomass and other renewables such as solar PV and wind.  
Source. IEA (2020). Energy Balance Data.

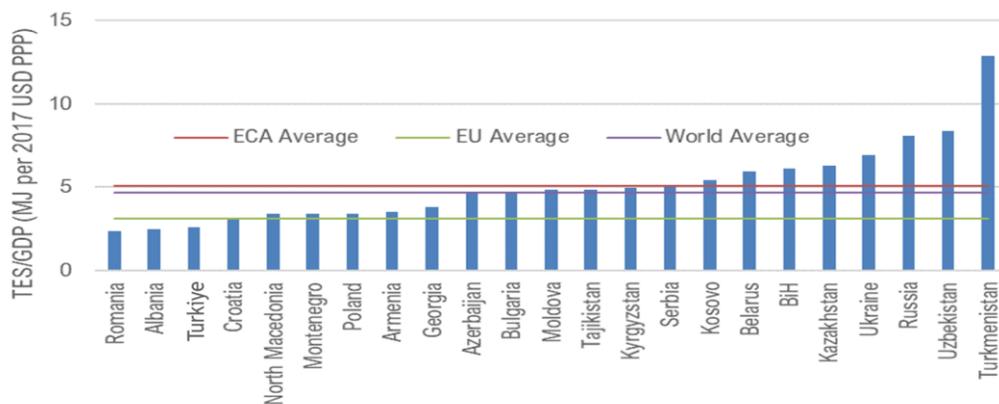
9. **About 24 percent of energy demand in ECA goes towards space heating, which is reliant on fossil fuels, and is a leading cause of air pollution in the region.** Heating demand has been largely met through fossil fuels (natural gas, coal) which account for about 83 percent of heating, with 14 percent more from unsustainable biomass (largely firewood). About 72 percent is consumed in the residential sector. Compounded by an aging and energy inefficient building stock, the heating sector has generated a significant level of emissions, both locally and globally. Across the region, air pollution, particularly in urban areas, is a serious threat leading to 302,000 deaths and a welfare cost of 7 percent of GDP annually. Annual gross carbon dioxide (CO<sub>2</sub>) emissions from ECA heating of buildings are estimated to be about 22 percent of total regional emissions, or 678 MtCO<sub>2</sub>, of which 75 percent is attributed to the residential sector. Moreover, the poor tend to spend a larger share of their household budgets on energy, including heating. According to the World Bank's estimates, an additional 4.3 million residents in the ECA region fell into poverty by the end of 2021 when energy prices started to soar. When energy prices rise, households are often left with two unappealing choices: reduce the heating levels in the home or revert to more affordable, often more polluting choices such as firewood or coal. Thus, transforming the heating sector—through EE, decarbonization of district heating (DH) and clean individual heating—is urgent if countries are to be on track to meet their carbon neutrality goals by mid-century.<sup>5</sup>

<sup>5</sup> World Bank (2023). Toward a Framework for the Sustainable Heating Transition in Europe and Central Asia.  
<https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099092023140527206/p1777440fed3230ce089060ff8ce59c9f5e>



**10. The legacy of centrally planned economies, coupled with chronic underinvestment and historically low energy prices, has resulted in ECA countries representing some of the world’s most energy-intensive economies.** Overdesigned electricity and heating sectors, a large and inefficient building stock, old and poorly maintained equipment and appliances, and misaligned incentives have led to extremely high energy waste and substantially energy-intensive economies. Most ECA countries have a higher energy intensity of the economy at purchasing power parity than the EU (Figure 2), which is an indication of a higher vulnerability of industries to energy price shocks. Given that many parts of ECA have low per capita energy use (e.g., Western Balkans per capita energy use is less than half of EU countries), energy intensity will rise with higher incomes. Low energy prices contribute to enormous financial strains in the sector, making access to financing more difficult and leading to continued underinvestment and poor maintenance. The legacy of the ‘unfinished transition’ to market economies has also limited private sector participation and maintained relatively weak institutions, which has led to chronic underinvestment in the sector.

Figure 2. Energy intensity level in ECA countries, 2022



Source: IEA (2022), SDG7: Data and Projections, IEA, Paris <https://www.iea.org/reports/sdg7-data-and-projections>.

**11. Energy efficiency is critical to address energy security concerns and combat energy poverty, climate change and spur economic growth. Substantial opportunities exist to reduce energy inefficiencies in the energy (DH), industrial, and building sectors.** EE refers to the improvement of technologies and practices to provide the same—or improved—levels of production and/or service quality with lower energy inputs. Supply side EE seeks to improve electricity and heat generation, transmission and distribution (T&D) network reliability and reduce technical losses—making energy less expensive for end users. Demand side EE helps public, residential and industrial customers to reduce energy usage through equipment replacement, building envelope, on-site RE generation and process improvements. Demand and supply side EE offers substantial cost-effective opportunities to reduce energy use, and thus can help to reduce the need for energy imports or new energy supply, enhance competitiveness and create green jobs, while making energy services (including heating) more affordable to citizens. EE can also mitigate the impacts of rising tariffs.<sup>6</sup> Both also lower emissions from energy production, supply and use.<sup>7</sup>

**12. Despite the high potential, demand side EE investments have been challenging due to a wide range of prevailing market failures and institutional complexities.** Because EE projects are generally small compared with other infrastructure investments, there are often disproportionately high transaction costs to identify, prepare, finance, and implement them. This combined with a lack of accessible and credible information, and behavioral inertia, have often hampered investments in EE. There are also a host of other barriers and market failures, such as:

<sup>6</sup> See, for example, World Bank (2013). Balancing Act: Cutting Energy Subsidies While Protecting Affordability. Available at: <https://elibrary.worldbank.org/doi/abs/10.1596/978-0-8213-9789-3>.

<sup>7</sup> While power T&D has enormous EE potential in the region, it was agreed that such investments will be part of the ECARES MPA given the need to coordinate such supply side investments with the absorption of new RE supply.



- (a) *Policy and institutional barriers*, such as low energy prices, metering and collections; lack of codes and standards, testing facilities, enforcement; weak and under-resourced energy/EE agencies; restrictive public procurement and budgeting rules;
- (b) *High transaction costs* due to many small, dispersed investments, multi-jurisdictional or multi-owner complexities (including homeowner associations or HOAs), split incentives (principal-agent problem), many steps and decision points (audit, design including technology selection, financing, renovation, measurement and verification, M&V);
- (c) *Financial constraints* due to high project development and upfront costs, long payback periods (due to chronic underinvestment, needed structural/seismic strengthening, suppressed demand), high costs of capital, uncreditworthy borrowers, newer technologies, bank biases towards on-balance sheet finance, over-collateralization;
- (d) *Information and behavioral challenges* such as general lack of awareness about credible EE opportunities and savings, lack of consumption and benchmark data, invisible and difficult to prove benefits (EE savings), untrained workforce, lack of access to credible data on technologies and costs, behavioral biases and inertia.

Collectively, these issues have hampered investments and prevented EE scale-up. While the World Bank’s global EE portfolio has shown successful models to overcome such barriers (through a combination of innovative financing and delivery model, strong policies and regulations, robust institutional and market development, financial incentives and credible information sharing), there is a need to achieve impacts at a larger scale through a more programmatic approach.

**13. Three critical issues in ECA have been most prevalent in preventing scale-up of demand-side EE: low energy prices (particularly in heating services and fuels) and collections, weak institutions, and uncreditworthy or marginally creditworthy end users.**

- (a) Electricity prices have been slowly rising to cost-recovery levels, but heating fuels such as coal and firewood need continued reforms to reflect their true environmental costs. DH, also dependent on subsidies, is often billed based on an apartment’s area rather than consumption, leaving little to no incentive for EE.
- (b) Energy agencies are also under resourced preventing them from harnessing the vast EE potential, by developing the market, mobilizing commercial financing, and bringing the programs to scale.
- (c) Financing has been a challenge since end users that are unable to access financing (e.g., SMEs, multi- and single-family homes, smaller municipalities) have the greatest energy saving potential. Where financing is available, it is often short term which makes it incompatible with the longer-term payback periods in the building sector.

**14. Despite these challenges, nine countries in ECA have now stated objectives to achieve carbon neutrality by 2050 to 2060,<sup>8</sup> which will require a significant scale up in EE, therefore massive investments are needed, creating a critical role for the private sector.** At the recent COP28 held in Dubai, more than 120 countries pledged to triple RE capacity and double the rate of improvements in EE by 2030, including 18 ECA countries. Country Climate and Development Reports (CCDRs) for ECA<sup>9</sup> also underscore the critical role of EE. In the CCDR for Türkiye, for example, EE featured in the top three priorities, with recommended actions including defined recommendations to cover more efficient energy use in buildings, transport, industry, urban and waste sectors. Kazakhstan’s CCDR notes significant EE potential in building renovations, industrial improvements, and the promotion of efficient appliances—which together would deliver about 22 percent of the total emission reductions needed by 2060. Overall, investments of 3.9 percent of GDP would be required to achieve ECA net zero targets by 2060, making private investment essential.

**15. Many ECA countries are also responding with strategic EE commitments and plans, largely inspired by the EU’s leadership and commitment to expedite the energy transition, which offer a fertile ground for scale-up.** Over the past decade, many ECA countries have substantially advanced the national policy landscape for EE. This includes developing and adopting National Energy Efficiency Action Plans (NEEAPs) with EE targets and mandatory reporting, National Energy

<sup>8</sup> Nine ECA countries have adopted carbon neutrality targets by 2050 (Armenia, Bulgaria, Croatia, Kyrgyz Republic, and Romania), 2053 (Türkiye) or 2060 (Kazakhstan, Russian Federation, and Ukraine). EU candidate countries, such as in the Western Balkans, have declared an ambition to work with the EU toward a net zero European continent by 2050, according to their NDCs and county strategies.

<sup>9</sup> CCDRs are completed for Azerbaijan, Kazakhstan, Romania, Türkiye and Uzbekistan; CCDRs are ongoing in the Western Balkans and Poland. See <https://www.worldbank.org/en/publication/country-climate-development-reports> for more information.



and Climate Plans (NECPs) through 2030, Long-term (building) Renovation Strategies (LTRSs), transposing or adapting EU EE directives, etc., as well as developing climate plans such as the Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs). All of these provide roadmaps and plans for governments to significantly scale-up the pace of building renovations, industrial modernization, and other EE programs.

**16. The World Bank’s longstanding engagement in EE in ECA has supported governments to reduce energy inefficiencies in the building, industrial and DH sectors through policy, regulatory and institutional support as well as cost-effective investments, while generating lessons learned.** In ECA, about US\$6.1 billion has been provided by the World Bank to support EE projects in the period FY2010-FY2023, with: (i) about US\$3.10 billion for supply-side investments (about half each for power T&D and DH); (ii) US\$1.8 billion for building renovation programs (about 70 percent public buildings, 30 percent residential); (iii) about US\$1.0 billion for industrial and commercial building upgrades; and (iv) about US\$200 million for other public sector EE (e.g., water utilities, street lighting). These EE investment projects, while generally smaller in scale, have been extremely important to improve the underlying policy and regulatory frameworks, create market capacities, develop the institutions and systems, demonstrate energy savings (often 30-60 percent in buildings) and test various financing and contracting models.<sup>10</sup>

### C. Relevance to Higher Level Objectives

**17. Scaling up EE is in line with the World Bank’s Evolution Roadmap that sets out the new vision and mission of poverty reduction and shared prosperity on a livable planet.** Energy consumption impacts every aspect of the economy. In the public sector, EE investments can generate budgetary savings for other development priorities, together with improved service delivery (e.g., better comfort levels in schools and hospitals, better public lighting). By lowering operating costs, EE can make businesses more competitive and greener. For households, EE can lower energy bills, improve indoor comfort levels (due to efficient heating and cooling, more efficient buildings), and increase property value. EE also generates benefits from reduced air pollution and associated decreases in health costs. Furthermore, EE can also foster local job creation, as several EE measures can be labor intensive, and boost productivity. In 2022, the end-use efficiency sector was the largest employer in the energy industry, with over 11 million jobs globally.<sup>11</sup>

**18. The E3 MPA seeks to incorporate the ongoing evolution of the World Bank Group to deliver solutions and impact at scale.** The E3 MPA integrates key elements of the new vision expressed in the World Bank Group’s *Evolution Roadmap*: (i) adopting an augmented country engagement approach that yields development outcomes at community, national, regional, and global levels; (ii) exploiting synergies from the mobilization of domestic revenues, private capital, and climate financing, while combining traditional and innovative instruments; and (iii) fully leveraging the potential and synergies of the World Bank Group institutions, while also harnessing partnerships, recognizing that no single institution can meet the required EE financing needs (estimated at about US\$200 billion per year globally) and that strategic concessional financing must be deployed to mobilize private capital and maximize impact. Together with the ECARES MPA, the E3 MPA is an early application of the Evolution Roadmap in the ECA region.

**19. EE is a high priority in the region’s Country Partnership Frameworks (CPFs) and Climate Change Action Plan.** Scaling up EE is included as one of the primary objectives in several CPFs<sup>12</sup> (Bulgaria, Croatia, Kazakhstan, Moldova, Poland), whereas in other cases, EE is featured as a key solution to meet broader development objectives, such as energy transition, climate resilience, sustainable use of natural resources, reliable infrastructure, and economic growth,

<sup>10</sup> For more information on sector opportunities for EE, barriers, typical financing and other program interventions, and lessons learned, pls see: ESMAP Livewire series on EE: [EE in the public sector](#); [EE in the residential sector](#); [EE in industry](#) and [Toward a Framework for the Sustainable Heating Transition in Europe and Central Asia](#) (for heating).

<sup>11</sup> Job creation varies by program type. The IEA estimates the potential for job creation from 8 to 27 job years per EUR 1 million invested in EE (covering building retrofits, heat pumps and other equipment, appliances, and industry efficiency). IEA (2023). World Energy Employment.

<sup>12</sup> Bulgaria (Report No. 104987-BG; June 27, 2016); Croatia (Report No. 130706; May 2, 2019); Kazakhstan (Report No. 183366-KZ; August 3, 2023), Moldova (Report No. 177939-MD; March 23, 2023), Poland (Report No. 125670-PL; June 5, 2018).



demonstrating its multifaceted nature and multisectoral benefits.<sup>13</sup> EE is also aligned with the region’s completed CCDRs which all call for the urgent scale-up of EE in the building, heating and industrial sectors. EE also contributes to ECA’s Climate Change Action Plan (CCAP) through 2025 by supporting climate mitigation and adaptation. In the CCAP, EE is featured as a primer – the single energy technology that contributes to all five system transitions needed in energy, industry, transport, urban, and food-landscape-water nexus.

#### D. Multiphase Programmatic Approach

##### *Rationale for Using the MPA*

**20. A regional MPA is urgently needed to support participating ECA countries to scale-up EE more effectively and efficiently than individual operations.** EE has been a core element of the World Bank’s energy strategy for more than 30 years, but investments are not keeping up with the growing ambitions in countries. Despite largely stable demand for EE lending in the ECA region, the scale-up that has been anticipated for many years has not materialized. By providing a more medium-term horizon and commitment, this MPA will help provide more consistency and predictability to local markets while providing greater access to public and private financing, concessional resources and more policy and institutional reforms. EE is central to the World Bank’s paper “[Scaling Up to Phase Down: Financing Energy Transitions in the Power Sector](#)” and recent IEG review entitled “[World Bank Group Support to Demand-Side Energy Efficiency](#)”, both of which called for an urgent need to accelerate the scale-up of EE in the Bank’s countries. A project-by-project approach presents the risk of fragmentation for the value chains, discontinuity in engagements and disjointed donor efforts.

**21. The E3 MPA provides a longer-term framework for governments to develop policies and regulations, build institutions and markets, and develop mechanisms to attract the scale of capital needed for EE investments.** Scaling-up EE investments in ECA countries requires continuity and more predictable World Bank support, as it depends on a sequence of mutually reinforcing policy, regulatory, institutional, and financing interventions. Under the MPA, multi-phase projects can be designed to help countries move from demonstration projects to scaled-up national programs that leverage commercial financing. Combining IPFs with PforR and guarantee instruments under the MPA allows countries to incorporate reform measures and risk mitigation mechanisms to achieve the required scale of investments. The MPA has been designed to provide a common program objective, indicators and pillars, with the latter being sufficiently defined with a range of structured interventions while providing a flexible menu of activities guided by the common theory of change that addresses high-impact barriers that are known to constrain private investment in EE. In addition, the MPA would allow additional countries to join when they are ready.

**22. The E3 MPA can create regional momentum and facilitate replicable engagements across ECA through enhanced standardization.** While ECA countries are each unique, a common legacy allows for more standardized project designs to be developed and replicated across sectors – public facilities, residential buildings, industry, and heat supply, thereby increasing the World Bank’s operational efficiency. For the World Bank, these changes imply faster preparation times, improved consistency and quality and streamlined documentation. For countries, these changes could offer facilitated preparation with greater access to standard preparation documents, the range of financing instruments of the World Bank Group, peer-to-peer learning and potential for cost reductions (e.g., reduced TA needs due to access to training materials, technical standards, guides, etc.). In this way, the E3 MPA can provide replicable and adaptable approaches that can be adopted, and more programmatic approaches imbedded in national programs that can help to scale up EE.

**23. The E3 MPA builds on the One WBG approach and provides a partnership platform for bilateral donors, climate funds and multilateral development agencies to facilitate a concerted approach.** The E3 MPA will enable a systematic deployment of complementary or sequential interventions from the Bank, IFC and MIGA to promote a sustainable enabling environment, ensuring greater returns on investment and multiplied impacts at both country and regional

<sup>13</sup> Among 21 ECA CPFs, 18 explicitly emphasize the critical role of EE in achieving one or more development objectives.



levels.<sup>14</sup> As a partnership platform, the MPA helps to avoid a fragmented approach to country assistance and to build a common strategy and integrated programs for each participating country. Increased coordination with donor partners will allow the E3 MPA to collaborate on joint national programs where possible, such as through pooling of funding, or to coordinate parallel programs in other cases.

**24. In addition, the E3 MPA will create regional market demand for EE services and products, helping spur industry capacity and supply chains.** The MPA’s financing envelope, including co-financing from the private sector and other partners, will catalyze private sector development, such as: (i) building capabilities of energy auditors, design firms, ESCOs (Box 1), installers, and construction firms, and (ii) creating capacities and supply chains for local manufacturing of material and equipment for EE renovations and equipment such as heat pumps and solar PV panels. Some of these private actors, such as ESCOs or equipment manufacturers, could later take on roles in financing EE through, e.g., ESCO or vendor credit/leasing models. A key aspect will be to engage with the private sector to signal likely products, technical standards, regulations, standard TORs/contracts, etc. to be supported under the MPA so the appropriate supply chains can be fostered with more standard and predictable demand, including at the regional level.

**Box 1. Energy service companies**

An energy service company, or ESCO, is a commercial business developed to implement EE projects. ESCOs generally provide a range of turnkey services—audit, design, procurement, installation, M&V—and may offer financing, so that the host facility has to put up little or no capital. In many cases, the compensation is contingent on demonstrated energy savings, so the client can ‘pay from savings’ and maintain a positive cashflow throughout the project.

Attempts to foster ESCO markets in the ECA region by replicating Western-style ESCO models have largely been disappointing. Donors and consultants systematically oversold ESCOs, creating extremely high—and often false—expectations for what ESCOs were capable of doing and how quickly they could develop. A host of challenges emerged, such as weak ESCO balance sheets, lack of M&V protocols, no dispute resolution system, unfamiliarity of end users with ESCO models, ESCO procurement, and suppressed demand. There was also a misperception that ESCOs would finance projects, even when local banks would not, and assume more operational risks that they were willing or able to bear.

Today, particularly in more developed markets such as Türkiye, Bulgaria or Poland, simple ESCO models are operating, often with single-technology retrofits (e.g., streetlights, boilers, chillers) by the suppliers, where design, performance and financing risks are low. However, full facility renovations by ESCOs have remained harder to replicate. The World Bank Group has developed and tested simplified ESCO contracts to support EE projects that are showing successes. One model, used successfully in Armenia, Türkiye and elsewhere involve the government or an EE Fund financing the project but hiring an ESCO to implement it. Selection is based on the highest NPV offered, and then a simple performance test is administered within two weeks of completion. Once the test is passed, the ESCO receives 80 percent of its payment, with the final 20 percent held for the one-year defects liability period. It is expected that such models can be further replicated and evolve over time as markets develop.

For more information on ESCOs, pls see [Fostering the Development of ESCO Markets for Energy Efficiency Live Wire](#) (World Bank, 2017).

**25. The E3 MPA learning agenda will facilitate knowledge exchange between countries and provide opportunities for leapfrogging.** Most barriers that prevent scaling-up investments in EE are common among ECA countries. Countries that are in more advanced stages in terms of private-sector led and scaled-up EE investments present critical learning opportunities for countries in earlier stages. The latter can benefit from the program designs and lessons to allow them to accelerate the transition to more sustainable financing models, and potentially to leapfrog to advanced models. The E3 MPA would also tap into a range of other World Bank Group initiatives and peer-to-peer learning platforms (e.g., the planned EE window of the Energy Sector Management Assistance Program or ESMAP, the Bank’s Utility Knowledge Exchange Platform UKEP, IFC’s EDGE buildings program) and establish a coalition of partners through a regional network.

**26. The E3 MPA will provide US\$1.46 billion in IBRD and IDA financing, and leverage US\$2.4 billion in government counterparts, partners, concessional financing and private capital; be structured along four pillars reflecting priorities**

<sup>14</sup> MIGA can, for example, provide credit enhancement to creditworthy state-owned banks to support them to raise commercial financing for dedicated EE financing programs under all four pillars. For industry, IFC could provide financing and advisory services to banks on financial products to support industrial modernization, EE, decarbonization and a circular economy.



**in the public, residential, industry and DH sectors; span a 6-year commitment period and a 10-year implementation period; and comprise:**

- (a) The proposed Türkiye Second Energy Efficiency in Public Buildings (EEP2, P500777, IBRD US\$300 million) and the Sustainable Transition through Energy Efficiency in Moldova (STEEM, P500560, IBRD US\$50 million, TF US\$4.5 million) IPFs will be delivered in Phase 1. These country-level operations, and their links to the E3 MPA, are described in Annexes 4 and 5.
- (b) Additional EE operations supporting investments in the MPA participating countries (Moldova, Montenegro, Türkiye, Uzbekistan) across the E3 MPA's four pillars which have requested financing support from the Bank as well as support towards fostering a regional learning and support agenda, to be delivered in subsequent phases. These subsequent operations under the MPA will be approved in accordance with the MPA policy. Table 1 provides information on the proposed pipeline of engagement under the MPA (see also Annex 3).
- (c) There is an expectation that additional ECA countries beyond those listed above could be added to the E3 MPA upon the receipt of letters of intent once the MPA is in place. If so, such operations would be processed as additional financing for the MPA and would be approved in accordance with the MPA policy.

The 10-year implementation period of the E3 MPA reflects the timing of expected subsequent operations under the current envelope, and considers the average timeframe for design and studies, procurement, implementation and commissioning of similar EE investments in the ECA region. Additional contributions from climate funds and other donors will be sought during the implementation of the MPA. In addition, the E3 MPA team will help fundraise concessional resources from climate funds and bilateral donors. Grants to specific operations could be channeled through ESMAP to expedite approval processes and streamline monitoring and reporting.

**27. A coalition of regional and global organizations, including international financial institutions (IFIs) and donor partners and organizations dedicated to knowledge exchange and capacity building, will be established through a regional network to support the MPA.** The regional network will be financed with an initial US\$5 million Bank-executed grant from ESMAP. The regional network, the roadmap for its establishment, and an overview of its partners are described below (para 41-44, para 48, Annex 2).

## II. PROGRAM DESCRIPTION

### A. Project Development Objective

**28. The Program Development Objective (PrDO) is to increase energy efficiency savings in participating countries of the Europe and Central Asia (ECA) region and develop enabling policies and programs for the scale-up of energy efficiency.**

**29. The project development objectives (PDOs) of individual operations under the MPA Program will align with the PrDO, while reflecting key expected outcomes specific to each operation.** The proposed PDO of the Second Energy Efficiency in Public Buildings Project is to enhance energy efficiency in existing central government buildings and strengthen the energy efficiency requirements for new and renovated public buildings. The PDO for the Sustainable Transition through Energy Efficiency in Moldova Project is to enhance energy efficiency in existing public buildings and the district heating sector in Moldova and provide immediate and effective response to an eligible crisis or emergency (see Annexes 4 and 5).

### B. Results Chain and Project Framework

#### *Program Results Chain*

**30. The MPA results chain reflects the various benefits of scaling up EE.** The proposed outcomes would be achieved through investments in four pillars for which technical, financial, and institutional barriers have persisted and private financing has been more difficult to mobilize: 1) public sector; 2) residential sector; 3) industry; and 4) DH. While distinct,



**Table 1. E3 MPA Program Framework**

Phase #	Project ID	Country	Instrument	Estimated IBRD Amount (US\$ million)	Estimated IDA Amount (US\$ million)		Estimated Other Amount (US\$ million)	Estimated Approval Date	Estimated E&S Risk Rating
1	P500777	Türkiye	IPF	300	0		0	June 2024	M
	P500560	Moldova	IPF	50	0		4.5	June 2024	M
2	P505964	Montenegro	IPF	30	0		20	FY25	M
3		Uzbekistan	IPF	180	100		250	FY26/27	M
4		Uzbekistan	IPF	0	250		150	FY27/28	M
5		Türkiye	IPF/P4R	500	0		1,950	FY26/27	M
6		Moldova	IPF	50	0		20	tbc	M
<b>Total</b>				<b>1,110</b>	<b>350</b>		<b>2,394.5</b>	<b>3,854.5</b>	
								<b>IBRD/IDA Financing Envelope</b>	<b>1,460</b>

\* The table shows indicative amounts. Include country name in case of multiple borrowers.

If there are changes in the MPA Program framework, the subsequent phase's PAD would include the original program framework as well as the revised one.

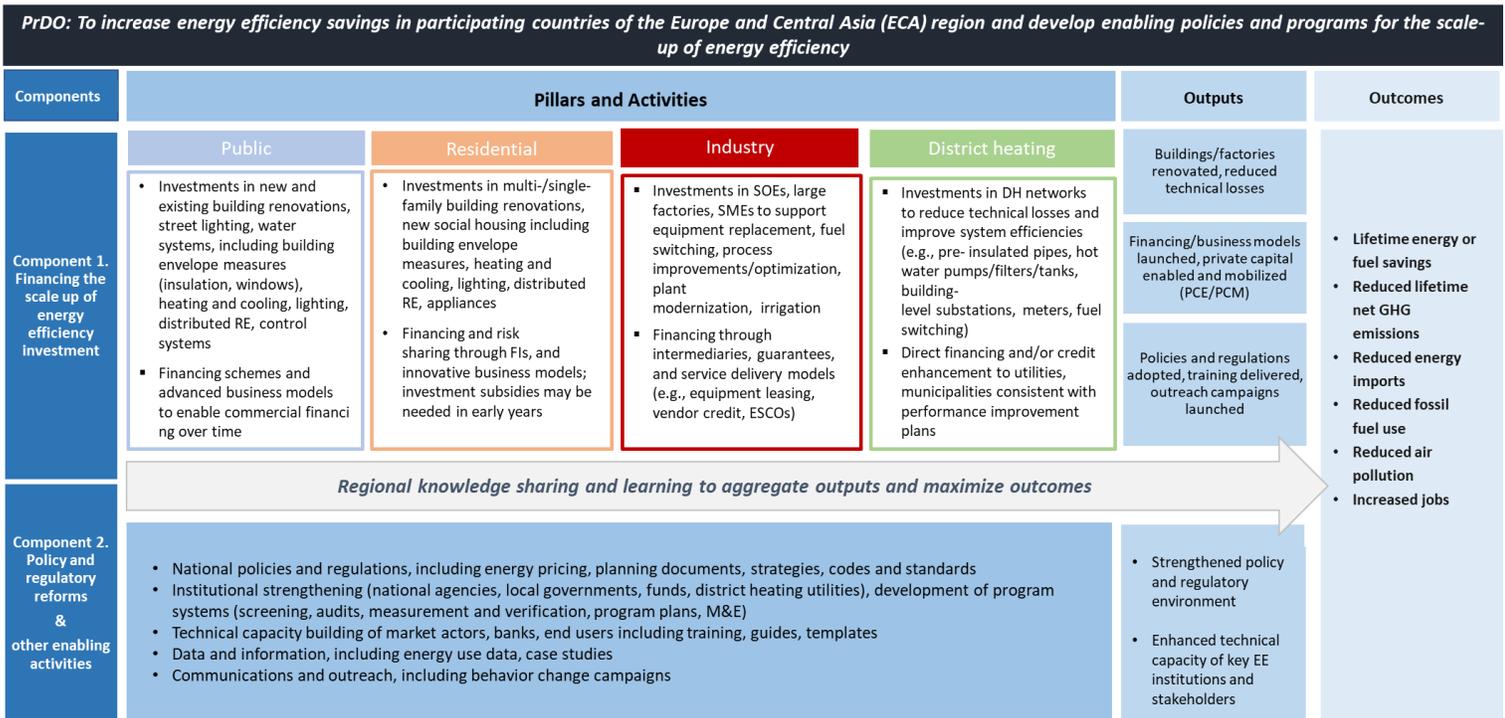
these pillars have important linkages— for example, (i) the public sector can lead by example and stimulate investments in the residential and industrial sectors; (ii) investments in building EE can reduce heating loads which lower the investment to transition to sustainable DH; (iii) building-level RE investments, included under pillars 1 and 2, can help offset additional electricity supply associated with electrification of heating; and (iv) innovative financing and business models, such as ESCOs and equipment leasing, can be piloted in the public sector and then expanded to serve the residential and industrial sectors. The E3 MPA has two components: Component 1 – Financing the scale-up of EE investments and Component 2 – Policy and regulatory reforms and other enabling activities. Investments under Component 1 would result in projected lifetime energy savings (PrDO-level indicator 1, see Table 2) and projected lifetime net GHG emissions (PrDO-level indicator 2 and corporate scorecard indicator). Activities under Component 2 would result in adoption/amendment of policies and regulations to scale up and sustain energy savings (PrDO-level indicator 3). These policy reforms would provide some energy savings during the E3 MPA’s implementation period, and pave the way for scaled-up impacts in the years ahead. Moreover, enabling activities under Component 2 would also help address many of the policy, financial, informational and other barriers noted earlier; thus the programmatic nature of the MPA will better enable the gradual and systematic scale-up of EE investments and private capital mobilized or enabled (PCM/PCE) over time. Energy savings would also enable reduced energy imports and fossil fuel use, reduced global and local emissions, increased economic productivity and jobs, contributing to low-carbon, resilient development (Figure 3).



Table 2. E3 MPA PrDO-level Outcome Indicators

#	PrDO indicators	Unit	End Target
1	Projected lifetime energy or fuel savings	Gigawatt hours (GWh)	Overall MPA: 63,227 GWh [Phase I: 4,877 GW]
2	Projected lifetime net greenhouse gas (GHG) emissions from results achieved <sup>15</sup>	Metric tons of CO <sub>2</sub> e	Overall MPA: -18.71 million tCO <sub>2</sub> e [Phase I: -1.63 million tCO <sub>2</sub> e]
3	Policies and regulations amended/adopted to scale up and sustain energy savings	Number	Overall MPA: 10 [Phase I: 2]

Figure 3. E3 MPA Theory of Change



\*Assumptions: Stable macroeconomic conditions, required EE and associated policies and regulations will be adopted and enforced, energy subsidies do not increase, governments remain committed to broad decarbonization goals by 2050s, private sector is willing to invest in EE and provide EE products and services.

Notes. FI = financial institutions; SOEs = state owned enterprises; SME = small and medium enterprises; PCE = private capital enabled; M&E = monitoring and evaluation.

**31. The E3 MPA has identified a menu of additional intermediary results indicators that could be selected, as relevant, for the operations under the MPA (See Section VII. Results framework and monitoring). These include: building blocks or businesses renovated (number), private capital mobilized (amount, US\$), private capital enabled (amount, US\$), reduced technical losses from DH networks (percentage, %), jobs created (number), generation capacity of energy constructed or rehabilitated (megawatt; disaggregated by renewable energy), project beneficiaries (number; disaggregated by gender), people trained (number; disaggregated by gender), and organizations established and/or plans adopted to support sustainable EE financing (number).**

**32. Under the E3 MPA, eligibility criteria need to be flexible but participating countries would be encouraged to have some important foundations and demonstrated commitment to implementing EE at scale. The following basic criteria should be met by countries to be included under the E3 MPA: (i) adoption or advanced preparation of national-**

<sup>15</sup> Estimated ex ante per existing corporate requirements against a counterfactual scenario without the operation using the established Bank methodology for this purpose.



level policies for EE, including medium-term targets; (ii) basic regulations for buildings and equipment (e.g., building codes, minimum standards and/or labeling of appliances); (iii) a dedicated institution with staff and resources to lead the development and implementation of scalable programs with suitable financing schemes; (iv) stated commitment to scaling-up investments, including the mobilization of commercial financing for EE. The four countries identified in Table 1 meet these criteria. The World Bank could offer upstream support through ongoing ASA programs to interested but ineligible countries to enhance their policy and regulatory frameworks and institutional set-ups. Policy measures to improve the enabling environment, such as energy prices and standards/codes, could also be supported through parallel Development Policy Operations (DPOs). Commitment to further reforms, such as moving away from traditional fuels, efforts to foster permanent institutions that can scale up implementation, SOE reforms and building credit histories for sub-borrowers (e.g., through initial public EE revolving funds) will also be critical to address some of the prevailing regional barriers discussed earlier.

**33. The E3 MPA would support both scaled-up programs and projects that seek to lay the groundwork for the development and initiation of scaled-up, national-level programs.** Given the current status of underdeveloped policies, institutions and markets in many ECA countries, achieving scale will take time and likely be done through a series of operations. For these countries, initial operations under the E3 MPA may be more modest in scope in terms of physical investments. However, for these operations, it will be essential to include a package of reforms to strengthen the enabling environments for countries eventually to develop and launch national level programs—i.e., programs that seek to renovate the full building stock or cover all factories or heating utilities over the program period. In Türkiye, for example, a draft national program for EE in public buildings is now being developed targeting the renovation of over 530,000 public buildings, which would require investments of more than US\$8.8 billion (excluding the investment needed for any structural reinforcements). Such programs would have to be implemented with significant IFI and donor partners, government and commercial co-financing, along with the necessary policy and regulatory reforms and market development, in order to achieve the designed scale.

**34. The EE MPA will encourage efforts to decarbonize buildings in line with the Paris Agreement by:** (a) maximizing the reduction of heat demand through cost-effective investments (e.g., insulation, windows, air tightness); (b) reducing fossil fuel use through switching to sustainable heating (electricity or RE-based heating) where feasible; (c) if clean heating fuels are not feasible, investments in improving the efficiency of existing gas boilers would be low mitigation risk if: (i) it is a transition fuel, does not extend the lifetime of the system and does not cause carbon lock-in; (ii) no investments in new gas infrastructure are made; and (iii) is consistent with the country's low emissions development plans; and (d) maximizing on-site RE power generation where viable.

**35. The E3 MPA consists of two components: 1) financing the scale-up of EE investments; 2) policy and regulatory reforms and other enabling activities.**

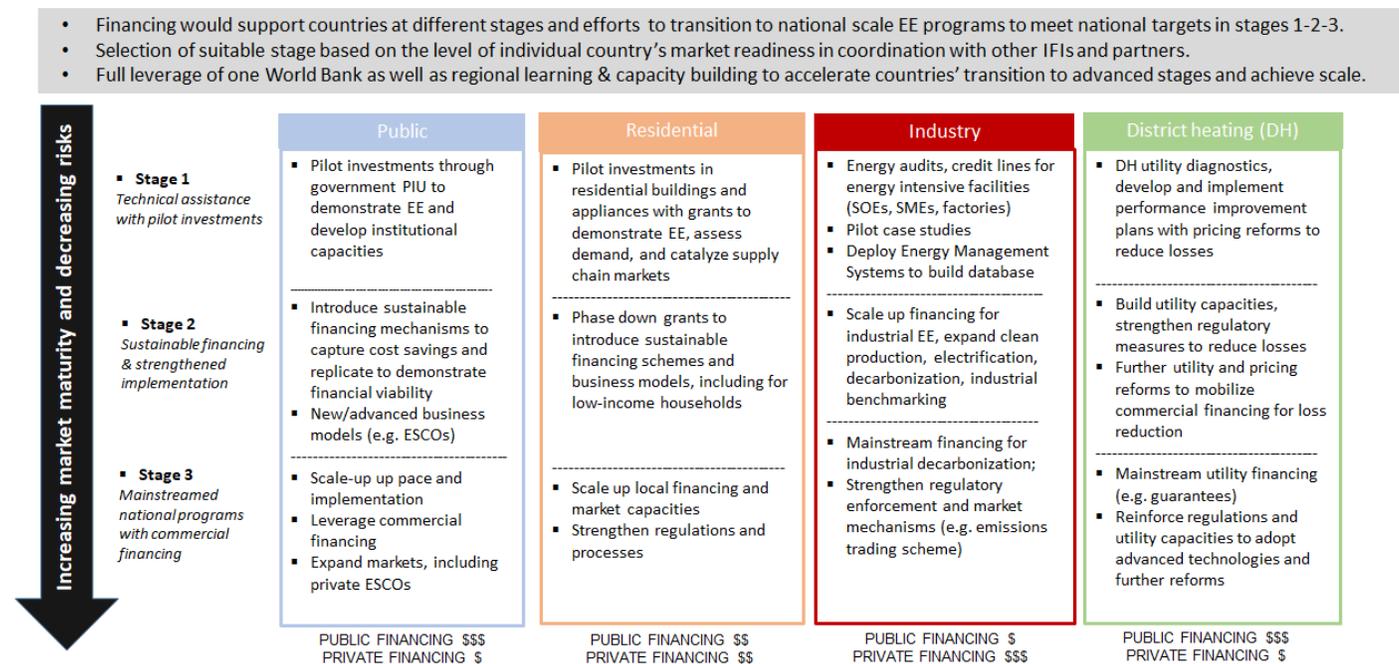
**36. Component 1. Financing the scale-up of EE investments.** Financing would be provided to support EE investments in the public sector, residential buildings, industrial facilities, and heating utilities to contribute to national-level energy savings targets. While all four main pillars of investment would be eligible, specific investment programs would be based on each participating country's target market(s) and conditions. In the early stages (see Figure 4), IPFs are likely to be the main instrument; these could also include financial intermediary operations for projects targeting private end users (mainly the residential and industrial sectors)<sup>16</sup>. Where possible, private capital will be sought to demonstrate the viability for commercial lenders and other financiers (such as ESCOs, leasing companies). In less developed markets, it will be important to introduce the necessary policy and institutional reforms needed to provide the right conditions for scaled-up private sector-led markets and domestic commercial financing in later stages (or later years within a project implementation period). Public financing through mechanisms such as EE revolving funds, may also be needed for less

<sup>16</sup> Where financial intermediary operations are proposed to join the MPA, appropriate assessments will be done to (i) assess the capabilities of the proposed domestic partner financial institutions to ensure their governance structures, appraisal methods and capitalizations, etc. are robust, (ii) evaluate the market conditions to confirm market failures exist and ensure any proposed on lending arrangements help develop rather than distort the market, and (iii) verify the robustness of plans to ensure sustained commercial lending to the target markets beyond the operation.



creditworthy segments of the market until demonstrated repayments and default rates can be documented for potential commercial financiers to enable accurately priced-in risks. Over time, as countries move towards more advanced stages and their markets evolve, the goal is to move up the “financing ladder” (see Figure 5), advancing to more commercial financing (e.g., partial risk-guarantees, ESCOs)<sup>17</sup>. This would allow PforR loans and guarantees to be deployed as country programs evolve. Upstream engagement with IFC, MIGA, other donors and the private sector will be important to develop strategies and approaches for successive program stages and to develop joint or coordinated programs. Individual projects would assess (i) legislative and regulatory frameworks, (ii) institutional capacities, (iii) maturity of local financial and credit markets, (iv) state of local EE service markets, and (v) technical and financial capabilities of target end users to determine the appropriate stage of intervention, suitable financing mechanisms, and level of ambition.<sup>18</sup> However, not all EE would be eligible under this MPA—financing of EE improvements in fossil fuel-based power generation, conventional power T&D loss reduction and one-off EE pilots would not be supported under the MPA.

Figure 4. E3 MPA in three development stages



Note. PIU = Project Implementation Unit

**37. Specific investments would be based on national plans and support access to suitable and affordable financing,** which are expected to include:

- a) **Financing of EE in the public sector (Pillar 1).** Investment support would be provided for the renovation of public buildings (central government and municipal buildings) and their heating/cooling and other systems (more efficient systems, transition to cleaner fuels), public lighting and other municipal services (e.g., water utilities). Investments could be provided through government units (for central government facilities) or intermediaries (e.g., commercial/development banks, specialized funds, etc.).<sup>19</sup> Over time, policy and regulatory frameworks would be

<sup>17</sup> It should be noted that markets can evolve more quickly, potentially skipping some stages (Figure 4) or financing instruments (Figure 5).

<sup>18</sup> This approach has been demonstrated in several ECA countries: launching EE programs for central government buildings followed by programs for municipal EE to build capacity of the implementing agencies, set up systems (e.g., energy audits, designs, commissioning, M&V) and program procedures, build market capabilities (of energy auditors, design companies, installers, construction firms, ESCOs), and create sustained demand for EE equipment and materials; and subsequently designing and launching programs for private facilities (e.g., residential buildings) based on these developed institutions, systems and markets.

<sup>19</sup> MIGA can, for example, provide credit enhancements for creditworthy public sector entities (sovereign/SOEs/municipality levels) to help raise commercial financing at improved terms to finance public-sector-led EE projects.



improved to enable public financing to transition to revolving funds and commercial financing, while strengthening building codes, building energy performance requirements (and certification), and equipment/material standards.<sup>20</sup> Risk sharing schemes would also be eligible to defray risks from untimely government payments to commercial financiers including ESCOs. To ensure that early-stage operations are able to transition to scaled up programs with commercial financing, such operations would include the required policy and institutional reforms and development of plans (e.g., sustainable financing mechanisms, engagement with parent budget entities to amend budget rules, reform of public procurement rules) (under Component 2.)

Figure 5. Financing Ladder for Energy Efficiency



- b) **Financing programs for the residential sector (Pillar 2).** Investment support would be provided for renovation programs for multi-family apartment buildings (MABs) and single-family buildings (SFBs) including the replacement of heating systems and inefficient appliances. Investments would be provided through intermediaries (e.g., development banks, specialized funds, commercial banks) with possible parallel support for investment subsidies and guarantees, bulk purchase, on-bill financing and other schemes.<sup>21</sup> Policy and regulatory frameworks would be strengthened similar to that in the public sector, focusing on appliance standards and building codes, building material (e.g., insulation, windows) standards, HOA regulations, fuel pricing and switching, universal metering, social safety nets, behavior change, etc. under Component 2.
- c) **Modernization of industry (Pillar 3).** Investments for the modernization and decarbonization of factories would be supported including large, energy-intensive enterprises (state-owned and private) and SMEs focusing on plant modernization, production process optimization, clean production, equipment replacement and phasing out of fossil fuels for heating using RE and electricity where feasible. Investments would be provided through banking intermediaries with possible parallel support for guarantees. Such programs would be complemented by national schemes to support equipment standards, industrial benchmarking, voluntary agreements, emissions trading schemes, ESCOs/equipment leasing and obligations for periodic energy audits and EE reporting. Incentives could also be provided to support adoption of best available technologies, surpassing of sector benchmarks, electrification of thermal production processes, etc. Collaboration with IFC and MIGA will be essential to help ensure a private sector-led approach, with greater use of policies and risk sharing to enable commercial financing to reach a greater segment of the market; market segmentation would then allow Bank financing to focus on

<sup>20</sup> This includes development of technical standards and guidelines to assess embodied carbon, that is the carbon emissions associated with upstream extraction, manufacturing, transportation, installation, maintenance and the eventual disposal of building materials.

<sup>21</sup> IFC could provide financing and advisory services to banks on financial products; its EDGE tool and financing for new housing; financing and/or advisory to construction/equipment/material suppliers to expand operations, and to potential service providers.



market failures or segments unable to access commercial financing in the earlier stages.

- d) **Investment in DH (Pillar 4).** DH remains highly cost-effective in areas of high demand density. However, as demand is reduced through EE in buildings, DH viability may need to be reassessed. The MPA would support such assessments through sustainable heating roadmaps and other tools to decarbonize DH supply (e.g., shifting from coal and natural gas to cleaner options such as geothermal, solar, electric heat pumps, waste heat), reduce technical losses and improve system efficiencies and service delivery. This would involve investments in largely municipal DH to improve efficiencies (e.g., reduced heat losses, building-level substations, consumption-based metering) and phaseout of fossil fuels towards RE-based and/or electric heating. Parallel reforms to improve sector governance, transparency, institutional strengthening and utility improvement plans would also be needed. As appropriate, risk sharing, and public-private partnership models would be developed to enable greater commercial financing to support the transition to more financially and environmentally sustainable DH.

### Box 2. Implementing the Financing Ladder in ECA

Many developed countries have been able to transition from largely public to commercial EE financing over time. ECA countries have had more challenges due to prevailing creditworthiness and other barriers. But some notable successes have emerged:

- (a) In Türkiye, the Bank approved its first credit line in 2009, through two development banks (TSKB and TKYB) to support EE in larger industries, deploying over US\$310 million. Many other IFIs joined the market as well. In 2013, the Bank shifted to a US\$200 million credit line to SMEs with three public banks (Halkbank, VakifBank, Ziraat Bank) and promoted energy-efficient equipment leasing, vendor credit and simplified ESCO contracts. During this period, several policies and regulations were also enacted for industries, such as appointment of energy managers, annual energy reporting, incentives, energy audits, etc. which further helped drive the market. While there are still some IFIs active in this sector, most of the financing for EE upgrades and renovations are now fully commercially financed. The government’s focus has now shifted to the building sector.
- (b) When banks were not willing to lend to public customers, the Bank explored a variety of innovative financing schemes, including the use of EE Revolving Funds with simplified ESCO and other pay from savings schemes (e.g., ESAs\*). EE revolving funds were created in Bulgaria, Croatia, Armenia, Kosovo and Uzbekistan. A number of these funds were able to demonstrate the performance of EE projects in public entities (largely schools, hospitals, universities) with documented repayments, default rates, etc. Bulgaria has since offered over US\$80 million in guarantees for banks to support EE projects; Armenia is now cofinancing some public EE projects with local banks.
- (c) Poland launched its Clean Air Priority Program (CAPP) in 2018 to support the replacement of coal-based heating and EE renovations in single-family homes. Through a national fund, CAPP offers subsidies to switch from coal to heat pumps, wood pellet boilers or efficient gas boilers and for thermal renovations to reduce energy use. To date, the program has received almost 815,000 applications for grants. To support household cofinancing, the fund signed agreements with seven banks which have provided almost PLN 300 million (US\$75.2 million) with plans to reach over US\$1.5 billion.

Source: World bank data and documents.

\* Under an ESA, the financier (typically an EE revolving fund or super ESCO) offers a package of services to identify, finance, procure, implement, and monitor EE projects for clients. The client is only asked to continue to pay its average baseline energy costs. From this payment, the financier is able to pay the new (lower) energy bill and apply the balance to recover its investment cost and associated fees until the contract period ends.

**38. The use of public financing will be judicious** mainly to demonstrate a limited number of investments needed to bring in commercial financiers, provide targeted subsidies alongside commercial financing, test new business and financing models, and de-risk investments. The Bank will focus more on public investments and enabling activities to unlock opportunities for IFC, MIGA and others to crowd-in commercial financing (particularly for pillars 2 and 3). Financing under the MPA could cover the costs of investment subsidies or grants, but these should be used judiciously in order to address legacy structural and functional infrastructure deficiencies (i.e., buildings with underheating, buildings with seismic or structural deficiencies, other adaptation measures), promote deeper renovations and high-efficiency equipment or newer technologies, phaseout of fossil fuel-based heating, and support poorer end users. Efforts will need to be made to identify sustainable sources for such subsidies or phase them out over time. In programs where carbon markets can be accessed, suitable M&V methodologies would be developed to provide additional revenues to incentivize greater levels of ambition and help offset potentially higher upfront investment costs (see Annex 8).

**39. Component 2. Policy and regulatory reforms and other enabling activities.** Investment support under



Component 1 will be complemented with activities designed to support critical policy reforms and the enabling environment for the design, implementation, monitoring and reporting for EE programs, and to put in place the necessary conditions to progress to the next stages of the MPA including PCE/PCM, leverage climate and carbon finance, and foster regional learning and market creation. These activities will be carried out under the respective country-specific operations and will be supported by the coalition of regional partners (see para 41-44 and Annex 2). Such activities could include:

(a) **National policies, regulations and targets.**

(i) *Strengthening and updating of national-level policy and program documents*, such as NEEAPs and NECPs, LTRs, transposition and adaptation of EE policies including EU EE directives and improved regulatory regimes (e.g., EE obligations), secondary legislation (e.g., rulebooks, standards, codes), HOA regulations, certification schemes (e.g., building performance, energy auditors), enforcement mechanisms, obligations for larger consumers, amendments to budgeting rules (retention of savings) and procurement regulations (green/EE purchasing, ESCO contracting, life-cycle costing/NPV selection), authorization for use of EE revolving schemes, ESCO financing, ESAs, etc., in the building, industrial and energy supply sectors.

(ii) *Energy pricing*. Support for the review of electricity and DH tariff methodologies, transition plans for universal metering and consumption-based billing for DH, time-of-use tariffs, assess social and fiscal impacts of tariff reforms, strengthening of social safety net schemes, etc.

(iii) *Development of planning documents*. TA to support the development of sustainable heating strategies and roadmaps, development of LTRs, industrial sector modernization and decarbonization/electrification plans, DH utility performance improvement plans, regulatory recommendations.

(b) **Institutional strengthening**. Provisions of support to strengthen lead institutions for program planning and implementation, including government agencies and EE funds (e.g., on market analysis, staffing and business plans, program systems, emissions trading and credit certification, appraisal methodologies for banks and other financial institutions).

(c) **Leveraging climate and carbon finance**. An important aspect of the E3 MPA strategy is to leverage additional financing through the monetization of emission reductions associated with investments under operations within the E3 MPA by accessing results-based climate finance sources and carbon markets, along with other forms of climate finance.

(d) **Technical capacity building and training**. TA to support further capacity development and training for other government agencies, municipalities, market actors (e.g., auditors, construction firms, ESCOs, banks), end users (on operations and maintenance or O&M) and skilled worker training for EE supply and demand. This could also include the development of implementation guides, audit templates, model agreements, EE calculators and energy management systems.

(e) **Access to information**. Support to develop national databases (e.g., building stock, industrial energy consumption and benchmarking), outreach campaigns to support program recruitment and implementation, including awareness raising, information on national programs and results, assessing and influencing end user behavior, case studies.

**40. The proposed E3 MPA structure and design will help address the barriers noted previously to foster EE scale-up and private sector participation.** The proper selection of market segments, design of financing mechanisms and creation of enabling activities will help address the prevailing policy, institutional, transactional, financing, and informational barriers noted earlier. A full list of EE barriers and plans to address them within the MPA is included in Annex 1.

**Learning Agenda**

**41. A regional network will be established under the E3 MPA through BETFs to facilitate knowledge exchange between countries, support knowledge creation, harmonize approaches, and ensure concerted actions of partners to scale-up EE.** Regional knowledge exchange enables countries that are in more advanced stages in terms of private-sector led and scaled-up EE investments, to share experiences with countries in earlier stages. The latter can benefit from the



program designs and lessons to allow them to transition to more sustainable financing models faster. The creation of knowledge, systematic identification of knowledge gaps (e.g., through market studies, institutional assessments, barrier analyses), curation of lessons and the development of new approaches by partner organizations will help bring in expertise in specific areas. Improved coordination of policy discussions with countries and adoption of common approaches (e.g., for energy audits, M&V approaches, technical standards, testing protocols) among countries can help prevent a fragmented approach and contribute to the harmonization of approaches in the region. Increased coordination with IFI and donor partners will also allow the E3 MPA to collaborate on joint national programs or to coordinate parallel programs. Therefore, the E3 Regional Network will partner with: (i) IFI and donor partners; (ii) organizations dedicated to knowledge exchange and capacity building in the area of EE; and (iii) consulting firms to provide additional outputs, e.g., development of a regional digital platform for knowledge sharing. (See Annex 2.)

**42. The E3 Regional Network will be demand-driven and (i) support knowledge exchange and capacity building, (ii) provide TA for countries accessing the E3 MPA, and (iii) enhance coordination with other IFIs and donor partners.** In terms of knowledge exchange and capacity building, activities would include designing and implementing virtual and in-person knowledge exchange activities between countries, capacity building and training activities for governments and market actors, and creating and maintaining a digital data and document repository to facilitate data collection and provide countries participating in E3 MPA with access to shared documents. Knowledge gaps would be identified under individual operations for specific countries and target markets. The TA would cover a wide range of activities, including support to formulate or strengthen EE policies, strategies, and action plans; development of program design documents, including market research and supply chain analysis, program design options, and financing and business models; preparation of standard project documents for procurement and E&S aspects, operation manuals, technical guidelines, standard TORs, energy audits, M&V, commissioning, and O&M; and support with the adoption of MRV systems to enable countries to access climate financing. In terms of coordination with other IFIs and donor partners, the regional network will help ensure that projects and programs are developed around a shared vision, which will facilitate coordination.

**43. The network's knowledge exchange and capacity building activities would focus on three priority topics which have been consistently flagged as key knowledge gaps in the scale-up of EE.** First, *policy formulation and implementation* are critical to lay a strong foundation for EE. While the development of well-developed policies, regulations, secondary bylaws, enforcement, etc., may not yield large savings within the project periods, they can accrue greater savings in the outer years. Second, knowledge gaps persist in the *design of scaled-up, national programs*. While project-level designs will be part of project preparation, the E3 MPA will seek to help governments transition to scaled-up, national-level programs over time. Such programs are more complex to design given the need for a broader set of institutional arrangements, scalable and sustainable financing sources, business models including ESCOs, capacity building, communications, and assessing and influencing behaviors. The E3 MPA will foster the sharing of lessons on shifting to national programs. Third, robust yet practical *M&V* is a major gap - the Regional Network will support the sharing of protocols to define process of planning, measuring, collecting and analyzing data to verify and report energy savings within a facility resulting from the implementation of EE measures. Rigorous M&V is also essential for countries/programs to access climate funding and carbon markets.

**44. A roadmap for the establishment of the E3 Regional Network is in place,** with the first partners expected to join by the end of 2024 and the first knowledge sharing and capacity building activities to start in mid-2025. ESMAP has indicated a likely allocation of about US\$5 million BETF to support the E3 Regional Network and additional grant funding may be mobilized in later phases. The activities described above represent a menu of options, from which specific ones will be selected and developed in detail depending on the needs of the participating countries during identification, preparation, or implementation of operations under the E3 MPA. Discussions with potential partners are ongoing (see para 48 and Annex 2). The first activity, which would create and maintain a digital data and document repository for the E3 MPA, and the first knowledge sharing and capacity building activities by partners are expected to start in mid-2025 so that experiences gathered by countries in the first year of E3 MPA can be shared with other countries. Based on the countries' demand, the Regional Network will identify further partners and procure activities. The E3 Regional Network



will also engage with regional platforms of other MPAs, such as the ECARES MPA and other MPAs to seek synergies. In addition to knowledge sharing, the Regional Network will also identify and foster synergies between country programs to support, for example, harmonization of technical standards that can facilitate trade, sharing of testing laboratories, and fostering of regional supply chains for common materials, products and services to help bring down costs and enhance quality.

### C. Program Beneficiaries

**45. The main beneficiaries are people in the ECA region who will gain more efficient and affordable energy services with various associated benefits such as improved local air quality and the creation of local jobs.** In the public sector, immediate beneficiaries of the MPA will be the users (e.g., students, hospital patients) and employees of public buildings. Local communities, including cities, will enjoy the accrued benefits at both energy end-use (public, residential and industrial sectors), as well as cleaner air and improved public services. Industrial enterprises will see lower operating costs, plant modernization and increased productivity in their businesses. DH utilities will benefit from upgraded systems, lower supply costs and improved financial performance which can help to ease pressures on tariff increases. Other beneficiaries would include private financiers, suppliers and service providers from increased demand for their goods and services, leading to increased employment. Participating countries will have better energy security, reduced pollution, and fiscal benefits through lower public energy bills and reduced subsidies. Estimated project beneficiaries for the E3 MPA will be over 1 million citizens.

### D. Rationale for Bank Involvement and Role of Partners

**46. The World Bank has been at the forefront of EE in ECA.** Across the World Bank, ECA has the largest regional EE portfolio of US\$6.1 billion in FY10-23. Globally, the total World Bank EE portfolio amounts to US\$20.9 billion (FY10-23) covering industry, public and residential buildings, DH and electricity transmission and distribution. The knowledge gained through years of EE operations and country engagement has given the World Bank a trusted playbook to scale-up and mainstream EE in our countries. This started with investments in power and heating system upgrades, moving to industrial credit lines and now a greater focus on public and residential buildings including appliances. However, scaled-up investments in all sectors are urgently needed to help countries gain greater energy security, ensure energy remains affordable and help meet energy transition and climate goals.

**47. The World Bank can leverage its convening power to align donors, other development partners, and the private sector around a common vision of EE scale-up and attract a larger pool of knowledge as well as resources.** The E3 MPA will seek to develop programs embedded in country plans and strive to reach a national-level scale, which will help the Bank, IFC, MIGA, other IFIs/donors and participating countries to support coordinated programs with pooled resources to help countries achieve their national aspirations and targets. Joint programs with pooled resources have already been done on an ad hoc basis, for example in the EE revolving fund in Kosovo (with EU-IPA funds). In cases where joint financing is not yet possible, segmentation of markets as well as coordination of policy and regulatory support and TA and capacity building/training would be done.

**48. Engagement with global and regional partner organizations that are active in knowledge exchange and capacity building is critical to realize the E3 MPA agenda.** Most barriers that prevent scaling-up investments in EE are common among ECA countries. Therefore, the experience of one or more countries that have demonstrated successes in some of the sectors can guide the design of policies and programs for countries that are still struggling with persistent barriers in those areas under the E3 MPA. The regional network to be established under the E3 MPA will engage global and regional partners to combine global knowledge with peer-to-peer learning and a detailed understanding of the regional and country context to help develop customized or adapted solutions. Partnerships are being cultivated with the IEA, the Copenhagen Centre for Energy Efficiency (C2E2), the Buildings Performance Institute Europe (BPIE), the Efficiency Valuation Organization (EVO), and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), among others. Additional partners may also include manufacturers and other associations, such as the European Heat Pump Association



(EHPA) to explore options to strengthen supply chains and resolve bottlenecks.

### E. Lessons Learned and Progress on Learning Agenda

**49. Strong and consistent government commitment, reinforced by credible policies and capable institutions, is the first step to creating an enabling environment for scaling up EE.** The host of barriers, related to incentives, institutional capabilities, high transaction cost, high perceived risks, lack of access to financing, need to be overcome to unlock the large potential in EE and enable greater market development and commercial financing to be realized. ECA countries still require substantial support for policymaking and institutional capacity building to overcome these barriers, which would be directly supported under Component 2. Development of suitable programs, financial schemes, implementing arrangements, and scaling up of supply chains and markets will help increase accessibility to affordable financing, products and services. Standardized documents and templates, streamlined procedures, etc. will help lower transaction costs making it easier to develop and implement EE investments.

**50. The World Bank's global EE portfolio over the last two decades, including in ECA, provides other lessons that have helped inform the MPA design and approach.** These include: (i) design and develop strong policies that encourage energy-efficient practices and can be properly implemented and enforced; (ii) link pricing reform and the energy transition with EE programs, as higher prices reinforce efficient energy use and EE can help mitigate the impacts of increased energy prices; (iii) adapt international models to suit local contexts and levels of market development and engage all market actors; (iv) strengthen institutional and enabling environments to allow for the scale-up including development of tools, templates and guides to facilitate investments; (v) improve access to affordable financing, including options to *pay from savings*, with appropriate sharing of benefits and risks; (vi) scaled-up, national programs while more complex, can provide opportunities to better leverage resources, standardize approaches, strengthen competition and supply chains and ultimately lower costs; and (vii) measure and promote the co-benefits of EE (e.g., better service levels, better indoor comfort and air quality, urban renewal, jobs, local air quality) to build political and public support to allow such policies and programs to be sustained and expanded over time. Technical lessons for each of the four pillars of the E3 MPA – public, residential, industry and DH – vary and require a tailored approach.

## III. IMPLEMENTATION ARRANGEMENTS

### A. Institutional and Implementation Arrangements

**51. Country-level institutions and implementation arrangements for each operation under the MPA's initial phase will be elaborated as they are developed.** Operations under the MPA will be implemented by a variety of institutions, including government project implementation units (PIUs), EE revolving funds, super ESCOs, partner banks (financial intermediaries), DH utilities and others. The World Bank will ensure that the agencies have the requisite technical and administrative staff needed to carry out all aspects of the operations. Where subprojects are not yet identified, the detailed procedures will be documented in Project Operation Manuals (OMs) and other project documentation.

**52. For Türkiye and Moldova, both operations will be implemented by existing PIUs with successful experience in implementing Bank operations in energy including EE.** In the case of Türkiye, the project will rely on the PIU for the ongoing Türkiye Energy Efficiency in Public Buildings (EPPB, P162762) and Public and Municipal Renewable Energy (P179867) Projects. The PIU is housed within the General Directorate for Construction Affairs (GDCA) within the Ministry of Environment, Urbanization and Climate Change (MoEUCC), which has the mandate for construction and renovation of central government buildings. For Moldova, the project will be implemented by the Ministry of Energy through its PIU (MEPIU), which was created in 2000 as an autonomous legal entity responsible for the day-to-day management of IFI-funded projects. Despite its large experience, including on E&S, the MEPIU will require staff reinforcements to implement the proposed project. The MEPIU plans to recruit additional staff to strengthen key positions. (See Annexes 4 and 5.)

#### *Use of concessional resources*



**53. In addition to the IBRD/IDA funding provided through the proposed MPA, the World Bank will seek to leverage concessional resources to complement the E3 MPA, incentivize an accelerated energy transition, and provide risk mitigation mechanisms.** First, the E3 MPA is seeking US\$30 million in grant support from the Energy Sector Management Assistance Program (ESMAP). Fundraising for the next cycle of ESMAP resources is underway including a new implementation support facility focused on Energy Efficiency and Industrial Decarbonization. The expected grant is included in the ESMAP business plan for FY25-30. Second, the E3 MPA will seek co-financing through concessional loans and grants from the Green Climate Fund (GCF), the Climate investment funds (CIFs), the Global Environment Facility (GEF) as well as bilateral donor facilities to support the overall MPA and/or individual operations within the MPA. Finally, the E3 MPA is seeking concessional financing from SCALE to provide countries annual payments from carbon revenues that reduce the effective capital costs of further investment, based on achieving pre-agreed results such as country-or jurisdiction-level reductions in carbon intensity from EE investments. Additional concessional loans and RETFs will be processed as additional financing to the MPA, or under individual operations. (See Annex 8 for concessional finance, including ESMAP, and provisions to support operations' access to carbon markets.) Additional grant funding to support Bank work under the E3 Regional Network will be sought.

**54. Concessional financing will remain an important ingredient to drive client ambitions and bring in private capital.** EE provides benefits to the end user and has a variety of socioeconomic benefits (e.g., lower emissions) but faces market failures and barriers, which can justify public investment to scale up the multiple benefits of EE. Given the current levels of policy and market maturity in ECA countries, there is often a clear need for public and concessional financing in the initial stages to establish implementation systems, demonstrate costs and benefits, and catalyze markets. With concessional finance and TA, more businesses would be encouraged to enter the market, test approaches and technologies, and develop their capabilities, during the process of which they can discover the best practices and ways to mitigate risks and lower costs. Together, their efforts can strengthen the business case for EE and help create and accelerate sustainable markets that could continue to grow as concessional support is phased out. Resources mobilized would be deployed strategically based on: (i) the level of country/program ambitions, (ii) the existence of persistent barriers that need to be addressed and overcome; (iii) the level and size of low-income residents that require support; and (iv) the potential to leverage private sector and other financial resources.

#### *One World Bank Group approach*

**55. The proposed MPA program has been designed in close collaboration with IFC and MIGA to leverage a One World Bank Group approach to deliver an expected total financing of about US\$3.9 billion, including US\$0.9 billion in government counterpart and partner financing, and US\$1.5 billion of private capital mobilized.** Annex 6 shows the approach under the E3 MPA to mobilize private sector financing within the currently proposed US\$1.46 billion IBRD/IDA financing and under a One World Bank Group approach. This figure, broken down by pipeline operation in Annex 2, is conservative and will likely increase as the MPA develops further. In addition to PCM, substantial private capital will be enabled by policy level reforms such as the introduction of sustainable financing schemes (such as EE revolving funds), the introduction of regulatory standards and technical guidelines (e.g., for building codes), and accessing carbon markets. IFC may provide upstream support, notably to identify upfront barriers, risks, and bankability considerations for private sector engagement, transaction advisory services for public private partnerships (PPPs), and financing for EE and enabling technologies. MIGA may provide the following: (i) political risk insurance (PRI) to mitigate non-commercial risks, including expropriation, transfer restriction and currency inconvertibility, breach of contract, and war and civil disturbance risks, for private sector investors, and (ii) credit enhancement guarantees to help certain governments and/or public agencies to mobilize international commercial financing at beneficial market rates and conditions. A One World Bank Group team has collaborated to develop the Program framework and is working on preparing the pipeline of planned and possible additional operations combining the various WBG products to maximize PCM, founded on a common assessment of policy, regulatory, institutional and market situation of individual ECA countries, to accelerate and maximize impact as well as promote sharing of lessons learned from leading countries. In some countries, a country level engagement may help in



the development of a holistic proposal to countries with ambitious targets, while in some countries the engagement will be coordinated on a project-by-project basis.

**56.** The World Bank is also approaching development partners to leverage the proposed E3 MPA as a platform to mobilize financing and scale-up the program, including from the EBRD, AIIB, KfW and the EU.

## **B. Results Monitoring and Evaluation Arrangements**

**57. Implementation progress and results will be monitored over the E3 MPA implementation period.** The E3 MPA has a set of results indicators from which participating countries can select as applicable to their respective programs (Section VII). These indicators will be tracked individually by project-level implementing agencies as outlined in the respective operations' Annexes 4 and 5, and reported through semiannual progress reporting. In addition, as noted above, a regional consultancy is planned for a digital platform to support the knowledge exchange, aggregation, and reporting of results indicators for the MPA. The consultancy will also analyze the aggregated results data to identify outliers, common elements, and potential lessons for a feedback loop to inform the learning agenda.

**58. A key element of the monitoring will be the development of improved, standardized M&V of results and impact.** EE investment results can be difficult to measure, since the resulting energy savings have to be estimated based on comparing the pre- and post-investment energy use, which requires additional levels of complexities if the operating conditions change over time. Changes in operating times or production levels, changes in weather, occupancy, improvements in service levels (common if pre-investment conditions included underheating or undercooling) require the development of adjusted baselines—i.e., what the baseline would have been under the post-investment conditions. Thus, a core aspect of the regional platform would be to assess M&V protocols being used, and seek to develop standard methodologies, guidelines and other tools, building on the International Performance Measurement and Verification Protocol (IPMVP) which defines the terms and best practice for quantifying the results of EE, RE, and water efficiency measures. These methodologies are also critical to enable countries to benefit from carbon markets, so the energy savings and resulting emission reductions they achieve can bring in additional revenues.

**59. The MPA will undertake a Mid-Term Review (MTR) to identify and implement course corrections and adjustments which may be needed to further enhance achievement of results.** The MTR will provide a snapshot of implementation experience, compare projected progress and results against actual progress, identify common implementation issues and lessons and develop a set of proposed revisions and refinements to help ensure the MPA is ultimately able to achieve its PrDO and key indicator targets.

## **C. Sustainability**

**60. Operations under the proposed E3 MPA have been designed with sustainability at the core.** All operations will enhance the enabling environment to ensure that investments under the respective pillar are sustained and scaled-up over time, even after individual project implementation periods close. This would include transitioning from early public financing to revolving schemes and other sustainable financing mechanisms, and eventually to fully commercial financing. However, some operations could allow for commercial or blended financing from their initial stages. The Türkiye operation includes efforts to identify and develop a sustainable financing mechanism, which would represent a major stepping stone towards commercial financing. It would also seek to enhance regulations around all new and existing public buildings to increase the levels of EE while reducing and hopefully eliminating fossil fuel use for heating. In Moldova, the development of an EE revolving fund, either as an independent entity or through the proposed Super ESCO, would support the transition to sustainable financing and substantially enable private capital in the public building renovation market. This would require regulatory changes, in terms of budgeting and procurement, to enable this transition.

**61. Both operations are also being developed within frameworks of national public building renovation programs which will also help ensure further investments are made.** Existing NEEAPs, NDCs and other strategic documents all stress the importance of EE within their national policy frameworks. On December 4, 2023, Türkiye announced its new NEEAP



(2024-30) and pledged to reduce its CO<sub>2</sub> emission by 100 million tons through EE investments and programs including in the building sector. A draft national program for EE in public buildings (US\$8.8 billion, 530,000 public buildings) has been prepared and is now under consultation. In Moldova, the government is also seeking to develop a national public buildings program (US\$800 million, 3,000 public buildings) to allow for its full public building stock to be renovated. These national programs will help ensure that the individual operations are part of broader, strategic initiatives and lead to sustained investments over time.

**62. Gender Responsiveness:** Despite significant progress in closing gender gaps in the last decade, women remain underrepresented in the EE sector in ECA, which has a strong association with the science, technology, engineering and mathematics (STEM) fields. At the project level, the E3 MPA will ensure that all country projects are prepared for gender tagging and include adequate gender indicators. To narrow down the gender gap at the regional level, the E3 MPA will proactively engage women and gender specialists in the pool of experts procured to raise awareness and, to the extent possible, ensure that policy and regulatory frameworks incorporate gender factors to empower women in the EE sector. Knowledge workshops, training and internship opportunities that prioritize women participation will be organized to support the necessary capacity building and skills for women to enter and build careers in the sector. In both the Türkiye and Moldova operations, internship programs for women with the corresponding government institutions (e.g., MoEUCC for Türkiye) along with several training programs have been included, with respective results indicators to track the progress. The Türkiye project will also provide incentives to consultancy firms to encourage increased participation of female experts (excluding administrative positions) as well as through the procurement process (see Annex 4).

**63. Citizen engagement:** E3 MPA's design and implementation modalities are underpinned by systematic citizen engagement with ample flexibility to tailor to each country. Citizen engagement will be treated at the project level, and all projects under the E3 MPA will have at least one citizen engagement indicator that will monitor the progress on upstream engagement prior to, during, and ex-post implementation to create a feedback loop that informs continuous improvement in program implementation and contributes to the learning agenda. All EE projects typically begin with consultations with the relevant stakeholders at the project design stage, which is essential for understanding the building user, industrial staff or community's needs and concerns, as these will directly affect the intervention's effectiveness and sustainability. Investment programs will pay attention to ensuring that more vulnerable energy users will benefit from the projects to address energy affordability issues. During implementation of both the Türkiye and Moldova operations, citizen feedback will be solicited through surveys and stakeholder engagement, as articulated in the country and regional Stakeholder Engagement Plans (SEPs). Survey results will be shared with all key stakeholders, including government agencies, contractors and service providers, to take informed corrective actions (see Annexes 4 and 5).

#### IV. PROJECT APPRAISAL SUMMARY

##### A. Technical, Economic and Financial Analysis (if applicable)

###### Technical

**64. Project activities under the MPA will be supported by well-proven technologies and business and implementation models, with elements to foster innovation over time.** Investments in improving EE in the proposed areas – public, residential, industry and DH – will employ tested technologies and measures to yield substantial and sustainable energy savings with positive socioeconomic and environmental impacts. For buildings, this would include building envelope measures (e.g., wall/roof/floor insulation and windows), improved heating, ventilation, and air conditioning (HVAC) systems including heat pumps, lighting and distributed RE such as solar PV. In industry, investments would be made to support industrial equipment replacement (e.g., kilns, boilers, motors), fuel switching, process improvements, system optimization and clean production. For DH, investments would seek to reduce heat losses through insulated piping, water pumping, building-level substations, etc., and decarbonize heat supply by phasing out fossil fuels towards RE-based and electric heating. A minimum savings of 20 percent will be required, but efforts will be made to maximize savings based on technical and economically feasible measures. Operation Manuals (OMs) will be developed for



all operations to document subproject investment eligibility and selection criteria and other procedures. Continued TA including under Component 2 would enable employment of more transformative measures that would allow countries to achieve more ambitious targets in line with their national net-zero goals. To achieve impacts at scale, as well as maximize PCM, delivery mechanisms through financial intermediaries and innovative financing will be explored, leveraging the One WBG approach.

### Paris Alignment

**65. Assessment and reduction of mitigation risks:** Investments under Pillars 1 and 2 include primarily low-risk activities that will focus on building renovations to substantially reduce energy use and decarbonize heating in buildings. Efforts will be made to (i) maximize the reduction of heat demand through cost-effective investments identified by an energy audit (e.g., insulation, windows, HVAC, lighting) and (ii) maximize the use of RE, both for heat supply (e.g., geothermal, solar water heating, heat pumps) and power generation (rooftop solar). For industrial investments, energy audits will identify cost-effective investments in equipment replacement and production system modernization/optimization to reduce energy demand, use waste heat and seek to phaseout fossil fuels using on-site RE (heat and power) and electricity. For DH, investments would seek to reduce heat losses through insulated piping, water pumping, building-level substations, etc., and decarbonize heat supply by phasing out fossil fuels towards clean heating. All investments (building renovations, industry, DH) and accompanying activities are consistent with the countries' carbon neutrality goals thus having a low risk of preventing the countries' transition to low-carbon development pathways.

**66. Assessment and reduction of adaptation risks:** Climate and geophysical hazards to which countries/investments included in this Program will be most exposed to are floods, extreme temperatures, and earthquakes impacting investments in all four Pillars. Flooding has the potential to cause significant damage to buildings and can also induce landslides. The location, structural quality, choice of materials, sealing techniques, and elevation significantly impact the flood resilience of buildings. Extreme temperatures increase energy demand in buildings for cooling and heating, contributing to higher energy consumption, and posing threats to the comfort and safety of building occupants. Adaptation risks to investments will be mitigated through eligibility criteria and screening criteria involving climate resilience to ensure no subprojects with potential high risk of flooding or geophysical hazards including earthquakes (unless deemed seismically safe) are included in individual operations, and investment measures such as improved building envelopes, new heating/cooling systems, and on-site RE generation to increase the buildings' resilience against climate hazards. The operation therefore adequately reduces the physical climate risks to the project outcomes, and the project's climate resilience and adaptation design considerations limit the exposure to an acceptable level of residual risk. Investments under Pillars 2 and 3 involving financial intermediaries need to ensure that climate hazard risks and adequate capacity of private sub-borrowers are detailed in the respective OMs and discussed with Program participants, notably Facility Borrowers, during the awareness and training events. Further details on adaptation risks and risk reduction measures will be provided for each country's operation for subsequent phases of the MPA as preparation advances.

**67.** Both the Türkiye and Moldova operations included in the Program's Phase 1 are aligned with the goals of the Paris Agreement on both mitigation and adaptation, as demonstrated in Annexes 4 and 5.

### Economic and financial analysis

**68. Economic analysis.** The economic viability of the E3 MPA can be demonstrated through the track record of historical EE projects. A review of economic analyses of a sample of 21 World Bank EE lending operations across various sectors showed that the Economic Internal Rate of Returns (EIRRs) are relatively high, with an average EIRR of 31 percent. Similarly, the two projects under the initial phase of the E3 MPA – Türkiye EEPB2 and Moldova STEEM – have EIRRs (see Table 3) well beyond the social discount rates in each country (4.08 and 6.0 percent, respectively). Economic benefits that are typically quantified for projects within the E3 MPA include: (i) economic value of energy savings from EE investments; (ii) reduction of local air pollution; and (iii) reduction of CO<sub>2</sub> emissions (Shadow Price of Carbon – SPC). In addition, other benefits that are more difficult to quantify include enhanced energy security and affordability, improved indoor comfort levels (indoor temperatures), better health, improved building asset values, increased competitiveness and productivity,



and fostering of green jobs. The main economic costs include capital investment for the EE investments. Over the course of the E3 MPA, the accumulated net benefits would multiply to achieve impacts at scale; while these benefits are difficult to capture in economic analysis, they will be pursued via impact evaluations as elaborated in the learning agenda.

**69. Financial analysis.** EE investments are typically financially attractive, resulting in costs per kWh saved that are well below the cost of energy generation. In the Türkiye EEPB2, the financial internal rate of return (FIRRs) of representative subprojects range between 13.6 percent and 30.1 percent and are well above the financial discount rate of 6 percent. A scenario analysis demonstrated that even if investment costs are 50 percent higher than the base case and energy tariffs less conducive to EE, the investments remained financially attractive. In the Moldova STEEM, the FIRRs of the proposed EE measures in public buildings range between 12.7 percent and 78.5 percent across representative subprojects, with the FIRR for the portfolio projected to be 32.6 percent. The FIRR is sensitive to investment costs, energy prices, and projected energy savings. A switching value analysis found that an increase in investment costs by 63 percent will result in an FIRR of Component 1 of the project equal to the financial discount rate of 6 percent.

**Table 3. Economic analysis: EIRRs in Türkiye EEPB2 and Moldova STEEM**

	Public building renovations	District heating upgrades
Without GHG benefits	6.1% to 31.5%	28.6%
With GHG benefits, low SPC	7.7% to 38.6%	33.8%
With GHG benefits, high SPC	9.3% to 45.5%	39.2%

## B. Fiduciary

**70. Financial Management.** FM arrangements for the initial IPF operations within the E3 MPA will be assessed in accordance with the Financial Management Manual for the World Bank IPF Operations (OPS5.05-GUID.180 issued September 7, 2021); future phases will follow the latest FM policies and guidelines. Similarly, fiduciary assessment (including FM, procurement and anti-corruption measures) for any future PforR within the MPA will be conducted as per PforR policy (OPS5.04-POL.107 issued March 25, 2022) and PforR directive (OPS5.04-DIR.107 issued March 8, 2022) or the latest policies and guidelines in force at the time of their processing. The assessments will determine if the arrangements would provide adequate assurance on the use of funds for the intended purpose. These agreed arrangements with the implementing agencies will be documented in the OMs and agreed by the appraisal for the relevant operations. (Annexes 4 and 5 contain additional details on the FM arrangements for the Türkiye and Moldova operations).

**71. Procurement.** Procurement for the initial Türkiye and Moldova operations will be carried out in accordance with the following World Bank procedures: [The World Bank Procurement Regulations for IPF Borrowers](#), fourth edition, dated September 2023; Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants, dated October 15, 2006 and revised in January 2011 and Anti-Corruption Guidelines as of July 1, 2016; and other provisions stipulated in the Financing Agreements. Future operations will be assessed based on the latest regulations in place at the time of processing. Procurement arrangements, capacity assessment, risks, and risk mitigation for first phase operation are summarized in Annexes 4 and 5.

## C. Legal Operational Policies

Legal Operational Policies	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Area OP 7.60	No



#### D. Environmental and Social

**72. Environment and social.** The Environmental and Social (E&S) risk rating for the E3 MPA is rated as Moderate, given the relatively modest E&S risks associated with typical EE projects under pillars 1-3; DH investments under pillar 4 may pose additional risks which will be assessed for individual operations. For the first phase of the E3 MPA, which include the Moldova STEEM and Türkiye EEPB2 operations, the E&S aspects of both projects are rated as Moderate (Annexes 4 and 5 contain additional details on the E&S related investments, risks and proposed mitigation measures). Future phases will be assessed based on the risks associated with each operation and set of investments. Substantial risk operations could be considered under the MPA as well, and the E&S instruments for such operations will be prepared in accordance with the ESF. Where possible, borrower frameworks will be used to manage Low and Moderate environmental and social risks. For PforR operations included in future phases of the MPA, ESSAs will be developed.

#### V. GRIEVANCE REDRESS SERVICES

**73. Grievance Redress.** Communities and individuals who believe that they are adversely affected by a project supported by the World Bank may submit complaints to existing project-level grievance mechanisms or the Bank's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the Bank's independent Accountability Mechanism (AM). The AM houses the Inspection Panel, which determines whether harm occurred, or could occur, as a result of Bank non-compliance with its policies and procedures, and the Dispute Resolution Service, which provides communities and borrowers with the opportunity to address complaints through dispute resolution. Complaints may be submitted to the AM at any time after concerns have been brought directly to the attention of Bank Management and after Management has been given an opportunity to respond. For information on how to submit complaints to the Bank's Grievance Redress Service (GRS), visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the Bank's Accountability Mechanism, visit <https://accountability.worldbank.org>.

#### VI. KEY RISKS

**74. The overall risk rating of the proposed E3 MPA is Substantial.** Despite more than three decades of tried and tested interventions which have been inspired by good global practices and lessons learned, the scaling up of EE has remained largely elusive for most ECA countries. The risk rating for sector strategies and policies and institutional capacity for implementation and sustainability are rated as Substantial given past challenges with key policy and institutional reforms. Strong policy dialogue with countries, linking operations to national targets and commitments, access to concessional and regional support, etc. can help encourage countries to commit to such reforms. However, since this approach, including seeking to maximize PCM and implement a One World Bank Group approach are new, the overall risk rating remains Substantial.

**75.** The Türkiye EEPB2 Project (P500777) risk rating is Moderate with only Macroeconomic risks rated Substantial, and the Moldova STEEM Project (P500560) has a risk rating of Moderate with Political and Governance, and Macroeconomic risks rated Substantial (See Annexes 4 and 5 for a fuller discussion on the risks and proposed mitigation measures for each operation). Both will be implemented by PIUs that are already successfully implementing ongoing projects financed by the World Bank. Selection of additional projects will also be based on demonstrated government commitment to reforms and increased level of ambition of national EE programs. However, for future MPA phases, risks will vary by country, considering country conditions, policy frameworks, markets and implementing agency capacities. The E&S risk rating for the E3 MPA is rated as Moderate, given the relatively modest E&S risks associated with typical EE projects under pillars 1-3. Most of the projects within the MPA are likely to have a Moderate risk rating but a few may be Substantial due to Political, Governance and Macroeconomic risks. Sector Strategies, Technical Design, Institutional Capacity and Stakeholder risks are likely to be largely Moderate.



VII. RESULTS FRAMEWORK AND MONITORING

<b>PrDO Indicators by PrDO Outcome</b>	
Baseline	Closing Period
<b>PrDO Outcome 1: Increase energy efficiency savings in participating countries of the Europe and Central Asia (ECA) region</b>	
<b>Projected energy or fuel savings (Gigawatt-hours (GWh))</b>	
Jan/2024	Dec/2034
0	63,227
<b>Projected lifetime net greenhouse gas (GHG) emissions from results achieved (Metric ton)</b>	
Jan/2024	Dec/2034
0	-18,713,300
<b>PrDO Outcome 2: Develop enabling policies and programs for the scale-up of energy efficiency</b>	
<b>Policies and/or regulations amended/adopted to scale up and sustain energy savings (Number)</b>	
Jan/2024	Dec/2034
0	10
<b>Intermediate Indicators by Component</b>	
Baseline	Closing Period
<b>1. Financing the scale up of EE investments</b>	
<b>GHG emission reductions (Metric tons/year)</b>	
Jan/2024	Dec/2034
0	935,665
<b>Building blocks or business renovated (Number)</b>	
Jan/2024	Dec/2034
0	3,000
<b>Private capital mobilized (Amount (USD))</b>	
Jan/2024	Dec/2034
0	1,520,000,000
<b>Reduced technical losses from district heating networks (Percentage)</b>	
Jan/2024	Dec/2034
0	5
<b>Generation capacity of energy constructed or rehabilitated (Megawatt)</b>	
Jan/2024	Dec/2034
0	250



<b>➤ Renewable energy generation capacity (other than hydropower) constructed under the project (Megawatt)</b>	
Jan/2024	Dec/2034
0	250
<b>Additional jobs created from EE investments (Number)</b>	
Jan/2024	Dec/2034
0	50,000
<b>Project beneficiaries (Number)</b>	
Jan/2024	Dec/2034
0	1,000,000
<b>➤ Of which female beneficiaries (Number)</b>	
Jan/2024	Dec/2034
0	500,000
<b>2. Policy and regulatory reforms and other enabling activities</b>	
<b>Organizations established and/or plans adopted to support sustainable energy efficiency financing (Number)</b>	
Jan/2024	Dec/2034
0	2
<b>People trained (Number)</b>	
Jan/2024	Dec/2034
0	25,000
<b>➤ Of which female beneficiaries (Number)</b>	
Jan/2024	Dec/2034
0	12,000



**Monitoring & Evaluation Plan: PrDO Indicators by PrDO Outcomes**

<b>PrDO Outcome 1: Increase energy efficiency savings in participating countries of the Europe and Central Asia (ECA) region</b>	
<b>Projected energy or fuel savings (Gigawatt-hours (GWh))</b>	
Description	Final energy or fuel savings from energy efficiency and/or on-site renewable energy investments at the renovated buildings, factories and/or heating networks over the lifetime of the investments (20 years)
Frequency	Semi-annual
Data source	PIU reports, energy audits, commissioning and M&V reports
Methodology for Data Collection	Reporting is based on energy audits or feasibility studies (before renovation) and updated based on M&V reports (after renovation).
Responsibility for Data Collection	Responsible PIUs
<b>Projected lifetime net greenhouse gas (GHG) emissions from results achieved (Metric ton) <sup>csc</sup></b>	
Description	This indicator measures projected aggregate absolute Scope 1 and 2 GHG emissions over the economic lifetime of activities financed under the Program under a reference scenario without the Program, less the emissions with the Program, based on results achieved during implementation. Values are cumulative. Negative values indicate emissions reductions.
Frequency	Semi-annual
Data source	Recipient private companies and program implementing agencies
Methodology for Data Collection	Direct reporting by project implementing agencies. Data verification protocols will be implemented to avoid double-counting. Emission reductions (tCO <sub>2</sub> e) will be calculated using appropriate monitoring methodologies and emission factors.
Responsibility for Data Collection	Regional Partner’s secretariat PIU’s digital MRV team and Statistics unit
<b>PrDO Outcome 2: Develop enabling policies and programs for the scale-up of energy efficiency</b>	
<b>Policies and/or regulations amended/adopted to scale up and sustain energy savings (Number)</b>	
Description	The number of improved and/or new government policies and/or regulations that are adopted to enable scaling up and sustaining energy savings in buildings, industry, and district heating.
Frequency	Annual
Data source	Government gazettes or circulars
Methodology for Data Collection	Documented evidence of policy/regulatory submission to further promote energy efficiency.
Responsibility for Data Collection	PIUs

**Monitoring & Evaluation Plan: Intermediate Results Indicators**

**Menu of potential intermediate indicators for individual operations under the E3 MPA**

Operations under the first phase of the E3 MPA will include the above-listed PrDO indicators within their respective results frameworks and the intermediate results indicators by components. Below is a longlist of potential intermediate indicators that operations under the E3 MPA could consider.

<b>Energy savings in buildings, industry, and district heating</b>	
<b>Building blocks or businesses renovated (Number)</b>	
Description	Number of renovated building blocks or businesses (industries) where EE investments have been undertaken and completed under the Project.
Frequency	Semi-annual
Data Source	PIU progress reports
Methodology for Data Collection	Commissioning and acceptance reports



Responsibility for Data Collection	PIUs
<b>Reduced technical losses from district heating networks (%)</b>	
Description	Difference in the percentage of technical losses from district heating networks as a results of the Project's interventions.
Frequency	Semi-annual
Data Source	Feasibility reports, district heating utility reports
Methodology for Data Collection	Comparing of the percent of technical losses before the renovation (from feasibility reports) and after (from utility reports)
Responsibility for Data Collection	District heating utilities, PIUs
<b>Renewable energy generation capacity (other than hydropower) constructed under the project (Megawatt)</b>	
Description	Installed capacity of the on-site renewable energy installations in the renovated buildings, business, district heating networks
Frequency	Semi-annual
Data Source	Energy audits and M&V reports
Methodology for Data Collection	Reporting is based on energy audits (before renovation) and will be updated based on M&V reports (after renovation)
Responsibility for Data Collection	PIUs
<b>Organizations established and/or plans adopted to support sustainable energy efficiency financing (Number)</b>	
Description	Organizations established and/or new/improved national plans adopted to enable and promote sustainable energy efficiency financing
Frequency	Annual
Data Source	Government gazettes or circulars
Methodology for Data Collection	Documented evidence of policy/regulatory submission to further promote energy efficiency.
Responsibility for Data Collection	PIUs
<b>Annual energy cost savings from sub-project investments (Amount, (USD))</b>	
Description	Annual cost (budgetary) savings resulting from energy efficiency and/or renewable investments made under the projects. The currency may also be tracked in the local currency.
Frequency	Semi-annual
Data Source	Energy audits and M&V reports
Methodology for Data Collection	Energy cost savings will be calculated using energy savings based on energy audits and M&V reports and current energy tariffs
Responsibility for Data Collection	PIUs

<b>Private capital</b>	
<b>Private capital mobilized (Amount (USD))</b>	
Description	This indicator measures the volume of financing flows from private sectors, including climate finance sources (e.g., carbon revenues), for E3 MPA interventions supported through direct financing or co-financing. In addition to private legal entities, this will also include retail and household investors, incl. equity providers, and private commercially-run foundations.
Frequency	Semi-annual
Data Source	Data from private companies receiving support through project preparation funds; program implementing agencies; regional financing facilities and participating financial institutions.
Methodology for Data	Depending on the choice of reporting option selected by the recipients: (i) direct reporting by project implementing



Collection	agencies or (ii) reporting through the digital MRV system.
Responsibility for Data Collection	Implementation agencies at country level, aggregation at regional level by Regional Support Partner.

**Climate and environment related indicators**

**GHG emission reductions (Metric tons/year) <sup>CSC</sup>**

Description	Project net greenhouse gas (GHG) emissions calculated as an annual average of the difference between project gross (absolute) emissions aggregated over the economic lifetime of the Project and the emissions of a baseline (counterfactual) scenario aggregated over the same time horizon. They are reported in metric tons of carbon dioxide equivalent per year.
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Frequency	Semi-annual
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Data Source	PIU progress reports, energy audits, commissioning and M&V reports
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Methodology for data collection	Reporting is based on energy audit reports (before renovation) and will be updated based on M&V reports (after renovation)
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Responsibility for Data collection	PIUs
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**Reduction in particulate matter from sub-project investments (Tons/year)**

Description	Annual reductions in particulate matters, such as PM2.5 / PM10, as a result of EE and RE measures in buildings, businesses (industrial), and district heating.
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Frequency	Semi-annual
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Data Source	PIU progress reports, energy audits, commissioning and M&V reports
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Methodology for data collection	Reporting is based on energy audit reports (before renovation) and will be updated based on M&V reports (after renovation)
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Responsibility for Data collection	PIUs
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**Deployment of D-MRV platform (Text)**

Description	This indicator relates to deployment and maintenance of the digital platform for MRV of new renewable energy capacity added, country renewable electricity share and for enabling results-based payments, including carbon financing.
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Frequency	Semi-annual
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Data Source	Implementation agency/ PIU
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Methodology for data collection	Confirmation by Regional Partner
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Responsibility for Data collection	Implementation agencies/ PIU at country level and Regional Support partner at regional level
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**Carbon finance revenues associated with GHG reductions generated by project-financed investments (Amount (USD))**

Description	This is the amount of carbon revenue generated through data aggregation and transaction facilitation through Digital MRV systems
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Frequency	Semi-annual
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Data sources	Implementation agencies/ PIUs
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Methodology for Data collection	PIU progress reports and MRV systems.
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Responsibility for Data collection	PIUs at project level, aggregation by Regional Support partner (to be identified)
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**Climate finance mobilized excluding carbon-finance revenues (Amount (USD))**

Description	Amount of climate funds disbursed by the operations included in the MPAs
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Frequency	Semi-annual
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Data sources	PIUs
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Methodology for Data	Direct reporting by Implementation agencies /PIUs
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collection	
Responsibility for Data collection	Implementation agencies/ PIUs at project level, aggregation by Regional Support partner (to be identified)

**Regional network and learning agenda**

Energy efficiency associated organizations, companies, banks and other institutions assisted by the MPA (Number)

Description	The E3 Regional Network will provide technical assistance to support selected organizations, private companies, banks and other institutions (e.g., utilities, municipalities, HOAs).
Frequency	Semi-annual
Data Source	Reporting from regional network based on workshop attendance, report downloads, surveys, etc.
Methodology for data collection	Direct reporting by project implementing agencies
Responsibility for Data collection	PIUs at project level, aggregation by Regional Support partner (to be identified)

People trained (disaggregated by gender) (Number)

Description	Number of people trained in various training sessions organized under Project (e.g., technical trainings on energy audits, design, construction supervisions, and GHG accounting), including PIU staff. Percentage of female participants will be collected supplementarily.
Frequency	Semi-annual
Data sources	Attendance forms from training events
Methodology for Data collection	Attendance forms will be collected in each training event organized by MoEUCC, based on which the number of people that attended the training events will be determined
Responsibility for Data collection	PIUs at project level, aggregation by Regional Support partner (to be identified)

Knowledge exchange events organized with participating MPA countries (Number)

Description	Number of events related to renewable energy technologies or grid integration organized
Frequency	Semi-annual
Data sources	PIU/ Implementing agency
Methodology for Data collection	Direct reporting
Responsibility for Data collection	PIUs/Implementation Agencies, aggregation at regional level by a Regional partner (to be identified)

**Jobs and project beneficiaries**

Additional jobs created from EE investments (Number)

Description	Cumulative number of full- or part-time jobs created from the energy efficiency investments, aggregated at the local level.
Frequency	Semi-annual
Data Source	Project consulting and works contracts
Methodology for data collection	Review of work plans and contract level of effort
Responsibility for Data collection	PIUs/Implementation Agencies, aggregation at regional level by a Regional partner (to be identified)

Project beneficiaries (disaggregated by gender) (Number)

Description	Number of beneficiaries benefitting from energy efficiency investments. This would include employees and users of public buildings (students, teachers, patients), residential inhabitants, district heating customers, etc.
Frequency	Semi-annual
Data Source	Energy audit reports, pre- and post- renovation surveys
Methodology for data collection	Collection of data on building users/occupants based on interviews with building administrators, collection of pre- and post-renovation survey data



Responsibility for Data collection	PIUs/Implementation Agencies, aggregation at regional level by a Regional partner (to be identified)
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<b>Gender</b>	
<b>Women participating in technical internships (Number)</b>	
Description	Number of women hired as technical interns by the PIUs for project implementation
Frequency	Semi-annual
Data Source	Direct reporting by PIUs/implementation agencies
Methodology for data collection	PIUs/Implementation Agencies, aggregation at regional level by a Regional partner (to be identified)
Responsibility for Data collection	PIUs/Implementation Agencies, aggregation at regional level by a Regional partner (to be identified)
<b>Key personnel in technical consultancies that are women (Percentage)</b>	
Description	Number of female personnel in the technical consultancies that are contracted by the PIUs for project implementation
Frequency	Semi-annual
Data Source	Direct reporting by PIUs/implementation agencies
Methodology for data collection	PIUs/Implementation Agencies, aggregation at regional level by a Regional partner (to be identified)
Responsibility for Data collection	PIUs/Implementation Agencies, aggregation at regional level by a Regional partner (to be identified)
<b>Increased Number of Females employed in Energy, EE or STEM Sectors (Number)</b>	
Description	This indicator measures the increase in number of women employed in the Energy Sector during the implementation of the MPA.
Frequency	Semi-annual
Data sources	Office of statistics in country/ reporting by PIUs
Methodology for Data collection	Direct reporting
Responsibility for Data collection	PIUs/Implementation Agencies, aggregation at regional level by a Regional partner (to be identified)

<b>Citizen engagements</b>	
<b>Annual consultation events and publicly disclosed summaries/minutes of these consultations (Number)</b>	
Description	This indicator measures the number of citizen engagements workshops and events (online and in person events) to share information on E3 MPA and seek feedback on design of the projects and insights into improving design. Events must provide minutes about the decisions taken as a result of those consultations.
Frequency	Semi-annual
Data Source	PIUs/Implementing agencies
Methodology for data collection	Direct reporting
Responsibility for Data collection	PIUs/implementation agencies
<b>Survey participants satisfied with the citizen engagement processes, renovation processes, and results (Percentage)</b>	
Description	Percentage of beneficiaries surveyed within the renovated buildings under the Project satisfied with the renovation processes, including consultations, and results of the renovation.
Frequency	Semi-annual
Data Source	Survey results
Methodology for data collection	Survey questionnaire including those to measure the satisfaction with citizen engagement process will be distributed (i) in each pre- and post-renovation monitoring meeting organized for participants and (ii) through



	separate post-renovation surveys (both face-to-face and virtually) for building users
Responsibility for Data collection	PIUs

In addition, for EE funds, Super ESCOs or financial intermediary operations, the participating projects could select among the indicators below:

Sub-loans for energy efficiency projects (Amount (USD))	
Description	Cumulative monetary amounts of sub-loans for energy efficiency projects made to sub-project borrowers by the Program Implementing Agency (PIA).
Frequency	Annual
Data sources	FI
Methodology for Data collection	Direct Reporting
Responsibility for Data collection	FI
Funding leveraged through guarantees or risk sharing facilities implemented by the FI (Amount (USD))	
Description	Total funding leveraged by the FI using risk mitigation instruments supported by World Bank
Frequency	Annual
Data sources	FI
Methodology for Data collection	Annual
Responsibility for Data collection	FI
Share of operating costs covered by revenues (%)	
Description	Percentage of operating costs for nonbanking intermediaries (e.g., EE Funds, Public ESCOS) that are covered each year by investment revenues to assess their prospects for sustainability.
Frequency	Annual
Data sources	EE Fund or other implementing agency
Methodology for Data collection	Direct Reporting
Responsibility for Data collection	EE Fund or other implementing agency
Non-performing loans in portfolio (Amount (USD))	
Description	Amount of sub loans issued by the financial intermediary that are subject to late repayment or are unlikely to be repaid by the sub-borrower.
Frequency	Annual
Data sources	FI
Methodology for Data collection	Direct Reporting
Responsibility for Data collection	FI



**ANNEX 1: E3 MPA Plans to Address Energy Efficiency Market Failures**

**Table A1-1. Energy efficiency market failures and proposed MPA design elements to address them**

EE Barriers	MPA responses
<b><i>Policy and institutional barriers</i></b>	
Low energy prices, metering and collections	Review electricity and DH tariffs, transition plans for universal metering and consumption-based billing for DH, time-of-use tariffs, strengthening of social safety net schemes (Comp 1d, 2a) Transition households away from traditional, underpriced fuels such as coal and firewood to (regulated) electricity and renewable energy for heating (Comp 1b, 1d)
Lack of codes and standards, testing facilities, enforcement	Transposition of EE policies including EU EE directives and improved policies/regulations for standards, codes, certification schemes (e.g., building performance, energy auditors), enforcement mechanisms (Comp 2a)
Restrictive public procurement and budgeting rules	Amendments to budgeting rules (retention of savings) and procurement regulations (green/EE purchasing, ESCO contracting, life-cycle costing/NPV selection), authorization for use of EE revolving schemes (Comp 2a)
Weak and under-resourced energy and/or EE agencies	Support to transition from small, temporary project units to strengthened lead institutions for program planning and implementation, including government agencies, EE funds, Super ESCOs, etc. and support them to conduct market analysis, design and implement programs, M&V (Comp 2b)
<b><i>High transaction costs</i></b>	
Many small, dispersed investments	Develop national programs and systems (e.g., subproject cycles, energy audit methodologies, data collection, benchmarking, measurement and verification, monitoring and evaluation) (Comp 2b) Develop appliance and other bulk purchase programs (Comp 1b)
Multi-jurisdictional or multi-owner complexities (including homeowner associations or HOAs)	Focus on parent budgeting agency or highest-level jurisdictional entity. (Comp 1a) Strengthen HOA regulations to allow them to vote, sign contracts, open bank accounts, enforce dues and repayments from homeowners (Comp 2a)
Split incentives (principal-agent)	Strengthen building codes, equipment standards and certification of buildings (Comp 2a). Raise awareness about the benefits of energy-efficient buildings to buyers and tenants (Comp 2e).
Too many steps and decision points (audit, design including technology selection, financing, renovation, measurement and verification, M&V)	Promote ESCOs and other integrated business models to reduce steps for countries and simplify the number of procurements and country decisions. (Comp 1a, 1c) Program development and training, including development of implementation guides, audit templates, model agreements, EE calculators, energy management systems, etc. (Comp 2d)
<b><i>Financial constraints</i></b>	
Long payback periods (due to chronic underinvestment, needed structural and seismic strengthening, underheating)	Provide access to longer-term financing, grant cofinancing, guarantees to help banks offer longer tenors. (Comp 1a, 1b, 1d) Support access to carbon markets to help offset longer payback periods. (Comp 2b, 2c)
High project development and upfront costs	Promote ESCOs, EE Funds, on-bill financing, national programs and other integrated models to amortize development and investment costs over time and allow for payments from achieved energy savings. (Comp 1a, 1b, 1c) Promote single-technology improvements to lower development costs and simplify financing and implementation. (Comp 1c)
High costs of capital	Support EE Funds and other mechanisms to offer public financing, blended financing, guarantees, etc. to help lower capital costs. (Comp 1a, 1b, 1c)
Uncreditworthy borrowers	Develop and test a variety of innovative financing schemes, including EE revolving funds, Super ESCOs, on-bill financing, etc. to offer public financing when commercial banks are unable to lend, or guarantees if they need risk coverage, investment subsidies, etc. to help demonstrate creditworthiness to commercial borrowers. (Comp 1a, 1b, 1c, 1d)
High thresholds to adopt advanced, new technologies	Promote ESCOs, equipment leasing, etc. to allow suppliers to guarantee performance of new technologies. (Comp 1a, 1c)



EE Barriers	MPA responses
	Raise awareness about benefits of EE, new technologies, case studies, etc. (Comp 2e)
Bank biases towards on-balance sheet finance	Promote ESCOs, equipment leasing, cash flow financing, pay from savings, etc. to demonstrate alternative financing models for banks. (Comp 1c)
Over collateralization	Support EE Funds and other mechanisms to offer public financing when commercial banks have excessive collateral requirements, guarantees if they need risk coverage to ease requirements, develop ESCO and other third-party models, etc. (Comp 1b, 1c)
<b>Information and behavioral challenges</b>	
General lack of awareness about EE opportunities and savings	Outreach campaigns to raise awareness about the benefits of EE, opportunities, case studies, etc. (Comp 2e)
Benefits (e.g., EE savings) are difficult to prove and quantify	Strengthen M&V protocols, promote EE calculators, simplify EE estimations and verification. (Comp 2a, 2d) Outreach campaigns to raise awareness about EE savings, case studies, etc. (Comp 2e)
Untrained workforce	Provide technical training for energy auditors, designers, installers, and other skilled workers to support government EE programs. (Comp 2d)
Lack of access to credible data and information of technologies and costs	Outreach campaigns to provide information about EE, technologies, cost and benefits, case studies, etc. and develop databases of information (Comp 2e)
Behavioral biases and inertia	Outreach campaigns to help assess and influence user behaviors regarding energy use, participation in national EE programs, O&M, etc. (Comp 2d, 2e)



## ANNEX 2: E3 Regional Network

### A. Background

1. The Scaling-up Energy Efficiency in Europe and Central Asia Multiphase Programmatic Approach (E3 MPA), which has a proposed funding envelope of US\$1.46 billion in IBRD and IDA funds with the goal of leveraging an additional US\$2.4 billion in public and private financing, aims to scale-up energy efficiency (EE) investments in participating countries in the Europe and Central Asia (ECA) region. E3 MPA supports EE across four pillars – public sector, residential sector, industry and district heating (DH) – and encourages participating countries to develop policies and programs at scale. The establishment of a regional network with other partners will be critical to realizing this agenda.

2. Most barriers that prevent scaling-up investments in EE are common among ECA countries. Therefore, the experience of one or more countries that have demonstrated successes in some of the sectors can guide the design of policies and programs for countries that are still facing persistent barriers in those areas under the E3 MPA. Countries that are in more advanced stages in terms of private-sector led and scaled-up EE investments present critical learning opportunities for countries in earlier stages. The latter can benefit from the program designs and lessons to allow them to transition to more sustainable financing models. International experience from countries outside E3 MPA can provide further good-practice examples to help develop local solutions. Second, more coordinated policy discussions with client countries and adoption of common approaches (e.g., for energy audits, measurement and verification or M&V approach, environmental or social or E&S instruments) among countries can help prevent a fragmented approach to country assistance and contribute to a harmonization of approaches in the region, shortening the time for project preparation and improving the quality and pace of project implementation. Third, increased coordination with International Financial Institutions (IFI) and donor partners allows E3 MPA to collaborate on joint national programs where possible or to coordinate parallel programs in other cases.

### B. Objectives

3. The objectives of the E3 Regional Network are to facilitate knowledge exchange between countries, support knowledge creation, harmonize approaches, and ensure concerted actions of partners to scale-up EE in countries participating in the E3 MPA.

### C. Organizations in the regional network

4. A coalition of diverse regional and global organizations will be required to achieve the objectives of the E3 Regional Network, which would include: (i) IFI and donor partners (multilateral development agencies, bilateral donors, climate funds), (ii) organizations dedicated to knowledge exchange and capacity building in EE, and (iii) consulting firms.

#### (i) IFI and donor partners

5. The regional network aims to leverage the Bank's convening power to rally IFIs and other donor partners around a common vision of EE scale-up and to attract a larger pool of knowledge as well as resources. The E3 MPA seeks to develop programs embedded in country plans and strive to reach a national-level scale, which will reduce fragmented approaches in favor of a coordinated program with pooled resources to help countries achieve their national aspirations and targets. This would help enhance partnerships with other IFIs (e.g., EBRD, EIB, KfW) and donors (e.g., USAID, GiZ, UNDP), the EU, banks, the private sector and others around a shared vision for the development of EE policies, programs, and markets. These organizations would be engaged through joint program documents.

#### (ii) Organizations dedicated to knowledge exchange and capacity building

6. Several global and regional partner organizations will carry out knowledge sharing, capacity building, and technical assistance (TA) in EE. Through the regional network, these partners are expected to combine global knowledge with peer-to-peer learning and a detailed understanding of the regional and country context to help develop customized solutions.



7. Identification of the partners will be determined based on the partners' (a) experience in an area to be covered by the regional network, including, among others, EE policy formulation and implementation, design and implementation of EE programs, and M&V of energy savings (including for accessing carbon markets), (b) common mandates and complementarity of activities, (c) existing networks and relationships within the ECA region, including track record of working with national governments and their relevant institutions, development partners, financial institutions, and the private sector, (d) regional presence, including local offices and network of local partners in the ECA region, and (e) track record of delivering high quality and impactful knowledge sharing, capacity building, and TA.

**(iii) Consulting firms**

8. Consulting firms, likely in partnership with local institutes and universities, will provide organizational support and important outputs that other partners do not have the mandate to provide, e.g., development of a regional digital platform for knowledge exchange, preparation of model documents, and organizational support for knowledge exchange and capacity building activities. These firms would be engaged through competitively tendered contracts.

**D. Beneficiaries**

9. The direct beneficiaries of the regional network will be ministries, government agencies, and private-sector companies in countries participating in the E3 MPA.

**E. Scope of activities**

**Key activities**

10. The regional network will be demand-driven and (i) support knowledge exchange and capacity building, (ii) provide TA for countries accessing the E3 MPA, and (iii) enhance coordination with other IFIs and donor partners. The key activities to be carried out by the partners in the regional network are described below. The priority topics to be addressed through these activities are described in the next section.

**(i) Knowledge exchange and capacity building**

- In individual operations under the MPA, priority knowledge and learning gaps would be identified through a combination of dialogue with the country, market studies, institutional assessments, barrier analyses and other mechanisms. These gaps would feed into the knowledge agenda and exchanges.
- Design and implement virtual and in-person knowledge exchange activities between countries participating in the E3 MPA to allow countries to share their experiences and lessons from the development and implementation of their respective programs and bring in global knowledge through experts to complement the peer-to-peer learning. This would likely be done twice a year and adjusted based on country demand. Draft agendas would be circulated in advance to solicit country needs.
- Design and implement capacity building and training activities for government agencies, municipalities, market actors (e.g., auditors, construction firms, ESCOs, banks), and end users (e.g., on operations and maintenance or O&M).
- Provide organizational and administrative support for in-person knowledge exchange activities.
- Create, maintain, and update a digital data and document repository to facilitate data collection across projects in the E3 MPA and provide access to shared documents and templates to support project preparation and implementation (e.g., policy and regulatory documents, program plans, monitoring and evaluation or M&E methodologies, procurement documents and strategies, E&S documents, operation manuals, guidelines, TORs, M&V procedures, commissioning protocols, technical specifications, O&M materials, ESAs, and other contracts).

**(ii) Technical assistance**

- Support to formulate or strengthen EE policies, strategies, and action plans. This could include National Energy Efficiency Action Plans (NEEAPs), National Energy and Climate Plans (NECPs), Long-Term Renovation Strategies



(LTRS), transposition and adaptation of EE policies including EU EE directives and improved regulatory regimes (e.g., EE obligations), secondary legislation (e.g., rulebooks, standards, codes), certification schemes (e.g., building performance, energy auditors), enforcement mechanisms, obligations for larger consumers (mandatory audits and reporting, subsector benchmarking, EE/specific energy consumption targets), amendments to budgeting and procurement regulations, authorization for use of EE revolving schemes, ESCO financing, and ESAs in the building, industrial and energy supply sectors.

- Develop program design documents, including market research and supply chain analysis, program design options, financing and business models, M&E, results framework. This could include the design of national programs for building renovation in the public and residential sector, industrial sector modernization and decarbonization/electrification, and DH utility performance improvement.
- Develop standard project documents for, e.g., procurement documents including sector wide procurement strategies, E&S documents, and operation manuals.
- Develop technical guidelines, standard TORs, and templates for energy audits, M&V, commissioning of EE investments including performance testing, and O&M.
- Define the measurement, reporting and verification (MRV) requirements for projects and support countries with the adoption of a MRV system to access climate financing and participate in carbon markets. This could include implementing an MRV system for the E3 MPA, facilitating adoption and operationalization of a MRV at the country level, and supporting countries with adopting a mechanism for carbon credit transactions.

**(iii) Enhanced coordination with other IFIs and donor partners**

- Develop projects and programs around a shared vision with countries, IFIs, and donor partners, which will allow for greater pooling of resources, as the Bank has done in some of its EE revolving funds (such as Kosovo with EU-IPA funds), segmentation of markets where pooling is not possible, and better coordination of policy and regulatory support, market development, training and capacity building. This will be particularly important for national-scale programs where the resources of one donor would not be sufficient for the scale of investments needed.
- In addition to knowledge sharing, the Regional Network will also identify and foster synergies between country programs to support, for example, harmonization of technical standards that can facilitate trade, sharing of testing laboratories, and fostering of regional supply chains for common materials, products and services to help bring down costs and enhance quality.

**Priority topics**

**11.** The regional network would focus on three priority topics, which are consistently raised as key knowledge gaps preventing the scale-up of EE: (i) policy formulation and implementation, (ii) design of scaled-up, national programs; and (iii) M&V of impacts.

**(i) Policy formulation and implementation**

**12.** The development of well-developed policies, regulations, secondary bylaws, enforcement are critical to lay a strong foundation for EE. While these may not yield large savings within the project periods, they can accrue even greater savings in the outer years. Standards and codes alone can ensure that future buildings constructed, and appliances manufactured and sold, meet high energy performance requirements. Given the importance of policies under the E3 MPA, the documentation and sharing of lessons around the formulation of sound policies, development of implementation and enforcement strategies, regular updating of regulations such as building codes and material/equipment standards, technical specifications, energy performance in building certificates (EPC) requirements, near-zero energy buildings (NZEB) definitions, public procurement of EE products, budget rules to allow for savings retention, HOA regulations, as well as information on their costs and benefits, will be a key aspect of the learning agenda.



### (ii) Design of scaled-up programs

**13.** While project-level designs will be part of project preparation, the E3 MPA will seek to help governments transition to scaled-up, national-level programs over time. Such programs are much more complex to design given the need for a broader set of institutional arrangements, scalable and sustainable financing sources, business models, capacity building, and communications. As a result, most projects fail to ever get to scale. The E3 MPA will foster the sharing of lessons on shifting to national programs and include aspects such as market data collection and analysis, development of national databases (e.g., building inventories), assessment of market and other barriers, successful approaches to identify target markets, formulation of program objectives and metrics, good practices in designing financing and business models, best practices in communications and behavior change, fostering competitive supply chains, and strong M&E systems to assess market activities and adjust the program as market realities evolve.

### (iii) Measurement and verification

**14.** M&V is a process of planning, measuring, collecting and analyzing data to verify and report energy savings within a facility resulting from the implementation of EE measures. Assessing the impacts of EE investments is more complicated than many other types of energy investments since the savings is based on a comparison of the post-project energy use compared to a hypothetical counterfactual—i.e., what the energy use would have been without the project. Complexities generally arise from low initial service levels (underheating/undercooling, poor lighting), lack of available or credible data, changes in operating conditions, changes in weather, which can lead to high M&V costs. Tools and methodologies (such as the International Performance Measurement and Verification Protocol, IPMVP) exist but need to be customized to local conditions and training provided on their use. Rigorous M&V is also essential for countries/programs to prove their impacts for the purpose of accessing climate funding and international or domestic carbon markets which can provide additional project funds or revenues. Thus, the sharing of protocols, good practices and lessons is critically important in these areas. There is also growing interest in sharing approaches to estimate the broader socioeconomic benefits from EE programs, such as fiscal savings (e.g., reduced energy subsidies, lower government energy bills), job creation (e.g., energy auditors, designers, construction firms, installers, ESCOs), health benefits (e.g., reduced local and global air pollution), which if estimated properly and widely reported can help bolster the political and public support of EE policies and programs.

## F. Implementation arrangements and roadmap

**15.** ESMAP has included an allocation of an initial US\$5 million<sup>22</sup> of Bank-Executed Trust Funds (BETF) in its business planning to support the E3 Regional Network and additional grant funding would be mobilized in later phases. The activities described above represent a menu of options, from which specific ones will be selected and developed in detail depending on the needs of the participating countries during identification, preparation, or implementation of operations under the E3 MPA. Based on the countries' needs, the ESMAP activity will identify further partners and procure consultancies. The first set of partners would join the regional network by the end of 2024. The first consultancy, which would create and maintain a digital data and document repository for the E3 MPA, and the first knowledge sharing and capacity building activities by partners are expected to start in mid-2025 so that experiences gathered by countries in the first year of E3 MPA can be shared with other countries. The E3 Regional Network will also engage with regional platforms of other MPAs, such as the Renewable Energy Scale-up in ECA (ECARES) MPA and other MPAs to seek synergies. Figure A2-1 illustrates the roadmap for the E3 Regional Network.

**16.** In terms of partner organizations dedicated to knowledge exchanges and capacity building, discussions are underway with the IEA's Energy Efficiency and Inclusive Transitions Department, Copenhagen Centre for Energy Efficiency (C2E2), Buildings Performance Institute Europe (BPIE), Efficiency Valuation Organization (EVO), and GIZ. Additional partners may also include manufacturer and other associations, such as the European Heat Pump Association (EHPA) to explore options to strengthen supply chains and help resolve bottlenecks. Figure A2-2 maps the initial set of organizations

<sup>22</sup> Included in the FY25-30 ESMAP Business Plan.



that may join the E3 Regional Network against its activities and priority areas.

**Figure A2-1. Roadmap for the E3 Regional Network**

<b>Mid-2024</b>	Board date for E3 MPA, followed by effectiveness of the first two operations under E3 MPA in Q3.
<b>End-2024</b>	BETF with initial grant funding in place. First partners join the E3 Regional Network through the signing of MOUs and an initial agreed work plan.
<b>End-2024</b>	Updated analysis of E3 MPA pipeline to determine likely sectors of focus, investment needs, program partners and capacity building requirements. Updating of partner network and scope of activities as required.
<b>Mid-2025</b>	First consultancy in place to create and maintain a digital data and document repository for E3 MPA. First knowledge sharing and capacity building activities by partners initiated.
<b>2026-2029</b>	Continuous assessment of country needs to (i) define specific activities of the regional network, (ii) identify further partners of the regional network, and (iii) define and procure consultancy services for specific tasks or outputs. Delivery of 1-2 exchanges each year with countries participating in the E3 MPA. Seek further grant funding as needed.
<b>2029</b>	Mid-term review of the regional network. As the number of countries participating in E3 MPA has increased and significant implementation experienced gathered during the first half of E3 MPA, consider expansion of the activities of the regional network.
<b>2034</b>	End of E3 MPA. Synthesize lessons learned from E3 MPA.

**Figure A2-2. Mapping of initial set of organizations that may join the E3 Regional Network**

<b>Activities</b>	<b>Priority topics</b>		
	<b>Policy formulation and implementation</b>	<b>Design of scaled-up programs</b>	<b>Measurement and verification</b>
Knowledge exchange and capacity building	IEA C2E2 BPIE		EVO
Technical assistance	BPIE GIZ Consultancies		EVO Consultancies
Enhanced coordination with other IFIs and donor partners	European Commission/EU Delegation Offices KfW, EBRD, AIIB		



**ANNEX 3: E3 MPA pipeline**

Country and project	Instr.	1 Public	2 Resid.	3 Industry	4 DH	Lending amount US\$ m	PCM US\$ m	Other amount US\$ m
<b>Türkiye</b> EEPB2	IPF	✓				IBRD 300		
<b>Moldova</b> STEEM	IPF	✓			✓	IBRD 50		4.5
<b>Montenegro</b> ▪ EE in public and residential buildings	IPF	✓	✓			IBRD 30		20
<b>Uzbekistan</b> ▪ Industrial EE	IPF			✓		IDA/IBRD 280	250	
<b>Uzbekistan</b> ▪ Sustainable Heating	IPF	✓	✓		✓	IDA 250	100	50
<b>Türkiye</b> ▪ Support the government’s national program for EE to renovate public buildings implemented by multiple entities (e.g., ministry, Super or Public ESCO) ▪ Investments include upgrades of building envelope, heating, ventilation and air conditioning (HVAC), lighting, and on-site RE	IPF/ PforR	✓	✓			IBRD 500	1,150	800
<b>Moldova</b> ▪ Energy Transition	IPF	✓				IBRD 50	20	



**ANNEX 4: Türkiye Second Energy Efficiency in Public Buildings**

**Second Energy Efficiency in Public Buildings Project (EEP2, P500777)**

Task Team Leaders: Aditya Lukas, Jas Singh

Core Team: Ayse Seda Aroymak, Tomris Oksar, Emre Dolek, Sibel Gulen, Oksan Gurtuna Haliloglu, Jiyoun Christina Chang, Selena Jihyun Lee, Andrea Muharemovic, Lisa Lui, Maiada Mahmoud Abdel Fattah Kassem, Nefret Zakaria Elnasserledinallah Amin Haroon, Wazhma Khalili Raheem, Serdar Jepbarov, Selcuk Ruscuklu, Eyup Mermer, Fatma Sedef Kaynarkan, Deren Yologlu

**DATASHEET**

**BASIC INFORMATION**

Project Beneficiary(ies)	Operation Name		
Turkiye	Second Energy Efficiency in Public Buildings under the E3 MPA		
Operation ID	Financing Instrument	Environmental and Social Risk Classification	
P500777	Investment Project Financing (IPF)	Moderate	

**Financing & Implementation Modalities**

<input checked="" type="checkbox"/> Multiphase Programmatic Approach (MPA)	<input type="checkbox"/> Contingent Emergency Response Component (CERC)
<input type="checkbox"/> Series of Projects (SOP)	<input type="checkbox"/> Fragile State(s)
<input type="checkbox"/> Performance-Based Conditions (PBCs)	<input type="checkbox"/> Small State(s)
<input type="checkbox"/> Financial Intermediaries (FI)	<input type="checkbox"/> Fragile within a non-fragile Country
<input type="checkbox"/> Project-Based Guarantee	<input type="checkbox"/> Conflict
<input type="checkbox"/> Deferred Drawdown	<input type="checkbox"/> Responding to Natural or Man-made Disaster
<input type="checkbox"/> Alternative Procurement Arrangements (APA)	<input type="checkbox"/> Hands-on Expanded Implementation Support (HEIS)

Expected Approval Date	Expected Closing Date	Expected Program Closing Date
25-Jun-2024	31-Dec-2030	29-Dec-2034
Bank/IFC Collaboration		



No

**MPA Program Development Objective**

To increase energy efficiency savings in participating countries of the Europe and Central Asia (ECA) region and develop enabling policies and programs for the scale-up of energy efficiency.

**MPA FINANCING DATA (US\$, Millions)**

MPA Program Financing Envelope	3,854.50
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**Components**

Component Name	Cost (US\$)
Energy efficiency investments in central government buildings	296,000,000.00
Technical assistance and implementation support	4,000,000.00

**Organizations**

Borrower: Republic of Turkiye  
 Implementing Agency: Ministry of Environment, Urbanization and Climate Change

**MPA FINANCING DETAILS (US\$, Millions)**

<b>MPA Financing Envelope:</b>	3,854.50
<b>of which Bank Financing (IBRD):</b>	1,110.00
<b>of which Bank Financing (IDA):</b>	350.00
<b>of which Other Financing sources:</b>	2,394.50

**PROJECT FINANCING DATA (US\$, Millions)**

**Maximizing Finance for Development**

Is this an MFD-Enabling Project (MFD-EP)? Yes  
 Is this project Private Capital Enabling (PCE)? Yes



**SUMMARY**

<b>Total Operation Cost</b>	<b>300.00</b>
<b>Total Financing</b>	<b>300.00</b>
<b>of which IBRD/IDA</b>	<b>300.00</b>
<b>Financing Gap</b>	<b>0.00</b>

**DETAILS**

**World Bank Group Financing**

International Bank for Reconstruction and Development (IBRD)	300.00
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**Expected Disbursements (US\$, Millions)**

WB Fiscal Year	2024	2025	2026	2027	2028	2029	2030	2031
<b>Annual</b>	0.00	15.00	30.00	45.00	60.00	60.00	60.00	30.00
<b>Cumulative</b>	0.00	15.00	45.00	90.00	150.00	210.00	270.00	300.00

**PRACTICE AREA(S)**

**Practice Area (Lead)**

Energy & Extractives

**Contributing Practice Areas**

Climate Change

**CLIMATE**

**Climate Change and Disaster Screening**

Yes, it has been screened and the results are discussed in the Operation Document



**SYSTEMATIC OPERATIONS RISK- RATING TOOL (SORT)**

Risk Category	Rating
1. Political and Governance	● Moderate
2. Macroeconomic	● Substantial
3. Sector Strategies and Policies	● Moderate
4. Technical Design of Project or Program	● Moderate
5. Institutional Capacity for Implementation and Sustainability	● Moderate
6. Fiduciary Financial Management Risk rating from Specialist: ● Moderate as of 2023-12-01T16:24:03Z Procurement Risk rating from Specialist: ● Moderate as of 2024-03-26T00:00:00Z	● Moderate
7. Environment and Social Environment Risk rating from Specialist: ● Moderate as of 2024-04-05T16:06:24Z Social Risk rating from Specialist: ● Moderate as of 2024-04-05T16:06:24Z	● Moderate
8. Stakeholders	● Moderate
9. Overall	● Moderate
<b>Overall MPA Program Risk</b>	● Substantial

**POLICY COMPLIANCE**

**Policy**

Does the project depart from the CPF in content or in other significant respects?

Yes  No

Does the project require any waivers of Bank policies?

Yes  No

**ENVIRONMENTAL AND SOCIAL**

**Environmental and Social Standards Relevance Given its Context at the Time of Appraisal**



E & S Standards	Relevance
ESS 1: Assessment and Management of Environmental and Social Risks and Impacts	Relevant
ESS 10: Stakeholder Engagement and Information Disclosure	Relevant
ESS 2: Labor and Working Conditions	Relevant
ESS 3: Resource Efficiency and Pollution Prevention and Management	Relevant
ESS 4: Community Health and Safety	Relevant
ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Not Currently Relevant
ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Not Currently Relevant
ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Not Currently Relevant
ESS 8: Cultural Heritage	Relevant
ESS 9: Financial Intermediaries	Not Currently Relevant

NOTE: For further information regarding the World Bank’s due diligence assessment of the Project’s potential environmental and social risks and impacts, please refer to the Project’s Appraisal Environmental and Social Review Summary (ESRS).

**LEGAL**

**Legal Covenants**

**Sections and Description**

Loan Agreement (LA), Schedule 2, Section I.A.1(b). The Borrower, through the Ministry of Environment, Urbanization, Climate Change (MoEUCC), shall maintain, throughout Project implementation, a Project Implementing Unit (“PIU”) with functions and responsibilities acceptable to the Bank, for the implementation of Part 1 and Part 2 of the Project.

LA, Schedule 2, Section I.A.2. The Borrower, through MoEUCC, shall maintain at all times qualified staffing, budgetary resources, and authority necessary and appropriate for the satisfactory implementation of the Project.

LA, Schedule 2, Section I.B.1. The Borrower, through MoEUCC, shall maintain throughout Project implementation, a Project Operations Manual (POM).

LA, Schedule 2, Section I.C.1. The Borrower, through MoEUCC, shall select Subprojects all in accordance with beneficiary and Subproject eligibility criteria and procedures acceptable to the Bank, as set forth in the LA and further detailed in the POM, unless otherwise agreed to by the Bank in writing and thereafter set forth in the POM.

LA, Schedule 2, Section I.C.2. To qualify for financing under Part 1 of the Project, prior to the start of each respective Subproject, the Borrower, through MoEUCC, shall issue to each Subproject beneficiary (e.g., hospital) a project initiation letter, and obtain the signature of the authorized representative of the respective Subproject beneficiary (e.g., building administrator) to the project initiation letter which shall outline the building renovation processes and procedures, and the respective parties’ roles, responsibilities and obligations in connection with the renovations.



LA, Schedule 2, Section I E.1. The Borrower shall, through MoEUCC, ensure that the Project is carried out in accordance with the Environmental and Social Standards and the Environmental Social Commitment Plan, in a manner acceptable to the Bank.

Conditions

Type	Citation	Description	Financing Source
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A. Context

1. **Energy security remains essential for Türkiye to continue to drive its economic development.** Recent supply shocks in the natural gas markets caused substantial price increases within Europe and Central Asia (ECA) including Türkiye. This resulted in record-high natural gas and electricity costs for Türkiye’s consumers in the final quarter of 2022, attributable to the country’s dependence on imported gas. In 2022, about 58 percent of Türkiye’s electricity generation (34.7 percent coal, 22.9 percent natural gas, and 0.1 percent oil) and 81 percent of Türkiye’s primary energy supply (28.8 percent oil, 27.4 percent natural gas, and 25.1 percent coal) was based on fossil fuels, with almost all the oil and gas, and more than half of the coal being imported.<sup>23 24</sup> The government has taken several steps to improve energy security, including (i) diversification of gas supply sources; (ii) scale up of renewable energy (RE) use and gas storage capacity; and (iii) increase in domestically mined lignite for power generation. As a result, gas imports declined from a peak of 55.3 bcm in 2017 to 50.5 bcm in 2023 (8.6 percent reduction).<sup>25</sup> Türkiye has also increased its purchase of LNG on the spot market and expanded gas storage capacity. In terms of RE, the government has tripled its share of solar and wind in the last decade and recently announced plans to add an additional 60 GW by 2035. However, while imported coal for power generation declined from over 17 percent in 2016 to about 9 percent in 2020, it has since rebounded to 22 percent in 2023.

2. **Energy efficiency is critical for Türkiye to improve energy security and affordability while meeting climate commitments.** While Türkiye’s energy intensity (2.49 MJ of primary energy use per \$2017 PPP GDP) was slightly lower than that of European Union (EU) countries (2.94), Türkiye’s energy consumption has significantly increased in recent decades and is expected to grow further (Türkiye’s energy use per capita is only about half that of EU countries).<sup>26</sup> Therefore, the Government has recognized the importance of reducing energy intensity through energy efficiency (EE) as part of its efforts to reduce dependency on imported fossil fuels, enhance energy security and affordability, and reduce greenhouse gas (GHG) emissions, as evidenced by its inclusion in various policy documents, e.g., Türkiye’s Nationally Determined Contributions (NDCs), Türkiye National Energy Plan (2022-2035), or second National Energy Efficiency Action Plan (NEEAP, 2024-2030).

3. **The building sector is one of the largest energy-consuming and greenhouse gas-emitting sectors in Türkiye and reducing its energy use is critical to meet energy efficiency and climate goals.** The building sector, including residential, commercial, and public services, consumed 1.55 million TJ in 2020, about one-third of the country’s total final energy consumption. In addition, the building sector is a direct consumer of coal and natural gas to meet its heat demand. Almost 41 percent of Türkiye’s final coal consumption (32 percent for commercial and public services and 9 percent for residential) and 61 percent of final gas consumption (13 percent for commercial and public services and 48 percent for residential) were used in buildings in 2020. As a result, this sector emitted about 62 Mt of CO<sub>2</sub> in 2020, about one-quarter of the direct

<sup>23</sup> IEA World Energy Balances 2022, Türkiye, <https://www.iea.org/countries/turkiye>

<sup>24</sup> IEA (2021) Türkiye 2021 Energy Policy Review, <https://www.iea.org/reports/turkey-2021>. Note: Domestic coal production has covered about three quarters of total coal supply in terms of mass, but less than half in energy terms, as domestic production is mainly lignite with lower calorific value compared to imported steam coal.

<sup>25</sup> Statista. <https://www.statista.com/statistics/1369632/turkey-natural-gas-import-volume/#:~:text=Over%20the%20observed%20period%2C%20the,nearly%2050.5%20billion%20cubic%20meters.>

<sup>26</sup> World Bank Open Data, <https://data.worldbank.org/indicator/EG.EGY.PRIM.PP.KD?locations=TR-EU>



GHG emissions from the final consumption sector (i.e., without accounting emissions associated with electricity) of the country<sup>27</sup>. Given that Türkiye's building floor area is projected to almost double from 3.6 billion m<sup>2</sup> in 2020 to 7.2 billion m<sup>2</sup> by 2050<sup>28</sup>, with increasing demands for cooling, the building sector will continue to drive the country's energy consumption. Türkiye's policy documents, including its NDCs, highlight the building sector as an indispensable component to meet the country's EE and climate mitigation goals.

4. **Improving energy efficiency in the public building stock not only leads to significant energy savings for Türkiye but also allows the Government to set a leading example and develop the market.** Global experience has shown that EE improvements in the public buildings sector can help stimulate market development and lead by example. Following this approach, the Ministry of Energy and Natural Resources (MENR), with the support of the World Bank, is preparing a national program plan for EE renovations of all public buildings in the country. According to the latest estimates for the national program plan, there are over 530,000 public buildings<sup>29</sup> consuming more than 51.9 TWh of final energy per year (or 187,000 TJ, 12 percent of the energy use for the entire building sector, or 4 percent of the country's final energy consumption). EE renovations of this building stock could result in energy savings of about 36 percent or 18.5 TWh per year and would require investments of more than US\$8.8 billion (excluding the investment needed for any structural reinforcements).<sup>30</sup> Consistent with the national program plan, the World Bank is supporting investments in public facilities through three projects that are implemented by the Ministry of Environment, Urbanization and Climate Change (MoEUCC) and IIBank, the (i) Energy Efficiency in Public Buildings Project (EEP, P162762), which supports EE and distributed Renewable Energy (RE) measures in public buildings that are seismically safe, the (ii) Seismic Resilience and Energy Efficiency in Public Buildings Project (SREEP, P175894), which supports EE and distributed renewable energy (RE) measures in central government buildings that require structural measures for seismic safety, and the (iii) Public and Municipal Renewable Energy Project (PUMREP, P179867), which supports distributed RE in central government buildings that are already sufficiently energy-efficient and seismically safe as well as in municipalities. These projects are helping to address several barriers that prevent more commercial financing for EE and distributed RE investments in public buildings despite the attractive payback periods. Through the establishment of appropriate mechanisms, potential for commercial financing remains despite some market risks in Türkiye.<sup>31</sup>

5. **The proposed Project is a follow-up operation responding to the Government's request for sustaining the EE investments supported under the ongoing EEP.** The ongoing EEP - financed by a EUR 135.9 million IBRD loan, US\$46.2 million Clean Technology Fund (CTF) loan, and US\$3.8 million CTF grant - was approved in November 2019 and has been progressing well. Most of the EEP's funds are committed or under advanced procurement, and the renovations of a total of 340 buildings are expected to be completed by the end of 2024 – well ahead of the closing date of December 31, 2025. The proposed Project would provide financing for further EE renovations of central government buildings, raise the requirements for EE for new and renovated public buildings in the country, and include innovative approaches and incorporate lessons from the ongoing EEP.

## B. Relevance to Higher-Level Objective

<sup>27</sup> IEA World Energy Balances 2022, Türkiye, <https://www.iea.org/countries/turkiye>

<sup>28</sup> According to the Türkiye CCDR (2022), the country's building floor area is projected to grow from 3.6 billion m<sup>2</sup> in 2020 to 7.2 billion m<sup>2</sup> in 2050 (an annual average growth rate of 2.3%) and the number of buildings is projected to grow from 9.9 million buildings in 2020 to 17 million by 2050 (an annual average growth rate of about 1.8%).

<sup>29</sup> MoEUCC's KAYES database includes about 530,000 registered public buildings (excluding security and military facilities), corresponding to a gross floor area of 410.5 million m<sup>2</sup>. Examples of public buildings in Türkiye include places of worship, government offices, schools, hospitals, universities, and dormitories.

<sup>30</sup> MENR (2023) National Program Plan for Energy Efficiency in Public Buildings.

<sup>31</sup> IMF Country Report No. 23/304. Republic of Türkiye: Financial System Stability Assessment, January 18, 2023.

<https://www.imf.org/en/Publications/CR/Issues/2023/08/17/Republic-of-Trkiye-Financial-System-Stability-Assessment-538281>



**6. The Project will contribute to the World Bank Group Country Partnership Framework (CPF) for the Republic of Türkiye for the period FY24-FY28<sup>32</sup> by supporting the CPF objective to improve the efficiency of energy consumption.**

Through the Project, the Bank will contribute to reducing energy consumption by supporting and scaling-up investments in EE in public buildings. EE is among the key priorities for the energy sector cooperation between the WBG and the Government of Türkiye as articulated under the CPF Objective 9 – “Support Energy Transition”. The CPF highlights enhancing EE, especially in the building stock, as a priority for WBG ongoing and planned engagement. In addition, the CPF underscores EE as significant factor to climate and disaster resilience (CPF Objective 7 – “Enhance Disaster Resilience and Preparedness”). The Project is also closely aligned with the priorities outlined in Türkiye’s Country Climate and Development Report (CCDR)<sup>33</sup>, which emphasizes EE in buildings as a critical priority for Türkiye to attain its goals of climate neutrality and sustainable development.

**7. The Project will also support Türkiye’s Nationally Determined Contribution, the Türkiye Country Climate and Development Report, and the Memorandum of Understanding signed between the World Bank, development partners, and Türkiye, and is therefore consistent with the country’s strategies on climate change.**

As per Türkiye’s NDC submitted to the UNFCCC in April 2023, the country has committed to reducing GHG emissions by 41 percent by 2030 compared to the business-as-usual scenario and to reaching peak emissions by 2038. Türkiye’s mitigation policies target GHG emission reduction from energy, industry, transportation, agriculture, buildings, and waste sectors as well as land use, land-use change, and forestry. As highlighted in both energy and building sector mitigation policies, utilizing EE and RE potential at the highest level possible, especially in buildings, is among the key mitigation measures in the NDC. On adaptation, the urban sector is one of the key areas identified in the NDC to improve its adaptation capacity against climate change, particularly with an aim to create sustainable, energy-efficient, and climate-resilient cities. The Türkiye CCDR highlights the need for an immediate start of EE renovations of buildings to meet Türkiye’s 2053 net zero target, given Türkiye’s large and rapidly growing building stock. The Project is a building block of Türkiye’s national program to renovate all public buildings and will help inform a broader building renovation plan for the country. Finally, the proposed Project is also aligned with the climate Memorandum of Understanding signed between the World Bank, development partners, and Türkiye<sup>34</sup> in November 2021, where the World Bank committed to providing additional lending worth US\$2 billion between FY22-24 in support of Türkiye’s sustainable development and climate action goals. In addition to supporting public financing of EE in public buildings, the operation includes a technical assistance activity that will explore sustainable financing mechanisms for future EE investments in the public sector. Furthermore, Bank-executed technical assistance will assess commercial financing solutions towards a One World Bank Group offering for EE in public buildings. The Bank is working with IFC and MIGA to identify entry points for private financing for EE beyond public buildings such as in the commercial, industrial and residential sectors, that would be supported under subsequent phases of the MPA.

### C. Project Description

**8. The Project Development Objectives (PDOs) are to enhance energy efficiency in existing central government buildings and strengthen the energy efficiency requirements for new and renovated public buildings.** Progress towards the PDO will be measured through three PDO level indicators: (i) Projected energy or fuel savings (MJ); (ii) Projected lifetime net GHG emissions from results achieved (Metric ton), corporate scorecard indicator; and (iii) Circular is issued by MoEUCC’s General Directorate for Construction Affairs (GDCA) to set strengthened requirements for reduced energy and fossil fuel use for construction of new and renovation of existing public buildings (Yes/No).

**9. Following is a brief description of the project components.** The Project includes two components: (i) EE investments in central government buildings and (ii) TA and Project implementation support.

<sup>32</sup> Report No CPF0000004; discussed by the Board on April 9, 2024.

<sup>33</sup> <https://www.ifc.org/en/insights-reports/2022/turkiye-country-climate-and-development-report>

<sup>34</sup> Together with other development partners, including the International Finance Corporation (IFC), Federal Ministry of the Environment, Natural Conservation and Nuclear Safety of Germany, France, United Nations, and European Bank for Reconstruction and Development.



### Component 1. Energy efficiency investments in central government buildings (EUR 276 million or US\$296 million equivalent IBRD loan)

10. Under this component, MoEUCC will finance the preparation and implementation of renovations of central government and central-government affiliated buildings (i.e., public buildings under central line ministries) to save energy and increase RE use. The Project aims to renovate about 400 buildings, each of which will receive a Turkish Energy Performance Certificate (EPC). Building renovations would result in minimum energy savings of 30 percent and seek to achieve a Turkish Class B EPC or higher.<sup>35</sup> Investment measures would include upgrades of the building envelope (insulation, windows, doors), space and water heating, cooling, ventilation, air conditioning, pumps/fans, lighting, and installation of on-site RE systems that primarily aim to offset the facility's energy consumption. A limited amount of funds could be allocated to ancillary measures (e.g., rewiring, minor structural repairs, painting, seismic safety, fire safety, improving access, etc.) provided that the simple payback period of the overall subproject does not exceed the agreed maximum payback period (see subproject eligibility criteria below). In order to ensure further decarbonization and deeper renovations, the Project will (i) maximize the replacement of fossil fuel-based boilers by electric heat pumps or RE-based heating to the extent that is technically and financially feasible<sup>36</sup>; (ii) introduce a standard taxonomy for building renovations that prescribes a set of mandatory EE and on-site RE measures; (iii) finance rooftop or ground-mounted (e.g., parking lot canopy) solar photovoltaic (PV) installations; and (iv) seek to reach NZEB standard for at least 20 percent of the buildings renovated under the Project.

11. For selected buildings, the Project would also pilot the following innovative approaches, which – if successful – could be expanded to a larger number of buildings:

- (a) **Water efficiency:** Improvements in water efficiency, such as upgrades to low-flow fixtures and installation of systems for rainwater capture and use, would be implemented along with the EE and on-site RE measures. Water savings will reduce energy use at the building (for water heating or water pumping) and at the water utility (for pumping and water treatment), as well as associated GHG emissions. The energy audit will include a simple building water audit; water efficiency measures would be implemented if the audit confirms at least 10 percent of cost-effective water savings potential.
- (b) **Performance-based payments in conventional contracting:** While ESCOs have been successful in the industrial sector (mostly single technology equipment suppliers), the business model has struggled in Türkiye in the public and building sectors. The largest issues are macroeconomic risks which have led to volatile equipment and material costs, and the current industry has not found suitable partnership models between construction companies and equipment ESCOs, which allow them to offer a comprehensive package of investments with appropriate risk-sharing arrangements among the partners. Perceived risks about operations of the equipment during the M&V period, access to financing during the construction period, quality of preliminary audits, etc., are also concerns raised by the ESCOs. Experience under the ongoing EEPB has shown that due to these issues, ESCOs and contractors either submitted extremely high bids or did not bid at all, leading to canceled tenders. While some aspects could be addressed in the ESCO tenders under EEPB, MENR is continuing its efforts to build the industry. The proposed Project would support these efforts by piloting partial performance-based provisions under conventional audit-design-supervision or construction contracts. It is proposed that a small percentage of the contract price (e.g., 2 to 5 percent) of the energy audit-design-supervision (DES&SUP) contracts, construction

<sup>35</sup> Current legislation only requires EPC Class C levels for new and (existing) renovated buildings. In case it is technically or financially not feasible to achieve EPC Class B due to the specific characteristics of an existing building, the MoEUCC PIU may be granted an exception to include the building in the Project on a case-by-case basis provided the renovation results in at least 30 percent energy savings and an EPC Class C.

<sup>36</sup> While full electrification of heating can be achieved through retrofits, experience with EE renovations in public buildings in Türkiye has shown that in some buildings, the technically and financially feasible approach is to replace a part of the existing gas boiler capacity in a building by heat pumps and keep some of the existing gas boiler capacity to support the heat pumps to meet peak demand during the coldest days. In some of these cases, the Project may also finance efficiency improvements of the remaining existing gas boilers. Any investment in efficiency improvement of gas boilers under the Project will be conditional on demonstrating its alignment with the goals of the Paris Agreement.



contracts, or design-build contracts could be tied to the achievement of the target energy savings based on an energy performance test during commissioning of the buildings.

- (c) **Renovations under a continued and sustainable financing scheme:** The Project includes TA to identify a financing scheme that would allow the MoEUCC to maintain its PIU capacity and sustain a public building renovation program beyond the Project period (see Component 2 for details). Once such a financing scheme has been identified, selected pilot buildings could be financed under the scheme. The implementation arrangements would remain the same, i.e., MoEUCC would continue to arrange for preparation, financing, and implementation of the EE investments in the central government buildings. This is consistent with the draft national program for EE in public buildings being developed by MENR under the ongoing EEPB.

12. **Beneficiary and subproject eligibility criteria.** Beneficiary eligibility criteria, which will be used at the screening stage, include: (i) the property is owned or legally assigned to the central government<sup>37</sup>; (ii) there are no plans for move, closure, demolition, or privatization of the facility; (iii) the property is not exposed to high flood risk<sup>38</sup>; (iv) facilities are not associated with military or security-related purposes (e.g., prisons, police stations); and (v) buildings must be structurally and seismically safe. The structural and seismic safety will be determined based on the following approach: For buildings that received a construction permit before January 2000, a building is considered structurally and seismically safe if it is officially assessed by a civil engineer (registered with the Turkish Chamber of Civil Engineers) as structurally and seismically safe according to the earthquake regulation enacted in 2019<sup>39</sup>. For buildings that received a construction permit between January 1, 2000, and December 31, 2018, structural and seismic safety will be determined based on MoEUCC's KAYES database<sup>40</sup>. Buildings that received a construction permit on or after January 1, 2019, are considered structurally and seismically safe.

13. Subproject eligibility criteria, which will be confirmed after completion of the energy audit of each subproject, include (i) the energy audit confirms at least 30 percent energy savings, a maximum simple payback period of 20 years for the overall investment (see also Section II. F on Lessons Learned and Reflected in the Project Design), and the maximum payback period of individual EE and on-site RE measures must not exceed their expected life; (ii) any proposed RE investment to generate electricity qualifies for "unlicensed" electricity production pursuant to the "Regulation on Unlicensed Electricity Production in the Electricity Market" No. 30772 published in the official gazette on May 12, 2019, and its subsequent amendments.

14. Prioritization criteria may be applied should the number of eligible buildings exceed available funding under the Project, i.e., buildings with (i) high specific annual energy consumption, (ii) use of carbon-intensive fossil fuels for heating, and (iii) larger gross floor area would be prioritized during the selection, while ensuring broad geographic coverage and adequate representation of all building types (hospitals, universities, offices, and high schools).

## Component 2. Technical assistance and implementation support (EUR 3.7 million or US\$4 million IBRD loan)

15. This component will include subproject development costs such as marketing and outreach, screening of subproject candidates, and review of energy audits and technical designs; technical support to develop and assess approaches for deeper renovations, comprehensive electrification of buildings, and improvements in water efficiency; day-to-day project management such as preparation and management of procurements, contract management, and

<sup>37</sup> This includes public facilities owned by the Borrower's central government, including central government-affiliated facilities, such as education facilities, dormitories, and hospitals. It excludes private buildings with public agency tenants, and facilities used for, or are intended to be used for, law enforcement, security or defense related purposes, and specifically police, prison, and military facilities, including dormitories used by the personnel providing these functions.

<sup>38</sup> Flood risk will be determined based on an approach defined in the POM.

<sup>39</sup> Turkish Building Earthquake Code entered into force on January 1, 2019, published in the Official Gazette No. 30364, dated March 18, 2018.

<sup>40</sup> MoEUCC's KAYES database is an official register of public buildings that covers about 530,000 buildings (410.5 million m<sup>2</sup> gross floor area) and uses a combination of multiple criteria to assess seismic safety of buildings.



supervision of renovation works; implementing financing requirements in compliance with the Bank's fiduciary policies and guidelines; ensuring satisfactory implementation of the Bank's Environmental and Social Framework (ESF); energy and water savings monitoring; Project monitoring and evaluation; training, capacity building, and knowledge sharing for the Project Implementation Unit (PIU) staff, service providers such as energy auditors and designers, construction firms, building administrators, women in the EE field, and any other relevant project stakeholders; Project communications and dissemination of results; equipment needed for day-to-day Project implementation; and incremental operational costs. This component would also include the following TA activities:

- (a) **Recommendations for strengthened EE requirements for public buildings:** Assessment of EE measures and costs for renovation of existing and construction of new public buildings to exceed current requirements for EE, including the feasibility of introducing different levels of requirements for reduced fossil fuel use for heating. The assessment would rely on (i) data and experiences from building renovations completed under the ongoing EEPB and the proposed Project and (ii) data and scenario analyses for new construction of public buildings in Türkiye. Recommendations for strengthened EE requirements would be based on the Turkish legislation on EPCs, so that the existing EPC system can be utilized to define the new EE requirements. The recommendations would result in issuing a Circular by MoEUCC to set strengthened requirements for reduced energy and fossil fuel use for construction of new and renovation of existing public buildings, as captured by the PDO level results indicator. As such, these requirements would apply to all public buildings which will have a significant impact on the energy use by the country's public building stock (consisting of more than 530,000 public buildings that consume about 12 percent of the energy use for the entire building sector or 4 percent of the country's final energy consumption). This is also consistent with the Türkiye CCDR, which includes strengthening of the EE requirements for all new and renovated buildings as a key milestone for the building sector to be met by 2030.
- (b) **Continued and sustainable financing for MoEUCC's building renovation program:** Identification of a financing scheme that would allow MoEUCC to maintain a public building renovation program over a longer term, i.e., beyond the Project period, by revolving the Project funds over time. This is consistent with MENR's proposal for a national program, which aims to renovate all public buildings in the coming decades. The plan relies on several implementing entities that would implement renovations in all central government and municipal buildings in parallel – MoEUCC, one or more Super-ESCOs, and İlbank. Options for a financing scheme for MoEUCC that may be considered include, e.g., a fixed annual allocation of budget to MoEUCC's GDCA for the public building renovation program, an annual allocation of budget to MoEUCC's GDCA based on an investment plan and expected energy cost savings, or a pay-from-savings scheme. While the current budget rules prevent a revolving financing scheme relying on a pay-from-savings mechanism, identifying a sustainable financing scheme for MoEUCC remains crucial to support the national program and ensure sustainability beyond the Project.
- (c) **Certification of GHG credits for Project activities:** Development of the documentation required to register the Project, and Measurement, Reporting and Verification (MRV) for certification of emission reductions.<sup>41</sup>

16. **Private capital enabled (PCE) and Mobilizing Finance for Development (MFD).** The Project enables private sector investments through two activities. First, the Project aims at strengthening EE legislation applicable to public buildings, with a plan to extend this to private buildings. This would be captured by the results indicator "Strengthened EE requirements for construction of private buildings effective through revision of existing legislation by the relevant directorate under MoEUCC", which could be realized by, e.g., (i) revision of the definition of the NZEB standard, which – after January 2025 – all new buildings with an area above 2,000 m<sup>2</sup> have to meet, (ii) revision of EPC classes, which are used to define the NZEB standard, (iii) or other revisions of (secondary) legislation that results in strengthened EE requirements for private buildings. As such strengthened requirements would apply to a major share of the newly

<sup>41</sup> Prior to development of the documentation, several details need to be decided by MoEUCC's Climate Change Directorate, including the use of the certified emission reductions, e.g., as mitigation outcomes under the NDCs or for compliance market transactions.



constructed private buildings in the country, the expected PCE linked to this results indicator would be significant. Second, the Project will provide TA to establish a system, including MRV, so carbon credits can be created based on investments in buildings, and sold through accessing domestic or international carbon markets. This would be captured by the indicator “Development and testing of an MRV system for the Project”, which will allow building renovation projects to access carbon markets to sell carbon credits resulting from the investments and boost revenues of building renovations for both public and private buildings. In addition, (a) there are clear Government plans to introduce private sector solutions, as evidenced by the national program plan for EE renovations of all public buildings, which is currently under consultation; and (b) the Project addresses knowledge and capacity constraints in the industry (energy auditors, design companies, installers, construction firms, ESCOs) through training on and demonstration of high energy-efficient technologies and approaches.

#### D. Project Beneficiaries

17. The immediate Project beneficiaries will be the users and employees of public buildings of line ministries and other central government institutions, such as the Ministries of National Education (MoNE), Health (MoH), Family and Social Policy (MoFSP), Justice (MoJ), Youth and Sports (MoYS), Forestry and Agriculture (MoFA), Culture and Tourism (MoCT), Energy and Natural Resources (MENR), and the Council of Higher Education. Public buildings to be renovated would include schools, dormitories, university campus, hospitals, ministerial office buildings, justice buildings, libraries, and conference centers. Other beneficiaries would include equipment suppliers, construction and engineering firms, and other service providers benefiting from increased demand for their business. Citizens, who use services provided by the central government, can benefit from budgetary resources saved from energy bills that could be deployed to enhance other priority services. Broadly, general citizens (taxpayers) will also benefit from more efficient use of public budgets and climate mitigation efforts.

#### E. Institutional and Implementation Arrangements

18. **The Project will rely on the same implementing entity and mostly on the same implementation arrangements as in the ongoing EEPB.** The Project will be implemented by GDCA in MoEUCC, which has the mandate for construction and renovation of central government buildings. GDCA has an existing PIU that is already implementing two World Bank projects, the EEPB and PUMREP, while the third Bank project, the SREEPB, is implemented by a PIU in the Internationally Funded Seismic Retrofit Department of MoEUCC. MoEUCC’s commitment and technical capacities in the construction sector are considered strong and the PIU in GDCA has already gained significant experience in preparation and implementation of Bank projects, including in fiduciary, and environmental and social (E&S) risk management. The current PIU of GDCA includes 17 in-house staff and 13 individual consultants (one procurement expert, one Financial Management (FM) expert, two mechanical engineers, one electrical engineer, three civil engineers, one environmental engineer, one occupational health and safety (OHS) expert, one social expert, and one stakeholder engagement and communication expert, one project assistant), who would continue to implement the Project.

#### F. Appraisal Summary

19. **Paris Alignment.** The operation is aligned with the goals of the Paris Agreement on both mitigation and adaptation.
- (a) **Assessment and reduction of adaptation risks.** The potential impacts of identified climate and disaster risks (extreme temperatures, flooding, and earthquakes) on the Project’s investment will be mitigated through the investment measures such as improved building envelopes and new heating/cooling systems to increase the buildings’ resilience against extreme temperatures, and the Project’s soft components, which include eligibility criteria and screening to ensure no subprojects with potential high risk of flooding or geophysical hazards including earthquakes are included in the Project. On adaptation, the operation adequately reduces the physical climate risks to the Project outcomes, and the Project’s climate resilience and adaptation design considerations limit the exposure to an acceptable level of residual risk.



- (b) **Assessment and reduction of mitigation risks.** The EE and RE investments under the proposed Project actively contribute to decarbonization by reducing grid-based electricity purchases and on-site fossil fuel use (mostly for heating), leading to substantial GHG emissions reductions. On mitigation, the operation has a low risk of preventing the country's transition to low-carbon development pathways, given the Project's investments result in energy savings (minimum 30 percent for each subproject) and increase of RE. Moreover, building renovations would seek to achieve a Turkish Class B EPC or higher, which is equivalent to the Level 1 EDGE Certification.

20. **Financial Management.** The financial management (FM) risk of the Project is moderate based on the FM assessment conducted on Project FM arrangements. The PIU in MoEUCC's GDCA has satisfactory FM arrangements in place for the ongoing EEPB. The Project will have similar arrangements regarding planning, budgeting, funds flow, internal controls, accounting and reporting, and auditing arrangements. The FM staff under EEPB have satisfactory qualifications and experience and will provide support during the preparation of the proposed Project. FM capacity will be enhanced further with an additional FM consultant during the implementation stage. The LOGO software will be used for accounting and reporting. The designated account for the Project will be opened at the Central Bank of Türkiye. MoEUCC will send quarterly interim un-audited financial reports (IFRs) to the Bank in an agreed template no later than 45 days after the end of the quarter. The project financial statements will be audited by Treasury Controllers in accordance with the International Auditing Standards. Audit reports will be submitted to the Bank within six months of the financial year's close and made publicly available as per the World Bank's Access to Information Policy.

21. **Procurement.** The Project will be carried out in accordance with the "World Bank Procurement Regulations for IPF Borrowers" (dated September 2023), hereafter referred to as the Bank's "Procurement Regulations". The World Bank's "Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants", dated October 15, 2006, and revised in January 2011 and as of July 1, 2016 (Anti-Corruption Guidelines), will also apply to the Project. MoEUCC has prepared a Project Procurement Strategy for Development (PPSD) and a Procurement Plan in line with paragraphs 4.1, 4.2 and 4.4 of the Bank's Procurement Regulations applicable to the Project agreed by the Bank. The PIU in MoEUCC's GDCA is executing World Bank-financed projects and has procurement experience under World Bank Regulations.

22. **Environment and Social.** The E&S impacts and risks of the Project are rated as Moderate as the potential impacts and risks are (i) predictable and expected to be temporary and/or reversible; (ii) low in magnitude; (iii) site-specific, without likelihood of impacts beyond the actual footprint of the Project; and have (iv) low probability of serious adverse effects to human health and/or the environment (e.g., do not involve use or disposal of toxic materials, routine safety precautions are expected to be sufficient to prevent accidents). These impacts will result from civil works under Component 1 including EE renovation/improvement activities. Component 2 of the Project is not expected to create any environmental and social impacts and risks. The potential adverse environmental risks and impacts from civil works can be listed as traffic, dust and noise generation, vehicle and machines emissions, generation of construction waste, handling of hazardous material and waste, and OHS risks. While solar panels are eligible as part of the EE renovation of buildings, solar panels will not be core for this operation.

23. **Gender.** In Türkiye, only 34.5 percent of women aged 15-64 participated in the labor force in 2020 compared to 73.3 percent of men of the same age.<sup>42</sup> The gender gap in the energy sector labor force is particularly high. According to the Turkish Statistical Institute, in 2020, women made up only 10.9 percent of the workforce in the electricity, gas, steam, water supply and sewerage sectors. The Project will contribute to closing the existing gender gap in women's employment in the energy sector. Women have low representation in energy and STEM fields and decision-making processes. This is due to limited opportunities and information gaps (training, mentorship, internship) among other drivers. Therefore, the Project will include the following activities contributing to closing the gender gap: (i) Internship program organized by the MoEUCC PIU for female university students and graduates: The MoEUCC PIU will organize outreach campaigns and career

<sup>42</sup> World Bank Gender Statistics, <https://databank.worldbank.org/source/gender-statistics>



seminars with female engineers and sector leaders at universities to inform and encourage female university students and graduates to participate in internships under the Project. The PIU will subsequently request consulting firms hired under the Project for energy audits, technical designs, and construction supervision to include at least one female intern for sector-specific work (architecture, electrical, mechanical, or civil engineering, EE or RE, etc.). (ii) Incentivize consultancy firms to have higher shares of female experts in their key staff (i.e., non-administrative positions such as project manager or professional engineer) by including gender balance as a criterion in the procurement processes under the Project (i.e., by giving additional points in the technical evaluation of the firms). The following indicator to measure progress towards closing the gender gap will be included in the results framework: Percentage of female interns who report being employed in the energy, EE, or STEM sector 24 months after they complete the MoEUCC internship.

24. **Citizen engagement.** A strong citizen engagement approach is envisaged under this Project, which has been developed based on lessons learned from the ongoing EEPB and will ensure the active participation of citizens and closing the feedback loop: (i) disseminating subproject information (e.g., energy audit result, subproject scope, design, plans for construction works) to subproject beneficiaries and relevant stakeholders; (ii) collecting feedback to capture their expectations and concerns during preparation and implementation of the subprojects; (iii) reporting to beneficiaries how their feedback was incorporated and the result of subprojects and measuring their satisfaction about engagement processes. Based on lessons learned from EEPB, citizen engagement activities will focus on selected public facilities that are particularly important to citizens and subject to use by various members of the community, such as hospitals or universities. The following instruments will be used: (i) public consultation meetings as part of the SEP; (ii) monitoring meetings before the commencement of construction works and after the completion of construction works, including stakeholder engagement satisfaction surveys at the end of the monitoring meetings; (iii) post-renovation surveys (conducted both face-to-face and virtually). The following indicators were discussed and will be included in the results framework: (i) Percentage of survey participants satisfied with the citizen engagement processes, renovation processes, and results; and (ii) number of building blocks with pre- and post-renovation monitoring meetings organized. The Project aims to conduct monitoring meetings in 50 percent of the renovated building blocks.

25. **GHG accounting.** The total GHG emission reduction potential is estimated to be 1.4 million tCO<sub>2eq</sub> over the lifetime of the investments (20 years). The emission reduction potentials were estimated based on parameters derived from the ongoing EEPB project and relevant emission factors, following the World Bank's "Guidance Manual: Greenhouse Gas Accounting for Energy Investment Operations". The average EE investment costs per annual energy saving, and the share of energy saving from electricity and heat consumption were calculated from actual investment costs and from energy audits under the ongoing EEPB project. Given that the full list of the subprojects and the exact energy saving is unknown, the total energy saving, annual electricity saving, and annual heat saving of the proposed project were estimated based on EEPB2 parameters and the financing amount for Component 1. To calculate the avoided annual emissions from EE investments of the proposed Project, the combined margin emission factor for grid emission factor (491.55 tCO<sub>2eq</sub>/GWh)<sup>43</sup> and natural gas emission factor (202 tCO<sub>2eq</sub>/GWh)<sup>44</sup> were multiplied to the estimated annual electricity saving, and to the estimated annual heat saving, respectively.

## G. Key Risks

26. **The overall risk rating of the proposed Project is Moderate.** All risks are rated Moderate, except for the macroeconomic risk, which is discussed further below including mitigation measures.

27. **Macroeconomic risks are rated Substantial.** The Project is subject to several macroeconomic risks: (i) heightened risks in macro-financial conditions and any further significant depreciation of the currency and high inflation could raise

<sup>43</sup> The grid emission factors are based on 33% of the operating margin and 67% of the build margin per guideline of UNFCCC IFI approach for EE investments.

<sup>44</sup> IPCC [https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2\\_Volume2/V2\\_2\\_Ch2\\_Stationary\\_Combustion.pdf](https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf)



the construction cost and foreign exchange risk faced by Project contractors and (ii) supply-side constraints due to a spike in imported intermediate goods and equipment price, and elevated pricing uncertainty could lead to delays in Project implementation. The ongoing energy crisis has caused a slowdown in the EU and other major markets. The Project economic analysis has therefore considered high-cost scenarios to assess the impact of potential increased implementation costs to achieve the PDO. The World Bank will also continue to monitor macro-financial risk, engage with the authorities on economic policies, and offer TA as requested by the Government.



H. Results Framework and Monitoring

PDO Indicators by PDO Outcomes

Baseline	Closing Period
<b>Reduce energy use in existing central government buildings</b>	
<b>Projected energy or fuel savings (Mega Joules (MJ))</b>	
Jan/2024	Dec/2030
0	14000000000
<b>Projected lifetime net greenhouse gas (GHG) emissions from results achieved (Metric ton)</b>	
Jan/2024	Dec/2030
0	-1,400,000
<b>Strengthen the energy efficiency requirements for new and renovated public buildings</b>	
<b>Circular is issued by MoEUCC's GDCA to set strengthened requirements for reduced energy and fossil fuel use for construction of new and renovation of existing public buildings (Text)</b>	
Jan/2024	Dec/2030
No	Yes

Intermediate Indicators by Components

Baseline	Closing Period
<b>Energy efficiency investments in central government buildings</b>	
<b>Generation capacity of energy constructed or rehabilitated (Megawatt)</b>	
Jan/2024	Dec/2030
0	20
<b>➤ Renewable energy generation capacity (other than hydropower) constructed under the project (Megawatt)</b>	
Jan/2024	Dec/2030
0	20
<b>Annual energy or fuel savings (GWh/year) (Gigawatt-hour (GWh))</b>	
Jan/2024	Dec/2030
0	195
<b>Greenhouse gas emission reductions (Metric tons/year)</b>	



Jan/2024	Dec/2030
0	70000
<b>Annual energy cost savings (TRY/year) (Number)</b>	
Jan/2024	Dec/2030
0	866000000
<b>Building blocks commissioned (Number)</b>	
Jan/2024	Dec/2030
0	400
<b>Renovated building blocks meeting the Turkish NZEB standard (Number)</b>	
Jan/2024	Dec/2030
0	80
<b>Renovated building blocks using partial performance-based provisions under conventional audit-design-supervision or construction contracts (Number)</b>	
Jan/2024	Dec/2030
0	5
<b>Annual water savings from water efficiency measures (Cubic meters/year)</b>	
Jan/2024	Dec/2030
0	5000
<b>Beneficiaries in renovated buildings (Number)</b>	
Jan/2024	Dec/2030
0	100000
<b>&gt;of which female beneficiaries (Percentage)</b>	
0	45
<b>Technical assistance and implementation support</b>	
<b>People trained (Number)</b>	
Jan/2024	Dec/2030
0	600
<b>&gt;of which female participants (Percentage)</b>	
0	30
<b>Strengthened energy efficiency requirements for construction of private buildings effective through revision of existing legislation by the relevant directorate under MoEUCC (Text)</b>	
Jan/2024	Dec/2030
No	Yes
<b>Development and testing of a MRV system for the Project, which will allow building renovation projects to access carbon markets to sell carbon credits resulting from the investments (Text)</b>	



Jan/2024	Dec/2030
No	Yes
<b>Women who report being employed in the energy, EE, or STEM sector 24 months after they complete the MoEUCC internship (Percentage)</b>	
Jan/2024	Dec/2030
0	20
<b>Survey participants satisfied with the citizen engagement processes, renovation processes, and results (Percentage)</b>	
Jan/2024	Dec/2030
0	90
<b>Building blocks with pre- and post-renovation monitoring meetings organized (Number)</b>	
Jan/2024	Dec/2030
0	200



**Monitoring & Evaluation Plan: PDO Indicators by PDO Outcomes**

<b>Reduce energy use in existing central government buildings</b>	
<b>Projected energy or fuel savings (Mega Joules (MJ))</b>	
Description	Final energy or fuel savings from EE and on-site RE investments at the buildings over the lifetime of the investments (20 years)
Frequency	Semi-annual
Data source	Energy audits and M&V reports
Methodology for Data Collection	Reporting is based on energy audits (before renovation) and will be updated based on M&V reports (after renovation)
Responsibility for Data Collection	MoEUCC PIU
<b>Projected lifetime net GHG emissions from results achieved (Metric ton) <sup>CSC</sup></b>	
Description	Projected lifetime net greenhouse gas (GHG) emissions are calculated as the difference between project gross (absolute) emissions aggregated over the economic lifetime of the Project and the emissions of a baseline (counterfactual) scenario aggregated over the same time horizon. They are reported in metric tons of carbon dioxide equivalent over the lifetime of the investments (20 years).
Frequency	Semi-annual
Data source	Energy audits and M&V reports
Methodology for Data Collection	Reporting is based on energy audits (before renovation) and will be updated based on M&V reports (after renovation)
Responsibility for Data Collection	MoEUCC PIU
<b>Reduce energy use in all new and renovated public buildings</b>	
<b>Circular is issued by MoEUCC's GDCA to set strengthened requirements for reduced energy and fossil fuel use for construction of new and renovation of existing public buildings (Yes/No)</b>	
Description	Issuance, by MoEUCC, of an official government circular that specifies, and further strengthens, the Government's policy requirements for reduced energy and fossil fuel use in the construction of new and renovation of existing public buildings, in accordance with MoEUCC's authority granted under Presidential Decree No. 1 on the Presidential Organization, published in the Official Gazette, July 10, 2018 (authorizing the Ministry to prepare zoning, environment, building and construction legislation regarding settlement, environment and construction, to monitor and supervise the practices, to prepare, develop and ensure the implementation of the norms and standards of professional services related to the field of duty of the Ministry and to keep records of those concerned).
Frequency	Annual
Data source	Circular
Methodology for Data Collection	Document evidence of publishing of the circular and confirm the requirements related to EE and reduced fossil fuel use
Responsibility for Data Collection	MoEUCC PIU

**Monitoring & Evaluation Plan: Intermediate Results Indicators by Components**

<b>1. Energy efficiency investments in central government buildings</b>	
<b>Annual energy or fuel savings (GWh/year)</b>	
Description	Final energy or fuel savings from EE and on-site RE investments at the buildings per year.
Frequency	Semi-annual
Data source	Energy audits and M&V reports
Methodology for Data Collection	Reporting is based on energy audits (before renovation) and will be updated based on M&V reports (after renovation)
Responsibility for Data Collection	MoEUCC PIU
<b>RE generation capacity (other than hydropower) constructed under the Project (MW)</b>	
Description	Installed capacity of the on-site RE installations included in the building renovations



Frequency	Semi-annual
Data source	Energy audits and M&V reports
Methodology for Data Collection	Reporting is based on energy audits (before renovation) and will be updated based on M&V reports (after renovation)
Responsibility for Data Collection	MoEUCC PIU
<b>GHG emission reductions (Metric tons/year) <sup>csc</sup></b>	
Description	Project net greenhouse gas (GHG) emissions calculated as an annual average of the difference between project gross (absolute) emissions aggregated over the economic lifetime of the Project and the emissions of a baseline (counterfactual) scenario aggregated over the same time horizon. They are reported in metric tons of carbon dioxide equivalent per year.
Frequency	Semi-annual
Data source	Energy audits and M&V reports
Methodology for Data Collection	Reporting is based on energy audits (before renovation) and will be updated based on M&V reports (after renovation)
Responsibility for Data Collection	MoEUCC PIU
<b>Annual energy cost saving (TRY/year)</b>	
Description	Annual energy cost savings resulting from EE and RE investments made under the Project in Turkish lira
Frequency	Semi-annual
Data source	Energy audits and M&V reports
Methodology for Data Collection	Energy cost savings will be calculated using energy savings based on energy audits and M&V reports and current energy tariffs
Responsibility for Data Collection	MoEUCC PIU
<b>Building blocks commissioned (number)</b>	
Description	Number of building blocks renovated under the Project
Frequency	Semi-annual
Data source	MoEUCC database
Methodology for Data Collection	The data will be retrieved from the MoEUCC database
Responsibility for Data Collection	MoEUCC PIU
<b>Renovated building blocks meeting the Turkish NZEB standard (number)</b>	
Description	Number of renovated building blocks under the Project meeting the effective Turkish NZEB standard
Frequency	Semi-annual
Data source	Energy performance certificates, data on on-site RE generation, MoEUCC database
Methodology for Data Collection	The data will be retrieved from the MoEUCC database
Responsibility for Data Collection	MoEUCC PIU
<b>Renovated building blocks using partial performance-based provisions under conventional audit-design-supervision or construction contracts (number)</b>	
Description	Number of renovated building blocks under the Project using partial performance-based provisions under conventional audit-design-supervision or construction contract
Frequency	Semi-annual
Data source	Contracts, MoEUCC database
Methodology for Data Collection	The data will be retrieved from the MoEUCC database
Responsibility for Data Collection	MoEUCC PIU
<b>Annual water savings from water efficiency measures (Cubic meters/year)</b>	
Description	Annual savings in domestic water use at the buildings that introduce water efficiency measures



Frequency	Semi-annual
Data source	Energy audits and M&V reports
Methodology for Data Collection	Reporting is based on energy audits that include a water audit (before renovation) and will be updated based on M&V reports (after renovation)
Responsibility for Data Collection	MoEUCC PIU
<b>Beneficiaries in renovated buildings (number)</b>	
Description	Number of beneficiaries (including users and employees) in renovated buildings
Frequency	Semi-annual
Data source	Pre- and post- renovation surveys, MoEUCC database
Methodology for Data Collection	The data will be retrieved from the MoEUCC database
Responsibility for Data Collection	MoEUCC PIU
<b>2. Technical assistance and Project implementation support</b>	
<b>People trained (number)</b>	
Description	Number of people trained in various training sessions organized under Project (e.g., technical trainings on energy audits, design, construction supervisions, and GHG accounting), including PIU staff. Percentage of female participants will be collected supplementarily.
Frequency	Semi-annual
Data source	Attendance forms from training events
Methodology for Data Collection	Attendance forms will be collected in each training event organized by MoEUCC, based on which the number of people that attended the training events will be determined
Responsibility for Data Collection	MoEUCC PIU
<b>Strengthened energy efficiency requirements for construction of private buildings effective through revision of existing legislation by the relevant directorate under MoEUCC (Text)</b>	
Description	(PCE, non-monetary indicator) Strengthened EE requirements could become effective through, e.g., (i) revision of the definition of the NZEB standard, (ii) revision of EPC classes, (iii) or other revisions of (secondary) legislation that results in strengthened EE requirements for private buildings.
Frequency	Semi-annual
Data source	Relevant secondary legislation
Methodology for Data Collection	MoEUCC will track the relevant changes in secondary legislation
Responsibility for Data Collection	MoEUCC PIU
<b>Development and testing of an MRV system for the Project, which will allow building renovation projects to access carbon markets to sell carbon credits resulting from the investments (Text)</b>	
Description	(PCE, non-monetary indicator) An MRV system will enable access to carbon markets, which will boost revenues of building renovations for both public and private buildings once it is established. The indicator monitors if the MRV system for the Project is developed and tested.
Frequency	Semi-annual
Data source	MoEUCC
Methodology for Data Collection	MoEUCC will be the primary user of the MRV system under the Project
Responsibility for Data Collection	MoEUCC PIU
<b>Women who report being employed in the energy, EE, or STEM sector 24 months after they complete the MoEUCC internship (Percentage)</b>	
Description	(Gender indicator) Percentage of women who report being employed in the energy, EE or STEM sector 24 months after their completion of the internship program organized by MoEUCC
Frequency	Annual



Data source	Survey result
Methodology for Data Collection	MoEUCC PIU will conduct surveys among internship participants to determine whether they are employed in the energy, EE, or STEM sector 24 months after the completion of their internship
Responsibility for Data Collection	MoEUCC PIU
<b>Survey participants satisfied with the citizen engagement processes, renovation processes, and results (Percentage)</b>	
Description	(Citizen engagement indicator) Percentage of beneficiaries surveyed within the renovated buildings under the Project satisfied with the renovation processes, including consultations, and results of the renovation.
Frequency	Semi-annual
Data source	Survey results
Methodology for Data Collection	Survey questionnaire including those to measure the satisfaction with citizen engagement process will be distributed (i) in each pre- and post-renovation monitoring meeting organized for participants and (ii) through separate post-renovation surveys (both face-to-face and virtually) for building users
Responsibility for Data Collection	MoEUCC PIU
<b>Building blocks with pre- and post-renovation monitoring meetings organized (Number)</b>	
Description	(Citizen engagement indicator) Number of building blocks with pre- and post-renovation monitoring meeting organized as part of the citizen engagement activities
Frequency	Semi-annual
Data source	Pre- and post-renovation monitoring meeting minutes and other communication records
Methodology for Data Collection	MoEUCC will track the building blocks where pre- and post-renovation monitoring meetings were held and record the details of the meetings
Responsibility for Data Collection	MoEUCC PIU



**ANNEX 5: Sustainable Transition through Energy Efficiency in Moldova**

**Sustainable Transition through Energy Efficiency in Moldova Project (STEEM, P500560)**

Task Team Leaders: Roger Coma Cunill, Silvia Martinez Romero

Core Team: Alexandra Lelouch, Rainer Behnke, Sergiu Robu, Liliana Dragulescu-Benitez, Deborah Berger, Cesar Niculescu, Serdar Jepbarov, Andrea Muharemovic, Eugenia Ganea, Elena Corman, Oxana Druta, Ion Efros, Thuy Bich Nguyen, Iuliana Stratan.

**DATASHEET**

**BASIC INFORMATION**

Project Beneficiary(ies) Moldova	Operation Name Sustainable Transition through Energy Efficiency in Moldova Project (STEEM)		
Operation ID P500560	Financing Instrument Investment Project Financing (IPF)	Environmental and Social Risk Classification Moderate	

**Financing & Implementation Modalities**

<input checked="" type="checkbox"/> Multiphase Programmatic Approach (MPA)	<input checked="" type="checkbox"/> Contingent Emergency Response Component (CERC)
<input type="checkbox"/> Series of Projects (SOP)	<input type="checkbox"/> Fragile State(s)
<input type="checkbox"/> Performance-Based Conditions (PBCs)	<input type="checkbox"/> Small State(s)
<input type="checkbox"/> Financial Intermediaries (FI)	<input type="checkbox"/> Fragile within a non-fragile Country
<input type="checkbox"/> Project-Based Guarantee	<input type="checkbox"/> Conflict
<input type="checkbox"/> Deferred Drawdown	<input type="checkbox"/> Responding to Natural or Man-made Disaster
<input type="checkbox"/> Alternative Procurement Arrangements (APA)	<input type="checkbox"/> Hands-on Expanded Implementation Support (HEIS)

Expected Approval Date 6-Jun-2024	Expected Closing Date 30-Jun-2029
Bank/IFC Collaboration No	

**Proposed Development Objective(s)**



To enhance energy efficiency in existing public buildings and the district heating sector in Moldova and provide immediate and effective response to an eligible crisis or emergency.

**Components**

Component Name	Cost (US\$)
Energy efficiency investments in public buildings	51,500,000.00
Implementation support and technical assistance	3,000,000.00
Contingent emergency response component	0.00

**Organizations**

Borrower: Republic of Moldova  
 Implementing Agency: Moldova Project Implementation Unit (MPIU), Ministry of Energy

**PROJECT FINANCING DATA (US\$, Millions)****Maximizing Finance for Development**

Is this an MFD-Enabling Project (MFD-EP)? Yes  
 Is this project Private Capital Enabling (PCE)? Yes

**SUMMARY**

<b>Total Operation Cost</b>	<b>54.50</b>
<b>Total Financing</b>	<b>54.50</b>
<b>of which IBRD/IDA</b>	<b>50.00</b>
<b>Financing Gap</b>	<b>0.00</b>

**DETAILS****World Bank Group Financing**

International Bank for Reconstruction and Development (IBRD)	50.00
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**Non-World Bank Group Financing**

Trust Funds	4.50
Moldova Growth, Resilience and Opportunities for Well-Being	4.50



**Expected Disbursements (US\$, Millions)**

WB Fiscal Year	2024	2025	2026	2027	2028	2029
Annual	0.00	9.00	13.00	15.00	13.00	4.50
Cumulative	0.00	9.00	22.00	37.00	50.00	54.50

**PRACTICE AREA(S)**

**Practice Area (Lead)**

Energy & Extractives

**Contributing Practice Areas**

**CLIMATE**

**Climate Change and Disaster Screening**

Yes, it has been screened and the results are discussed in the Operation Document

**SYSTEMATIC OPERATIONS RISK- RATING TOOL (SORT)**

Risk Category	Rating
1. Political and Governance	● Substantial
2. Macroeconomic	● Substantial
3. Sector Strategies and Policies	● Moderate
4. Technical Design of Project or Program	● Moderate
5. Institutional Capacity for Implementation and Sustainability	● Moderate
6. Fiduciary	
Financial Management Risk rating from Specialist:	
● Moderate as of 04-Apr-2024	● Moderate
Procurement Risk rating from Specialist:	
● Moderate as of 18-Apr-2024	
7. Environment and Social	
Environment Risk rating from Specialist:	
● Moderate as of 08-Apr-2024	● Moderate
Social Risk rating from Specialist:	
● Moderate as of 08-Apr-2024	



8. Stakeholders	● Moderate
9. Overall	● Moderate
<b>Overall MPA Program Risk</b>	● Substantial

**POLICY COMPLIANCE**

**Policy**

Does the project depart from the CPF in content or in other significant respects?

Yes  No

Does the project require any waivers of Bank policies?

Yes  No

**ENVIRONMENTAL AND SOCIAL**

**Environmental and Social Standards Relevance Given its Context at the Time of Appraisal**

E & S Standards	Relevance
ESS 1: Assessment and Management of Environmental and Social Risks and Impacts	Relevant
ESS 10: Stakeholder Engagement and Information Disclosure	Relevant
ESS 2: Labor and Working Conditions	Relevant
ESS 3: Resource Efficiency and Pollution Prevention and Management	Relevant
ESS 4: Community Health and Safety	Relevant
ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Not Currently Relevant
ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Not Currently Relevant
ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Not Currently Relevant
ESS 8: Cultural Heritage	Not Currently Relevant
ESS 9: Financial Intermediaries	Not Currently Relevant

NOTE: For further information regarding the World Bank’s due diligence assessment of the Project’s potential environmental and social risks and impacts, please refer to the Project’s Appraisal Environmental and Social Review Summary (ESRS).

**LEGAL**



**Legal Covenants**

**Sections and Description**

The Recipient shall carry out the Project in accordance with the Implementation Arrangements set out in Section I, Schedule 2 of the Loan Agreement.

The Recipient shall carry out the Project in accordance with the Implementation Arrangements set out in Section I, Schedule 2 of the Grant Agreement

LA. Schedule 2, Section III, B.1 (a): no withdrawal shall be made for payments made prior to the Signature Date, except that withdrawals up to an aggregate amount not to exceed EUR 9,340,000 may be made for payments made prior to this date but on or after April 1, 2024, for Eligible Expenditures, following an Environmental and Social Audit, satisfactory to the Bank, showing that the pertinent obligations set forth in this Agreement, as applicable to each Eligible Expenditure, have been complied with.

LA. Schedule 2, Section III, B.1(b): no withdrawal shall be made for Emergency Expenditures under Category (2), unless and until all of the following conditions have been met in respect of said expenditures: (i) (A) the Borrower has determined that an Eligible Crisis or Emergency has occurred, and has furnished to the Bank a request to withdraw Loan amounts under Category (2); and (B) the Bank has agreed with such determination, accepted said request and notified the Borrower thereof; and (ii) the Borrower has adopted the CERC Manual and Emergency Action Plan, in form and substance acceptable to the Bank.

GA. Schedule 2, Section III, B.1: no withdrawal shall be made: for payments made prior to the Signature Date, except that withdrawals up to an aggregate amount not to exceed \$900,000 may be made for payments made prior to this date but on or after the date falling April 1, 2024, for Eligible Expenditures, following an Environmental and Social Audit, satisfactory to the Bank, showing that the pertinent obligations set forth in this Agreement, as applicable to each Eligible Expenditure, have been complied with.

**Conditions**

Type	Citation	Description	Financing Source
Effectiveness	Article V, 5.01(a)	The execution and delivery of this Agreement on behalf of the Recipient have been duly authorized or ratified by all necessary governmental action.	Trust Funds
Effectiveness	Article V, 5.01(b)	That the Loan Agreement has been entered into in a manner acceptable to the Bank and all conditions precedent to its effectiveness, other than the effectiveness of this Agreement, have been fulfilled.	Trust Funds
Effectiveness	Article V, 5.01(c)	That the Project Operations Manual referred to in Section I.C of Schedule 2 to	Trust Funds



		this Agreement has been prepared and adopted by MoE, in form and substance acceptable to the Bank.	
Effectiveness	Article V, 5.01(d)	That the Project Implementation Agreement referred to in Section I.B of Schedule 2 has been entered into in a manner satisfactory to the Bank.	Trust Funds
Effectiveness	Article V, 5.01(e)	That MoE has caused MEPIU to hire an environment and social, health and safety specialist dedicated to the Project, with qualifications and functions acceptable to the Bank.	Trust Funds
Effectiveness	Article V, 5.01(a)	That the Grant Agreement has been entered into in a manner acceptable to the Bank and all conditions precedent to its effectiveness, other than the effectiveness of this Agreement, have been fulfilled.	IBRD/IDA
Effectiveness	Article V, 5.01(b)	That the Project Operations Manual referred to in Section I.D of Schedule 2 has been prepared and adopted by MoE, in form and substance acceptable to the Bank.	IBRD/IDA
Effectiveness	Article V, 5.01(c)	That the Project Implementation Agreement referred to in Section I.B. of Schedule 2 has been entered into in a manner satisfactory to the Bank.	IBRD/IDA
Effectiveness	Article V, 5.01(d)	That MoE has caused MEPIU to hire an	IBRD/IDA



environmental and social, health and safety specialist dedicated to the Project, with qualifications and functions acceptable to the Bank.

**A. Context**

1. **Moldova is almost entirely dependent on fossil fuel and electricity imports.** Only 20 percent of its energy demand is covered by domestic production, consisting mostly of solid biomass.<sup>45</sup> Natural gas accounts for more than a quarter of Moldova’s total primary energy supply (26 percent in 2022), oil almost half (40 percent in 2022) and solid biomass one-fifth (20 percent in 2022). Most natural gas is used for electricity and heat generation, whereas oil is the most important energy source for final consumers, particularly in the transport sector.

2. **Energy efficiency is a critical Government priority in the National Energy and Climate Plan (NECP) to address energy security cost-effectively, while contributing to combat climate change and address energy poverty.** The NECP, expected to be approved in first half 2024, puts forward a Buildings Renovation Strategy to improve energy efficiency (EE) in public and residential buildings and reduce GHG emissions. The Moldova Energy Strategy 2050, which is expected to be approved by the end of 2024, sets as one of its objectives the principle of "energy efficiency first" in all segments of the economy and energy consumption.

3. **Buildings represent about 60 percent of the total final energy consumption in Moldova.** While public buildings represent a small fraction of the total (20 percent), a targeted EE program would strengthen the capacity of key stakeholders (e.g., auditors, contractors) and help create a sustainable market that could be expanded to the residential sector. Among public buildings, the education sector represents almost 67 percent of the total energy consumption, while health and administrative buildings represent 22 and 11 percent, respectively. In the short term, there is a need to reduce energy consumption as much as possible by direct public financing of EE in public buildings to increase energy security in Moldova and develop the EE market<sup>46</sup>. In parallel, a Super ESCO model for public buildings is expected to be piloted with the support of a US\$1 million grant by USAID. The Super ESCO would be established as a governmental entity with a mandate to aggregate private ESCO<sup>47</sup> projects for financing<sup>48</sup>. Such models typically reduce transaction costs and increase economies of scale for EE works and services. The approach also seeks to demonstrate and establish a good commercial basis for EE projects with attractive Returns on Investment (ROIs). The initial pilot phase (through 2026) will be implemented by the government’s newly created National Center for Sustainable Energy (CNED)<sup>49</sup> in parallel to the proposed STEEM project. The Super ESCO program will also involve the creation of a revolving mechanism that will capture part of the savings to be used for future investments. This, together with other policies and mechanisms focused on the residential market are expected to provide a strong enabling environment for the scale-up EE investment in Moldova.

<sup>45</sup> IEA, Republic of Moldova: Energy Profile, 2020.

<sup>46</sup> EE interventions in the education and health sector also have important social benefits.

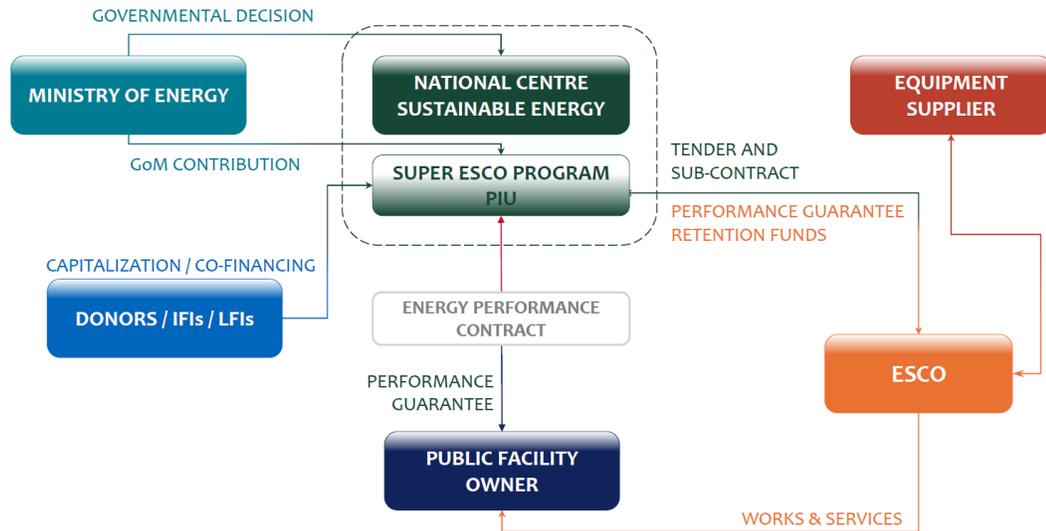
<sup>47</sup> An ESCO is a company that delivers aggregated energy services and/or other EE improvement measures in a user's premises and accepts some degree of financial risk in doing so. The payment for the services delivered is based in part on the achievement of EE improvements.

<sup>48</sup> Such a model has been successful in developing ESCO markets in the U.S., Belgium, Germany, India and elsewhere.

<sup>49</sup> Starting January 1, 2024, the Government of Moldova restructured the Energy Efficiency Agency into a National Center for Sustainable Energy (CNED), with a broader scope of activities. The CNED is expected to lead the Super ESCO program after the initial pilot phase.



Figure A5-1: Scaling-up EE in Moldova: financing scheme under preparation<sup>50</sup>



4. **The public utility Termoelectrica plays a key role in improving energy efficiency in the energy sector.** The company supplies around 87 percent of Chisinau’s district heating (DH) and provides heat and hot water to 4,397 buildings, including 483 public buildings and 3,122 residential buildings. The closed World Bank-financed District Heating Efficiency Improvement Project (P132443) and ongoing Second District Heating Efficiency Improvement Project (P172668) provided support to Termoelectrica (TE) to improve the efficiency of the DH sector, particularly in upgrading co-generation plants. Building on the experience from these two projects, TE has put forward a EUR 110 million plan to roll-out Individual Heating substations (IHS)<sup>16</sup> as a strategic investment to improve the performance and country services of the DH system.

### B. Relevance to Higher-Level Objective

5. **The project is aligned with the overarching objective of the World Bank Group Country Partnership Framework (CPF) for the Republic of Moldova for the period of FY23-FY27<sup>51</sup> to support the country’s green, resilient and inclusive development.** The project supports its objective 3.1 “Increase energy security and efficiency” by improving energy savings in buildings and district heating and, thus, reducing the country’s dependence on energy imports. The project is expected to be the first of a series of sequenced parallel projects to be supported by donor partners under the Moldova Energy Efficiency Program in Public Buildings, which will address the CPF call for an urgent nationwide focus on EE.

6. **The project will support the country in achieving its Nationally Determined Contribution (NDC) and contribute to efforts of climate change mitigation and adaptation, and therefore is consistent with the Country’s strategies on climate change.** National GHG emission reduction targets, set in the NDC of the Republic of Moldova, were officially approved at the national level by Government Decision no. 1470 of 30.12.2016 on the approval of the Low Emission Development Strategy of the Republic of Moldova until 2030 and the Action Plan for its implementation.<sup>52</sup> Improving EE, increasing the use of renewable energy sources and promoting sustainable development of the energy areas are among

<sup>50</sup> USAID, Moldovan ESCO Market Development Concept and Roadmap, 2023.

<sup>51</sup> Report No. 177939-MD; discussed by the Board on March 14, 2023.

<sup>52</sup> Moldova signed the Paris Agreement in September 2016 and ratified it by Law 78 of 04.05.2017. In 2023 Moldova published its Fifth National Communication Developed to be reported to the United Nations Framework Convention on Climate Change, <http://clima.md/doc.php?l=en&idc=81&id=5853>.



the priority objectives of the Energy Strategy of the Republic of Moldova until 2030, with two chronological stages of implementation: 2013-2020 and 2021-2030.

7. **The project will contribute to the acceleration of reforms for Private Capital Mobilization and Private capital enabled by promoting private sector participation in developing sustainable solutions for energy efficiency in public buildings with ripple effects in residential buildings.** The project will include technical assistance to support the initial operationalization of a sustainable financing mechanism for EE, which will enable the financing of subprojects with a gradual increase of commercial co-financing as the EE market in Moldova matures and EE public awareness increases. This mechanism will also be a stepping stone for scaling-up EE in the residential sector, complementing the residential EE fund created in parallel, because of the unique opportunities that will be offered to national ESCOs to develop their technical and financial capacities. In the medium- to long-term, the mechanism is expected to contribute to leverage private financing for EE. Thus, the proposed project is consistent with the WBG's Maximizing Finance for Development (MFD) and Private Capital Enabled (PCE) approach to infrastructure finance.

### C. Project Description

8. **The Project Development Objective (PDO)** is to enhance energy efficiency in existing public buildings and the district heating sector in Moldova and provide immediate and effective response to an eligible crisis or emergency. Progress towards the PDO will be measured through two PDO level indicators: (i) Projected energy or fuel savings (MJ); and (ii) Projected lifetime net greenhouse gas (GHG) emissions from results achieved (Metric ton), corporate scorecard indicator.

9. **The following is a brief description of the project components.** Details are in the financing agreement and in the Project Operations Manual (POM). The project would be implemented by the Project Implementation Unit hosted at the Ministry of Energy (MEPIU) and include three components: (i) EE investments in public buildings, (ii) Implementation Support and technical assistance, and (iii) Contingent emergency response component (CERC). Retroactive financing up to a maximum amount of US\$10 million is envisioned for eligible expenditures as agreed with the Bank.

### Component 1 – EE investments in public buildings (US\$50 million equivalent from IBRD and US\$1.5 million from M-GROW TF)

10. **Sub-component 1.1. EE renovation in education buildings (US\$35 million equivalent from IBRD).**<sup>53</sup> This sub-component will finance the retrofit of selected education facilities, including: (i) implementation of standard energy efficient retrofit measures, such as thermal insulating of wall and roof, replacing windows and doors, renovation of internal heating system, ventilation and air conditioning systems, and replacement of lighting using well-proven technologies and equipment for EE improvements in end-use application; (ii) installation of heat pumps, solar thermal collectors and rooftop solar PV if technically feasible and economically viable; and (iii) ancillary measures to ensure sustainability of the subprojects.<sup>54</sup> Eligibility and prioritization criteria will be as follows:

- (a) **Beneficiary and subproject eligibility criteria.** Beneficiary eligibility criteria for sub-component 1.1, which will be used at the screening stage, include: (i) full ownership by a governmental agency and primarily used for education services;<sup>55</sup> (ii) preliminary confirmed structural soundness of the buildings (in terms of structural durability and

<sup>53</sup> During the walk-through energy audits a rapid inspection and check of structural durability and safety of the construction of the selected public building has been conducted. That led to the preliminary confirmation for the short-listed 46 schools of being structurally sound and stable and not having severe seismic and construction damages. On suspect or demand, a more detailed analysis of seismic and structural soundness will be conducted during the detailed energy audit.

<sup>54</sup> This includes measures that do not deliver EE savings but are important to ensure the impact of EE investments over its lifetime (examples include replacement of old gutters and down spouts to ensure that building envelopes do not get damaged by water, improvement of sanitary facilities, and upgrade of building internal wiring for safety reasons. Ancillary measures are limited to up to 15 percent of total investment costs per subproject. The Bank may authorize up to 20 percent of ancillary measures in selected subprojects, if the overall ancillary measures' costs for all subprojects financed under subcomponent 1.1 are 15 percent or below.

<sup>55</sup> excluding buildings of publicly-owned enterprises, and private buildings with public agency tenants.



safety of the construction); stability of the building, no seismic and construction damages; (iii) secured prospective use of the facility, and absence of plans for relocation, closure, downsizing or privatization; (iv) no other users occupying the building or parts; and (v) the building has been constructed between 1950<sup>56</sup> and 2013, as it is expected that relatively new buildings have lower demand for retrofit. Subproject eligibility criteria, which will be confirmed after completion of the energy audit of each subproject will include that the energy audits confirm at least 20 percent energy savings after renovation compared to real consumption and normative demand baseline, and an economic payback period of less than 15 years. In addition, buildings which may trigger ESS5 will not be eligible for funding.

- (b) **Prioritization criteria** may be applied should the number of eligible buildings exceed available funding under the Project. The ranking of shortlisted facilities will be along the following indicators to prioritize highest impacts by the intervention: (i) expected specific energy savings per US\$ invested, i.e. kWh saved per US\$; (ii) avoided GHG emission per US\$ invested, i.e. CO<sub>2</sub>eq per US\$; and (iii) number of users, which can benefit from the building retrofit per US\$ invested for retrofit.

11. **Sub-component 1.2. District heating upgrades (US\$15 million equivalent).** This sub-component will finance improvements in the central district heating (DH) heat supply in prioritized education facilities and public administration facilities through the installation of individual heat substations (IHS)<sup>57</sup> including DH Network upgrades and required reconfiguration of DH distribution pipelines for IHS installation at building site.<sup>58</sup> The public utility Termoelectrica will be responsible for the supervision of works and will provide regular status updates to the MEPIU.

12. **Sub-component 1.3. Initial operationalization of a sustainable financing mechanism for EE<sup>59</sup> (US\$1.5 million from M-GROW TF).** The sub-component will support the National Center for Sustainable Energy (CNED) with the initial operationalization of a sustainable financing mechanism for EE, including its initial setup phase by financing: (i) technical assistance for the carrying out of energy audits, preparation of detailed designs and technical specifications for EE improvements, technical reviews, and other technical studies; and (ii) the acquisition of IT equipment for CNED. The CNED will manage a sustainable financing mechanism for EE and build a pipeline of sub-projects through energy audits supported in parallel by this sub-component.

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<sup>56</sup> Building codes (Norms) and regulations in the Moldova Republic were under the former Soviet Norms until independence from the USSR in 1991. The first building construction norm in USSR, which set minimum standards for seismic stability has been enforced in 1951, by PSP 101-51 'Regulations of Buildings in Seismic Regions'. Thus, it can be considered that buildings constructed before 1951 have not been designed to comply with minimum seismic standards. Those buildings shall be not considered as eligible, because the risk of insufficient seismic soundness is high. The government approved a new Urbanism and Construction Code (CUC) in September 2023, which will regulate all aspects of the sector, from land use planning to the authorization and execution of construction projects, including building codes. Details and implementation provisions are due.

<sup>57</sup> Approximately 280 IHS are expected to be installed.

<sup>58</sup> Required Reconfiguration of DH Network comprises the reconfiguration of parts of the DH Network of the old Central DH Heating Point to the New Building-Based IHS, required for the installation of IHS at building site and necessary to enable its connection to the DH Network. The Required Reconfiguration of DH Distribution Pipelines exclude activities that require land acquisition or cause economic or physical displacement as defined under ESS5.

<sup>59</sup> USAID is supporting the government of Moldova to establish a Super ESCO mechanism (also known as "MESCO Project"), which includes the creation of a revolving mechanism and a US\$1 million initial pilot phase (through 2026). The Super ESCO program will establish a sustainable mechanism to support the rehabilitation of existing public buildings with a cost estimate of EUR 1.3 billion. In a 5-year horizon, the Super ESCO Program will be implemented in three phases: preparation, tendering and implementation until its transformation to a facilitator role once the EE and ESCO market is developed. The preparation phase consists, among other activities, in creating financing instruments and developing standardized templates, guidance and methodologies for successful implementation of EPCs. A US\$1 million pilot project through February 2026 will assess ESCOs' capacities, performance contracts and revolving features of the ESCO fund. A tendering phase will follow suit to develop, facilitate and manage EE projects using an EPC approach. The implementation phase will include quality control of EE projects under implementations, M&V services and training of experts. This final phase is expected to end by 2029. A draft Government Decision for the Super ESCO mechanism is in the advanced stage of preparation by the MoE and Ministry of Finance. The proposed STEEM project will support the Super ESCO approach through EE audits to identify energy savings potential and a pipeline of sub-projects in public buildings. The synergies between USAID and World Bank supported initiatives to catalyze the EE market will enable local banks to prepare products to finance additional EE building rehabilitation.



**Component 2 – Implementation support and technical assistance (US\$3 million from M-GROW TF)**

13. This component will include: (i) support for MEPIU project management and coordination, including operating costs; (ii) capacity building for staff at Ministry of Energy (MoE), Ministry of Education and Research (MoED), CNED, Termoelectrica SA (TE) and MEPIU; (iii) development and operationalization of GIS Information System and Database, and EE information System for project management at CNED; (iv) energy audits in selected education facilities including monitoring and verification; (v) development and implementation of a capacity building program on energy efficiency for the relevant entities, including study tours and workshops; and (vi) the development and implementation of a Women in the Energy Sector Internship Program including the provision of onboarding training to the eligible interns, and provision of internship allowances.<sup>60</sup> This component is expected to contribute to the creation of new incentives for EE and increase private sector participation in EE projects and helping Moldova to reach scale in EE investments in a sustainable manner.

**Component 3 – Contingent emergency response component (US\$0 of IBRD).**

14. This component would have zero allocation of financing to allow for rapid reallocation of proceeds of uncommitted financing in the event of an eligible crisis or emergency. For the CERC to be activated, and financing to be provided, the Government of Moldova will need to (a) submit a request letter for CERC activation and the evidence required to determine the eligibility of the emergency, as defined in the CERC manual; (b) have an Emergency Action Plan, including the emergency expenditures to be financed; and (c) meet the E&S requirements as agreed in the Emergency Action Plan and related E&S instruments.

**D. Project beneficiaries**

15. The project will benefit around 46,000 school-age youth, teachers and schools' support staff which will experience improved indoor comfort levels, lighting and indoor air quality in beneficiary schools. The project will support the Government initiative of "Model Schools" which aims to increase resources of schools across the country and education outcomes by merging small schools in larger central schools. In addition, private sector energy service companies (*construction and design companies, energy auditors, equipment suppliers*) will also benefit from the project as it will build demand for their services and will build their expertise and capacity. Citizens, who use services provided by the government, can benefit from budgetary resources saved from energy bills that could be deployed to enhance other priority services. Broadly, general citizens (taxpayers) will also benefit from more efficient use of public budgets and climate mitigation efforts.

**E. Institutional and Implementation arrangements**

16. **The project will rely on the same implementing entity and similar implementation arrangements as the two ongoing World Bank-funded projects: Second District Heating Efficiency Improvement Project (P172668) and Power System Development Project (P160829).** The MoE has overall responsibility for the implementation of the Project and delegates day-to-day responsibilities to its Moldova Energy Project Implementation Unit (MEPIU). The MEPIU established under the Government Decision no. 1276 of December 21, 2000, as an independent legal entity, will hold fiduciary, E&S responsibilities vis-à-vis the World Bank. The Ministry of Finance, Ministry of Energy, MEPIU, MoED, CNED and TE will sign a Project Implementation Agreement to clarify the roles and responsibilities of each institution for project implementation. The signing of this Agreement will be a condition for effectiveness of the project. Sub-component 1.1 will be implemented by MEPIU with the support of MoED and CNED. Sub-component 1.2 will be implemented by MEPIU with the support of TE and MoED. Subcomponent 1.3. will be implemented by MEPIU with the support of CNED. Component 2 will be implemented by MEPIU. The MEPIU team is in place and includes: Director, Monitoring and Evaluation Expert, Electrical engineer, Environmental engineer, Procurement Specialist, two financial management experts and lawyer. The

<sup>60</sup> Internship Allowances will be provided to eligible interns for up to six (6) months; all according to the terms, conditions, eligibility criteria and procedures set forth in the Project Operations Manual.



MEPIU will hire an environmental and social, health and safety specialist dedicated to the project prior to effectiveness.

#### F. Appraisal summary

17. **Paris alignment:** The operation is aligned with the goals of the Paris Agreement on both mitigation and adaptation.

18. **Assessment and reduction of adaptation risks:** The main climate and disaster risks likely to affect energy efficiency in public buildings are the impacts of temperature increase and changes in precipitation regimes. The project design takes into account the risks of extreme heat and fluctuations in precipitation that could jeopardize the outcomes of the project. Specifically, climate change risks and vulnerability to extreme heat will be managed and mitigated through targeted adaptation measures such as establishing of building codes and design standards with climate resilience and resource efficiency (energy and water) considerations for retrofitted buildings. Moreover, energy efficiency investments in two public pilots for retrofits are designed to include climate resilience and resource efficiency considerations. Extreme flood events, expected to increase with climate change, are likely to impact the functionality of the building; a more flood-resilient design such as water proofing materials has been chosen to improve the building's functionality. Thereby, these activities will complement climate resilience and adaptation goals of the project.

19. **Assessment and reduction of mitigation risks:** The project investments in district heating are part of a plan to improve efficiency and reduce losses of gas-based district heating, while (i) decarbonization options for DH sector are being assessed under an ongoing Bank-financed Sustainable Heating Roadmap, and (ii) a process to increase electrification of heating sector is initiated with strong Government commitment in a context of increased RE penetration in the electricity sector. The project will invest in individual heating substations to improve efficiency, enable individual temperature control and therefore reduce losses and emissions due to less consumption. To reduce the dependence on natural gas, additional measures to be evaluated include switching from natural gas to biomass from sustainably managed forests in district heating and supporting rooftop solar PV installations in public buildings.

20. **Financial management.** The Project's Financial Management (FM) responsibilities including planning, budgeting, accounting, internal controls, flow of funds, regular financial reporting and auditing, will be handled by MEPIU which has a successful and proven track record of implementing donor-financed projects, including the ongoing DHEIP and PSDP. MEPIU's FM arrangements, which have been reviewed regularly as part of implementation support visits for other WB-funded Projects<sup>61</sup> (also assessed for the new project) have been found acceptable without major issues on FM side. MEPIU has experienced and knowledgeable FM staff which may be supplemented with additional staff if the need arises based on the assessed workload. As such, the existing arrangements will serve as solid starting point for the new project and will be slightly adjusted to reflect its specific characteristics to be described in detail in the POM. Coming from the above, the financial risk for the project is moderate.

21. **Procurement.** MEPIU has extensive experience in implementing Bank-funded operations and with the Bank procurement procedures following the Procurement and Consultant Guidelines, and Procurement Regulations. The MEPIU currently employs two Procurement Specialists – both being experienced in Bank procurement procedures and use of the Systematic Tracking of Exchanges in Procurement (STEP). Procurement will be carried out in accordance with the World Bank 'Procurement Regulations for IPF Borrowers: Procurement in IPF of Goods, Works, Non-Consulting and Consulting Services', dated September 2023 (the Procurement Regulations), as well as with the latest Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits. MEPIU developed a Project Procurement Strategy for Development (PPSD) and a Procurement Plan which were discussed and agreed with the Bank on May 7, 2024.

22. However, the MEPIU must increase its staffing in anticipation of the ramping up of activities under the Project. Indeed, the World Bank team's assessment revealed the following procurement process issues and potential risks to implementation: (a) delays at each stage of the procurement cycle specifically for large-value contracts, (b) delays in the

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<sup>61</sup> The latest FM review was conducted in September 2023.



development of technical specifications for complex activities due to limited capacities within MEPIU and TE, (c) delays with the implementation of contracts, and (d) potentially insufficient procurement capacities given that MoE currently implements two ongoing Bank-funded projects. To mitigate these risks, the MEPIU plans to recruit additional staff to strengthen key positions, including a procurement specialist, to implement the Project while maximizing synergies with current staff engaged in on-going projects under implementation.

23. **Environmental and Social.** Of 10 Environmental and Social Standards (ESSs), five were found to be relevant to the project. These are: ESS 1, Assessment and Management of Environmental and Social Risks and Impacts; ESS 2, Labor and Working Conditions; ESS 3, Resource Efficiency and Pollution Prevention and Management; ESS 4, Community Health and Safety and ESS 10, Stakeholder Engagement and Information Disclosure.

24. The project E&S risks are both rated as Moderate. The project is not expected to have significant adverse environmental or social risks and/or impacts. The project will result in positive impacts in terms of energy conservation, reduction of GHG emissions and air pollution, and will also contribute to improved health outcomes and social sustainability. Building renovations could bring between 45-70 percent energy savings and comparable CO2 emission reductions. However, short-term risks are mostly related to small-scale civil works within existing facilities (public buildings – schools, administrative institutions; and individual DH systems and earth-moving works to upgrade/reconfigure short sections of district heating networks). While solar panels are eligible as part of the EE renovation of buildings, solar panels will not be core for this operation. To address the above risks, the project has prepared, consulted, and disclosed, the Environmental and Social Management Framework (ESMF), Stakeholder Engagement Plan (SEP), and Environmental and Social Commitment Plan (ESCP), prior to appraisal. The ESMF also contains Labor Management Procedures (LMP). The ESMF ensures that site-specific Environmental and Social Management Plans (ESMPs) or ESMP Checklists will be prepared for subproject activities and will include site-specific impacts and mitigation measures, with clearly defined procedures for screening, mitigation, monitoring, and responsibility roles. No additional or private land acquisition is envisaged by the project and all the civil works will be confined to the existing lands. No activities will be funded under the project that may cause economic or physical displacement.

25. **Gender.** The project will support an internship program for female engineers and energy professionals in participating energy sector institutions to address the gender gap in labor force participation within Moldova's energy sector. Promoting employment in the science, technology, engineering, and mathematics (STEM) fields is particularly relevant for enhancing women's employment and income-earning prospects. While STEM occupations offer desirable benefits, such as higher financial remuneration, significant barriers hinder girls and women from entering these fields. A 2020 analysis identified multiple influencing factors, including parental predisposition to discourage girls from pursuing STEM careers and a lack of awareness about opportunities within these domains.

26. **Citizen engagement.** The project includes beneficiary feedback through surveys led by the MEPIU to education and public administration buildings and through Termoelectrica's regular customer satisfaction assessments. Collection of this feedback will start no later than the third year of implementation, by which point the positive feedback loop of improved quality of service could be assessed. Feedback from beneficiaries, including from the GRM supported through the Project, will be made public to enhance accountability and transparency. Citizen engagement will also be ensured through the communication plan – part of the SEP of the operation, which will also support community-based awareness raising campaigns to strengthen citizen engagement in the project through different channels.

## G. Key Risks

27. **The overall risk for the project is rated Moderate.** All risks are rated Moderate, except for the political and governance risk and macroeconomic risk, both of which are rated Substantial.

28. **Political and governance risk is rated as Substantial.** Social pressure emerging from the impact of high food and fuel prices, combined with the strong polarization of the electorate, could undermine support for the ongoing reform agenda. In addition, political interference has exerted pressure on donor-funded procurement processes in the past. These



risks are partially mitigated by reforms supported under the DPO series<sup>62</sup>, in particular the social protection measures, and the government's commitment to protect the most vulnerable. Also, the procurement capacities at the MEPIU will be strengthened as well as the Bank's monitoring of procurement processes. The World Bank will also continue coordination with various levels of government counterparts in the key agencies to sustain implementation.

29. **Macroeconomic risk is assessed as Substantial** due to the vulnerability of the economy to regional geopolitical events. The economy is dependent on remittances channels, energy and food prices. Macroeconomic risks stem mainly from the dependency of the economy on imports of energy and associated challenges regarding fiscal sustainability. These risks are partially mitigated by Moldova's proactive strategy toward the diversification of energy sources, including through reforms supported by the World Bank. Fiscal risks associated with the increase in energy prices are also mitigated by a strong support from development partners, as well as by Moldova's macroeconomic policies and commitment to full adherence to the fiscal and monetary targets of the IMF Program.

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<sup>62</sup> Moldova Emergency Response, Resilience, and Competitiveness DPO (P175640); Moldova Emergency Response, Resilience, and Competitiveness DPO2 (P179086).



### H. Results Framework and Monitoring

#### PDO Indicators by PDO Outcomes

Baseline	Closing Period
<b>Reduction of energy use in existing public buildings and district heating sector in Moldova</b>	
<b>Projected energy or fuel savings (Mega Joules (MJ))</b>	
Jan/2024	Dec/2028
0	4,822,540,081
<b>Projected lifetime net greenhouse gas (GHG) emissions from results achieved (Metric ton)</b>	
Jan/2024	Dec/2028
0	-389,867.00

#### Intermediate Indicators by Components

Baseline	Period 1	Closing Period
<b>Energy efficiency investments in public buildings</b>		
<b>GHG emission reductions (Metric tons/year)</b>		
Jan/2024		Dec/2028
0		19,500
<b>Public building retrofitted (Number)</b>		
Jan/2024		Dec/2028
0		46
<b>Retrofitted floor area of public buildings (Square Meter(m2))</b>		
Jan/2024		Dec/2028
0		257,723
<b>Beneficiaries, as users of public buildings, increased indoor room conditions (Number)</b>		
Jan/2024		Dec/2028
0		46,300
➤ <b>Female beneficiaries (Number)</b>		
Jan/2024		Dec/2028
0		24,500
<b>Generation capacity of energy constructed or rehabilitated (Megawatt)</b>		
Jan/2024		Dec/2028



0		2
➤ Renewable energy generation capacity (other than hydropower) constructed under the project (Megawatt)		
Jan/2024		Dec/2028
0		2
<b>Individual Heating Substations installed (Number)</b>		
Jan/2024		Dec/2028
0		280
<b>Implementation support and technical assistance</b>		
<b>Supply and installation of Energy Information System at CNED (Text)</b>		
Jan/2024	Dec/2025	Dec/2026
N/A	Contract for Energy Information System signed	Energy Information System supplied, installed and operationalized
<b>Preparation of Energy Efficiency Action Plan 2024-2030 (Text)</b>		
Jan/2024		Dec/2028
N/A		Energy Efficiency Action Plan 2024-2030 prepared and approved
<b>Capacity building events delivered (Number)</b>		
Jan/2024		Dec/2028
0		10
<b>Women participating in the “Women in the Energy Sector Internship Program” (Number)</b>		
Jan/2024		Dec/2028
0		10
<b>Women interns who signed employment contracts and retained their jobs one year after completing the “Women in the Energy Sector Internship Program” (Number)</b>		
Jan/2024		Dec/2028
0		10
<b>Grievances registered and addressed within the GRM timeframe (Percentage)</b>		
Jan/2024		Dec/2028
0		100



**Monitoring & Evaluation Plan: PDO Indicators by PDO Outcomes**

<b>Energy savings</b>	
<b>Projected energy or fuel savings (Mega Joules (MJ))</b>	
Description	Project energy and fuel savings are determined as an annual average of the difference between the calculated energy consumption baseline (norm supply baseline, to achieve indoor norm conditions as per sanitary building norms) compared to the verified energy consumption after the retrofit intervention, over the economic lifetime of the project. Both electricity and fuel savings will be converted into MJ to align with corporate requirements.
Frequency	Quarterly. The database should be updated at least on a quarterly basis and when a batch of buildings have been commissioned and energy savings have been verified. PDO-level and intermediate indicators for the project will be reported based on this database.
Data source	Technical reports, and progress reports drawing on data from participating buildings. The MEPIU will develop and maintain a database which includes all building details, status of selection, status of audits and designs, stage of renovation works, and the relevant data for each subproject required to track the PDO-level and intermediate indicators.
Methodology for Data Collection	The building energy consumption baseline will be established using building consumption data as reported by the electricity and natural gas companies and reports of solid fuels consumption at each facility. Once each building is commissioned, the MEPIU, Contractor, and Beneficiary will verify the new energy consumption during the first winter after commissioning and calculate the energy savings. The verification of savings will include installation of sensors to collect data on energy consumption, indoor temperature, humidity and air quality, and collection of bills for electricity and heating fuels. In addition, the CNED will carry out continuous monitoring of energy consumption of all larger renovated buildings through their energy portal EMIS. Any variances between the estimated savings from the energy audit and actual energy savings will be documented and actions developed to improve the quality of future energy audits, technical designs, renovation implementation, O&M of the buildings, or address behavior of users of renovated public buildings. Annual training will be provided to energy auditors, designers, construction firms, and others to share the lessons from early subprojects. In addition, sample pre- and post-renovation social surveys will be carried out, as well as surveys to evaluate the impact of awareness raising and communication campaigns.
Responsibility for Data Collection	The MEPIU will be responsible for providing detailed implementation progress reports on agreed indicators aligned with the Results Framework.
<b>Projected lifetime net GHG emissions from results achieved (Metric ton) <sup>CSC</sup></b>	
Description	Projected lifetime net greenhouse gas (GHG) emissions are calculated as the difference between project gross (absolute) emissions aggregated over the economic lifetime of the Project and the emissions of a baseline (counterfactual) scenario aggregated over the same time horizon. They are reported in metric tons of carbon dioxide equivalent over the lifetime of the investments (20 years).
Frequency	Semi-annual
Data source	Estimations
Methodology for Data Collection	Expected GHG emission savings for component 1.1. have been estimated by conducting walk-through energy audits (WTEA), individually for each short-listed building, during the period 11/2023 to 02/2024. The scope of the WTEA is (i) to establish a leveled baseline on energy consumption and GHG emissions, (ii) to develop a catalogue of EE retrofit measures, and (iii) to assess initial costs, and benefits by energy saving and CO2 mitigation. The GHG assessment method considers on building-level (i) the type of energy for heating, and (ii) the savings compared to the calculated, pre-renovation norm supply baseline, by application of related national emission coefficients. Reporting is based on energy audits (before renovation) and will be updated based on progress reports after renovation.
Responsibility for Data Collection	The MEPIU will be responsible for providing detailed implementation progress reports on agreed indicators aligned with the Results Framework.

**Monitoring & Evaluation Plan: Intermediate Results Indicators by Components**

<b>Energy efficiency investments in public buildings</b>	
<b>GHG emission reductions (Metric tons/year) <sup>CSC</sup></b>	
Description	Project net greenhouse gas (GHG) emissions calculated as an annual average of the difference between project gross (absolute) emissions aggregated over the economic lifetime of the Project and the emissions of a baseline (counterfactual) scenario aggregated over the same time horizon. They are reported in metric tons of carbon dioxide equivalent per year.
Frequency	Semi-annual



Data source	Energy audits and M&V reports
Methodology for Data Collection	Reporting is based on energy audits (before renovation) and will be updated based on M&V reports (after renovation)
Responsibility for Data Collection	MEPIU
<b>Public building retrofitted (Number)</b>	
Description	Number of public building retrofitted under the project
Frequency	Quarterly
Data source	Project reports
Methodology for Data Collection	Up-dated database by MEPIU; including completed, in progress, expected completion in next reporting period, justification of delays.
Responsibility for Data Collection	MEPIU
<b>Retrofitted floor area of public buildings (Square Meter(m2))</b>	
Description	Sq. meters of retrofitted floor area of public buildings under the project
Frequency	Quarterly
Data source	Project reports
Methodology for Data Collection	Updated database by MEPIU; data based on detailed energy audits and BoQ of DED
Responsibility for Data Collection	MEPIU
<b>Beneficiaries, as users of public buildings, increased indoor room conditions (Number)</b>	
Description	Number of beneficiaries (including users and employees) in renovated buildings. Percentage of female participants will be collected supplementarily.
Frequency	Quarterly
Data source	Surveys
Methodology for Data Collection	Pre- and post- renovation surveys
Responsibility for Data Collection	MEPIU
<b>Generation capacity of energy constructed or rehabilitated (Megawatt)</b>	
Description	Installed capacity of the on-site RE installations
Frequency	Quarterly
Data source	Project reports
Methodology for Data Collection	The completion of the RE installations will be reported in the project reports based on the certificate of acceptance.
Responsibility for Data Collection	MEPIU
<b>Individual Heating Substations installed (Number)</b>	
Description	Number Individual Heating Substations installed under the project
Frequency	Quarterly
Data source	Project reports
Methodology for Data Collection	Submission of acceptance certificates for completion of installation of Individual Heating Substations
Responsibility for Data Collection	MEPIU/Termoelectrica
<b>Implementation support and technical assistance</b>	
<b>Supply and installation of Energy Information System at CNED (Text)</b>	
Description	Supply and installation of Energy Information System at CNED (Text)
Frequency	Semi-annual
Data source	Project reports
Methodology for Data	Submission of acceptance certificates for completion of installation of Energy Information System



Collection	
Responsibility for Data Collection	MEPIU/CNED
<b>Preparation of Energy Efficiency Action Plan 2024-2030 (Text)</b>	
Description	Preparation of Energy Efficiency Action Plan 2024-2030
Frequency	Semi-annual
Data source	Project reports / Official government publication
Methodology for Data Collection	Disclosure and publication of Energy Efficiency Action Plan 2024-2030
Responsibility for Data Collection	MEPIU
<b>Capacity building events delivered (Number)</b>	
Description	Number of capacity building events delivered to personnel of stakeholders under the project (including but not limited to technical trainings on energy audits, design, construction supervisions), including MEPIU staff.
Frequency	Semi-annual
Data source	Project reports
Methodology for Data Collection	Number of delivered events will be confirmed through the collection of attendance forms.
Responsibility for Data Collection	MEPIU
<b>Women participating in the “Women in the Energy Sector Internship Program” (Number)</b>	
Description	Number of women who participated in internship program.
Frequency	Annual
Data source	Project reports
Methodology for Data Collection	Formal confirmation on the completion of internship program.
Responsibility for Data Collection	MEPIU
<b>Women interns who signed employment contracts and retained their jobs one year after completing the “Women in the Energy Sector Internship Program” (Number)</b>	
Description	(Gender indicator) Number of women who report being employed in the energy and STEM sectors 12 months after their completion of the internship program
Frequency	Annual
Data source	Survey result
Methodology for Data Collection	MEPIU will conduct surveys among internship participants to determine whether they are employed after the completion of their internship
Responsibility for Data Collection	MEPIU
<b>Grievances registered and addressed within the GRM timeframe (Percentage)</b>	
Description	The indicator measures the functionality of the Grievance Redress Mechanism (GRM) process. Reporting will be disaggregated by gender.
Frequency	Semi-annual
Data source	GRM database
Methodology for Data Collection	Project reports
Responsibility for Data Collection	MEPIU



## ANNEX 6: Mobilizing Private Sector Financing

1. **The benefits of the E3 MPA, underpinned by the One World Bank approach, would include greater standardization, streamlined preparation, aggregation and learning among others.** The E3 MPA would allow for (i) replication and harmonization of common project design elements, (ii) flexibility for country customization, (iii) aggregated markets and scaled-up impacts, and (iv) enhanced learning. Point (iii) in particular would necessitate concerted efforts among IBRD/IDA, IFC and MIGA to maximize private capital enabled and mobilized, and development of robust supply chains, to achieve the desired scale. The MPA will signify a longer-term commitment to market development and better visibility on EE policies and programs from the Bank, as these can impact the structure of demand and drive the creation of new industries for manufacturing of energy-efficient equipment (e.g., heat pumps), creation of service companies, access to new sources of funding when markets mature, including local banks (together with MIGA and IFC). Figure A6-1 captures the key benefits of the MPA approach that leverages the comparative advantages of the three institutions with an illustrative example for building renovation programs. While the residential and industrial sectors would likely offer the greatest potential for private capital mobilization, opportunities would be explored in all areas. Earlier engagements in the upstream stage (e.g., for CCDRs, CPFs and CPSDs), prior to PCNs, would be needed to facilitate joint approaches and programs. A more detailed illustrations of potential collaboration between the IBRD/IDA, IFC and MIGA per E3 MPA pillars are presented below.

2. **Financing of EE in the public sector.** The public sector is often the largest single energy user in a country, and investments in renovating public buildings (central and municipal), public lighting, etc., would require billions of dollars.

a. **IBRD/IDA funds** could be deployed early on to demonstrate the savings from typical investments (when financiers require it), develop basic institutional and market capacities, develop standardized documents, and strengthen the policy environment (e.g., public procurement and contracting of ESCOs, building codes and certifications, energy auditor certifications, budget rules for savings to be captured, etc.). Some financing schemes, such as revolving funds and/or super ESCOs, may be needed if commercial appetite for lending remains weak.

b. **IFC** could come at all stages, such as to help capitalize ESCOs that bid on public sector investments, (re)capitalization of revolving funds or super ESCOs, financing (including equity) investments in service providers (e.g., equipment suppliers, construction firms, equipment/building material manufacturing), commercial financing schemes to support public investments (i.e., through PPPs, ESCOs, municipal financing structures) or direct municipal financing. Efforts would be developed upstream for specific countries/ programs to coordinate joint engagement strategies, financing needs, possible market segmentation, etc. to exploit institutional synergies. IFC knowledge and investment experience via its Green Buildings initiative can support efforts in the public buildings space.

c. **MIGA and IBRD/IDA guarantees, insurance and other credit enhancement products** could be built in as options at the design stage in programs where applicable, and offer risk sharing instruments to ESCOs and other private sector investors to cover late/nonpayment by public entities in order to facilitate their access to commercial financing. If creditworthy public sector entities (sovereign/SOEs /municipality levels) launch public-sector-led EE projects and finance them directly through borrowing, credit enhancement covers could be provided to the commercial lenders to improve borrowing terms and/or structuring of green bonds.

3. **Financing programs for the residential sector.** Investments would be provided to support renovation programs for MABs and SFBS including the replacement of heating systems and inefficient appliances (e.g., heat pumps). Investments may be provided through commercial property owners, utility service providers, ESCOs, and/or financial intermediaries with possible parallel support for guarantees and investment subsidies, and programs, depending on the specifics of the market segment and country circumstances, may be a mix of public- and private-forward approaches.

a. **For building renovation programs, IBRD/IDA support** could be provided to develop national program framework and implementing arrangements; support key policy and institutional reforms; develop eligibility and investment

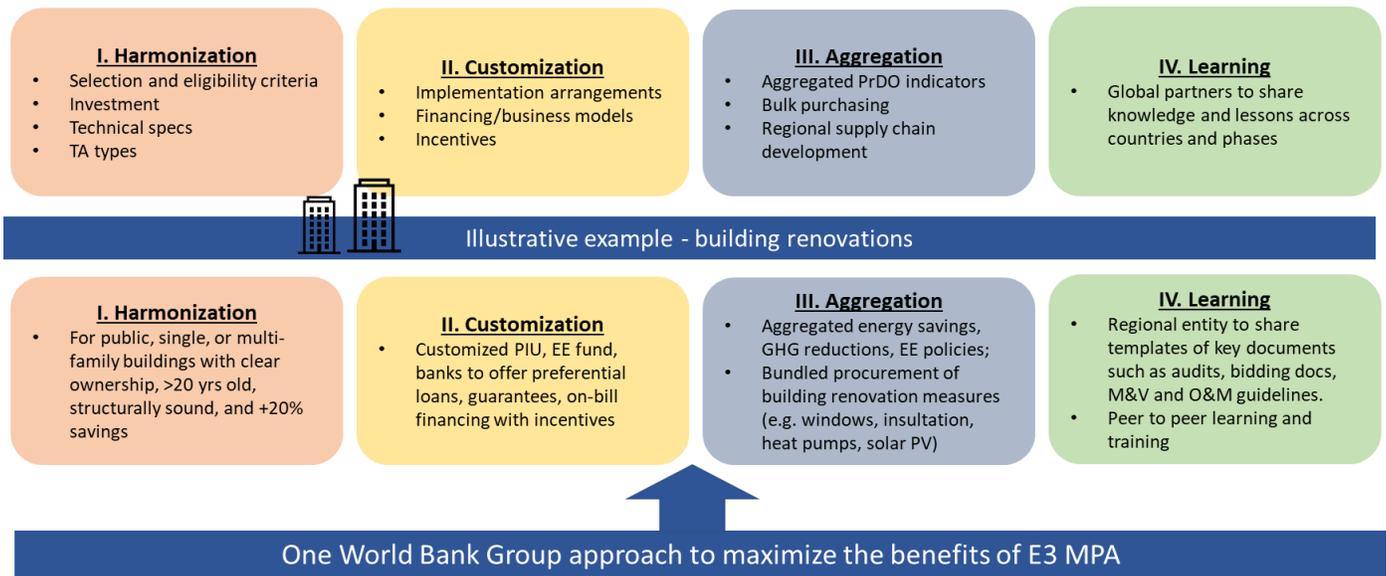


criteria; technical guidelines; financing for demonstrations, program admin/marketing/monitoring, targeted incentives for low-income households; and de-risking instruments for nonpayment. For efficient appliance schemes, the World Bank could develop national program framework and implementing arrangements; support key policy and institutional reforms; technical standards and testing; financing for demonstrations, program admin/marketing/monitoring, targeted incentives, low-income; and de-risking instruments to facilitate appliance credit schemes.

b. For building renovation programs, IFC could provide financing and advisory to banks on financial products; EDGE tool + financing for new housing; financing and/or advisory to construction/equipment/material suppliers to expand operations, and to potential service providers (developers, installers, ESCOs). For efficient appliance schemes, IFC could offer financing and advisory services to banks to introduce financial products; financing and/or advisory to appliance suppliers/retailers to expand operations, and to potential market aggregators (e.g., utilities). IFC can also work in selective countries on strengthening the policy environment (e.g., building codes, certification programs) and will coordinate on joint engagement with the Bank.

c. MIGA and IBRD/IDA guarantees, insurance and other credit enhancement products could be built in as options at the design stage in programs where applicable to ensure access to financing for developers, homeowners, construction firms, equipment suppliers, etc. Credit enhancement covers could be provided to raise commercial financing for public sector-led programs to renovate residential buildings. Such funding can be channeled to the creditworthy sovereign and municipalities, SOEs or state-owned banks.

Figure A6-1. Illustration of One World Bank Group approach in the building sector



IBRD/IDA	IFC	MIGA
<ul style="list-style-type: none"> <li>• Develop national program framework and implementing arrangements;</li> <li>• Support key policy and institutional reforms;</li> <li>• Develop eligibility criteria and technical guidelines;</li> <li>• Financing for demonstrations and market development, incl. program admin and marketing;</li> <li>• Provide targeted incentives, incl. for low-income, and de-risking instruments</li> </ul>	<ul style="list-style-type: none"> <li>• Financing, advisory to banks on financial products;</li> <li>• EDGE tool + financing for new housing; financing, equity and/or advisory to construction/ equipment/material suppliers to expand operations;</li> <li>• Financing, equity and/or advisory to potential service providers (developers, installers, ESCOs)</li> <li>• Financing to real-sector companies for industrial decarbonization, EVs, and circular economy</li> <li>• Support policy reforms and national program frameworks in coordination with the Bank</li> </ul>	<ul style="list-style-type: none"> <li>• Political Risk Insurance (PRI) that provide risk mitigation for private sector investors and lenders engaging with commercial projects</li> <li>• Non-Honoring (NH) credit enhancing guarantees that support public sector borrowing from commercial lenders and through capital market issuances</li> </ul>



4. *Modernization of industry.* Investments to support the modernization of factories would be supported including large, energy-intensive, commercially oriented enterprises and SMEs focusing on plant modernization, production process optimization, clean production, equipment replacement and phasing out of fossil fuels for heating using renewable energy and electricity. Investments approaches will typically be more private finance-forward but seeking to blend private, public, concessional, and credit enhancement tools when justified. Such programs would be complemented by national schemes to support industrial benchmarking, voluntary agreements, emissions trading schemes, and other emerging incentives for greater energy efficiency. IFC's experience in difficult-to-decarbonize industries can be built upon within the scope of a One World Bank effort, with joint efforts to segment market (particularly in middle to high-income countries) so public financing can be deployed to underserved areas, and blended financing to better incentivize industrial firms to take on greater levels of ambition.

a. *IBRD/IDA funds* could be deployed to develop national program framework and implementing arrangements; support key policy and institutional reforms; developing early credit lines when needed to bring in local banks; developing eligibility and investment criteria; technical guidelines; financing for program admin/marketing/monitoring, targeted incentives to promote deeper decarbonization and electrification, and de-risking instruments for SOEs/SMEs. Financing of EE in large industry and mid-caps would be avoided unless there are other prevailing barriers.

b. *IFC* could provide financing and advisory to banks on financial products to support industrial modernization, EE, clean production; financing and/or advisory to equipment suppliers and leasing firms to expand operations, and to potential service providers (installers, ESCOs). Priority would be large industry and mid-caps and SMEs where banking partner risk appetites allow. IFC can also provide financing and advisory directly to real-sector companies for industrial decarbonization and a circular economy. IFC can also develop national frameworks and support key policy reforms to promote deeper decarbonization of industry, including plastic and waste recycling, green infrastructure development, deployment of electric vehicles and charging infrastructure, efficient energy solutions in industry (shallow geothermal, etc.).

c. *MIGA and IBRD/IDA guarantees, insurance and other credit enhancement products* could be deployed in several ways. First, creditworthy industrial State- or municipal- owned enterprises could raise financing from commercial lenders with a credit enhancement guarantee. Or creditworthy State-owned banks could raise commercial financing with credit enhancement guarantees to support a dedicated financing programs for the modernization of industry. MIGA's political risk insurance could also be offered to ESCOs and other private sector investors to cover late/nonpayment by public entities and other political risks to facilitate their equity investments and commercial financing for their EE projects.

5. *Investment financing of district heating.* Investments in the district heating (DH) sectors would be provided to decarbonize heat supply, reduce technical losses, and improve system efficiencies and service delivery. This would involve investments in largely municipal DH to improve overall efficiencies (e.g., reduced heat losses, building-level substations, consumption-based metering) and phaseout of fossil fuels towards RE-based and electric heating.

a. *IBRD/IDA funds* could be deployed to develop national sustainable heating strategies and roadmaps, resource assessments, develop utility performance improvement plans; support key policy and institutional reforms; utility benchmarking; investments in non-creditworthy public DH utilities to reduce losses and bring financial performance to levels needed to attract commercial financing; support for economically attractive (but low FIRR) decarbonization/EE investments with public or blended financing; support for social safety net schemes; possible de-risking instruments for DH utility nonpayment to commercial financiers or private RE/clean heat suppliers.

b. *IFC* could provide financing and advisory to banks on financial products to DH companies, and to potential heat service providers (private DH utilities, PPPs, clean heat suppliers, ESCOs); or commercial financing schemes to support public investments (i.e., through PPPs, ESCOs, municipal financing structures).



- c. **MIGA and IBRD/IDA guarantees, insurance and other credit enhancement products** could be built in as options at the design stage in programs where applicable to ensure access to financing for sustainable heating suppliers, DH utilities, etc. If creditworthy public DH utilities or municipalities launch projects to decarbonize heat supply or improve efficiency and finance them through borrowing, a comprehensive guarantee (NH) could be provided to the commercial lenders to improve the borrowing terms.
6. In addition to the One World Bank Group approaches noted above, engagement with and mobilization of the private sector is likely to come in many forms, including:
- a) **Commercial bank financing.** Financing from commercial, community and development banks will be needed in order to mainstream energy efficiency financing in countries. Under the MPA, banks should form an integral part of the MPA from the initial stage (predominantly as a stakeholder and recipient of case studies and training) and Stage 2 (banks could manage some EE revolving funds as is planned in North Macedonia, through credit lines as in past operations in Türkiye and Uzbekistan, and as cofinancing for certain utility investments). In Stage 3, banks will form an integral aspect of program designs and could be supported under the PforRs as in Poland or through guarantees which the Bank has done outside ECA (e.g., India, Viet Nam). A key to mobilizing bank financing will be to demonstrate (i) strong and sustained demand for EE financing in the selected sectors, (ii) critical mass of creditworthy target end users, (iii) good, commercial returns on EE investments, and (iv) market actors in place that can assess the technical merits and prepare quality, bankable financing proposals.
  - b) **Energy service companies.** While most service providers are expected to be contractors (i.e., energy auditors, designers, construction firms, equipment providers where a service is provided for a fixed fee), business models do exist to provide bundled services including financing. These are commonly referred to as ESCOs. Most ESCOs offer a bundle of services (e.g., energy audit, design, renovation and savings verification) with a portion of their payment tied to meeting a minimum level of energy savings. Others also offer financing with a full performance guarantee, where the end user only has to pay for the service from the actual energy savings, allowing the end users to maintain a positive cashflow throughout the project period. Armenia, Bulgaria, Croatia, Romania and Türkiye are among countries in the region that have reported ESCO projects. The EC has also included provisions for ESCO projects in its various EE directives. ESCOs could be engaged on a pilot basis under Stage 1 (and invited to trainings as was done in Armenia and Türkiye), promoted with standardized contracts under Stage 2 and mainstreamed under Stage 3.
  - c) **Energy supply agreements.** Another mechanism common in the EU is energy supply agreements (also called contract energy management or *chauffage*). Under these contracts, a private firm can take over a utility service, such as heating or cooling, and enter into a contract with an end user for a fixed price per unit of service (€/MJ, €/BTU). This is becoming more common in ECA countries, where a firm will take over a public sector or multi-family apartment building boiler house, upgrade the system and sell the building heat based on an agreed price. Such investments generally include requirements to upgrade the heating system to reduce energy losses. Such contracts could also include obligations to renovation of the buildings and/or switching to cleaner fuels. Such options would be explored in Stages 2 and 3 of the MPA.
  - d) **Energy efficiency industry.** As noted above, private sector companies are key stakeholders in EE projects and will continue to be so under the MPA. These include auditors, designers, installers, construction firms, M&V consultants, equipment and building material suppliers, energy management system experts, etc. Some equipment suppliers and vendors can offer credit to their customers or lease the equipment with lease payments aligned to the estimated energy cost savings. While most would not offer financing, they still represent a major private stakeholder under the MPA and efforts will be made in each of the stages to engage with them, solicit their views on the program stages, seek their advice on the capacity of the market to deliver, solicit views on policy or institutional barriers and assess their training needs.



ANNEX 7: World Bank Group’s Energy Sector Engagement in ECA

1. The World Bank engagement in the energy sector in ECA is supporting Governments to deliver affordable, reliable, sustainable, and modern energy services for all in the region. To achieve the same overarching objectives, the World Bank supports Governments through a variety of interventions and financing instruments both at country and regional levels, using a blend of horizontal and vertical MPAs, complemented with individual IPFs, PforRs and DPOs as needed, while capitalizing on the opportunities and available tools offered by the One World Bank Group. The engagements are closely coordinated with IFC and MIGA, who are analytically contributing to medium-term energy sector reform and investment plans and help attract private sector across the energy sector value chain, especially in generation. The energy engagement on clean energy transition strategy in ECA is structured along four pillars in most countries: energy efficiency, renewable energy, just transition and regional integration.

Figure A7.1. Key Pillars of Clean Energy Transition in ECA



The focus of the engagement is adapted to the priorities of each sub-region:

- (a) **Eastern Europe.** In Eastern Europe (Ukraine and Moldova), Bank support has been focused on supporting the liberalization of the energy sector, investment in transmission, EE, DH and large hydro and battery storage investments as well as for the development of strategies for renewables. More recently, the support has focused on restoration efforts in Ukraine and continuation of the support to reforms (including social protection for vulnerable consumers), upgrading DH and EE in buildings in Moldova. Also, the Bank is working with IFC and MIGA on an ambitious program to scale up renewables during the reconstruction phase in Ukraine.
- (b) **South Caucasus.** The World Bank, IFC, and MIGA are providing joint support to power sector development, including private sector-led renewable energy development in the South Caucasus. For EE, the Bank helped the Armenian Renewable Resources and Energy Efficiency Fund (R2E2 Fund) develop an innovative mechanism, called ESAs, and helped finance EE in public buildings. The R2E2 Fund renovated more than 200 buildings, with full investment cost recovery, and has expressed interested to expand to the residential sector. In Georgia, the Bank developed an Options Paper to analyze alternative financing and implementation schemes to support a program for EE in the public sector, and completed a study on the health impacts from underheating. An EE investment program is now under consideration. In Azerbaijan, the Bank is supporting TA through an EU TF to develop an EE Revolving Fund to support the renovation of public buildings along with policy work and TA.



- (c) **In the EU, the World Bank is providing timely support to selected countries to overcome the energy crisis while increasing energy security and accelerating progress towards their ambitious decarbonization targets.** In the aftermath of the recent energy crisis, the European Commission launched the REPower EU plan, a comprehensive and ambitious plan to accelerate the implementation of energy security strategies and limit the dependence on fossil fuels. The WB's engagement was decisive to define the national REPower EU plans in Romania and Bulgaria, identifying high-impact areas of opportunity to ensure energy supply in the short and midterm, and accelerate the energy transition while reducing dependency from fuel imports in the medium-to-longer term. In Poland, the Bank has provided TA and a PforR loan to support the country's "Clean Air Program", which aims to support EE retrofits and replacement of coal boilers by low-carbon and clean heating sources in 3 million single-family buildings. The Bank is also managing a €3 million EU TF to support the Renovation Wave in Bulgaria, Croatia and Poland including a gap analysis and development of financing and implementation plans for building renovation schemes.
- (d) **In the Western Balkans (WB6) countries,** the World Bank is providing lending and programmatic ASA support for the design and implementation of medium- to long-term strategies to ensure energy security and resilience while meeting decarbonization and sustainability objectives. In five out of six countries, EE lending operations are ongoing, with a recent shift from grant-financed public building renovation projects to EE revolving mechanisms for public buildings and infrastructure, and loans supporting clean energy investments in the residential sector. These renovations include replacement of heating systems with more efficient, cleaner ones given the major air pollution experienced during the winter months in major urban areas.
- (e) **In Türkiye,** the World Bank has provided broad-based TA and lending support towards building capacity in energy institutions, including to develop carbon markets and leverage private capital through financial intermediaries, as well as fostering RE development through grid strengthening, distributed solar business models or a risk-sharing mechanism for geothermal energy exploration. In terms of EE, the World Bank has supported various TA activities, including identification of financing and implementation schemes for public buildings, assessment of waste heat and ground source heat pump potential, and development of the second National Energy Efficiency Action Plan (NEEAP). The Bank has provided lending to support EE in industry/SMEs (with a total of US\$1.2 billion in IBRD, US\$100 million CTF, and US\$3.64 million in GEF financing) and more recently, in public buildings. Currently, three ongoing Bank operations support EE and on-site RE in public facilities (with a total of US\$965 million in IBRD, US\$50 million CTF, US\$3 million ESMAP, and US\$750,000 GFDRR financing). The Bank has also supported the development of Türkiye's national program plan that aims to renovate all public buildings in the country, which will require a mix of different implementing institutions to work together and the combination of various financing models to leverage private sector financing.
- (f) **In Central Asia,** the World Bank engagement provides comprehensive support both at the country and regional level. At the country level, efforts include supporting improvement in sector governance and financial viability through least cost planning, assessment of RE resources, supporting the implementation of best-practice tariff methodologies and progressive cost recovery, and EE while protecting the vulnerable, including through TA, DPOs and PforR instruments. Investments in clean energy resources towards increased energy security and affordability, have been through hydropower modernization and development as well as Scaling Solar approaches (in Uzbekistan and forthcoming in Kyrgyz Republic), and EE (district heating in Kyrgyz Republic and Uzbekistan, public buildings in Kazakhstan, Kyrgyz Republic and Uzbekistan, industry in Uzbekistan). Additionally, at the regional level, the Bank is supporting regional integration through the development of a power market, the financing of large interconnection infrastructure, and the promotion of clean generation assets that aim at supplying electricity to several countries.

## MIGA PRODUCTS AND ENERGY EFFICIENCY ENGAGEMENT IN ECA

2. MIGA can offer two types of guarantees coverage: Political Risk Insurance (PRI) guarantees that provide risk mitigation for private sector investors and lenders engaging with commercial projects, and Non-Honoring (NH) credit enhancing guarantees that support public sector borrowing from commercial lenders and through capital market



issuances. The risks that are covered are the following: (a) PRI - currency inconvertibility and transfer restriction (CITR); (b) PRI - expropriation (EXP); (c) PRI – war and civil disturbance (WCD); (d) PRI – breach of contract (BOC); (e) NH – non-honoring of sovereign financial obligations (NHSFO); (f) NH – non-honoring of financial obligation by a state-owned enterprise (NHSOE).

3. MIGA’s product offerings that are relevant for EE engagement for countries in ECA are summarized in Figure A7-2.

**Figure A7.2. MIGA Program relevant for the country’s energy efficiency engagement**

Country	MIGA Program relevant for the country’s Energy Efficiency Engagement						Comments
	PRI				NH		
	BoC	Exp	TR	WCD	NHSFO	NHSOE	
Moldova	v	v	v	v	N/A	N/A	Can support projects to improve energy efficiency in public (e.g. education, health etc.) and residential buildings by providing PRI for foreign private investors in the EE projects. ESCO structures could be supported if the ESCO contract involves the public sector (sovereign or subnational entities).
Türkiye	v	v	v	v	N/A	N/A	Türkiye currently ranks as the MIGA’s largest gross exposure globally. Given the high existing exposures, MIGA will continue to look for opportunities to support EE projects subject to headroom and reinsurance capacity.
Bulgaria	v				v	v	Can support projects to improve energy efficiency in public (e.g. education, health etc.) and residential buildings by providing PRI for foreign private investors in the EE projects. ESCO structures could be supported if the ESCO contract involves the public sector (sovereign or subnational entities). If the public sector (sovereign/SOE/municipality levels) launched public-sector-led programs for EE projects, and financed them through borrowing, a comprehensive guarantee (NH) could be provided to the commercial lenders to improve the borrowing terms.
Montenegro	v	v	v	v	N/A	N/A	Can support projects to improve energy efficiency in public (e.g. education, health etc.) and residential buildings by providing PRI for foreign private investors in the EE projects. ESCO structures could be supported if the ESCO contract involves the public sector (sovereign or subnational entities).
Uzbekistan	v	v	v	v	v	v	Can support projects to improve energy efficiency in public and residential buildings and district heating by providing PRI for foreign private investors in the EE projects. ESCO structures could be supported if the ESCO contract involves the public sector (sovereign or subnational entities). If the public sector (sovereign/SOE/municipality levels) launched public-sector-led programs for EE projects, and financed them through borrowing, a comprehensive guarantee (NH) could be provided to the commercial lenders to improve the borrowing terms.
Kazakhstan	v	v	v	v	v	v	Can support projects to improve energy efficiency in industrial sector by providing PRI for foreign private investors in the EE projects. ESCO structures could be supported if the ESCO contract involves the public sector (sovereign or subnational entities). If the public sector (sovereign/SOE/municipality levels) launched public-sector-led programs for EE projects, and financed them through borrowing, a comprehensive guarantee could be provided to the lenders to improve the borrowing terms.
Armenia	v	v	v	v	N/A	N/A	Can support projects to improve energy efficiency in public buildings (e.g. education, health etc.) and residential buildings by providing PRI for foreign private investors in the EE projects. ESCO structures could be supported if the ESCO contract involves the public sector (sovereign or subnational entities).
Serbia	v	v	v	v	v	v	Can support projects to improve energy efficiency in residential sector by providing PRI for foreign private investors in the EE projects. ESCO structures could be supported if the ESCO contract involves the public sector (sovereign or subnational entities). If the public sector (sovereign/SOE/municipality levels) launched public-sector-led programs for EE projects, and financed them through borrowing, a comprehensive guarantee (NH) could be provided to the commercial lenders to improve the borrowing terms.
Tajikistan	v	v	v	v	N/A	N/A	Can support district heating energy efficiency projects by providing PRI for foreign private investors in EE projects. ESCO structures could be supported if the ESCO contract involves the public sector (sovereign or subnational entities).

Note: ‘v’ indicates relevance. ‘PRI’ = Political risk insurance. ‘BoC’ = Breach of Contract. ‘Exp’ = Expropriation. ‘TR’ = Transfer restriction. ‘WCD’ = War and civil disturbance. Non-honoring (NH) is subject to MIGA internal credit rating. ‘NHSFO’ = NH of Sovereign Financial Obligations. ‘NHSOE’ = NH of Financial Obligation by a State-Owned Enterprise.



**Box 1: Hungary EXIM Project - Example of MIGA's Energy Efficiency Engagement in ECA Region**

In June 2024 MIGA issued €386mn in guarantee covering ING's €300mn 12-year loan to State-owned enterprise Hungary Exim (HE). The loan supports HE's launch of green financing products to support Small and Medium Enterprises as well as some larger sustainable projects. Eligible projects include investments in energy efficiency, renewable energy and sustainable housing. The lending will also contribute to Hungary Exim's plans to channel €300mn of financing towards climate finance by the end of 2028. This is the third transaction between MIGA and HE, but the first one to focus on climate finance and energy efficiency, and highlights the importance of considering energy efficiency as a pillar of the competitiveness of export-oriented companies.

**IFC'S ENERGY EFFICIENCY ENGAGEMENTS IN ECA**

4. **Across IFC's Europe region, IFC has been actively investing in green buildings using a variety of innovative financial instruments.** Recent commitments include a green loan with sustainability-linked features to support investments in green industrial and logistics buildings in Bulgaria and Poland, a loan to facilitate financing of high-quality green retail infrastructure in countries across Eastern Europe achieved through the delivery of 238,000 sqm of new low-carbon and modern property retail space, and investment in bonds issued by a Romanian financial institution (FI) to finance green mortgages and green housing renovation loans. Furthermore, Ukraine is currently a key country of focus for IFC in the EE space in residential buildings. IFC has provided direct TA to help the Government of Ukraine create and operationalize an Energy Efficiency Fund, which provides financing for EE renovation of MABs. As part of this undertaking, IFC has been channeling donor-funded grants to help HOAs of MABs finance EE building retrofits.

5. **In IFC's Middle East, Central Asia, Türkiye, Afghanistan and Pakistan (MCT region), the energy transition will be the main priority going forward.** In Türkiye, IFC's is interested to support the just transition for coal phaseout and market development for shallow geothermal heat pumps in addition to its more than US\$1.15 billion in climate-related financing (mostly for EE and green mortgages) through FIs since 2012. Recent commitments included IFC's first blue loan of US\$120 million in Yapı Kredi Finansal Kiralama A.O. (Yapı Kredi Leasing) to boost green and blue asset financing for SMEs. IFC has also invested US\$125 million in Diversified Payment Rights financing to Yapı Kredi to support women-owned micro, small and medium enterprises (MSMEs). Furthermore, IFC has invested in Akbank Sustainability Bond<sup>63</sup> to enhance access to finance for SMEs with a focus on WSMEs and SME climate finance projects. In addition to investments, IFC will launch advisory services to enhance the capacity of FIs in developing a climate risk management framework, ensuring regulatory compliance, alignment with the Paris Agreement, and facilitating the development of sustainable and climate finance investment products. IFC has also been collaborating with (i) automotive OEMs to support expansion of their electric vehicle (EV) production capacity and capabilities, (ii) white goods manufacturers to improve energy and resource efficiency practices, and (iii) other manufacturing companies to expand environment friendly manufacturing practices. Since 2020, IFC has committed US\$600 million in climate financing to manufacturing companies in Türkiye, to support their transformation including EE initiatives. In addition, IFC advisory has active engagement with the government and private sector to decarbonize industrial zones, with focus on (i) enabling policy and regulatory environment for greening economic zones; (ii) capacity building of zones and private sector players on decarbonization assessments and implementation plans; and (iii) removing focused policy and regulatory bottlenecks for plastic and waste circularity.

6. **In Central Asia, IFC is seeking to build capacity for all the stakeholders on the principles of complex energy projects/project finance perspective/basis of financial modelling and calculation of the tariffs/international E&S standards,**

<sup>63</sup> As part of a US\$300 million financing package, IFC provided US\$75 million in subordinated debt financing.



to leverage WBG guarantees for derisking energy projects, and to support an enabling policy framework needed to fast-track the deploy of climate change mitigation priorities investments, including a regional scaling-up of shallow/surface geothermal heat pumps<sup>64</sup>. IFC has provided more than US\$46.6 million in financing through FIs to support green finance including for EE since 2018 (Uzbekistan). This includes investments in JSCB Uzbek Industrial and Construction Bank (UzPSB) to support green and climate resilience projects, including EE, RE, water efficiency, climate-smart agriculture, and green buildings. The IFC team has also been working to facilitate the development of the residential mortgage market by supporting the introduction of capital markets instruments to enable FIs access long-term funding for residential mortgage lending and supporting FIs building green mortgage portfolios suitable for refinancing. IFC has also been engaging on Green Building policies and regulatory TA, with focus on a) enabling EDGE and other international certification standards to be applied locally; b) advising government on setting adequate incentive policy to enable green buildings (including residential buildings and industry), and c) assisting government in developing national framework and implementing arrangements for green buildings. IFC has also been engaging on EVs and e-mobility and regulatory TA. In Kazakhstan, IFC provides advisory support to FIs to develop a green finance strategy, and a comprehensive action plan for green transformation and regulators to implement sustainable and green finance policies, including providing advice on carbon footprint disclosure and lending portfolio disclosures. IFC also provides advice on EVs with a focus on: (i) advising the government to prepare e-Mobility policies; (ii) removing regulatory bottlenecks to deploying charging infrastructure; (iii) advising the government on localizing EV assembly, and (iv) enabling policies to green public transport. In Tajikistan, IFC has recently made a commitment to invest US\$10 million equivalent in a green bond, a first for the country.<sup>65</sup>

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<sup>64</sup> This work envisions a pre-market assessment to support government committing to create an enabling policy and regulatory framework, an initial cost-benefit analysis of shallow geothermal solutions for different types of building structures, identification of the regulatory and incentives regime changes needed to enable these investments and to scale up solutions, and a high-level supply chain mapping that would lead to fast-track deployment of surface geothermal.

<sup>65</sup> The bond will be issued by Eskhata Bank to finance EE and water efficiency loans for MSMEs, as well as low-income households. This investment was enabled by IFC's advisory services, which supported the bank in enhancing its risk management practices, developing a green finance roadmap, building climate finance capacity, and establishing the necessary pillars for its green bond framework.



## ANNEX 8: Leveraging of Concessional Climate and Carbon Finance Resources

### I. Potential Sources of Concessional Financing for Energy Efficiency

1. The E3 MPA aims to leverage at least US\$80 million in grants, concessional and climate finance from the following initiatives, which would be dedicated to incentivizing and de-risking investments under all four Pillars as well as funding the Regional Platform:

- (a) **ESMAP (US\$30 million) Energy Efficiency and Industrial Decarbonization Window (RETF).** With the *Energy Efficiency and Industrial Decarbonization Window* hosted under the World Bank ESMAP Trust Fund, the program seeks to develop global knowledge and tools to improve, accelerate and scale-up EE investments in all sectors. In the previous Business Plan, ESMAP focused more on EE investments in the public sector (Zero Carbon Public Sector) and Sustainable Cooling.
- (b) **The Climate Investment Funds (CIF)<sup>66</sup>, managed by the World Bank, include several programs that could potentially offer concessional funding to the E3 MPA:**
  - (i) **Clean Technology Fund.** Supports fossil fuel-dependent countries with the deployment of low-carbon technologies with significant potential for reducing long-term GHG emissions. It provides concessional financing to large-scale RE, EE, and sustainable transport projects. CTF have supported several investment programs targeting in ECA, including in Kazakhstan, Türkiye and Ukraine. The focus is on creating scaled and sustained transformation of markets for EE.
  - (ii) **Smart Cities Program.** Will help countries undergoing challenges from rapid urbanization to support their newly emerging cities, while they are still in development, by ensuring that their growth is managed in climate-smart, green, inclusive, and sustainable ways.
- (c) **The Green Climate Fund (GCF)** – a critical element of the historic Paris Agreement - is the world's largest climate fund, mandated to support developing countries to raise and realize their NDC ambitions towards low-emissions, climate-resilient pathways. Eligible GCF-financed projects include:
  - (i) Transformational planning and programming: by promoting integrated strategies, planning and policymaking to maximize co-benefits between mitigation, adaptation and sustainable development.
  - (ii) Catalyzing climate innovation: by investing in new technologies, business models, and practices to establish a proof of concept.
  - (iii) De-risking investment to mobilize finance at scale: by using scarce public resources to improve the risk-reward profile of low emission climate resilient investment and crowd-in private finance, notably for adaptation, nature-based solutions, least developed countries (LDCs) and small island developing states (SIDS).
  - (iv) Mainstreaming climate risks and opportunities into investment decision-making to align finance with sustainable development: by promoting methodologies, standards and practices that foster new norms and values.
- (d) **The Global Environment Facility (GEF)** – The GEF is a family of funds dedicated to confronting biodiversity loss, climate change, pollution and strains on land and ocean health. On climate and EE, the GEF focuses on supporting efforts to remove barriers for scaled-up private investment in EE in all sectors. The GEF have supported Bank EE operations in the past in ECA in Armenia, Belarus, Bulgaria, North Macedonia, and Türkiye.

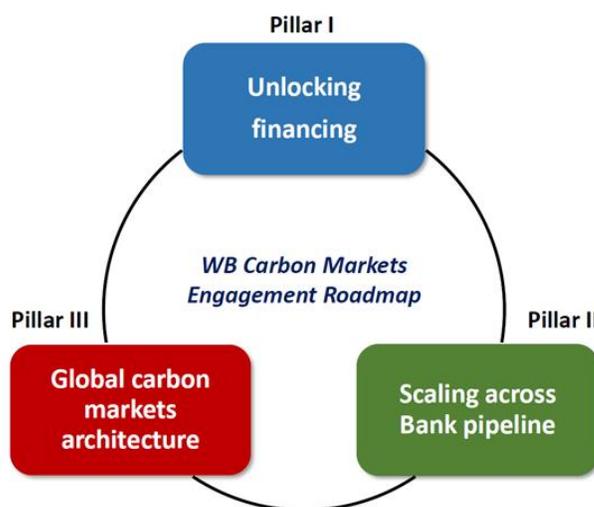
<sup>66</sup> Initiated by the US, the UK and Japan, the Climate Investment Funds (CIF) were set up to be managed by the World Bank. In July 2008, the CIF were approved by the World Bank's Board of Directors



## II. Monetizing climate benefits from energy efficiency investments under the E3 MPA

2. The E3 MPA’s funding envelope is proposed to be about US\$1.46 billion in IBRD/IDA funds, with the goal of leveraging additional US\$2.4 billion from public and private financing sources to scale-up energy efficiency (EE) investments in targeted ECA countries. An important component of E3’s strategy is to leverage additional financing through the monetization of emission reductions associated with E3’ EE investments by accessing results-based climate finance sources and carbon markets, along with other forms of climate finance. This is aligned with the Bank’s [Carbon Market Engagement Roadmap](#) launched at COP 28, where under its Pillar II the Bank aims to support projects across its portfolio to generate and sell high integrity carbon credits.

Figure A8-1 - World Bank Engagement Roadmap for Carbon Markets: High Integrity, High Impact



3. Dedicated EE programs targeting key sectors are essential to GHG mitigation strategies in the region. The Bank’s CCDRs in a number of ECA countries highlight EE as a top priority. EE also features prominently in ECA countries’ NDCs. In the case of the E3 MPA, EE investments would be made under 4 pillars: (i) public sector; (ii) residential sector; (iii) industrial sector and (iv) district heating. The priority investments area in most of the countries under the MPA is expected in buildings – in both public and residential pillars. Preliminary estimates suggest that the MPA would achieve up to 63 TWh (228 PJ) of lifetime energy savings. This is estimated to translate into about 18.7 Mt CO<sub>2eq</sub> of avoided emission. If that volume of emission reductions could be monetized, it could potentially yield US\$187 million in payments for verified emission reductions at a price of US\$10/tCO<sub>2</sub> (or US\$374 million at a price of US\$20/tCO<sub>2</sub>).

4. To position the E3 MPA - supported activities so that they can generate emission reduction credits (ERCs) that can be monetized and generate carbon finance revenues – which is of significant interest to countries - it is important to understand the process to generate emission reduction credits, the potential avenues for their monetization, as well as the implications and requirements of different options. This includes the necessary institutional, regulatory frameworks and decision points. The readiness for monetization of ERCs also requires putting in place a robust ERC asset creation infrastructure. The latter refers in large part to monitoring, reporting and verification (MRV) systems, which are one of the key pieces to unlock climate/carbon finance, as they provide “evidence” of the environmental integrity of the ERCs generated and sold (and potentially transferred<sup>67</sup>) to the buyers. Emission reduction credits need to have a real mitigation

<sup>67</sup> As explained further down in the Note, not all ERCs generated and for which a payment is made by a buyer, need to be transferred to the



impact and need to be measured, reported, and verified, through a system that is easy to prove and defensible against claims of greenwashing and double counting.

5. EE projects can be challenging to assess because energy savings cannot be directly measured. EE represents the absence of energy use (i.e., the saved energy) and requires comparison of post-project energy consumption with a baseline scenario without the project (or the counterfactual) assuming similar levels of production or service quality. Such calculations and the procedures to measure, report and verify (MRV) the achieved emission reductions resulting from the EE interventions are part of the “methodologies” for the generation of emission reduction credits (ERC) in carbon markets. As is the case for all type of projects, these methodologies specify, inter alia, the coverage (which impacts the project scope), the procedure to determine the baselines, as well as the procedures to conduct the MRV, including the parameters to use and the data to collect/monitor. It will be important, in the context of the activities to generate ERCs under the E3 MPA with the goal of monetizing them to consider the experience in EE carbon finance projects in developing countries. This includes the methodological challenges mentioned above as well as challenges due to issues such as suppressed demand (e.g., underheating, undercooling) affecting the determination of the baseline, the lack of data or meters (e.g., most DH is billed based on an apartment’s floor area) for monitoring and limited resources to conduct robust MRV.

6. In carbon markets, with no exception, communication between platforms (MRV systems, project registries, transaction registries, auctions platforms, exchanges, etc.) is vital for their secure, transparent, and agile development. In addition to support the development and strengthening of carbon market regulatory and institutional frameworks, the digitization of the MRV system and ERC asset creation process constitute a critical element of the E3 MPA’s proposed approach to mobilizing additional sources of financing – in this case carbon finance – to scale-up EE investments. The digitization of the MRV system is proposed to help address the technical challenges (noted above) and lower the transaction costs associated with monitoring and tracking the performance of EE-based carbon programs – something that has plagued demand-side EE projects under the first generation of carbon markets (which took place under the Kyoto Protocol’s Clean Development Mechanism) largely due to the dispersed nature of demand-side EE investment programs.

7. In terms of crediting approach, the Bank team’s early assessments suggest adopting a *programmatic* crediting approach, given the dispersed nature of the many individual EE investments (e.g., approximately 400 public buildings are expected to be renovated under the Türkiye project and 70 public buildings in the Moldova project) and given that the MPA may not be suitable for a “sectoral” approach, as its targeted interventions may be better described as “sub-sectors”. For example, “public buildings” are typically not considered a ‘sector’ per se, nor is data collected and reported in the way the power sector or the iron and steel sector may be considered. (See Box A8-1.)

8. There are existing methodologies that can be used to guide the generation of emission reduction credits from EE programs. Nonetheless, given the need to evolve the MRV system to better and more cost-effectively cover demand-side EE carbon programs, the Bank is of the view that it will be critical to review the existing baseline methodologies, explore proven digital solutions and have an early engagement with carbon standards to determine appropriate levels of aggregation for baseline-setting, clarify the limited set of parameters to track, and have a mechanism to confirm the quality (or “verify”) the reported emission reductions through digitized systems. The development of any proposed revised/new methodology under the MPA will be conducted keeping in mind the need for methodologies to be robust, simple/implementable and involve low/manageable transaction costs.

9. Carbon finance readiness activities will seek to assess countries’ carbon readiness and needs and help build the capacity and overall governance and procedures for the generation of ERCs and their monetization. The Bank will explore the possibility of including some of the readiness activities in the E3 MPA regional network. The Bank’s carbon finance/carbon market experts, through the Bank’s Climate Change Group, will help design, shape and guide these activities. Such arrangement will help facilitate the development and deployment of common documentation and

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relevant buyer’s emissions account. This is the case for example, of ERCs paid through a Results-Based Climate Finance mechanisms and some ERCs transacted under the Voluntary Carbon Market.



procedures and the potential regional aggregation of MPA data for covered countries. The E3 MPA regional network is also expected to engage with individual countries to build capacity and the enabling environment for facilitating access to carbon markets to monetize emission reductions associated with E3-supported investments in each country.

**Box A8-1: Overview of emission reduction crediting approaches**

A crediting approach defines how GHG emission reduction credits are generated and specifies the required quantification approach.

**Project-based crediting** typically focuses on individual investment projects. The baselines and MRV are based on targeted technology. It however offers limited opportunities to scale-up and has been associated with risk of leakage\* and perverse incentives. Indeed, this has been a common form of crediting, but has also led to some concerns that it does not ensure that GHG-emitting activities are not simply being displaced by the project-based credited investment.

**Programmatic Crediting** supports a larger number of similar projects often small and micro scale (including household level) within a program. The Baselines and MRV are based on the program’s targeted technology(ies). This approach allows for scale through the replication of similar activities/projects. These have also been associated with a risk of leakage and perverse incentives.

**Policy Crediting** supports a policy intervention such as an energy efficiency standard or energy/carbon pricing policies. Baselines and MRV are based on economic modelling. This approach involves a high level of complexity and high project preparation costs, but is suited for reaching a large scale and can have a transformative impact. Its application has been very limited to date.

**Sectoral crediting** is based on a target set according to the aggregation of emissions in a defined economic sector or sub-sector (e.g., power generation sector; cement manufacturing sector, etc.). Such crediting incentivizes and rewards mitigation achieved at a sectoral level relative to a sectoral crediting baseline. The MRV is also conducted at the level of the entire sector. This crediting approach is only possible on an aggregate level.

**Jurisdictional crediting** is based on aggregate emissions in a jurisdiction typically comprising both a physical area and a legal entity, such as a city or a state in a country. Jurisdictional crediting can focus on all categories of emissions and removals or target specific categories. Jurisdictional crediting has been discussed mostly in the context of REDD+ (targeting emissions from deforestation and forest degradation). This crediting approach is only possible on an aggregate level.

\* *Note: carbon leakage occurs when an emissions-reduction policy, such as a carbon price, inadvertently causes an increase in emissions in other jurisdictions that do not have equivalent emissions-reduction policies.*

Source: World Bank, <https://documents1.worldbank.org/curated/en/361421548709604783/pdf/134104-WP-PUBLIC-26-1-2019-17-7-32-CarboncreditingapproachesFIN.pdf>

**Options to monetize climate mitigation benefits associated with demand-side EE investments**

10. The landscape of opportunities to monetize emission reductions is evolving, including requirements and prices, and the avenues for monetization can be divided into 3 main categories outlined below:

- i. **Compliance carbon markets (CCM)** – CCMs are regulated systems, where ERCs (with each credit representing one tCO<sub>2eq</sub>) are used to achieve compliance. For example, some countries may impose a GHG emission-related compliance obligation (e.g., domestic emissions trading schemes or carbon taxes) to its entities that can be met (partially) through purchases of ERCs. At the international level, the Paris Agreement’s Article 6 allows countries to cooperate with each other to achieve emission reduction targets set out in their NDCs. This means that a country (or countries) may “authorize” the transfer verified ERCs to another country(ies), enabling mitigation action where it is most cost effective to do so and, through this trading of ERCs, reduce the overall cost of meeting climate targets.
- ii. **Voluntary carbon markets (VCM)** – VCMs operate in parallel to compliance markets. VCMs are not regulated by governments and buyers are typically corporates pledging “net zero” or other voluntary mitigation commitments



(i.e., ERCs are not required by any regulated system), who are the ones driving the demand for ERCs in the VCM. Projects seeking to monetize their ERCs in the VCM are certified by an independent crediting standard<sup>68</sup>. The resulting issued ERCs (after verification) may be “claimed” by the buyer and may not require the *authorization* and *corresponding adjustment* from the host country (i.e., the resulting issued ERCs may be used to contribute towards the host country’s NDC).

- iii. **Results-based climate finance (RBCF)** – RBCF refers to a mechanism whereby payments are provided upon verification of achievement of agreed climate results (typically verified GHG emissions reduced or removed) but does not involve the transfer of “title” to claim the ERCs or carbon assets from the recipient project<sup>69</sup> and does not involve “corresponding adjustments”. The Bank’s Scaling Climate Action by Lowering Emissions (SCALE) Trust Fund is one option to monetize ERs through RBCF, in which climate finance is brought directly into the operation to disburse against ER results which the client can use for reaching NDC compliance. (The E3 MPA could be supported under SCALE’s “Sustainable Infrastructure Solutions” target area. See: <https://www.worldbank.org/en/programs/scale/overview>.)

11. Ultimately, it is each host country’s prerogative to decide the ultimate use of the “MRV-ed” emission reductions. Each country will decide whether it seeks to use these ERCs for compliance with own NDC or to sell them. In the latter case, it is also up to each country to select the avenue(s) for the monetization of their ERCs, taking into account its national requirements, implications of different options, and pricing. The E3 MPA will help build the structure required for the monetization of emission reduction that will support individual countries’ decisions through an approach seeking standardization for similar processes and for similar activities as well as aggregation at the country level and potentially more broadly, which will help reach scale, access more buyers, and potentially fetch higher prices.

#### ***The E3 MPA’s approach to climate and carbon finance***

12. The generation and monetization of ERCs through accessing the carbon market may have significant potential for the E3 program, but it can also be a complex process. This will be further assessed and elaborated during the implementation phase of the MPA, and will start with an assessment of the ERC potential to justify the Bank’s engagement in climate and carbon finance. The experience with the first phase will inform and help streamline (and accelerate) the process for subsequent phases. Specifically, this includes:

- **ERC creation** – This involves adapting relevant methodologies (to be assessed and determined) to define a programmatic approach for estimating ERs from the MPA, using suitable crediting approach(es).
- **ERC infrastructure** – developing the necessary ER infrastructure including monitoring, reporting and verification (MRV) systems to generate high quality (credible) emissions reductions during the MPA’s implementation. The aim is to standardize digital MRV (dMRV) systems to facilitate transparent and consistent aggregation of data (from countries and the private sector).
- **ERC monetization technical and readiness support** (at country and regional levels) – building and strengthening institutional and governance frameworks and capacities to assess, inform decisions and access avenues for the monetization of ERCs. This will help create an enabling environment for countries’ participation in carbon markets.

#### ***Emission reduction credit asset creation process and its main components***

13. The development of ER assets includes a number of elements and steps, including (a) setting out a crediting approach and methodological framework; (b) independent validation; (c) project registration; (d) monitoring and

<sup>68</sup> Examples of independent carbon standards include the Gold Standard, Verra and the Climate Action Reserve.

<sup>69</sup> Sovereign providers of RBCF to developing countries may report RBCF as a contribution of financial resources under Article 9 of the Paris Agreement (which specifies that developed countries shall provide financial resources to assist developing countries in respect to both mitigation and adaptation).



reporting; (e) periodic verification; (f) issuance of ERs; (g) labeling of ERs to indicate compliance; and (h) authorization by a host country.

14. Under the Paris Agreement, bilateral or plurilateral cooperation between participating parties can be established through a mutually agreed policy and governance framework and reflected in the agreement between the parties involved. This decentralized architecture requires considerably higher levels of engagement and oversight from participating parties. The context for setting institutions and approval procedures at the domestic level necessary to establish the enabling environment is fundamentally rooted in each country's national climate strategy and its NDC. A country participating in the carbon market should have a clear strategy that guides how its participation will help the country achieve its overall climate change commitments and targets.

15. The host country is *solely* responsible for *authorizing* and transferring ERCs for the CCM, as well as for applying *corresponding adjustments*, if applicable. To support transactions under the E3 MPA, decision-making arrangements at the country-level (including institutional roles and responsibilities) will need to be clarified early in the implementation of the MPA and efforts will be made to help standardize documentation and procedures. However, the way in which an ER becomes an *emission reduction credit* impacts what is required for decision-making. Countries (or a group of countries under the E3 MPA) may benefit from aggregation efforts, including to collect the necessary data and potentially to develop a common registry (e.g., in the case of smaller countries), to enable accessing carbon markets at lower transaction costs. This will be further explored during the E3 MPA's implementation. To the extent possible, these arrangements would build on existing institutional arrangements to minimize any additional burdens and delays for participating in carbon markets.

#### ***Reaching potential buyers: Next steps on market outreach***

16. The Bank would help identify monetization options and their respective terms, requirements and implications through market outreach to inform ECA countries' decisions on the monetization of ERCs generated under the E3 MPA.

17. Below are some of the initial avenues/outreach currently pursued by the Bank which could benefit the E3 MPA:
- **[Scaling Climate Action by Lowering Emissions](#)** (SCALE) – The Bank is actively fundraising to capitalize SCALE, which is the new World Bank umbrella instrument to catalyze results-based finance for ambitious GHG mitigation programs associated with Bank lending operations and help countries access carbon market financing.
  - **[Energy Transition Accelerator](#)** (ETA) – Announced by the US Government at COP27, the ETA intends to scale up and de-risk private investment in accelerating the clean energy transition in developing countries through the participation of companies to provide upfront finance commitments in exchange for high-quality carbon credits.
  - **Strategic partnership with sovereigns under Article 6 framework.** Two countries can enter into cooperative approaches for implementing their NDCs through trade of ERCs under Article 6.2 of the Paris Agreement. A number of buyer countries<sup>70</sup> have entered into a number of bilateral agreements and MoUs to cooperate under the framework of Article 6.2.

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<sup>70</sup> Key buying countries (Japan, Singapore, South Korea, Sweden, Switzerland, etc.) are identifying partnerships.

**ANNEX 9: Team List**

<b>Name</b>	<b>Role</b>	<b>Unit</b>
Jas Singh	Lead Energy Specialist, Team Leader (ADM Responsible)	IEEGK
Aditya Alexander Lukas	Sr. Energy Specialist, Team Leader	IECE1
Carlos Lago Bouza	Sr. Procurement Specialist (ADM Responsible)	EECRU
Jose Simon Rezk	Sr. Financial Management Specialist (ADM Responsible)	EECG1
Arun Manuja	Sr. Financial Management Specialist	EECG2
Alexandra C. Bezeredi	Lead Social Specialist (ADM Responsible)	SCASO
Maged Mahmoud Hamed	Lead Environmental Specialist (ADM Responsible)	SCAE1
Andrei Busuioac	Sr. Financial Management Specialist, Team Member	EECG1
Selena Jihyun Lee	Energy Specialist, Team Member	IEEGK
Andrea Muharemovic	Environmental Specialist, Paris Alignment Advisor	SCAEN
Christine Ortner	Consultant, Paris Alignment Advisor	SCAEN
Kjetil Hansen	Sr. Public Sector Specialist, Team Member	EECG2
Roger Coma Cunill	Sr. Energy Specialist, Team Member	IECE1
Silvia Martinez Romero	Lead Energy Specialist, Team Member	IECE1
Martina Bosi	Sr. Climate Change Specialist	SCCFE
Giovanni Bo	Sr. Counsel	LEGLE
Eduard Yakubov	Operations Officer, Team Member	CEUAE
Sudipta Husain	S. Investment Officer	CN5CT
Tarik Sahovic	Sr. Operations Officer	CMCAE
Ji Sung Won	Sr. Underwriter, Team Member	MIGO1
Carole Chineze Marchand	Sr. Underwriter, Team Member	MIGEA
Rome Chavapricha	Sr. Infrastructure Finance Specialist, Team Member	IPGFG
Serdar Jepbarov	Sr. Operations Officer	IECE1
Wazhma Khalili Raheem	Program Assistant, Team Member	IECE1