THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP

FOR OFFICIAL USE ONLY

Report No: PAD4738

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT
ON A
PROPOSED LOAN

IN THE AMOUNT OF EUR 44.9 MILLION
(US$50 MILLION EQUIVALENT)

TO THE

REPUBLIC OF SERBIA

FOR A

SCALING-UP RESIDENTIAL CLEAN ENERGY (SURCE) PROJECT

March 1, 2022

Energy & Extractives Global Practice
Europe And Central Asia Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective January 31, 2022)

Currency Unit =	Serbian Dinars (RSD)
US$1 =	RSD 104.42
US$1 =	EUR 0.89

FISCAL YEAR

January 1 - December 31

Regional Vice President:	Anna Bjerde
Country Director:	Linda Van Gelder
Regional Director:	Charles Joseph Cormier
Practice Manager:	Sudeshna Ghosh Banerjee
Task Team Leader(s):	Katharina B. Gassner, Joern Thorsten Huenteler

ABBREVIATIONS AND ACRONYMS

Acronym	Meaning
AERS	Energy Agency of the Republic of Serbia
ASA	Advisory Services and Analytics
CEB	Council of Europe Development Bank
CFU	Central Fiduciary Unit
CO_2	carbon dioxide
CPF	Country Partnership Framework
DA	designated account
DFIL	Disbursement and Financial Information Letter
DH	district heating
DPL	Development Policy Loan
DPO	Development Policy Operation
E&S	environmental and social
EBRD	European Bank for Reconstruction and Development
EE	energy efficiency
EEA	Administration for Energy Efficiency Financing and Promotion (Energy Efficiency Administration)
EIB	European Investment Bank
EIRR	economic internal rate of return
EnMS	Energy Management Systems
ENPV	economic net present value
EPS	Elektroprivreda Srbije (Electric Power Industry of Serbia)
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
ESRS	Environmental and Social Review Summary
ESS	Environmental and Social Standard
EU	European Union
EU-SILC	European Union Survey on Income and Living Conditions
EVP	Energy Vulnerable Program
FDI	foreign direct investment
FM	financial management
FY	fiscal year
GDP	gross domestic product
GEFF	green economy financing facility
GGF	Green for Growth Fund
GHG	greenhouse gas
GIZ	Gesellschaft für Internationale Zusammenarbeit (German International

	Cooperation Agency)
GoS	government of Serbia
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service
IBRD	International Bank for Reconstruction and Development
IEA	International Energy Agency
IFI	international financial institution
IFR	interim financial report
INDC	Intended Nationally Determined Contribution
IPA	Instrument for Pre-accession Assistance
IPF	Investment Project Financing
IRR	internal rate of return
JICA	Japan International Cooperation Agency
KfW	Kreditanstalt für Wiederaufbau (German Development Bank)
LCDS	Low-Carbon Development Strategy
LSGU	local self-government unit (including municipalities, cities, and cities with municipalities)
M&E	monitoring and evaluation
M&V	measurement and verification
MAB	multi-apartment building
MCTI	Ministry of Construction, Transport, and Infrastructure
MJ	mega joules
MoEP	Ministry of Environmental Protection
MoF	Ministry of Finance
MoME	Ministry of Mining and Energy
NBS	National Bank of Serbia
NDC	Nationally Determined Contribution
NECP	National Energy and Climate Plan
NPV	net present value
OeEB	Oesterreichische Entwicklungsbank (Austrian Development Bank)
OHS	occupational health and safety
P4R	Program for Results
PBC	performance-based condition
PDO	Project Development Objective
PHRD	Policy and Human Resources Development
PIU	Project Implementation Unit
PLR	Performance and Learning Review
PM	particulate matter
POGM	Project Operations and Grant Manual
PP	Procurement Plan
PPP	purchasing power parity
PPSD	Project Procurement Strategy for Development

PSC	Project Steering Committee
PV	photovoltaics
RAS	Reimbursable Advisory Services
RE	renewable energy
REEP	Regional Energy Efficiency Program
RSD	Serbian dinar
SCC	social cost of carbon
SCD	Strategic Country Diagnostic
SECO	Swiss State Secretariat for Economic Affairs
SEEP	Serbia Energy Efficiency Project
SEP	Stakeholder Engagement Plan
SFH	single-family house
SH	sustainable heating
SORT	Systematic Operations Risk-rating Tool
STEP	Systematic Tracking of Exchanges in Procurement
SURCE	Scaling-Up Residential Clean Energy
TA	technical assistance
ToR	terms of reference
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
WB	World Bank
WB6	Western Balkans 6 countries
WBIF	Western Balkans Investment Framework
WHO	World Health Organization
WTEA	walk-through energy audit

TABLE OF CONTENTS

DATASHEET

BASIC INFORMATION

Country(ies)	Project Name	
Serbia	Scaling-Up Residential Clean Energy (SURCE) Project	
Project ID	**Financing Instrument**	**Environmental and Social Risk Classification**
P176770	Investment Project Financing	Moderate

Financing & Implementation Modalities

[ ] Multiphase Programmatic Approach (MPA)	[ ] Contingent Emergency Response Component (CERC)
[ ] Series of Projects (SOP)	[ ] Fragile State(s)
[ ] Performance-Based Conditions (PBCs)	[ ] Small State(s)
[ ] Financial Intermediaries (FI)	[ ] Fragile within a non-fragile Country
[ ] Project-Based Guarantee	[ ] Conflict
[ ] Deferred Drawdown	[ ] Responding to Natural or Man-made Disaster
[ ] Alternate Procurement Arrangements (APA)	[ ] Hands-on Enhanced Implementation Support (HEIS)

Expected Approval Date	Expected Closing Date
05-Apr-2022	30-Nov-2027

Bank/IFC Collaboration

No

Proposed Development Objective(s)

Increase the uptake of energy efficiency, sustainable heating, and rooftop solar photovoltaics (PV) by households in participating local self-government units (LSGUs) in Serbia.

Components

Component Name	Cost (US$, millions)

Financing energy efficiency, sustainable heating, and rooftop solar investments in residential buildings	45.00
Technical assistance and implementation support	4.88
Front-end fee	0.13

Organizations

Borrower:	The Republic of Serbia
Implementing Agency:	Ministry of Mining and Energy

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	145.00
Total Financing	145.00
of which IBRD/IDA	50.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	50.00

Non-World Bank Group Financing

Counterpart Funding	95.00
Local Govts. (Prov., District, City) of Borrowing Country	45.00
Local Beneficiaries	50.00

Expected Disbursements (in US$, Millions)

WB Fiscal Year	2023	2024	2025	2026	2027	2028
Annual	5.00	8.00	11.00	11.00	11.00	4.00
Cumulative	5.00	13.00	24.00	35.00	46.00	50.00

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

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

The Borrower, through the MoME, shall:
(a) Establish, not later than sixty (60) days after the Effective Date, and maintain throughout Project implementation, a Project implementation unit ("PIU") within the MoME with composition, resources, terms of reference, and functions acceptable to the Bank, including, inter alia: (i) the overall coordination of all Project implementation activities; (ii) ensuring that the requirements, criteria, policies, procedures, and organizational arrangements set forth in the Procurement Regulations and the Project Operations and Grant Manual ("POGM") are applied in carrying out the Project; (iii) preparation of Project implementation documents, including Project progress reports; and (iv) monitoring and evaluation of the Project;
(b) Engage and hire, not later than sixty (60) days after the Effective Date, or retain (if applicable), and maintain throughout Project implementation, the following PIU staff members: Project Manager, Engineer, Economic/Financial Expert, IT Specialist, and an Environmental and Social Specialist;
(c) Submit annual project financial audits to the Bank within six (6) months after the end of each financial year; and
(d) Prepare and submit to the Bank not later than forty-five (45) days after the end of each calendar quarter,

interim unaudited financial reports for the Project covering the quarter, in form and substance satisfactory to the Bank.

Sections and Description

The Borrower, through MoF, shall maintain, throughout Project implementation, the Central Fiduciary Unit ("CFU") within MoF, with composition, staff in numbers and with qualifications, resources, terms of reference, and functions acceptable to the Bank, as further set forth in the Procurement Regulations and the POGM, including the responsibility for providing overall fiduciary support (financial management and procurement) to the PIU for Project implementation.

Conditions

Type	Financing source	Description
Disbursement	IBRD/IDA	No withdrawal shall be made under Components 1 and 2 until the Borrower, through MoME, has developed and adopted a Project and Grant Operations Manual, in form and substance satisfactory to the Bank.

I. STRATEGIC CONTEXT

A. Country Context

1. **Serbia is an upper-middle-income economy featuring the largest population in the Western Balkans at 7 million, as well as the highest gross domestic product (GDP) per capita at US$7,720.**[1] After making substantial gains in political stability and institution building, in 2014 Serbia started official accession negotiations with the European Union (EU), which are ongoing. Despite some reform efforts, improvements in government effectiveness and accountability have stagnated in recent years, holding back stronger progress across other areas. Environmental sustainability concerns have become more prominent, with pressing issues such as air pollution, solid waste management, and a highly carbon-intensive economy.[2]

2. **The COVID-19 pandemic and related containment measures have taken a heavy toll on the Serbian economy, but recovery in 2021 was strong.** The economy entered a recession in 2020, amid declining tourism and transport activity, lower remittances, decelerating exports, and lower foreign direct investment (FDI) and investment overall. In 2020, GDP declined by 1 percent, after a robust 4.2 percent expansion in 2019. In response, the government approved a large stimulus package for the economy and households, totaling almost 13 percent of GDP. This stimulus has sustained household income and businesses, allowing a quick recovery in 2021 (GDP grew by an estimated 6.5 percent in 2021 and is projected to grow by 4.5 percent in 2022[3]), but it has caused the budget deficit to expand significantly (to around 8 percent of GDP).

3. **The government of Serbia (GoS) is scaling up green investments to spur post-COVID recovery and build resilience against future shocks, especially among its most vulnerable citizens.** The budget for 2021 has set aside close to EUR 2.2 billion for energy efficiency, sustainable heating, district heating rehabilitation, green recovery and growth, mining, sewer network construction, wastewater treatment, and solid waste management projects and programs. In April 2021, the EU Delegation and the GoS signed a new Instrument for Pre-accession Assistance (IPA III) agreement in the amount of EUR 86 million, out of which EUR 54 million will be dedicated to the implementation of the Green Agenda in Serbia. The GoS has also formed a National Coalition on Energy Poverty, a dedicated advisory body whose objective is to contribute to strengthening the regulatory and policy framework to reduce negative impacts of the anticipated changes in the energy sector on vulnerable citizens. One of its first activities has been to revise the Decree on Energy Vulnerable Consumers and expand its coverage, leading to an estimated doubling of beneficiaries starting in 2022. In the later part of 2021, the steep increase in international energy prices has contributed to inflation, with an annual price increase of 7.5 percent reported in November 2021 and higher exposure of lower-income households to rising food and energy costs.[4]

4. **Strengthening its focus on "green" investments will contribute to reducing Serbia's vulnerability to climate and disaster risks and achieving its ambitious climate change mitigation commitments.** Serbia is particularly vulnerable to the impacts of climate change, especially higher-frequency and higher-intensity floods, wildfires, droughts, and heatwaves. Awareness about these risks has been increasing in recent years,

[1] 2020 value. Source: World Bank, World Development Indicators.
[2] Source: World Bank. 2020. *Serbia Systematic Country Diagnostic: Update*. Washington, DC: World Bank. https://openknowledge.worldbank.org/handle/10986/33736.
[3] Source: IMF (International Monetary Fund), October 2021 End-of-Mission Press Release.
[4] Source: Fiscal Council of Serbia, January 4, 2022.

and the Serbian government has started taking action towards climate change mitigation and adaptation. Serbia has been a party to the United Nations Framework Convention on Climate Change (UNFCCC) since 2001 and the Kyoto Protocol since 2008. The government set up the National Climate Change Committee in 2014 and submitted its Intended Nationally Determined Contribution (INDC) to the UNFCCC in 2015, pledging to cut greenhouse gas (GHG) emissions by 9.8 percent by 2030 in comparison to 1990 levels. Serbia signed the Paris Agreement on Climate Change in 2016 and ratified it in 2017. Additionally, as a Contracting Party to the Energy Community Treaty,[5] Serbia has made legally binding commitments to adopting core EU energy legislation (the so-called "acquis communautaire"). As a signatory to the Sofia Declaration on the Green Agenda for the Western Balkans, aligned with the EU's Green Deal, Serbia has committed to working toward the 2050 target of a carbon-neutral continent together with the EU. The current government, which was installed in October 2020, has shown commitment to addressing several challenges related to the decarbonization of the energy sector, including improving energy efficiency and increasing the share of renewable energy in the energy mix by enacting a legislative reform package within months of its tenure. In contrast, the phase-out of coal-fired electricity and heat generation is still under consideration and no timelines have been announced by the political leadership.

5. **Serbia has begun developing the strategic framework for the decarbonization of its economy.** On the regional level, in October 2020 the European Commission announced "An Economic and Investment Plan for the Western Balkans" and Guidelines for Implementation of the Green Agenda for the Western Balkans, which support the transition to climate neutrality according to the principles of Just Transition for All, which stipulates that a successful low-carbon transition must be socially just and inclusive and leave no one behind. On a national level, a draft Low-Carbon Development Strategy (LCDS) was prepared in 2020 with financial support from the EU, setting a more ambitious target to reduce Serbia's GHG emissions by 33.3 percent in 2030 compared to 1990 levels (or 13.2 percent compared to 2010 levels).[6] It is expected that this objective will be reflected in the update to the Intended Nationally Determined Contribution (INDC) expected to be released in 2022. In January 2021, the GoS adopted an Action Plan for the Implementation of the Government's Programme 2020–2022, which includes two "Green Agenda" objectives: priority objective 1.3, "Environmental protection and green transformation" under the responsibility of the Ministry of Environmental Protection (MoEP), and priority objective 1.4, "Energy transformation and sustainability" under the responsibility of the Ministry of Mining and Energy (MoME). A new Energy Sector Development Strategy and a National Energy and Climate Plan (NECP) are also under preparation, and the documents are expected to be disclosed for public consultation in early 2022. The Law on Housing and Building Maintenance envisages sustainable housing development as one of the basic principles. Finally, a long-term building renovation strategy spelling out medium- to long-term targets for residential, commercial, and public buildings was finalized in 2021 and is expected to be reflected in the forthcoming NECP and Energy Strategy.

B. Sectoral and Institutional Context

[5] The Energy Community is an international organization that brings together the European Union and its neighbors to create an integrated pan-European energy market. The organization was founded by the Energy Community Treaty, which was signed in October 2005 in Athens, Greece, and has been in force since July 2006. Its key objective is to extend the EU internal energy market rules and principles to countries in South East Europe, the Black Sea region, and beyond on the basis of a legally binding framework.

[6] The Serbian president announced the new targets in December 2020. Source: https://www.euractiv.com/section/politics/short_news/serbia-will-be-a-low-carbon-competitive-economy-by-2050-says-president/.

(i) Institutional Structure and Governance

6. **The energy sector policy agenda is implemented by several institutions at various levels.** The Ministry of Mining and Energy (MoME) is responsible for the national energy policy and leads decarbonization efforts in the energy and mining sectors. The Ministry of Construction, Transport, and Infrastructure (MCTI) is responsible for the buildings sector, including the preparation of the national buildings renovation strategy that includes energy efficiency improvements. Environmental management and monitoring are the mandates of the Ministry of Environmental Protection (MoEP). Local self-government units (LSGUs) with more than 20,000 inhabitants are obliged to set objectives to improve energy efficiency, produce and implement Energy Efficiency Programs (for three-year periods) and Energy Efficiency Plans (for one-year periods), introduce and implement Energy Management Systems (EnMS), and allocate funds in their budgets for the fulfillment of municipal energy efficiency obligations. Smaller LSGUs are obliged to prepare and implement Energy Development Plans. Despite this obligation, many LSGUs have not yet adopted local energy efficiency programs, housing strategies, or action plans, and financial and human resources at the local level are inadequate in a number of localities.

7. **The GoS in early 2021 embarked on an ambitious reform program to improve the legal and regulatory framework for clean energy and energy efficiency, partly driven by Serbia's EU accession process, which requires adherence to the EU's acquis communautaire.** The Law on Climate Change was adopted in March 2021. A package of legislative reforms was ratified by Parliament in April 2021 and includes new Laws on Renewable Energy Sources and on Energy Efficiency, as well as amendments to the Energy Law and the Mining Law. Secondary legislation documents for all laws have been and are still being developed, including those being drawn up with assistance from the World Bank and other development partners. These secondary legislation documents provide the regulatory conditions for activities newly supported through government programs, including in the areas of "prosumers" and residential energy efficiency.

(ii) Residential Clean Energy

8. **Serbia's energy mix is dominated by fossil fuels, whereas the contribution of nontraditional renewable energy sources is negligible.** In 2019, 82 percent of Serbia's gross inland energy consumption (15.5 megatons of oil equivalent [Mtoe]) came from fossil fuels (44 percent from lignite, 24 percent from oil, and 14 percent from natural gas). Biomass (mainly firewood) and hydro (hydroelectric power) represented 7 percent and 6 percent of gross inland energy consumption, respectively, whereas the share of nontraditional renewable energy sources (such as wind, solar) is below 1 percent.[7] As a consequence of its high level of reliance on domestic lignite, Serbia's carbon dioxide (CO_2) emissions per unit of GDP purchasing power parity (PPP) are significantly higher than the ones of the EU and several other Western Balkan countries.[8] In the electricity sector, non-hydro renewable energy sources account for a very small share of Serbia's electricity generation. In 2020, only about 3 percent of Serbia's electricity generation came from non-hydro renewable energy sources, compared to 69 percent from coal and 28 percent from

[7] Source: Eurostat.

[8] Despite a significant decrease over the past decade, Serbia's carbon intensity of GDP (0.38 $kgCO_2$ per 2015 US$ PPP in 2018) remains almost three times as high as the EU's (0.15 $kgCO_2$ per 2015 US$ PPP), but also significantly higher than those of other coal-reliant WB6 countries (e.g., North Macedonia and Montenegro, with 0.23 and 0.22 $kgCO_2$ per 2015 US$ PPP, respectively) and comparable EU countries in the region (e.g., Bulgaria and Romania, with 0.28 and 0.14 $kgCO_2$ per 2015 US$ PPP, respectively). Source: IEA (International Energy Agency), Indicators for CO_2 Emissions.

hydropower.[9] Non-hydro renewable energy generation is concentrated in large wind farms, whereas the share of small-scale distributed generation is negligible. In line with international trends, the 2021 Renewable Energy Law stipulates the switching from a feed-in tariff program to competitive auctions to support the development of large-scale renewable energy plants, and the government is working on the secondary legislation with the intention of launching the first wind and solar auctions in 2022. In order to also boost small-scale distributed generation, the GoS has made the involvement of citizens and small producers in renewable energy generation (especially rooftop solar photovoltaics) a key priority of its agenda.

9. **Households account for about one third of Serbia's final energy consumption, with about three quarters of the energy they consume used for heating purposes**. In 2018, households accounted for 34 percent of Serbia's final energy consumption, followed by industry (28 percent), transport (25 percent), commercial and public services (11 percent), and agriculture and forestry (2 percent). About 75 percent of the final energy consumed by Serbian households is used for space and water heating, compared with 17 percent for lighting and electrical appliances and 7 percent for cooking.[10] The largest share of the heating needs of Serbian households is met by firewood and coal (36 percent and 12 percent, respectively, of total household energy consumption for heating in 2018[11]), whereas electricity, district heating, and natural gas, respectively, account for 24, 19, and 9 percent of the total. In rural areas, heating is almost exclusively provided by firewood and coal.[12] Firewood and coal are often burnt in old, inefficient boilers, leading to negative environmental and health impacts and raising concerns on the sustainability of wood harvesting.

10. **Residential heating is a major source of air pollution in Serbian cities.** Residential heating accounts for more than 50 percent of fine particulate matter ($PM_{2.5}$) emissions in the winter months. Particulate matter concentrations in Serbian cities are consistently above World Health Organization (WHO) guideline values. For example, in the 2019–2020 heating season, the average $PM_{2.5}$ concentration in Belgrade was 27.4 micrograms per cubic meter of air ($\mu g/m^3$), almost three times as high as the recommended WHO limit of 10 $\mu g/m^3$.[13] In a 2021 public opinion poll, three quarters of the participants stated that they believed that pollution in Serbia has gotten worse over the last five years.[14] According to a 2019 analysis by the WHO, exposure to $PM_{2.5}$ accounts for 3,585 premature deaths per year across 11 Serbian cities, including 1,796 deaths in Belgrade. A 2021 World Bank study showed that in the Western Balkans countries with similar conditions, existing wood and coal stoves have $PM_{2.5}$ emissions 6 to 15 times higher than the eco-design wood and pellet stoves and that CO_2 emission and health costs together account for about 50–70 percent of the total economic cost of wood and coal stoves.[15]

11. **The GoS has made the participation of citizens in the energy transition—as "prosumers" of clean energy and as adopters of cleaner heating and energy efficiency solutions—a core part of its current energy sector agenda.** First, the GoS is promoting rooftop solar PV to harness its impressive solar resource potential and falling cost of solar equipment. This strategy relies on a number of considerations: (a) achieving Serbia's ambitious decarbonization targets will inevitably require relying on a significant share of

[9] Source: Energy Agency of the Republic of Serbia (AERS), 2020 Annual Report.
[10] Source: Eurostat.
[11] Source: Eurostat.
[12] Source: Statistical Office of the Republic of Serbia, 2011 Census.
[13] Source: Modeling by UrbanEmissions.info for the World Bank, March 2021.
[14] Source: Public opinion polls on environmental issues, Serbia. World Bank, November 2021.
[15] Source: *Sustainable Heating Assessment in Western Balkan Countries*, World Bank Technical Assistance Project funded by ESMAP (Energy Sector Management Assistance Program), December 2021.

distributed renewable generation, given land availability and other constraints; (b) small renewable installations (especially rooftop solar PV) are becoming increasingly affordable; and (c) Serbia has an average specific photovoltaic power output of 3.5 kilowatt-hour per kilowatt peak (kWh/kWp), which corresponds to a higher solar potential than many other European countries. Recently adopted energy laws have created the conditions to simplify the procedure for the installation of solar panels on the rooftops of buildings, and the GoS has adopted a regulatory framework to allow Serbian households to become prosumers[16] and sell excess generation from their solar PV systems to the grid through a net-metering mechanism. In September 2021, the MoME launched its first public call for subsidies for solar panels, with the long-term ambition of reaching 30 percent of Serbian households equipped with solar PV systems.[17] Second, the GoS has put in place programs to scale up the adoption of sustainable heating solutions and distributed renewable energy in residential buildings, but these programs remain small and the scale-up is difficult due to the fragmented implementation across the government. In 2021, the MoEP launched a boiler replacement program aimed at improving air quality. In February 2021, the program issued two public calls, for (a) co-financing the procurement, replacement, reconstruction, and rehabilitation of heating boilers (RSD 200 million, EUR 1.7 million); and (b) co-financing of air pollution reduction from individual heating sources (RSD 100 million, EUR 0.9 million).

(iii) Energy Efficiency

12. **Serbia lags behind its peer countries in terms of the overall energy intensity of the economy.** In 2018, Serbia's total final energy consumption per unit of GDP PPP was 0.078 tons of oil equivalent (toe) per thousand 2015 US$ PPP. This value was significantly higher than that of the EU-27 countries (0.056 toe per thousand 2015 US$ PPP), but also higher than that of other "Western Balkans 6" (WB6) countries (for example, North Macedonia and Albania, with 0.062 and 0.057 toe per thousand 2015 US$ PPP, respectively) and comparable EU countries in the region (for example, Bulgaria and Romania, with 0.070 and 0.048 toe per thousand 2015 US$ PPP, respectively). In the region, only Bosnia and Herzegovina has a higher final energy consumption per unit of GDP PPP (0.096 toe per thousand 2015 US$ PPP).[18]

13. **Energy prices are close to or at cost recovery, but energy taxation is marginal, thus leading to relatively low prices in a regional comparison and limited incentives for investments in energy efficiency and distributed renewable generation.** Electricity prices for household consumers in Serbia are significantly lower than in all EU countries and even lower than in the neighboring Western Balkans countries. In the first half of 2020, the average electricity tariff (including taxes and levies) for household consumers consuming between 2.5 and 5 megawatt-hours (MWh) per year was EUR 7.4 cent/kWh in Serbia, versus an EU-27 average of EUR 21.3 cents/kWh.[19] Even at purchase power parity, Serbia's electricity prices rank among the lowest in Europe (only Finland and the Netherlands have lower prices). Low electricity tariffs provide perverse incentives for excessive consumption, and Serbia's per capita energy consumption is among the highest in Europe and the region. At the same time, the promise of a cheap and abundant energy supply has figured as one of the selling points used by Serbia to attract FDI. In the face of recent increases of

[16] "Prosumers" are generally defined as electricity consumers that produce part of their electricity needs from their own power plant and use the distribution network to inject excess production and to withdraw electricity when self-production is not sufficient to meet their own needs. Source: Energy Community.
[17] July 29, 2021, statement of the Minister of Mining and Energy Zorana Mihajlovic. Source: Executive News (Executive Newsletter, Issue No. 4848, July 30, 2021).
[18] Source: IEA, World Indicators.
[19] Source: Eurostat.

international energy prices, the GoS has capped tariffs charged to businesses and households until the end of the heating season.

14. **The residential sector has a large untapped potential for energy efficiency improvements, especially in single-family houses (SFHs).** The residential sector accounts for nearly 49 percent of total electricity consumption and about 55 percent of total heat consumption in Serbia.[20] SFHs account for almost 60 percent (179 million m^2) of the total surface and 97 percent (over 2.2 million units) of the total number of residential buildings,[21] and their average net energy demand for heating is almost twice as high as that of multi-apartment buildings (281 vs. 153 kWh/m^2 per year).[22] The SFHs built in the 1970s and 1980s are those with the highest net energy demand for heating (above 300 kWh/m^2 per year). A recent WB study in Western Balkans countries with similar conditions showed that energy savings above 50 percent can be achieved in SFHs by retrofitting insulation of walls, roofs, and windows.[23] The investments required to improve the energy efficiency of residential buildings are significant, but they are estimated to result in sizeable social, economic, and environmental benefits. The draft Long-Term Buildings Renovation Strategy prepared by the MCTI estimates that the total investments required for the renovation of all Serbian buildings range between RSD 2,326 billion (EUR 19.8 billion) and RSD 9,377 billion (EUR 79.7 billion) by 2050.

15. **Although SFHs account for the largest share of the residential building stock and many of them are very energy-inefficient, very limited instruments are in place to support energy efficiency improvements in these houses.** Most of the Serbian national and donor-funded support schemes have so far targeted public buildings and households in the higher-income segments that are less likely to live in SFHs.[24] For example, the World Bank-supported Serbia Energy Efficiency Project (SEEP, 2004–2013) and the subsequent Program for Results (P4R) Enhancing Infrastructure Efficiency and Sustainability Program (2017–2023) financed the rehabilitation of public buildings, at both central and local levels. The Regional Energy Efficiency Program (REEP), launched by the European Bank for Reconstruction and Development (EBRD), finances energy efficiency investments in the residential sector, although its design (with limited grant shares) is geared toward higher-income households that can afford to invest in energy efficiency or have access to financing.

16. **The need to link residential energy efficiency effort—switching to clean heating solutions—and air quality improvement is increasingly being understood.** In order to lessen the negative impact of bad air quality on the health and well-being of citizens, the call for policies supporting switching away from heating methods based on solid fuels is growing louder. Coal and firewood are used to meet half of the residential heating demand and provide heating to the majority of SFHs in Serbia, particularly in rural areas. Political commitment to support fuel switching is demonstrated, for example, by MoEP programs subsidizing boiler replacement, but the need to link such efforts with energy efficiency (EE) measures that lessen the need for heating energy is recognized.

[20] Source: World Bank. 2020. “Serbia: Key Design Features for a Residential Energy Efficiency Program.”
[21] Source: National Typology of Residential Buildings of Serbia (until 2012), Statistical Yearbooks (2013—2020).
[22] Source: *Support for Low-Emission Development in South Eastern Europe (SLED*), based on 2011 Census data from the Statistical Office of the Republic of Serbia.
[23] Source: *Sustainable Heating Assessment in Western Balkan Countries*, World Bank Technical Assistance Project funded by ESMAP (Energy Sector Management Assistance Program), December 2021.
[24] In 2019, across Serbia 89 percent of households belonging to the lowest income quintile lived in SFHs, compared to only 47 percent of households in the highest income quintile. Source: EU-SILC (European Union Statistics on Income and Living Conditions).

17. **An Administration for Energy Efficiency Financing and Promotion (hereinafter Energy Efficiency Administration, or EEA) has been created within the MoME through the newly adopted 2021 energy legislation.** The EEA will replace the current budgetary fund for energy efficiency, which was just a budget line operated by the MoME. The MoME will develop and oversee the implementation of the national energy efficiency policy, while the EEA will have a task to implement this policy based on the annual investment programs adopted by the government each year. The EEA will provide grants (either repayable or nonrepayable) to all energy consumption sectors and particularly to the household sector and other types of support, which will be developed in the future. It will also provide assistance to municipalities, financial institutions, energy service companies, and consumers to implement EE measures and will be in charge of raising awareness on energy efficiency. Under the Law on Energy Efficiency and Rational Use of Energy (LEERUE), the EEA is mandated to coordinate the different energy efficiency and clean energy support programs, recognizing the link between EE and clean energy.[25] In 2021, the Ministry of Mining and Energy initiated a pilot government program that finances for the first time energy efficiency investments in residential buildings. Under the program, households can apply to their local self-government unit (LSGU) for up to 50 percent of grant financing (up to 25 percent provided by the MoME and up to 25 percent provided by the LSGU) for the implementation of energy efficiency measures.

(iv) Challenges to the Scale-Up of Residential Clean Energy and Energy Efficiency

18. **First, affordability of poor and vulnerable households.** In 2019, almost 10 percent of Serbian households reported that they could not keep their home adequately warm. Serbian households spend about three quarters of their energy budget (and 9 percent of the total household budget) on space and water heating, which makes them vulnerable to changes in the price of the different energy products used for heating (coal, wood, electricity, district heating). Energy affordability is of particular concern for rural households: over 23 percent of Serbian households are at risk of poverty, but this rate increases to 34 percent in rural areas.[26] Low-income households have fewer resources available to finance clean energy and energy efficiency investments and find it more difficult to access financing due to their lower creditworthiness. Moreover, evidence suggests that the penetration of clean energy and energy efficiency investments in households is lower for lower-income households.[27] The Decree on Energy Vulnerable Customers in force stipulates that the beneficiaries of financial social assistance and child allowances, as well as other low-income households, can receive discounts on their electricity and natural gas bills, thanks to a subsidy financed by the state budget. The recently updated Energy Law has extended this subsidy to vulnerable households connected to district heating systems. In addition, some cities provide additional support at the municipal level (for example, subsidies for low-income consumers of district heating services financed through the budget of the City of Niš). The MoME is currently developing a new draft regulation, expected to be adopted in early 2022, to enhance and expand the protection of energy vulnerable customers, thus further mitigating existing energy poverty as well as anticipating future changes in the sector.

[25] The existing boiler replacement program will likely remain under the management of the MoEP, at least for the foreseeable future.

[26] A household is defined as “at risk of poverty” if its equivalized disposable income is below the relative poverty line (RSD 19,381 per month for a single-person household in 2019). Source: Eurostat.

[27] For example, it is estimated that only 5 percent of households with a monthly income below €300 have undertaken energy efficiency improvements, compared to 80 percent of households with a monthly income above €1,700.

19. **Second, lack of access to financing.** Many Serbian citizens have limited financial resources and are reluctant or have difficulty accessing commercial lending because of a lack of experience and trust or low levels of creditworthiness and missing collaterals. Other financial barriers include high interest rates and additional bank fees. These barriers make access to commercial finance for this type of investment unattractive, if not impossible, for many, especially for lower-income households. Available funds from public sources (national and municipal budgets) are very limited, which is due to the high indebtedness of the public sector, especially at the local level. The Anti-Corruption Council of the Government of Serbia reports that local governments fail to collect about EUR 1 billion annually of owed taxes and fees, which represents about one third of total local budgets.[28]

20. **Third, nascent awareness of sustainable energy solutions among Serbian households.** Serbian citizens often have limited knowledge of their energy consumption patterns, as well as the potential opportunities related to the implementation of energy efficiency measures or the adoption of sustainable heating and distributed renewable energy technologies. Familiarity with existing technologies and negative preconceptions may undermine the desire to switch to a different technology. The costs and benefits of these investments are difficult to quantify for untrained persons, particularly when access to reliable data is poor. Moreover, there is limited communication about the potential for energy savings in residential buildings; the related public and private benefits; the government's vision, programs, and plans; and how households and other stakeholders can collectively contribute to this vision. However, the Serbian citizens' interest in energy efficiency investments is growing. According to a 2021 Ipsos Group public opinion poll, about a quarter of Serbian citizens (24 percent) have already considered applying for government support for better insulation of their housing, while every second citizen might consider the option.

21. **Fourth, limited institutional structures and low technical capacity, especially at the local level.** Until 2021, there was no national program to promote residential clean energy and energy efficiency in place, and key departments in ministries and LSGUs remain severely understaffed and underbudgeted. In particular, LSGUs and municipal housing maintenance companies often have other priorities and functions and do not have adequate capacity to deal with energy efficiency programs at scale. The energy managers appointed by the LSGUs often have only a small operational budget, which hardly covers the daily work, and have limited experience regarding the implementation of residential energy efficiency renovation programs. The energy services market is underdeveloped, and there are practically no qualified energy service companies (ESCOs) with sufficient technical and financial capacity to provide a broad range of energy services in the residential sector.

(v) Project Intervention in Sector Context

22. **The project aims to put in place a scalable framework and implementation structures for the development of a private sector-led market for energy efficiency and clean energy investments in Serbia.** The size and low level of energy efficiency of the existing Serbian building stock will require decades of massive investments in building renovations and improvements. The draft Long-Term Buildings Renovation Strategy estimates energy efficiency investments alone to range between RSD 2,326 billion (EUR 19.8 billion) and RSD 9,377 billion (EUR 79.7 billion) by 2050. The ability to sustain this level of investments in the longer term will depend on the creation of a market for energy efficiency and clean energy investments and the mobilization of private sector resources. The project aims at laying the groundwork for this, by expanding

[28] For example, Belgrade Waterfront company alone owes over €100 million (0.2 percent of GDP) to the City of Belgrade. Source: ВЛАДА РЕПУБЛИКЕ СРБИЈЕ САВЕТ ЗА БОРБУ ПРОТИВ КОРУПЦИЈЕ 72 Број:021-00-10768/2021, 22. новембар. 2021. Године, Б е о г р а д.

existing financing schemes. At the same time, the project will take a forward-looking approach to foster commercial banks and stimulate the local EE market, in order to ensure the long-term sustainability of the Serbian energy efficiency and clean energy market, even after the end of the World Bank project and the phase-out of government subsidies.

23. **The project will demonstrate a number of co-benefits of green investments, including air pollution reduction, increased energy security, the creation of new jobs, and enhanced competitiveness of the economy.** Replacing the inefficient firewood and coal boilers that are currently widespread in Serbia will contribute to reducing air pollution, which has severe negative health impacts. Energy efficiency improvements will reduce domestic energy demand (thus indirectly reducing local air pollution), while rooftop solar PV plants will contribute to the diversification of the Serbian energy mix, improving the country's energy security. The development of the energy efficiency and clean energy markets will also spur the creation of new jobs and make the Serbian economy more competitive. In addition, the project will seek to increase the participation of vulnerable and lower-income households in energy efficiency and clean energy investments.

24. **The project will address the above-mentioned barriers to a scale-up of clean energy solutions in the residential sector in a comprehensive manner,** establishing sustainable financing mechanisms supported by awareness-raising campaigns; improvements in the regulatory, legal, and institutional frameworks; and capacity building. Sustainable financing mechanisms are required to unlock energy efficiency and clean energy investments from Serbian households, especially the lower-income ones. The creation of such financing mechanisms needs to be accompanied by other measures to remove the legal, regulatory, informational, technical, and institutional capacity barriers.

25. **The project will adopt an adaptive, 'learning-by-doing' approach to implementation, with periodic calls for proposals that allow for lessons learned during implementation to be incorporated into the program and incentive design**. This approach is being adopted as the residential segment of the market for energy efficiency and clean energy is new territory for the MoME and has traditionally been the most difficult to develop at scale, even in the EU and North America. The design and implementation modalities will therefore keep the flexibility to adjust for lessons learned during implementation. Subsequent public calls under the project will incorporate lessons learned from the previous calls and introduce adjustments deemed necessary. The project will seek to gradually adjust grant targeting to maximize leveraging of private-sector financing and avoid market distortions, while improving the targeting of government grants to those investments that have the highest energy payback and longest financial payback periods, and to those households and LSGUs that are most in need of grant support.

C. Relevance to Higher Level Objectives

26. **The project is consistent with Serbia's Country Partnership Framework (CPF).** The latest official CPF for FY2016–20 (Report No. 94687-YF) consists of two broad focus areas, including: (a) Focus Area 1: economic governance and the role of the state, which specifically addresses constraints on the effectiveness of economic governance; and (b) Focus Area 2: private sector growth and economic inclusion, which addresses significant constraints on private sector development and economic inclusion. Through the project activities on institutional development and investment, the project contributes directly to the two CPF focus areas. The CPF for FY2016–20 did not originally envisage an operation in the energy sector; however, engagement with the Ministry of Mining and Energy under the new GoS, which took over in October 2020, demonstrated a new strategic drive and opportunity to make an impact. Therefore, as part of the program update under the Performance and Learning Review (PLR), the energy sector was considered

important for re-engagement. The new CPF for FY2022–26 (expected Board approval in FY2022) aims to support Serbia in achieving a robust recovery from the impacts of COVID-19 and foster growth that is greener and more resilient (Higher-Level Outcome 1). Objective 1.2 (Greener investment and [just] transition to a low-carbon and resilient economy) includes areas aligned with the Serbian government's green agenda aspirations, such as environmental sustainability, greater energy efficiency, and transition to a low-carbon economy. The project is consistent with, and contributes to, all the new support areas included in the CPF for FY2022–26 that is currently being finalized.

27. **The project will build on the World Bank's engagement in the energy and mining sector in Serbia, which includes a Green Recovery pillar in the FY2021 Public Sector Efficiency and Green Recovery Development Policy Loan (DPL) (P164575) operation and subsequent budget support in FY2022 and FY2023 in the form of a Green Transition Development Policy Operation (DPO) series (P177410).** A range of broad reforms spanning the environment, water, transport, urban, and green finance were topics of the Public Sector Efficiency and Green Recovery DPL, including the adoption of the Climate Change Law. The Green Transition DPO series currently under preparation is designed to support Serbia's clean energy transition and is structured around three pillars (Macroeconomic Stability, Clean Energy Transition, and Environment). The Clean Energy Transition prior actions include policy measures aimed at: (a) mobilization of domestic investment in residential energy efficiency and distributed renewable energy, through direct citizen participation; and (b) power sector reforms to support the clean energy transition, including protection of vulnerable households.

28. **The project will leverage experience from other World Bank engagements in Serbia's energy sector.** Additional relevant engagements include: (a) a Mining Sector Transition operation (P170004) under preparation that aims at establishing a framework for the decommissioning of coal mines and strengthening governance processes in the mining sector; (b) an ongoing joint transport-energy P4R aimed at improving the efficient management of public assets, including through renovation of public buildings to enhance energy efficiency and the use of renewable energy sources (P163760); (c) a Reimbursable Advisory Services (RAS) study supporting results-based management in the national electricity utility Electric Power Industry of Serbia (EPS) (P167033); (d) Advisory Services and Analytics (ASA) on district heating and residential energy efficiency (P169842); and (e) two Western Balkans-wide regional studies on sustainable heating and residential energy efficiency, respectively.

29. **The project is closely aligned with the activities of Serbia's development partners active in clean energy and energy efficiency.** Several development partners active in Serbia have projects on clean energy and energy efficiency, including the EU, European Investment Bank (EIB), German Development Bank (KfW), German International Cooperation Agency (GIZ), EBRD, United States Agency for International Development (USAID), United Nations Development Program (UNDP), and Japan International Cooperation Agency (JICA). Ongoing projects span both public sector and residential buildings and involve to a various extent local financial institutions and the private sector. A list of the main clean energy and energy efficiency projects run by development partners in Serbia is shown in Table 1.

Table 1. Selection of clean energy and energy efficiency projects run by development partners in Serbia

Donor	Project Title	Short Description	Start Year	End Year	Budget (EUR mln)	Type of Financing
EIB, KfW	Green for Growth Fund (GGF)	Innovative public-private partnership that provides refinancing to financial	2009	2025	316.0	Technical assistance

		institutions to enhance their participation in the EE and renewable energy (RE) sectors and makes direct investments in nonfinancial institutions with projects in these areas				and investment grants
KfW	Energy Efficiency in Public Buildings	Energy efficiency improvements of more than 20 educational facilities in Serbia	2014	2023	17.0	Investment grants
EU, Others	Western Balkans Investment Framework (WBIF)	Joint initiative of the EU, international financial institutions (IFIs), and the governments of the WB6 to provide finance and technical assistance for strategic investments, particularly in infrastructure, energy efficiency, and private sector development	2016	2026	600.0	Technical assistance and investment grants
EBRD	Green Economy Financing Facility (GEFF) for the Western Balkans	Finance for green economy investments in the residential sector, as well as for businesses that supply energy efficiency and renewable energy products and services to households	2017	n.a.	135.0	Technical assistance and investment grants
SECO	Municipal Energy Efficiency and Management Project	Introduction of the European Energy Award and improvement of energy efficiency of public buildings in selected cities	2018	2021	7.2	Investment grants
CEB	Energy Efficiency Improvements to Government Buildings	Financing of energy efficiency improvements for government buildings in Belgrade (almost 30 government buildings of about 200,000 square meters in total involved)	2019	2025	40.9	Policy-based loan and grant
OeEB	Financing of Energy Efficiency Investments of Serbian Elixir Group	Long-term loan to the Serbian Elixir Group to be used to finance energy efficiency measures to reduce emissions and energy consumption and expand production capacities	2019	n.a.	31.0	Policy-based loan
EIB, KfW	Regional Energy Efficiency Programme for the Western Balkans (REEP+ Replenishment)	"REEP Plus replenishment" developed to continue to address the barriers and bring additional benefits through a combination of project preparation support and medium- to long-term financing for households and public buildings sector for their required sustainable energy efficiency investments	2020	n.a.	156.0	Technical assistance and investment grants
KfW	Energy Efficiency in Public Buildings, Phase II	Energy efficient rehabilitation of circa 50–60 public buildings in selected LSGUs throughout Serbia	2020	2025	21.5	Policy-based loan and grant

KfW	Energy Efficiency in Public Buildings and Renewable Energies in the District Heating Sector	Sustainable and significant reduction of the VMA's energy consumption, reduction of GHG emissions, and improvement of the quality of hospital-specific usage requirements through a holistic refurbishment approach	2021	2025	258.0	Policy-based loan
KfW	Solar District Heating	Increase the share of RE in Serbian overall energy mix through the introduction of solar-thermal technologies in district heating systems. Pre-feasibility study in progress.	2023	To be defined by the PFS	To be defined by the PFS	Policy-based loan and grant
EBRD	Renewable District Energy in Serbia—Phase 1	Support the integration of RE into district heating (DH) systems and reduce dependency on fossil fuels; improve the air quality by reduction of local emissions; create demonstration projects based on proven technologies with RE (predominantly solar thermal, geothermal, and heat pumps) to show the potential in Serbia; pave the way for private investors to invest in RE for DH in Serbia. Rapid Assessment Study completed for Phase 1, for Phase 2 in progress	2022	2024	23	Loan, technical assistance, and investment grants
EBRD	Energy Efficiency in Residential and Public Buildings	Improvement of EE in buildings connected to DH systems with a focus on multi-apartment buildings (MABs), in order to support the implementation of consumption-based billing	2022	2024	20	Loan (probably additional 5 million EUR grant would be secured)

Note: n.a. means not available

II. PROJECT DESCRIPTION

A. Project Development Objective

PDO Statement

30. Increase the uptake of energy efficiency, sustainable heating, and rooftop solar photovoltaics (PV) by households in participating local self-government units (LSGUs) in Serbia.

PDO Level Indicators

31. **The project will have PDO-level results indicators,** reflecting the three constituent objectives of increasing the uptake of (a) energy efficiency (PDO Indicator 1), (b) sustainable heating (PDO Indicator 2), and (c) rooftop solar PV (PDO Indicator 3) by households in participating local self-government units in Serbia**:**

- **Projected energy or fuel savings (CRI, megajoules [MJ])** stemming from energy efficiency and sustainable heating investments in residential buildings (target: 20,000,000,000 MJ).
- **Number of households that have implemented energy efficiency and sustainable heating investments** (target: 25,000 households), of which:
  i. Number of households benefiting from MoME's social inclusion top-up grants (target: 2,500 households).
  ii. Number of households switching away from traditional solid fuel heating solutions (target: 3,000 households).
- **Renewable energy generation capacity constructed under the project (CRI, megawatts [MW])** through rooftop solar PV installations (target: 4 MW).

B. Project Components

32. **The project is designed to help the GoS put in place a scalable framework and implementation structures over the next decade to mobilize private investment in residential clean energy and energy efficiency.** The need for scalability of the framework and structures comes from the size of the addressable market, which is estimated in the draft Long-Term Buildings Renovation Strategy to range between RSD 2,326 billion (EUR 19.8 billion) and RSD 9,377 billion (EUR 79.7 billion) by 2050.

33. **Project financing will be at US$49,875,000 (equal to the loan amount of US$50,000,000, minus the front-end fee of US$125,000) divided between the two components:**

- **Component 1:** Financing Energy Efficiency, Sustainable Heating, and Rooftop Solar Investments in Residential Buildings (US$45,000,000[29]).
- **Component 2:** Technical Assistance and Implementation Support, with the overall aim of supporting the development of scalable financing mechanisms and removing market barriers (US$4,875,000), with three subcomponents: (a) enhancing local market capacity, improving

[29] The MoME might be interested in providing additional funds from the government budget to expand the scope of the project. However, any additional public funds from the MoME will be considered parallel financing rather than IBRD-GoS co-financing.

enabling environment, and strengthening public awareness; (b) technical studies informing program design and implementation; and (c) project implementation support.

34. **Components 1 and 2 will be implemented simultaneously.** Investments will be financed under Component 1 and scaled up relying on the analytical insights, institutional structures, and financing mechanisms developed under Component 2. Table 2 summarizes the project components and the allocation of funds under the project. The detailed scope and rationale of the project components are outlined below.

Table 2. Proposed components and fund allocation under the project

Component Description	Fund Allocation Estimate (US$)
Component 1: Financing Energy Efficiency, Sustainable Heating, and Rooftop Solar Investments in Residential Buildings Partial grants for clean energy and energy efficiency investments in the residential buildings sector, including investments for: • Thermal energy efficiency (e.g., outer wall insulation, window and exterior door replacement, roof ceiling insulation, installation of thermostatic and hydraulic balance valves) • Sustainable heating (e.g., boiler replacement, fuel switching, installation of solar collectors for sanitary hot water) • Rooftop solar PV	45,000,000
Component 2: Technical Assistance and Implementation Support	4,875,000
Subcomponent 2a: Enhancing local market capacity, improving enabling environment, and strengthening public awareness	*800,000*
Subcomponent 2b: Technical studies informing program design and implementation	*800,000*
Subcomponent 2c: Project implementation support	*3,275,000*
Front-end fee (0.25 percent of the loan amount)	125,000
Project total	**50,000,000**

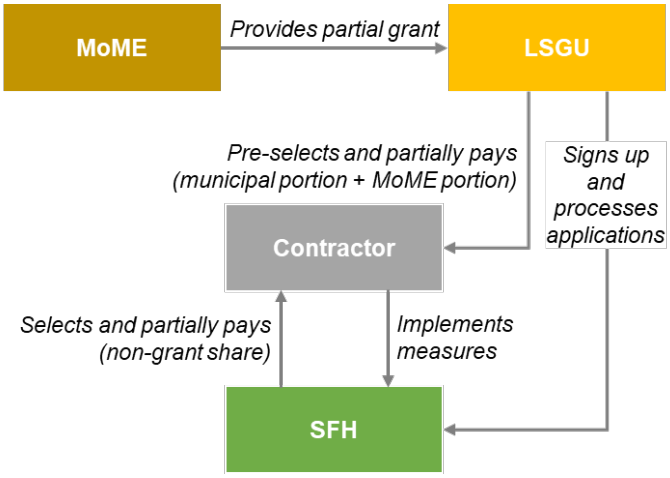
Component 1: Financing Energy Efficiency, Sustainable Heating, and Rooftop Solar Investments in Residential Buildings (US$45,000,000)

35. **Scope:** This component will finance partial grants administered by the MoME, which will co-finance investments in energy efficiency, sustainable heating, and rooftop solar in residential buildings—traditionally the most difficult market for scaling up these investments. The investments will be financed through: (a) partial grants financed through the project, offered by the MoME and channeled through participating local self-governing units (LSGUs); (b) partial grants offered by the LSGUs directly, in parallel with the IBRD financing channeled through the project; and (c) household contributions, financed either from savings or borrowings (see below for details).

36. **Pilot experience:** The project will scale up a revised version of an existing government program, piloted in 2021, financing residential energy efficiency (EE) investments through a combination of public grants and leveraged private-sector financing. Under the program (developed with support from the Swiss State Secretariat for Economic Affairs (SECO) under the RELOF 2 project), owners of single-family houses

(SFHs) and apartments in multi-apartment buildings (MABs) can submit an application to their LSGU for grant co-financing (in the first pilot in 2021, up to 25 percent provided by the MoME and up to 25 percent provided by the LSGU) for the implementation of clean energy and energy efficiency measures. The diagram shown in Figure 1 illustrates the functioning of the pilot program. Two rounds of public calls, one for energy efficiency and one for rooftop solar PV, were issued as pilots in 2021, and participation levels from LSGUs have been considerable, although not reaching national scale. As a result of the energy efficiency call issued in April 2021 (MoME contribution RSD 220 million), 67 LSGUs (corresponding to about 40 percent of the country's total of 168[30]) have signed a contract with MoME to participate in the program. In terms of beneficiaries, the pilot has already completed works at 1,700 households and signed contracts with about 3,800 households. Given the increasing interest expressed by LSGUs, the MoME is planning to launch a second public call for residential energy efficiency in early 2022. The call for rooftop solar PV grants was launched in September 2021, and the MoME has signed contracts with 37 municipalities, with a budget for MoME's contribution of RSD 100 million. The revisions to the pilot program that will be introduced in the first calls financed by the project are elaborated in detail below.

Figure 1. Structure of the program, with the LSGU playing a pivotal role and the citizen required to pay a substantial share of the investment



Source: World Bank staff.

37. **Roles and responsibilities:** LSGUs play a pivotal role in the program, as the entities that recruit the contractors implementing the energy efficiency measures, process citizen applications, and channel grants. The implementation steps of the program are the following:

(i) The MoME launches a public call for LSGUs and cities to participate in the program (the call remains open for two months).

(ii) The MoME and the participating LSGUs[31] sign a contract confirming the co-financing of grants.

[30] This number includes municipalities, cities, and cities with municipalities (excluding Kosovo and Metohija). Source: 2021 Annual Report of the Statistical Office of the Republic of Serbia.

[31] In order to be selected by the MoME to participate in the program, among other things, LSGUs need to confirm that they have sufficient budget for the co-financing of the grant component.

(iii) Participating LSGUs submit to the MoME a rulebook laying out the rules and steps of their local programs; the rulebook is approved by the MoME, and then adopted by the LSGUs (unless already adopted).[32]

(iv) Participating LSGUs launch a public call for the selection of contractors that will implement the energy efficiency measures.

(v) Participating LSGUs launch a public call for the selection of the SFHs and individual apartments in MABs that will be the final beneficiaries of the local EE program; members of local energy commissions within the LSGUs process household applications, visit households to verify their eligibility, and form a final list of program beneficiaries. Citizens commit to paying their share of the costs.

(vi) LSGUs, contractors, and citizens sign a tripartite contract, after which construction works can begin.

(vii) At the end of the construction works, the members of the energy commissions within the LSGUs visit the households to verify the implementation of the energy efficiency investments and, in case of a positive outcome, disburse the grant funds directly to the construction company.

38. **Eligibility:** The Project Operations and Grant Manual (POGM)[33] will define the specific criteria for eligibility of households and investments. The principles underpinning the eligibility criteria are:

- The project will prioritize investments in SFHs, for four main reasons: (a) the thermal characteristics of Serbian SFHs are generally worse than those of larger buildings, mainly due to the unfavorable surface-to-volume ratio and the relatively older building stock; (b) SFHs tend to rely more on polluting and less-efficient coal and wood boilers for heating, whereas a significant share of MABs rely on district heating and electricity;[34] (c) lower-income households are more likely to live in SFHs;[35] and (d) other national and donor-funded support schemes have so far primarily targeted public buildings and some pilot schemes for MABs. In selected cases, technically sound investments in individual apartments in MABs will be eligible for support under the program.
- Supported buildings need to be (a) structurally sound, and (b) fully finished (that is, constructions with finished roof and façade and with adequate access to primary infrastructure such as electricity, sewage, and water supply).

[32] Criteria for the selection of beneficiary households vary based on the LSGU. In general, the two main criteria requested by most LSGUs are: (a) proof of ownership (e.g., construction permit, obtained either through the regular permitting procedure or retroactively through legalization, proof that the homeowner has applied for legalization), and (b) proof that the house is inhabited (e.g., electricity bill from the previous month showing a consumption above 30 kWh). In addition, some LSGUs have requested that applicants will have paid all the local taxes they owed.
[33] A draft of the POGM was prepared by negotiation.
[34] Although comprehensive data on the heating sources used by households living in different building types is not available, 2011 Census data supports this statement: in rural areas (dominated by SFHs), virtually all households rely on firewood or coal for heating; in urban areas, among households without access to central or district heating (mainly SFHs), 60 percent use firewood for heating, 15 percent coal, 33 percent electricity, and 12 percent other sources (the total adds up to more than 100 percent because some households use more than one heating source).
[35] In 2019, across Serbia 89 percent of households belonging to the lowest income quintile lived in SFHs, compared to only 47 percent of households in the highest income quintile. Source: EU-SILC (European Union Statistics on Income and Living Conditions).

39. **Leveraging of LSGU and household financing:** Thanks to the financing structure, the project funds will leverage substantial subnational and private co-financing (in the pilot implemented in 2021, the leveraging factor was 4:1). In the pilot, the MoME program provided 25 percent of the investment financing, LSGUs another 25 percent, and households 50 percent (more details on the pilot are provided below). The financing percentages will be adjusted during implementation but will begin with a similar ratio to what was done in the pilot.

40. **Commercial bank financing of household contributions:** To improve affordability for households, the program has established a partnership with Banka Poštanska Štedionica ("Postal Savings Bank"), which has developed a targeted loan product for the program to cover the households' contributions, complementing the partial grants offered by the MoME and the LSGUs**.** Banka Poštanska Štedionica is majority-owned by the GoS[36] and is one of the largest commercial banks in the country. It operates through branches in all post offices of the national post service, Pošta Srbije, and is responsible for handing out retirement checks to citizens. As part of the pilot run by MoME in 2021, citizens who were awarded a grant from their LSGU can apply for a commercial loan with Banka Poštanska Štedionica to cover the remaining investment based on the pro forma invoice issued by the contractor. In the pilot, Banka Poštanska Štedionica offered loans with amounts ranging from RSD 50,000 to RSD 1.5 million (from about EUR 400 to about EUR 12,800), a fixed interest rate of 6.5 percent (9.89 percent including life insurance), a debt-to-income ratio of up to 60 percent, and tenor ranging from 12 to 71 months.[37] Between October 25, 2021, and December 22, 2021, Banka Poštanska Štedionica approved 34 loans, with an average amount of RSD 115,000 (EUR 1,000) and an average repayment period of 31 months. However, this number only includes loans from LSGUs that have already signed contracts with participating households and contractors (a key requirement to be eligible for the loan), while several large LSGUs (where the number of loans requested is expected to be relatively higher) are still processing household applications and contracts with construction companies.

41. **Revisions and further developments of the project design compared to the pilot:** The first public call under the SURCE project (expected to be launched by the end of 2022) will be based on the 2021 program pilot, with some enhancements. Leveraging the delivery model adopted by the MoME for the pilot will enable a swift launch of the first public call using project funds after the project reaches effectiveness, including revisions compared to the pilot program on the following design elements:

a. **Standardization of investments.** The project will promote the standardization of clean energy and energy efficiency investments, broadly classified into "light," "standard," and "advanced" packages:

   i. "Light" renovation packages include windows and doors replacement and roof/ceiling insulation (estimated cost about EUR 2 thousand per household) and can lead to energy savings of 25–30 percent of baseline demand.

   ii. "Standard" renovation packages include wall insulation, boiler replacement, and heat network renewal, on top of the measures included in the light package (energy savings 60–65 percent; EUR 7–8 thousand per household).

   iii. "Advanced" renovation packages have a cost of about EUR 12–13 thousand per household and include heat pump, solar PV system, and solar collector, on top of the

[36] The main shareholders of Banka Poštanska Štedionica are the government of Serbia with 71 percent, Pošta Srbije (the national post service) with 18 percent, and Telekom Srbija with 10 percent.
[37] Source: Banka Poštanska Štedionica website, http://www.posted.co.rs/krediti_efikasnost.html.

measures included in the light and standard packages (excluding boiler replacement), leading to energy savings of 80–85 percent.[38]

The efforts to standardize notwithstanding, additional combinations of measures that could be financed under the project include, but are not limited to: (i) simple windows and/or doors replacement, (ii) simple boiler replacement, and (iii) incremental investments required to achieve a "standard" renovation package for households that have already implemented some form of renovation (such as beneficiaries of the existing boiler replacement program interested in energy efficiency investments, or households that have replaced windows under the pilot program). The project will place a specific emphasis on the replacement of traditional solid fuel boilers with cleaner, more efficient boilers. In line with the pilot run by the MoME, the project will not finance the replacement of existing coal boilers with more-efficient coal boilers, in order to avoid carbon lock-in. Building on the first call for proposals in September 2021, which focused solely on rooftop solar PV, the program will also provide partial grants for households that install rooftop solar PV, either as a separate measure or as a joint measure with energy efficiency improvements.[39] In order to prioritize certain investments over others, the possibility to offer different grant shares depending on the type of intervention being financed will be assessed (the grant level will be set in the public calls and the POGM and adjusted during implementation).

b. **Standardization across LSGUs:** To promote standardization across the program and make the program scalable and attractive for contractors, the project will work with LSGUs to standardize implementation modalities and develop standardized documents to support the work of the municipal energy commissions. Standardized guidelines and checklists will be developed for the municipalities to carry out remote screening of the applications received and identify those that will require an in-person prerenovation visit because of technical issues with the documentation or a higher risk of fraud, thereby lessening the need for visits to all dwellings. Post-renovation visits will be carried out on a sample basis to verify that the investments have actually been implemented.

c. **Specific emphasis on the most vulnerable households and solidarity mechanism for poorer LSGUs (social inclusion top-up grants).** Through its focus on SFHs, the project is designed to ensure that lower-income households are well represented among the potential beneficiaries of the program: households living in SFHs represent about 80 percent of households in the lowest income quintile, versus 40 percent of households in the highest income quintile.[40] However, a detailed distributional assessment of household finances suggests that this group requires higher subsidy levels, particularly to take up the standard package investments. In order to further strengthen the focus on vulnerable and lower-income households and enhance their participation in the program, the project may include social inclusion top-up grants. In the first call financed by SURCE, these top-ups would be provided to lower-income LSGUs, covering part of their contribution to the program and thereby increasing the share of this group of

[38] Source: walk-through energy audits carried out in late October 2021 in 30 houses located in nine LSGUs across Serbia.
[39] The program may merge rooftop solar PV and energy efficiency into one round of calls for proposals or keep them separate, depending on the learnings from the first pilot call for solar, launched in September 2021, and feedback on demand gathered during the initial implementation phase.
[40] Estimate based on the 2019 Household Budget Survey (HBS).

municipalities. For future calls, the program will explore options to also target the social inclusion top-up grants on a household level; for example, through cross-eligibility for homeowners who are also recipients of social assistance benefits or receive energy bill discounts under the Energy Vulnerable Program[41] (EVP).

d. **Adoption of World Bank environmental and social (E&S) and fiduciary requirements.** With the introduction of World Bank financing, the program will comply with the World Bank's Environmental and Social Framework (ESF) and fiduciary requirements. The World Bank will work with the MoME and the EEA to promote the adoption of ESF-compliant practices across all activities financed by the MoME and the EEA, including those financed from the GoS budget and other financiers, as part of the wider capacity building and strengthening efforts.

e. **The World Bank will support the government in reflecting behavioral insights in the program design and communication.** The use of behavioral diagnostics of household attitudes and knowledge, including among poorer and vulnerable households, will be critical for identifying barriers in transitioning toward cleaner and more efficient energy and improving the program targeting as well as communication to its beneficiaries. A regional survey on energy efficiency and sustainable heating practices and attitudes was prepared in collaboration with Ipsos and is being administered in February-March 2022. The MoME has been informed of the survey, and the communication and outreach strategy prepared for the project will fully integrate its findings.

42. **Learning-by-doing and adjustments during implementation:** The residential segment of the market for energy efficiency and clean energy is new territory for the MoME and has traditionally been the most difficult to develop at scale, even in the EU and North America. The design and implementation modalities will therefore keep the flexibility to adjust for lessons learned during implementation. Subsequent public calls under the project will incorporate lessons learned from the previous calls and introduce adjustments deemed necessary. For the first public calls under SURCE, the project will maintain the approach of periodic public calls to allow for gradual adjustments over time. In the medium term, once the financing model becomes more defined, the project will assess the possibility to transition to a program that accepts applications on a rolling basis. The project will also seek to gradually adjust grant targeting to maximize leveraging of private-sector financing and avoid market distortions. The World Bank will work closely with the MoME, the EEA, and LSGUs throughout the implementation period to scale up the program while gradually improving the targeting of government grants to those investments that have the highest energy payback and longest financial payback periods, and to those households and LSGUs that are most in need of grant support. The technical studies under Component 2b will provide important inputs to this process of gradual improvements to targeting, while ensuring broad and inclusive access to the program. Moreover, the possibility of transforming a part of the grants into repayable grants will be investigated, conditional on whether a feasible repayment mechanism from an operational and legal standpoint can be identified. Repayable grants would serve as an option for LSGUs to modify their grant portion during later stages of implementation.

43. **Potential additional strategic partners to be engaged during implementation:**

[41] Because not all households that are eligible for the Energy Vulnerable Program actually apply to it, cross-eligibility could be expanded to all households that are eligible for it, instead of just those that are recipients of the energy bill discounts. The household would, however, still need to receive the certificate of status from the local center of social assistance that confirms eligibility for the EVP.

- The project will seek to establish further partnerships with commercial banks to establish additional sources of financing for beneficiary households to cover their share of the investment cost. The project will maintain the partnership established with Banka Poštanska Štedionica under the pilot energy efficiency program run by MoME. In addition, the project will seek to involve other local commercial banks in the program to allow beneficiary households to complement the grant financing offered by the MoME and the LSGUs. During implementation, the World Bank and the MoME will closely monitor the participation of commercial banks and as part of the mid-term review and assess the possibility of including additional measures to promote their participation. Credit lines or other forms of on-lending will not be pursued under the project.
- The project will monitor the emergence of potential energy service companies (ESCOs) in the residential sector, although it will not seek to support the development of local contractors into full-fledged ESCOs. No ESCOs are currently operating in the Serbian energy efficiency market, except in street lighting projects and heat energy supply projects. Should suitable energy efficiency or clean energy ESCOs emerge during implementation, the project will assess the possibility of involving them in the program as an additional source of financing. The project will investigate the potential for a pilot in which ESCOs play a role, including in processing household applications, applying for grants from the MoME and LSGUs, and offering lending to households.

44. **Midterm review:** A midterm review in 2024 will systematically evaluate the project results and grant implementation modalities with the aim of steering the project further into the directions outlined above. Most importantly, the midterm review will aim to steer the project toward (a) inclusive access to the program, (b) maximum possible leveraging of private co-financing, (c) maximum possible impact on the clean energy transition in Serbia per unit of investment, and (d) development of a sustainable commercial market for residential clean energy and energy efficiency.

Component 2: Technical assistance and implementation support (US$4,875,000)

Subcomponent 2a: Enhancing Local Market Capacity, Improving Enabling Environment, and Strengthening Public Awareness (US$800,000)

45. **This component will include a wide range of activities aimed at enhancing local market capacity, improving the enabling environment, and strengthening public awareness.** Among other activities, this component will support, in coordination with other IFIs and donors:

- Policy, legal, and regulatory development related to energy efficiency, sustainable heating, and rooftop solar.
- Market development and capacity building for the MoME, LSGUs, local energy commissions, contractors, and commercial banks, to screen, design, evaluate, appraise/finance, implement, and measure clean energy and energy efficiency investments in the residential sector.
- Communication and outreach activities to raise awareness among the Serbian population of the benefits of energy efficiency and clean energy investments and available support programs.

Subcomponent 2b: Technical Studies Informing Program Design and Implementation (US$800,000)

46. **This component will finance technical studies that are needed to implement investment projects, such as:**

- **Selective prerenovation energy audits.** Consultants will be hired to conduct selected energy audits to: (a) assess proposed energy savings measures; (b) verify baseline energy usage; and (c) calculate investment costs, annual energy savings, and simple payback periods. It is envisaged that prerenovation energy audits will be mainly needed for the advanced building renovation packages (such as installation of heat pumps or solar PV systems), whereas they are not required for measures under the light and standard packages. The sample walk-through energy audits carried out in October 2021[42] demonstrated that the measures to be implemented and the expected savings for the light and standard renovation packages are similar across different households.
- **Selective technical designs and construction supervision.** Consultants will be hired to develop detailed technical designs and bills of quantity for renovation works for selected eligible buildings (including technical drawings and bidding documents for renovation works) and perform construction supervision on a sample basis.
- **Sample post-renovation energy audits and measurement and verification (M&V).** Consultants will be hired to perform sample post-renovation energy audits, including verification of the energy savings based on agreed M&V protocols.
- **Monitoring and evaluation (M&E).** Consultants will be hired to carry out M&E activities based on inputs provided by the LSGUs. A database and a program management support tool will be developed and made available to the Project Implementation Unit (PIU) and the LSGUs for the collection of data required for M&E: (a) project implementation status; (b) disbursed, committed, and invested amounts; (c) repayments; (d) energy savings from investments; (e) social surveys; (f) periodic program evaluations; and (g) annual stakeholder consultations. In addition, an online civic engagement tool will be developed to gather feedback on program design and implementation from the beneficiaries.

Subcomponent 2c: Project Implementation Support (US$3,275,000)

47. **This component will support activities related to the implementation of the project**, such as: (a) hiring of PIU staff (project manager, technical experts, environmental and social experts, database and monitoring and evaluation experts, legal experts, and so on); (b) hiring of technical experts within the LSGUs (or at the regional level); (c) audits; and (d) operating costs (equipment, logistics, and so forth).

C. Project Beneficiaries

48. **The direct project beneficiaries will be the households receiving partial grants for the implementation of clean energy and energy efficiency measures.** As mentioned in the description of Component 1, the project will prioritize investments in single-family houses (SFHs), which tend to have worse thermal characteristics than multi-apartment buildings (MABs) and rely on more polluting and inefficient heating sources. In addition, the project will seek to ensure that lower-income households can also participate in the program and implement clean energy and energy efficiency improvements in their homes. Participating households will benefit from the program in multiple ways: (a) the thermal renovations and boiler replacements implemented will generate energy savings that will translate into monetary savings through lower energy bills; (b) the improved thermal properties of the buildings will enhance thermal

[42] World Bank experts visited 30 SFHs and apartments and conducted walk-through energy audits (WTEAs) in a field mission in October 2021.

comfort for households that were experiencing underheating before the improvements were implemented;[43] (c) the more efficient, cleaner heating technologies will improve indoor air quality, thus contributing to mitigating outdoor air pollution, which is an issue seriously affecting urban areas in Serbia, as well as reduce time requirements for refueling of inefficient stoves and boilers using solid fuels; and (d) the investments implemented will increase house property values.

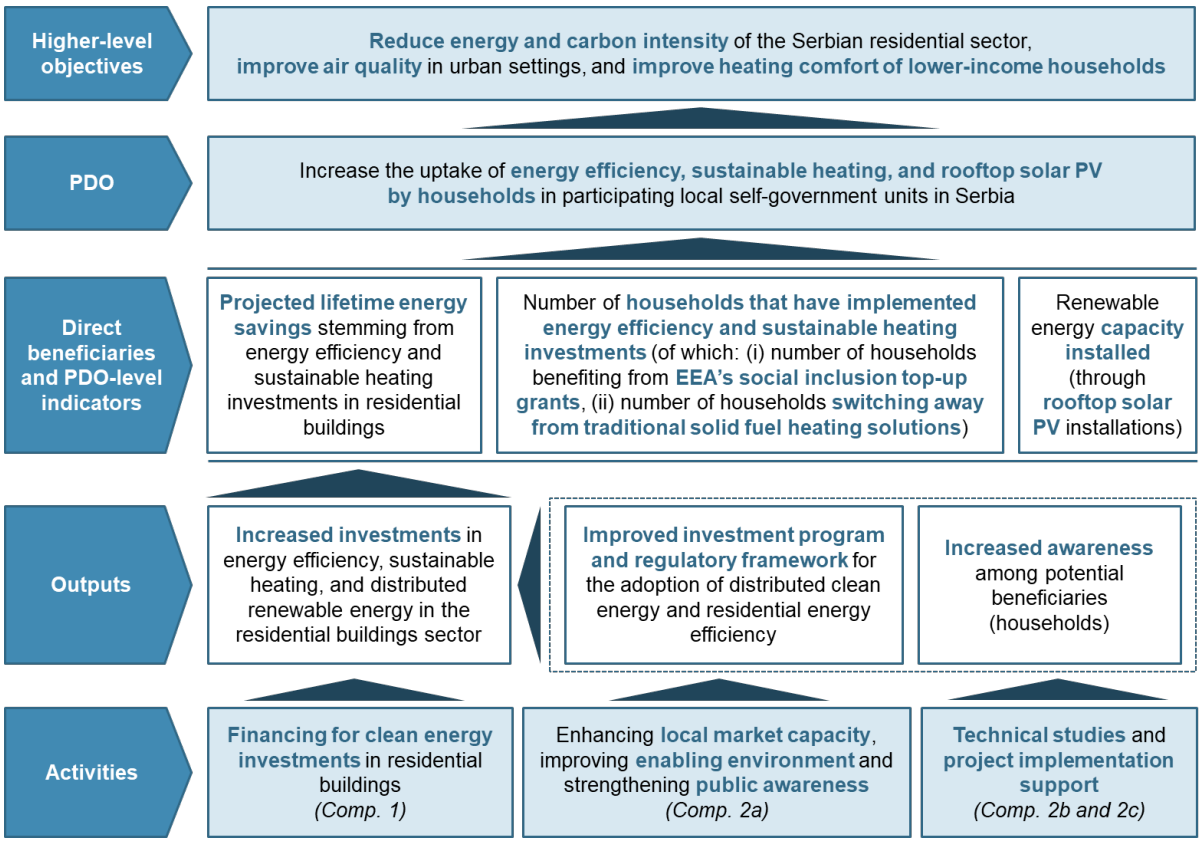
49. **In addition, the project will benefit local contractors, material suppliers, and commercial banks.** Contractors and material and equipment suppliers will benefit from the enlarged clean energy and energy efficiency markets and the subsequently increased demand for their products and services. Commercial banks will benefit from an increased number of customers and loan volume. In the case of emerging ESCOs, innovative companies will be able to develop new business models targeting the residential energy market.

[43] According to the results the EU Survey on Income and Living Conditions (EU-SILC), in 2019 almost 10 percent of Serbian households could not keep their house adequately warm (versus an EU-27 average of 7 percent). The walk-through energy audits carried out during project preparation in several LSGUs across Serbia have also highlighted that underheating is a fairly common phenomenon among single-family houses in Serbia, with some houses suffering 30 percent underheating, compared with a normal heating baseline.

D. Results Chain

50. **The theory of change of the project is visualized in Figure 2.**

Figure 2. Theory of Change: SURCE project



Source: World Bank staff.

E. Rationale for Bank Involvement and Role of Partners

51. **Program design to maximize private financing for energy efficiency and ensure sustainable implementation modalities.** Along with financing, the World Bank's technical assistance will be critical to help improve the efficiency of public spending in the residential clean energy and energy efficiency sectors, create an ecosystem for private investment in these sectors in Serbia, and promote good practices in terms of E&S and fiduciary management. Furthermore, improving the institutional capacity of the MoME and other stakeholder government agencies will not only enhance their ability to provide services, but also enable them to increase the levels of soft grants as well as private capital raised for current and future investment needs.

52. **World Bank expertise in public interventions in retail markets for residential sector clean energy and energy efficiency.** The World Bank has extensive experience supporting partner countries in creating, sustaining, and expanding markets for residential sector clean energy and energy efficiency, a segment that is still new to many governments in Europe and Central Asia that have focused their efforts mostly on public sector energy efficiency. Relevant examples include, among others: (a) the Energy Efficiency in Single-Family

Buildings Program and the Clean Air Through Greening Residential Heating Program in Poland (P170131), (b) the Urban Heating Program in Armenia (P057880), and (c) the Grid-Connected Rooftop Solar Program in India (P155007). Lessons learned from these and other programs support the effective design and implementation of the present project.

53. **The project provides public sector financing for residential clean energy and energy efficiency where commercial financing is not considered viable: investments with long payback times and investments by lower-income households**. Experience in other European countries and worldwide suggests that residential clean energy and energy efficiency investments cannot be effectively mobilized without substantial and sustained public support to incentivize and de-risk private sector participation. Overall investment needs in the residential buildings sector are expected to be met by a combination of concessional financing through development partners and private financing, which will be more likely to be secured through the de-risking provided by concessional financing. Involvement by the World Bank is already leveraging other development partners such as the EU, EBRD, and KfW, which have expressed interest in supporting the agenda pursued by the MoME.

F. Lessons Learned and Reflected in the Project Design

54. **The project's structure will build upon the World Bank's leadership role in creating energy efficiency funds in the Western Balkans countries and other regions.** The systematic scale-up of residential clean energy and energy efficiency via the MoME is considered an important first step toward the potential establishment of a stand-alone Energy Efficiency Fund in Serbia. Such institutions have played a pivotal role in many countries with successful and sustained residential EE programs (for example, Armenia, Lithuania). Table 3 shows the lessons learned from other World Bank clean energy and energy efficiency projects (including the ones in Bosnia and Herzegovina, Albania, North Macedonia, Turkey, and Poland), with respect to the design of scalable financing schemes that will be taken into consideration.

Table 3. Lessons learned and how they are reflected in the project design

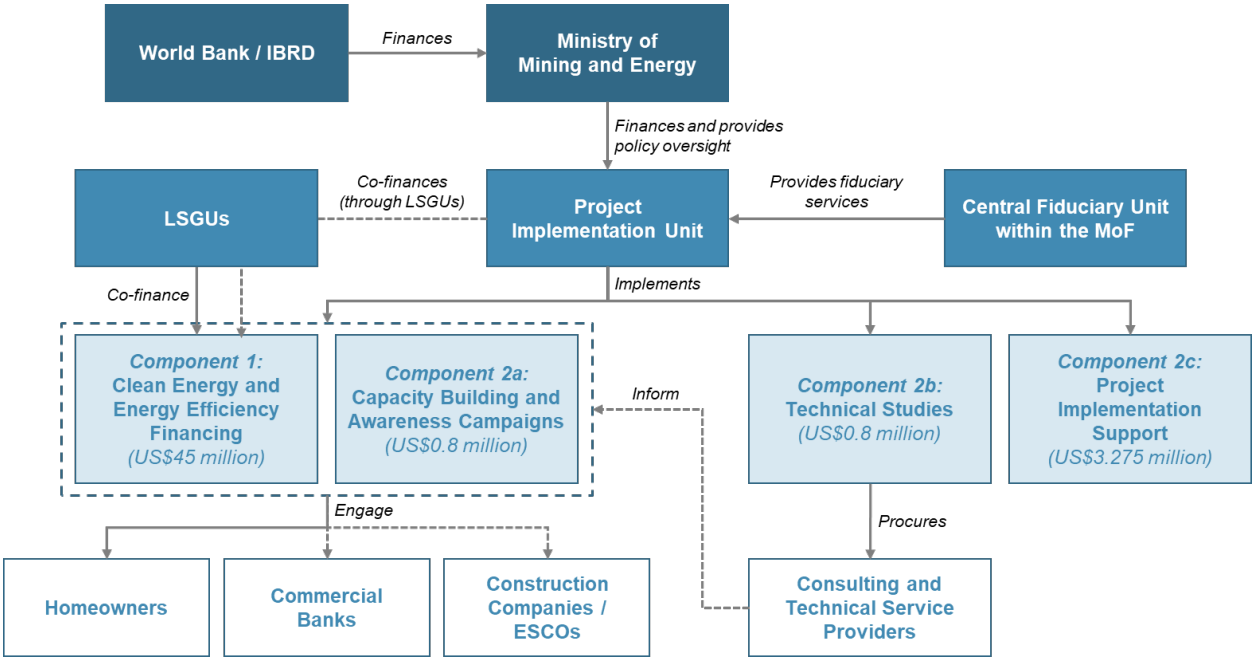
Lesson learned	Implications for the project design
Simple support schemes such as subsidies delivered as grants or concessional loans are most common in the region. It is important to gradually introduce alternative financing and delivery models that are simple and adjusted to the local market context before moving toward more complex schemes.	The project will build upon the existing financing mechanisms and will gradually evolve toward more complex structures.
Other development partners provide grants and soft loans for EE and sustainable heating (SH) improvements in buildings, but most of these initiatives are isolated from each other and focused on public buildings, where EE projects are easier to implement; the residential sector is left behind.	The project will facilitate EE financing to residential buildings across the country through a single window. Over the longer term, it will aim to mobilize financing by other local and international partners in a coordinated manner to increase scale and impact.
Repayment schemes and co-financing arrangements with local and international partners remain limited in their replication and scale, are ad hoc in nature, and are usually constrained to available budget and grant funding resources.	This project will assess the possibility of implementing revolving financing models that increase leverage and demonstrate the concept of repaying EE investments based on energy cost savings.
EE, sustainable heating, and distributed renewable energy in buildings continue to face major technical, policy, regulatory, financial, and capacity barriers, which are particularly challenging for residential buildings.	The project will have a substantial TA component to address the barriers in a comprehensive manner: it will support regulatory changes to encourage the transition to commercial financing models and improve enabling environment; build public awareness on the importance of, and possibilities for, EE, SH, and distributed renewable energy in the residential sector; etc.
Training and capacity building for local energy service providers and public stakeholders on technical, operational, and fiduciary aspects relating to EE improvements are critical to ensure sustainability and quality of investments.	The project will strengthen the capacities of local energy service providers (including private banks, consultancy companies, and construction firms) and public entities to prepare, implement, and invest in EE, sustainable heating, and renewable energy in a sustainable and cost-effective way.

III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and Implementation Arrangements

55. **The envisioned project structure and implementation arrangements are summarized in Figure 3.** The World Bank (through the IBRD) will provide a US$50 million loan to the government of Serbia. The Ministry of Mining and Energy (MoME) will be the implementing agency and will receive and administer loan disbursements, with day-to-day project management being assigned to the Project Implementation Unit (PIU) within the MoME, with assistance from the EEA. The loan funds will flow into a designated account opened at the National Bank of Serbia (NBS) in MoME's name. The MoME will co-finance local investments with the LSGUs, channeling funds from the designated account to separate accounts/subaccounts denominated in RSD and opened for this purpose at the Treasury by the LSGUs, through the MoME RSD Sub-Account in the Republic of Serbia budget execution information system.

Figure 3. Envisioned project structure and implementation arrangements



Source: World Bank staff.

56. **A Project Steering Committee (PSC) will be established and maintained throughout the duration of the project to ensure overall coordination and strategic guidance functions.** The MoME will act as chair and the PIU as the secretariat of the PSC. The members of the PSC will be nominated by the GoS and will include representatives from relevant ministries (for example, the Ministry of Finance; Ministry of State Administration and Local Self-Government; Ministry of Labor, Employment, Veterans and Social Affairs; Ministry of Environmental Protection; Ministry of Construction, Transport, and Infrastructure; and so forth) and representatives from LSGUs (for example, members of the Standing Conference of Towns and Municipalities, Heads of Administrative Districts). Representatives of beneficiaries (such as civil society and the private sector) could also be involved in the work of the PSC.

57. **The project will use the services of the Central Fiduciary Unit (CFU) within the Ministry of Finance (MoF) for procurement and financial management.** The CFU was established within the MoF in October 2017 to provide fiduciary support (procurement and financial management activities) to all World Bank-supported projects in Serbia. CFU staff will work with the technical staff of the MoME with regard to technical aspects of project implementation. See Section IV.B below for more details.

Implementing Agency Assessment

58. **The PIU will be embedded in the MoME and will build on the experience gained by MoME in scaling up investments in energy efficiency renovation of public buildings since 2015.** The establishment of the Budgetary Fund for Improvement of Energy Efficiency was envisaged in 2013 with the adoption of the Law on Energy Efficiency (Official Gazette of the RS No. 25/13). The Fund started operating in 2014,[44] shortly after the Government of Serbia adopted a decision on its formation (Official Gazette of the RS no. 92/13), as a MoME account held in the Treasury Administration, with financing allocated from the annual budgetary appropriations, donations, and loans.[45] Between 2014 and 2021, the Fund operated based on annual programs approved by the Government with financing primarily used for public sector buildings at the local level.[46] In total, 91 public buildings projects have been financed since the inception of the Fund. Thermal insulation of the public building envelope (including window replacement) was the most common energy efficiency measure, but there were also several local renewable energy projects as well as street lighting improvement projects. MoME has also gained experience in the residential sector thanks to the new program started in 2021, as detailed in Section B above (Component 1). Two public calls for residential clean energy and energy efficiency projects have been completed (one on rooftop solar PV and one on energy efficiency). Households living in single-family houses and multi-apartment buildings can apply to the LSGU for up to 50 percent grant financing (up to 25 percent provided by the Fund and up to 25 percent provided by the LSGU) for implementation of energy efficiency measures and installation of solar PV panels. MoME and EEA are planning to organize more public calls in 2022.

59. **The MoME will need to increase staffing to manage this and other new financing projects and will recruit additional consultants to staff the Project Implementation Unit.** MoME's capacity to scale up investments and expand the implementation to the residential and SME sectors has been limited in the past. To manage the World Bank project, MoME will recruit additional local and international consultants for dedicated tasks, including project management, environmental and social monitoring, database management, and technical studies.

60. **SURCE implementation will be also facilitated by the new Energy Efficiency Administration (EEA) which has a coordinating role for clean energy and energy efficiency programs across government.** The

[44] Formally, operationalization of the Budgetary Fund was carried out through adoption of the secondary legislation when key bylaws were adopted in 2015 and have been periodically amended. These include the Rulebook on conditions for distribution and use of funds from the Budget Fund for the improvement of energy efficiency of the Republic of Serbia and criteria for exemption from the obligation to perform energy audits and Annual Government Decree on the establishment of the Program for financing activities and measures to improve energy efficiency. The MoME has also developed detailed guidelines for LSGUs on how to organize local public calls, select projects, and mange funds.

[45] Until December 2017, budgetary funds were classified as indirect budget beneficiaries. Currently, local transfers to LSGUs for EE projects are classified under programmatic activities of the responsible line ministry.

[46] According to the Rulebook on Conditions for Distribution and Use of Resources of the Budgetary Fund for Energy efficiency Improvement of the Republic of Serbia, funding is also available for single family households, housing associations (multi-apartment buildings).

adoption of the new Law on Energy Efficiency and Rational Use of Energy in April 2021 laid the foundation for the establishment of EEA. As of January 2022, the EEA is established as an administrative authority within the MoME, a semi-independent body with its own legal personality and clearly defined mandate for planning and implementing energy efficiency and clean energy investment projects defined in the Law Energy Efficiency and Rational Use of Energy.[47] The EEA is managed by a Director (civil servant) appointed by the Government for a period of five years and directly reporting to the Minister of Mining and Energy. As a state administration body, the EEA is linked to the Ministry's annual budget planning process but has a separate budget line. The 2022 national budget allocated RSD 1,983,049,000 (EUR 16.9 million), classified as transfers to cities and municipalities, under the EEA budgetary appropriation for the implementation of the EE renovation program.[48] The EEA's operational budget for 2022 is in the amount of RSD 28,540,000 (EUR 243 thousand). To make the EEA operational, plans are to increase staffing to 12 full-time employees in 2022. Additional funds from EU IPA implemented by EBRD and KfW (and potentially support from additional EU funds or other donors, such as GIZ) are expected to become available by 2023 to support EEA's objectives through further technical assistance.

B. Results Monitoring and Evaluation Arrangements

61. **Monitoring and evaluation (M&E) activities will be carried out by the Project Implementation Unit (PIU) staff housed within the MoME.** It is envisaged that one PIU staff member will be responsible for M&E. M&E activities will be based on inputs provided by the LSGUs on the beneficiaries, projects implemented, and disbursements. In order to ensure proper monitoring of the flow of data and funds, a database for standardized data entry and outputs will be developed with assistance from the World Bank and made available to the PIU and the LSGUs as a centralized program management tool.

C. Sustainability

62. **The project will seek to ensure the longer-term sustainability of the clean energy and energy efficiency program run by the MoME.** Under one of the reform areas included in the Green Transition DPO series currently under preparation for FY2022 and FY2023 (P177410), the GoS is expected to improve budget predictability of the EEA and better alignment of the budget allocation schedules with the seasonal cycles of energy efficiency support schemes (taking into account that most EE work needs to be done outside of the winter season). The project aims at being a proof-of-concept for the scale-up of such investments and unlocking significantly larger financing from multiple sources, including other donors.

63. **The project design will include several additional elements aimed at ensuring continuity and longer-term sustainability of the program**, such as: (a) satisfaction surveys for program beneficiaries to collect information on their demographics (age, gender, income level, and location), their satisfaction with the program and positive impacts of the program (such as cleaner indoor air, better indoor temperature, improved health, and lower energy bills), and any adverse impacts and feedback; (b) TA and institutional capacity building for the MoME/EEA and participating LSGUs, including mechanisms to gather feedback and incorporate lessons learned from previous public calls into the program; and (c) capacity building programs for local contractors and other stakeholders.

[47] The Government of Serbia approved the Rulebook on Internal Organization and Systematization of Ministry of Mining and Energy on November 10, 2021, introducing the EEA in the Ministry's organizational structure.
[48] Source: National Budget for 2022 – *http://www.parlament.gov.rs/upload/archive/files/cir/doc/zakoni/2021/1955-21%20za%20sajt.pdf*

IV. PROJECT APPRAISAL SUMMARY

A. Technical, Economic, and Financial Analysis

(i) Technical Analysis

64. **Walk-through energy audits (WTEAs) were carried out by energy efficiency experts between October 25 and November 4, 2021, in several LSGUs across Serbia to gather first-hand data on building performance, energy efficiency needs, and household affordability, in order to inform project design.** The WTEAs involved 30 households in nine Serbian LSGUs (Nova Crnja, Vrbas, Jagodina, Žabari, Sečanj, Bojnik, Leskovac, Vlasotince, and Kuršumlija) characterized by different climates and different levels of urbanization. The households selected for the audits included 22 single-family houses, five double houses, and three apartments in MABs. With regard to the heating sources, 20 of the households relied on firewood, three on coal, three on electricity, three on natural gas, and one on district heating. The WTEAs included the following steps: (a) introductory citizen interview; (b) collection of data on the size of the building and building elements (for example, windows, doors); (c) assessment of the building conditions (including building envelope); (d) identification of transmission heat losses, also through thermal imaging cameras; (e) assessment of heating system performance; (f) collection of data on household expenditure for heating; (g) assessment of other sources of energy consumption and related expenditure (for example, electrical appliances, lighting); (h) collection of data on household financial conditions (including affordability of potential energy efficiency investments); and (i) discussion of potential energy efficiency measures that the household could implement.

65. **The WTEAs highlighted the high penetration of poorly insulated single-family houses relying on firewood for heating.** The energy audits found a high variability of specific heating energy consumption by type of heating, with households relying on firewood consuming about 320 kWh/m^2 on average, compared with about 280 kWh/m^2 for those relying on coal and about 240 kWh/m^2 for those relying on electricity and natural gas. The specific heating energy consumption was found to also vary significantly with the age of the building: buildings constructed before 1970 showed a specific heating energy consumption of about 320 kWh/m^2, compared with just 240 kWh/m^2 for buildings constructed after 1990. The main sources of transmission heat losses are: (a) old wooden frame doors and windows with high U-values, (b) poorly insulated blinds/shutter boxes, (c) walls with no insulation and façade plastering, and (d) the presence of heat bridges and cold edges. Most houses relied on room-based or central firewood stoves/boilers with 50–60 percent efficiency and high heat losses in combustion and exhaust chimneys; moreover, heating systems did not typically have hydraulic balancing, thermostatic valves at the radiators, or insulated heating pipes.

66. **Based on the results of the WTEAs, different standardized renovation packages have been developed for a typical SFH.**[49] A "light" renovation package (including window and door replacement and roof/ceiling insulation) would require an investment of EUR 1,700–2,000 and generate 25–30 percent energy savings with a payback period of approximately six years. A "standard" renovation package (including the measures of the "light" package, plus wall insulation, boiler replacement, and heat network renewal) would require an investment of EUR 7–8,000 and generate 60–65 percent energy savings with a payback period of about nine years. Finally, an "advanced" renovation package (including the measures of the "light" and "standard" packages with a heat pump instead of boiler replacement, plus a solar PV system and a solar collector for sanitary hot water if conditions allow) would require an investment of EUR 12–13,000 and

[49] The "typical" SFH taken into consideration included: (a) 80 m^2 heated area, (b) heating system relying on firewood, (c) baseline heat energy consumption of 30 MWh per year, and (d) specific energy consumption of 360 kWh/m^2.

generate 80–85 percent energy savings with a payback period of approximately 16 years. A summary of the characteristics of the different renovation packages is provided in Table 4.

Table 4. Characteristics of the different building renovation packages available to a typical SFH

Building Renovation Package	Measures Included	Expected Cost	Expected Energy Savings	Expected payback period
Light	• Windows and doors replacement • Roof ceiling insulation	EUR 1,700–2,000	25–30 percent	~6 years
Standard	*Measures included in the light package, plus:* • Wall insulation • Boiler replacement • Heat network renewal	EUR 7,000–8,000	60–65 percent	~9 years
Advanced	*Measures included in the light and standard packages, plus:* • Heat pump (instead of boiler replacement included in the standard package) • Solar PV system • Solar collector for sanitary hot water	EUR 12,000–13,000	80–85 percent	~16 years

(ii) Economic and Financial Analysis

67. **An analysis has been carried out to assess the economic and financial viability of the energy efficiency and clean energy investments under consideration for Component 1.** The analysis has taken into consideration three types of energy efficiency and clean energy investments (light, standard, and advanced building renovation packages) for SFHs relying on four different heating energy sources (firewood, coal, natural gas, and electricity).[50] The investments have been assumed to be implemented over five years (project duration) and have a lifetime of 15 years. The financing structure includes a combination of: (a) grants (55, 60, and 65 percent for the light, standard, and advanced packages, respectively), co-financed by the MoME and the LSGUs[51]; (b) households' own funds (up to EUR 1,000[52]); and (c) commercial loans (with a tenor of five years and a 7.5 percent interest rate including bank fees). The walk-through energy audits described in the Technical Analysis section have provided inputs with regard to both technical assumptions (such as 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.

[50] It has been assumed that 55 percent of the beneficiaries will implement a light package, 40 percent a standard package, and 5 percent an advanced package. The breakdown of beneficiary households by type of heating energy source has been assumed to approximately reflect the breakdown across the general population in Serbia (65 percent firewood, 20 percent coal, 5 percent natural gas, and 10 percent electricity).
[51] Co-financing from the LSGU has been assumed to be 50 percent (decreased to 30 percent for poorer LSGUs, corresponding to about 13 percent of the Serbian population).
[52] The WTEAs have shown that an average Serbian household would be able to afford an upfront investment of about €1,000.

68. **Under these assumptions, the SURCE project is expected to support energy efficiency and clean energy investments in about 31,100 households (about 1.26 percent of total Serbian households) over five years of implementation.** This corresponds to an average yearly dwelling stock renovation rate of 0.25 percent. The total value of the investments unlocked is estimated to reach about EUR 128 million, of which about EUR 76 million (about 60 percent) would be covered by grants (MoME and LSGUs) and EUR 52 million would be private capital mobilized (households' own funds and commercial loans). The estimated energy savings are 6,400 gigawatt-hours (GWh), or 23,000 terajoules (TJ),[53] over an investment lifetime of 15 years, or 430 GWh (1,550 TJ) per year, which is equivalent to 1.3 percent of total final energy consumption in residential buildings in Serbia. These energy savings are expected to reduce GHG emissions by 2.7 million tons over the investment lifetime (or 0.2 million tons per year).

Economic Analysis

69. **The most tangible benefit of energy efficiency and clean energy investments is a significant reduction in household energy expenditures.** Such reduction represents a monetary benefit stemming from: (a) reduced fuel consumption due to lower demand for primary heating energy (thanks to the higher efficiency of the heating system), as well as final heating energy (thanks to the better insulation); and (b) lower consumption of grid electricity thanks to self-generation through the solar PV system.[54] In addition to this monetary benefit, the economic benefits related to greenhouse gas (GHG) mitigation and air pollution reduction have been estimated. Additional economic benefits that have not been quantified include substantial social benefits (such as improved quality of life for the households involved) and property value increase. All these benefits will prime the market for energy efficiency, sustainable heating, and rooftop solar PV investments, by creating demand for equipment and services and sending a signal to the private sector and the general public about the government's commitment to decarbonization.

70. **The results of the economic analysis indicate strong economic returns as well as substantial GHG mitigation benefits.** The project economic net present value (ENPV) at a 6 percent discount rate and the project economic internal rate of return (EIRR) are shown in Table 5. The investment ENPV varies depending on the type of package implemented and the heating energy source. Light and standard packages are estimated to have a positive ENPV (about EUR 2,100 and EUR 1,000 per household, respectively), whereas the advanced package is estimated to have a negative ENPV of about EUR 1,000 per household, due to the significantly higher investment cost required. The investment ENPV is positive for all heating energy sources, ranging between EUR 400 per household for coal and EUR 6,200 per household for electricity.

Table 5. Summary of the results of the economic analysis

Parameter	Unit	Net benefits (excluding GHG mitigation)	Net benefits including GHG mitigation	
			Low SCC scenario	High SCC scenario
ENPV	EUR million	47.3	129.8	212.1
EIRR	%	13%	25%	37%

71. **Air pollution benefits are estimated to be sizeable.** The energy efficiency and clean energy investments financed under the project are expected to produce significant reductions in nitrogen oxides

[53] 1 GWh = 3.6 TJ = 3,600,000 MJ.
[54] In order to account for underheating, in the analysis the reduction in household expenditures was calculated by estimating savings against baseline energy consumption and expenditure, instead of normal levels.

(NO_x), sulfur oxides (SO_x), and $PM_{2.5}$ emissions. Although the economic benefits of air pollution reduction are strongly influenced by local conditions, an estimate based on assumptions used in a regional sustainable heating study[55] suggests that if air pollution benefits are taken into account, the project ENPV (excluding GHG mitigation benefits) increases to more than EUR 500 million, with an EIRR of more than 120 percent.

Financial Analysis

72. **The financial analysis only takes into account the monetary benefits and costs of the energy efficiency and clean energy investments from the household's perspective.** The only benefit is represented by the reduction in household energy expenditures calculated also as part of the economic analysis. Costs include: (a) households' own funds used for an upfront payment toward the investments and (b) the monthly repayments of the loan taken to pay for the portion of the investment not covered by grants or own funds.

73. **The results of the financial analysis (shown in Table 6) indicate strong positive financial returns for the citizens with the financing structure taken into consideration.** The project's net present value (NPV) is estimated to be EUR 98.3 million at a 7 percent discount rate, with an internal rate of return (IRR) of 89 percent. The individual investments show a positive NPV for all types of packages implemented and for all heating energy sources.

Table 6. Summary of the results of the financial analysis

Parameter	Unit	Net benefits
NPV	EUR million	98.3
IRR	%	89%

74. **Although the financial analysis shows that the investments financed are in general financially viable for Serbian households, targeted additional support will be required to enhance the inclusion of low-income and vulnerable households into the program.** The social inclusion top-up grants at the household level, which will be explored in future calls under the project-financed program, aim to alleviate affordability constraints among low-income and vulnerable households. A detailed distributional assessment of household finances suggests that this group requires higher subsidy levels, particularly to take up the standard package investments. The bottom income quintile may need 90 percent grants for the standard package. Either the light package or the boiler replacement alone is more affordable: it is estimated that the median household in the first and second income quintile can pay back over a five-year period the self-financed part when provided with 60 or 50 percent grants, respectively. The project will further assess the options to provide social inclusion top-up grants (that is, higher than 50 percent grant share) to homeowners who are recipients of social assistance benefits or who receive the status of energy vulnerable consumers under the Energy Vulnerable Program (EVP). In addition to this financial support, the project will seek to inform outreach and handholding support to poorer and socially vulnerable SFH homeowners (Component 2).

Sensitivity Analysis

75. **Several sensitivity analyses have been run to test the robustness of the results of the economic and financial analysis against changes in the inputs and assumptions.** The key parameters for which sensitivities have been carried out are as follows:

[55] World Bank. *Sustainable Heating Assessment—Western Balkans*, October 2021.

- **Discount rates.** The project ENPV (excluding air pollution and GHG mitigation benefits) is estimated to turn negative at an economic discount rate of 13 percent (versus 6 percent typically used for World Bank projects). In the financial analysis, the NPV is estimated to turn negative at a financial discount rate of 87 percent, which is a sign of the high level of robustness of the results.
- **Baseline energy consumption.** The project ENPV (excluding air pollution and GHG mitigation benefits) turns negative for baseline energy consumption values that are just 12 percent lower than assumed.[56] This result is particularly relevant in light of the fact that the project aims to target lower-income households, for which underheating is a relatively widespread phenomenon. Poorer households are likely to have lower baseline energy consumption, which makes the investments financed under the project less attractive for them. In order to overcome this issue, while the project already offers relatively high grant shares to make the investments financially viable, a grant top-up will be offered to lower-income households.
- **Investment cost-effectiveness.** Results appear to be fairly sensitive to changes in: (a) investment cost and (b) post-renovation energy consumption (that is, changes in the "benefits" produced by the investment). The project ENPV (excluding air pollution and GHG mitigation benefits) is estimated to decrease by about 2.5 percent for each percentage point increase in the investment cost and by about 5.5 percent for each percentage point increase in the post-renovation specific energy consumption. In other words, the ENPV is estimated to turn negative if the investment cost is about 40–45 percent higher than assumed, or if the post-renovation specific energy consumption is just 15–20 percent higher. The project will seek to ensure that the cost-effectiveness of the investments financed does not significantly deviate from the expectations to avoid undermining the economic viability of the investments. It is to be noted that thanks to the relatively high grant shares offered, the financial NPV of the project remains positive under all reasonable ranges of investment cost and post-renovation energy consumption.
- **Investment lifetime.** The project ENPV (excluding air pollution and GHG mitigation benefits) is estimated to be negative with an investment lifetime of nine years or less. This highlights the need to select beneficiary households that are more likely to guarantee a longer investment lifetime (for example, structurally sound buildings, houses with younger citizens).

B. Fiduciary

(i) Financial Management

76. **The project will use the services of the Central Fiduciary Unit (CFU) within the MoF for procurement and financial management.** The Project Implementation Unit (PIU) within the MoME will remain responsible for project implementation. The Project Operations and Grant Manual (POGM) will detail implementation arrangements, including the division of responsibilities between the CFU and the PIU. At the moment, the CFU supports financial management and procurement for nine investment projects, and one Policy and Human Resources Development (PHRD) grant.

77. **The CFU has acceptable capacity and track record for meeting project fiduciary expectations,** in particular: (a) it makes use of adequate accounting software, (b) the audits of the active Bank-financed

[56] Note that the assumptions used for the analysis already account for some level of underheating (e.g., 11 percent for households relying on firewood), based on the results of the walk-through energy audits.

projects supported by the CFU revealed no major issues, and (c) the interim unaudited financial reports (IFRs) of the active projects were always received on time and found to be acceptable to the Bank.

78. **The CFU will support the implementation of the financial management (FM) arrangements of the project.** These FM arrangements include planning and budgeting, accounting, financial reporting, flow of funds (including disbursement), internal controls, and external auditing. The application of the controls and procedures in practice will be verified by the World Bank.

79. **The designated account (DA) for administering the project funds will be opened in EUR at the National Bank of Serbia (NBS) and will be managed by the MoME.** MoME will open an RSD Sub-Account in the Republic of Serbia's budget execution information system at the Treasury Administration. The control environment in the NBS is considered to be acceptable. Allowed methods of disbursement will be advances to the designated account, direct payments, reimbursements, and special commitments.

80. **Component 1 will finance partial grants for clean energy and energy efficiency investments in residential buildings.** Each LSGU will be eligible for grants up to a value determined per predefined formula, and the award of a grant will be subject to compliance with agreed eligibility criteria. The awarded LSGUs will sign an agreement with the MoME, which will define the activities and obligations under the grant. The funds for the grants will flow from the national DA to the special subaccounts opened by the LSGUs with the local Treasury for grant-related purposes only. The PIU will disburse (a) an advance of up to 50 percent of the allocated Grant upon the parties' signing the grant agreement with the participating LSGU; and (b) subsequent tranches, up to the amount for which the LSGU has signed Tripartite Agreements, upon the PIU's and CFU's verification that the participating LSGU used the grant proceeds of all previous tranches for the intended purposes. The PIU and the CFU will conduct the verification based on (a) the review of the Project financial reports prepared by the Participating LSGUs; and (b) any additional terms and conditions set forth under the POGM.

81. **Internal controls and procedures to be used on the project will be described in the POGM, the draft of which is expected to be prepared by negotiation.** This will minimize the risk of an error, safeguard the project's assets, and ensure the use of funds for intended purposes. Application of the controls and procedures in practice will be verified by the Bank's supervision. The POGM will rely upon—and will refer to—the national and local rulebooks that govern the organization of public calls under the MoME's grant programs, as the approach for grant allocation via municipalities will continue under the project.

82. **The CFU will submit a full set of consolidated interim unaudited financial reports (IFRs), once approved by the PIU and the MoME,** including all components and subcomponents for each calendar quarter throughout the life of the project. Acceptable accounting software will be used for project accounting and reporting, including principal financial reports (i.e., quarterly IFRs and annual project financial statements).

83. **LSGUs will provide financial reports in the agreed format to the MoME, covering one calendar quarter, or the report on total expenditures for the first tranche, if shorter than one quarter.** The POGM will include the format of the financial reports and list documentation needed to accompany the reports and the means by which the MoME and CFU will supervise the use of grant proceeds. If the LSGUs are already using an acceptable format to report to the MoME, this format will be assessed and used if possible. In addition, field controls may be made at any time of the investment duration by the MoME. The goal of the field control is to check whether the on-the-spot situation is congruent with the information provided by the LSGUs in the financial reports.

84. **The annual audited project financial statements will be provided to the Bank within six months after the end of each fiscal year, as well as at the closing of the project.** The audit will be conducted by a private audit firm acceptable to the Bank and in line with the terms of reference (ToR) agreed with the Bank. The audit ToR will extend the scope in order to assess applied procedures with regard to grants and the level of their alignment with the POGM, as well as the audit of the use of grant funds on a sample of municipalities.

85. **Based on the above arrangements and the project design, the overall financial management risk for the project is substantial.** In order to finalize and implement the financial management arrangements, a POGM acceptable to the Bank should be prepared, and effective communication channels and reporting lines between the MoME, the CFU, and the LSGUs established.

(ii) Procurement

86. **Project procurement will be implemented by the PIU, supported by the CFU.** Procurement will be conducted in accordance with the World Bank's Procurement Regulations for Investment Project Financing (IPF) Borrowers, *Procurement in Investment Project Financing—Goods, Works, Non-Consulting, and Consulting Services* (updated November 2020). The project will also be subject to the World Bank's Anti-Corruption Guidelines. More details on procurement arrangements will be provided in the Project Procurement Strategy for Development (PPSD) and the Procurement Plan (PP), currently under preparation by the MoME with CFU support. The project will conduct all procurement activities using the World Bank's Systematic Tracking of Exchanges in Procurement (STEP) system.

87. **The grants by the MoME to LSGUs are not subject to World Bank Procurement Regulations**. The grants will be governed by the Project Operations and Grant Manual (POGM). A POGM was drafted as part of project preparation. Where relevant, the POGM will reference the national and local rulebooks that govern the organization of public calls under the grant programs by the MoME and the EEA, as the approach for grant allocation via LSGUs will continue under the project.

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

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

89. **The environmental risk is considered moderate.** The project is not expected to have significant adverse environmental risks and/or impacts. On the contrary, given its overall green and energy efficiency footprint, it will likely result in positive impacts in the long run. However, there are several short-term risks, mostly related to small-scale civil works on already existing facilities (single-family houses and multi-apartment buildings) under Component 1. The main environmental risks in this regard could be identified as: (a) impacts on ground and surface water, soil, and air contamination (dust and noise); (b) occupational

health and safety (OHS) issues and access to work sites; and (c) inadequate waste management. Component 2 should have no significant environmental impacts as it is focused on strengthening policies and practices in TA. Because the project will not include works outside the existing parameters, impacts from these activities (if managed and mitigated adequately) are expected to be typical for construction works, and as such, low in magnitude, predictable, reversible, and temporary. Given that the exact locations of investments are not known with certainty so far, the MoME has prepared the Environmental and Social Management Framework (ESMF), which will be implemented to identify and properly manage adverse impacts and risks and specify legislative and regulatory framework, procedures, and institutional responsibilities.

90. **The ESMF also sets forth a screening mechanism to ensure that substantial or high-risk activities are not financed under the project, as well as activities on cultural heritage or within protected areas and sensitive habitats**. The ESMF ensures that site-specific Environmental and Social Management Plans (ESMPs) or an ESMP checklist will be prepared for subproject activities and will include site-specific impacts and mitigation measures, with clearly defined procedures for screening, mitigation, monitoring, and responsibility roles. The ESMF also includes provisions for the avoidance of any sensitive environments or protected areas, guidance for pollution prevention and environmentally sound resource use under ESS 3, and any guidance on cultural heritage or chance finds as stipulated under ESS 8. The ESMF, along with a template of a screening procedure, has been prepared and reviewed by the Bank team. All relevant ESF documentation was disclosed on January 19, 2022 on the Ministry of Mines and Energy website[57] and a public consultation process was concluded on February 3, 2022 and a report summarizing the results of the consultations was included in the final ESMF document. In addition to the ESMF, the Ministry of Mining and Energy and other relevant stakeholders will implement the activities listed in the Environmental and Social Commitment Plan (ESCP). The ESCP could be revised during implementation, if needed.

91. **The social risks are considered moderate, and overall expected impacts are positive.** Risks can be effectively mitigated through the developed ESF instruments and the proposed tailored communication and outreach strategy. The activities under Component 1 will involve minor civil works, with no labor influx and thus no associated risk, and no land acquisition needs. Component 2 supports TA aimed at optimizing project benefits and has negligible adverse social impacts. The overall risk rating is moderate, to highlight the importance of implementing an effective stakeholder engagement and outreach campaign throughout the duration of the project. The central social risk is potential exclusion, in particular, of vulnerable and disadvantaged groups from the project benefits, due to the drivers of their vulnerabilities and overall challenges in accessing information on the products and services supported by the project. These potential risks will be readily addressed through the project design and additional mitigation measures developed through the ESF instruments, including the ESMF, Stakeholder Engagement Plans (SEPs), Labor Management Procedures (LMPs), and the ESCP.

92. **To prevent possible social risks, the design of the project envisages the integration of citizens and stakeholder engagement.** In the Stakeholder Engagement Plan (SEP), a comprehensive engagement strategy inclusive of a dedicated civic platform has been adopted with a specific target to reach the underserved part of the population. The project also includes specific strategies like subsidies and targeting mechanisms to ensure that poor and vulnerable households adequately benefit from the project. A solidarity mechanism for poorer LSGUs will be introduced to enable their participation in the program thanks to lower co-financing requirements (the current co-financing requirement is 50 percent for all LSGUs,

[57] https://www.mre.gov.rs/aktuelnosti/oglasna-tabla/javne-konsultacije-za-surce-projekat-public-consultations-surce-project

thereby matching the grants provided via the MoME program). Due to its focus on SFHs that are solid fuel users, the project targets a population group that predominantly represents the bottom 40 percent of the income distribution. To explore additional targeting of vulnerable households, the project will conduct a survey among households eligible for social assistance/Energy Vulnerable Program benefits, to confirm the share of homeowners among them and their level of interest in energy efficiency improvement.

93. **The SEP also defines the establishment of the project-level GRM** to enable local communities and affected stakeholders to raise grievances and seek redress in case they perceive a negative impact arising from the project's activities.

94. **No major risks are expected concerning small civil work activities in Component 1**, such as the installation of solar panels and better insulation**.** The national labor and OHS framework offers a solid framework that the LMP builds upon. Despite the low risk of sexual exploitation and abuse (SEA) and sexual harassment (SH), the LMP has called for a Code of Conduct for project workers and a grievance mechanism equipped to receive confidential complaints. The project workers will receive training on the prevention of SEA/SH.

E. Other Corporate Priorities

(i) Gender

95. **The project aims to reduce the gender gap in knowledge and awareness of clean energy and energy efficiency, with the goal of channeling this knowledge into increased investments in residential energy efficiency and clean energy by women.** The project will contribute to reducing the gender gap by increasing women's voice and agency, one of the four pillars of the World Bank Group Gender Strategy 2016–2023. A 2015 qualitative study conducted in eight Europe and Central Asia (ECA) countries on energy efficiency reforms revealed a gap between men and women in their awareness and knowledge of energy efficiency, as well as in their ability to take actions to improve energy use in their households.[58] Men are generally better informed about topics related to energy efficiency investments and are consequently more involved in making decisions about energy sources and home improvements. This gap puts women (particularly those in female-headed households) at a disadvantage, as they are less likely to apply to and benefit from government energy efficiency programs. A recent survey suggests that approximately 32 percent of households in Serbia are headed by women,[59] while other data sources suggest that the share of female-headed households may be slightly higher, at around 36 percent. Female home ownership is 41 percent according to information from the Statistical Office of the Republic of Serbia. The gender gap in knowledge and awareness about energy efficiency can thus affect a substantial portion of potential project beneficiaries. Further, as women are typically more likely to spend extensive periods in the domestic environment, which includes performing household activities related to maintaining the heat source, they are more exposed to harmful pollutants and poor indoor air quality. Having the knowledge about the investment options available will enable female-headed households to purchase cleaner, more energy-efficient heating technologies.

[58] Source: World Bank. 2015. *Toward Gender-Informed Energy Subsidy Reforms: Findings from Qualitative Studies in Europe and Central Asia.* Washington, DC: World Bank.

[59] Source: Statistical Office of the Republic of Serbia and UNICEF. 2019. *Serbia Multiple Indicator Cluster Survey and Serbia Roma Settlements Multiple Indicator Cluster Survey, 2019, Survey Findings Report.* Belgrade, Serbia: Statistical Office of the Republic of Serbia and UNICEF.

96. **To close the existing gender gap, program implementation will be accompanied by communication and stakeholder engagement targeting women, informed by a survey on air quality and energy efficiency that will be conducted in several Western Balkans countries, including Serbia.** The survey will probe gender-disaggregated knowledge and attitudes toward energy efficiency and air quality, current practices regarding energy consumption and efficiency in the household, financial ability to upgrade the energy sources in the household, knowledge of subsidies and support programs available, and the most effective communication channels to reach residents. The survey will also test the effectiveness of possible messages among respondents. The gender-disaggregated findings from the survey will enable the project to develop a set of actions aimed at addressing the gender gap in knowledge and awareness of clean energy and energy efficiency; for example, by designing an awareness campaign with dedicated messaging targeted to women, including recommendations on energy investments and behavior changes that help save energy. The awareness campaign will therefore be calibrated to the differentiated knowledge that men and women currently have on implementing energy efficiency investments, to ensure they: (a) are equally informed about the investment options and their benefits, (b) know how to apply and implement the improvements, and (c) are therefore motivated and equally able to benefit from the energy efficiency investments available under the project.

97. **To measure progress toward closing the gender gap, the project will track the increase in the share of female home-owning beneficiaries of the program.** To measure the impact of the program's actions to close the gender gap, the project will monitor the following quantitative intermediate result indicator: "*Increase in the share of female home-owning beneficiaries of the clean energy and energy efficiency grants program*", defined as the percentage-point increase in the share of female homeowners whose homes have been approved for the program vs. the baseline value in the pilot program. The program will aim to achieve 41 percent female beneficiaries, reflecting the national share of female homeowners, compared to a baseline share of 35 percent in the first pilot call for proposals in 2021.

(ii) Citizen Engagement

98. **The MoME has engaged the public extensively during the ongoing reform process and the development of the ongoing program of investments in the residential sector.** The engagement includes the newly established National Coalition on Energy Poverty, as well as feedback processes for each legislative and regulatory measure, including the decrees establishing the design and implementation arrangements of the ongoing investment program. The pilot program run by the MoME includes a feedback mechanism whereby citizens can submit complaints or requests for additional information, either by email or phone. The MoME responds to all complaints and requests.

99. **Citizen engagement will be crucial for the project to engage with local beneficiaries in two-way dialogues.** The project interventions in residential buildings will offer many opportunities for outreach and socially inclusive engagement with citizens, as well as (potential) grant program applicants. Citizen engagement will be carried out in several ways:

- For participatory planning and monitoring, committees will be formed by electing interested citizens—specifically inviting persons representing vulnerable citizens (such as the elderly or people with disabilities) and representatives of local community centers (*Mesne zajednice*). These committees would serve two key purposes: (a) identifying citizens' needs and issues with the program, by asking for feedback on issues experienced (such as application procedures, understanding of energy efficiency measures, and communication of financial and energy savings benefits); and (b) monitoring the energy efficiency renovations (including committees to provide feedback on the quality of the works and perceived improvements).

- Annual surveys with beneficiaries will include quantitative and qualitative interviews with project beneficiaries to collect their perspectives and perceptions of the program's implementation and impact.
- Roundtables and open-door days will be organized to gather representatives of LSGUs, residents, and project beneficiaries and directly discuss project activities, building improvements, and survey results.
- In addition, the project may mobilize female and male "Youth Energy Ambassadors" for local action in LSGUs, in order to engage citizens on key issues around energy efficiency and clean energy.

100. **The project will introduce an online civic engagement tool as an efficient mechanism to support and complement citizen engagement in various ways.** These could include: (a) making all relevant project information documents and sensitization material easily available online and accessible through cell phones; (b) facilitating interactive two-way communication with beneficiaries, thus improving accountability and transparency; (c) ensuring all participating municipalities have access to the same tools and can exchange experiences and knowledge, thus supporting consistent project implementation throughout all participating municipalities; and (d) enabling design and implementation adjustments based on feedback received. The World Bank will support the introduction of this tool under grant-financed technical support. The online civic engagement tool will enhance and expand the feedback collection mechanism under the existing pilot.

(iii) Private Sector Mobilization

101. **The project aims at mobilizing private financing of clean energy and energy efficiency investments from program beneficiaries and commercial banks.** The project will contribute to unlocking investments from Serbian households, especially the ones belonging to the lower income quintiles that have been excluded so far from the clean energy and energy efficiency markets. This will ensure the long-term sustainability of such investments, as well as the achievement of a scale of intervention aligned with the ambitious decarbonization targets.

V. GRIEVANCE REDRESS SERVICES

102. **Communities and individuals who believe that they are adversely affected by a World Bank-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 in order to address project-related concerns. Project-affected communities and individuals may submit their complaints to the WB's independent Inspection Panel, which determines whether harm occurred or could occur as a result of WB noncompliance 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.[60]

VI. KEY RISKS

[60] 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.

103. **The assessment is that the risks to the PDO are moderate.** Key risks are discussed in detail below.

- **Macroeconomic (moderate).** The main macroeconomic risk is inadequate fiscal resources for LSGUs to contribute their share of the grants, and macroeconomic conditions leading to limited disposable household income for their contribution. Economic growth is projected to be healthy in the medium term (6.5 percent in 2021 and at 4.5 percent in 2022, according to IMF projections), and the World Bank is preparing to support the GoS through a parallel green growth DPO series to strengthen macroeconomic resilience and promote a strong, green recovery from the COVID pandemic. Strengthening decentralized government is a core pillar of recent GoS policy, mitigating the risk of lower resource allocations, and the most at-risk municipalities will benefit from more favorable co-financing conditions under the project.
- **Technical project design (substantial).** The main technical design risks are related to the fact that: (a) the program might not generate sufficient interest from households, in particular among the lower-income group targeted, and thus may have a slow implementation regarding the focus area of affordability; and (b) commercial banks and contractors might not show interest in the program, with market-based solutions for residential EE and clean energy not gaining traction. These risks will be mitigated through: (a) a communications program that will accompany implementation to raise awareness and generate interest; (b) flexible grant levels and efforts to engage additional banks beyond the one already engaged; and (c) stakeholder engagement during early stages of implementation to ensure responsiveness to the capacity of commercial banks and contractors.
- **Institutional capacity for implementation and sustainability (substantial).** The main institutional capacity risks are related to the fact that: (a) the new Energy Efficiency Administration might not be able to mobilize sufficient human resources for implementation; and (b) LSGUs, banks, and contractors might not have sufficient capacity to fulfill their envisioned role in the project. The sustainability risk is related to the need to build a robust project pipeline, which is typically a challenge in demand-side energy efficiency projects. These risks are being mitigated through the World Bank's close cooperation with the MoME and EEA during the implementation of the program pilots, and the MoME's commitment to ensure staffing continuity and scale-up as the World Bank-financed phase of the program begins. Pipeline readiness will be ensured through active involvement of LSGUs, as well as communication campaigns to raise awareness of the benefits of energy efficiency investments and the grants offered through the project among the Serbian population. The project will also make expert resources available to the MoME and EEA and provide capacity building to LSGUs, banks, and contractors. Finally, substantial additional financial TA resources will be available to the MoME and EEA starting from 2023 through the Instrument for Pre-accession Assistance (IPA) funds.
- **Other (COVID-19 pandemic; substantial).** The pandemic may slow down implementation if movement restrictions for goods and staff are reintroduced due to a resurgence of the COVID-19 cases. The team will monitor this risk closely and work with the implementing agency to be able to do as much of the work remotely as possible, but this risk will not be fully mitigated through the design of the project.

VII. RESULTS FRAMEWORK AND MONITORING

Results Framework
COUNTRY: Serbia
Scaling-Up Residential Clean Energy (SURCE) Project

Project Development Objectives(s)

Increase the uptake of energy efficiency, sustainable heating, and rooftop solar photovoltaics (PV) by households in participating local self-government units (LSGUs) in Serbia.

Project Development Objective Indicators

Indicator Name	PBC	Baseline	End Target
Increased uptake of energy efficiency and sustainable heating by households in participating LSGUs			
Projected energy or fuel savings (CRI, Mega Joules (MJ))		0.00	20,000,000,000.00
Number of households that have implemented energy efficiency and sustainable heating investments (Number)		0.00	25,000.00
Number of households benefiting from MoME's social inclusion top-up grants (Number)		0.00	2,500.00
Number of households switching away from traditional solid fuel heating solutions (Number)		0.00	3,000.00
Increased uptake of rooftop solar PV by households in participating LSGUs			
Generation capacity of energy constructed or rehabilitated (CRI, Megawatt)		0.00	4.00
Renewable energy generation capacity (other than		0.00	4.00

Indicator Name	PBC	Baseline	End Target
hydropower) constructed under the project (CRI, Megawatt)			

Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline	End Target
Financing energy efficiency, sustainable heating, and solar PV investments in residential buildings			
Share of program beneficiaries that report being satisfied with the thermal comfort levels of their house (Percentage)		0.00	75.00
Net greenhouse gas (GHG) emissions (CRI, Metric tons/year)		0.00	150,000.00
Private sector capital mobilized through household contributions (including own funds and commercial loans) (Amount(USD))		0.00	50,000,000.00
Technical assistance and implementation support			
Share of beneficiaries reporting satisfaction with consultation process under the program (Percentage)		0.00	75.00
Share of Serbian municipalities participating in the program (Percentage)		40.00	80.00
Number of capacity building workshops provided (Number)		0.00	20.00
Share of female home-owning beneficiaries of the clean energy and energy efficiency grants program (Percentage)		35.00	41.00

Monitoring & Evaluation Plan: PDO Indicators					
Indicator Name	**Definition/Description**	**Frequency**	**Datasource**	**Methodology for Data Collection**	**Responsibility for Data Collection**
Projected energy or fuel savings		Every 6 months	Project database (to be developed) that will consolidate inputs from participating LSGUs.	Estimate based on technical assumptions from the walk-through energy audits and inputs on projects implemented from participating LSGUs.	MoME (raw data consolidation), participating LSGUs (raw data collection).
Number of households that have implemented energy efficiency and sustainable heating investments		Every 6 months	Project database (to be developed) that will consolidate inputs from participating LSGUs.	LSGUs to input data on investments implemented in the project database.	MoME (raw data consolidation), participating LSGUs (raw data collection).
Number of households benefiting from MoME's social inclusion top-up grants		Every 6 months	Project database (to be developed) that will consolidate inputs from participating	LSGUs to input data on investments implemented in the project database.	MoME (raw data consolidation), participating LSGUs (raw data collection).

			LSGUs.		
Number of households switching away from traditional solid fuel heating solutions		Every 6 months	Project database (to be developed) that will consolidate inputs from participating LSGUs.	LSGUs to input data on investments implemented in the project database.	MoME (raw data consolidation), participating LSGUs (raw data collection).
Generation capacity of energy constructed or rehabilitated		Every 6 months	Project database (to be developed) that will consolidate inputs from participating LSGUs.	LSGUs to input data on investments implemented in the project database.	MoME (raw data consolidation), participating LSGUs (raw data collection).
Renewable energy generation capacity (other than hydropower) constructed under the project		Every 6 months	Project database (to be developed) that will consolidate inputs from participating LSGUs.	LSGUs to input data on investments implemented in the project database.	MoME (raw data consolidation), participating LSGUs (raw data collection).

Monitoring & Evaluation Plan: Intermediate Results Indicators					
Indicator Name	**Definition/Description**	**Frequency**	**Datasource**	**Methodology for Data Collection**	**Responsibility for Data Collection**
Share of program beneficiaries that report being satisfied with the thermal comfort levels of their house		Every 6 months	Project database (to be developed) that will consolidate inputs from participating LSGUs.	Satisfaction surveys conducted among program beneficiaries.	MoME (raw data consolidation), participating LSGUs (raw 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	Every 6 months	Project database (to be developed) that will consolidate inputs from participating LSGUs.	Estimate based on technical assumptions from the walk-through energy audits and inputs on projects implemented from participating LSGUs.	MoME (raw data consolidation), participating LSGUs (raw data collection).

	equivalent per year.				
Private sector capital mobilized through household contributions (including own funds and commercial loans)		Every 6 months	Project database (to be developed) that will consolidate inputs from participating LSGUs.	LSGUs to input data on investments implemented in the project database.	MoME (raw data consolidation), participating LSGUs (raw data collection).
Share of beneficiaries reporting satisfaction with consultation process under the program		Every 6 months	Project database (to be developed) that will consolidate inputs from participating LSGUs.	Satisfaction surveys conducted among program beneficiaries.	MoME (raw data consolidation), participating LSGUs (raw data collection).
Share of Serbian municipalities participating in the program		Every 6 months	Project database (to be developed) that will consolidate inputs from participating LSGUs.	LSGUs to input data on investments implemented in the project database.	MoME (raw data consolidation), participating LSGUs (raw data collection).

Number of capacity building workshops provided		Every 6 months	Project database (to be developed) that will consolidate inputs from participating LSGUs.	MoME and LSGUs to input data on workshops organized in the project database.	MoME and participating LSGUs.
Share of female home-owning beneficiaries of the clean energy and energy efficiency grants program	Percentage-point increase in the share of female homeowners whose homes have been approved for the program vs. the baseline value in the pilot program	Every 6 months	Project database (to be developed) that will consolidate inputs from participating LSGUs.	LSGUs to input data on investments implemented in the project database.	MoME (raw data consolidation), participating LSGUs (raw data collection).

ANNEX 1: Team Members

Team Member Name	Title	Role	Unit
Katharina B. Gassner	Senior Energy Economist	Co-TTL (ADM Responsible)	IECE1
Joern Thorsten Huenteler	Senior Energy Specialist	Co-TTL	IECE1
Benedicta T. Oliveros	Procurement Specialist	Procurement Specialist (ADM Responsible)	EECRU
Tanvir Hossain	Senior Procurement Specialist	Procurement Specialist	EECRU
Aleksandar Crnomarkovic	Senior Financial Management Specialist	Financial Management Specialist (ADM Responsible)	EECG2
Abdoulaye Gadiere	Senior Environmental Specialist	Environmental Specialist (ADM Responsible)	SCAEN
Esma Kreso Beslagic	Senior Environmental Specialist	Environmental Specialist	SCAEN
Ivana Novakovic	Environmental Specialist	Environmental Specialist	SCAEN
Roxanne Hakim	Senior Social Development Specialist	Social Specialist (ADM Responsible)	SCASO
Olivera Kovacevic	Consultant	Social Specialist	SCASO
Felix Alberto Quintero Vollmer	Senior Counsel	Counsel	LEGLE
Dilip Kumar Prusty Chinari	Finance Officer	Team Member	WFACS
Jasna Vukoje	Portfolio Analyst	Team Member	ECCYU
Pedzisayi Makumbe	Senior Energy Specialist	Team Member	IECE1
Claudio Protano	Consultant	Team Member	IECE1
Elena Merle-Beral	Consultant	Team Member	IECE1
Kornel Drazilov	Consultant	Team Member	IECE1
Rainer Florian Behnke	Consultant	Team Member	IECE1
Zeljko Kukoleca	Consultant	Team Member	IECE1
Emina Djuricic Cerovac	Consultant	Team Member	EECG2
Jonathan George Karver	Social Scientist	Team Member	EPVGE
Leonardo Ramiro Lucchetti	Senior Economist	Team Member	EECPV
Trang Van Nguyen	Senior Economist	Team Member	EECPV
Carlos Gustavo Ospino Hernandez	Consultant	Team Member	EECPV
Marijana Jasarevic	Social Protection Specialist	Team Member	HECSP
Desanka Stanic	Program Assistant	Team Member	ECCYU
Miroslav Nesic	Program Assistant	Team Member	ECCYU
Wazhma Khalili Raheem	Program Assistant	Team Member	IECE1

ANNEX 2: Implementation Arrangements

Financial Management

Implementing Entities and Staffing

104. **The Central Fiduciary Unit (CFU) will support fiduciary arrangements for the project, while a Project Implementation Unit (PIU) within the MoME will be responsible for the overall project implementation.** The CFU was established within the MoF in October 2017 to provide fiduciary support (procurement and financial management activities) to all World Bank-supported projects in Serbia. The CFU is currently comprised of the following staff: director, head of operations, three procurement specialists, and three financial management specialists. The MoF provides office and equipment for the staff, and their salary is paid against investment projects it supports on a rotation basis. At the moment, the CFU supports financial management and procurement for the PHRD Grant on Agriculture and nine investment projects: (i) the Inclusive Early Childhood Education and Care Project (ECEC, P157117), (ii) State-Owned Financial Institutions Strengthening Project (SOFI, P156837), (iii) Tax Administration Modernization Project (TAMP, P163673), (iv) Serbia Competitive Agriculture Project (SCAP, P167634), (v) Western Balkans Trade and Transportation Facilitation Project (WBTTF, P162043), (vi) Enabling Digital Governance Project (EDGE, P164824), (vii) Serbia Accelerating Innovation and Growth Entrepreneurship (SAIGE, P170185), (viii) Railway Sector Modernization Project (RSMP, P170868), and (ix) Sava and Drina Rivers Corridors Integrated Development Program (P168862).

Planning and Budgeting

105. **The project's budget will be prepared by the MoME with overall support from the CFU.** There is sufficient capacity for planning and budgeting within CFU in order to manage project funds in terms of optimal allocation, liquidity, and overall performance. Variances of actual versus budgeted figures should be monitored on a regular basis, appropriately analyzed, and corrective actions taken. The CFU will prepare in-year financial plans and cash forecasts based on the project's budget, thus ensuring adequate liquidity management and withdrawal of funds. The LSGUs' planning of projects will need to be assessed and monitored by the MoME and the CFU.

Accounting System

106. **Acceptable accounting software is in place and administered by the CFU, and it will be used for project accounting and reporting.** Accounting records should include appropriate analytics of expenditures per contracts and each specific payment. The project will follow the cash basis of accounting (cash-based International Public Sector Accounting Standards [IPSAS]), recording transactions when actual payment is done, rather than when they are incurred. Transactions should be accounted for within eight days after incurring the expenses. There should be an appropriate backup of accounting records on external drives, as well as appropriate security regulation of access to and rights to edit the financial information.

Internal Controls

107. **Procedures and controls to be applied to the project will be detailed in the POGM.** They should detail procedures and processes regarding planning and budgeting, accounting, financial reporting, internal controls, flow of funds, and external audit for the project. Component 1, *Financing Energy Efficiency, Sustainable Heating, and Rooftop Solar Investments in Residential Buildings,* will finance grants to LSGUs so there is a requirement that the POGM detail procedures for eligibility, evaluation, selection, and implementation of grants (flow of funds, reporting back). It should also describe roles and responsibilities and communication channels and modes between the MoME/PIU, LSGUs, and the CFU. This will minimize the risk of an error, safeguard the project's assets, and ensure the use of funds for intended

purposes. Application of the controls and procedures will be verified by the Bank's supervision. Some of the key internal controls to be applied for the project should include:

(i) Appropriate authorizations and approvals of all purchases, relevant documentation, transactions of payments, and so forth;
(ii) Segregation of duties, as different persons will be responsible for different phases of a transaction;
(iii) Reconciliations between project accounting records and other relevant sources of information (Client Connection, bank account statements, and so on), performed at least monthly by senior finance staff; and
(iv) Original documentation supporting all project transactions properly filed.

Contract Management

108. **For Component 1, *Financing Energy Efficiency, Sustainable Heating, and Rooftop Solar Investments in Residential Buildings*, the MoME will be responsible for the signing and monitoring of the grant contracts with LSGUs.** From their part, the LSGUs with be responsible for processing the grant applications and disbursing the funds to homeowners and construction companies. LSGUs will evaluate and select the grantee homeowners and construction companies, act as signatories to the respective grant contracts, and monitor and evaluate the contract implementation and quality of work. Regarding Component 2, *Technical Assistance and Implementation Support*, the respective technical staff at the MoME will evaluate and select contractors, act as signatories to the contracts, and monitor and evaluate the contract implementation and quality of deliverables. For their part, the CFU staff will perform checks and controls of contract commitments and payments due under each contract, as well as review invoices and the accompanying documentation for correctness and completeness. Upon technical staff acceptance and approval of the goods received and services rendered, the CFU will process payments to contractors and account for the transactions.

Financial Reporting

109. **The CFU will submit a full set of interim unaudited financial reports (IFRs), consolidated for all project components and subcomponents for each calendar quarter throughout the life of the project, once approved by the PIU and the MoME.** The IFRs will be due 45 days after the end of each quarter. The format of the IFRs will be agreed upon between the GoS and the Bank and attached to the minutes of negotiation and the POGM. The CFU has acceptable accounting software, which will be used for project accounting and reporting, including quarterly IFRs and annual project financial statements. The following financial reports will be submitted to the Bank:

- The Statement of Cash Receipts and Payments,
- The Statement of Expenditure by Activity,
- Designated Accounts Statements,
- Statement of Grants Breakdown by Beneficiaries, and
- Notes to the Statements.

110. **LSGUs will provide financial reports in the agreed format to the PIU/CFU, covering one calendar quarter, or the report on total expenditures for the first tranche, if shorter than one quarter.** The POGM will include the format of the financial reports and list documentation needed to accompany the reports, as well as the means by which the PIU/CFU will supervise the use of grant proceeds. If the LSGUs already have an acceptable format to report to the MoME, it will be assessed and used, if possible. In addition, field controls may be made at any time of the investment duration by the MoME/PIU. The goal of the field control is to check whether the on-the-spot situation is congruent with the information provided in the LSGUs' financial reports.

External Audit

111. **The annual audit of the project financial statements will be conducted by a private audit firm acceptable to the Bank, in line with the agreed terms of reference (ToR).** The ToR will be agreed upon between the GoS and the Bank and attached to the minutes of negotiation and the POGM. In addition, the audit will include an extension of scope to grants and the level of their alignment with the POGM, as well as the audit of the use of grant funds on a sample of municipalities. It should include verification of the adequacy of financial reports delivered by the grant beneficiaries in relation to the accompanying documentation (contracts, invoices) and performance review, at least on a sample basis, to ensure that agreed outputs are delivered in an efficient manner with respect to grant facility. The audit of project financial statements will be funded by the project. The audit report will be submitted to the Bank no later than six months after the end of the audited period. The audited project financial statements will be posted by the MoME website within two weeks of the audit report's acceptance by the World Bank.

Financial Management Covenants

112. **The financial management legal covenants for the project, included in the Disbursement and Financial Information Letter (DFIL), will be as follows:**

(i) PIU and CFU to maintain an adequate financial management system.
(ii) PIU and CFU to prepare interim unaudited financial reports (IFRs) for each calendar quarter and deliver these to the Bank no later than 45 days after the end of the reporting quarter.
(iii) Annual project financial statements audited by a private audit firm acceptable to the Bank, and such audit to be delivered to the Bank no later than six months after the end of the audited period.

Funds Flow and Disbursement Arrangements

113. **The designated account (DA) for administering the project funds will be opened in EUR at the National Bank of Serbia (NBS) and will be managed by the MoME/PIU, with the assistance of the CFU.** The MoME will open a RSD Sub-Account in the Republic of Serbia's budget execution information system at the Treasury Administration. The control environment in the NBS is considered acceptable. Allowed methods of disbursement will be advances to the designated account, direct payments, reimbursement, and special commitments. Project funds will flow from the World Bank Loan Account to the respective DA either as an advance or based on the Statement of Expenditure (SOE) for already incurred eligible expenses. The World Bank can also execute direct payments to the beneficiaries on the basis of direct payment withdrawal applications, or make special commitments.

114. **The ceiling for the DA will be defined in the Disbursement and Financial Information Letter (DFIL) that accompanies Loan Agreement.** Applications for replenishment of the DA will be submitted monthly or when one third of the amount has been withdrawn, whichever occurs earlier. Documentation requirements for replenishment would follow standard Bank procedures as described in the Disbursement Handbook. Before funds from the loan account may be withdrawn or committed, the authorized representatives of the implementing entities, as designated in the Loan Agreement, must furnish to the World Bank, electronically through either the Client Connection website (http://clientconnection.workdbank.org) or an authorized signatory designation letter, the names of the officials authorized to (a) sign and submit applications for withdrawal and (b) receive Secure Identification Credentials (SIDC) from the World Bank.

115. **The funds for the grants will flow from the DA to the special subaccounts opened by the LSGUs with the local Treasury, for grant-related purposes only,** through the MoME RSD Sub-Account in the Republic of Serbia budget execution information system. The PIU will disburse (a) an advance of up to 50 percent of the allocated Grant upon the

parties' signing the grant agreement with the participating LSGU; and (b) subsequent tranches, up to the amount for which the LSGU has signed Tripartite Agreements, upon the PIU's and CFU's verification that the participating LSGU used the grant proceeds of all previous tranches for the intended purposes. In case the participating LSGU does not spend the grant funds in accordance with the conditions and deadlines defined by the grant agreement signed between the PIU and the LSGU, the LSGU is obliged to promptly return the unspent grant funds to the budget execution account of the Republic of Serbia / the MoME RSD sub-account in the Republic of Serbia's budget execution information system, according to the instructions that MoME received from MoF (these returned unspent grant funds can be used for the further grant allocation to participating LSGU under this loan agreement). The MoME is obliged to report to the MoF on unspent grant funds by participating LSGUs and cancel any unspent grant funds under the grant agreement no later than the expiration date of the grant agreement, or at an earlier date if agreed upon in writing by the parties.

Financial Management Supervision

116. **During project implementation, the World Bank will supervise the project's financial management arrangements in two main ways:** (a) review the project's interim unaudited financial reports 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 the project's financial management: 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, and disbursement and monitoring of grants. A sample transactions review will also be conducted. Implementation support and supervision will be performed by the Bank-accredited financial management specialist. In case of a prolonged COVID-19 pandemic, the World Bank supervision may have to be performed virtually as an alternative to on-site visits.