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Report No: PAD4871

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF US\$143 MILLION

TO THE

REPUBLIC OF UZBEKISTAN

FOR A

CLEAN ENERGY FOR BUILDINGS IN UZBEKISTAN PROJECT

June 2, 2022

Energy and Extractives Global Practice
Europe and Central Asia Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective: April 30, 2022)

Currency Unit = Uzbekistan Sum (UZS)

UZS 11,175.68 = US\$1

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AFUE	Annual Fuel Utilization Efficiency
ASA	Advisory Services and Analytics
CBA	Cost-Benefit Analysis
CEBU	Clean Energy for Buildings in Uzbekistan
CERC	Contingent Emergency and Response Component
COVID-19	Coronavirus Disease 2019
CPF	Country Partnership Framework
CVA	Credible Verification Agent
DLI	Disbursement-Linked Indicator
d-RE	Distributed Renewable Energy
EE	Energy Efficiency
EHSG	Environmental, Health, and Safety Guidelines
ENPV	Economic Net Present Value
ERR	Economic Rate of Return
ESA	Energy Service Agreement
ESCO	Energy Service Company
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESS	Environment and Social Standards
FM	Financial Management
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GIIP	Good International Industrial Practices
GoU	Government of Uzbekistan
GM	Grievance Redress Mechanism
IEA	International Energy Agency
IFI	International Financial Institution

IFR	Interim Financial Report
ILO	International Labour Organization
IPF	Investment Project Financing
IRR	Internal Rate of Return
KEEP	Kazakhstan Energy Efficiency Project
LMP	Labor Management Procedures
M&V	Monitoring and Verification
MAB	Multi-Apartment Building
MEDPR	Ministry of Economic Development and Poverty Reduction
MIFT	Ministry of Investment and Foreign Trade
MoC	Ministry of Construction
MoE	Ministry of Energy
MoF	Ministry of Finance
MoH	Ministry of Health
MoHCS	Ministry of Housing and Communal Services
MoPE	Ministry of Public Education
MoPSE	Ministry of Pre-school Education
MOU	Memorandum of Understanding
MTR	Midterm Review
NDC	Nationally Determined Contribution
NPV	Net Present Value
O&M	Operation and Maintenance
PAP	Project-Affected People
PBC	Performance-Based Condition
PCM	Private Capital Mobilization
PDO	Project Development Objective
PIA	Project Initiation Agreement
PLR	Performance and Learning Review
PMC	Project Management Company
POM	Project Operations Manual
PPP	Public-Private Partnership
PPSD	Project Procurement Strategy for Development
PSC	Project Steering Committee
PV	Photovoltaic
RE	Renewable Energy
RSPV	Rooftop Solar Photovoltaic
SEA	Sexual Exploitation and Abuse
SEP	Stakeholder Engagement Plan
SH	Sexual Harassment
SMEs	Small and Medium Enterprises
SOE	State-Owned Enterprise
TA	Technical Assistance

TOR	Terms of Reference
TWG	Technical Working Group
UBEEP	Uzbekistan National Building Energy Efficiency Program
UNDP	United Nations Development Programme
VAT	Value Added Tax
WBG	World Bank Group

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DATASHEET

BASIC INFORMATION

Country(ies)	Project Name	
Uzbekistan	Clean Energy for Buildings in Uzbekistan	
Project ID	Financing Instrument	Environmental and Social Risk Classification
P176060	Investment Project Financing	Moderate

Financing & Implementation Modalities

<input 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 checked="" 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"/> Alternate Procurement Arrangements (APA)	<input type="checkbox"/> Hands-on Enhanced Implementation Support (HEIS)

Expected Approval Date	Expected Closing Date
24-Jun-2022	29-Dec-2028

Bank/IFC Collaboration

No

Proposed Development Objective(s)

The development objective is to improve energy efficiency in public buildings and enhance the regulatory framework for clean energy investments in the buildings sector.

Components

Component Name	Cost (US\$, millions)
Clean energy investments in public buildings	179.40
Technical assistance, capacity building, and project implementation support	6.50
Contingent Emergency Response Component	0.00

Organizations

Borrower:	Republic of Uzbekistan
Implementing Agency:	Extra-budgetary Intersectoral Energy Savings Fund Ministry of Energy

PROJECT FINANCING DATA (US\$, Millions)

SUMMARY

Total Project Cost	185.90
Total Financing	185.90
of which IBRD/IDA	143.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Development Association (IDA)	143.00
IDA Credit	143.00

Non-World Bank Group Financing

Counterpart Funding	42.90
Borrower/Recipient	42.90

IDA Resources (in US\$, Millions)

	Credit Amount	Grant Amount	Guarantee Amount	Total Amount

Uzbekistan	143.00	0.00	0.00	143.00
National PBA	143.00	0.00	0.00	143.00
Total	143.00	0.00	0.00	143.00

Expected Disbursements (in US\$, Millions)

WB Fiscal Year	2022	2023	2024	2025	2026	2027	2028	2029
Annual	0.00	11.00	17.23	22.93	30.81	32.39	28.64	0.00
Cumulative	0.00	11.00	28.23	51.16	81.97	114.36	143.00	143.00

INSTITUTIONAL DATA

Practice Area (Lead)

Energy & Extractives

Contributing Practice Areas

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	● Substantial
2. Macroeconomic	● Moderate
3. Sector Strategies and Policies	● Moderate
4. Technical Design of Project or Program	● Substantial
5. Institutional Capacity for Implementation and Sustainability	● Substantial
6. Fiduciary	● Substantial
7. Environment and Social	● Moderate
8. Stakeholders	● Low
9. Other	
10. Overall	● Substantial

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 Standards Relevance Given its Context at the Time of Appraisal

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

Sections and Description



Annual Work Plan

For purposes of carrying out the Project and starting on January 1, 2023, the Recipient shall, not later than November 30 of each year during Project implementation, prepare and submit to the Association an Annual Work Plan (AWP) for the following year, including, inter alia, the proposed investment plan, its related expenditures, PBC targets to be met, and the sources of financing needed to implement the Project activities under the AWP, all as set forth in the Operational Manual and acceptable to the Association.

Sections and Description

Project Steering Committee

The Recipient, through MoE, shall not later than 30 days after the Effective Date establish and thereafter maintain, throughout the implementation of the Project, a Project steering committee (“Project Steering Committee”) with responsibilities and composition acceptable for the Association, including, inter alia, representatives from the MoE, MoH, MoPSE, MoPE, MIFT, and MoF, all as set forth in the POM.

Sections and Description

Project Management Company

Unless otherwise agreed with the Association, and without limiting the generality of Section I above, to facilitate the carrying out of the Project, the Recipient, through the MOE shall cause the PIE to hire, appoint and thereafter maintain a Project Management Company (“PMC”), with staffing, resources, and terms of reference approved by the Association.

Sections and Description

Verification Agent

Not later than two (2) months after the Effective Date, the Recipient, through the Ministry of Energy, shall ensure Verification Agent(s) are appointed to carry out, under terms of reference satisfactory to the Association, a verification review of Project implementation.

Sections and Description

Project Energy Service Agreements

For purposes of carrying out Part 1 of the Project and prior to the carrying out of any EE investment or the d-RE investment, through a revolving financing mechanism, the Recipient, through the MoE, shall cause the PIE to enter into an agreement (the “Project Energy Service Agreement” or “Project ESA”) with a selected Eligible Facility (through its managing/legal entity responsible for the Eligible Facility) under terms and conditions acceptable to the Association.

Sections and Description

Project Operations Manual

The Recipient, through the MoE shall, and shall cause the PIE, to carry out the Project, throughout Project implementation, in accordance with a Project Operational Manual (“POM”), under terms satisfactory to the



Association.

Sections and Description

Project Implementation Entity

The Recipient, through the MoE, shall, and shall cause the PIE, to maintain throughout the course of Project implementation, a structure, functions, responsibilities, and adequate staff, all as further described in the POM and acceptable to the Association, for the purposes of day-to-day Project management, monitoring, evaluation and supervision.

Conditions

Type	Financing source	Description
Disbursement	IBRD/IDA	<p>No withdrawal shall be made:</p> <p>(a) for payments under Category (1) and (2), unless the PMC is contracted by the Recipient, as referred to in Section I.B of Schedule 2 to this Agreement, in form and substance satisfactory to the Association, and subject to the provisions of Schedule 4 below (provided the Association and Recipient have not agreed otherwise pursuant to Section I.B.1 of Schedule to this Agreement); or</p> <p>(b) for payments under Category (2) unless: (i) the Association has received evidence satisfactory to the Association that the PBCs related to Category (2) and specified in Schedule 4 have been fully met, and such evidence has been verified in accordance with the Verification Protocol and the POM; and (ii) the Association has confirmed that payments for clean energy investments have been made in accordance and in compliance with the procedures set forth in the POM.</p> <p>and retroactive financing</p> <p>(c) for payments made prior to the Signature Date, except that withdrawals up to an aggregate amount not to exceed \$28,600,000 may be made for payments made prior to this date but on or after twelve (12) months before Signature Date, for Eligible Expenditures under Categories (1) and (3).</p>
Effectiveness	IBRD/IDA	<p>Condition of Effectiveness:</p> <p>To facilitate the carrying out of the Project, the Recipient shall make the proceeds of the Credit available to the PIE under an agreement</p>



between the Recipient's MOF, MOE and the PIE, under terms and conditions approved by the Association ("PIE Agreement")



I. STRATEGIC CONTEXT

A. Country Context

1. **Uzbekistan is a resource-rich, double landlocked, and lower-middle-income country that uniquely borders all other countries in Central Asia.** The country has the largest population in Central Asia of 35 million as of 2021, over 70 percent of whom are under the age of 40. The population is growing at about 1.9 percent per year. The Central Asia region is adjacent to some of the largest and rapidly growing economies in the world which include China, India, and Pakistan, and this presents an opportunity for Uzbekistan to become a crossroads for energy production and trade.

2. **Over the past decade, Uzbekistan has maintained high and stable economic growth rates and has gradually diversified its economy.** The officially reported average economic growth rate was over 8 percent per year during the previous decade, although it slowed down to 5.1 percent in 2018 and 5.5 percent in 2019¹. Official poverty estimates have declined from 27.5 percent in 2001 to 11.4 percent in 2018². These gains have relied largely on an economic model that is driven by the state's dominance in major productive sectors and a small, but restricted, small and medium enterprises (SMEs) business sector. The state's surplus was accumulated mainly through commodity exports, such as gold and cotton, sold by the state in international markets and obtained domestically at controlled (low) prices.

3. **Over the last five years, Uzbekistan has made solid progress in its market transition.** Since late 2016, it has implemented wide-reaching economic and social reforms with remarkable speed. Most prices have been liberalized. Foreign exchange is now fully convertible for current account needs. An overhaul of the tax and regulatory system has substantially lowered barriers that suppressed private sector development in favor of state enterprises. State-directed lending at interest rates below the official monetary policy reference rate has largely ended. Reforms to liberalize horticultural exports and improve cotton and wheat policies have contributed to surges in agricultural output and productivity. Before the pandemic, these reforms contributed to record increases in new business and taxpayer registrations, horticultural exports, and tourist arrivals. They also supported Uzbekistan's efforts to weather the coronavirus disease 2019 (COVID-19) crisis and helped maintain positive economic growth in 2020. Crucially, they have led to visible improvements in the lives of the Uzbek citizens: the poverty rates are lower; incomes of the bottom 40 percent considerably higher and economic freedom more readily enjoyed; and environmental stresses, such as the impact of climate change, more visibly acknowledged.

4. **The Government aims to build strong and independent institutions.** Uzbekistan still faces risks, including continued global supply chain and border disruptions, further pandemic-induced external shocks affecting domestic economic performance and financial sector stability, and adverse weather conditions that affect agricultural output. Improving incentives, institutions, and access to inputs is critical

¹ This is mostly attributable to (a) lower world commodity prices, reducing the dollar value of Uzbekistan's exports and inflows of worker remittances from other commodity-dependent countries; (b) periods of unfavorable weather that adversely affected production in agriculture, which accounts for about one-fifth of the country's gross domestic product (GDP); and (c) a slowdown in key exports in 2018 due to energy and water shortages, unfavorable weather, and a larger-than-usual incidence of pest infestation.

² These figures are presented in estimated purchasing power parity terms. In current US dollars (Atlas method), gross national income per capita rose from US\$560 in 2001 to US\$2,111 in 2016, to US\$1,880 in 2019 due to the depreciation of the Uzbekistan sum.



to develop an efficient market economy. Businesses have identified access to resources, notably to finance, land, energy, and skilled labor, as constraints, as well as administrative bottlenecks and policy uncertainty. To create a business-friendly environment, the Government is creating strong, professional, and independent institutions and strengthening economic incentive structures.

5. **Uzbekistan’s long-term development goal is to become an industrialized upper-middle-income country by 2030.** The approach of the Government of Uzbekistan (GoU) toward achieving this goal is to continue the transition to a more market-oriented economy, mitigate potential negative consequences of external shocks, ensure equitable distribution of growth between regions, and maintain infrastructure and social services at an adequate level. In the medium term, the GoU’s key development priorities are to (a) further strengthen the macroeconomic stability and maintain high rates of economic growth, including the balance of the state budget and stability of the national currency; (b) increase the efficiency of infrastructure, especially of energy, transport, and irrigation; (c) enhance the competitiveness of targeted strategic sectors; (d) diversify the economy, particularly to reduce reliance on raw materials exports; and (e) improve access to and the quality and outcomes of education, health, and other social services so that the benefits of overall growth are shared equitably by the entire population. Energy plays an important role to achieve this goal, and the Government has embarked on an ambitious reform program to liberalize the sector.

B. Sectoral and Institutional Context

Institutional Context

6. **The Ministry of Energy (MoE) was established in 2019 and has a mandate to set and lead the implementation of the national energy policy.** This includes regulating the generation, transmission, distribution, and consumption of electric and thermal energy and coal, as well as exploration, extraction, processing, transportation, distribution, sale, and use of oil, gas, and their products. Several key ministries and committees are critical for the implementation of the energy policy. The Ministry of Investment and Foreign Trade (MIFT) oversees the investment strategy across the sector, and the Ministry of Finance (MoF) provides financing for the public investments in the sector. The Ministry of Economic Development and Poverty Reduction (MEDPR) supports implementation of the energy policy in the industrial sector, the Ministry of Housing and Communal Services (MoHCS) supports the buildings sector, and other line ministries (Ministry of Public Education [MoPE], Ministry of Pre-school Education [MoPSE], and Ministry of Health [MoH]) support energy-related investments and policies in their respective ministries. The line ministries collaborate with the local authorities who nominate public facilities for investments. The Extra-budgetary Intersectoral Energy Savings Fund (the Fund) was established in 2020, under the Ministry of Energy, with the mandate to support energy efficiency and distributed renewable energy investments across the economy. Lastly, the State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection oversees environmental protection associated with energy policy and investments.

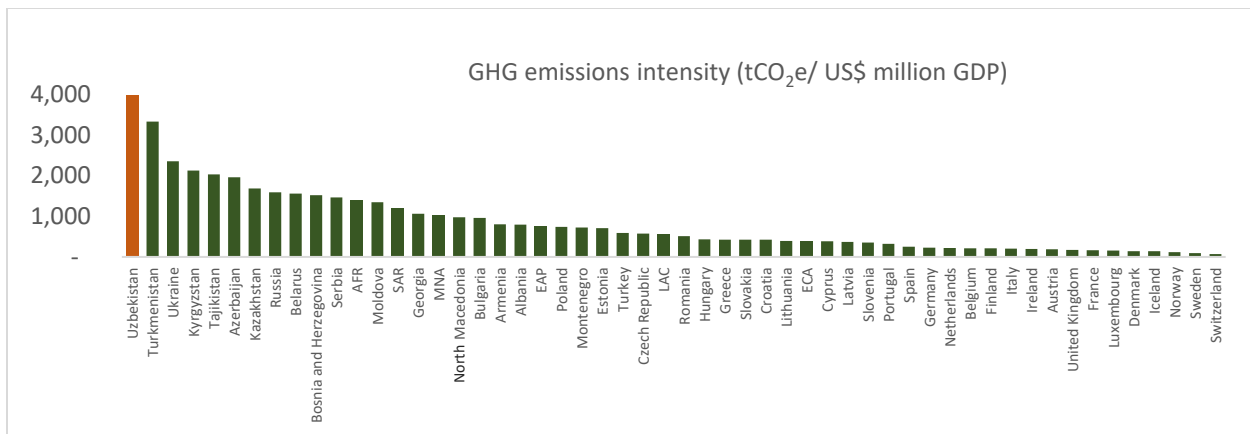
7. **The Government is implementing significant reforms which include the unbundling of state-owned enterprises (SOEs) in the energy sector.** The former vertically integrated national utility, Uzbekenergo JSC, was unbundled into thermal power plants, national electric networks of Uzbekistan, and regional electric networks. Similarly, Uzbekneftegas was unbundled into Uzbekneftegaz, Uztransgaz, and Khududgaztaminot. This served as a first step toward introducing market-based principles and



competition, recovering the electricity utilities’ financial standing, transitioning toward clean energy, and strengthening regional energy connectivity and trade. The Government is also implementing large investment programs to improve the reliability of energy supply and services to citizens, maintain economic growth, and enhance productivity. The large-scale renewable energy (RE) investments are supported by improvements in the regulatory framework conducive for RE and public-private partnership (PPP) which were adopted in 2019.

8. **Uzbekistan’s energy mix is dominated by fossil fuels, and the country reports one of the highest energy and carbon intensities in the Europe and Central Asia region.** Natural gas accounts for 86 percent of the total primary energy consumption and more than 80 percent of the electricity mix. At about 4,000 tCO₂e/US\$ million GDP, Uzbekistan’s carbon intensity is about two times that of neighboring Kazakhstan, seven times that of Turkey, and about twenty times that of a typical Western Europe country such as the United Kingdom (Figure 1). The combustion of fossil fuels also contributes to poor air quality, which can lead to respiratory diseases. Overall, 82 percent of the emissions come from natural gas, and the power sector is responsible for the highest portion (35 percent) of the emissions.

Figure 1. GHG Emissions Intensity of Some Europe and Central Asia Countries



Source: International Energy Agency

Buildings are the second largest carbon emitters in Uzbekistan after the power sector.

9. **The buildings sector is responsible for the largest share of the total final energy consumption, most of which is for space heating.** There are 46,836 public buildings, 135,255 commercial buildings, and 8,246,708 residential buildings in Uzbekistan³. Overall, the buildings sector accounts for 50 percent of the total final energy consumption, followed by the industry and transport sectors at 22 percent and 20 percent, respectively⁴. In the public buildings sector, heating is responsible for about 70 percent⁵ of the

³ World Bank. 2016. *Republic of Uzbekistan: Scaling up Energy Efficiency in Buildings*.

⁴ The buildings sector accounts for 60 percent of the final natural gas consumption, 56 percent of the final coal consumption, and 34 percent of the final electricity consumption.

⁵ World Bank. 2021. *Deploying Energy Efficiency and Distributed Solar in the Public Buildings*. World Bank. Of the remainder, 8 percent is for lighting, 7 percent for water heating, 7 percent for cooking, and 8 percent for other purposes.



energy consumption in regional hospitals, 84 percent⁶ in pre-schools, 88 percent⁷ in rural clinics, and 97 percent⁸ in public schools. In the residential sector, heating is responsible for about 67 percent of the final energy consumption. The buildings sector is directly responsible for the second highest portion of 25 percent of CO₂ emissions, which are largely emitted from heating using fossil fuels, and an additional 8 percent for the electricity consumed in the buildings. The industry and transport sectors account for 15 percent and 14 percent of the emissions, respectively.

10. **The buildings are generally in poor condition, operate below comfort standards, and have high energy intensity.** Most of the public, commercial, and residential buildings were developed in the 1970s–1980s with little regard to energy efficiency (EE). About 85 percent of the 53 million m² of public buildings are in the health care and education sectors. The facilities are poorly insulated, are slightly underheated⁹, and use old boilers and water heating systems. Most commercial buildings (shops, hotels, restaurants, and so on) lack insulated roofs and walls, and most use old inefficient heating technologies. Residential buildings are often underheated as well; have inadequate insulation of windows, roofs, and walls; and face heat and electricity supply disruptions during the winter. The associated average specific heat consumption in the public buildings is high at 253 kWh/m²—ranging from 204 to 450 kWh/m² depending on the specific type of building. The specific heat consumption in residential buildings is 290 kWh/m², which is also high compared to 95 kWh/m² in the Netherlands which is similarly dependent on natural gas and reliant on individual gas boilers.

11. **Most of the space heating in buildings is generated from individual gas boilers.** About 10 percent of the buildings use centralized district heating systems, and 90 percent use heat generated from individual boilers. Centralized district heating has largely been neglected around the country, and 70 percent of the remaining district heating systems are in Tashkent. The district heating sector generates most of its heat from natural gas, relies on old Soviet-era boilers, faces financial viability challenges due to low tariffs set below cost recovery, and lacks consumer trust to provide good-quality services¹⁰. The use of individual boilers is largely split between gas and coal boilers. Biomass (or other renewable options) are not widely represented in the market. About 63 percent of the *regional hospitals* use individual gas boilers for heating¹¹, and about 70 percent of the *rest of the public buildings* use individual coal boilers¹². About 70 percent of the residential homes and commercial buildings use individual natural gas boilers for heating. About 75 percent of all boilers are inefficient and have been in service for 10 years or more. About 35 percent of the boilers are ‘homemade’ by local craftsman using nonstandard components and without proper safety compliance. These nonstandard boilers consume almost 50 percent more gas than

⁶ World Bank 2021. *Deploying Energy Efficiency and Distributed Solar in the Public Buildings*. Of the remainder, 6 percent is for water heating, 3 percent for refrigeration, 3 percent for lighting, 2 percent for cooking, and 2 percent for air conditioning and office equipment.

⁷ World Bank 2021. *Deploying Energy Efficiency and Distributed Solar in the Public Buildings*. Of the remainder, 4 percent is for lighting, 3 percent for air conditioning, 2 percent for water pumping, and 3 percent for other purposes.

⁸ World Bank 2021. *Deploying Energy Efficiency and Distributed Solar in the Public Buildings*. Of the remainder, 2 percent is for lighting and 1 percent for equipment.

⁹ Utility expenses of the public institutions are high-priority expenditures (protected expenditures) of the state budget and provided on time to ensure comfortable conditions for students and patients. However, in some cases, heat losses through the building envelope are so extensive that the heating is not sufficient to compensate for the heat losses to provide comfortable conditions.

¹⁰ The District Heating Energy Efficiency Project (P146206) is financing renovations of the district heating system in Andijan City, Bukhara City, Chirchik City, Samarkand City, and Sergeli District.

¹¹ About 24 percent of the regional hospitals are heated using coal.

¹² Gas is used for heating 38 percent of pre-schools, 23 percent of rural clinics, and 23 percent of schools.



boilers manufactured according to modern industrial standards. Electricity is also often used as a supplemental source of heating due to the unreliability and low pressure of gas supply.

EE in buildings can contribute toward climate change mitigation, modernization of buildings, and improvement of public service provision.

12. **EE investments can reduce energy consumption without lowering the quality of service provided and result in lower greenhouse gas (GHG) emission.** EE investments contribute toward the decarbonization of the economy by lowering the country's GHG and local pollutant emissions. The several benefits of EE investments also include (a) mitigating climate change, (b) improving internal comfort conditions in buildings, (c) improving air quality, (d) improving public service delivery, and (e) creating jobs. The EE investments are typically among the lowest cost options to achieve these various benefits with most investments under World Bank projects averaging US\$1.4/kWh. They also have an impact on climate adaptation efforts by making buildings more climate resilient through reducing their energy demand and providing an ability to supply their own energy. They also improve the aesthetics of buildings, which tends to have a positive impact on the community, and contribute toward improving the security of energy supply, particularly during the winter months, and reducing the demand on dwindling natural gas reserves.

13. **There is significant potential for reducing energy consumption across the buildings sector.** Demonstration pilots¹³ by the United Nations Development Programme (UNDP), supported by the Global Environment Facility (GEF), found that implementing standard EE measures, including building envelope measures, heating and cooling systems, water heating, pumps/fans, and lighting, will have cost-effective normative energy savings potential in schools and hospitals ranging from 35 to 45 percent¹⁴. The pilots found the potential to reduce energy consumption by 22 percent while bringing public buildings into compliance with the requirements of building code 2.01.18-2018. A 2021 World Bank study similarly found that (a) the annual energy savings potential in pre-school, public school, and health care facilities is 7,051 GWh (thermal: 6,809.1 GWh and electricity: 241.9 GWh) and (b) implementation of clean energy measures in public buildings is viable with an average payback period of 10 years¹⁵. Results are aligned with the experience in the neighboring country of Kazakhstan, where 83 municipal buildings (hospitals, schools, kindergartens, primary care facilities, and street lighting) were renovated under the World Bank's Kazakhstan Energy Efficiency Project (KEEP). The monitoring data from KEEP implementation demonstrate on average around 30–40 percent reduction in energy consumption from such investments. The potential is similarly high in the commercial sector, and estimates in the residential sector range from 20 to 50 percent depending on the type of EE investments implemented¹⁶. A 2016 World Bank study found that replacing highly inefficient nonstandard gas boilers with modern gas boilers would reduce residential and commercial gas consumption by about 2.4 billion m³ or about 13 percent of the total residential and

¹³ The renovations implemented as part of the demonstrations by the UNDP included insulation of walls, floors, roofs, and basements; use of double-glazed windows; replacement of heating pipes, radiators, and boilers; replacement of doors; heat reflectors; automatic thermo controls; shading; and improved ventilation.

¹⁴ UNDP. 2014. *Energy Efficiency in Buildings: Untapped Reserves for Uzbekistan Sustainable Development Summary Report*. Tashkent. https://www.uz.undp.org/content/uzbekistan/en/home/library/environment_energy/energy-efficiency-in-buildings--untapped-reserves-for-uzbekistan.html.

¹⁵ World Bank 2021. *Deploying Energy Efficiency and Distributed Solar in the Public Buildings*.

¹⁶ World Bank 2021. *Deploying Energy Efficiency and Distributed Solar in the Public Buildings*.



commercial gas consumption, with a payback period of less than 8 years¹⁷, and the payback period would be under 5 years if the energy tariffs were fully cost reflective.

14. Deployment of economically viable distributed renewable energy (d-RE) systems, as part of deep EE renovation packages, could also support the green transition and sustainable heating agenda for buildings. While the recent success in developing large-scale RE projects is noteworthy, the development of d-RE remains an important, reliable, and resilient option. The GoU has established programs to promote d-RE for heating in buildings, and the World Bank is supporting such endeavors through analytical work funded by the Energy Sector Management Assistance Program. The work is expected to be completed in April 2022. Findings from the study will inform the project, and more broadly the GoU programs, on the most cost-effective feasible RE options to consider for the relevant investments. The testing of such options under the project will inform programs targeted toward the residential and commercial sectors about the feasibility of such technologies. This will also help develop the market for the supply of cleaner solutions in Uzbekistan and lower associated costs as the market grows.

Despite the GoU measures to promote EE and clean energy investments, significant market barriers remain.

15. The Government enacted several policies and strategies to improve realization of clean energy investments. It signed the Paris Agreement on Climate Change in April 2017 and ratified it in September 2018. Its Nationally Determined Contributions (NDCs) set a mitigation objective to decrease carbon intensity by 10 percent by 2030 from 2010 levels. The Government further set targets to improve overall EE by 50 percent by 2030 (with 2015 as the baseline year) and raise the share of non-hydro RE generation to 25 percent by 2026 from the current 0.2 percent. In the Green Economy Strategy (October 2019) and the Low Carbon Energy Strategy (May 2020), the Government reinforced these targets. These measures are part of a broader energy market-based reform program embarked by the Government with the objectives of improving energy services through, among others, clean energy development, strengthening of the institutional and market structure of the energy sector, subsidy reforms, and leveraging of sustainable financing for sector development.

16. The Government also passed laws to form the legal basis and decrees to incentivize the clean energy investments¹⁸. The Law of the Republic of Uzbekistan on Rational Use Energy (1997, amended on July 14, 2020) and the Law on the Utilization of Renewable Energy Sources No. ZRU-539 of 2019 form the legal basis for clean energy programs in the country. Several programmatic decrees and resolutions (Presidential Decree No. PP-2343 of 2015¹⁹, Presidential Decree No. PP-3102 of 2017, Presidential Resolution No. PP-4422 of 2019²⁰, and Presidential Decree PP-4779 of July 2020) incentivize the

¹⁷ World Bank 2016.

¹⁸ The Law on Rational Use of Energy No. 412-I (1997, as amended on July 14, 2020) forms the legal basis for EE programs, while the Law on the Utilization of Renewable Energy Sources No. ZRU-539 (2019) forms a common legal basis for RE programming. In addition, the GoU issued several programmatic decrees and resolutions such as Presidential Decree No. PP-2343 of 2015, Presidential Decree No. PP-3102 of 2017, Presidential Resolution No. PP-4422 of 2019, and Presidential Decree PP-4779 of July 2020. The decrees incentivize the use of clean energy. For example, Presidential Decree No. PP-4422 (2019) provides guidance for financial support, standards development, awareness programs, and capacity building for the development of clean energy.

¹⁹ Presidential Decree No. PP-2343: Program of Measures to Increase Energy Efficiency and Introduce Energy-Saving Technologies in the Sectors of Economy and Social Sphere during 2015–2019.

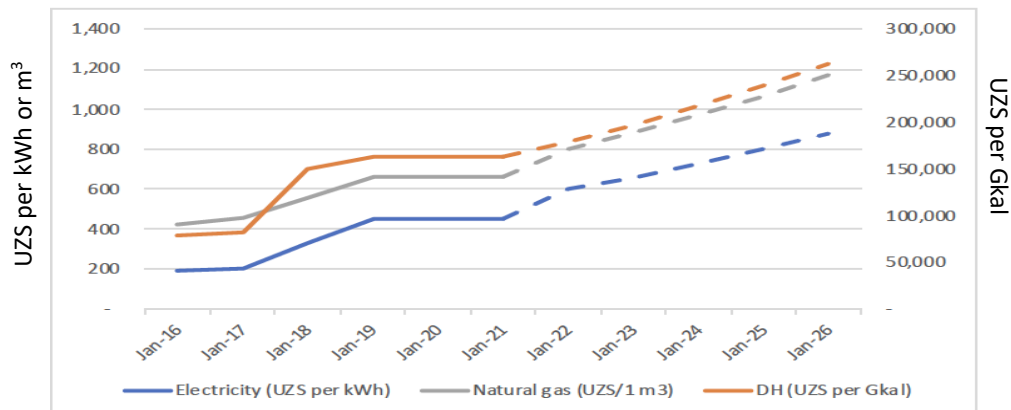
²⁰ Presidential Resolution No. PP-4422: About Accelerated Measures to Improve Energy Efficiency of Economic and Social Spheres, Introduction of Energy-Saving Technologies, and Development of RE Sources.

investments. For example, Presidential Decree No. PP-4422 (2019) sets a specific target to increase the overall solar power capacity to 4,300 MW by 2030 and grants tax privileges to RE producers and power generation equipment manufacturers. The Cabinet of Ministers’ Resolution 217 (April 2021) provides guidelines for the provision of 30 percent capital grants for rooftop solar photovoltaic (RSPV) systems, and Presidential Resolution No. PP-44 (December 2021) established the compensation scheme²¹ for small-scale prosumers who export excess generation to the grid.

17. **The Government has also commenced tariff reforms to strengthen the sector’s financial sustainability and promote demand-side EE, although more is needed.** The Cabinet of Ministers issued a resolution in April 2019 that adopts a new electricity tariff methodology and establishes a separate tariff commission setting out a path for tariffs to be systematically adjusted to full cost recovery levels on a regular and systematic basis. Tariff adjustments in 2018–2019 collectively brought the weighted average tariff from 70 percent at the beginning of 2018 to 92 percent of the cost recovery level in 2019. The first increase occurred in November 2018 and consisted of a 45 percent increase for nonresidential consumers and 9 percent increase for residential consumers. The subsequent tariff increases, effective on August 15, 2019, raised the nonresidential electricity tariffs by up to 36 percent and residential tariffs by 18 percent (Box 1). Similar efforts to adjust gas and heat tariffs are ongoing. Although it is not the focus of the project to directly support tariff activities, the World Bank continues to support the Government on these efforts including through a number of ongoing engagements such as the Energy Strategy Programmatic Technical Assistance, Modernization and Upgrade of Transmission Substations Project, Electricity Sector Transformation and Resilient Transmission Project, and Development Policy Operation engagement.

Box 1. Uzbek Historical Tariff Adjustment

The Government has shown a strong commitment to increasing tariffs for electricity, gas, and district heating over the past few years, with the goal to establish a competitive market and the regulatory framework to ensure transparency and equal access for all participants. The electricity tariffs and district heating tariffs have doubled over the past five years, while the price for gas has increased by 50 percent. In 2021, the Government announced that electricity tariff will be raised by 33 percent, and natural gas by 21 percent in 2022, expecting to bring tariffs to cost recovery levels. However, due to the COVID-19 pandemic, the plan is postponed to later in 2022. The tariffs are projected to increase at the rate of 10 percent annually during project implementation to accommodate inflation which averaged 10 percent between 2006 and 2022.



Source: Uzbekistan Electricity Sector Transformation Report (tariffs for public buildings)

²¹ The decree guarantees the purchase of excess electricity (beyond own consumption) for installations less than 1 MW at a rate slightly above the residential tariffs.



18. **There remain several barriers to achieve the potential scale-up of EE in buildings.**

- (a) **Access to financing.** In general, customers including public building administrators face difficulties in accessing financing due to short loan tenors, lack of collateral, high cost of capital, and poor credit rating. The typical loan tenor of 1–2 years is shorter than the typical investment payback period; loan collateral requirements are high as they range from 125 percent to 175 percent of the loan, and banks are uncertain about the enforceability of collateral claims; the Uzbek-denominated loan interest rates range from 20 to 24 percent; and many institutions and customers have poor credit rating. In addition, most local banks are not familiar with clean energy investments in buildings and lack capacity to carry out investment due diligence.
- (b) **Institutional and regulatory issues.** Despite the issuance of legislation supporting clean energy investments, key secondary legislation has not been developed yet. To ensure market readiness, regulatory assessments indicate that there is need for (i) secondary legislation and standards for energy audits and building energy performance and (ii) development of standards to facilitate commercial financing for clean energy investments in the buildings sector. There are also significant institutional and regulatory barriers for public building administrators to carry out clean energy investments. These include a lack of funding to cover up-front development costs such as energy audits and feasibility studies, lack of proper net metering and grid connection rules for RSPV, inability to retain budget cost savings, public procurement which favors lowest costs over best value, and poor enforcement of existing technical standards and codes.
- (c) **Technical capacity.** There is limited technical capacity among government entities, banks, and private companies to design and implement EE programs and financing instruments at scale. Local banks have limited experience assessing risks and benefits of clean energy investments in the buildings sector; government entities have limited capacity to oversee, design, procure, operate, and maintain the investments; and only a few private companies have the capacity to implement such investments. Of the five banks consulted during project identification, only one had some experience with clean energy building subprojects. Past Government programs have yielded limited results, and the incentives were difficult to scale up. Small and medium-size engineering firms, which have the potential to become energy service companies (ESCOs), struggle to convince banks to fund their business plans beyond equipment purchases with limited 1–2-year tenors.
- (d) **Lack of awareness and information.** The lack of awareness and information about clean energy inhibits broad interest to develop the market. The public has limited awareness of the benefits and needs for clean investments; hence, there is limited broad uptake of the programs. There is also lack of information/data needed to start developing clean energy programs such as building statistics and typologies; typical energy consumption; high and low public building performers; a variety of credible case studies on costs and benefits; information centers; and database of service providers, EE technologies, and/or equipment providers. Overall, many stakeholders are not aware of the opportunities to improve clean energy utilization and hence lack full commitment.

The proposed project is programmatically anchored in the Uzbekistan National Building Energy Efficiency Program (UBEEP) to support transformational impact in the sector.

19. The UBEEP, supported by the World Bank and expected to be approved by July 2022, is a national program to support EE and clean energy investments in buildings to decrease energy consumption and GHG emissions, while improving comfort conditions and public service delivery. The program is a *wholistic* approach to facilitate transformational EE improvements in the building sector through investments and creation of a targeted enabling environment. Based on the Presidential Decree No. 60 of the Republic of Uzbekistan on the Development Strategy of the New Uzbekistan for 2022–2026 dated January 28, 2022, the UBEEP aims to improve EE in all buildings (commercial, residential, and public buildings) by 30 percent and increase the proportional use of RE sources in buildings by 25 percent. The country aims to conduct standard rehabilitation of 2.37 million buildings over the next 10 years, or 28 percent of the entire building stock, to meet this target. One scenario implies the rehabilitation of 73 percent of the current public buildings’ stock, 66 percent of the multi-apartment buildings’ (MABs’) stock, 60 percent of the commercial buildings’ stock, and 27 percent of the single-family buildings’ stock. The program aims to add 3.4 GW of renewable electricity generation capacity and 4.3 GW of renewable thermal energy capacity.

20. The program-based approach adopted by the GoU is critical to develop a market and transform EE in the buildings sector as part of the UBEEP. International experience shows that successful programs tend to address several aspects of the clean energy industry; hence, the UBEEP is organized into five pillars: Policy and Regulations, Finance and Budgeting, Institutional Development, Capacity Building, and Market Development. Some of the tasks under each pillar are summarized in Table 1.

Table 1. Summary of Activities under the UBEEP

Pillar	Main Objective of Program Activities
Policy and Regulations	Developing, adopting, and enforcing secondary regulations to promote and facilitate clean energy application in the buildings sector (for example, establishing building EE performance standards and legal triggers for mandatory EE improvements during a building life cycle)
Finance and Budgeting	Developing and implementing clean energy financing approaches not solely reliant on Government financing and mobilizing private sector financing (for example, implementing revolving financing mechanisms, adding EE top-up financing to the Capital Repair Program under the MoHCS, establishing a soft loan program under the Intersectoral Energy Savings Fund [hereafter referred to as the Fund], and evolving the Capital Grant Allocation Program)
Institutional Development	Strengthening institutions, enhancing coordination, monitoring overall program implementation, and tracking progress toward policy goals (for example, set up a one-stop-shop for all activities for clean energy investments in buildings)
Capacity Building	Providing capacity building and developing stakeholder <i>experience</i> with clean energy investments in the buildings sector (for example, by implementing the World Bank Clean Energy for Buildings in Uzbekistan [CEBU] Project)
Market Development	Facilitating market development through publicity and awareness, improving industry data, sharing case studies, demonstrating profitability of the investments, and so on

21. The total investment needs of the UBEEP are US\$26 billion and will require both public and private capital—this project establishes the business model, strengthens the institutional environment, and supports with the first suite of public-financed incentives for market development. The investments will be spread over 10 years, and about US\$17.2 billion is for EE investments and US\$9.0 billion for RE



investments. The UBEEP estimates that about 40 percent of the required financing will need to be mobilized from public resources, in part as direct investments (with revolving mechanisms) and in part as guarantees and/or other financial instruments to leverage private financing and equity investments.

22. **By addressing all building markets across rural and urban areas, the UBEEP is designed to be inclusive and to improve communities.** The program will create jobs, improve comfort conditions in homes, improve values of homes, and improve public service (health, education, administration, and so on) delivery by improving conditions in pre-schools, schools, and hospitals. The UBEEP will also contribute to the GoU's energy consumption and CO₂ emission reduction objectives. The reduction in fossil fuel consumption is expected to reach 5.8 mtoe/year (equivalent to a 55 percent reduction compared to the January 2022 fossil fuel consumption). Similarly, the reduction in CO₂ emission is expected to amount to 20 mtCO₂eq, which is equivalent to a 27 percent reduction in current CO₂ emissions from the buildings sector. In monetary terms, the UBEEP will allow building owners to save US\$1.83 billion per year in energy costs and the Government to realize US\$9.42 billion in returns (through exporting saved gas, reducing subsidies, increasing construction and manufacturing taxes, and so on). The envisaged measures will mitigate the potential impact of tariff subsidy removal and further sustainability of the energy sector.

23. **The proposed project is fully anchored in the UBEEP and is designed to have a demonstrative role to jump-start transformation in all building market segments.** The project is the first large-scale EE intervention in the buildings sector supported by the Government. Investments under the project will focus on public buildings for a number of reasons: (a) public buildings typically lack access to financing for clean energy investments; (b) the investments provide direct benefits to the state budget by lowering operational expenditures; (c) renovated public buildings contribute to the citizens' satisfaction with the provision of public services; (d) the investments create jobs, thereby contributing to the post-COVID-19 green recovery; and (e) the renovations enable the Government to lead by example and demonstrate the viability and benefits of clean energy investments.

24. **Successful implementation of EE in public buildings will develop the market and institutions that will speed up implementation in residential and commercial buildings.** The process of investing in the public buildings develops systems for energy audits, designs using innovative technologies, renovation practices, and verification protocols which can be exported to the commercial and residential sectors with some minor adjustments. Thus, the investments help the Government initiate market transformation, test and refine financing schemes, develop and publicize case studies, and generate economies of scale to lower the market costs associated with clean energy investments in the buildings sector.

25. **A revolving fund approach will be used to pave the way for sustainable financing and contribute toward the diversification of financing options available for greening the building stock.** The GoU and the World Bank conducted an analysis of various options to facilitate the sustainability and scale-up of clean energy investments and concluded that the revolving fund approach is best suited for Uzbekistan (see annex 2). Revolving financing schemes have proven effective in promoting EE initiatives. If designed and managed well, revolving funds can ensure sustainability and scalability of the building EE intervention as exemplified in countries such as Armenia, Montenegro, Ukraine, and so on. Other key advantages of the revolving financing approach include the ability to use innovative procurement approaches (unencumbered by public procurement regulation), relative ease of mobilizing of commercial financing, predictability of payments which enables long-term planning, and better energy management and behavioral EE at the building level.

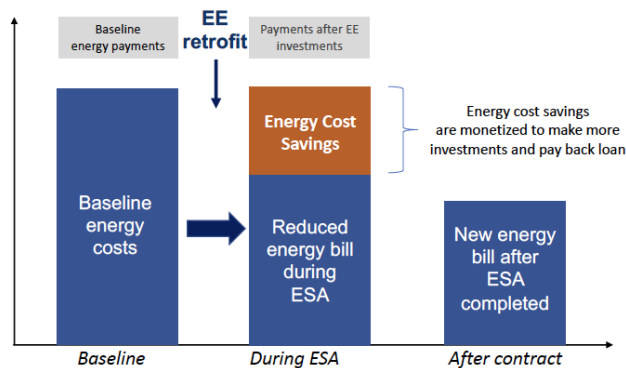


26. **The proposed project will facilitate the development of a private sector-led market to ensure the long-term sustainability of the market.** Private sector financing and participation is important because Government resources are limited; hence, mobilization of private sector resources is critical for the UBEEP to succeed. The proposed project will be implemented using energy service agreements (ESAs), which are a revolving financing instrument that enables the capture of energy cost savings, resulting from clean energy investments, to be used to make additional clean energy investments or pay back the loan (see Box 2). Use of the ESAs will therefore have a catalytic function to demonstrate the financial viability of the investments and establish a track record of repayments, which can attract new financing sources to scale up renovations in other subsectors/market segments. Implementation of the project using the ESAs will be supported by awareness-raising campaigns; improvements in legal, regulatory, and institutional frameworks; and capacity-building activities under the UBEEP to support the development of the market in the commercial and residential buildings as well.

Box 2. Energy Service Agreements

Under an ESA, the financier (usually an EE revolving fund or ESCO) offers a package of services to identify, finance, procure, implement, and monitor EE projects for clients. The client is asked to pay what it is currently paying for energy, that is, its baseline energy costs, from which the financier will make the new, lower-energy payments and recover its investment cost and associated fees from the energy cost savings.

For central government entities that are not allowed to borrow, and for municipalities that have reached their debt limits, ESAs provide the twin advantage of being relatively simple and being regarded as long-term service contracts instead of debt.



Source: World Bank Team

27. **The proposed project will showcase co-benefits of EE and clean energy investments such as improved comfort conditions, viability of switching to renewable heating, and environmental benefits which are the key objectives of the UBEEP.** The buildings will be renovated to national comfort standards to avoid under or overheating, ventilation will be improved, and facilities will be modernized to facilitate the provision of better public service. Preliminary studies indicate that about 20–30 percent of facilities audited by the MoE can switch from coal to renewable heating, which will lead to improved air quality in schools and hospitals and reduce respiratory health challenges associated with local air pollution. This is particularly important as the project will improve quality of services for the most vulnerable population, that is, children in kindergartens, students in schools, and patients in rural and urban hospitals.

28. **The proposed project is also expected to reduce the fiscal burden of public buildings driven by energy subsidies.** The total energy bill of public buildings accounts for a significant portion of the state



budget expenses. Through project interventions, the budget expenditures for energy bills will be maintained over the project implementation period but subsequently reduced because of enhanced EE. This will free up, in the long run, fiscal space to meet other priority needs of the country.

29. **The proposed project builds on efforts by other development partners to support clean energy in the buildings sector incorporated under the UBEEP.** These efforts include (a) UNDP (funded by the GEF) partnership with the State Committee for Architecture and Construction and Ministry of Construction (MoC) on the US\$6.3 million Energy Efficiency for Rural Housing in Uzbekistan Project to promote the design and construction of energy-efficient and low-emission rural houses and settlements, (b) Asian Development Bank study of the d-RE market and green mortgages, (c) the European Bank for Reconstruction and Development's US\$25 million line of credit for clean energy investments, (d) European Investment Bank and *Deutsche Gesellschaft für Internationale Zusammenarbeit* exploration of opportunities in the residential sector, and (e) Japan International Cooperation Agency work with the MoE on assessing EE opportunities in public buildings. Thus, this project benefits from the knowledge and experience gained under a wide range of technical assistance (TA) and pilots financed by development partners but will be the first project to establish systems and scale for a national clean energy investments program in the buildings sector.

30. **Lastly, the investments and measures supported by the project will help Uzbekistan cope with the spillovers from the war in Ukraine.** Uzbekistan stopped gas exports to the Russian Federation in January 2020 in line with the Government policy to halt exports to meet domestic energy needs. In addition, there is no direct power exchange with Russia, limiting potential impacts from the crisis. According to the International Energy Agency (IEA), building EE investments creates more jobs (25 jobs per US\$1 million invested) than many other forms of infrastructure investments. Investments in EE, particularly in rural areas, will have the potential to bring construction and maintenance activities, helping to reduce the impact of likely decreased remittances from abroad.

C. Relevance to Higher Level Objectives

31. **The proposed project is consistent with the new Country Partnership Framework (CPF) for Uzbekistan (FY22–26) (Report No. 170931), which was discussed by the Board of Executive Directors on May 24, 2022.** The project is primarily aligned with High-Level Objective 3 (HLO3) – Improve livelihoods and resilience through greener growth, and High-Level Objective 1 (HLO1) – Increase inclusive private sector employment. Under HLO3, the project will directly contribute to objectives 3.1. and 3.2 which are “decarbonization and greener development of industry and the economy,” and “more efficient use of natural resources” respectively. Under HLO1, the project will contribute towards objective 1.2 which is to “enable private sector growth and investment.” The project will also contribute towards High Level Objective 3 (HLO3) by improving pre-schools, public schools, and health care facility; hence, contribute towards better education (objective 2.1) and health (objective 2.2).

32. **The WBG's engagement in Uzbekistan has been adjusted in line with the WBG COVID-19 Crisis Response Approach Paper, 'Saving Lives, Scaling-up Impact and Getting Back on Track'.** The project will directly contribute to the ‘strengthening policies, institutions, and investment for resilient, inclusive and sustainable recovery’ pillar. It will contribute by creating jobs (IEA studies showed that EE investments create the most jobs when compared to other energy infrastructure investments), facilitating private sector participation, and making social facilities more resilient to future shocks. In pre-schools and schools,



the project will specifically improve ventilation to minimize the spread of COVID-19, provide digital infrastructure for enhanced remote learning, and improve comfort conditions which has been shown to improve learning outcomes. Similarly, in hospitals and clinics, the proposed project will improve comfort conditions which improves health outcomes. Lastly, the proposed project is well balanced between supporting the emergency response and strengthening the economy's post-COVID-19 recovery as it is designed to immediately support investments and be sustainable in the long term.

33. **The proposed project will also contribute toward the World Bank Group Twin Goals of ending extreme poverty and promoting shared prosperity) and toward Private Capital Mobilization (PCM).** The project will boost shared prosperity by supporting improvements in schools and hospitals in all regions of the country. It will reduce expenditures and mitigate the impact of the energy price increase planned for coming years. The project will support the PCM objective of enabling private sector participation in EE investments in buildings through the use of the revolving financing mechanism to demonstrate the profitability of clean energy investments and provision of support to commercial banks to develop financial products. The UBEEP is expected to raise 60 percent of the required financing (US\$15.7 billion) from the private sector.

34. **Lastly, the proposed project will also contribute to the World Bank Climate Action Plan commitment to increase climate financing to 35 percent of the total financing.** Clean energy investments reduce GHG emissions, thereby contributing to climate change mitigation. The investments also strengthen climate change adaptation by improving the ability of building facilities to supply own power through rooftop solar investments and utilize less energy and is in general alignment with the Paris Agreement.

II. PROJECT DESCRIPTION

A. Project Development Objective

PDO Statement

35. The Project Development Objective (PDO) is to improve energy efficiency in public buildings and enhance the regulatory framework for clean energy investments in the buildings sector.

PDO Level Indicators

36. Progress toward the development objective will be monitored using the following indicators:
- (a) Projected lifetime energy savings from energy efficiency investments in public buildings (MJ, number; Core indicator);
 - (b) Renewable energy generation capacity constructed under the project (MW); and
 - (c) Clean energy secondary legislation (for energy audits, building energy performance, and energy service contracts) adopted under the Project (text; Performance-Based Condition [PBC]).



B. Project Components

37. The project has three components: (a) clean energy investments in public buildings; (b) TA to enhance the enabling environment for EE investments, support market development, and provide project implementation support; and (c) the Contingent Emergency and Response Component (CERC). The project will be implemented using the Investment Project Financing with Performance-Based Conditions (IPF-PBCs) instrument financed by IDA resources. The three components are further discussed below.

38. **Component 1 (a) and (b): Clean energy investments in public buildings (US\$138 million).** The purpose of Component 1 is to not only finance clean energy investments but to do so in a way which demonstrates the revolving financing mechanism (hence profitability) of clean energy investments in the buildings sector. Such demonstration, and development of the capacity needed to implement the component, supports the implementation of other activities under the broader UBEEP. The component will finance EE and, where applicable, associated d-RE investments in pre-school education, public education, and health sector facilities under the MoPSE, MoPE, and MoH, respectively. The component will finance the investments under two sub-components: subcomponent 1(a) will finance goods, works, non-consulting services, and consulting services; and subcomponent 1 (b) will finance goods, works, non-consulting services, and consulting services *subject to achievement of the PBCs*.

39. Eligible facilities will include kindergartens; day-care facilities; public primary, secondary, and high schools; dormitories; student hostels; specialized schools (for example, sports and cultural schools); central, regional, and municipal hospitals; rural clinics; and associated administrative buildings. All facilities will need to meet the following criteria: (a) central public ownership; (b) not had extensive renovations in the past 10 years; (c) structurally and seismically safe; and (d) have no plans for office moves, closure, building demolition, or selling. The investments will need to yield at least 20 percent energy savings after renovation and have a maximum simple payback period of 15 years for the suite of renovations including the d-RE investments.²² Additional criteria will be included in the project operations manual, and the selection of public facilities will be coordinated with the public investment program for the capital reconstruction of social facilities.

40. **The component will finance typical EE and d-RE measures.** The suitable combination of EE and d-RE measures will be determined using energy audits and should result in a payback period less than 15 years. Selection of the appropriate renovation package for a specific building will be based on the following hierarchy: (a) reducing building heat demand through the *insulation* of the building envelope (that is, the insulation of walls, roofs, and basements of the building, replacement of inefficient windows, doors, and lighting systems, and so on); (b) *heating system upgrades* to supply the smaller heat load through clean energy options such as air-source heat pump, pellets, geothermal, and so on, and if these options are not economically/financially feasible, then upgrading to more efficient gas/electric boilers; and finally (c) application of *on-site renewable generation* to further offset the electric load if proven financially and economically viable.

41. **Typical technical services directly related to investments to be supported under this component include** (a) subproject screening (including climate change considerations), detailed energy audits, technical designs, construction supervision, and so on; (b) gender and citizen engagement and social

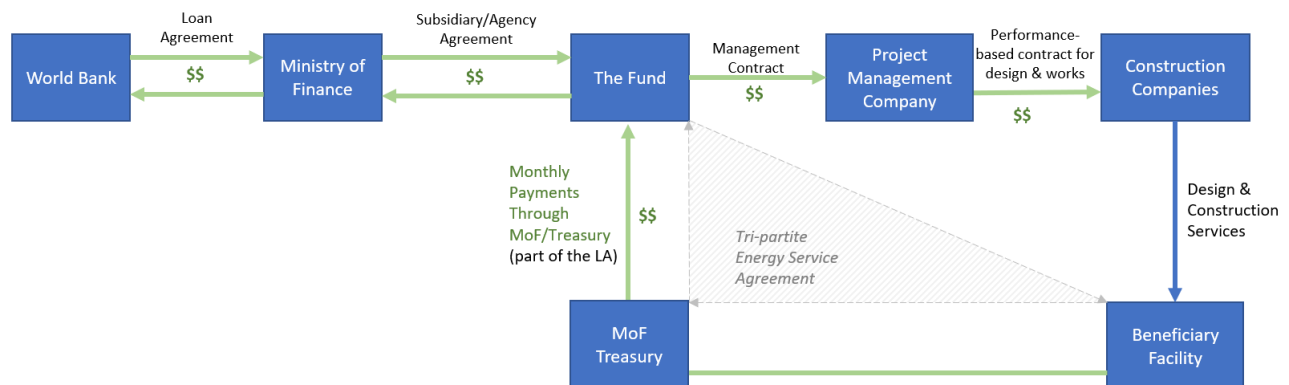
²² The average payback period of the investments under the World Bank Deploying Energy Efficiency and Distributed Solar in the Public Buildings TA is about 10 years.

monitoring before and after the EE investments; (c) online monitoring system for energy performance to help implement the measurement and verification framework and manage energy consumption post renovation; and (d) Environmental and Social Management Plans (ESMPs) according to the Environmental and Social Framework (ESF).

42. **Investments in the selected facilities will be implemented using the ESAs between the Fund, the MoF, and the public beneficiary.** Under the ESA, the Project Management Company (PMC), hired by the MoE/Fund, will provide a full set of services for clean energy improvements at the beneficiary facility, and the beneficiary will pay for such services over the payback period of the investments primarily using energy cost savings. The services provided by the PMC will include procurement, financial management (FM), supervising contractors, overseeing environmental and social risk management, and participating in the measurement and verification of savings.

43. **The flow of funds under the ESA is illustrated in Figure 2.** The World Bank will lend funds to the GoU as represented by the MoF, which will channel the funds on to the Fund under a subsidiary agreement. The Fund will implement the project through the PMC under a project management contract. The PMC will hire construction companies to provide design and construction services to beneficiary facilities, who will then make monthly repayments to the Fund for the services provided. The repayments will be based on energy savings resulting from the clean energy investments, and since all buildings are centrally owned, all payments will be made through the MoF treasury (see Section III for additional details).

Figure 2. Project Flow of Funds



44. **Component 2: Technical assistance, capacity building, and project implementation support (US\$5 million).** This component will provide TA to enhance the enabling environment for clean energy investments in the buildings sector, support market development, and provide project implementation support.

- (a) **Institutional strengthening and market capacity building (US\$1 million).** This subcomponent will (i) support the full operationalization of the Fund to use the revolving financing mechanism for implementing clean energy investments; (ii) provide TA to the MoE and other government agencies on the design and implementation of clean energy subprojects; (iii) provide training to facilities and public institutions owned by the ministries



of Health, Ministry of Public Education and Ministry of Preschool education to enhance their energy management skills; (iv) develop and implement targeted training programs for contractors, energy auditors, engineering companies, and potential companies that provide energy service; and (iv) provide vocational and technical training on EE and d-RE investments. The subcomponent will encourage women and youth to participate in the trainings and further apply their knowledge in the clean energy market. It will support activities to improve capacity in revolving financing, project management, staffing, procurement, audit/designs, FM systems, and environmental and social safeguards management. The subcomponent will also support activities such as South-South knowledge exchange, training, twinning, and workshops (targeting local and central government authorities, design and construction companies, banks, and so on).

- (b) **Information dissemination and communication (US\$0.5 million).** This subcomponent is particularly important to support the development the clean energy market, share knowledge with the private sector, and make the information accessible to improve awareness of clean energy opportunities and renovation. The TA will create knowledge pieces and case studies, hold workshops for targeted audiences (for example, EE providers with the potential to serve the private sector, commercial enterprises likely to implement clean energy investments such as cooled warehouse facilities, and so on), and make the information accessible to improve awareness of clean energy opportunities.
- (c) **Project implementation support (US\$2.5 million).** This subcomponent will support activities of the Fund and PMC related to implementation of the proposed project. Although Presidential Decree No. 4779 stipulates that the Government will provide financing for Fund operations, the subcomponent will support Project management, implementation, monitoring, evaluation, and reporting, including in the areas of financial management, engineering, procurement, disbursement, and social and environmental protection. This subcomponent will also support the implementation of gender, citizen engagement, environmental, and social protection action plans.
- (d) **Leveraging private sector participation and financing (US\$0.5 million).** The goals of this subcomponent are threefold: (i) to facilitate commercial sector participation in clean energy investments, that is, utilize the demonstration effect of the project in public buildings to facilitate clean energy investments in commercial buildings as well; (ii) support EE providers to pilot the ESAs in the commercial sector; and (iii) facilitate private sector financing of clean energy investments given the limited government financing. The TA will assess what is needed to scale up private sector investments and the barriers to private sector financing of the investments and then provide support as needed within the confines of the development objectives. The project will carefully identify two or three EE providers to support their pilot of the ESA business model in the commercial sector. These sub-activities will contribute toward the development of the market for clean energy investments in the buildings sector as a whole.
- (e) **Studies and activities to support the broader implementation of energy efficiency and distributed renewable energy investments (US\$0.5 million).** This subcomponent will support the rollout of the national building EE program, including development of necessary regulations, and any further studies and surveys necessary to broadly support clean energy investments in the buildings sector.



45. **Component 3: Contingent Emergency and Response Component (US\$0 million).** This component, with a provisional zero allocation, would allow for a quick reallocation of resources within the total project financing envelope to boost the country's response in the event of an eligible national crisis or emergency. Such eligible crisis or emergency is defined as "an event that has caused, or is likely to imminently cause, a major adverse economic and/or social impact associated with natural or man-made crises or disasters." If triggered, paragraph 30 of the World Bank Policy for IPF, regarding 'Projects in Situations of Urgent Need of Assistance or Capacity Constraints' would apply. There is a low to moderate probability that during the life of the project, Uzbekistan would experience such a natural or a man-made disaster. Triggers for the CERC will be clearly outlined in the Project Operations Manual (POM) acceptable to the World Bank. Disbursements will be made against an approved list of goods, works, and services required to support crisis mitigation, response, and recovery. All expenditures under this component will be appraised, reviewed, and found to be acceptable to the World Bank before any disbursement is made. A CERC operations manual will be included in the POM.

Performance-Based Conditions

46. **Component 1 (b) investments are intertwined with PBCs, and achieving PBC targets unlocks about a third of the total project financing for investments in the public facilities.** Achieving a PBC target result is a milestone which provides access to funds to finance eligible expenditures (renovations under Component 1) at selected public buildings. The allocation for PBCs is US\$50 million. The PBCs support use of sustainable financing, adoption of secondary legislation and standards, and private capital mobilization. The specific PBCs are summarized as follows:

- (a) **PBC 1 - At least three eligible facility renovations have been financed from repayments under the Project ESAs to demonstrate viability of the revolving financing mechanism (US\$15 million).** PBC 1 supports the demonstration of the revolving financing mechanism. Use of the revolving financing mechanism is strategically important because (i) it proves that clean energy investments can pay for themselves; hence, the GoU can do more investments (that is, increase the number of beneficiaries) without generating additional debt and (ii) it demonstrates the profitability/financial viability of clean energy investments which can stimulate private sector participation. Though the target of facilities to be renovated from repayments is 50; lessons learned from other projects indicate that the first set of the ESAs and repayments are typically the most challenging to implement; hence, PBC 1 places emphasis on the first three facilities to be financed from the repayments. The facilities could be financed under one contract or separate contracts, and the disbursements are scalable.
- (b) **PBC 2 – The Recipient, through the MoE, has adopted key secondary legislations for energy audits, building energy performance, and general Energy Service Agreements²³ (general ESAs); and thereafter caused or facilitated completion of energy audits, implementation of building energy performance, and conclusion of a general ESA for sample buildings, all in a manner and substance satisfactory to the Bank (US\$21 million).** PBC 2 is designed to support the creation of an adequate regulatory framework to promote clean energy investments in the buildings sector and support the broader UBEEP implementation. A detailed review of current legislation identified the need for three sets of secondary

²³ "General Energy Service Agreement" or "General ESA" means the agreement concluded between a private sector company and the managing entity of an Eligible Facility for the purposes of achieving energy efficiency.



legislation: (i) energy audits, (ii) building EE performance, and (iii) energy service contracts. By establishing a regulatory basis, the respective legislation is important because (i) energy audit secondary legislation enables *credible* implementation of energy audits (that is, establishes procedures, responsibilities, methodologies, procedures for the accreditation of auditors, reporting requirements, and so on) across the whole economy, and credible energy audits increase the likelihood of implementation of the recommended measures; (ii) building energy performance secondary legislation enables new construction designs to incorporate energy-efficient measures—hence avoiding locking-in inefficient building energy consumption patterns, and setting performance standards for renovated buildings that minimize energy demand; and (iii) the general energy service agreement provision provides social facilities the right to conclude ESAs *with private companies* and hence implement clean energy investments without solely relying on central government resources. Relevant regulations for energy audits and building EE performance have been jointly drafted by the MoE and the MoC, and this PBC supports their adoption. In a nutshell, PBC 2 will improve the quality and standards of clean energy investments, thus bringing credibility to the development of the market. The PBC disbursements are scalable at US\$5 million for adopting each set of secondary legislation (for a total of US\$15 million) and US\$2 million for implementing each set of legislation at sample buildings (for a total of US\$6 million).

- (c) **PBC 3 - At least three banks have entered into agreements with the PIE, all in a manner and substance satisfactory to the Association, to receive technical or financial support to enable them to provide clean energy financing for the buildings sector. (US\$9 million).** Identified as critical under the UBEEP, PBC 3 supports private/commercial financing of clean energy investments in the buildings sector. The PBC seeks to increase the number of banks financing clean energy investments and broaden dedicated support provided to the banks. The type of support provided to improve capacity will depend on the findings of the TA under Subcomponent 2(d) and the needs of each bank. It could include cross-promotion of financial products that contribute to the PDO, development of partial risk-sharing instruments (for example, junior/senior debt instrument where the Fund assumes junior debt and a commercial bank assumes senior debt), development of new instruments to use cash flow as collateral, and so on.
- (d) **PBC 4 - Evaluation of the net billing scheme completed by the PIE based on the installation and operation of a rooftop solar photovoltaic (RSPV) system with net billing for one year at one public building facility (US\$5 million).** PBC 4 seeks to assess the net billing framework to ease the process of connecting to the grid and managing rooftop solar systems, and demonstrate net billing opportunities to the broader market. There are gaps in standards and procedures for connecting to the grid and receiving compensation; hence, prosumers often struggle despite the existence of a net billing framework. For a successful system, deviation of the annual average monthly output from the envisaged output should be less than 10 percent. Thus, PBC 4 will help the GoU assess the effectiveness of the framework introduced in December 2021 and provide lessons learned for improvements. The Fund/PMC will work closely with a clean energy service provider responsible for the installation and operation and maintenance (O&M) of the solar system for the first year of operation. This will inform how the Fund/PMC structures contracts on similar investments.



Table 2. Summary of PBCs and Indicators

PBCs	Scalable Disbursement Amount (US\$)	Description of Indicators and verification	Strategic relevance
PBC 1. At least 3 Eligible Facility renovations have been financed from repayments under the Project ESAs to demonstrate viability of the revolving financing mechanism.	15,000,000	The PBC verifies the number of building renovations financed using repayments. The buildings will be considered fully financed at commissioning i.e., when the renovations are completed. Formula: US\$ 5 million for each building.	The PBC proves the financial viability of clean energy investments, which is important for scaling up investments in the public buildings and stimulating private sector interest.
PBC 2. The Recipient, through the MoE, has adopted key secondary legislations for energy audits, building energy performance, and general Energy Service Agreements; and thereafter caused or facilitated completion of energy audits, implementation of building energy performance, and conclusion of general ESA for sample buildings:	21,000,000 (total for PBC 2)		
PBC 2.1: The Recipient has adopted an energy audit regulation for the purpose of transposing International Standards for Energy Audits. ²⁴	5,000,000 (PBC 2.1)	Evidence: publication in the National Database of the Legislation of the Republic of Uzbekistan	The PBC enables the adoption and implementation of <i>credible</i> energy audits which are needed to provide a basis for clean energy investments.
PBC 2.2 Energy audits reports for Sample Buildings have been issued in accordance with the regulations adopted by the Recipient in PBC 2.1	2,000,000 (PBC 2.2)	Evidence: Verification of audit completion in Sample Buildings in accordance with the regulation adopted in PBC 2.1 by the CVA	
PBC 2.3: The Recipient has adopted a building energy performance regulation in line	5,000,000 (PBC 2.3)	Evidence: publication in the National Database of the Legislation of the Republic of Uzbekistan	The PBC enables the incorporation of energy considerations in building designs and common

²⁴ “International Standard for Energy Audit” means the international standards for the carrying out of energy audits such as ISO 50002 or “Article 8 of the Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on Energy Efficiency” or other internationally recognized standard proposed by the Recipient and acceptable to the Association.



PBCs	Scalable Disbursement Amount (US\$)	Description of Indicators and verification	Strategic relevance
with International Standards for Building Energy Performance. ²⁵			understanding of the EE of different buildings.
PBC 2.4: A building energy performance report has been issued for one Sample Building in accordance with the regulations adopted by the Recipient in PBC 2.3	2,000,000 (PBC 2.4)	Evidence: Verification of implementation of building energy performance in accordance with the regulation in PBC 2.3 by the CVA	
PBC 2.5: The Recipient has adopted an amendment to the relevant regulations to enable public entities to conclude General Energy Service Agreements with private sector companies for the purpose of implementing energy efficient investments	5,000,000 (PBC 2.5)	Evidence: publication in the National Database of the Legislation of the Republic of Uzbekistan	The PBC provides an opportunity for budgetary institutions to implement clean energy investments without relying on central budget capital financing for the investments.
PBC 2.6: General ESA has been concluded between a managing entity for an Eligible Facility and a private sector company for at least one Sample Building.	2,000,000 (PBC 2.6)	Evidence: Verification of signed agreements of a General ESA in accordance with the regulation in PBC 2.4 by the CVA	
PBC 3. At least three banks have entered into agreements with the PIE, all in a manner and substance satisfactory to the Association, to receive technical or financial support to enable them to provide clean energy financing for the buildings sector.	9,000,000	This PBC verifies the number of banks receiving support to finance clean energy investments in the buildings sector. The support will be evidenced by a signed agreement between the PIE and the banks with details of the support to be provided, and intended outcomes.	The PBC contributes to private capital mobilization for clean energy investments in the buildings sector
		Formula: US\$3 million for each bank.	

²⁵ “International Standard for Building Energy Performance” means the international standards for the carrying out of building energy performance, such as ISO- 52000- or other internationally recognized standard proposed by the Recipient and acceptable to the Association.



PBCs	Scalable Disbursement Amount (US\$)	Description of Indicators and verification	Strategic relevance
PBC 4. Evaluation of the net billing scheme completed by the PIE based on the installation and operation of a rooftop solar photovoltaic system for one year in one Sample Building.	5,000,000	The successful operation of the rooftop solar PV system is evidenced by online verification of the output provided by supplier. Deviation of the average monthly output from the envisaged output should be less than 10 percent. The average monthly output will be calculated at the end of the first year of operation of the system (US\$5 million).	The PBC assesses the effectiveness of the net billing framework recently established to seek experience-based improvements to ease the process of connecting to the grid and managing rooftop solar systems.

Note: a. See the Results Framework for details.

47. **Annual work plans and disbursements for achieving PBC results.** The Fund/PMC will be required to prepare an annual work plan for each upcoming year. Inclusive of other tasks, the work plan will specify (a) the facilities to be renovated during the upcoming year and the associated eligible expenditures, for example, the annual work plan will list the specific addresses of facilities to be renovated and the cost of the renovations at each facility, and (b) the facilities whose disbursements will be conditional on achieving PBC result indicators i.e., facilities to be renovated under Component 1 (b). The World Bank will disburse funds for those facilities when a CVA verifies that the PBC results have been achieved. A CVA will need to be appointed by the MoE to verify the achievement of the PBCs based on agreed verification methods summarized in the Results Framework. The CVA could potentially be the same as the company hired to conduct the financial audit of the project. The firm will need to have qualified personnel satisfactory to the World Bank, and the terms of reference (TOR) for the CVA will be agreed with all parties.

C. Project Beneficiaries

48. **Component 1 will benefit approximately 500,000 regular users (students, patients, teachers, doctors, nurses, and so on) and employees (occupants) of the selected health and education public buildings.** Beneficiaries will also include the more than 2 million citizens reliant on the services provided by public buildings, such as citizens who may need to access hospital services or services provided by public administrative buildings. Other beneficiaries will include professionals working in the engineering, architecture, and construction sectors; equipment suppliers; and construction and engineering firms benefitting from the job opportunities and new skills for further expansion in the clean energy industry. Citizens (taxpayers) will also benefit from more efficient use of energy and increased energy security under climate change.

49. **Component 2 will benefit sector institutions, especially the MoE, Fund, MoC, MoHCS, MoH, MoPSE, and MoPE, through capacity building, TA, and the provision of project implementation support.** These activities are expected to improve their planning, technical, fiduciary, and institutional capacity to



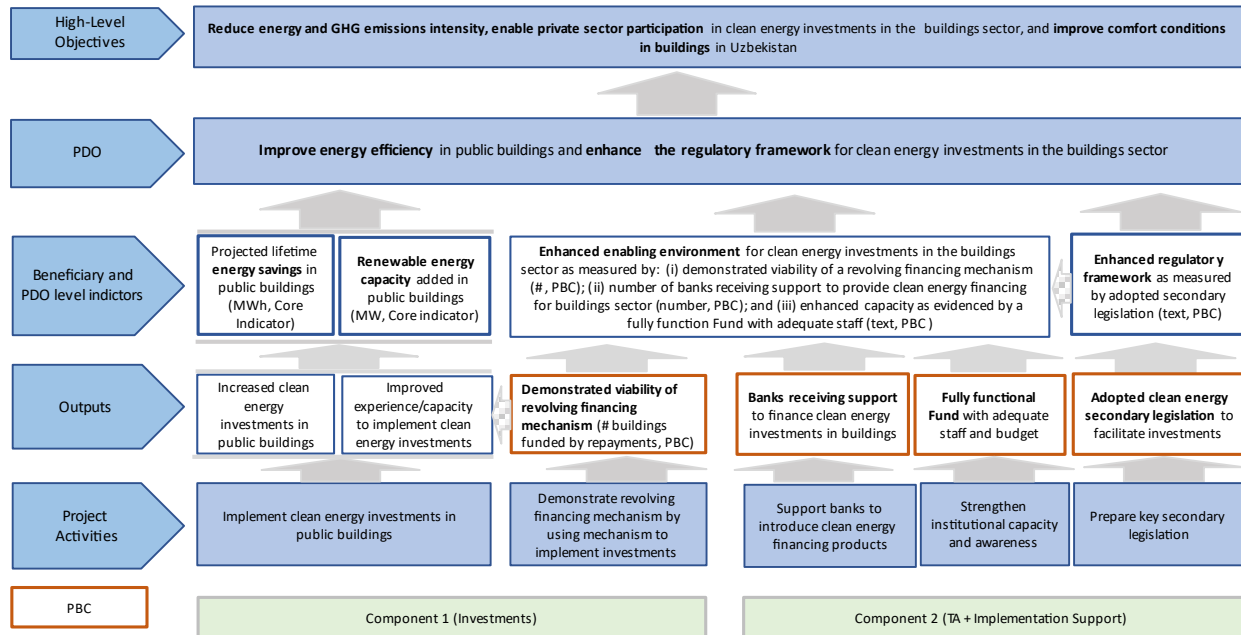
support and deliver the clean energy agenda in the buildings sector, beyond the timeline of the proposed project.

50. **Furthermore, the project has focused areas of intervention on citizen engagement and gender to ensure equal access to quality, reliable, and affordable energy services; skill development opportunities; and managerial and technical jobs.** The project will also address universal access to public buildings for all categories of visitors such as people with disabilities, the elderly, and people with small children. The primary focus in terms of beneficiaries under the gender equality work includes (a) women who will get equal access to managerial and technical jobs; (b) EE firms which will be able to attract female talent for their business operations; and (c) education and health institutions that have the potential to promote gender equality, create employment and opportunities for women, and improve the quality and outcomes of key social services.

D. Results Chain

51. **The project simultaneously addresses the objectives to save energy in public buildings and enhance the regulatory framework for clean energy investments in the buildings sector, creating the foundation for the successful implementation of the UBEEP.** Meeting these objectives will contribute to the high-level objectives (that is, the UBEEP objectives) of reducing energy and GHG emissions intensity, enabling private sector participation in clean energy investments in the buildings sector, and improving comfort conditions in buildings. The development objective will be met by investing in clean energy in buildings utilizing a sustainable financing mechanism and providing TA to enhance the general enabling environment, and more specifically the enabling regulatory framework. The project is thus organized into two main components: (a) Component 1 will (i) support the clean energy investments in priority education and health care facilities and (ii) demonstrate the viability of sustainable financing (hence profitability) of clean energy investments and (b) Component 2 will support the adoption of secondary legislation, private/commercial capital mobilization, and capacity building to enhance the enabling and framework for clean energy investments. The proven profitability will attract private sector participation and build on the capacity and experience gained from project implementation to scale up clean energy investments. The investments then lead to saved energy (hence reduced energy and GHG emissions intensity) and better comfort conditions in buildings. The theory of change is summarized in Figure 3.

Figure 3. Theory of Change



E. Rationale for Bank Involvement and Role of Partners

52. **Public financing of the project is justified by the prevalent market failures and barriers to sustainable financing for building clean energy retrofits as described in section I.B.** Both public and commercial financing for EE investments in buildings is largely absent, and there are no ESCOs in the market that have sufficient technical and financial capacity to finance EE investments using their own balance sheets. The project aims to strengthen their technical capacity by testing simple ESCO models as part of contractual arrangements, working with banks to improve their ability to assess the risks associated with clean energy investments in buildings, and demonstrating the profitability of the investments. In addition to providing training, the project will provide an opportunity for stakeholders to learn by doing which develops critical experience transferrable to other subsectors. Public financing is needed to initiate the transformation since the private sector will not do it under existing barriers.

53. **Public sector provisioning is needed to initiate a market for large-scale investments in the buildings sector.** There are currently no large-scale investments in the buildings sector, and public sector provisioning is needed to overcome the initial market inertia. In addition to addressing capacity challenges identified in section I.B, the project will also create demand for those services by hiring auditors and construction companies and exploring opportunities to work with local banks and so on. The UBEEP and the World Bank investment signal a commitment to the market, hence attracting private sector participation.

54. **Buildings renovated under the project will provide a scalable demonstration effect to inform future financing.** The project will invest in selected public buildings and through this process create a demonstration effect and positive examples to showcase approaches for investing in resilient and sustainable public buildings. The experience gained and capacity developed during implementation will



help create an enabling environment in which the Government can leverage additional funds to address the rest of the energy-inefficient building stock.

55. **Building on the World Bank’s leadership on EE in Uzbekistan, the proposed project extends the World Bank’s assistance to the buildings sector.** The World Bank has been providing multipronged assistance to the GoU on the formulation and implementation of energy transition to low carbon development through Advisory Services and Analytics (ASA) and investments. Key support in the EE and RE space includes lending operations through the Navoi Scaling Solar Independent Power Producer Project (P170598), Energy Efficiency Facility for Industrial Enterprises Project (P118737), District Heating Energy Efficiency Project (P146206), and the ongoing programmatic ASA Support for Preparation of Energy Sector Strategy (P168487), which is central to the sector reform discussion that aims to support the GoU prepare and implement energy reforms for a market-oriented transition of the sector. This project benefits from the knowledge and experience gained under a wide range of TA and investment projects financed by development partners as well.

F. Lessons Learned and Reflected in the Project Design

56. **The proposed project will draw on the experience and lessons learned from other projects, including the importance of institutional strengthening for sustainability of investments.** The World Bank is valued not only for its ability to introduce a sustainable financing mechanism but also for sharing international best practices based upon its vast experience with building renovation programs in the broader Europe and Central Asia region, including Kazakhstan, Armenia, Montenegro, Bosnia and Herzegovina, Kosovo, and Turkey. By building on the abundant regional experiences, the Government will establish a sustainable model to invest more in clean energy, resulting in enhanced energy independence and security.

57. Key lessons learned from similar projects include the following:

- (a) **Use of an IPF with PBCs enables close implementation supervision and improves the results-orientation of the project.** Experience from other projects shows that this instrument enables the World Bank to provide closer supervision and implementation support which is needed to implement the ESAs that have never been implemented in the country before. There are significant challenges to the development of a comprehensive enabling framework for clean energy investments; hence, linking some disbursements to critical actions (the PBCs) is necessary to improve the likelihood of having the actions to tackle the challenges adopted by the Government.
- (b) **Repayments by beneficiaries increase the ownership, accountability, and quality of energy management by the beneficiaries.** Simple support schemes such as subsidies delivered as grants or concessional loans are most common in the region. However, it is important to gradually introduce alternative financing and delivery models that are simple and adjusted to the local market context. EE financing through a revolving fund structure is possible on a sustainable basis in social institutions that have budgetary constraints and are fully budget dependent. The energy cost savings (which will be revolved) are likely to be sustained when beneficiaries maintain energy-efficient behaviors, and making beneficiaries responsible for repayment is a good way to incentivize energy-efficient behaviors.



- (c) **A strong, dedicated institution (the Fund) which has a clear mandate and well-trained and motivated staff with adequate compensation is critical for the project's success.** There is a unique opportunity to develop and strengthen the newly established Fund from its current start-up phase into a 'full service' sustainable financing institution for clean energy investments to overcome some of the identified barriers. Its capacity to implement clean energy projects will be strengthened during implementation through proper staffing, training, twinning, and dedicated support from the World Bank. The experience from preparing and implementing the project will help build staff expertise and systems for business planning, project screening, energy audits and designs, procurement, contract negotiations, contractor supervision, and monitoring of savings and repayments. Support to develop capacity will be provided under Subcomponent 2(a).
- (d) **The introduction of performance-based payments helps ensure quality and accountability of contractors.** The Fund/PMC will engage energy service providers to provide some or all of the implementation services using performance-based contracts. Performance-based contracting improves the quality of goods and services provided by the contractors, as part of their payment is based on the energy saved. This approach is new to Uzbekistan; hence, the project will adopt a flexible approach which might start with making the last 10 percent payment to the contract after a year of proven performance as part of the monitoring and verification (M&V) process.
- (e) **Substantial training is needed to build the capacity of construction firms to effectively participate in the project.** This includes mastering performance-based contracting, finding design company partners, mobilizing working capital, understanding net present value (NPV) contracting, and so on. Developing the capacity of construction firms is key to achieving sufficient scale. The proposed project will provide targeted capacity building to help companies develop sufficient capacity, and this will be done under Subcomponent 2(a).
- (f) **Realizing financial savings is reliant on the careful selection of buildings to participate in the project and the diligent management of works.** Buildings participating in the project are restricted to those where energy savings can be achieved without extensive expenditures that do not contribute to energy savings. The line ministries have other sources of funds which can be used for such works; hence, the project will restrict expenditures on non-EE works to 10 percent of the total financing. Additionally, utilizing NPV-based procurement shifts the focus from least-cost investments to highest NPV investments which tend to have higher savings. Examples from Montenegro and Armenia indicate that this careful selection and management lead to financial savings that tend to exceed targets.

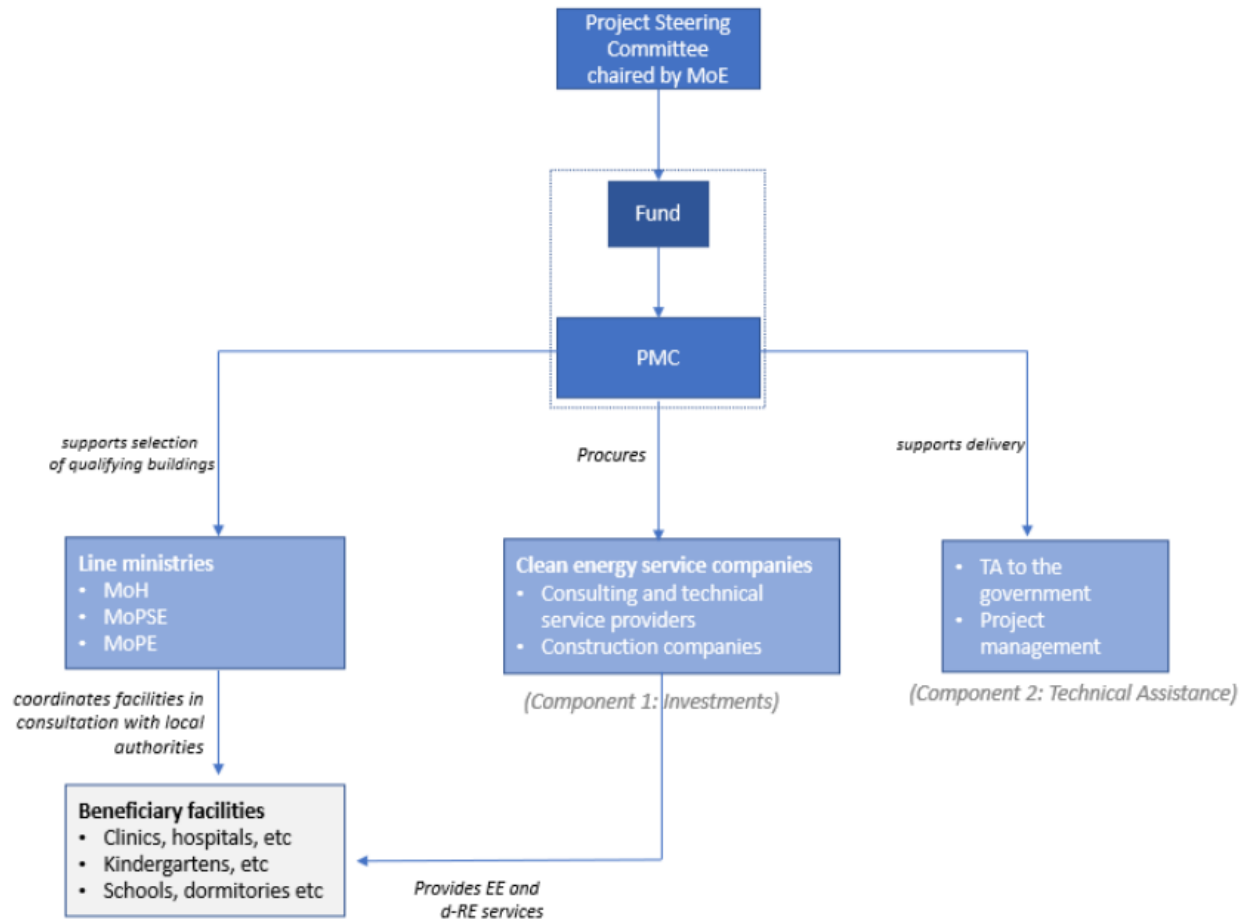
III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and Implementation Arrangements

58. The project implementation arrangements are summarized in Figure 4.



Figure 4. Project Implementation Structure



Institutional Implementation Arrangements

- (a) **The Project Steering Committee (PSC)** is an inter-ministerial committee comprising representatives from the MoE, MoF, MIFT, MoH, MoPE, MoPSE, one bank, one construction company, and the Fund (as an observer) which will oversee project implementation activities of the Fund. The PSC will be chaired by the MoE as the lead Government institution responsible for project implementation. It will supervise the progress of implementation, that is, approve project annual budget; approve annual work plans; monitor project timelines, budget, and results; and so on. Some meetings of the PSC will be strategic in nature, while others will be operational. Thus, the PSC will also provide strategic and operational guidance to the Fund/PMC as needed.
- (b) **The Fund** was established in 2020 as a separate legal entity owned by the MoE. It is the project implementation entity. However, it is new with limited capacity; hence, the MoE/Fund will hire a PMC (unless agreed otherwise with the Association in the event that the Fund has the appropriate staffing and resources in place) to implement the project and provide capacity building to the Fund to enable it to take over project implementation at or before the Midterm Review (MTR).

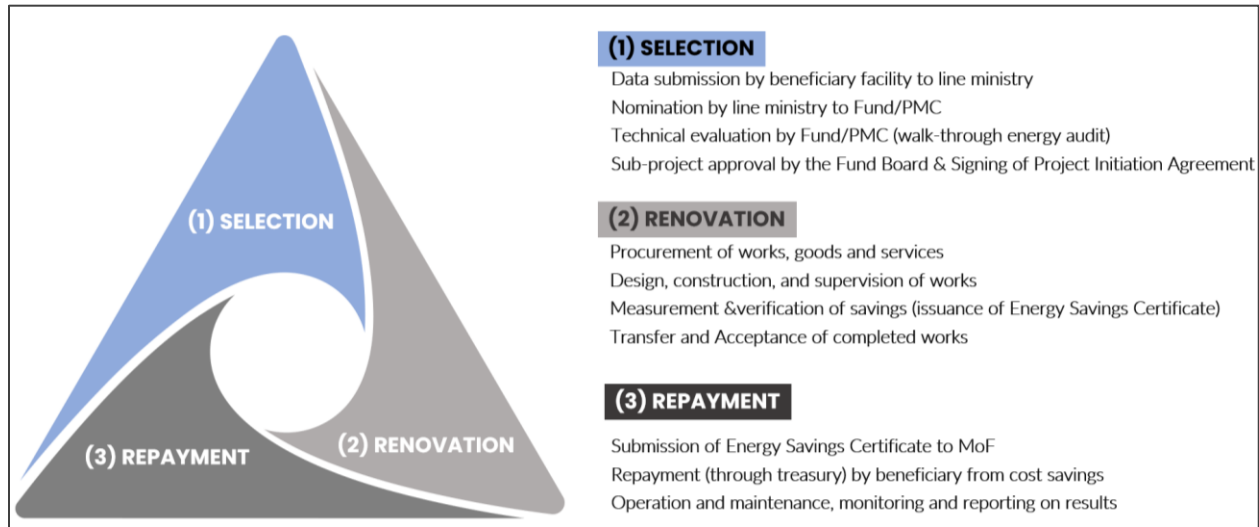


- (c) **The PMC** will be appointed (unless agreed otherwise with the Association in the event that the Fund has the appropriate staffing and resources in place), with staffing, resources, and terms of reference approved by the Bank to carry out the project on behalf of the Fund up to the MTR (or for a shorter period if sufficient capacity is developed in the Fund sooner). It will thus help avoid delays in the project implementation and speed up capacity building of the Fund through twinning. The PMC will provide FM, disbursement, reporting, procurement, technical, environmental and social protection, monitoring, and other services needed to implement the project in accordance with the relevant provisions of the Financing Agreement, the Project Operations Manual, and the Subsidiary Agreement. The TOR to hire the PMC will be agreed between the World Bank, Fund, and MoE. The Fund will need to create a PIU to take over operational implementation responsibility from the PMC after a term specified in the operations manual but no longer than 2.5 years from the effectiveness date.
- (d) **The line ministries (MoH, MoPSE, and MoPE)** will be responsible for nominating facilities to participate under the project. They will also participate in the evaluation of bidding documents (through the procurement committee) and provide strategic and operational guidance (through the PSC). Social facilities under the line ministries will be responsible for repayments to the Fund according to the ESA.

59. **Energy service agreements.** The project will be implemented using ESAs (see paragraph 11 and Box 2) signed between the Fund and the beneficiary institution. Under an ESA, the Fund/PMC will provide a set of services (energy audit, procurement, detailed design, financing, construction and monitoring, technical supervision, and so on) for energy-efficient upgrades at the eligible public building facility. The implementation cycle of each ESA is summarized in Figure 5, and it has three major phases: (a) selection, (b) renovation, and (c) repayment. Each phase has three to four steps which have been agreed with the counterparts and will be refined in the POM and improved upon as the counterparts learn and adjust from implementing each ESA. During the *selection phase*, beneficiary facilities are nominated to participate in the project by the line ministries, and the PMC evaluates whether the facilities meet the technical criteria for participating in the project. Selected facilities move on to the *renovation phase* during which the PMC does procurement, and supervises construction. During the *repayment phase*, the beneficiary institution will repay the cost of all services to the Fund over the payback period of the investment, and the payments will be based on the energy cost savings generated from the renovations/upgrades. Each year, an equivalent amount for energy expenses (baseline energy consumption adjusted for current tariffs) will be budgeted as before retrofitting, and a portion of the funds (equal to the verified after-renovation energy consumption) will be used to pay for the energy bills, and the savings portion (verified savings after the renovation) will be paid to the Fund for energy services provided according to the ESA. The baseline energy consumption before renovation will be triangulated with data on the energy consumption of social facilities using the smart meters database (natural gas and electricity), and actual consumption from the facilities. The payments will be made until full investment cost recovery. The repayment schedule will be based on the transparent mechanism of measurement and verification of savings. The payment to the Fund under the ESA is made the same way as any payment for utility services following the existing MoF treasury system. Additional details will be provided in the operations manual, and the ESA will be improved incorporating lessons learned from implementation.



Figure 5. ESA Implementation Cycle



60. **Flow of funds.** The flow of funds is summarized in Figure 2. The IDA credit funds will be channeled to the Fund under a Subsidiary Agreement signed between the MoF, MoE and the Fund. The agreement envisages that the Fund will use the CEBU funds to implement the project on behalf of the Republic of Uzbekistan. The Recipient will define the financial terms, in particular whether the funds will be on-lent or on-granted to the Fund by effectiveness as the subsidiary agreement is an effectiveness condition. The provided funds will be used only for the project’s activities following the procedures described in the POM approved by the World Bank. The Fund/PMC will make payments to the contractors and consultants for goods, works, and services according to the Financial Management Manual. The Fund will collect payments from the public institutions that benefitted from the project as described in the previous paragraph. The collected payments will be allocated under the CEBU as financing of the investments minus a small service fee charged by the Fund. Additional details will be provided in the operations manual, and subject to improvements learned from implementing the ESA.

61. **Implementation readiness.** The line ministries submitted 250 buildings to the Fund/MoE for initial consideration to participate in the project. Walk-through energy audits were conducted at 45 buildings to assess whether the buildings meet the technical criteria to participate in the project. About 60 percent of the buildings met the criteria. Since the GoU requested to utilize advanced procurement and retroactive financing procedures, the Fund/MoE is preparing the draft procurement documents so that implementation can start as soon as the project is approved. The advance procurement will be done according to WB procurement regulations, and in accordance with the ESCP.

B. Results Monitoring and Evaluation Arrangements

62. **Overall monitoring, policy guidance, and strategic oversight of the project rests with the MoE as the Government entity responsible for the project.** The Fund, in collaboration with the MoE, will consolidate progress reports on TA activities implemented by the PMC, Fund, and MoE; updates from the line ministries; and progress reports provided by the PMC on completed procurement, disbursements, physical progress of renovation works, and project indicators to report on the overall project



implementation progress. The Fund and the MoE will submit the overall implementation progress reports to the World Bank and other stakeholders on a semiannual basis.

63. **Project indicators and subproject tracking.** The PDO-level and intermediate indicators are presented in the Results Framework. The Fund will be responsible for providing detailed implementation progress reports on agreed indicators aligned with the Results Framework. The Fund 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. The database should be updated at least on a quarterly basis and when a batch of buildings has been commissioned and energy savings have been verified. PDO-level and intermediate indicators for the project will be reported based on this database. 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.

64. **M&V of energy savings.** 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, supervision company will verify the energy savings (with the Fund/PMC, contractor, and beneficiary as observers). 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 Fund/PMC will carry out continuous monitoring of energy consumption of all larger renovated buildings through their energy portal. 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, and O&M of the buildings or address behavior of users of renovated public buildings. Annual training will also be provided to energy auditors, designers, construction firms, and others to share these lessons from early subprojects.

65. **Periodic reporting to assess implementation progress and improve procedures.** In addition to implementation support missions by the World Bank conducted every six months, the Fund will report—either via email and/or meetings—annually to the representatives from the line ministries or central government institutions on the progress of project implementation, identified problems and risks, and lessons learned.

66. **MTR.** An MTR will be carried out by the World Bank to assess the overall project progress, identify critical implementation issues, and make any necessary revisions to the project design or schedule as discussed in the POM. The MTR is expected to be carried out about 2.5 years from project effectiveness.

C. Sustainability

67. **Institutional sustainability.** This project will support the Government in establishing the institutional capacity to scale up clean energy investments in public buildings, which in turn will support a successful implementation of the UBEEP for other subsectors. Establishing an efficient and effective institutional system for cataloguing, screening, assessing, retrofitting, renovating, and replacing existing public buildings is expected to enable the Government and local authorities to build on this experience and meet the ambitious renovation targets defined as part of the UBEEP. Moreover, the first-hand technical experience with the planning and implementation of retrofitting, combined with the



institutional capacity to plan for future investments, is expected to enable the authorities to better manage financial resources for public building investments—not only those from the World Bank but also those from the state and other international financial institutions (IFIs). The project is also aligned with the existing and planned Government strategies on clean energy development.

68. **Technical sustainability.** The engineering and technical designs will follow Uzbek legislation for strengthening and upgrading existing buildings and for new construction. Following the completion of the works financed under the project, the O&M costs are expected to remain minimal in the short term. Increased EE will also support climate change adaptation and sustainability, with the useful life of the buildings extended for another 30–50 years. A building energy management system can also be introduced as an additional tool to monitor and manage the energy consumption of renovated buildings in a sustainable manner. For instance, building energy management services could be implemented in a centralized manner for all large buildings.

69. **Financial sustainability.** Because IDA funding is limited and the need for clean energy investments in buildings is sizeable at around US\$26.2 billion, sustainability is important to the project’s design. To this end, the project introduces a sustainable financing model aimed at (a) leveraging project funds through capturing and reinvesting energy cost savings; (b) demonstrating the principle of repayment of EE investments from energy cost savings, which is critical to transition toward more commercial financing options required for the UBEEP and reduce the need for budget support for EE investments; and (c) coordinating with international donors that are interested in co-financing the UBEEP.

IV. PROJECT APPRAISAL SUMMARY

A. Technical, Economic and Financial Analysis

(i) Technical Analysis

70. This project supports clean investments in select pre-school education, public education, and health sector facilities under the MoPSE, MoPE, and MoH, respectively, which comprises 25,000 buildings with a total floor area of 43 million m².²⁶ Pre-schools (average floor area of 1,500 m²) comprise 15 percent by area, public schools (average floor area of 4,000 m²) 67 percent, and health facilities (average floor area of 1,100 m² for rural health centers/policlinics and 10,300 m² for hospitals) 18 percent. The daily users of the public buildings include 8 million students, patients, teachers, and staff of whom about 6.7 million are pre-school and public-school students and 1.3 million are patients.

71. Walk-through energy audits were conducted at 45 public facilities consisting of 11 pre-schools, 20 public schools, 5 policlinics, and 7 hospitals. These include technical assumptions such as baseline energy consumption, expected energy savings, and GHG emission reduction and financial assumptions such as baseline energy expenditure, investment costs, and expected financial savings for the buildings. The walk-through energy audits provided the basis for key inputs and assumptions used to conduct the economic and financial analysis and define appropriate renovation packages.

²⁶ This project refers to public buildings managed by the MoPSE, MoPE, and MoH only, so this number does not include universities and administrative buildings.

72. Based on the results of the energy audits, different standardized renovation packages were developed for a typical public building. A ‘light’ renovation package (including window and door replacement and roof ceiling insulation) will require an investment of US\$25–43 per m² and generate 30–35 percent energy savings with a payback period of less than 8 years. A ‘standard’ renovation package (including the measures of the ‘light’ package, plus wall insulation, boiler replacement, and heat network renewal) will require an investment of US\$45 to US\$61 per m² and generate 55–60 percent energy savings with a payback period of 8–10 years. Lastly, an ‘advanced’ or deep renovation package (including the measures of the light and standard packages with a heat pump instead of boiler replacement, plus a solar photovoltaic [PV] system and a solar collector for sanitary hot water if conditions allow) will require an investment of US\$70 to US\$77 per m² and generate 70–85 percent energy savings with a payback period longer than 10 years.

73. The proposed renovation measures have been widely deployed across the world in similar EE programs and are technically achievable per building category. A summary of the characteristics of the different renovation packages is included in Table 3. The suitable EE package for each building will be determined by site-specific energy audits and according to the hierarchy already presented in section I.B and must have a payback period less than 15 years. The initial walk-through energy audits suggested 24 percent of public buildings can implement a light package, 44 percent a standard package, and 32 percent an advanced package. For about 30 percent of cases, the energy audits suggested switching from gas to electricity, or from district heat to electricity, using heat pumps, but the project will not invest in updating coal boilers to more efficient models. For about 15 percent of cases, the energy audits suggested installation of RSPV, which will further reduce electricity demand after the renovations.

Table 3. Characteristic of the Different Building Renovation Packages Available to a Typical Building

Building Renovation Package	Measures Included	Expected Energy Savings (%)	Unit Costs per Area (US\$/m²)	Expected Payback Period (years)	Mainly Applicable At
Light	<ul style="list-style-type: none"> • Windows and doors replacement • Roof ceiling insulation. 	30–35	25–43	<8	Schools, pre-schools, and polyclinics
Standard	<p><i>Measures included in the light package, plus</i></p> <ul style="list-style-type: none"> • Wall insulation • Heat network renewal • More efficient gas/electric boilers when heat pumps are not economically/financially feasible. 	55–60	45–61	8–10	Schools, pre-schools, hospitals, and polyclinics
Advanced	<p><i>Measures included in the light and standard packages, plus</i></p> <ul style="list-style-type: none"> • Heat pump (instead of boiler replacement included in the standard package) • Solar PV system • Solar collector for sanitary hot water. 	70–85	70–77	10–13	Public buildings with coal heating



(ii) **Economic and Financial Analysis**

74. **An analysis was carried out to assess the economic and financial viability of the clean energy investments under consideration for Component 1.** The analysis considered three types of clean energy investments (light, standard, and advanced building renovation packages) for public buildings relying on three different heating energy sources (coal, natural gas, and district heating). The investments were assumed to be implemented over 5 years (project duration) and have a lifetime of 20 years. It was assumed that 24 percent of the public buildings will implement a light package, 44 percent a standard package, and 32 percent an advanced package as mentioned in the findings from the walk-through energy audits and associated viability analyses. The breakdown of public buildings by type of heating energy source was assumed to approximately reflect the breakdown across the public buildings inventory in Uzbekistan (63 percent coal, 31 percent natural gas, and 6 percent district heating). The floor area of pre-schools, public schools, and health facilities accounts for 15 percent, 67 percent, and 18 percent, respectively, of the total floor area that will be renovated, which is line with their percentage in total public buildings.

75. The financing structure considers two scenarios: (a) investments will be made without any revolving schemes and (b) during the five years of project implementation, repayments will be reinvested under the revolving fund to scale up clean energy improvements in public buildings according to the ESA term, assuming a 10-year revolving period starting in 2023.²⁷ The walk-through energy audits described in the Technical Analysis section provided inputs with regard to both technical assumptions (for example, baseline energy consumption, expected energy savings, and GHG emission reduction) and financial assumptions (for example, baseline energy expenditure, investment cost, and expected monetary savings) for each type of renovation package and heating energy source.

76. Under these assumptions, the CEBU project is expected to support clean energy investments in about 824²⁸ public buildings (about 3 percent of total public buildings in Uzbekistan) over 5 years of implementation. This corresponds to an average yearly public buildings renovation rate of 0.6 percent. The total value of the captured energy savings for reinvestments in EE and clean energy during the project implementation is estimated to reach about US\$28.4 million. The estimated energy savings are 9,487 GWh (34,153 TJ²⁹) over an investment lifetime of 20 years, or 364 GWh (1,310 TJ) per year, which is equivalent to 3 percent of the total final energy consumption in public buildings in Uzbekistan.

77. **Economic analysis – methodology.** A cost-benefit analysis (CBA) was conducted on the provisional list of public buildings proposed for the clean energy investments. The economic rate of return (ERR) and NPV of benefits are calculated using the WBG's standard CBA methodology. The analysis assumes an economic discount rate of 9.8 percent following the World Bank Guidance Note on discount rates (2× long-term average annual real per capita GDP growth).

78. **Economic costs.** The economic costs considered for the analysis were the capital investment costs.

²⁷ The analysis used a conservative approach, not considering repayment after project closing.

²⁸ The number of buildings could be higher if the Government ends up doing more light and standard packages and less advanced packages.

²⁹ 1 GWh = 3.6 TJ = 3,600,000 MJ.



79. **Economic benefits.** The main economic benefits of the project are (a) reduced fuel consumption due to lower demand for primary heating energy (due to the higher efficiency of the newer heating system) as well as final heating energy (due to the better insulation) and (b) lower consumption of grid electricity due to EE measures and self-generation through the solar PV system. The economic cost of energy used is the estimated long-term opportunity cost of energy and is assumed to increase 3.4 percent annually, reflecting the average global fuel commodity prices increase in the long term.³⁰ The reduction in energy consumption was calculated from the walk-through energy audits reports and is valued at the opportunity cost—assumed to be the benefits of saved natural gas that can be exported, saved amount of coal that needs to be imported, and electricity and district heating generation avoided, as of baseline year 2021. In addition to this monetary benefit, the economic benefits related to GHG mitigation were also estimated.

80. Additional economic benefits such as improved building condition, increased asset value, lower maintenance costs/winter preparation costs, better quality of indoor room conditions for building users, enhanced energy security, reduced fiscal burden for fuel imports, better health and indoor comforts, improved worker productivity, and so on were not quantified in this analysis. In addition, the project will improve sustainability while boosting jobs, income, and growth by offering training and employment, which is crucial for the post-pandemic recovery.

81. **GHG emissions.** GHG emissions over the project lifetime were forecast based on expected decrease in GHG emissions from the reduction in energy consumed. World Bank's GHG Guidance Manual HG Accounting for Energy Investment Options Version 2 was used to calculate the GHG emissions. The emission factors for the calculations for Uzbekistan were provided by the MoE. The social cost of carbon is based on the low range from the WB's Guidance Note on Shadow Price of Carbon in Economic Analysis (November 12, 2017).³¹ The project will lead to a reduction in GHG emissions by 3.1 million tons over the investment lifetime (or 0.1 million tons per year) during the economic life of the proposed project. Therefore, the project will generate significant environmental benefits, thus contributing to Uzbekistan's NDC commitments under the Paris Agreement.

82. **Results.** The overall economic analysis shows that without revolving the energy cost saving, the combined economic net present value (ENPV) is positive at US\$9.9 million and the ERR is 10.9 percent. When avoided CO₂ emissions with a low shadow price of carbon are factored in, the ENPV and ERR will increase to US\$59.0 million and 15.8 percent, respectively. When avoided CO₂ emissions with a low shadow price of carbon are factored in, the ENPV and ERR will increase to US\$176.8 million and 20.4 percent. These results show that the project is economically viable (Table 4).

³⁰ World Bank global energy commodity market outlook, World Bank 10/2021, <https://www.worldbank.org/en/news/press-release/2021/10/21/soaring-energy-prices-pose-inflation-risks-as-supply-constraints-persist>.

³¹ The World Bank Guidance Note on Shadow Price of Carbon in Economic Analysis (2017) suggests the use of a low economic price of carbon which starts at US\$39/ton CO₂ in 2019 and increases to US\$53/ton CO₂ at the end of the 15-year economic life of the investments. The World Bank Guidance Note on Shadow Price of Carbon in Economic Analysis (2017) suggests the use of a high economic price of carbon which starts at US\$78/ton CO₂ in 2019 and increases to US\$107/ton CO₂ at the end of the 15-year economic life of the investments.

Table 4. Summary of the Results of the Economic Analysis

Parameter	Unit	Net Benefits (Excluding GHG Mitigation)	Net Benefits Including GHG Mitigation	
			Low Shadow Carbon Price Scenario	High Shadow Carbon Price Scenario
(a) Investments without any revolving energy cost saving				
ENPV	US\$, millions	9.9	59.0	176.8
ERR	%	10.9	15.8	20.4
(b) Energy cost savings reinvested under the ESA term				
ENPV	US\$, millions	31.4	169.8	417.8
ERR	%	13.0	24.8	34.9

83. **Sensitivity analysis.** A sensitivity analysis was conducted using discount rate, investment cost, and amount of energy savings as key input parameters that affect the economic viability of the investments.

- **Discount rates.** The project ENPV (excluding air pollution and GHG mitigation benefits) is estimated to turn negative at an economic discount rate of 12 percent (versus 9.8 percent used in the analysis).
- **Energy savings.** The project ENPV (excluding air pollution and GHG mitigation benefits) turns negative for energy savings values that are just 12 percent lower than assumed, while the ERR is still higher than the economic discount rate.³²
- **Investment costs.** The ENPV is estimated to turn negative and the ERR will become lower than the economic discount rate if the investment cost is about 16 percent higher than assumed.

84. **Financial analysis.** The financial analysis includes an assessment of incremental costs and benefits from proposed clean energy investments.

85. **Financial costs.** The financial costs considered for the analysis were the capital investment costs. The financial analysis was conducted inclusive of value added tax (VAT) and duties to be applied to project costs.

86. **Financial benefits.** The financial benefits are represented by the reduction in energy expenditures of public buildings. The reduction in energy consumption was estimated from the walk-through energy audits reports (calculated also as part of the economic analysis) and is valued at the financial tariff of electricity, natural gas, coal, and district heating. The energy price is assumed to increase by 28 percent in 2022,³³ 10 percent annually until 2030, and 6 percent annually in the following years, reflecting the

³² It is to be noted that the assumptions used for the analysis already account for some level of underheating (for example, 11 percent for households relying on firewood), based on the results of the walk-through energy audits. Stakeholders highlighted that underheating was not a big concern in Uzbekistan during preparation. Buildings participating in the project will be selected based on the energy audits, and buildings with extreme underheating will not be considered.

³³ In 2021, the Government announced that electricity tariff will be raised by 33 percent and natural gas by 21 percent in 2022. The average financial price for electricity will increase from US\$0.042 per kWh to US\$0.053 per kWh and for heating fuel will increase from US\$0.009 per kWh to US\$0.011 per kWh. The weighted average increase of the cost of all types of energy is 28 percent.

Government's commitment in tariff adjustment (Box 1).³⁴ The analysis includes the 15 percent VAT and assumes a 20-year life of the investments, annual inflation³⁵, and a financial discount rate of 5.9 percent, which is the level of yield of Eurobond on US dollars for Uzbekistani som.

87. **Results.** The results show that the combined financial NPV is positive at US\$8.6 million without revolving the cost savings, and the financial rate of return is 6.4 percent. The NPV utilizing the revolving financing mechanism is US\$31.9 million, and the financial internal rate of return (IRR) is 7.8 percent.

Table 5. Summary of the Results of the Financial Analysis

Parameter	Unit	Net Benefits
(a) Investments without any revolving cost saving		
NPV	US\$, millions	8.6
IRR	%	6.4
(b) Energy cost savings reinvested under the ESA term		
NPV	US\$, millions	31.9
IRR	%	7.8

88. **Sensitivity analysis.** A sensitivity analysis was conducted using discount rates, investment costs, and amount of energy savings as key input parameters that affect the financial viability of the investments. It was conducted assuming no significant tariff increases during the project's lifetime.

- **Discount rates.** In the financial analysis, the NPV is estimated to turn negative at a financial discount rate of 7 percent versus the 4.6 percent used in the analysis.
- **Energy savings.** In the financial analysis, the NPV is estimated to turn negative, and IRR will become lower than the financial discount rate at energy savings values that are 25 percent lower than assumed, which is a sign of the high level of robustness of the results.
- **Investment costs.** The IRR is estimated to fall below the financial discount rate only when the investment cost is about 30 percent higher than assumed. The result is robust to sensitivity analysis on costs increase.
- **Tariff increase.** Assuming no tariff adjustment in 2022 and tariff increase at the rate of 6 percent annually to consider inflation, the NPV turned negative, and the IRR became lower than the financial discount rate. However, (a) the GoU has shown a strong commitment to increasing tariffs to establish a competitive market and ensure transparency and equal access for all participants (Box 1) and (b) the project investments in social facilities will be funded by the MoF; hence, 'economic costs per kWh' are more relevant and the project is viable at the current economic tariffs which are only expected to increase.

³⁴ Uzbek Government, <https://www.gazeta.uz/ru/2021/11/11/liberalization-of-prices/> in Russian. The full report of the Accounts Chamber can be found at <http://www.ach.gov.uz/uploads/Of201f4b-3b58-cd8d-3e4b-a5b3e6666368.pdf> in Uzbek, p. 52.

³⁵ IMF Uzbekistan inflation forecast. <https://www.imf.org/en/News/Articles/2021/12/10/pr21369-imf-staff-concludes-visit-to-uzbekistan>.



B. Fiduciary

(i) Financial Management

89. The project FM risk is Substantial as the Fund does not have experience with the implementation of World Bank-financed projects and any projects financed by other IFIs or by the state budget. Provided the Fund has limited capacity, it is agreed that the PMC will be hired by the Fund/MoE (as a disbursement condition) and the PMC will be responsible for FM and disbursement aspects during project implementation, including planning, budgeting, accounting, financial reporting, funds flow, internal controls, and auditing.

90. The following activities will be particularly incorporated into the TOR for the PMC, and these activities will be implemented by the PMC. Unless agreed otherwise, hiring a PMC is a disbursement condition; hence these requirements are part of the disbursement condition unless agreed otherwise:

- (a) Develop the FM chapter of the POM to reflect project-related internal control, budgeting, external auditing, financial reporting, and accounting policies and procedures.
- (b) Develop the Environment and Social chapter of the POM related to environment and social management.
- (c) Include a dedicated FM specialist with relevant experience in implementing donor-funded projects if such expertise is not available in-house
- (d) Have an accounting system for project accounting and reporting purposes. The accounting system shall have the functionality of automatic generation of Statement of Expenditures and interim financial reports (IFRs) for the project and have the functionality for dual-currency accounting with inbuilt controls to ensure data security, integrity, and reliability.

91. **The PMC to be hired will submit quarterly unaudited IFRs to the World Bank.** It will produce a full set of IFRs every calendar quarter and submit to the World Bank within 45 days after the end of each calendar quarter.

92. **The annual audited project financial statements together with the auditor's opinion and the management letter will be provided to the World Bank within six months after the end of each fiscal year and at the closing of the project.** The audit of the project financial statements prepared by the PMC will be conducted (a) by an independent private auditor acceptable to the World Bank in accordance with TOR acceptable to the World Bank and (b) according to the International Standards on Auditing issued by the International Auditing and Assurance Standards Board of the International Federation of Accountants. The PMC through the Fund will publicly disclose the audit reports on its website within one month after receiving them from the auditor. After formally receiving the audit reports from the PMC, the World Bank will make publicly available audited project financial statements in accordance with the World Bank's Policy on Access to Information.

93. **Disbursement arrangements.** Some disbursements will follow a traditional disbursement mechanism, including direct payments, replenishments of the Designated Account, and reimbursement. Some disbursements are conditional on achieving PBC results. The Procurement Plan and annual work plan will specify the specific disbursements which fall under each category. The minimum application size



and the Designated Account ceiling will be specified in the Credit Disbursement and Financial Information Letter. The PMC will open a Designated Account in US dollars and a transit account in Uzbekistan sum in a financial institution acceptable to the World Bank. Both accounts will be used exclusively for the inflow of the credit funds and the payment of eligible expenditures. The PMC will receive access to Client Connection to perform disbursement functions.

(ii) Procurement

94. **The World Bank Procurement Regulations for IPF Borrowers - November 2020 (Procurement Regulations) will apply to the proposed project.** 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 proposed project.

95. **The recipient through the MoE and the Fund, has developed a PPSD pursuant to paragraphs 4.1 and 4.2 of the Procurement Regulations.** The PPSD discusses the recipient’s procurement arrangements, and a draft Procurement Plan is developed for the project including their cost estimate, selection methods, review procedure, and envisaged time frame according to paragraph 4.4 of the Procurement Regulations. The PPSD concluded that most of the proposed procurements are in small or medium size and most of the suppliers are available in the national market. The PPSD also proposed to initiate procurement as early as possible for the timely implementation of the contracts to meet its ambitious project timeline. Procurement will be implemented by the Fund/PMC.

96. **The recipient, through the MoE and the Fund, will use the World Bank’s Systematic Tracking of Exchanges in Procurement,** an online procurement tracking tool to prepare, clear, and update its Procurement Plans and conduct all procurement transactions.

97. **Thresholds for World Bank review and procurement methods to be applied will be set out in the Procurement Plan of the project.** Procurements not previously reviewed by the World Bank will be subject to ex post review on a random basis in accordance with the procedures set forth in paragraph 4 of the Procurement Regulations. More details on the findings of the procurement assessment, the proposed procurement supervision arrangements, risks, and relevant mitigation measures to address them are provided in annex 1.

C. Legal Operational Policies

	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Areas OP 7.60	No

D. Environmental and Social

98. **The social and environmental risk of the project is assessed as Moderate.** Overall, the project is likely to bring positive impacts in terms of energy conservation and reduction of GHG emissions and air pollution. The works are limited in nature and scope to EE and RE measures in public buildings. These will



have standard, temporary, and site-specific construction impacts. The subprojects are expected to be implemented in existing public lands in urban and peri-urban areas. The project will not finance any subprojects categorized as High or Substantial environmental and social risk such as subprojects that may require involuntary resettlement and economic/physical displacement and those that may have impacts on urban settings with tight space, heavy traffic, and high population. The project will also not support activities with resulting impacts associated with involuntary resettlement/land acquisition (including economic displacement), ecologically sensitive areas, and cultural heritage as defined under ESS5, ESS6, and ESS8, respectively.

99. **Of the 10 Environment and Social Standards (ESS), 5 are relevant to the project.** These are ESS1 - Assessment and Management of Environmental and Social Risks and Impacts, ESS2 - Labor and Working Conditions, ESS3 - Resource Efficiency and Pollution Prevention and Management, ESS4 - Community Health and Safety, and ESS10 - Stakeholder Engagement and Information Disclosure.

100. **The environmental impacts related to the project** are expected to be predictable, temporary, low in magnitude, site specific without likelihood of impacts beyond the actual footprint of the project, reversible, and manageable in a predictable manner through the implementation of cost-effective mitigation measures in line with the national laws as well as the use of the World Bank Environmental, Health, and Safety Guidelines (EHS) and Good International Industrial Practices (GIIP). However, based on the project description of the planned activities, key environmental issues will be related to (a) waste management including hazardous waste during construction works; (b) occupational health and safety of workers; (c) community health and safety of health care staff, patients, and visitors as well as school staff and students during construction works; (d) disruption of classes and health care treatments as a result of construction noise pollution; (e) transport and traffic safety at construction sites; and so on. The Recipient developed the Environmental and Social Management Framework (ESMF). The ESMF sets out the principles and procedures to effectively manage environmental and social impacts/risk of the project. The ESMF includes guidance and procedures for identifying and mitigating associated risks/adverse impacts with the project activities, as well as monitoring and implementation arrangements that will ensure adequate implementation of the ESF requirements. In this respect, subproject site-specific construction ESMPs (for example, noise management plan, waste management plan, traffic safety management plan, occupational health and safety management plan, asbestos management plan, and so on) will be prepared and implemented by contractors before the commencement of the works. The provisions of the abovementioned ESMPs and sub-management plans will be incorporated into the bidding documents and the contractor's contract for each subproject. Training and capacity-building needs are also part of the ESMF and the Environmental and Social Commitment Plan (ESCP).

101. **Environmental risks and occupational health and safety hazards** will mostly originate from activities under Component 1 - Clean energy investments in public buildings. Under this component facilities will be renovated, that is, roofs and walls insulated, building envelopes renovated, HVAC and lighting systems retrofitted, and low-efficient Annual Fuel Utilization Efficiency (AFUE, below 50 percent) replaced with the high-efficient natural gas fired boilers (AFUE of approximately 90 percent) or with RE options such as integrated solar PV with heat pumps and/or solar collectors where feasible. Most of the expected impacts occur primarily during the construction phase (occupational health and safety hazards, solid waste management, air pollution and noise, traffic safety management at the construction site, and so on), are minor, are of limited duration, influence relatively small areas, and are easily mitigable. Hazardous materials management such as possible asbestos materials in old buildings will follow a



procedure described in the ESMF and site-specific construction ESMPs, ensuring the safety of workers and communities. Component 2 will provide TA to enhance the enabling environment for clean energy investments in the buildings sector and project implementation support.

102. **The social risks and impacts associated with labor and working conditions and community health and safety are considered moderate.** The project is expected to provide generally positive social benefits due to EE and use of cleaner RE. It could also generate economic opportunities for enterprises directly and indirectly involved in or affected by the project. The project investment activities are not expected to require land acquisition, restrictions on land use, or involuntary resettlement as the EE and d-RE investments, technologies, and equipment are being placed in existing schools and hospitals and are not expected to cause economic and physical displacement. It is expected to engage direct workers and, possibly, contracted workers for which Labor Management Procedures (LMP) were prepared as a part of the ESMF.

103. **Though the solar component is minimal, there is a significant risk of forced labor in the global supply chain for solar panels and solar components.** To support forced labor risk mitigation, the Borrower is required to identify those risks and if forced labor cases are identified, prior to beginning the procurement process, the Borrower will undertake market analysis to identify the possible sellers of solar panels to the project. The bidding documents will emphasize forced labor risks in solar panels and components and will require that sellers of solar panels to the project not engage or employ any forced labor among their work force. Bidders will be required to provide two declarations: a Forced Labor Performance Declaration (which covers past performance), and a Forced Labor Declaration (which covers future commitments to prevent, monitor and report on any forced labor, cascading the requirements to their own sub-contractors and suppliers). In addition, enhanced language on forced labor will be included in the procurement contracts. The Bank will prior review procurements which include solar panels and components to ensure that enhanced provisions are used by the Borrower.

104. **The project also seeks to prevent sexual exploitation and abuse/sexual harassment (SEA/SH).** These risks are assessed as low but will be confirmed by appraisal. Stakeholder engagement will be a key aspect of the project. Given its involvement with schools and hospitals, the project will include grievance redress mechanisms (GMs) for labor-related issues and for complaints about the project's environmental and social management. In accordance with World Bank requirements, the World Bank team completed an SEA/SH risk assessment, which has concluded a low SEA/SH risk for the project. The rating will be confirmed by appraisal. The project does not involve large labor influx. It will include SEA/SH measures, including a Code of Conduct for workers, a channel in the project GMs to report SEA/SH cases, and training and awareness sessions for project workers and affected communities.

105. **Since the renovation and reconstruction activities will be carried out in existing facilities used by Government employees and citizens, there will be temporary disruptions for these users.** These will be minimized and managed by timing and phasing works to the extent possible, traffic planning around subproject sites, timely dissemination of information, collection of feedback through a grievance mechanism, and a proactive stakeholder engagement campaign to raise public awareness about clean energy among women and men, as well as community safety measures identified (such as phased work schedule, traffic planning, creation of alternative entrances, specialized pathways for the users of the buildings to ease their access to the services they obtain from these buildings, and so on) to meet the requirements of ESS4 incorporated into the site-specific ESMPs. Information dissemination, stakeholder



engagement, and grievance mechanism principles and activities will be outlined in the Stakeholder Engagement Plans (SEPs) to be prepared by the supervision consultants and implemented by the PMC. Despite the above social risks and impacts which are largely construction induced and temporary, the project is expected to generate positive impacts as it will create employment opportunities within the investments financed under the project.

106. The MoE and the Fund have prepared an ESMF, an ESCP, a Stakeholder Engagement Framework, and an LMP to adequately manage the environmental and social impacts and risks of project activities and to guide the project implementing entity to fulfil the requirements of the national environmental law, Labor Law (and all other relevant regulations), and World Bank ESS. The environmental and social staff in the PMC will be responsible for the continuous monitoring of construction works to assure compliance with the abovementioned instruments, as well as to oversee the implementation of the SEP throughout the project. Further capacity building through project-specific training on ESF and for environmentally and socially responsive subproject planning and implementation will be provided.

E. Gender, Citizen Engagement and Climate Change

(i) Gender

107. Although female labor force participation in Uzbekistan is above the average of lower-middle-income countries, it is still more than 25 percentage points lower than men's labor force participation (52.1 percent versus 78.5 percent in 2019, respectively, according to International Labour Organization [ILO] estimates for the 15–64-years population). Women's participation in technical and managerial jobs in the energy sector is particularly relevant for advancing women's employment and their income-earning opportunities. While there are no gender-disaggregated data available on employment in the energy sector in Uzbekistan, ILO estimates of employment in the broad industry sector indicate that, as of 2019, only 14.3 percent of the Uzbek female labor force was employed in the industry sector, less than half of the male labor force employed in the same sector (29.1 percent). In 2018, the share of female graduates from the science, technology, engineering, and mathematics fields in Uzbekistan was 24.6 percent, which indicates that there is room to increase the recruitment and retention of female workers in these fields.

108. The project will contribute to closing the gender gap in women's employment in the energy sector through several complementary activities:

- (a) A gender gap assessment of employment in EE companies will seek to identify the extent and underlying reasons for the gender gap in employment in this subsector.
- (b) All EE companies that will benefit from trainings under the TA component will be required to
 - (i) Include a given percentage of female employees in the participants to the trainings provided by the project and
 - (ii) Provide gender-disaggregated data on their technical and managerial workforce, as a condition for participating in the trainings, with annual updates.
- (c) All communication and outreach efforts to promote the project among participating energy and construction companies will highlight the fact that the project seeks to promote female employment in technical jobs.



- (d) Based on the outcomes of the gender gap assessment of employment, other specific gender actions will be considered which may include
 - (i) Providing specific trainings on gender inclusion to the clean energy companies that benefit from the TA component or
 - (ii) Providing other technical trainings aimed at women with the requisite technical profile, to enable them to be hired by EE companies and/or have better opportunities for promotion within those companies (for example, as auditors, technicians, and so on).

109. **With these proposed actions, the project aims to contribute to addressing the lack of gender-disaggregated data on employment in the EE subsector and to address some of the underlying reasons for the gender gap in employment in that subsector** (which will be identified by the gender gap assessment). The project will measure the impact of these actions on the employment of women in the energy sector through intermediate outcome indicators: (a) percentage increase in the number of women in technical and managerial jobs at companies directly benefitting from project; and (b) percentage of participants in capacity building activities who are women.

(ii) Citizen Engagement and Inclusion

110. **Participatory approaches in planning and monitoring will empower building end users and give voice to vulnerable beneficiaries.** The project will organize several citizen engagement activities to consider feedback from the project beneficiaries:

- (a) **Participatory design walk-through consultations** in several buildings (schools and hospitals) with building user committees (before and after works), particularly including vulnerable building users as part of the energy audit activities. Committee members and other interested end users of the buildings will be invited to jointly walk through the building and provide their feedback on the needs, EE retrofitting works, and perceived improvements (such as temporary access issues and quality of works)—ensuring that relevant users' needs/obstacles are addressed in the planning and implementation of the renovation works.
- (b) **Social monitoring surveys** (before and after works) to supplement the walk-through consultations and collect data from students, patients, and professionals working in the facilities selected on a sample basis. Questions to be included will likely encompass subjective evaluations of comfort levels, quality of windows, joinery, heating systems, air, lighting, and so on. The survey results will be disaggregated by vulnerability markers (such as age, income group, or employment status) to analyze possible variations in answer patterns and draw recommendations specific to certain vulnerable groups.
- (c) **Pre-commissioning roundtables** to share and discuss project activities, building improvements, and the results of the walk-through consultations and social monitoring surveys (any corrective action which was taken to address issues raised through the feedback process). In addition, the roundtables will serve as public information events—presenting short movies of case studies and publicly disseminating beneficiary feedback and actions taken, hence closing the feedback loop.
- (d) **A robust GM**, which will include an active and socially inclusive outreach campaign to ensure active participation of project beneficiaries and affected people. For complaints regarding



the clean energy works (for example, high noise, increased dust emissions, and so on), the primary grievance focal point will be the site manager appointed by contractors, who will be responsible for relations with the local population and handling complaints. Contact information for this person and the PMC manager will be made available to the public at all locations where the works are being performed and should specify that all complaints received by contractors should be communicated to the Fund director. Grievance can be filed personally; verbally by telephone; or in writing through email, post, or fax to the Fund director. The Fund shall inform the World Bank immediately of any grievance received. Grievances will be systematically acknowledged through an interim reply of receipt of the complaint and provide the basic information about the next steps according to the POM.

111. **Complementing these traditional engagement methods, an online, mobile-friendly digital platform will be developed and sustainably hosted by the PMC** to ensure accessible online feedback and monitoring from end users and to support the mentioned citizen engagement activities. This platform will provide a resilient approach for the implementation of citizen engagement activities (given the COVID-19 related challenges) and will be used for information, survey, posting of survey results, complaints, and so on.

112. **The Results Framework includes a beneficiary feedback indicator measuring the engagement processes** (that is, Percentage of beneficiaries who report that the project has established effective citizen engagement processes) so that the project can course correct these processes during project implementation.

(iii) Climate Change Mitigation and Adaptation

113. This project has been screened by the World Bank for short- and long-term climate and disaster risks and has been assessed for its contribution to climate change adaptation and mitigation.

114. **It is expected that the project is anticipated to create significant climate mitigation benefits through CO₂ emissions reduction.** Specifically, it aims to reduce carbon emissions by investing in (a) EE (lighting and insulation) through modern and efficient heating and cooling systems, (b) exploration of rooftop solar and other RE solutions, and (c) promotion of zero waste initiatives in schools. The development of investment planning will focus on ensuring clean energy in public buildings. Awareness and knowledge on sustainability and energy savings will also be increased among engaged building users. Training will also be provided for building maintenance staff and building users to support them to take advantage of the new energy-efficient environment and to undertake necessary O&M. There is also an opportunity to promote zero waste initiatives in renovated buildings which also contributes to a reduction in GHG emissions.

115. **To support greater adaptation to climate change, the proposed project will ensure that all public buildings intervened under the project are resilient** to storms (wind and storm loading) and extreme heat and cold events that are expected be more frequent due to climate change. This step will be achieved during design and civil works. By investing in rainwater harvesting and where suitable enhanced use of grey water, the project can support adaptation to drought. Public buildings will also be checked to ensure that they are not located in areas of heightened flood risk, and information will be provided to building occupants on the placement of building furnishings and equipment to reduce damage from water inundation in the event of flash floods and floods that have exceeded historic floods. This may include



placement of expensive medical equipment and generators above the finished floor level or having provisions to ensure that these can be rapidly protected or moved in the event of floods.

116. **Continued service provision and use of buildings during emergencies and disasters will be ensured.** Public buildings under this project will be designed to maintain continued operation during disasters, through structurally robust walls and roofs that can withstand extreme weather events, adequate cooling during extreme heat, and access to alternative energy sources through RE. Beyond the structural element, there may be opportunities for outreach to building users and the community on disaster resilience and adaptation through community engagement events.

V. GRIEVANCE REDRESS SERVICES

117. **Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS).** The GRS ensures that complaints received are promptly reviewed to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, because of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

VI. KEY RISKS

118. **The overall project risk rating to achieve development outcomes is rated as Substantial.** The project has an ambitious agenda to establish a national program for clean energy investments, support the development and adoption of two sets of secondary legislations, and institutionalize sustainable financing for clean investments in the buildings sector. International experience shows that the most significant risk to achieving these objectives is the legal adoption of the national program, legal adoption of the secondary legislation, legal establishment of the institution responsible for the sustainable financing model, and implementation of the mechanism within the existing legal and regulatory framework. These challenges have been partially mitigated by incorporating PBCs into the project. The building blocks of the project have been approved by the MoF, MoE, and other key stakeholders. Residual risks remain and these have been discussed.

119. **Political and Governance risk is rated as Substantial.** The Government has demonstrated its commitment to clean energy through its decrees and investment programs as described in section I.B of this Project Appraisal Document. This commitment is unlikely to change in the near term. At the project level, the key ministries of the MoF, MIFT, MoE, MoH, MoPSE, and MoPE have all endorsed the project concept. They have also formed a working group which is coordinating project preparation. However, risks to adopt the national program and institutionalize sustainable financing (that is, prove the sustainable financing concept using the ESA and have the ESA widely accepted throughout the Government) remain



substantial. Additional political buy-in is required to improve the way the Fund is run. These risks will be mitigated through the PBCs, as well as maintaining consistent policy dialogue and capacity building.

120. **The Technical Design of Project risk is rated as Substantial.** The proposed project utilizes PBCs to enhance the enabling environment for clean energy investments and ESAs to implement investments. Both instruments have never been used in Uzbekistan before. Thus, the operation is technically substantially complex. TA³⁶ preceding the project helped mitigate some of the technical risks associated with the project, and both the Government and the World Bank team have demonstrated a willingness to adjust the design (as needed) to achieve the PDO. The risk will also be mitigated by incorporating lessons learned from other projects such as the Armenia Energy Efficiency Project, KEEP, Second Montenegro Energy Efficiency Project, Kosovo Energy Efficiency and Renewable Energy Project, and the Uzbekistan Energy Efficiency Facility for Industrial Enterprises Project.

121. **The Institutional Capacity for Implementation and Sustainability risk is rated as Substantial.** The Fund is the project implementation entity. It has neither project implementation experience nor systems to implement the project in place. This weak institutional capacity has a substantial likelihood to affect PDO achievement. This risk will be mitigated by hiring a PMC (unless agreed otherwise) to be responsible for project implementation up to 2.5 years. The Fund itself will be supported by the steering committee, and procurement committee as required by the legislation. The PMC will be complemented by helping the Fund hire competent staff acceptable to the World Bank and providing extensive capacity building and close implementation supervision. The sustainability risk is also substantial because the continued operation of the ESA will be based on its ability to fully cover its operating costs during the project. There is no mechanism for the World Bank to monitor what happens to the repayment capital after the project closes, beyond the agreed provision as part of the UBEEP.

122. **The Fiduciary risk is rated as Substantial.** The Fund will be responsible for all fiduciary responsibilities including procurement, payments to contractors, fulfilment of World Bank fiduciary requirements, and reporting to the MoF and the World Bank. The proposed project will follow transaction-based disbursements and produce quarterly unaudited IFRs for monitoring. The procedures and formats for disbursements, financial reporting, accounting, and budgeting will be agreed upon and documented in the POM. Annual external audit of the project financial statements will be carried out by an independent private auditor on the TOR acceptable to the World Bank. An annual external audit of the entity is also required by the legislation. The Fund is new and has no procurement or FM experience. This risk will be mitigated through hiring the PMC, providing extensive capacity building, and implementing advanced procurement to minimize delays after project approval. The PMC will perform procurement and FM functions during the first one–two years of the project implementation while building capacity of the Fund through the day-to-day hands-on transfer of knowledge. Upon gaining experience and assessment of the capacities, the PMC will hand over the activities to the Fund.

123. **Disaster risk screening.** The proposed project was screened for climate and disaster risks using the 'Climate and Disaster Risk Screening Tool', and seismic risk and flooding were identified. The structural soundness of selected buildings is an eligibility criterion that will be assessed through a required structural assessment. Should the evaluation reveal structural deficits that cause serious risk of collapse, the facility will be removed from the list of facilities to be renovated under the project.

³⁶ World Bank 2021. *Deploying Energy Efficiency and Distributed Solar in the Public Buildings.*



VII. RESULTS FRAMEWORK AND MONITORING

Results Framework

COUNTRY: Uzbekistan

Clean Energy for Buildings in Uzbekistan

Project Development Objectives(s)

The development objective is to improve energy efficiency in public buildings and enhance the regulatory framework for clean energy investments in the buildings sector.

Project Development Objective Indicators

Indicator Name	PBC	Baseline	End Target
Projected lifetime energy savings from energy efficiency investments in public buildings			
Projected energy or fuel savings (CRI, Mega Joules (MJ))		0.00	34,153,000,000.00
Projected lifetime energy savings (CRI, Mega Joules (MJ))		0.00	4,440,000,000.00
Projected lifetime fuel savings (CRI, Mega Joules (MJ))		0.00	29,713,000,000.00
Projected electricity generation savings (CRI, Mega Joules (MJ))		0.00	5,496,000,000.00
Renewable energy generation capacity constructed under the project (Megawatt)		0.00	25.00
Clean energy secondary legislation (for energy audits, building energy efficiency performance, and energy service contracts) adopted under the Project (Text)	PBC 2	None	(i) Secondary legislation for energy audits for the purpose of transposing international standards is adopted, and implemented in sample buildings; (ii) Secondary legislation for building energy performance



Indicator Name	PBC	Baseline	End Target
			for the purpose of transposing international standards is adopted, and implemented in sample buildings; (ii) A provision of the right of budgetary institutions to conclude energy service contracts with private companies is adopted, and implemented in sample buildings.

Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline	End Target
Component 1 : Clean energy investments in public buildings			
Net greenhouse gas (GHG) emissions (CRI, Metric tons/year)		0.00	3,509,000.00
Number of public buildings renovated with EE or renewable energy investments under the project (Number)		0.00	800.00
Number of public building renovations financed using repayments under the ESAs (Number)	PBC 1	0.00	50.00
Private capital mobilized for clean energy investments in the buildings sector (Amount(USD))		0.00	10,000,000.00
Annual average of the monthly solar output deviation at a selected facility (Percentage)	PBC 4	0.00	10.00
Component 2 : Technical assistance, capacity building, and project implementation support			
Percentage of beneficiaries who report that the project has established effective citizen engagement processes (Percentage)		0.00	80.00
Percentage increase in the number of women in technical and managerial jobs at companies directly benefitting from project		0.00	10.00



Indicator Name	PBC	Baseline	End Target
(Percentage)			
Number of banks receiving support to provide clean energy financing for the buildings sector (Number)	PBC 3	0.00	3.00
Full functionality of the Intersectoral Energy Savings Fund (Fund) with adequate staff as evidenced by a signed document transferring implementation responsibility from the PMC to the Fund (Text)		Limited capacity	Full functionality of the Fund with adequate staff as evidenced by a signed document transferring implementation responsibility from the PMC to the Fund
Percentage of participants in capacity building activities who are women (Percentage)		0.00	30.00

Monitoring & Evaluation Plan: PDO Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Projected energy or fuel savings		Semi-annual	Technical reports, progress reports	Technical reports, and progress reports drawing on data from participating buildings. Both electricity and fuel savings will be converted into MJ to align with corporate requirements.	Fund/PMC



Projected lifetime energy savings		Semi-annual	Technical reports, progress reports	Technical reports, and progress reports drawing on data from participating buildings. The energy savings will be projected over the lifetime of the investments.	Fund/PMC
Projected lifetime fuel savings		Semi-annual	Technical reports, progress reports	Technical reports, and progress reports drawing on data from renovated buildings. The fuel savings will be projected over the lifetime of the investments.	Fund/PMC
Projected electricity generation savings		Semi-annual	Technical reports, progress reports	Technical reports, and progress reports drawing on data from participating buildings. The electricity generation savings will be projected over the lifetime of the investments.	Fund/PMC
Renewable energy generation capacity constructed under the project	This indicator monitors the amount of renewable energy generation capacity	Semi-annually	Technical progress reports	The generation capacity will be determined from design	Fund/PMC



	for electrical or heating needs constructed under the project.			specifications of the installed renewable generation (solar panels, biomass boilers, etc) equipment, and tested at commissioning.	
Clean energy secondary legislation (for energy audits, building energy efficiency performance, and energy service contracts) adopted under the Project	This indicator monitors progress towards enhancing the regulatory framework for clean energy investments in the buildings sector. There is need for: (i) secondary legislation for energy audits, (ii) secondary legislation for building energy efficiency performance; and (iii) provision of the right of budgetary institutions to conclude energy service contracts with private companies. There is also need for the implementation of these regulation.	Annual	Ministry of Energy, Fund/PMC, passed decrees	The secondary legislation will be considered adopted when published in the National Database of the Legislation of the Republic of Uzbekistan. The regulations are considered implemented when: 2(i) the Fund/PMC and/or CVA can verify that EE audits have been implemented as per regulations by reviewing a sample of completed EE audit reports 2 (ii) the Fund/PMC and/or CVA can verify that building energy performance standards have implemented as	Ministry of Energy / PMC



				<p>per reviewing by reviewing building energy performance reports, and visiting some of the building to ascertain that measures have been implemented</p> <p>2 (iii) the Fund/PMC and/or CVA can verify that provision of the right of budgetary institutions to conclude energy service contracts with private companies has been implemented by reviewing a copy of the concrete and touring buildings where the investments are being/have been implemented.</p>	
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Monitoring & Evaluation Plan: Intermediate Results Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Net greenhouse gas (GHG) emissions	Project net greenhouse gas (GHG) emissions are 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.	Semi-annual	Technical reports, progress monitoring reports	The net GHG emissions will be calculated as per WB guidelines provided in the indicator definition above. The result is expected to be negative.	Fund/PMC
Number of public buildings renovated with EE or renewable energy investments under the project	This indicators monitors the number of buildings under the Ministry of Public Education, Ministry of Pre-School Education, and Ministry of Health renovated under the Project.	Semi-annual	Technical reports, progress reports	The indicator is a simple count of the number of buildings under the ministry renovated under the project, and will be based on the technical and progress reports provided by the PMC	Fund/PMC
Number of public building renovations financed using repayments under the	This indicator monitors the number of building	Semi-annually	Progress reports,	The Fund/PMC will report on the number	Fund/PMC



ESAs	renovations financed using revolved energy cost savings. The revolved energy cost saving are payments to the Fund predicated on the realized energy savings.		technical monitoring reports	of buildings financed using energy cost savings	
Private capital mobilized for clean energy investments in the buildings sector	This indicator monitors the amount of money mobilized from private resources for clean energy investments in the buildings sector. Private capital can be financing from commercial banks or any other source (e.g. ESCOs) besides the central government.	Semi-annually	Progress, and technical reports	The Fund/PMC will report on the amount of financing provided by other parties besides the central government for clean energy investments in buildings sector. This could be funds provided by commercial banks, ESCOs or others.	Fund/PMC
Annual average of the monthly solar output deviation at a selected facility	This intermediate indicator is specifically tied to the the PBC "Evaluation of the net billing scheme completed based on the installation and operation of an RSPV system with net billing for one year at one public building facility" It monitors the deviation of solar output from the envisaged output	Monthly for one year only.	Solar output monitoring system/reports	The Fund/PMC will get monthly output data for solar modules installed at a regional hospital. The output is then compared to the anticipated output, and the monthly deviation calculated by subtracting the actual output from the	Fund/PMC



	(at engineering and design). The objective is to minimize the deviation; hence the percentage is inversely related to achieving the PDO.			anticipated (at engineering and design) output. The monthly deviations are then averaged over a year.	
Percentage of beneficiaries who report that the project has established effective citizen engagement processes	This indicator measures the success of the engagement processes. It documents the percentage of citizens/ beneficiaries/ building end-users who report that the Project has established effective citizen engagement processes/ tools") so that the project can course correct these processes during Project implementation.	Semi-annually	Surveys and other CE activities organized by the PMC.	The PMC will solicit feedback on how CE tools (e.g. the GRM, roundtables, and walk-through consultations) are working when preparing the semi-annual progress reports. In addition, the PMC will conduct a before and after beneficiary surveys at select facilities.	Fund/PMC
Percentage increase in the number of women in technical and managerial jobs at companies directly benefitting from project	This indicator monitors the percentage change in the number of women employed in technical and managerial jobs at companies providing technical (design, construction, etc) services to the Project. The firms will be asked to provide data on the number of women in	Semi-annually	Project progress reports	The data will be collected from responses provided by companies participating in the project.	Fund/PMC



	technical and managerial jobs.				
Number of banks receiving support to provide clean energy financing for the buildings sector	This indicator monitors the number of banks provided with support to provide clean energy investments in the buildings sector	Semi-annually	Progress reports, technical reports, discussions with banks	The Fund/PMC will provide MOUs of partnerships with banks, and detail the type of support provided to the banks	Fund/PMC
Full functionality of the Intersectoral Energy Savings Fund (Fund) with adequate staff as evidenced by a signed document transferring implementation responsibility from the PMC to the Fund	This indicator monitors institutional strengthening, capacity building, and operationalization of the Fund.	Semi-annually	Fund/PMC	The CVA will verify progress by reviewing the handover document, reviewing progress and technical reports, and assessing Fund implementation capacity in procurement, financial management, environment and social protection, and engineering/technical expertise.	Fund/PMC
Percentage of participants in capacity building activities who are women	This indicator monitors the increase (impr in the percentage of women participating in capacity building activities	Semi-annually	capacity building progress reports	The baseline will be established from the percentage of women participating in the very first capacity building activities held without gender promotion. The	Fund/PMC



					improvement is then recorded by comparing the baseline to the average percentage of women participating in the capacity building activities held over each reporting 6-month period.
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Performance-Based Conditions Matrix

PBC 1	At least 3 eligible facility renovations have been financed from repayments under the Project ESAs to demonstrate viability of the revolving financing mechanism.				
Type of PBC	Scalability	Unit of Measure	Total Allocated Amount (USD)	As % of Total Financing Amount	
Outcome	Yes	Number	15,000,000.00	13.99	
Period	Value		Allocated Amount (USD)	Formula	
Baseline	0.00				
Year 1	0.00		0.00	0%	
Year 2	0.00		0.00	0%	
Year 3	3.00		15,000,000.00	100%	
Year 4	3.00		0.00	0.00	



Year 5	3.00		0.00	0.00
PBC 2	Key secondary legislation (for energy audits, building energy efficiency performance, and energy service contracts) has been adopted, and implemented in sample buildings			
Type of PBC	Scalability	Unit of Measure	Total Allocated Amount (USD)	As % of Total Financing Amount
Output	Yes	Text	21,000,000.00	14.68
Period	Value		Allocated Amount (USD)	Formula
Baseline	None			
Year 1	(2.1) Adoption of energy audit secondary legislation for the purpose of transposing international standards as evidenced by publication in the National Database of the Legislation of the Republic of Uzbekistan (US\$5 million); and (2.2) implementation of energy audits according to the legislation in sample buildings as verified by reviewing relevant documents such as the energy audit reports (US\$2 million);		7,000,000.00	33%
Year 2	(2.3) Adoption of building energy performance secondary regulations for the purpose of transposing international standards as evidenced by publication in the National Database of the Legislation of the Republic of Uzbekistan (US\$5 million) and (2.4) implementation of building energy performance according to the legislation in sample buildings as verified by reviewing		7,000,000.00	33%



	sample building energy performance reports, and walk-through-assessments of the sample buildings (US\$2 million)		
Year 3	(2.5) Adoption of a provision of the right of budgetary institutions to conclude energy service contracts with private companies as evidenced by publication in the National Database of the Legislation of the Republic of Uzbekistan (US\$5 million), and (2.6) implementation of general energy service agreements for at least one sample building as verified by reviewing the general energy service agreement, and touring the public building renovated/under renovation (US\$2 million)	7,000,000.00	33%
Year 4	-	0.00	0%
Year 5	Summary of results indicators for this PBC2 : (Y1) Secondary legislation for energy audits is adopted, and implemented in sample audits; (Y2) Secondary legislation for building energy efficiency performance is adopted, and implemented in sample buildings; (Y3) A provision of the right of budgetary institutions to conclude energy service contracts with private companies is adopted, and implemented in sample buildings.	0.00	0%



PBC 3	At least three banks have entered into agreements with the PIE to receive technical or financial support to enable them to provide clean energy financing			
Type of PBC	Scalability	Unit of Measure	Total Allocated Amount (USD)	As % of Total Financing Amount
Intermediate Outcome	Yes	Number	9,000,000.00	6.29
Period	Value		Allocated Amount (USD)	Formula
Baseline	0.00			
Year 1	1.00		3,000,000.00	0%
Year 2	2.00		3,000,000.00	100%
Year 3	3.00		3,000,000.00	0%
Year 4	3.00		0.00	0%
Year 5	3.00		0.00	0%
PBC 4	Evaluation of the net billing scheme completed by the PIE based on the installation and operation of a rooftop solar photovoltaic system for one year in one sample building			
Type of PBC	Scalability	Unit of Measure	Total Allocated Amount (USD)	As % of Total Financing Amount
Outcome	Yes	Percentage	5,000,000.00	3.49
Period	Value		Allocated Amount (USD)	Formula
Baseline	0.00			
Year 1	0.00		0.00	0%



Year 2	10.00	5,000,000.00	100%
Year 3	10.00	0.00	0%
Year 4	10.00	0.00	0%
Year 5	10.00	0.00	0%

Verification Protocol Table: Performance-Based Conditions

PBC 1	At least 3 eligible facility renovations have been financed from repayments under the Project ESAs to demonstrate viability of the revolving financing mechanism.
Description	The indicator monitors the number of building renovations financed using repayments/revolved energy cost savings. The target is set to the first 3 buildings as the PBC primarily focuses on proving the viability of the revolving financing mechanism.
Data source/ Agency	Fund/PMC
Verification Entity	Credible Verification Agent
Procedure	The CVA will determine the number of eligible facilities/buildings renovated using repayment from progress and financial reports provided by the Fund, and visits to some of the buildings. The PBC disbursements are scalable at US\$5million per building for the first three buildings financed using repayments.
PBC 2	Key secondary legislation (for energy audits, building energy efficiency performance, and energy service contracts) has been adopted, and implemented in sample buildings
Description	This PBC monitors improvement in the regulatory environment as part of enhancing the enabling framework for clean energy investments in the buildings sector. The PBC will specifically monitor the adoption and implementation of energy auditing and building performance secondary regulations transposing international standards and adoption of a provision



	for budgetary institutions to sign general energy service agreements.
Data source/ Agency	Ministry of Justice, Ministry of Energy, and the Fund
Verification Entity	Credit Verification Agent
Procedure	<p>The CVA verifies that the regulations have been adopted by checking the National Database of the Legislation of the Republic of Uzbekistan.</p> <p>The regulations are considered implemented when:</p> <p>2.2 the Fund/PMC and/or CVA can verify that EE audits have been implemented as per regulations by reviewing a sample of completed EE audit reports</p> <p>2.4 the Fund/PMC and/or CVA can verify that building energy performance standards have implemented as per regulation by reviewing building energy performance reports, and visiting some of the building to ascertain that measures have been implemented</p> <p>2.6 the Fund/PMC and/or CVA can verify that provision of the right of budgetary institutions to conclude general energy service agreement with private companies has been implemented by reviewing a copy of the certificate/report, and touring buildings where the investments are being/have been implemented</p>
PBC 3	At least three banks have entered into agreements with the PIE to receive technical or financial support to enable them to provide clean energy financing
Description	This PBC monitors the number of banks which have entered into agreement to receive support to provide financing for clean energy investments in the buildings sector. The term 'support' is intentionally broad to suit the needs of each bank, and be informed by the technical assistance to be carried out under the Project. The agreements will be in a manner and substance satisfactory to the Association.
Data source/ Agency	Fund/Progress Reports
Verification Entity	CVA
Procedure	Number of banks provided with support to provide financing for clean energy investments in the buildings sector as reported by the Fund, and verified by the CVA. The CVA will review MoUs signed by the Banks and the Fund. The MoU



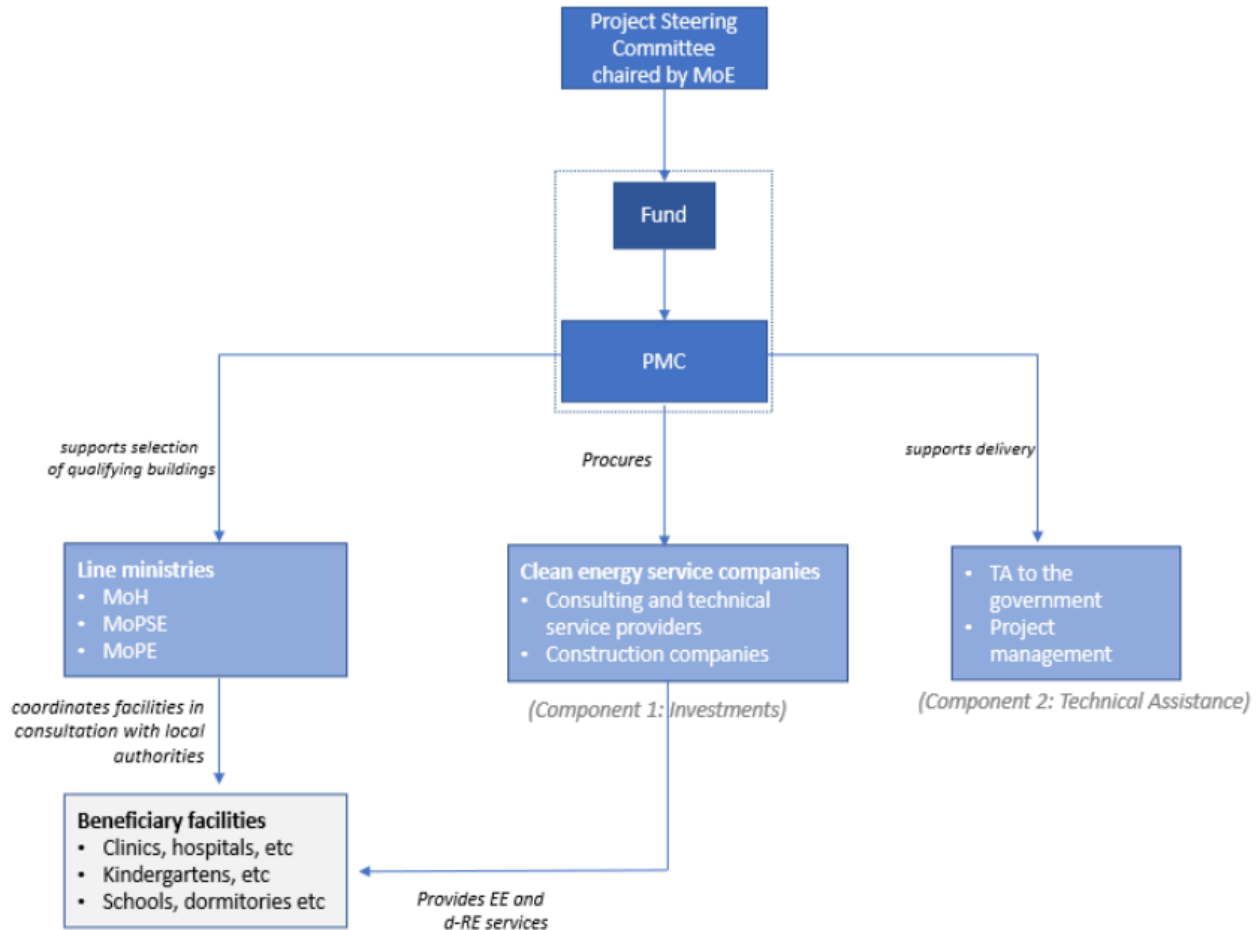
	<p>will state what type of support will be provided to each bank.</p> <p>Please note that the numbering is cumulative.</p>
PBC 4	<p>Evaluation of the net billing scheme completed by the PIE based on the installation and operation of a rooftop solar photovoltaic system for one year in one sample building</p>
Description	<p>The successful operation of the rooftop solar PV system is evidenced by “deviation of the average monthly output from the envisaged output that is less than 10 percent.” The average monthly output will be calculated at the end of the first of year of operation of the system.</p>
Data source/ Agency	<p>Fund/PMC</p>
Verification Entity	<p>CVA</p>
Procedure	<p>The CVA will verify that the average monthly solar output deviation is less than 10% from the technical and progress reports including reports generated by the system monitoring solar output at the public facility. Though data will be collected monthly for a year, the CVA will calculate the average monthly deviation over the first year of operation of the system.</p>

ANNEX 1: Implementation Arrangements and Support Plan

COUNTRY: Uzbekistan
Clean Energy for Buildings in Uzbekistan

- The project implementation arrangements are summarized in Figure 1.1.

Figure 1.1. Project Implementation Structure



Institutional Implementation Arrangements

- The MoE** is the lead government institution responsible for project implementation. It will chair the PSC whose primary job is to oversee activities of the implementation entity. The ministry is also in charge of developing and implementing state policy on EE and hence will be responsible for regulatory aspects of the TA such as the development of clean energy legislation.
- The PSC** is an inter-ministerial committee comprising representatives from the MoE, MoF, MIFT, MoH, MoPE, MoPSE, one bank, one construction company, and the Fund (as an



observer) which will oversee project implementation activities of the Fund. It will supervise the progress of implementation, that is, approve project annual budget, approve annual work plans, monitor project timelines, monitor progress results, and so on. Some meetings of the PSC will be strategic in nature; hence, senior staff from the ministries will participate, and some will be technical in nature to provide operational advice to the Fund/PMC.

- (c) **The Fund** was established in 2020 as a legal entity owned by the MoE. The Fund is the project implementation entity considering its mandate stipulated in the legislation,³⁷ namely “conclusion of agreements with government agencies on the provision of energy services for the implementation of projects to increase EE and the introduction of RE sources; financing of EE projects; assistance in training and retraining of specialists in the field of energy saving and EE; participation in the organization of awareness raising and information support on the rational use of fuel and energy resources; financing the implementation of other energy saving measures in accordance with applicable law.” Although implementation through the Fund ensures sustainability of institutional mechanisms to scale up investments in EE in the buildings sector, the Fund has limited experience and capacity to implement the project. Therefore, the MoE/Fund will hire a PMC to implement the project and provide hands-on capacity building to the Fund so that the Fund can take over the project implementation at or before MTR. Hiring the PMC will avoid delays in project implementation and provide capacity building (including twinning of Fund staff with experienced consultants).
- (d) **The PMC** will be responsible for project implementation for a period up to the MTR. It will primarily be hired to avoid delays in the project implementation and provide capacity building to the Fund. The PMC will provide FM, procurement, technical, environmental and social protection, and other services needed to implement the project. The TOR to hire the PMC will be agreed between the World Bank, the Fund, and the MoE. The PMC will be supported by the procurement committee according to Resolution No. PP-3857 dated July 16, 2018, of the President of the Republic of Uzbekistan. The resolution specifies that IFI rules will apply to sovereign loans. It also specifies that under such projects, an interagency Procurement Committee will be established with a minimum of seven members. Line ministries will nominate members of the Procurement Committee to fulfil obligations according to the resolution.
- (e) **The line ministries (MoH, MoPSE, and MoPE)** will be responsible for nominating facilities to participate in the project. They will also participate in the evaluation of bidding documents (through the Procurement Committee) and provide strategic and operational guidance (through the PSC). Social facilities under the line ministries will be responsible for repayments to the Fund according to the ESA and Loan Agreement.

2. **The PMC will be responsible for the implementation of the TA component as well.** The PSC will approve the scope of the TA activities and budgets. These will be reflected in the Procurement Plan satisfactory to the World Bank. The selection of consultants for the provision of specific TA will be conducted based on the approved Procurement Plan and specified methods. It is expected that after

³⁷ Resolution of Cabinet of Ministers 640, October 9, 2020.

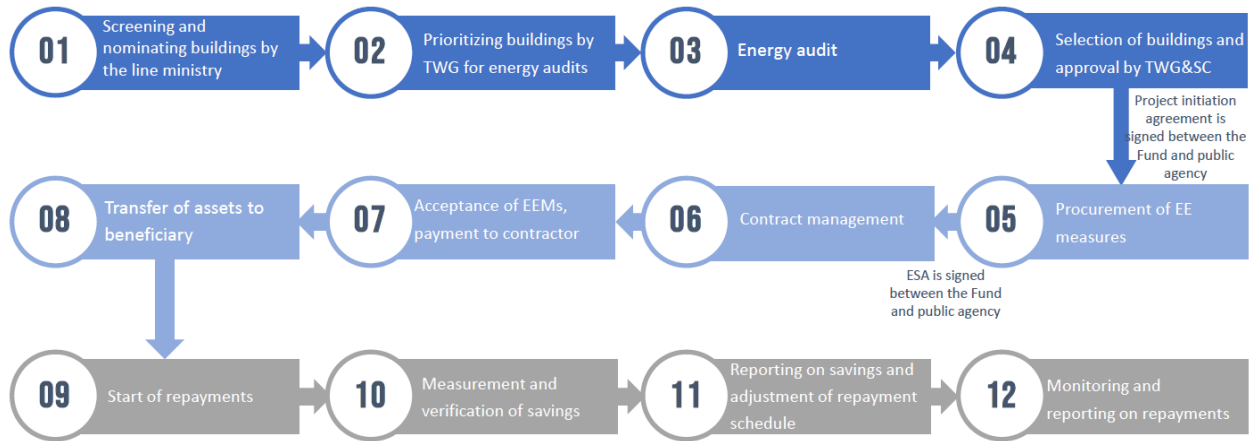


approval of the UBEEP, some of the prioritized legal regulatory documents will be developed under the CEBU to enhance the enabling environment for EE investments at scale.

3. **ESAs.** The project will be implemented using the ESAs (see Box 2) signed between the Fund and beneficiary institution. Under an ESA, the Fund (through the PMC) will provide a set of services (energy audit, procurement, detailed design, financing, construction and monitoring, technical supervision, and so on) for energy- efficient upgrades at the eligible public building facility. The implementation cycle of each ESA is summarized in Figure 1.2, and it has three major phases: (a) selection, (b) renovation, and (c) repayment. Detailed description of the processes and procedures will be provided in the POM and adjusted as needed during implementation.

- (a) **Selection phase.** Using data on building and energy consumption provided by the public building facilities, the line ministries will screen facilities to nominate to the Fund using eligibility criteria as outlined in section II.B. The list of selected buildings will be provided to the PMC which will review and prioritize (with support from the TWG) buildings for walk-through energy audits to be provided by the PMC. The summary reports of each building energy audit will be discussed at the TWG to create a pipeline for the implementation of EE measures in the facilities. The Fund will then submit the list of prioritized buildings with the estimated investment cost to the PSC for approval. Upon approval, a Project Initiation Agreement (PIA) is signed between the beneficiary and the Fund, and the facility will advance to the next phase.
- (b) **Renovation phase.** The PMC will conduct performance-based procurement for the whole scope of EE improvement, including turnkey contract for design, civil works, and the first-year O&M. After selection of the contractor, the Fund (PMC) will then sign the ESA with the beneficiary. The ESA price is based on the cost of the contract for EE measures, including engineering design, measurement and verification, and first- year operation cost. The ESA specifies that the beneficiary will repay the investments during the payback period, according to the repayment schedule. The Fund will supervise the construction by hiring an independent licensed company and will organize the handover of the results to the beneficiary under the commissioning act. The Fund (PMC) will organize measurement and verification of the energy saving according to the specific protocol and report to the line ministries and the MoF about the annual energy consumption and saving level. The repayment schedule can be adjusted after verification of savings.
- (c) **Repayment phase.** The beneficiary institution will repay the cost of all services to the Fund over the payback period of the investment, predominantly using the energy cost saving generated from the renovations/upgrades. Each year, an equivalent amount for energy expenses (baseline energy consumption adjusted for inflation) will be budgeted as before retrofitting, and a portion of the funds (equivalent to the verified after-renovation energy consumption) will be used to pay for the energy bills, and the savings portion (equivalent to the verified savings after the renovation) will be paid to the Fund for energy services provided according to the ESA. The payments will be made until the full investment cost is recovered. The payment to the Fund under the ESA is made the same way as any payment for utility services following the existing treasury system.

Figure 1.2. ESA Implementation Cycle



Strategy and Approach for Implementation Support

4. During project implementation, the World Bank will supervise the project’s FM arrangements in two main ways: (a) review the project’s unaudited IFRs for each calendar quarter as well as the annual audited project financial statements and auditor’s management letter and (b) perform on-site supervision with the frequency based on the assessed project’s risk and performance. The on-site supervision will include the review of the following areas of project’s FM: accounting and reporting, internal control procedures and external audits, planning and budgeting, funds flow, staffing arrangements, and grants mechanism. The review will include all types of payments, namely operating cost, acquisition of goods and services, disbursement, and monitoring of grants. A sample transactions review will also be conducted. Implementation support and supervision will be performed by the World Bank-accredited financial management specialist. In case of the prolonged COVID-19 pandemic, the World Bank supervision may have to be performed virtually as an alternative to on-site visits.

Implementation Support Plan

5. During implementation of the project, the World Bank team will provide targeted and continuous implementation support and TA. Specific technical experts (both World Bank staff and external consultants) may be engaged at various points during the implementation to provide on-demand support and technical advice. The World Bank’s implementation support will also focus on the major risks identified and the mitigation measures to ensure the achievement of the PDO.

6. **The scope of implementation support will be comprehensive to enable the achievement of results.** Specific areas of support include (a) review of implementation progress and achievement of results and PBCs, (b) support for resolving issues or enhancing results during project implementation, (c) enhancement of institutional capacity, and (d) monitoring of the adequacy of systems performance and compliance with legal agreements. Implementation support will be particularly rigorous during the first 18 months of the project due to its criticality for the further operationalization of the processes and procedures.



7. In particular, the World Bank's implementation support will consist of the following:
- (a) **Monitoring and reporting.** Twice a year, the World Bank team will visit to assess compliance with agreed actions, verify reported PBCs, review additional relevant documentation, and identify enhancements for the monitoring and evaluation systems.
 - (b) **Technical support.** The World Bank implementation support missions and continuous engagement will include the engagement of international and national technical specialists to help guide aspects of EE and d-RE policies and regulations and the technical standards and provide support for outreach and behavioral messaging, project monitoring, and so on.
 - (c) **Procurement.** A procurement specialist will carry out ongoing supervision during project implementation. The specialist will also participate in the implementation support missions and site visits, respond to just-in-time requests, and provide ongoing guidance to the Fund/PBC and other institutions involved as needed.
 - (d) **FM.** The World Bank will supervise the FM arrangements and adherence to agreed FM procedures and actions. Implementation support will include capacity strengthening. An annual fiduciary review will be conducted for the project, aligning with the reporting requirements and processes already in place. This review will be supplemented by on-site visits by the World Bank's fiduciary staff at least twice a year. In addition, desk reviews will be done for audits, financial, and any other reports received throughout the financial year. In-depth reviews may also be commissioned by the World Bank as needed.
 - (e) **Environment and social measures.** The World Bank staff will periodically monitor environmental management systems and social measures taken to ensure compliance with agreed actions. The World Bank environmental specialists will participate in the implementation missions and site visits as deemed appropriate. The World Bank will also monitor and provide support to strengthen information campaign improvements, improved involvement of public beneficiaries, feedback measures, and GMs. It will encourage improved reporting from the regional level on local feedback received and grievances being addressed.
8. The World Bank will provide the following support to the MoE and line ministries involved in the project:
- The monitoring of delivery and performance, through proactive identification and collaborative resolution of issues on the performance of the project
 - The institutional strengthening of the agencies, through implementation of the targeted trainings, institutional dialogue, twinning activities, and so on.
9. Program monitoring support is designed to provide confidence to the World Bank that the targeted outputs will be achieved within the expected time scale and at the expected level of quality.

Table 1.1. Implementation Support

Time	Focus	Skills Needed	Resources Estimate
First 6 months	Support for <ul style="list-style-type: none"> • Fund/PBC planning • Establishment of FM system • Progress reporting • Independent verification • Program outreach • Citizen engagement • Beneficiary satisfaction survey and gender survey Monitoring of <ul style="list-style-type: none"> • Program budgeting and allocations • Procurement • Program Results Framework and reporting • Progress 	<ul style="list-style-type: none"> • Project management • FM and disbursement • Procurement • EE expert • Technical standards • Communications • Procurement and contracts 	12–14 staff weeks combined with appropriately calibrated specific technical experts to support the program
6–18 months	Monitoring of <ul style="list-style-type: none"> • Project implementation and physical progress • Disbursements • Results Framework • Budgeting and allocations • Program implementation and physical progress • Program Results Framework • Evaluation of technical performance through field visits and so on 	Same as above	8–10 staff weeks per year combined with expertise on specific topics

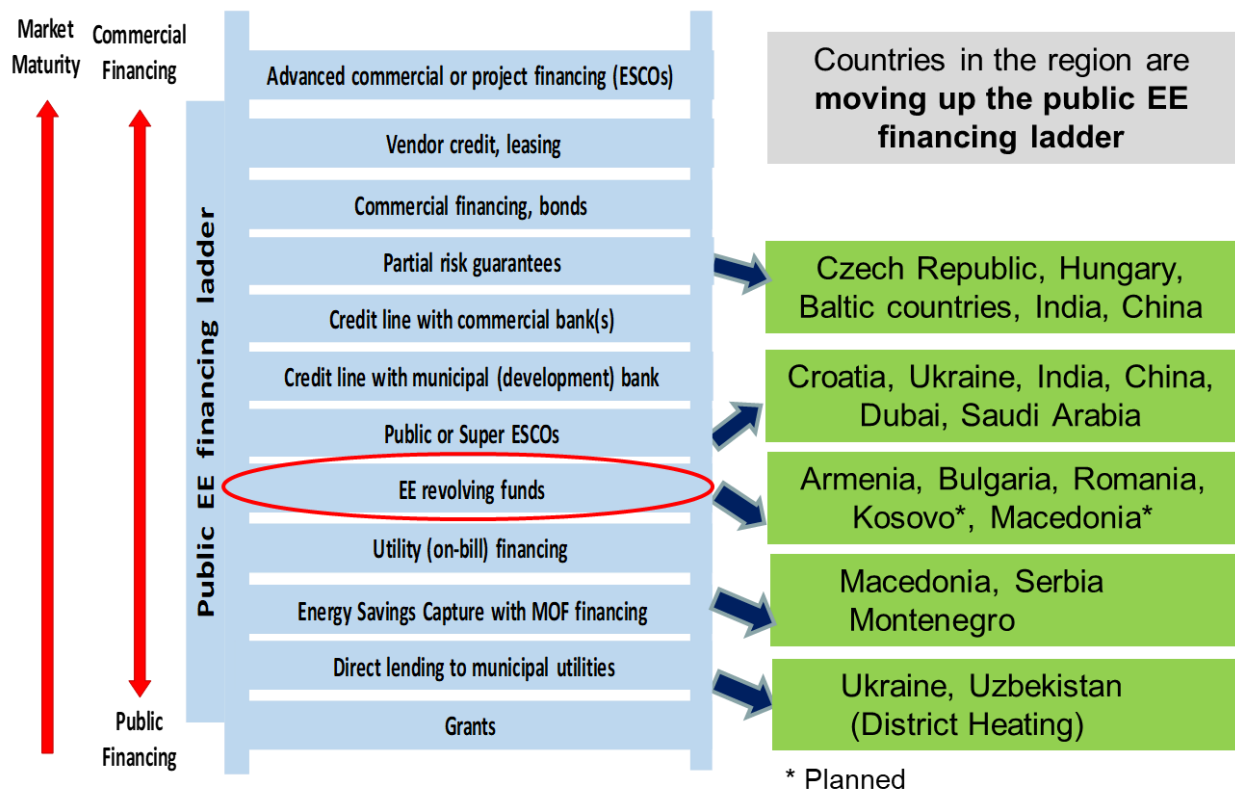
Table 1.2. Task Team Skills Mix Requirements for Implementation Support

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Project management	8	2	HQ and field based
FM	4	2	Field based
Revolving fund management	4	2	HQ based
Environmental and social aspects	6	2	HQ and Europe and Central Asia based
Technical standards	2	1	HQ based
Program outreach, behavior change	4	1	HQ and field based
Procurement and contract management	8	—	Field based

ANNEX 2: Comparison of Financing Approaches

1. A revolving fund approach was chosen to support the implementation of the UBEEP, following analysis of various options to facilitate the sustainability and scale-up of clean energy investments. Experience from other countries shows a range of financing and delivery mechanisms, either to enhance the financial leverage of public funds or to use public funds judiciously to demonstrate and thereby unlock access to commercial financing in these sectors. These various mechanisms are summarized in a ladder of institutional setups and financing options ranging from all-grant investment (direct budget transfers), which is the current situation in buildings in Uzbekistan, to commercial project financing such as through ESCOs (Figure 2.1).

Figure 2.1. Financing Instruments Used for EE Investments and Some Country Examples



2. **The revolving fund has several advantages when considering the objective of the long-term sustainability of the UBEEP:** (a) over time, the Fund could mobilize and consolidate financial resources (for example, Government budget, IFI loans, and commercial funds) to implement large and scalable investment programs; (b) the GoU can delegate tasks to a single entity to reduce its management burden and coordination issues, making the Fund a permanent implementation unit with sustained staffing and expertise, a center of excellence, and knowledge and best practice when it comes to EE and clean energy investments in buildings; the Fund can also provide experience-based feedback to improve the GoU-relevant policies and regulations; (c) it is easier to attract financial resources from IFIs, which are not designed to deal with sub-sovereign (regional/local) levels or multiple borrowers; and (d) the Fund can be assigned to take risks that local banks are unwilling to assume in the early days of market development,



such as lending to a homeowner association in the case of MABs. A comparison of the revolving fund versus direct budget transfer is summarized in Table 2.1. On this basis, the GoU legally established the Fund in July 2020 through Presidential Decree No. PP-4779 and Cabinet of Ministers Resolution No. 640 of October 2020 to finance and implement EE and clean energy investments under the UBEEP.

Table 2.1. Pros and Cons of the Direct Budget Transfer versus the Revolving Fund Mechanisms

	Direct Budget Transfer	Revolving Fund
<i>Time lag to delivery</i>	Fast option. The MoF makes investment funds available through an existing platform for implementing capital improvements but with additional arrangements for recovering a part of or full investment through reduced energy expenditure.	Could be deployed relatively fast if it can be established under the current regulatory framework and uses an existing platform, as in the case of Uzbekistan.
<i>Implementation costs</i>	Likely the lowest among the options because no additional organizational setup is needed. However, there are difficulties in using advanced procurement approaches such as NPV-based procurement.	Additional cost of possible new organization. Possibly higher efficiency/economy of scale if procuring multiple contracts at the same time.
<i>Quality management</i>	Quality standards at the discretion of different public entities, unless the MoF sets public sector standards. Risk of unequal energy performance among public buildings.	The Fund establishes uniform operational guidelines with consistent implementation across building categories.
<i>Long-term impact on sustainable financing for clean investments</i>	Limited, as the model is highly dependent on Government decisions subject to change.	Significant if the fund supports over time private investors, energy service providers, and contractors and leverages commercial financing.
<i>Operational and financial risks</i>	Low if the MoF develops and maintains operational and budget controls.	Medium: public entities must accept accountability for repayment.
<i>Conclusions</i>	Attractive in the short term but undesirable if the MoF is unwilling to shoulder the administrative responsibility of recovering energy cost savings. It also lacks a clear mandate to develop long-term sustainable EE financing beyond the public sector.	Higher potential to open new avenues of financing and help catalyze new industry