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R2019-0115/1

May 13, 2019

Closing Date: Wednesday, May 29, 2019 at 6:00 p.m.

FROM: Vice President and Corporate Secretary

Romania - Strengthening Preparedness and Critical Emergency Infrastructure Project

Project Appraisal Document

Attached is the Project Appraisal Document regarding a proposed loan to Romania for a Strengthening Preparedness and Critical Emergency Infrastructure Project (R2019-0115), which is being processed on an absence-of-objection basis.

Distribution:
Executive Directors and Alternates
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REPORT NO: PAD3169

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF EUR 40 MILLION

(US$45.60 MILLION EQUIVALENT)

TO

ROMANIA

FOR A

STRENGTHENING PREPAREDNESS AND CRITICAL EMERGENCY INFRASTRUCTURE PROJECT

May 6, 2019

Social, Urban, Rural and Resilience Global Practice
Europe and Central Asia Region

CURRENCY EQUIVALENTS
(Exchange Rate Effective: February 28, 2019)

Currency Unit =	Euro (EUR)
EUR 1.00 =	US$1.1418
US$1.00 =	EUR 0.8758

FISCAL YEAR
January 1 - December 31

Regional Vice President:	Cyril E Muller
Country Director:	Arup Banerji
Senior Global Practice Director:	Ede Jorge Ijjasz-Vasquez
Practice Manager:	David N. Sislen
Task Team Leader(s):	Tafadzwa Irvine Dube, Vica Rosario Bogaerts

ABBREVIATIONS AND ACRONYMS

CBA	Cost-Benefit Analysis
CPF	Country Partnership Framework
DES	Department of Emergency Situations
DRM	Disaster Risk Management
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
EU	European Union
FM	Financial Management
GBV	Gender-based Violence
GDP	Gross Domestic Product
GIES	General Inspectorate for Emergency Situations
GIRG	General Inspectorate of the Romanian Gendarmerie
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service
IA	Implementing Agency
IFC	International Finance Corporation
IPF	Investment Project Financing
IRR	Internal Rate of Return
ISP	Implementation Support Plan
M&E	Monitoring and Evaluation
MoIA	Ministry of Internal Affairs
MoPF	Ministry of Public Finance
MRP	Mean Return Period
MTR	Mid-Term Review
NCSES	National Committee for Special Emergency Situations
NDC	Nationally Determined Contribution
NPV	Net Present Value
PDO	Project Development Objective
PGA	Peak Ground Acceleration
PIU	Project Implementation Unit
POM	Project Operations Manual
PP	Procurement Plan
PPSD	Project Procurement Strategy for Development
RSB	Roma Sounding Board
SMISU	*Sistemul de Management Informaţional pentru Situaţii de Urgenţă* (National Emergency Management System for Emergency Disaster and Response)
SOP	Series of Projects
TDRF	Triple Dividend of Resilience Framework
VSL	Value of a Statistical Life

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DATASHEET

BASIC INFORMATION

Country(ies)	Project Name	
Romania	Strengthening Preparedness and Critical Emergency Infrastructure Project	
Project ID	**Financing Instrument**	**Environmental Assessment Category**
P168120	Investment Project Financing	B-Partial Assessment

Financing & Implementation Modalities

[ ] Multiphase Programmatic Approach (MPA)	[ ] Contingent Emergency Response Component (CERC)
[✓] Series of Projects (SOP)	[ ] Fragile State(s)
[ ] Disbursement-linked Indicators (DLIs)	[ ] 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)	

Expected Approval Date	Expected Closing Date
29-May-2019	

Bank/IFC Collaboration

No

Proposed Development Objective(s)

The objective of the Project is to enhance the resilience of Romanian Gendarmerie Facilities that are critical to respond to Emergency Situations and disasters and to strengthen the institutional capacities for emergency preparedness and response.

Components

Component Name	Cost (US$, millions)
Enhance the Resilience of Selected Romanian Gendarmerie Infrastructure to be used in Disaster Response	38.90
Operational Readiness and Public Awareness	4.20
Project Management	2.50

Organizations

Borrower:	Romania (through its Ministry of Public Finance)
Implementing Agency:	Ministry of Internal Affairs (General Inspectorate of the Romanian Gendarmerie)

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	45.60
Total Financing	45.60
of which IBRD/IDA	45.60
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	45.60

Expected Disbursements (in US$, Millions)

WB Fiscal Year	2020	2021	2022	2023	2024	2025
Annual	0.44	3.71	5.90	11.09	15.25	9.21
Cumulative	0.44	4.15	10.05	21.14	36.39	45.60

INSTITUTIONAL DATA

Practice Area (Lead)

Social, Urban, Rural and Resilience Global Practice

Contributing Practice Areas

Climate Change and Disaster Screening

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

Gender Tag

Does the project plan to undertake any of the following?	
a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF	Yes
b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment	Yes
c. Include Indicators in results framework to monitor outcomes from actions identified in (b)	Yes

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

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

COMPLIANCE

Policy

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

[ ] Yes [✓] No

Does the project require any waivers of Bank policies?

[ ] Yes [✓] No

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	✓	
Performance Standards for Private Sector Activities OP/BP 4.03		✓
Natural Habitats OP/BP 4.04		✓
Forests OP/BP 4.36		✓
Pest Management OP 4.09		✓
Physical Cultural Resources OP/BP 4.11	✓	
Indigenous Peoples OP/BP 4.10		✓
Involuntary Resettlement OP/BP 4.12		✓
Safety of Dams OP/BP 4.37		✓
Projects on International Waterways OP/BP 7.50		✓
Projects in Disputed Areas OP/BP 7.60		✓

Legal Covenants

Conditions

I. STRATEGIC CONTEXT

A. Country Context

1. **Romania is one of the fastest-growing economies in the European Union** (EU), with a growth rate averaging 2.8 percent during 2010–2017 (7 percent in 2017). Growth was led by private consumption (up to 9.5 percent annually), which was fueled by rate reductions in the standard value added tax, personal income tax, and corporate income tax and by increases in the minimum wages, and public-sector remunerations and pensions. Despite rapid economic growth, Romania still faces the twin challenges of inclusion and consolidation of the sustainability of its growth model through better-quality investments, higher productivity, and exports, rather than through domestic consumption alone. Further, investment increased by 5.4 percent, on the back of resurging private investment, but public investment underperformed, declining by 9.5 percent.

2. **Romania is still among the poorest countries in the EU, with more than a quarter of its population living on less than US$5.50 per day**.[1] The majority of the poor, at approximately 70 percent, live in rural areas due to unequal opportunities and unequal access to markets when compared to urban areas. Further, although economic growth has been strong over the past 10 years, income growth of the bottom 40 percent has been slow and was negative between 2009 and 2015. To address these challenges, the Government's program for 2018–2020 focuses on further supporting economic growth, boosting social cohesion, and reducing poverty, including through a series of increases in the public pensions and wages in 2017.

B. Sectoral and Institutional Context

Disaster and Climate Risk Context

3. **Geophysical and climate-related disasters pose a considerable threat to Romania's efforts to alleviate poverty and to its sustainable economic growth, with disaster losses growing as climate change and urbanization occur.** Romania is prone to a range of natural disasters, particularly earthquakes, floods, droughts, and extreme weather, which have resulted in significant physical, social, and financial impacts over recent decades. Since 1990, 77 severe disaster events[2] were recorded in Romania, including 44 floods, 15 extreme temperature events, seven storms, two earthquakes, one drought, and one landslide, resulting in over US$3.5 billion of direct damage.[3] Disaster impacts are increasing for several reasons, including increased exposure of people and economic assets, insufficient funding for risk reduction, and climate change effects. The poor, Roma, children, and the disabled are among those disproportionally affected by these disasters.

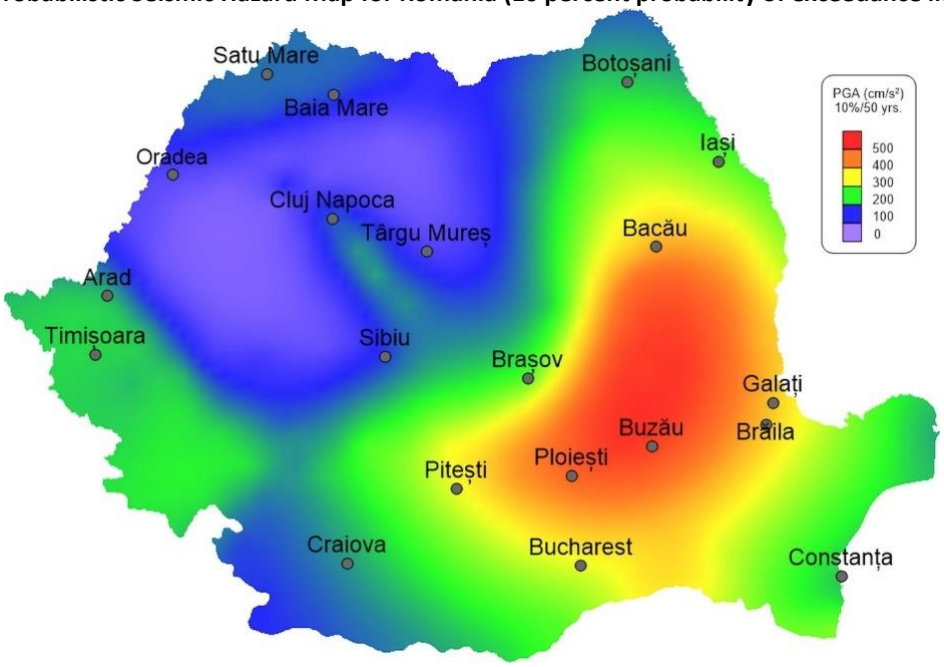
4. **Romania's vulnerability to natural disasters will be further exacerbated by climate change.** Romania's climate is predicted to change considerably over the next 50–100 years. Expected increases in air temperature vary between climate models but increases in the annual average temperature are

[1] Measured in 2011 Purchasing Power Parity Terms.
[2] To be classified as a disaster, an event must conform to at least one of the following criteria: 10 or more dead, 100 or more affected, declaration of state of emergency, or call for international assistance. Centre for Research on the Epidemiology of Disasters (CRED). EM-DAT: The OFDA/CRED International Disaster Database. Brussels, Belgium: Catholic University of Leuven.
[3] Data are from Guha-Sapir, Below, and Hoyois, EM-DAT.

expected to be in the range of 0.5°C to 1.5°C by 2029, and in the range of 2.0°C to 5.0°C by 2099. This change is expected to lead to more frequent and persistent heat waves and more spatially extended droughts. The total amount of annual precipitation is projected to decrease by about 10–20 percent (depending on the climate model scenario and geography within Romania) by the end of the century. Precipitation patterns are also expected to become more irregular, with flood risk increasing as intense localized rainfall events become more frequent (though shorter in duration). Observed and anticipated climate change impacts include more frequent severe inland flooding, more frequent flash floods, more intense and more frequent droughts, and a higher risk of soil erosion and desertification.

5. **Romania's earthquake risk is among the highest in the EU; in the last 200 years, earthquakes have claimed hundreds of lives and damaged tens of thousands of buildings.** In each of the last five centuries, Romania has on average experienced two earthquakes of magnitude 7 or above. Since 1802, there have been five earthquakes above magnitude 7.5, and seismic experts consider a high-magnitude earthquake possible at any time. The Romanian economy's vulnerability to earthquakes is exacerbated by the concentration of people and assets in areas with high earthquake hazard: more than 75 percent of the population (65 percent of the urban population) and 45 percent of all critical transport, energy, water, and communication services are in such areas.[4] Furthermore, 60–75 percent of Romania's fixed assets, which contribute to 70–80 percent of the country's gross domestic product (GDP), are in seismic zones.

Figure 1. Probabilistic Seismic Hazard Map for Romania (10 percent probability of exceedance in 50 years)



Source: Technical University of Civil Engineering of Bucharest, 2018.
Note: PGA = Peak ground acceleration. The probabilistic seismic hazard map is based on spectral ordinates for a mean return period (MRP) of 475 years. The higher PGA values are associated with more intense shaking of the earth in those locations.

[4] General Inspectorate for Emergency Situations. *Country Report: 5.1 Conditionality Romania 2016.* https://www.igsu.ro/documente/RO-RISK/Raport_Final_de_tara.pdf.

6. **In recent years, Romania has signed important international agreements related to disaster and climate risk management.** As an EU member state and signatory to the Paris Agreement, Romania is a party to the mitigation and adaptation commitments made in the EU's collective Nationally Determined Contribution (NDC).[5] Romania also adopted a National Climate Change Strategy for 2013–2020 in 2013, followed by the National Climate Change and Low Carbon Green Growth Strategy for 2016–2030 in 2016 and the associated Action Plan on Climate Change for 2016–2020. Each of these documents establishes sectoral priorities for responding to climate change, including in the energy, transport, agriculture and rural development, forests, biodiversity, urban development, and water and waste management sectors. Greater disaster preparedness, improved response capabilities, and specific investment and development actions to reduce hydrometeorological disasters are critical to the short- and long-term management of climate risks. Finally, Romania committed to the international Sendai Framework for Disaster Risk Reduction 2015–2030 at the Third United Nations (UN) World Conference for Disaster Risk Reduction in Sendai, Japan, in 2015. The 15-year Sendai Framework is a voluntary, nonbinding agreement that recognizes the state as having the primary role in reducing disaster risk but holds that responsibility should be shared with other stakeholders, including local Governments and the private sector. It aims to substantially reduce disaster risk and losses in lives, livelihoods, and health, and in the economic, physical, social, cultural, and environmental assets of persons, businesses, communities, and countries.

Institutional Context

7. **Numerous Romanian Government agencies are involved in emergency response activities.** The Ministry of Internal Affairs (MoIA) is the lead authority for all types of disasters in the country. Through its Department of Emergency Situations (DES), the MoIA coordinates key agencies involved in emergency response, including the General Inspectorate for Emergency Situations (GIES), the General Inspectorate of the Romanian Gendarmerie (GIRG), and the General Inspectorate of the Romanian Police. The GIES, with over 31,000 personnel, conducts a broad range of emergency preparedness and response activities: it operationalizes the National Platform for Disaster Risk Reduction, implements the National Emergency Management System for Emergency Disaster and Response (*Sistemul de Management Informaţional pentru Situaţii de Urgenţă*, SMISU), trains volunteer emergency responders, and actively engages with the private sector and local civil society to improve preparedness and response capabilities. In the event of an emergency, the Romanian Gendarmerie and the Romanian Police complement the response efforts coordinated by the DES and provide the necessary personnel on the ground to save lives and protect property. With more than 50,000 officers and staff, the Romanian Police coordinates and enforces evacuation routes and traffic control and first responder operations. The Romanian Gendarmerie, with more than 24,000 personnel, supports search and rescue operations (including mountain rescue) and evacuation missions, ensures security at evacuation points, distributes essential supplies to the affected population, and maintains law and order.

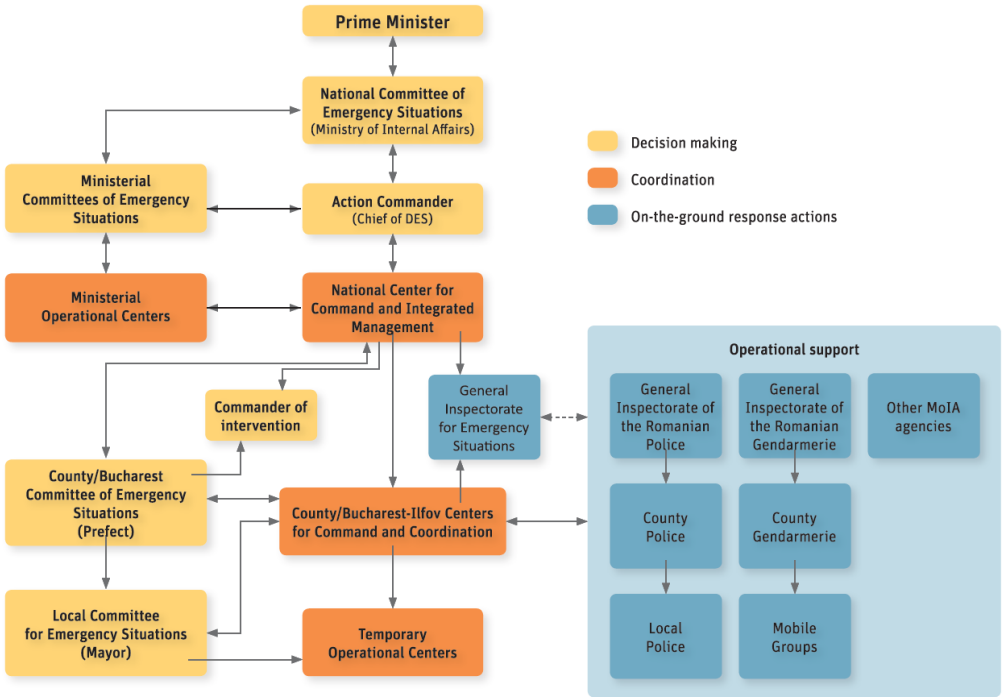
8. **The Romanian Gendarmerie is a specialized civil protection institution under the MoIA whose mandate includes ensuring public order and safety, protection of citizens' rights and property, countering terrorist acts, and providing operational support in emergency situations** (as noted in the previous paragraph). The institution comprises the General Inspectorate and subordinate units, including the General Gendarmerie Directorate of Bucharest, the Special Intervention Brigade of Gendarmerie, 8

[5] Nationally Determined Contribution of the EU and its Member States, see NDC Registry (interim), http://www4.unfccc.int/ndcregistry/PublishedDocuments/European%20Union%20First/LV-03-06-EU%20INDC.pdf.

mobile groups, 41 county gendarmerie inspectorates, educational institutions, and other specialized units for medical and logistical support. In 2017, for example, 4,079 gendarmes were mobilized to respond to 936 interventions during emergency situations across Romania, resulting in about 1,043 people being saved and 443 people being evacuated.

9. **Romania has established a clear decision making and coordination structure to enable agencies with different legal and functional responsibilities at all levels of Government to effectively plan, coordinate, and interact on the ground in the event of an emergency.** At the heart of the decision making and coordination structure are action commanders and various committees for emergency situations. The role of the action commanders and committees is to assess the nature and magnitude of an emergency and the available resources—human capacity, equipment, and supplies—to address the emergency. In the event of a major disaster, the National Committee for Special Emergency Situations (NCSES) can be convened to take political and administrative responsibility for decisions regarding the response strategy. The NCSES's permanent members are the MoIA, the Secretary of State of Internal Affairs, and representatives of all line ministries. In addition to the NCSES, there are also committees at the ministerial level that are responsible for ensuring emergency measures are taken in the areas that fall within their mandate. Finally, if the impact of an emergency is at the county or local level, without consequences for the society at large, the emergency can be dealt with by local authorities through the Bucharest Committee for Emergency Situations or one of the county or local committees for emergency situations. Regarding coordination, command and operational centers at both the national and county level serve as critical hubs that manage the full spectrum of emergency response actions. Finally, the GIES, the Romanian Police, and the Romanian Gendarmerie act as the first providers of immediate support at the scene of an emergency (Figure 2).

Figure 2. The Romanian Emergency Response Structure



Source: World Bank, 2019.

10. **These efforts are complemented by civil society and private sector organizations.** Among civil society organizations, the Romanian Red Cross is an important operational player. Established in 1876, the Romanian Red Cross has a wide presence across the country with 47 branches and 1,996 subbranches. During an emergency, it provides health care and essential supplies (medicine, food, and clothing) to the affected population. Another relevant civil society organization is the Awareness and Preparedness for Emergencies at Local Level (APELL) National Center for Disaster Management, which organizes large-scale field exercises to test the capacity of first responders. Recognizing that lifeline service disruptions (electric power, telecommunications, gas, and so on) can cause serious social and economic impacts, Romania requires private lifeline service providers to develop emergency contingency plans to protect critical lifeline infrastructure in the event of disruption.

Challenges

11. **Romania has adopted measures to strengthen its institutional and legal framework and to scale up its operational capabilities for effective emergency preparedness and response.** The Romanian legal framework for preparedness and response, complemented by European rules and regulations, meets international standards. Regarding operational capabilities, important milestones include the implementation and operationalization of SMISU emergency management information system and the training of volunteer emergency responders. In 2014, the Urban Search and Rescue Team, under the DES, received an accreditation for disaster response from the International Search and Rescue Advisory Group in line with UN standards. The Government has recognized the need to modernize its emergency equipment and in 2017 announced that it would endow the GIES with emergency equipment worth EUR 600 million, including 4,330 new ambulance service vehicles, along with new fire trucks and protection equipment for firefighters. The Government is also establishing a network of regional training centers for its operative personnel.[6] Finally, Romania has started to take active part in regional simulation exercises to test and evaluate the performance of first responders. In October 2018, for example, Romania organized the largest civil protection mechanism exercise ever conducted in the EU. This exercise, which simulated a 7.5 magnitude earthquake in Bucharest, mobilized over 1,000 people and involved urban search and rescue and medical teams from Austria, Germany, Israel, Italy, Norway, Romania, the Slovak Republic, and Sweden as well as experts from other states participating in the EU Civil Protection Mechanism.

12. **Despite these improvements, Romania continues to face challenges to ensuring effective disaster response**. The first challenge relates to institutional capacity to reduce the seismic vulnerability of essential emergency infrastructure, both in the short and long term. A significant part of Romania's public infrastructure is vulnerable to the impact of earthquakes. This poses a particular problem in the event of an emergency, because emergency personnel cannot carry out essential response activities if their own facilities, for example fire stations or police and gendarmerie buildings, are damaged. In the worst case, first responders will be among the first casualties. An immediate obstacle to effectively addressing this problem relates to the fact that Romania's public institutions have limited experience with the planning, procurement, and management of large-scale retrofitting interventions. Without this first-hand experience, it is difficult for public institutions to become familiar with the latest developments and progress in earthquake engineering, which should inform the design and guide the implementation of retrofitting interventions. As a result, reducing seismic vulnerability of public infrastructure remains a

[6] The centers will be in Bucharest, Iaşi, Suceava, Timiş, Hunedoara, Dolj, Constanţa, and Mureş.

significant technical challenge. Another obstacle relates to the limited institutional capacity for long-term infrastructure planning. The Romanian Police and Romanian Gendarmerie currently do not have an up-to-date strategic vision to address seismic risk nor do they have an evidence-based infrastructure plan that considers the scale of the problem, an estimation of the overall cost to address the problem, or a prioritization framework to guide investment decision making.

13. **The second challenge arises from the need to continuously improve the operational readiness of emergency institutions and personnel.** Given that emergencies often occur with little or no warning, effective response requires a high level of readiness to act, which relies on prior planning and a highly skilled and experienced workforce with access to essential emergency equipment. Although Romania has made significant investments in recent years, global experience shows that operational readiness can erode within a short period of time if the availability and quality of the first response workforce declines. To keep Romania in a state of readiness and ensure that first responders acquire knowledge, develop critical skills, and gain practical experience, a comprehensive training program (with simulation exercises) is essential. This program would need to be continuously improved to enhance the operational capabilities of Romania's first responders; for example, training materials would need to be kept up-to-date to conform with best practices and the latest legislation and accountability frameworks. Moreover, lessons from simulation exercises would need to be incorporated into existing emergency preparedness and response plans.

World Bank Engagement on Disaster Risk Management (DRM) and Climate Resilience

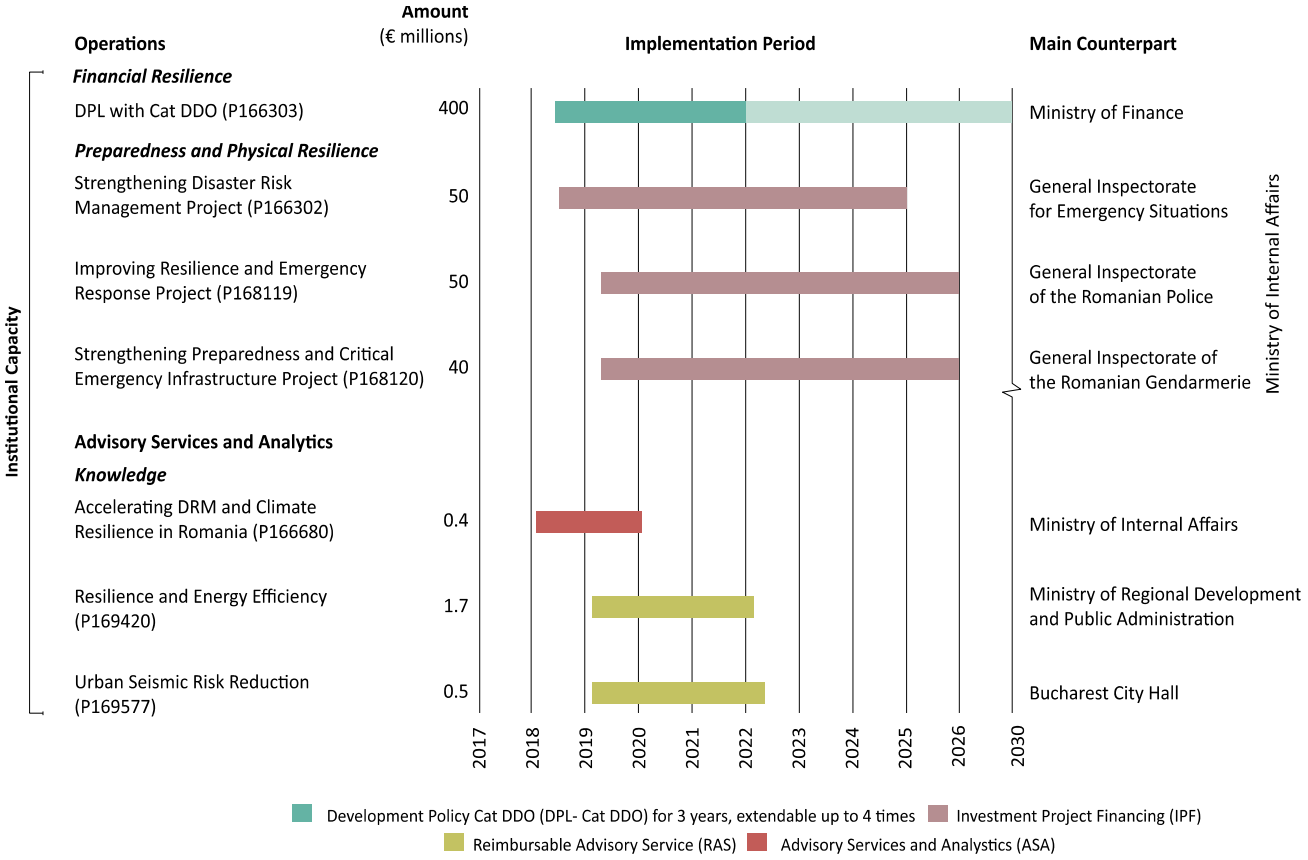
14. **The World Bank is supporting Romania in building resilience to the impact of natural disasters and climate change through a range of financial and advisory instruments.** In 2018, the Strengthening Disaster Risk Management Project (EUR 50 million) was approved by the World Bank Board of Directors. This project—the first in a Series of Projects (SOP)—seeks to enhance the resilience of fire stations and to strengthen the capacity of the GIES in disaster risk reduction and climate change adaptation. In 2018, the Board of Directors also approved a Development Policy Loan with Catastrophe-Deferred Drawdown Option (EUR 400 million), which supports overall DRM policy reform and provides access to contingent financing in the event of a disaster. In 2019, the World Bank will start analytical and advisory support to the Ministry of Regional Development and Public Administration through a Reimbursable Advisory Service). The goal is to develop a strategic framework for renovation and improvement of the seismic safety of residential and nonresidential buildings. Through another Reimbursable Advisory Service, the World Bank will support the city of Bucharest in advancing the agenda on seismic risk reduction. Finally, a Global Facility for Disaster Reduction and Recovery grant is providing technical assistance to guide and inform the overall World Bank engagement (see Figure 3).

15. **Considering lessons from prior experience, the Government initiated the SOP with the GIES, the Romanian Police and the Romanian Gendarmerie, and this proposed project is the third in the SOP.** One of the main lessons to emerge from the implementation of the Country Partnership Framework (CPF) for FY14–FY17[7] was that the design of projects was often poorly adapted to Romania's policy and institutional environment. In this context, the CPF for FY19–FY23[8] sought to simplify the design of operations, focusing

[7] World Bank. 2014. Romania - Country partnership strategy for the period FY2014-2017. Washington, DC.: World Bank Group. https://hubs.worldbank.org/docs/imagebank/pages/docprofile.aspx?nodeid=19552473.
[8] World Bank. 2018. Romania - Country partnership framework for the period FY19-23. Washington, D.C.: World Bank Group. https://hubs.worldbank.org/docs/imagebank/pages/docprofile.aspx?nodeid=30243347.

on a smaller number of clearly measurable objectives, with clear implementation accountabilities. The projects in the SOP are thus being designed as single-sector and single-agency projects to make the technical design and implementation arrangements less complex.

Figure 3. World Bank Engagement on DRM and Climate Resilience in Romania



Source: World Bank, 2019.

C. Relevance to Higher Level Objectives

16. **Building disaster and climate resilience is essential to support the World Bank's twin goals of ending extreme poverty and promoting shared prosperity**. Disaster events can undermine hard-earned development gains, potentially trapping vulnerable groups in poverty and preventing economic growth. Activities contributing to resilience are thus directly linked to sustained development and allow the poorest—those most affected by disasters—to escape cycles of poverty. Moreover, as demonstrated in the recent World Bank Report, Unbreakable: Building the Resilience of the Poor in the Face of Disasters,[9] there are multiple reasons why the poor are hit hardest by disasters, including their inability to cope and recover and the lasting impact of disasters on their health and education. DRM interventions can significantly reduce these potential impacts and protect existing development gains. Such interventions

[9] Hallegatte, Stephane, Adrien Vogt-Schilb, Mook Bangalore, and Julie Rozenberg.2017. *Unbreakable: Building the Resilience of the Poor in the Face of Natural Disasters.* Washington, DC: World Bank.

are also in line with the World Bank's corporate agenda, which adopted DRM as a priority item during the 2012 Annual Meetings in Tokyo (World Bank Sendai Statement).

17. **The proposed project is fully aligned with the objectives of the CPF for FY19–FY23, which seeks to reduce poverty in Romania and foster sustainable income growth for the bottom 40 percent of the population.** The CPF focuses on building better public institutions through three focus areas. The project will contribute to the third focus area 'Build Resilience to Shocks', through its focus on public buildings that are disaster resilient, climate resilient, and energy efficient. The project is also in line with the overarching goal of the CPF in seeking to improve public service delivery by building institutional capacity for prompt and effective emergency response. Moreover, the project meets three of the selectivity filters identified in the CPF: (a) it improves the response capacity of the government, which benefits the poor and vulnerable, including the Roma, who would be most affected during disasters, (b) it catalyzes the use of other funds to improve the resilience of critical public infrastructure, and (c) it contributes to regional and global public goods by integrating climate change considerations into sector priorities. The following table summarizes how this proposed operation meets the CPF filters.

Table 1: Applicability of CPF filters to the proposed operation

	Romania CPF filters	**How filters are met by the proposed operation**
Core WBG criterion	Strengthening institutions responsible for emergency response in Romania	Addressing limited institutional capacity for effective disaster response by (a) ensuring critical emergency response facilities are operational and the personnel are able to reach affected communities during an event, and (b) improving operational readiness and overall coordination among all agencies involved in emergency response. The proposed operation also addresses the government's lack of capacity to systematic plan for long term risk reduction to ensure critical emergency response facilities are resilient.
Additional IBRD criteria	1. Benefitting the most poor and vulnerable, including Roma	Specific focus will be placed on improving both public service delivery and the government's ability to respond effectively to poor and vulnerable communities, including the Roma, who are among the most affected following a disaster.
	2. Catalyzing other sources of funding (such as better absorption of EU funds)	Developing a long-term risk reduction strategy that will allow the government to use its own future resources, or funds from the EU, to systematically strengthen the resilience of all public infrastructure that is critical to prepare and respond to emergency situations. Further, the strategy will help the government leverage and maximize the use of EU funds for energy efficiency.
	3. Contributing to regional and global public goods	Integrating disaster and climate change risk considerations in sector priorities, including maximizing climate-related benefits through energy efficiency upgrades. The operation will also reduce the socio-economic impacts of climate-related events through effective and timely response following events.

II. PROJECT DESCRIPTION

A. Project Development Objective (PDO)

PDO Statement

18. The proposed PDO is to enhance the resilience of Romanian Gendarmerie Facilities that are critical to respond to Emergency Situations and disasters and to strengthen the institutional capacities for emergency preparedness and response.

PDO Level Indicators

19. Achievement of the PDO will be monitored and evaluated primarily through the following key PDO-level indicators (organized by outcomes):

- Gendarmerie personnel with access to resilient emergency response buildings[10]
  - Number of Gendarmerie personnel with access to resilient emergency response buildings[11]
- Beneficiaries in areas served by Gendarmerie personnel in resilient emergency response buildings
  - Number of direct project beneficiaries served by Gendarmerie personnel in resilient emergency response buildings
- Institutional capacity to reduce vulnerability of emergency response infrastructure is strengthened
  - Capacity of the Gendarmerie to plan risk reduction investments strengthened
- Capacity of Gendarmerie personnel to provide emergency operational support is strengthened
  - Percentage share of trained Gendarmerie personnel with newly acquired skills and emergency response equipment participating in operational interventions

20. The main intermediate results indicators by component are the following:

- Component 1: Enhance the Resilience of Selected Romanian Gendarmerie Infrastructure to be Used in Disaster Response
  - Number of Technical designs completed
  - Number of emergency response buildings which have been reconstructed to enhance resilience
  - Number of emergency response buildings which have been retrofitted to enhance resilience

[10] The designation of 'emergency response' is further elaborated in the description of Component 1.
[11] This indicator will be disaggregated by gender during implementation monitoring and data collection.

- Percentage of reconstructed or retrofitted emergency response buildings which have added or enhanced gender-responsive design features
- Percentage of reconstructed or retrofitted emergency response buildings which have design features for universal access

- Component 2: Operational Readiness and Public Awareness
  - Number of Gendarmerie personnel with access to new emergency response equipment
  - Number of Gendarmerie personnel who have received training in emergency response
  - Number of communities reached through informative community meetings

- Component 3: Project Management
  - Institutional capacity in place for project implementation (Yes/No)
  - Percentage of grievances responded to within stipulated time

B. Project Components

Component 1: Enhance the Resilience of Selected Romanian Gendarmerie Infrastructure to be Used in Disaster Response (EUR 34.1 million)

21. This component will support priority retrofitting and reconstruction investments and technical assistance to enhance the emergency situations response capacity of selected Romanian Gendarmerie facilities and guide future infrastructure planning that covers the entire building stock managed by the GIRG.

22. Given the limited institutional experience of the Romanian Gendarmerie with seismic retrofitting and reconstruction of buildings and the need to acquire first-hand experience to manage such investments, Component 1 will finance no-regret priority retrofitting and reconstruction investments which would also allow the Romanian Gendarmerie to build the necessary technical capacity. It will also enable the Romanian Gendarmerie to showcase tangible results that can be replicated at scale (see Subcomponent 1A). Building on this, it will support technical assistance to guide future infrastructure planning that covers the entire building stock managed by the GIRG (see Subcomponent 1B).

23. **Subcomponent 1A: Priority Investments.** This subcomponent will seek to improve the seismic safety and disaster resilience capacity of prioritized critical Romanian Gendarmerie facilities managed by the GIRG and selected for their specific functions to also respond to disaster and emergency situations through the carrying out of seismic retrofitting works and/or construction of new buildings, to be complemented by functional upgrading and adoption of energy efficiency measures. A total of 27 buildings managed by the GIRG have been tentatively identified as a high priority for intervention and are being proposed for potential inclusion under the project. These buildings are at high risk of significant damage or collapse during an earthquake. Further, the inability of these buildings to remain operational following an earthquake would have a negative impact on the Government's emergency response capacity, with devastating consequences for affected communities. These buildings—which are operational headquarters, housing headquarters, training centers, and education headquarters—are located across 14 counties in Romania.

24. The preidentified Romanian Gendarmerie facilities are classified as emergency response buildings due to their critical role in Romania's overall emergency preparedness and response system. As such, these facilities are part of a broader network of essential facilities and systems required for the provision of direct public services in the event of an emergency, including providing emergency communications, emergency response, and life safety (for example, firefighting facilities, emergency hospitals, and evacuation centers.). The Romanian Gendarmerie staff in the buildings will also perform their other duties of providing public order and safety, protection of citizens' rights and property, and countering terrorist acts according to the gendarmerie's mandate.

25. The pre-selected buildings will comprise operational headquarters, education headquarters, and housing spaces. The operational headquarters will specifically house Romanian Gendarmerie personnel who perform the following main functions: operational support to emergency situations, public order and safety, medical and logistical support, and protection of citizens' rights and property. The education headquarters at local, county, and national level will act as training facilities and provide operational support to emergency situations as needed. Finally, the housing spaces will provide living quarters and housing amenities to Gendarmerie staff who will be taking part in emergency preparedness education and emergency situation trainings; and will also provide spaces to staff mobilized to support an emergency if additional support is required. These functions would be critical to responding to a disaster event or any other type of emergency (for example, performing search and rescue and evacuations), in particular those that would require 24-hour support from specialized teams working in shifts.

26. **Framework approach.** As a design principle of the project's framework approach, the required technical studies for close to 19 percent of the buildings on the long list are planned to be completed and their full cost estimates developed within the first 12–18 months of implementation.[12] The remaining technical studies are expected to be undertaken by the end of fourth year of implementation to establish the number of buildings that could be included within the available project funds under this component. The total number of buildings may also be impacted by fluctuations in exchange rates and market prices. To determine the sequencing of the technical evaluations, the buildings on the longlist have been ranked according to a prioritization process and criteria (annex 5).

27. **Planned Activities.** Seismic retrofitting works will be complemented by functional upgrading and adoption of energy efficiency measures. The following will be eligible:

(a) Preparation, review, and analysis of, among others, the technical surveys, energy efficiency audits, feasibility studies (including relevant documentation), technical designs, technical verification, authorizations and permits, and designer consultant services during execution of works needed to carry out this component

(b) Retrofitting or reconstruction civil works, including improvement of buildings functionalities according to the current Romanian construction laws, regulations, and standards

(c) Improvement of energy efficiency, and strengthening of electrical, water supply, and telecommunication system resilience (for example, through the installation of generators and backup communications)

(d) Functional operationalization of the new and retrofitted buildings, when needed (for example, furniture, safety equipment, and other building amenities)

[12] The technical studies for a first batch of five buildings will be undertaken using the Government's own funds before the start of the project.

(e) Supervision of construction works

28. **Subcomponent 1B: Long-Term Infrastructure Investment Planning.** The 27 buildings represent a small part of the overall inventory of potentially at-risk buildings managed by the GIRG that would require reconstruction or retrofitting. Therefore, this subcomponent will support technical assistance to enable the Romanian Gendarmerie to strengthen their capacity for implementing a long-term disaster risk reduction strategy to address this challenge. The following will be eligible activities: (a) updating the Romanian Gendarmerie's infrastructure planning model, (b) updating the existing framework for the assessment of the entire building stock, and (c) designing and implementing the first stages of a training program for Romanian Gendarmerie staff on infrastructure planning.

Component 2: Operational Readiness and Public Awareness (EUR 3.7 million)

29. Component 2 will strengthen the institutional capacity of the Romanian Gendarmerie to ensure operational readiness in the event of an emergency through a series of trainings and acquisition of essential emergency equipment. In addition, this component will finance various public awareness activities to inform citizens about the role of the Romanian Gendarmerie in an emergency and to raise overall awareness of the project.

30. **Subcomponent 2A: Operational Readiness for Emergency Response.** This subcomponent will finance the acquisition of emergency response equipment and provision of trainings to strengthen the operational readiness of Romanian Gendarmerie personnel. The types of equipment covered include personal protective equipment, equipment for warning and informing the population, upgrading operational information technology, operational and search and rescue equipment, interoperable communications equipment, and logistics equipment. All the equipment financed by the project are directly related to improving the preparedness and emergency response capacity of the Romanian Gendarmerie, and do not include weapons, lethal equipment, or any other equipment of such nature not related to emergency preparedness and response.

31. **Subcomponent 2B: Public Awareness.** This component will finance the following: (a) meetings with beneficiaries (that is, communities directly served by those Romanian Gendarmerie personnel who are located in the buildings targeted under Component 1) to provide information about the planned investments, the role of the Romanian Gendarmerie in emergency response, and the benefits of retrofitting and reconstruction; (b) public awareness campaigns using various communication tools, including billboards, posters, brochures, and social media; and (c) surveys to allow the Romanian Gendarmerie to better understand the views of the beneficiaries and to track their views during the lifetime of the project. All activities will take into consideration access to, and encouraging participation of, groups identified as vulnerable during consultations with the Roma Sounding Board (RSB) and public consultations on the Environmental and Social Management Framework (ESMF) (for example, the Roma, the disabled, and the illiterate). Further, activities will include sensitizing Romanian Gendarmerie personnel who facilitate community meetings, campaigns, and surveys on issues specific to these groups; communicating information in a form and language that can be easily understood; ensuring meetings and surveys are carried out at accessible locations; and conducting small focus groups where participants can express their views openly.

Component 3: Project Management (EUR 2.2 million)

32. Component 3 will strengthen the institutional capacity of the Romanian Gendarmerie in project management. This component will support operating costs to ensure timely and efficient implementation of the project. It will also cover costs related to activities designed to build the Romanian Gendarmerie's technical, procurement, financial management (FM), monitoring and evaluation (M&E), and environmental and social safeguards capacities. This component will also support the establishment and operation of a grievance redress mechanism (GRM) to address and mitigate adverse impacts on citizens that may arise during implementation.

33. **Eligible expenditures/costs.** These include (a) staff salaries (external technical specialists and experts to support procurement, management of social and environmental safeguard issues, FM, M&E, and project reporting); (b) operating costs for project implementation; (c) costs for goods; (d) consulting services and non-consulting services; (e) trainings and workshops; and (f) audits.

Cross-Cutting Themes

34. **Climate change.** The project will contribute to national climate change objectives and World Bank climate targets by generating climate co-benefits, estimated at approximately 65 percent of total project costs. These co-benefits will be achieved by ensuring that all civil works financed under the project incorporate design measures to reduce energy consumption. They will also be achieved through provision of trainings and equipment to strengthen the operational readiness of the Romanian Gendarmerie in the event of an emergency. The ability of the Romanian Gendarmerie to respond on time and effectively reduces the impact of current and projected future climate variability and change, including extreme precipitation and flooding. The economic and financial analysis section in annex 4 provides a more detailed overview of specific co-benefits.

35. **Gender.** Many Romanian Gendarmerie buildings were constructed before women were part of the workforce, and the buildings thus offer limited facilities specifically for women. In recent years, the gender profile of the Romanian Gendarmerie has changed to include more women. Considering this changing demographic, the project will ensure that the civil works include design measures that are gender sensitive (for example, separate and safe bathrooms, dormitories, and sanitary facilities). The project will also strengthen the capacity of the Romanian Gendarmerie to incorporate gender into the training curriculum for emergency response. Progress will be tracked through (a) one PDO indicator disaggregated by gender (number of Romanian Gendarmerie personnel with access to resilient emergency response buildings, of which percentage female) and (b) one gender-specific intermediate results indicator (percentage of reconstructed or retrofitted emergency response buildings which have added or enhanced gender-responsive design features).

36. **Universal access and disability.** Many of the buildings were not constructed with consideration for universal design considerations (that is, accessibility for older people and people with disabilities). All new construction and upgrading will therefore comply with EU and Romanian regulations on universal access; for example, construction and upgrading works will ensure that publicly accessible buildings with public access provide facilities (such as toilets) that are disability-inclusive. Progress will be tracked through one disability-specific intermediate results indicator (percentage of reconstructed or retrofitted emergency response buildings which have design features for universal access).

37. **Citizen engagement.** Citizen engagement efforts have included consultations with the RSB, civil society groups, nongovernmental organizations, and other stakeholders during project preparation. For project activities under Subcomponent 1A, as part of the effort to manage potential risks to neighboring properties during construction, the project will foster a participatory and inclusive process during the planning and implementation of the civil works at the local project sites. The project will also consider public participation as part of the training and capacity building for the Romanian Gendarmerie under Subcomponent 1B. In line with activities financed by Subcomponent 2B, the project will explore specific ways of making public outreach more inclusive, such as the availability of key information materials in braille, through audio campaigns, and/or in Romani language, as necessary. Moreover, surveys will be conducted during project implementation to allow the Romanian Gendarmerie to better understand the views of the beneficiaries and to track their views during the lifetime of the project, and a communications and grievance redress mechanism will be established to address and mitigate adverse impacts on citizens that may arise during implementation. Progress will be tracked through two intermediate results indicators: (s) the number of communities reached through informative community meetings, and (b) the percentage of grievances responded to within a stipulated time.

C. Project Cost and Financing

38. **The total project cost is EUR 40 million (US$ 45.6 million)** and will be financed through an Investment Project Financing (IPF) loan. The implementation period for this project is six years. An indicative breakdown of costs per component is provided in 2.

39. **The total in-kind contribution from the Government in support of implementation will amount up to EUR 1.52 million.**[13] The Government will contribute to the project through Government staff seconded to the Project Implementation Unit (PIU) in several functions, including but not limited to the following: project manager, deputy project manager, FM specialist, procurement specialist, environmental and social safeguards specialist, technical experts, and M&E experts. An estimated EUR 600,000 in their staff time will support overall project implementation and an additional EUR 500,000 in staff time will be dedicated toward implementing Subcomponent 1b. The Government will also contribute about EUR 421,659.57 to support the functioning of the project management unit, including rent and repairs for the space in which the PIU will operate furniture, household appliances, utilities, fuel, and maintenance of vehicles.

Table 2. Summary of Program Components and Financing (EUR, millions)

Project Components	Project Financing	IBRD Financing
Component 1: Enhance the Resilience of Selected Romanian Gendarmerie Infrastructure to be Used in Disaster Response	34.1	34.1
Component 2: Operational Readiness and Public Awareness	3.7	3.7
Component 3: Project Management	2.2	2.2
Total Financing	**40.0**	**40.0**

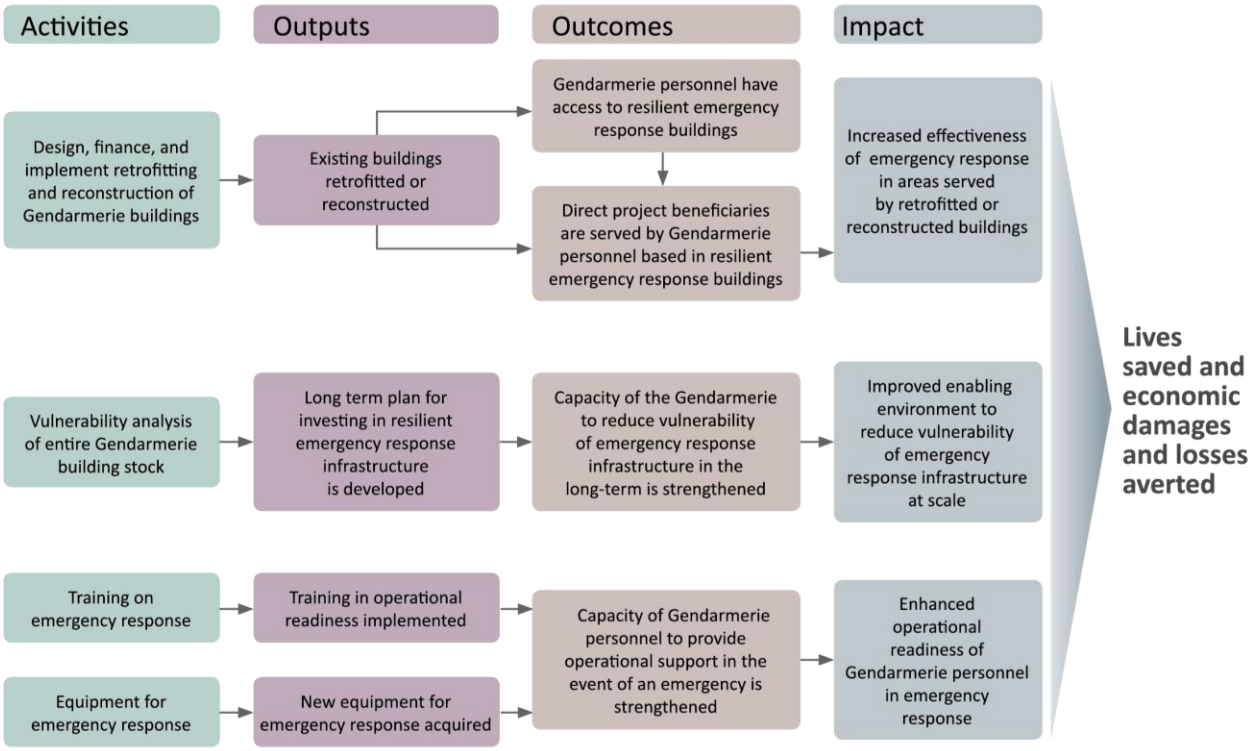
[13] Does not include the contribution from the Government in support for activities in Subcomponent 2b.

D. Project Beneficiaries

40. The project's beneficiaries will include approximately 4,248 Romanian Gendarmerie personnel (including administrative and operational personnel) who will have access to resilient emergency buildings. Romanian Gendarmerie personnel will also benefit from trainings and equipment that increase their operational readiness, as well as from technical assistance for long-term infrastructure planning that builds their capacity to integrate disaster risk into infrastructure investment planning processes. Other direct beneficiaries include up to 7.4 million citizens who will be directly served by the Romanian Gendarmerie in an emergency.

E. Results Chain

Figure 4. Results Chain



F. Rationale for Bank Involvement and Role of Partners

41. **Rationale for World Bank involvement.** The World Bank's interventions will bring added value by contributing to the delivery of global public goods and by demonstrating the benefits of investments in seismic retrofitting that can be replicated in Romania and globally. At the national level, the project will contribute to strengthening the Romanian emergency response system, which in turn can help save lives and reduce the socioeconomic impacts of future natural disaster events. Additionally, the project will contribute to the reduction of greenhouse gas emissions through the energy efficiency upgrades that will be undertaken during retrofitting of the buildings. Finally, the lessons learned from the project (and the SOP) can be shared globally through the World Bank's knowledge portal as a potential model for other

countries that face similar challenges in undertaking and scaling up seismic retrofitting and reconstruction efforts.

42. **Role of Partners.** Although the buildings addressed under the project represent only a small subset of the overall needs, the interventions represent a 'first wave' of physical investments by the Government to reduce disaster risks across its stock of critical public buildings. The experience gained, retrofitting capacity developed, and investment planning undertaken during implementation will help create an enabling environment in which the Government can leverage partner funds, including EU and other international financial institution funding, to address the rest of its at-risk building stock.

G. Lessons Learned and Reflected in the Project Design

43. **The World Bank has extensive experience in supporting DRM projects.** The project design draws on lessons from several World Bank projects, including the Romania Hazard Risk Mitigation and Emergency Preparedness Project (P075163), the Colombia Disaster Vulnerability Reduction Project First Phase APL (P082429), and the Istanbul Seismic Risk Mitigation Project (P078359). The most relevant lessons, and the way in which they have been incorporated into the project design, are discussed below.

- **Single sector focus.** Prior experience in Romania suggests that projects with a complex implementation structure (that is, involving multiple institutions) are likely to face significant challenges throughout the life cycle of the project and fail to deliver on expected results.

- **Reaching scale.** Citizens cannot always observe—and therefore may not appreciate—risk reduction measures, and these measures may not yield benefits in the immediate future. As a result, even decision makers informed of disaster risk may choose to allocate public resources to other projects with more visible benefits. It is therefore important to consider investments in risk reduction under a World Bank project as an integrated part of the Government's overall infrastructure planning process.

- **Achievement of investment targets.** Underestimating the retrofitting and replacement costs leads to cost overruns and reduces the number of buildings retrofitted/reconstructed. Recognizing this common challenge, the project includes an annual review that will be prepared and monitored during implementation to ensure timely adjustments of costs and targets.

- **Functional upgrades and energy efficiency.** The inclusion of energy efficiency measures and functional upgrades (to modern service provision standards) makes retrofitting of public facilities more effective and sustainable. The additional costs of these upgrades are often marginal compared to the costs of seismic retrofitting and combining these types of intervention reduces the time that buildings are not operational.

- **Public awareness and community involvement.** Early involvement of project beneficiaries in the planning and execution of the retrofitting/reconstruction is crucial to successful project implementation. In particular, tailored public awareness campaigns that complement physical investments in seismic resilience provide a low-cost opportunity to ensure buy in and support from beneficiaries.

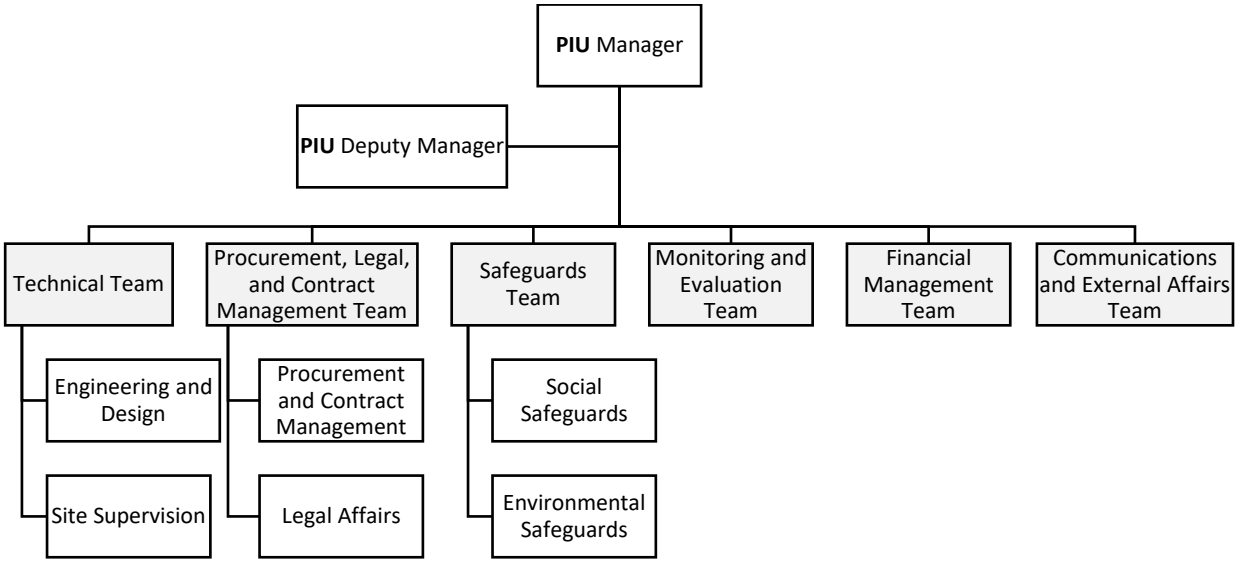
III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and Implementation Arrangements

44. **PIU.** The project will be implemented by the MoIA through the GIRG. A dedicated PIU will be established within the GIRG, and the PIU will be responsible for overall coordination and oversight, as well as relations with and reporting to the World Bank on project activities and progress. The PIU will also be responsible for all day-to-day implementation activities, including technical, procurement, FM, social and environmental safeguards, and M&E. An organizational chart of the PIU arrangements is provided in Figure 5. Regarding staffing, the project will primarily be implemented and managed by staff from the GIRG and MoIA and will use existing staff capacity. During implementation, Component 3 (Project Management) will be used as needed to augment the PIU team with additional capacity in administrative support, technical, procurement, FM, and environmental and social safeguards, as well as in monitoring, reporting, and evaluation. Component 3 will also support the PIU in building staff capacity in technical, procurement, FM, M&E, and environmental and social safeguards.

45. **Project implementation readiness.** The GIRG is using counterpart funding for the preparation of the technical documentation of the first batch of investments identified following a prioritization process (annex 5). To ensure project implementation readiness, the counterpart will finance the following three technical studies and other relevant technical documentation for each of the five buildings in the first batch under Subcomponent 1A: (a) a technical survey, (b) an energy efficiency audit, and (c) a feasibility study. These technical studies and documentations will be completed before the project starts to ensure that the PIU is ready to start procurement of technical designs upon project launch.

Figure 5. PIU Organizational Chart



B. Results Monitoring and Evaluation Arrangements

46. **Data collection**. The PIU will collect data for results indicators from the field through its M&E Unit, monitor the quality of data collection, and evaluate results (including through specialized consultants). The PIU will then review and verify the data and evaluate results before including these results in progress reports to be sent to the World Bank. If deemed necessary by the MoIA, the PIU will receive support from externally hired M&E specialists to ensure high-quality monitoring and reporting up to the standards of the World Bank.

47. **Reporting.** The PIU will prepare a biannual progress report that covers the following: (a) physical and financial progress achieved against agreed implementation and disbursement indicators, (b) issues and problem areas, including comments on actions to address identified problems, and (c) work programs and cost estimates for the coming year, including revised estimates for the former period. The reports will also include data on grievances and resolutions to allow for timely corrective action.

C. Sustainability

48. **Institutional sustainability.** This project will support the Government in establishing the institutional capacity to improve resilience of the at-risk building stock, particularly infrastructure that is critical for effective response. The establishment of an efficient and effective institutional system for retrofitting and replacing existing public buildings is expected to enable the Government to build on this experience and target a larger number of buildings in the medium to long term. Moreover, the first-hand technical experience with the planning and implementation of retrofitting investments, combined with the institutional capacity to plan for future investments, is expected to enable the Government to mobilize financial resources not only from the World Bank, but also from other international financial institutions or the EU.

49. **Technical sustainability.** The engineering designs, technical designs, and verification including technical assistance and construction supervision will seek to use international best practices to assure quality of work. Following the completion of the physical works financed under the project, the operations and maintenance costs are expected to remain minimal in the short term. Moreover, the project will support energy efficiency improvements in buildings to be retrofitted or reconstructed, and the increased energy efficiency is expected to reduce the overall operations and maintenance costs in the medium to long term. Increased energy efficiency will also support climate change adaptation and sustainability.

50. **Financial sustainability.** The fiscal impacts of disasters require significant capital expenditures for repairing and reconstructing damaged infrastructure facilities. The project will reduce the Government's contingent liability by making vulnerable priority infrastructure facilities more resilient to adverse natural events and by building the capacity to scale up investments in resilient infrastructure.

IV. PROJECT APPRAISAL SUMMARY

A. Technical Analysis

Preparation of Pipeline

51. **Initial screening and prioritization of investments.** The exact number of buildings and their retrofitting/rehabilitation or reconstruction needs under the project are yet to be identified. The indicative list of investments includes 27 buildings. For each of the 27 buildings identified, the GIRG has completed building data sheets and ranked the buildings according to a prioritization approach. The data sheets, developed by the World Bank team and Technical University of Civil Engineering of Bucharest, requested core building structural and functional information, which is relevant for the building prioritization process. The prioritization approach included developing a weighted ranking system and reviewing the 27 buildings based on one main criterion and three sub criteria (importance within the emergency response system, seismic hazard, year of construction, and structure type, respectively). The buildings were subsequently grouped into four batches and the technical surveys for the first (5 buildings)[14] and second batches (7 buildings)—for a total of 12 buildings—will be completed by the first 12–18 months of implementation.

52. **As technical evaluations are completed for each batch within the implementation phase of the project, the GIRG will appraise the nature of the interventions for assessed buildings and confirm exact cost estimates to the World Bank.** Subsequently, following review of the technical documentation and assessment of the available budget, the GIRG and the World Bank will confirm inclusion of the assessed buildings for financing under the project. The review process will be conducted on a rolling basis as implementation progresses, and the list of buildings included in the project will be jointly reviewed and confirmed semiannually.

Preparation of Specific Investments

53. **The overall process for the physical works, from preparation of technical documentation to subsequent construction for each building, is as follows**: (a) preparation of the technical surveys, energy efficiency audits, and feasibility studies; (b) review, technical verification,[15] and approval of feasibility studies by the client; (c) preparation of technical detailed design documents, including the site-specific Environmental and Social Management Plan (ESMP), and technical assistance; (d) technical verification; (e) review and approval of the technical detail designs by the client; (f) application for building demolition (if applicable) and construction permits; and (g) construction works and site supervision.

54. **Technical surveys and feasibility studies**. The first step will be to conduct a technical survey. In cases where technical surveys have already been completed by the GIRG, they will need to be shared with the World Bank technical team for review. Once the surveys are completed, the subsequent feasibility studies must include a minimum of two solutions based on the technical survey recommendations, the

[14] The technical surveys for the first batch will be undertaken before the start of the project using the Government's own funds.
[15] In accordance with Article 7 (c) of Government Decision No. 742/2018 related to the regulation for verification and technical expertise of the quality of the projects, the execution of works and constructions.

energy efficiency audit, and the building's level of upgrading. The feasibility studies will also include a cost-benefit analysis (CBA) to ensure that the cost of retrofitting is below the agreed replacement cost ratio.

55. **Replacement versus retrofitting.** The technical approach under the project will begin by considering the retrofitting of structures where technically and financially feasible; where the existing building quality does not allow for reasonable retrofit, the project will consider building reconstruction. Reconstruction will be undertaken when the cost of retrofit and modernization approaches the replacement cost of the building. As required by the Romanian code, the threshold is considered at the point at which the retrofit cost is lower than 60 percent of the cost of replacement with a new seismically resilient structure on the same site. The evaluation of the replacement value will include all costs associated with reconstructing a building at today's standard and codes, including demolition of the existing building and other costs associated with the construction process.[16] Based on a preliminary assessment of the investments on the tentative list, reconstruction works are expected for about one-third of the buildings, whereas retrofitting works are expected for the remaining two-thirds.

56. **Detailed designs.** Technical designs will follow the latest Romanian construction code, which experts acknowledge is suitable for the seismic conditions of Romania. The project will also finance a technical team of structural civil engineers as part of the PIU to review the retrofitting and reconstruction designs. The overall quality control of design and construction will be provided through (a) design review by qualified and experienced national and/or international structural civil engineers, (b) site supervision and technical control by PIU engineers with experience in seismic retrofitting and reconstruction supervision, and (c) on-site experienced Romanian or internationally procured construction supervision consultants.

57. **Building functionality.** The World Bank team and Romanian Gendarmerie have agreed that when defining each building's need for upgrading according to normative documents, the Romanian Gendarmerie will consider the building's future functionality requirements, including full operational capacity in case of design earthquake,[17] as well as electrical and mechanical systems, gender aspects, environmental and social safeguards, and universal access.

58. **Non-eligible investments.** Buildings found to be in flood- and landslide-prone areas (based on the information provided in the building data sheets) will be excluded from the project. Further, it is expected that buildings will be retrofitted, improved, or reconstructed within their existing boundaries without new land acquisition.

B. Economic and Financial Analysis

59. **Preliminary calculations indicate that with EUR 34.1 million of funding under Component 1, up to 27 emergency and disaster response buildings can be reconstructed or retrofitted over an estimated**

[16] In addition, replacement costs should also include costs associated with debris removal, fees, premium material costs, and any site improvements.
[17] In the design earthquake, the amplitudes of the ground motion (defined by the seismic code) are used to check the compliance of the seismic response with the criteria assigned to the ultimate limit state.

five-year construction period.[18] This corresponds to more than 38,000 m^2 of floor space, providing protection to more than 3,800 building occupants (gendarmerie officers, administration staff, and so on), and ensuring that more than 7 million residents have continued emergency response during an earthquake or other disaster. Although preliminary calculations suggest that the financing available can cover 27 buildings, the Results Framework refers to 20 buildings to allow for fluctuations in construction costs, exchange rates, or other uncertainties.

60. **The World Bank Triple Dividend of Resilience Framework (TDRF) identifies three types of benefits from risk reduction and disaster mitigation projects,** consisting of (a) avoided losses and lives saved, (b) unlocked development potential arising from stimulated innovation and bolstered economic activity in a context of reduced disaster-related background risk for investment, and (c) enhanced synergies of the social, environmental, and economic co-benefits of DRM investments, even if a disaster does not take place for many years.[19]

61. **Avoided losses (first dividend of resilience).** Calculations show that for the scenario earthquake event assessed—an annual exceedance probability of earthquake hazard of 39 percent in 50 years, corresponding to an earthquake with magnitude of approximately 7.5—the avoided direct damages to the emergency response buildings amounts to EUR 10.7 million. Additionally, avoided losses from saved equipment, tools, furniture, computers, and other supplies housed in the emergency response buildings are estimated at EUR 0.6 million. Thus, a total of EUR 11.3 million in avoided direct losses is expected from this project.

62. **Lives saved (first dividend of resilience).** The buildings under the project host more than 3,800 occupants and provide support to rescue services for emergency and disaster events for approximately 7 million residents. Inclusive of the people saved by Romanian Gendarmerie interventions, the project is expected to result in about 3,636 lives saved due to earthquake-resistant emergency response buildings and fully functional services that can support rescue services in the surrounding areas. Based upon EUR 575,723 per person as the estimated value of a statistical life (VSL), the value of lives saved by Romanian Gendarmerie intervention is estimated at approximately EUR 251 million. Additionally, since the total project investment is EUR 40 million, the average value to save a life from a statistical standpoint ranges from approximately EUR 11,000 (Gendarmerie personnel and people saved) to EUR 92,000 (people saved only), both of which compare favorably with the assumed VSL of EUR 575,723.

63. **Unlocking development potential (second dividend of resilience).** Data and research are very rare on this point. As a benchmark, the Hallegatte framework has been applied.[20] This approach estimates the value of concurrent economic development as equivalent to 8 times the value of avoided asset losses at the lower end of the spectrum and 15 times at the higher end. Since emergency response facilities constitute only a small part of an overall earthquake hazard mitigation program, it is assumed that the economic development benefits associated with investments in response buildings would be approximately equal to the value of the avoided asset losses at the lower end and three times as high at

[18] For the cost-benefit analysis, the investment period refers to the period after project effectiveness when civil works under Component 1 have been initiated.
[19] Tanner, T. M., R. Reid, E. Wilkinson, S. Rajput, S. Surminski, and J. E. Rentschler. 2015. "The Triple Dividend of Resilience: Realizing Development Goals through the Multiple Benefits of Disaster Risk Management." World Bank, Washington, DC.
[20] Hallegatte, Stephane. 2012. "A Cost-Effective Solution to Reduce Disaster Losses in Developing Countries: Hydro-Meteorological Services, Early Warning, and Evacuation." Policy Research Working Paper 6058. World Bank, Washington, DC

the higher end. This logic allows the use a weighted factor of 2 to multiply the avoided asset losses (and related benefits), yielding an average of approximately EUR 22.6 million in benefits due to triggered economic development.

64. **Mitigation co-Benefits (third dividend of resilience).** Although data paucity is a problem in this category of benefits as well, energy efficiency improvements in existing public buildings are in the positive list of co-benefits related to mitigation of climate change and yield savings on lighting, water, and heating investments. Under the project, more than 38,000 m^2 of emergency response facilities will be rebuilt or structurally strengthened and refurbished. If one-third of buildings are reconstructed to 2020 energy efficiency targets and two-thirds refurbished to a 'moderate energy efficiency target', then energy consumption and associated costs and emissions will be more than halved. Assuming monthly energy costs of EUR 1.2 per m^2, this equates to a total saving of more than EUR 8 million in energy costs over a 30-year planning horizon.

65. **Summary of CBA results.** At full development and over the 30-year planning horizon, the project yields an internal rate of return (IRR) of 6.57 percent, with a benefit-cost ratio of 1.16 for the design earthquake scenario considered.[21] The results represent an acceptable investment prospect. It is also noteworthy that the project's efficiency parameters in both earthquake scenarios are highly sensitive to the VSL estimate and the number of lives saved, which play a vital role in rendering the project feasible in economic terms.

Table 3. Summary of CBA Results

Earthquake Scenario	Benefit-Cost Ratio	Net Present Value (NPV) (EUR)	IRR (%)	Payback Period (years)
39% exceedance probability in 50 years	1.16	4,796,015	6.58	24

C. Fiduciary

Financial Management

66. **FM assessment.** An assessment of the FM capacity of the GIRG–the entity responsible for the fiduciary function of the project–has been carried out for staffing, budgeting, accounting, internal controls and audit, flow of funds, financial reporting, and external audit. The assessment concluded that the FM arrangements are acceptable. The findings of the assessment are detailed in annex 3. The FM procedures applicable to the project, including internal controls, will be detailed in the Project Operations Manual (POM) to be prepared and agreed with the World Bank by loan effectiveness. The FM risk is assessed as Moderate.

67. **Applicable FM arrangements.** The FM arrangements of the project will rely on the systems and structures in place at the GIRG, where the finance and accounting function is well represented. Staff will be trained in the World Bank's fiduciary procedures and supplemented during project implementation.

[21] The CBA was conducted using avoided losses (First Dividend of Resilience) only and did not include the benefits stream from the Second and Third Dividends due to a lack of readily available data.

The project will use the existing disbursement mechanism applicable to the World Bank-funded operations in Romania: expenditures will initially be pre-financed from the state budget and then the IBRD-eligible amounts will be claimed by the Ministry of Public Finance (MoPF) for reimbursement by the World Bank. The loan proceeds will be transferred to the MoPF account opened with the National Bank of Romania and used according to the Romanian legislation on public debt. Adequate and timely budget allocations are critical for effective implementation of the project. The GIRG will coordinate with the MoIA and the borrower to prepare realistic forecasts and to follow up on any cash-flow shortages. The GIRG will maintain appropriate accounting records for the project in the existing systems. The GIRG's Internal Controls Framework is reliable and will be used for the project. FM procedures will be detailed in a separate chapter of the POM, reflecting the arrangements in place. Semiannual cash-based, unaudited interim financial reports will be submitted to the World Bank in the agreed format, 45 days after the end of each reporting period. The project financial statements will be audited by independent auditors acceptable to the World Bank, in accordance with the terms of reference agreed with the World Bank. The annual audit reports will be due for submission to the World Bank six months after year end.

Procurement

68. **Applicable procurement arrangements.** Procurement under the project will be carried out in accordance with the World Bank Procurement Regulations for IPF Borrowers: Procurement in IPF of Goods, Works, Non-Consulting and Consulting Services (issued in July 2016, revised in November 2017 and August 2018; referred to below as 'Procurement Regulations') and with the latest Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants.

69. **Capacity assessment.** In November 2018, the World Bank team carried out an assessment of the GIRG's capacity to implement procurement, and results were recorded in the Procurement Risk Assessment and Management System. Given the risks identified and the results of the assessment, procurement risk is considered high. The findings of the assessment are detailed in annex 3.

70. **Project Procurement Strategy for Development (PPSD).** Based on the project requirements, operational context, economic aspects, technical solutions, and market analysis, a PPSD has been developed for the project by the GIRG with support from the World Bank team. The World Bank reviewed, commented on, and agreed with the document. A summary of the PPSD is provided in annex 3.

D. Safeguards

Environmental Safeguards

71. **The project will not finance any activities with significant or irreversible environmental impacts.** It triggers OP 4.01 and is classified as Environmental Category B. The main project interventions refer to the rehabilitation, retrofitting, and limited new construction of (tentatively) 27 buildings—operational headquarters, housing headquarters, training centers, education headquarters—managed by the Romanian Gendarmerie in 14 counties across Romania. Although the environmental and social impacts of the project will be largely positive (in that the project will reduce selected buildings risk of damage or collapse in the event of an earthquake), some adverse impacts may be generated from construction

activities. These include increased pollution from construction waste; dust, noise, and vibration from the movement of construction vehicles and machinery; risks due to improper disposal of construction waste or to minor operational or accidental spills of fuel and lubricants from the construction machinery; and improper reinstatement of construction sites upon completion of works. All these potential environmental impacts are readily identifiable, small in scale, and minimal in impact. They can be effectively prevented, minimized, or mitigated by including in the work contracts specific measures to be taken by contractors and by having the PIU closely supervise compliance.

72. **Effective measures have been put in place under the project to address and closely monitor the safeguards issues.** An ESMF for the project consistent with Environmental Assessment requirements for both Romania and the World Bank was prepared by the GIRG and found satisfactory by the World Bank. The ESMF has been discussed at the public consultations meeting, posted on the GIRG's website, distributed to the GIRG subunits involved in the project, and sent to the World Bank's website. The ESMF will be incorporated into the POM. Site-specific ESMPs, based on the ESMF, will be prepared for each site where construction works will be implemented. Issues to be addressed through the ESMF and ESMPs include proper waste management and disposal of construction debris (including asbestos), proper wastewater treatment, heating and fuel system assembly, dust and noise control, sensitivity of designs to cultural settings, and cultural heritage/chance find procedures. In practice, these issues will be addressed through a series of local permits detailed in the environmental framework review, through oversight of site supervisors, through the local municipality requirements, and through the unit (the PIU) in the MoIA responsible for the building rehabilitation.

73. **The project will not finance any Category A activities or activities that affect natural habitats or protected sites, nor will it finance activities that can cause a significant loss or degradation of any significant natural habitat.** The environmental screening process will check for the presence of physical cultural resources. In addition, cultural heritage/chance find procedures will be included in all works contracts.

74. **During project implementation, the PIU will have overall supervision responsibility for ensuring that the measures indicated in the ESMF/ESMPs are being properly carried out.** In close collaboration with the subunits of the GIRG housed in the buildings selected under the project and with the local Environmental Protection Agencies, the PIU will perform environmental monitoring during the construction and operation phases, as specified in the monitoring plan of the site-specific ESMPs. Appropriate training in the World Bank safeguards will be provided to local officials, contractors, and community representatives.

Social Safeguards

75. **Social assessment.** Under its Resilient Emergency Response Infrastructure component, the project aims to support reconstruction, retrofitting, and rehabilitation of about 27 buildings, which include operational headquarters, housing headquarters, training centers, and education headquarters of the Romanian Gendarmerie, which are located across 14 counties in Romania. The social screening exercise carried out for selected buildings reveals that the buildings proposed for construction and/or rehabilitation are confined to the public domain of the Romanian state, in the administration of the MoIA through the subunits of the GIRG. Thus, no additional land will be required nor is resettlement of individuals or households (permanent) anticipated, although construction-related temporary relocation

of employees in some of the selected buildings is possible. Finally, there are no interventions planned in protected areas or in locations that hinder livelihood activities or that cause economic displacement or other impacts associated with situations of restricted access to natural resources for local communities. Social screening and reviews indicate that the potential minor impacts—such as construction-induced temporary access restrictions, relocation of employees to alternate buildings, road diversions, and road safety issues—could be managed under the provisions of OP 4.01 (Environmental Assessment). Thus, OP 4.12 (Involuntary Resettlement) is not triggered for the project.

76. **In accordance with World Bank policy (OP 4.01), an ESMF has been developed to mitigate potential environmental and social risks associated with the project.** The ESMF elaborates relevant procedures, including preparation of site-specific ESMPs and establishment of a project-specific GRM and social risk mitigation measures to address potential construction-induced impacts and risks at site level. Although a direct physical address to the GIRG and online request (or complaint form) are provided on the GIRG's website, there are no GRMs yet available at the subunit level. The ESMF is developed based on the findings of the environmental and social screening process and site-level public consultations with the workers/neighboring communities of the selected buildings.

77. **Overall, the proposed project is expected to generate significant positive social impacts at the level of each targeted site and/or community.** The rehabilitation and/or reconstruction of buildings is of major importance for the beneficiary communities, including vulnerable groups such as the Roma, the disabled, and children, whose lives and livelihoods are at especially high-risk during disasters. The project will have direct benefits for those who work in the selected buildings through a better-protected workplace with safety equipment. Further, women will have access to improved toilet and sanitary facilities. Finally, the proposed improvements also aim to rebuild facilities to promote full inclusion and participation of persons with disabilities.

78. **The Romanian Gendarmerie, as a disaster response agency, is required to develop its public relations and outreach activities to implement socially inclusive disaster response programs in the country.** As a part of the project investment, special emphasis is given to implementing a robust public outreach campaign and mitigating any reputational risks. Among the agencies responsible for DRM, there is limited capacity to manage social and environmental safeguards due to the novelty of managing such large-scale investments. Hence, the project management assistance over the course of the project will include a series of capacity-building trainings relevant to social and environment safeguards.

79. **Gender-based violence risk (GBV) assessment.** Findings of the GBV risk assessment for the proposed project interventions, and social and environmental screening carried out in parallel to ESMF preparation, confirm that the GBV risk associated with the project interventions is low. To ensure adequate due diligence in identifying and addressing GBV-related risks during implementation, the following measures will be instituted: (a) Training and sensitization regarding GBV issues will be incorporated into the social and environmental safeguards capacity building activities provided by the World Bank for the Romanian Gendarmerie; (b) GBV risks and mitigation mechanisms will be highlighted during stakeholder consultations that will be convened during the preparation of safeguards instruments and reflected in the contents of related documents (ESMP and Contractor's ESMP); (c) GBV requirements and expectations will be described in the bid documents, including provisions on suitable code of conduct to be displayed at all work sites; and (d) along with information on the GRM, the project will disseminate contact information for local GBV services providers and the support services offered.

Other Safeguards

80. **The project also triggers OP/BP 4.11 (Physical Cultural Resources),** which includes procedures and responsibilities for managing works in culturally and historically significant areas and for handling of accidentally discovered or 'chance find' cultural artifacts. The goal is to ensure that cultural heritage assets are not adversely affected by World Bank-financed projects. The ESMF includes requirements for the borrower and contractors, and these will be reflected further in the site-specific ESMPs and the POM. The requirements are specific measures dictated by the Romanian law, procedures related to physical cultural resources, and World Bank requirements for managing impacts on cultural property.

81. **Romania has a well-developed cultural heritage protection system, with responsibility for monitoring and enforcement vested in the Ministry of Culture and National Identity.** Law No. 422/2001 governs the protection of historical monuments and sets forth departmental roles and responsibilities. The Ministry of Culture and National Identity or Regional Directorates of Historic Monuments must approve all technical documentation for buildings officially listed or located in cultural protected areas and can call specialists as members of a consultative board, as needed. Designers, contractors, and site supervision engineers working on an investment project that involves an historic monument must be pre-certified and listed by the Ministry of Culture and National Identity. If any cultural assets ('chance finds') are found during construction (excavation) works, the measures outlined in Law No. 422/2001 will be undertaken, including establishing a protection zone, reporting to the local Ministry of Culture and National Identity offices, and obtaining a special permit for the execution of works in connection with the found cultural assets.

Grievance Redress Mechanisms

82. 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 complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service.
For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

V. KEY RISKS

83. The overall project risks are assessed as Substantial. There are three main drivers of the risk rating: (a) political and governance, (b) institutional capacity for implementation and sustainability, and (c) fiduciary. Table **4** summarizes the key risks identified and the measures developed to mitigate them.

Table 4. Summary of Key Risks and Associated Mitigation Measures

Key Risks	Mitigation Measures
Political and Governance	Political and governance risk is rated Substantial. High levels of political and legislative volatility have limited the Government's ability to implement important public policies, including policies to improve resilience to natural disasters. In this context, although the current Government has demonstrated strong commitment to implementing important reforms related to DRM, a change of priorities at the highest level of Government and staff changes within the GIRG could affect the ownership of the project and therefore project implementation. The political risks cannot be fully mitigated. However, political developments will be monitored carefully. Governance risks will be mitigated through strong citizen engagement.
Institutional Capacity for Implementation and Sustainability	Institutional capacity risk is rated Substantial. The rating is derived from the limited experience of the implementing agency (IA) in preparing and implementing World Bank IPF projects. Without mitigation, there is a risk that the IA may take a long time to familiarize itself with the World Bank procedures and that activities may be slow to start. A number of mitigation measures will be pursued to address this situation, such as: (a) prior to project effectiveness, the PIU will be fully staffed with officials whose qualifications are acceptable to the World Bank; (b) during project preparation and implementation, training will be provided in procurement, FM, contracts management, supervision of works and contracts, and safeguards; and (c) before project effectiveness, pre-procurement activities will be accelerated to facilitate timely procurement of key contracts in the first year of implementation. These efforts will include early preparation of technical studies and bidding documents, and the drafting of terms of reference (particularly for the technical assistance activities).
Fiduciary	Fiduciary risk is assessed as Substantial based on the assessment of the IA's capacity in procurement and FM, and on the World Bank's experience with investment operations in Romania. Prior to this, the World Bank projects have faced delays due to the Government's inability to adequately provide budgetary allocations to fund project activities, particularly large-scale investments. A specific risk to the project is potential delays arising from lengthy processes to obtain demolition and construction permits, as well as complex internal decision making and control processes. To mitigate these risks, fiduciary aspects of project implementation will be closely monitored through regular portfolio reviews and continuous support to strengthen the implementation capacity.
Other	The risk related to the reputation of the World Bank is rated Moderate. An assessment[a] of the public perception of the Romanian Gendarmerie was conducted during project preparation. Based on various historical surveys, the levels of public trust or confidence in the Romanian Gendarmerie has progressively increased between 2012 and 2016[b]. However, isolated incidents related to Romanian Gendarmerie interventions have occurred during public protests, particularly between 2017 and 2018. Anecdotal evidence suggests potentially negative impacts on the public's trust vested in the institution. The

Key Risks	Mitigation Measures
	project will mitigate this risk through the following: (a) public outreach campaigns to raise awareness on the role of the Romanian Gendarmerie in emergency response and the objectives of this project, and (b) public perception surveys to obtain beneficiary feedback during implementation. The outreach campaigns will seek to minimize public distrust by communicating in basic and easy to understand terminology, using a variety of media instruments and other information conduits such as brochures and community (traditional) mediators, and ensuring translated communications where needed. The assessment[a] also reviewed other possible risks that could be associated with the project such as the potential use of the equipment purchased under the project for law enforcement. To mitigate this risk, the emergency response equipment that could potentially be used for law enforcement activities will be ineligible for procurement under the project (Subcomponent 2A).

Note: a. The assessment was conducted in accordance to the Staff Guidance Note: World Bank Support for Criminal Justice Activities. Washington, DC: World Bank.
b. According to the Romanian Institute for Evaluation and Strategy, public confidence in the Romanian Gendarmerie was at 57 percent in 2012. INSCOP Research reports this at 58 percent in 2013, 62 percent in 2014, and 63 percent in 2015. The Romanian Public Broadcasting Company estimated public confidence in the institution at 72 percent in 2016.

VI. RESULTS FRAMEWORK AND MONITORING

Results Framework

COUNTRY: Romania

Strengthening Preparedness and Critical Emergency Infrastructure Project

Project Development Objectives(s)

The objective of the Project is to enhance the resilience of Romanian Gendarmerie Facilities that are critical to respond to Emergency Situations and disasters and to strengthen the institutional capacities for emergency preparedness and response.

Project Development Objective Indicators

Indicator Name	DLI	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
Gendarmerie personnel with access to resilient emergency response buildings								
Gendarmerie personnel with access to resilient emergency response buildings (Number)		0.00	0.00	0.00	0.00	607.00	1,248.00	4,248.00
Of which female (Percentage)		0.00	0.00	0.00	0.00	28.67	19.23	9.98
Beneficiaries in areas served by Gendarmerie personnel in resilient emergency response buildings								
Direct project beneficiaries served by Gendarmerie personnel in resilient emergency response buildings (Number)		0.00	0.00	0.00	0.00	3,667,500.00	5,501,250.00	7,335,000.00
Institutional capacity to reduce vulnerability of emergency response infrastructure is strengthened								

Indicator Name	DLI	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
Capacity of the Gendarmerie to plan risk reduction investments strengthened (Text)		Existing strategy	Existing strategy	Existing strategy	Existing strategy	Strategy revised and updated	Strategy revised and updated	Strategy revised and updated
Capacity of Gendarmerie personnel to provide emergency operational support is strengthened								
Share of trained Gendarmerie personnel with newly acquired skills and emergency response equipment participating in operational interventions (Percentage)		0.00	20.00	40.00	60.00	80.00	90.00	100.00

Intermediate Results Indicators by Components

Indicator Name	DLI	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
Enhance Resilience of Selected Romanian Gendarmerie Infrastructure to be Used in Disaster Response								
Technical designs completed (Number)		0.00	0.00	5.00	12.00	19.00	27.00	27.00
Emergency response buildings which have been reconstructed with enhanced resilience (Number)		0.00	0.00	0.00	0.00	2.00	5.00	5.00
Emergency response buildings which have been retrofitted to enhance		0.00	0.00	0.00	0.00	3.00	7.00	15.00

Indicator Name	DLI	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
resilience (Number)								
Reconstructed or retrofitted emergency response buildings which have added or enhanced gender responsive design features (Percentage)		0.00	0.00	0.00	0.00	25.00	60.00	100.00
Reconstructed or retrofitted emergency response buildings which have design features for universal access (Percentage)		0.00	0.00	0.00	0.00	0.00	7.40	37.00
Operational Readiness and Public Awareness								
Gendarmerie personnel with access to new emergency response equipment (Number)		0.00	306.00	420.00	612.00	725.00	918.00	1,224.00
Gendarmerie personnel who have received training in emergency response (Number)		0.00	1,530.00	3,060.00	4,590.00	6,120.00	7,650.00	9,180.00
Number of communities reached through informative community meetings (Number)		0.00	0.00	0.00	0.00	5.00	12.00	20.00
Project Management								
Institutional capacity in place for project implementation (Yes/No)		No	Yes	Yes	Yes	Yes	Yes	Yes
Grievances responded to within stipulated time (Percentage)		0.00	100.00	100.00	100.00	100.00	100.00	100.00

Monitoring & Evaluation Plan: PDO Indicators					
Indicator Name	**Definition/Description**	**Frequency**	**Datasource**	**Methodology for Data Collection**	**Responsibility for Data Collection**
Gendarmerie personnel with access to resilient emergency response buildings	Rescue and response, emergency and disaster response, and administrative staff who occupy or use emergency response buildings which have been made more resilient	Annual	Annual progress report	Review data sheets on personnel occupying or using emergency response buildings, pre- and post-improvements	GIRG
Of which female					GIRG
Direct project beneficiaries served by Gendarmerie personnel in resilient emergency response buildings	Number of people in the communities directly served by the Gendarmerie in buildings that are made resilient and fully functional following a disaster.	Annual	Population census data (baseline); Annual progress report (target)	Review population statistics of service area and progress reports	GIRG
Capacity of the Gendarmerie to plan risk reduction investments strengthened	GIRG has revised and updated its existing strategy for investing in resilient emergency response infrastructure	Annual	Annual progress report	Review progress reports	GIRG

Share of trained Gendarmerie personnel with newly acquired skills and emergency response equipment participating in operational interventions	Personnel who participated in training sessions for operational readiness in disasters have applied new skills and equipment during emergency support missions	Annual	Annual report	Review training attendance sheets and reports pertaining to emergency support missions	GIRG

Monitoring & Evaluation Plan: Intermediate Results Indicators					
Indicator Name	**Definition/Description**	**Frequency**	**Datasource**	**Methodology for Data Collection**	**Responsibility for Data Collection**
Technical designs completed	Retrofitting or reconstruction designs completed for disaster and emergency response facilities	Bi-annual	Bi-annual report	Review technical surveys and detailed technical designs	GIRG
Emergency response buildings which have been reconstructed with enhanced resilience	New buildings which will be constructed on the existing facility site, where technical surveys confirm that it is technically and financially unfeasible to retrofit buildings	Bi-annual	Bi-annual progress reports	Review detailed technical designs and construction monitoring reports	GIRG
Emergency response buildings which have been retrofitted to enhance resilience	Buildings which will be retrofitted, where technical surveys confirm technical and financial viability with greater benefit to the Government and project beneficiaries	Bi-annual	Bi-annual report	Review detailed technical designs and construction monitoring reports	GIRG

Reconstructed or retrofitted emergency response buildings which have added or enhanced gender responsive design features	Design features which facilitate access for female users have been added in reconstructed buildings (e.g. new female bathrooms), or enhanced in retrofitted buildings (e.g. existing female bathrooms improved by replacing old/malfunctioning equipment, providing adequate waste disposal, or other modernizing features)	Bi-annual	Bi-annual progress report	Review detailed technical designs and construction monitoring reports	GIRG
Reconstructed or retrofitted emergency response buildings which have design features for universal access	Reconstructed or retrofitted emergency response buildings, which have a public access function, have added or enhanced design features to facilitate access for members of the public with physical disabilities (e.g. ramps, lifts, wheelchair-accessible bathrooms, and providing information in braille)	Bi-annual	Bi-annual report	Review detailed technical designs and construction monitoring reports	GIRG
Gendarmerie personnel with access to new emergency response equipment	Rescue and response, and emergency and disaster response staff provided with new emergency response equipment (e.g. for personal protection, operational search and rescue,	Annual	Annual report	Review procurement actions	GIRG

	interoperable communications, and logistics)				
Gendarmerie personnel who have received training in emergency response	Personnel with roles in rescue and response, and emergency and disaster response who have participated in training sessions for operational readiness in disasters	Annual	Annual report	Review training attendance sheets and reports	GIRG
Number of communities reached through informative community meetings	Communities in the vicinity or serviced by the buildings who have been reached through meetings on planned investments, role of the Gendarmerie in emergency response, and benefits of retrofitting and reconstruction	Semi-annually during implement ation	progress reports by GIRG	Data collation from communication materials, meeting minutes, and list of attendees	GIRG
Institutional capacity in place for project implementation	Sufficient implementation capacity within the PIU, including engineering, procurement, financial management, safeguards, and M&E, with consultants hired as needed to fill gaps	Monthly (Year 1), Quarterly (Year 2), Bi-annual (Years 3-5)	Monthly, quarterly, bi-annual reports	Review organizational charts, terms of reference for staff/consultants, and procurement actions	GIRG
Grievances responded to within stipulated time	Grievances submitted through the project's GRM are addressed or responded to within the stipulated timeframe	Monthly (Year 1), Quarterly (Year 2), Bi-annual (Years 3-5)	Monthly, quarterly, bi-annual reports	GRM reports	GIRG

ANNEX 1: IMPLEMENTATION SUPPORT PLAN

Strategy and Approach for Implementation Support

1. Experience under comparably sensitive and challenging projects has shown that higher-than-normal levels of supervision and support are required for specific World Bank responsibilities, including the transfer of knowledge that the World Bank has gained over the past decade in similar operations.

2. Implementation support will be provided by the World Bank team, consisting of staff with relevant competencies in operations, procurement, finance, safeguards, and technical content on DRM and seismic risk reduction. The World Bank team will undertake field or implementation support missions every six months throughout the project's implementation, as allowed by security status.

3. To enable the World Bank to honor its corporate commitments—regarding fiduciary and safeguards responsibility, oversight and implementation support, and M&E of project implementation, outcomes, and results—the World Bank will maintain close contact with the PIU. The PIU will manage the day-to-day implementation of the project and produce and transmit to the World Bank all data, reports, and information required to follow project implementation progress. The PIU will also identify and respond to problems and bottlenecks during implementation, including any issues related to procurement transactions, FM requirements, and verification of construction sites and assets acquired under the project against the specifications. The PIU will report to the World Bank on the progress and status of project implementation and contract administration against agreed or contractual timetables and schedules.

4. The PIU will also report to the World Bank on compliance with the triggered environmental and social safeguards policies. The PIU will receive support from the World Bank to prepare relevant environmental and social documents and instruments applicable to the project, will support the World Bank in conducting due diligence processes, and will monitor the timely preparation of environmental and social assessments and management instruments, which must be completed and approved by the World Bank before any physical activity or works commence in the field. The PIU will also ensure that a functioning GRM is in place and maintained for each building.

5. The Implementation Support Plan (ISP) for the project has been developed based on the specific nature of the project activities, factoring in the existing capacity of the implementing agency and the project's risk profile in accordance with the Systematic Operations Risk-Rating Tool (SORT). This ISP reflects the assessments conducted by the World Bank during project preparation and will be regularly reviewed and revised as required.

6. The ISP includes frequent review of implementation performance and progress. The World Bank team will monitor progress on several fronts, including (a) indicators as defined in the results framework, (b) central and county-level project implementation, (c) independent verification of project activities, (d) proper fiduciary management of all activities carried out by the PIU, (e) reconciliation of payments with contracts, and (f) monitoring of key legal covenants.

7. Implementation support missions, including field visits, will concentrate on the overall implementation of project activities at all levels. Field visits will serve to verify compliance with the approved POM. Support will be provided by the World Bank, in collaboration with other experts, to ensure

that activities are implemented in an efficient and cost-effective fashion in accordance with the PDO. The World Bank team will also facilitate knowledge exchange and mobilize appropriate global expertise.

8. **Client relations.** Task team leaders will (a) coordinate World Bank implementation support to ensure consistent project implementation as specified in the legal documents, and (b) follow up with senior representatives of the MoIA (where appropriate) to gauge progress in achieving the PDO and address implementation bottlenecks as they arise. In addition, the task team leader will ensure regular exchanges of information and coordination with other key stakeholders, including bilateral and multilateral donors.

9. **FM.** The World Bank's FM specialist will also provide timely and effective support. As part of broader implementation support and supervision, the project's management of finances will be monitored through a risk-based approach that includes (a) desk reviews of audit reports and Management Letters, interim financial reports, and status of action plans agreed with the counterparts following visits or audit findings, if any; and (b) on-site reviews of the continuous adequacy of the project's FM arrangements. These will include monitoring and reviewing the implementation status of any agreed actions and issues identified by the auditors, as well as other issues related to project accounting, reporting, budgeting, internal controls, and flow of funds. Special emphasis will be placed on the adequacy of the budgetary allocations to pre-finance project expenses. A walk-through review of a sample of transactions will also be conducted during the on-site monitoring reviews. The Implementation Status and Results Report will include an FM rating of the project. To the extent possible, mixed on-site supervision missions will be undertaken together with procurement, M&E, and safeguards colleagues.

10. **Procurement.** Implementation support will include prior procurement reviews. The World Bank's procurement specialist will carry out at least two missions per year to provide support to the implementation of procurement activities, and as the need arises. This support will include the setup and functioning of the Procurement Plan, the implementation of procurement activities listed in the Procurement Plan, and training as needed. In addition to carrying out random ex post reviews of procurement activities, the procurement specialist may lead thematically focused missions depending on the procurement needs and as agreed to by the ministry.

11. **Safeguards.** The World Bank team's social and environmental safeguards specialists will provide technical support and oversight throughout project implementation and will take responsibility for initiating the timely preparation of required safeguards instruments (ESMF and ESMPs). Semiannual inputs from the environmental and social specialists will be required throughout the project, and formal implementation support missions and field visits will ensure that the safeguards processes are adhered to in a fashion acceptable to the World Bank.

12. **Mid-term review (MTR).** An MTR will be carried out after three years of project implementation. In preparation for the MTR, an independent review of implementation progress will be carried out, including audits. Results will provide input to any potential revisions or restructuring at the time of the MTR. The MTR will review (among other things) the Results Framework, Systematic Operations Risk-Rating Tool, country ownership, stakeholder participation, FM, procurement processing, and sustainability aspects.

13. **Implementation Completion and Results Report.** To satisfy accountability needs and provide lessons from completed operations, an ICR will be drafted by the World Bank and the borrower within six

months of project completion. ICRs are tailored to enhance development effectiveness through a continuous process of self-evaluation, lesson learning and application, knowledge sharing, and accountability for results. The lessons learned from ICRs improve the quality and effectiveness of World Bank operations, whereas borrower/stakeholder participation in the ICR process informs later designs, preparation, and implementation of projects.

14. The World Bank team and additional consultants will directly support project implementation with technical assistance as needed. Given the nature of the project, it is foreseen that frequent missions to essential areas will be needed during the project's first year to support the MoIA (GIRG) in initiating activities.

Implementation Support Plan and Resource Requirements

15. The ISP reflects the preliminary estimates of the skill requirements, timing, and resource requirements over the life of the project. Given the need to maintain flexibility in project activities from year to year, the ISP will be reviewed annually to ensure that it continues to meet the implementation support needs of the project.

16. Tables 1.1 and 1.2 indicate the level of inputs and staffing that will be needed from the World Bank to provide implementation support for the proposed project.

Table 1.1. Implementation Support Plan

Time	Focus	Skills Needed	Partner Role
First 12 months	• Provide support in the following areas: ○ Project activities' initiation ○ FM systems ▪ Functioning of Procurement Plan ▪ Practices related to World Bank norms ▪ Establishment of M&E system • Monitor implementation of project activities	All skills	• Have task team support smooth start-up • Ensure safeguards are on track • Support the PIU
12–72 months	• Ensure adequate implementation support for all aspects of the project • Monitor implementation of project activities, including site visits • Provide support to final evaluation and ICR	All skills	• Ensure safeguards are on track • Support the PIU • Provide technical assistance

Table 1.2. Skills Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Task team leader	48	12	International or field-based staff
DRM specialist	90	12	International or field-based staff
Technical specialist	12	3	International or field-based staff
Environmental specialist	12	Travel as needed	International or field-based staff

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Social specialist	12	Travel as needed	International or field-based staff
Economist (M&E)	12	Local travel as needed	Field-based staff
Procurement specialist	60		Field-based staff
FM specialist	12		Field-based staff
Consultant for environmental safeguards	90	Local travel as needed	Short-term consultant
Consultant for social safeguards	90	Local travel as needed	Short-term consultant
Consultant for communications	90	Local travel as needed	Short-term consultant

ANNEX 2: DETAILED PROJECT DESCRIPTION

1. The project will have three components, as follows: (i) Enhance the Resilience of Selected Romanian Gendarmerie Infrastructure to be Used in Disaster Response, (ii) Operational Readiness and Public Awareness, and (iii) Project Management.

Component 1: Enhance the Resilience of Selected Romanian Gendarmerie Infrastructure to be used in Disaster Response (EUR 34.1 million)

2. Component 1 will finance priority retrofitting and reconstruction investments to enable the Romanian Gendarmerie to build the necessary technical capacity and showcase tangible results that can be replicated at scale (Subcomponent 1A). The component will also support technical assistance activities to guide future infrastructure planning that covers the entire building stock managed by the GIRG (Subcomponent 1B).

Subcomponent 1A: Priority Investments

3. This subcomponent will improve the seismic safety and disaster resilience of critical disaster and emergency response buildings through investments in building reconstruction, structural strengthening, and modernization. Improvements will ensure that these critical buildings are fully operational before, during, and after a disaster by taking the resilience of critical systems such as energy, water and communications into account. Improvements in energy efficiency will be based on EU and Romanian regulations and will contribute to operational savings. Finally, all building renovations will consider universal access and ensure equal access for men and women through the addition of gender appropriate facilities (for example, dedicated bathrooms for women).

4. **Tentative list of buildings.** A long list of about 27 buildings seen as crucial to the emergency response system and at high risk of partial or complete collapse during an earthquake has been tentatively compiled by the Romanian Gendarmerie. However, the exact number of buildings from this list (and their retrofitting or rehabilitation needs under the project) are yet to be identified. As a design principle of the project's framework approach, the required technical studies for up to 19 percent of the buildings on the list will be completed and their full cost estimates will be developed during the first 12–18 months of implementation. The remaining technical studies are anticipated to be undertaken by the end of the fourth year of implementation to establish the total number of buildings that will be included within the available project funds for this component.

5. The buildings on the long list include emergency coordination and operational response buildings located across 14 counties in Romania. The inability of one or more of these buildings to be fully operational during an earthquake, storm or flood event, would create a significant gap in the Government's response capacity and could have potentially devastating consequences for the affected communities. This long list, however, represents a small subset of the 1,600 buildings managed by the Romanian Gendarmerie (and other public buildings owned by the Government) that could be at risk from collapse or serious damage.

6. The long list has been prioritized and ranked according to a two-step process. First, the buildings were grouped according to their operational importance during an emergency, considering the area and number of citizens served and number of Romanian Gendarmerie personnel working in the buildings.

Secondly, within each group, the buildings were then ranked according to the following three criteria: (a) seismic risk, (b) building age, and (c) structure type. The preliminary results from the prioritization and ranking will inform the sequencing of the technical studies and determine which buildings will be financed under the project. The prioritization process is provided in annex 5.

7. The World Bank team and Romanian Gendarmerie have agreed that when defining the upgrading needs of each building according to current normative documents, the Romanian Gendarmerie will consider the building's future functionality requirements, including full operational capacity in case of design earthquake, electrical and mechanical systems, functional operationalization of the new buildings and retrofitted buildings, when needed, gender aspects, environmental and social safeguards, and universal access. Further, the buildings found to be in flood- and landslide-prone areas will be excluded from project investments.

8. **Universal access.** The design of the new or rehabilitated buildings will consider access routes and facilities for citizens with disabilities where applicable, in accordance with the EU and national norms and legislations. Out of the 27 buildings on the tentative list, 10 buildings (approximately 37 percent) have been identified as requiring the inclusion of universal access routes and facilities on the ground floors, as these buildings will include designated spaces for public activities.[22]

9. **Gender aspects.** Some of the buildings may have limited dedicated facilities for women. The project will ensure that the civil works incorporate design measures that are gender-sensitive including creating separate and safe bathrooms, toilets and sanitary facilities, separate locker rooms, and dormitories. In the existing female bathrooms, old or malfunctioning equipment will be replaced, adequate waste disposal will be provided, and other modernizing features will be added. The design of the new buildings or extensions will consider projected midterm to long-term staff increases (including estimates of increasing female employment) to avoid overcrowding of staff in the future.

10. The fundamental requirements of seismic assessment of the existing buildings and the fundamental requirements of seismic design for the retrofitting solutions must be performed with consideration of the ground motion, with 20 percent probability of exceedance in 50 years (225-year MRP) for the life safety requirement. The retrofitted and/or rehabilitated buildings must be fully operational after the design earthquake. This goal can be achieved using the seismic action with a 225-year MRP for the life safety requirement and amplified by the importance and exposure factor of 1.4, as required by the Romanian seismic design code in force.

11. The overall process from preparation of technical documentation to subsequent construction for each building is as follows: (a) preparation of the technical surveys and energy efficiency audits, (b) preparation, review, and approval of the feasibility studies by the client and technical verification, (c) preparation of detailed technical design documents and technical verification including the site-specific ESMP, (d) review and approval of the technical detail designs by the client, (e) application for building demolition permit (if applicable) and construction permits, and (f) construction works, technical assistance by the designer, and site supervision.

[22] The remainder of the buildings will house non-disabled operational personnel only and will not include any areas accessible to the public. Therefore, by Romanian legislation, these buildings are not required to include universal access routes and facilities.

12. This subcomponent will cover all goods, works, and consulting services associated with structural retrofitting or reconstruction, functional upgrading, and energy efficiency investments. It will include the financing of (a) preparation, review, and analysis of, among others, the technical surveys, energy efficiency audits, feasibility studies (including relevant documentation), technical designs, technical verifications, authorizations and permits, and designer consultant services during execution of works needed to carry out this component; (b) retrofitting or reconstruction civil works, including improvement of buildings' functionalities according to the current Romanian construction laws, regulations, and standards; (c) improvement of energy efficiency, and strengthening of electrical, water supply, and telecommunication system resilience (for example, through the installation of generators and backup communications); (d) functional operationalization of the new buildings and retrofitted buildings, when needed (for example, furniture, safety equipment, and other building amenities); and (e) supervision of construction works.

Subcomponent 1B: Long-Term Infrastructure Investment Planning

13. The 27 buildings represent a small part of the overall inventory of potentially at-risk buildings managed by the GIRG that would require reconstruction or retrofitting. This subcomponent will therefore support technical assistance activities to enable the Romanian Gendarmerie to strengthen their capacity for a long-term disaster risk reduction program that addresses this challenge. The subcomponent will involve developing databases of core building structural and functional data for the entire building stock managed by the GIRG, undertaking CBA on typical retrofitting and reconstruction designs for various building typologies, including climate-resilient designs, and developing investment cost estimates.

14. The following activities are envisioned: (a) review and analysis of past/existing investment plans and strategies to determine gaps, (b) undertaking data collection and updating the risk-informed infrastructure planning model, (c) updating the existing framework for the assessment of the entire building stock, and (d) designing and implementing the first stages of a training program on infrastructure planning for Romanian Gendarmerie staff.

Component 2: Operational Readiness and Public Awareness (EUR 3.7 million)

15. Component 2 will strengthen the institutional capacity of the Romanian Gendarmerie to ensure operational readiness in the event of an emergency through a series of trainings and acquisition of essential emergency equipment (Subcomponent 2A). In addition, this component will finance various public awareness activities to inform citizens about the role of the Romanian Gendarmerie in an emergency and to raise overall awareness of the project (Subcomponent 2B).

Subcomponent 2A: Operational Readiness for Emergency Response

16. This subcomponent will finance the acquisition of emergency response equipment and provision of trainings to strengthen the operational readiness of Romanian Gendarmerie personnel. The types of equipment that have been tentatively included are personal protective equipment, equipment for warning and informing the population, upgrading operational information technology, operational and search and rescue equipment, interoperable communications equipment, and logistics equipment. The equipment will be identified and provided based on the needs considered during implementation. The personal protective equipment includes protective clothing, helmets, goggles, or other garments or equipment designed to protect from injury or infection following an event. Operational and search and rescue equipment includes optics, safety, and scene control equipment. Interoperable communications

equipment includes equipment to upgrade the IT and communications of operational centers to ensure the flow of information, coordination between different levels involved in emergency situations, and support the decision-making process. Finally, logistics equipment include audio, video, and/or imaging systems to enable effective on-site communications and decision support. Before the equipment can be procured under the project, it will have to be found acceptable to the World Bank.[23]

17. The subcomponent will provide specialized training, workshops, and tabletop exercises to Romanian Gendarmerie personnel to strengthen their capacity and improve coordination during emergencies. The training activities will target the Romanian Gendarmerie personnel involved in operations and interventions to enhance communication skills and use of emergency equipment, basic first aid training, and coordination exercises with other institutions involved in emergency response such as the GIES.

Subcomponent 2B: Public Awareness

18. This subcomponent will finance the following: (a) meetings with beneficiaries (that is, communities directly served by those Romanian Gendarmerie personnel located in the buildings targeted under Component 1) to provide information about the planned investments, the role of the Romanian Gendarmerie in emergency response, and the benefits of retrofitting and reconstruction; (b) public awareness campaigns using various communication tools, including billboards, posters, brochures, and social media; and (c) surveys to allow the Romanian Gendarmerie to better understand the views of beneficiaries and to track their views during the lifetime of the project. All activities will consider providing access to and encouraging the participation of groups identified as vulnerable during consultations with the RSB and public consultations on the ESMF (for example, the Roma, the disabled, and the illiterate). Further, activities will include sensitizing Romanian Gendarmerie personnel who facilitate community meetings, campaigns, and surveys on issues specific to these groups, communicating information in a form and language that can be easily understood, ensuring meetings and surveys are carried out at accessible locations, and conducting small focus groups where participants can express their views openly.

Component 3: Project Management (EUR 2.2 million)

19. Component 3 will strengthen the institutional capacity of the Romanian Gendarmerie in project management. This component will support operating costs to ensure timely and efficient implementation of the project. It will also cover costs related to activities designed to build Romanian Gendarmerie capacity in technical areas, procurement, FM, M&E, and environmental and social safeguards.

20. **Eligible expenditures/costs.** These include (a) staff salaries (external technical specialists, and experts to support procurement, management of social and environmental safeguard issues, FM, M&E, and project reporting), (b) operating costs of project implementation, (c) costs for goods, (d) consulting services and non-consulting services, (e) trainings and workshops, and (e) audits.

[23] Includes being in compliance with the "International Bank for Reconstruction and Development General Conditions for IBRD Financing, IPF", dated July 14, 2017.

ANNEX 3: IMPLEMENTATION ARRANGEMENTS

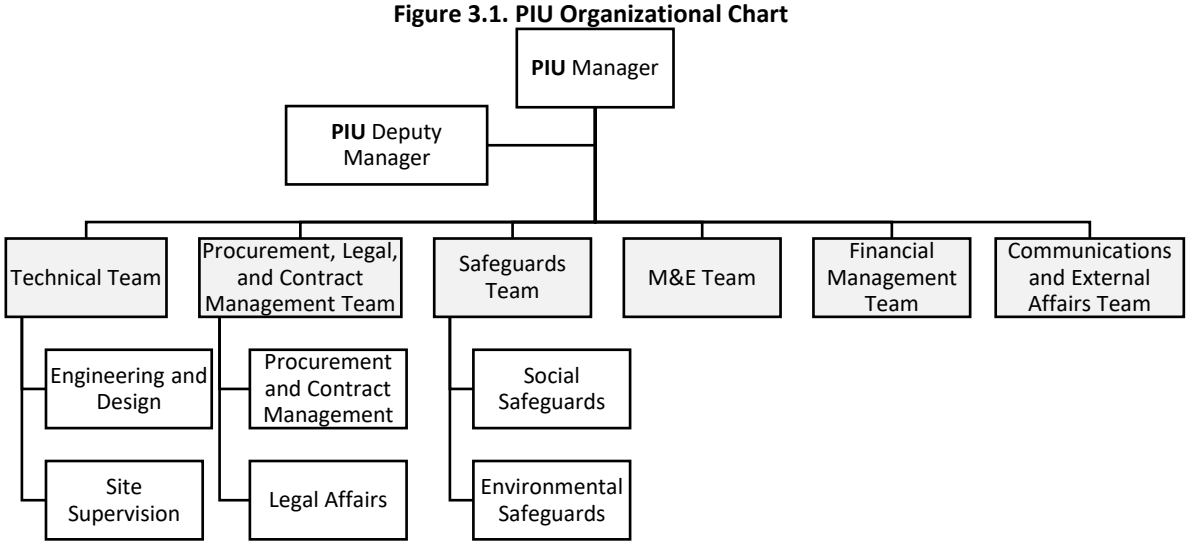
Project Institutional and Implementation Arrangements

1. The World Bank will enter into a loan agreement with the MoPF. The IA for the project will be the MoIA through the GIRG.

2. A PIU will be established within the GIRG for all legal aspects associated with the implementation of the project, including technical, fiduciary, and procurement activities. The PIU will also be responsible for daily M&E, contract management, safeguards, and provision of technical oversight in architecture, engineering, construction, permits, supervision, and so forth. All communication related to implementation issues such as procurement, FM, and safeguards will be carried out directly with the World Bank task team on a day-to-day basis.

3. The PIU will implement the project in accordance with the POM, which will be prepared in consultation with the World Bank and will set forth the rules, methods, guidelines, specific development plans, standard documents, and procedures for carrying out the project. The POM will include, among other things, (a) a detailed description of all project activities supported under the loan agreement, their sequencing, and a prospective timetable and benchmarks for the activities; (b) the methodology for prioritizing interventions and other details related to the components of the project; (c) the ESMF; (d) the procurement and FM arrangements for the project; (e) arrangements governing the day-to-day execution of the project; and (f) project M&E and reporting arrangements. The PIU organizational chart is shown figure 3.1.

Figure 3.1. PIU Organizational Chart



Financial Management

4. **Overview.** The FM systems to be instituted by the GIRG are acceptable to support the implementation of the project. The GIRG's finance function will be strengthened through training on the World Bank`s specific requirements and with additional staff to support project implementation. The FM

arrangements will be described in a chapter of the POM that will be prepared and agreed with the World Bank before loan effectiveness.

5. The project will rely significantly on the country`s public FM system (including budget formulation and execution, accounting, internal controls, and Treasury). The FM arrangements of the project will be the responsibility of the GIRG (through MoIA) and the MoPF that will work closely to manage loan disbursements.

6. **Risk analysis.** The FM residual risk is assessed as Moderate after application of mitigation measures. The risks related to this project include (a) systematic and substantial risk of insufficient and/or untimely budgetary allocations for contracting and spending, given that project activities will be pre-financed from the state budget, and (b) potential delays and/or irregularities in booking and reporting project transactions to the World Bank due to limited of experience with World Bank-funded projects and limited resources to manage and properly account for project transactions, particularly the works contracts for the geographically dispersed objectives in the country. To mitigate these risks, the GIRG can (a) secure the necessary financial resources through timely elaboration of realistic budgetary estimates with the MoIA and MoPF, aligned to the procurement and implementation plan, (b) ensure rigorous contract management, supervision of works, and project accounting, and (c) participate in hands-on training provided by the World Bank and hire additional staff to build capacity.

7. **Staffing.** The project FM arrangements will be managed by the existing staff in the GIRG, which is experienced in public finance and budgetary accounting and familiar with the implementation of several projects funded by international donors. To ensure adequate capacity for the project, the assigned GIRG finance staff will be trained in the specific FM and disbursement procedures and will be supported by a full-time expert to be recruited in the first year of implementation.

8. **Budgeting and planning.** The GIRG has adequate planning and budgeting capacity, and the project budget will follow the national procedures for approval, budget formulation and execution, reporting, and monitoring. Annual budgets will be entered into the commitments and reporting system and used for periodic comparison with actual results as part of the interim reporting.

9. **Accounting.** The GIRG applies the existing Romanian budgetary accounting policies, procedures, and systems. The accounting records are maintained on an accrual basis, in accordance with the prescribed chart of accounts, and are denominated in Romanian lei. The GIRG has a reliable computerized accounting system in place and will maintain detailed accounting records for each project it implements.

10. **Flow of funds and disbursement.** The project will use the pre-financing mechanism that is applicable to the World Bank-funded operations in Romania. Accordingly, the GIRG (as the implementing agency) will pre-finance eligible expenditures from the state budget, and then MoPF (on behalf of the borrower) will claim reimbursement of funds from the loan based on the documentation prepared by the GIRG to reflect project-eligible payments. The Treasury will make monthly budgetary openings as requested, and the project will receive its allocations under title number 65, in accordance with the existing budgetary structure and classification. No Designated Account will be used.

11. **Internal controls and audit.** The project will rely on the existing public sector internal control framework that is established in the GIRG. This framework includes the use of prescribed templates and checklists to ensure that required procedures are performed, and that necessary authorizations and

approvals from various technical units are obtained before the payment is made. The FM verifications include checking mathematical accuracy of the invoice, confirming legal conformity of the invoice, matching the invoice to the relevant contract, and matching the invoice to goods received notes or evidence of completion of work, account numbers, and so forth. The internal audit function in the MoIA (which covers the GIRG`s activities) is fairly well represented and includes EU-funded projects in the scope of its annual work program. As the internal audit function continues to develop, increased reliance will be placed on its activities to also cover internal audit aspects for the World Bank-funded project.

12. **Financial reporting.** The GIRG will prepare semi-annual cash-based interim financial reports to report on project expenditures pre-financed from the state budget, based on the formats agreed with the World Bank. The reports will be due for submission within 45 days after the end of each semester.

13. **External audit.** The project financial statements will be subject to an annual audit by independent auditors acceptable to the World Bank and in accordance with the agreed terms of reference. The audited financial statements, together with auditor's opinion and Management Letter, will be due for submission within six months after year-end. The cost of the project audits will be financed from the loan. Within a month after their formal acceptance by the World Bank, audited financial statements and audit reports will be publicly disclosed in a manner acceptable to the World Bank.

14. The Supreme Audit Institution (Romanian Court of Accounts) is not yet fully familiar with the World Bank's procurement and FM guidelines and procedures. There are plans to strengthen its capacity in this area and others, such as financial and performance auditing and quality assurance and communication. Under its larger mandate, the Court will continue to carry out regular financial and compliance audits of the MoPF and the GIRG. The World Bank will be informed about any project-related issues raised by the Court, and it will determine if they require follow-up actions that should be addressed by the counterparts to strengthen the FM arrangements for this project.

15. **Disbursements.** Loan proceeds will be used to reimburse the state budget for pre-financing of project-eligible expenditures. Table 3.1 describes the types of expenditures that will be financed under the loan and the applicable IBRD loan eligibility percentage.

Table 3.1. Expenditure Types under the Project

Category	Amount of the Loan Allocated (Euros)	Percentage of Expenditures to be Financed (inclusive of taxes)
(1) Goods, works, non-consulting services, and consulting services (including audit for the project), training and operating costs	40,000,000	100
Total	40,000,000	

16. The project budget will be included in a specific line in the GIRG budget. The allocation from the state budget will be provided to the GIRG (through the MoIA) for the pre-financing of the project-eligible expenditures. The GIRG will report to the MoPF (denominated in euros and lei) on the eligible expenditures incurred monthly and will periodically provide MoPF with statements of expenditures to report on the amounts spent for project purposes. Based on the documents received, the MoPF will request periodic reimbursements from the loan by sending withdrawal applications to the World Bank, in accordance with the instructions included in the Disbursement and Financial Information Letter. The funds

requested will flow from the World Bank to the MoPF's euro-denominated account opened with the National Bank of Romania, as reimbursement for the pre-financing used for project-eligible expenditures. These funds will be used solely for the purposes specified in the Romanian legislation on public debt.

Procurement

17. **Capacity Assessment.** The World Bank team assessed the risks that may negatively affect the ability of the GIRG to carry out procurement processes. The key issues, risks, and mitigation measures concerning procurement for implementation of the project are detailed in Table 3.2.

Table 3.2. Key Procurement Risks and Mitigation Measures

Identified Risk	Proposed Mitigation Measure	Responsible Party	Time Frame
No knowledge of World Bank procurement procedures and no previous experience with World Bank-funded operations	The World Bank procurement team will provide procurement training for the GIRG that covers the approach to procurement, Procurement Regulations, and the Systematic Tracking of Exchanges in Procurement (STEP) The World Bank team will also make available any information on relevant external training courses and will encourage the GIRG staff to attend The World Bank will carry out regular implementation support visits and otherwise support and guide the IA throughout the project implementation period	World Bank team	Shortly after project approval Throughout the project implementation period Throughout the project implementation period
The detailed structure and task assignment for the PIU has been finalized and although important skills, such as procurement and FM, exist in the GIRG, these need to be enhanced with externally hired consultants	GIRG will (a) hire qualified and experienced procurement specialists to enhance procurement capacity, and (b) employ technical experts to enhance capacities where expertise is lacking.	GIRG	After project effectiveness
Lack of practical guidance on the steps of the procurement process. The Implementing Agency does not have internal manuals, including the POM, which would guide staff in carrying out procurement.	GIRG will (a) develop a POM that includes a detailed chapter on steps in the procurement cycle, and on roles and responsibilities of Implementing Agency staff in the procurement process; and (b) assign qualified staff to ensure that the Procurement Plan is implemented, monitored, and updated properly and on time.	GIRG/IA	After project approval
Insufficient and/or delayed allocation of budget funds.	The GIRG will accurately estimate the annual budgets and allocation of funds to ensure the required allocation of funds and avoid delays in contract implementation. The	GIRG and MoIA	Throughout the project implementation period

Identified Risk	Proposed Mitigation Measure	Responsible Party	Time Frame
	MoIA will prioritize this project in the budgetary allocation process, within the total expenditures ceiling provided to it by the MoPF.		

18. **PPSD.** Based on the project requirements, operational context, economic aspects, technical solutions, and market analysis, a PPSD has been developed for the project with support from the World Bank team. The PPSD identifies the following types of activities: (a) civil works contracts for no-regret priority retrofitting and reconstruction investments to allow the Romanian Gendarmerie to build the necessary technical capacity; and (b) consulting services for detailed design of works, construction supervision, energy efficiency audits, technical surveys, technical assistance, feasibility studies and technical verification, and so on. For the procurement of civil works, the estimated cost per contract ranges from EUR 0.4 million to EUR 4.5 million. The PPSD shows that there are many potential contractors in Romania for works of this type, nature, and size; thus, approaching the national market and inviting open competition is considered the most suitable choice. Nevertheless, foreign contractors are still allowed to participate if they wish to do so. The project does not foresee contracts costing above US$20 million, the threshold at which open competition on the international market would be required. The major consulting services contracts relate to works and these are technical surveys, feasibility studies, civil works designs and technical assistance, technical verification, and construction supervision.

19. Generally, the value of consulting contracts is low, and the national market approach is recommended given the availability of local firms for such assignments. For construction supervision, the PPSD suggests that several contracts be signed as the civil works contracts are scattered all over the country. Procurement of goods will be limited to small value contracts to procure equipment necessary for the functioning of the PIU. Although the market research demonstrates that there is a significant number of potential consultants in the country for the types of services needed, the participation of reputable and qualified international consultants will be beneficial to project implementation. Therefore, the World Bank recommends that the project approaches international markets for larger value contracts and for those that are critical for the project. However, irrespective of the market approach, the PPSD suggests that for all contracts, including those for which a national approach is foreseen, either the World Bank's standard procurement documents or other procurement documents agreed by the World Bank can be used. For procurement approaching the international market, the World Bank's standard procurement documents shall be used.

20. **Procurement Plan.** As part of the PPSD, the GIRG developed a Procurement Plan that will be consistent with the project implementation plan. The Procurement Plan provides information on procurement contracts, selection methods, procurement approach, and evaluation methods to be adopted for each contract to be financed under the project. Any updates to the Procurement Plan will be subject to the World Bank's prior review. Systematic Tracking of Exchanges in Procurement will be used to prepare, clear, and update the Procurement Plan and conduct all procurement transactions for the project. Therefore, all the procurement activities under the project will be entered into, tracked through, and monitored online through the system. Once approved by the World Bank, the Procurement Plan will be published on the World Bank's website.

21. **Procurement prior review thresholds.** The procurement prior review thresholds were set by the World Bank based on the project's procurement risk level. All contracts at or above the set thresholds are subject to international advertising and the use of the World Bank's standard procurement documents. The thresholds will be specified in the Procurement Plan. Although currently using the Best and Final Offer approach, procurement processes involving contract negotiations, competitive dialogue, and/or sustainable procurement are not foreseen under the project, and these approaches will be subject to the World Bank's procurement prior review, irrespective of the contract value, if the decision is taken during project implementation to apply them.

22. **Record keeping.** All documentation for each procurement will be retained by the GIRG according to the requirements of the Legal Agreement. Upon request, the GIRG will furnish such documentation for examination by the World Bank or its consultants/auditors. Documents with respect to procurement subject to post review will be furnished to the World Bank upon request.

23. **World Bank's procurement oversight.** The World Bank will exercise its procurement oversight through a risk-based approach comprising prior and post review and independent procurement reviews, as appropriate. Procurement supervision visits will be carried out at least twice per year. These will include special procurement supervision for post review on procurement processes undertaken by the GIRG to determine whether they comply with the requirements of the Legal Agreement. The post review will be conducted with an initial sampling rate of 15 percent, though this could be adjusted periodically during project implementation based on the project performance.

Environmental and Social (including safeguards)

24. **Environmental safeguards category.** Based on the nature of the proposed civil works, the project is categorized as Environmental Category B-partial assessment.

25. **Establishment of environmental and social expertise within the PIU.** Technical specialists within the PIU will be responsible for full coordination and supervision of the environmental plans and risk mitigation measures undertaken within the project. The specialists will (a) work in close coordination with supervising engineers and the local technical staff of subunits of GIRG in the selected locations; (b) coordinate environmental training for staff, designers, and local contractors; (c) disseminate existing environmental management guidelines and develop guidelines for issues not covered by the existing regulations (in line with the World Bank and EU standards for implementation, monitoring, and evaluation of mitigation measures); ensure that contracting processes for construction works and supply of equipment include reference to appropriate guidelines and standards; and (e) conduct periodic site visits to inspect and approve plans and monitor compliance.

26. For the civil works, no resettlement or land acquisition will be necessary, and no social safeguards policies are triggered. The sites selected for the development of subprojects are publicly owned[24] and not used for agricultural or businesses purposes by either formal or informal users. Negative social impacts of project activities are expected to be negligible.

27. The PIU will follow the mechanism for development and execution of environmental documents in line with the requirements of environmental legislation, good international practice, and the World

[24] The public domain consists of assets which, by law or by their nature, are of use or of public interest and are acquired by the Romanian State or administrative-territorial units through the means provided by the Romanian law, Article 3/4.

Bank OP 4.01 (Environmental Assessment). An ESMF has been developed; and individual (site-specific) ESMPs will be produced for each subproject, including detailed sections on environmental protection (as needed), the state of environmental appraisal, the activities ensuring environmental mitigation measures, the institutional framework for preventative arrangements, and the environmental monitoring program.

28. The PIU will create monitoring arrangements for environmental and social aspects of the approved subprojects during the whole project life cycle. During project implementation, the PIU will have overall supervision responsibility for ensuring that the measures indicated in the ESMF/ESMPs are properly carried out. In collaboration with the local authorities using the selected buildings, the PIU will perform the environmental monitoring during both construction and operation phases, as specified in the monitoring plan of the ESMPs. During the construction stage, each ESMP will be monitored on site as part of the overall supervision services for each site. Thus, each periodic monitoring report will include a specialized chapter dedicated to environmental and social supervision and performance, which will include the results of the field supervisors' screening and review procedures and a description of any operations not currently in compliance with environmental requirements.

29. Appropriate training in World Bank safeguards will continue to be provided under the project to local officials, contractors, and community representatives.

30. Communities and individuals who believe that they are adversely affected by a World Bank–supported project may submit complaints to existing institutional redress mechanisms, including the MoIA's Public Relations Department or the World Bank's GRS. To address a request or complaint to the GIRG, territorial units rely on either a direct address to the institution or an online form to be completed on the institution's website. These types of requests or complaints are treated under Law No. 544/2001 regarding the free access to public information. There are no other GRMs available at the level of GIRG units on the websites of those units.

31. The GRM ensures that complaints received are promptly reviewed to address project-related concerns. Communities and individuals affected by the project may submit their complaint to the World Bank's independent Inspection Panel, which determines whether harm occurred or could occur as a result of the World Bank's failure to comply 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 the World Bank management has been given an opportunity to respond.

Monitoring and Evaluation

32. A detailed Results Framework for this operation is provided in Section VI (Results Framework and Monitoring). Progress on results and implementation will be monitored on a routine basis throughout the implementation of the project. Learning from M&E data from each phase will provide critical information for the development of the subsequent phases. Data on progress toward achieving the PDO and intermediate indicators will be collected through the PIU.

33. A guideline on collecting and evaluating indicators and appropriate reporting templates will be included in the POM. The progress on meeting these indicators and on evaluation of the data will be described in the semiannual progress reports to be submitted by the PIU to the World Bank. In a clear and tangible manner, the progress reports will chart the progress made during the reporting period against the Results Framework and the identified target values. The PIU is responsible for submission of progress

reports semiannually. The World Bank team will conduct and issue an MTR and a final ICR.

34. The PIU will collect data for results indicators from the field, monitor the quality of data collection, and evaluate results. The PIU will then review and verify the data before including these results in reports to be sent to the World Bank. If deemed necessary by the GIRG, the PIU may receive support from externally hired M&E specialists to ensure that high-quality monitoring and reporting meet the standards of the World Bank.

35. Project implementation progress will be monitored by the World Bank through implementation support missions to be conducted every six months throughout the life span of the project. Outputs and outcomes will be reviewed during project supervision to evaluate progress using data compiled by the PIU. The M&E Unit will measure project performance according to the targets in the Results Framework, and the provided progress reports will assess the progress based on timely delivery of targets, the management of contractors, and inclusion of and outreach to external stakeholders.

ANNEX 4: DETAILED ECONOMIC AND FINANCIAL ANALYSIS

Approach and Methodology

1. To inform project design, a full CBA was performed and filed with the project documents. The analysis aims to estimate the economic IRR, NPV, and benefit-cost ratios of the intervention based on a set of assumptions. The direct and indirect asset losses from an earthquake scenario which suggests annual exceedance probability of earthquake hazard in 50 years at 39 percent when a corresponding earthquake magnitude of 7.5 was considered.[25] Human life has been valued as part of the analysis and included using the concept of VSL.

2. The CBA uses the World Bank's TDRF as a basis. The TDRF identifies three types of benefits from risk reduction and disaster mitigation projects: (a) avoided losses, (b) unlocked development potential arising from stimulated innovation and bolstered economic activity in a context of reduced disaster-related background risk for investment, and (c) enhanced synergies of the social, environmental, and economic co-benefits of DRM investments, even if a disaster does not take place for many years.[26]

3. A World Bank Policy Paper[27] identifies the key variables in a CBA for risk reduction efforts (that is, retrofitting and reconstructing critical infrastructure) and states that calculation of the benefits and costs of such projects involves estimates and assumptions covering the following six elements: (a) strengthening and retrofit costs, (b) building replacement costs, (c) the risk of a natural disaster (and the scale of that disaster), (d) the risk of damage if a natural disaster occurs, (e) the cost of that damage in both financial and human terms (loss of life, casualties, amount of damage and service interruption for public facilities, and so on), and (f) the discount rate. Consistent with this approach, Table 4.1 contains the assumptions and parameters used in the analysis.

4. The CBA analysis focused on assessing the IRR for Component 1 (Enhance the Resilience of Selected Romanian Gendarmerie Infrastructure to be Used in Disaster Response) investments, which account for 85 percent of the overall project funding. Due to limitations in readily available data, the CBA calculations account solely for the avoided losses component (that is, the first type of benefit under the TDRF), whereas the second and third types of benefits are discussed qualitatively but are not included in the final calculations. It is also reasonably assumed that the avoided losses will constitute the majority of the benefit stream arising directly from project implementation.

[25] The earthquake scenario is conjectured to impact the target project sites and benchmarked to the 1977 Vrancea earthquake ($M_w = 7.4$)

[26] Tanner, M., R. Reid, E. Wilkinson, S. Rajput, S. Surminski, and J. E. Rentschler. 2015. "The Triple Dividend of Resilience: Realizing Development Goals through the Multiple Benefits of Disaster Risk Management." World Bank, Washington, DC.
Hallegatte, Stephane. 2012. "A Cost-Effective Solution to Reduce Disaster Losses in Developing Countries: Hydro-Meteorological Services, Early Warning, and Evacuation." Policy Research Working Paper 6058. World Bank, Washington, DC.
Kenny, Charles. 2009. "Why Do People Die in Earthquakes? The Costs, Benefits and Institutions of Disaster Risk Reduction in Developing Countries." Policy Research Working Paper 4823. World Bank, Washington, DC.

Table 4.1. Summary of Data and Parameters Used for the CBA

Parameter	Unit	Cases	
		Without Project	With Project
Earthquake hazard, PGA	cm/s^2	Defined for all project sites using site dependent ground motion parameters	
Exceedance probability of earthquake hazard	Percentage in 50 years	39 in 50 years	
Project investment	EUR, millions	0	34.1
Number of staff members	Persons	3,824	4,248
Total area of GIRG buildings	m^2	38,636	46,410
Value of GIRG buildings and equipment	EUR, millions	26.6	60.7
Number of persons in the areas served by GIRG buildings	Persons	6,610,800	
Avoided fatalities in collapsed buildings	Persons	0	436
VSL	EUR [a]	575,723	
Value of avoided fatalities in collapsed buildings	EUR, millions	0	251.2
Avoided direct damage to GIRG buildings	EUR, millions		10.7
Avoided content losses to GIRG buildings	EUR, millions	0	0.6
Aggregated value of avoided losses	EUR, millions		262.5
Planning horizon	Years	0	30
Discount rate	Percentage		5.0
Benefit-cost ratio	n.a.	n.a.	1.16
NPV	EUR, millions	n.a.	4.8
Internal return rate	Percentage	n.a.	6.57
Payback period	Years	n.a.	24

Note: n.a. = not applicable.

[a.] Exchange rate used for the CBA analysis: US$1 = EUR 0.885.

Key Data and Parameters

5. **Earthquake hazard and its annual exceedance probability.** The 27 buildings identified under Component 1 are scattered across Romania, and the seismic hazard at the different project sites is determined by more than one seismic source. For this reason, the economic and financial analysis in this annex defines seismic hazard in terms of site-dependent ground motion parameters (PGAs). The CBA is based on a probabilistic seismic hazard analysis that assumes an earthquake scenario of PGA values occurring on the project sites with 39 percent probability of exceedance in 50 years, and collectively corresponding to a 100-year mean return period (MRP). The PGA values with a 100-year MRP have a probability of exceedance of 9.5 percent in 10 years, 18.1 percent in 20 years, 25.9 percent in 30 years, or 39 percent in 50 years. In terms of moment magnitude of an earthquake generated by the Vrancea intermediate-depth seismic source, the mean recurrence interval of 100 years corresponds to M_W=7.5–7.6.

6. The CBA analysis also investigated a second earthquake scenario using PGA values occurring on project sites with 10 percent probability of exceedance in 50 years, and collectively corresponding to a 475-year MRP.[28] The PGA values with a 475-year MRP have a probability of exceedance of 2.1 percent in 10 years, 4.1 percent in 20 years, 6.1 percent in 30 years, or 10 percent in 50 years. In terms of moment magnitude of an earthquake generated by the Vrancea intermediate-depth seismic source, the mean recurrence interval of 475 years corresponds to M_W=7.9–8.0. The results from this analysis are discussed further in the results section.

7. **Project Investment.** The planned investments amount to EUR 34.1 million under Component 1.

8. **Value of GIRG assets (buildings and equipment).** The total floor area of the 27 buildings listed by the GIRG is approximately 38,636 m^2. Using the best estimates available at project appraisal, the average cost per square meter of existing GIRG buildings (value of structural and nonstructural building components) is estimated at EUR 600 per m^2. Thus, the estimated value of the GIRG buildings is EUR 23,181,600. In addition, the value of the equipment and tools housed within the buildings is estimated at EUR 3,345,689. Thus, the aggregate value of the GIRG buildings and equipment is EUR26,527,289. The value of land was excluded in these calculations.

9. **Discount Rate.** The World Bank recommends that advanced economic analysis should link social discount rates to the long-term growth prospects of the country where the project takes place.[29] Assuming reasonable parameters for the other variables in the standard Ramsey formula, this yields a discount rate of 5 percent, which has been used for the present analysis.

10. **Value of lives saved.** The concept of VSL is used to account for the intrinsic value of life and assign a numerical estimate to the value of avoided fatalities due to the project intervention.[30] Due to the scarcity of reliable VSL estimates applicable to the project, the 'benefits transfer' method[31] is used to value the lives potentially saved by the project (that is, avoided fatalities). This method involves selecting a reference country with relevance to the Romanian case and using the most recent VSL estimates to make adjustments. The VSL estimate of the United States Environmental Protection Agency is equal to US$9.7 million. This U.S.-based VSL estimate is adjusted using the ratio of the Romanian GDP per capita (US$9,522) to U.S. GDP per capita (US$57,683).[32] Specifically, the U.S. VSL is multiplied by this ratio. Moreover, to account for the potential overestimation in the resulting VSL estimate, which could arise when a VSL is transferred from a high-income to a lower-income country, an income elasticity of 1.5 is employed. That is, the calibrated VSL is calculated by raising the ratio of GDP per capita in the two countries to the power of 1.5. This yields the calibrated VSL estimate of US$650,567, or EUR 575,723,[33] for Romania. The underlying calculus is summarized in the Table ***4.2***.

Table 4.2. VSL Calculation for Romania

Parameter Description	Designation or Formula	Unit	Value
VSL per U.S. EPA calculations	VSL_{USA}	US$	9,700,000

[28] This scenario is recommended by Eurocode 8 (EN 1998-1, CEN 2004)
[29] The projected, long-term real consumption growth rate for Romania is estimated at approximately 4.9 percent.
[30] VSL reflects people's willingness to pay for reductions in their risks and reflects an intrinsic value of life.
[31] Cropper, Maureen L., and Sebnem Sahin.2009. "Valuing Mortality and Morbidity in the Context of Disaster Risk." Policy Research Working Paper 4832, World Bank, Washington, DC. http://elibrary.worldbank.org/doi/abs/10.1596/1813-9450-4832.
[32] World Bank data for 2016; see https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=US-RO.
[33] Based on an exchange rate of US$1 = €0.885 at appraisal.

Romania GDP/capita (2016)	Y_{RO}	US$	9,522
U.S. GDP/capita (2016)	Y_{USA}	US$	57,683
Income elasticity of VSL	E	None	1.5
VSL estimate (calibrated)	$VSL_{RO} = VSL_{USA} \times \{(Y_{RO}/Y_{USA})\}^{E}$	US$	650,567

11. **Number of persons in the served areas.** Population exposure is characterized by the number and geographical distribution of persons in each census unit. The number of persons in the served areas for this analysis was obtained by combining the area served by each GIRG building with the statistical information on population within each census unit belonging to the served areas.[34] Thus, the number of people in the areas currently served by GIRG buildings is estimated at 6,610,800.

12. **Avoided fatalities from building collapse.** The buildings belonging to census areas served by the GIRG buildings are classified in typologies according to the quality and level of seismic design, as well as the type of structural system used. To evaluate the avoided fatalities from building collapse, the casualty model is employed to determine the percentage of occupants trapped when buildings collapse.[35] The model considers a series of factors that are applied to the population exposed under different building typologies. It estimates the number of injured persons using the methodology provided in the Hazus-MH MR4 Multi-Hazard Loss Estimation Methodology Technical Manual.[36] To assess the number of injured survivors in collapsed buildings who subsequently lose their life, two cases are considered, as follows: (a) GIRG buildings not operational (no project), and (b) GIRG buildings fully operational (implementation of the project). The difference between the number of survivors who subsequently lose their life in the two cases represents the number of avoided fatalities. Overall, the number of avoided fatalities from building collapse is estimated at 436.

13. **Avoided direct damage to the 27 GIRG buildings.** Avoided direct damage is expressed as the total cost for repairing or replacing the 27 GIRG buildings damaged by the earthquake scenarios used in this analysis. It is calculated by taking the difference between the total cost for repair or replacement of GIRG buildings in their current state (without the project) and the total cost for repair or replacement of GIRG buildings that had been strengthened/retrofitted (with the project). The average value of avoided direct damages is obtained using an average replacement cost of EUR 800 per m^2 multiplied by the average value of the total repair cost ratio (expressed as a percentage of building replacement cost). Overall, the average value of avoided direct damage is calculated at EUR 10,653,351.

14. **Avoided content losses to GIRG buildings.** Building content is defined as equipment, tools, furniture, computers, and other supplies that are not integral to the building structure. The avoided content losses to GIRG buildings are expressed as the cost of content damage to the 27 buildings damaged by each earthquake scenario and are calculated as the difference between the cost of damaged content considering the current condition of the GIRG buildings and the cost of damaged content after the implementation of Component 1. Overall, the average value of avoided content losses is estimated at EUR 591,633.

[34] The census data used are from 2011.
[35] For the casualty model, see A. Coburn and R. Spence, Earthquake Protection, 2nd ed. (Chichester, UK: John Wiley and Sons Ltd., 2002).
[36] HAZUS manuals are available on the U.S. Federal Emergency Management Agency website at https://www.fema.gov/media-library/assets/documents/24609.

Other Parameters Considered

15. **Second dividend of resilience–development.** Data and research relating to these benefits (identified under the TDRF) are very rare. The Hallegatte framework—which deals with hydromet-related hazards, investments, and benefits—has been applied as a benchmark.[37] This approach estimates the value of concurrent economic development as equivalent to 8 times the value of avoided asset losses at the lower end of the spectrum and 15 times at the higher end. The 27 buildings identified for intervention constitute only a small part of those that an overall earthquake hazard mitigation effort would address; thus, it is assumed that the economic development benefits associated with emergency and response building investments would be approximately equal to the value of the avoided asset losses at the lower end, and three times as high at the upper end. Applying a weight of 2 to the lower-end and higher-end economic development benefits triggered from avoided asset losses (even when the disaster never strikes) results in an average of approximately EUR 22.6 million. These estimates were, however, not included in the final CBA calculations.

16. **Third dividend of resilience–mitigation co-benefits.** Although data paucity is also a problem for this category of benefits identified under the TDRF, energy efficiency improvements in existing public buildings are among the co-benefits related to mitigation of climate change; they yield savings on lighting, water, and heating investments. Under the project, more than 38,600 m^2 of emergency buildings will be rebuilt or structurally strengthened and refurbished. If one-third of buildings are reconstructed to 2020 energy efficiency targets and two-thirds refurbished to a 'moderate energy efficiency target', then energy consumption and associated cost and emissions will be reduced by more than half.[38] Assuming monthly energy costs of EUR 1.2 per m^2, this equates to an estimated total saving of more than EUR 8 million in energy costs over a 30-year planning horizon. These estimates were, however, not included in the final CBA calculations.

Results and Discussion

17. **Cost-effectiveness.** The assumption was made that one-third of buildings would be reconstructed and two-thirds retrofitted. The effective floor area for reconstruction and retrofit was estimated as more than 38,600 m^2. These buildings host more than 3,800 occupants who serve more than 6.5 million residents. The project is also expected to directly save more than 436 lives through earthquake-resistant buildings and fully functional services that can support emergency response activities in the event of a disaster. Given a total project investment of EUR 40 million, it is possible to compute an average cost of approximately EUR 11,000 to save a life–a figure that compares very favorably to the calibrated VSL of EUR 575,723.

18. **Interpretation of efficiency parameters and sensitivity analysis.** Calculations were performed using Excel sheets to estimate the standard project efficiency parameters for the earthquake scenario. The undiscounted value of the investment cost is EUR 34.1 million, whereas the undiscounted value of benefits amounts to EUR 262.5 million. Applying a discount rate of 5 percent for a planning horizon of 30 years, the discounted values of costs and the associated benefits amount to EUR 29.1 million and EUR

[37] Hallegatte, Stephane. 2012. "A Cost-Effective Solution to Reduce Disaster Losses in Developing Countries: Hydro-Meteorological Services, Early Warning, and Evacuation." Policy Research Working Paper 6058. World Bank, Washington, DC.
[38] Romanian Ministry of Regional Development and Public Administration. 2014. "Strategy for Mobilising Investments in the Renovation of Residential and Commercial Buildings Existing at National Level, Both Public and Private." (Version 1/2014). https://ec.europa.eu/energy/sites/ener/files/documents/ener-buildingseedro_en.pdf.

33.9 million, respectively. The resulting benefit-cost ratio, NPV, IRR, and payback period are presented in Table 4.3, representing an acceptable investment prospect.

Table 4.3. Summary of Main CBA Results

Earthquake Scenario	Benefit-Cost Ratio	NPV (EUR)	IRR (%)	Payback Period (years)
39% exceedance probability in 50 years	1.16	4,796,015	6.57	24

19. When buildings (assets) were dropped from the analysis, the IRR was reduced to 6.12 percent suggesting that the role of assets in the model is not indispensable (that is, it is nonvital), because analysis without assets still yields an acceptable investment endeavor (refer to Table 4.4). However, when the aspect of lives saved was eliminated from the analysis, the resulting IRR declined to below zero, indicating an infeasible investment prospect. Thus, an important feature of this analysis is that the project will not be able to meet efficiency criteria unless the value of lives saved is explicitly considered.

Table 4.4. Sensitivity Analysis Results for 39% Exceedance Probability in 50 years (MRP = 100 years)

Case	Benefit-Cost Ratio	NPV (EUR)	IRR (%)	Payback Period (years)
Base case	1.16	4,796,015	6.58	24
Case without benefits from avoided asset losses	1.12	3,369,627	6.12	25
Case without benefits from lives saved	0.05	-27,687,738	n.a.	n.a.

20. When a higher magnitude earthquake scenario corresponding to a 10 percent probability of exceedance in 50 years (475-year MRP) is considered, the resulting IRR is 1.56, BCR is 0.68, and the NPV is below zero at the assumed discount rate of 5 percent. One possible reason for the decline in the CBA indicators for this higher earthquake scenario is a potential underestimation in the number of people saved by the Romanian Gendarmerie. By their mandate, the Romanian Gendarmerie operate in mobile units that can be quickly deployed where needed, including to support emergency situations at the regional or national levels. However, this aspect would be complex to model and account for in the CBA, and thus the immediate census units–based on each building's location–was used for estimating the number of lives saved. It is reasonable to conclude, therefore, that the benefits stream calculated for this earthquake scenario is on the lower end and this would explain the resulting unfavorable CBA investment indicators.

ANNEX 5: PRIORITIZATION METHODOLOGY

COUNTRY: Romania
Strengthening Preparedness and Critical Emergency Infrastructure Project

1. The GIRG has provided a tentative list of 27 buildings to be considered for financing under the project. The buildings have been selected according to a brief set of objective criteria and ranked using a prioritization process developed by the GIRG in consultation with the World Bank team.

Initial Identification of Buildings

2. The GIRG conducted an internal assessment of its building stock of approximately 1,600 buildings to establish a tentative long list of 27 buildings that would be considered for intervention under the project. The internal assessment used four main criteria:

- **Relative importance of the building in supporting operations during emergency situations.** An assessment was conducted to establish the relative operational importance of each building in the response to emergency events, including coordination of efforts.

- **Year of construction and current state of the building.** The GIRG assessed the current state of the building, structure type, and age to preliminarily determine whether the building needed to be repaired or reconstructed. Priority was given to buildings constructed at an earlier date and in an advanced state of degradation.

- **Seismic risk classification.** The GIRG considered buildings classified in Risk Classes I and II according to past technical surveys (when available) together with buildings located in areas where the peak value of the ground acceleration for earthquakes is considered significant.

- **Area served and number of citizens who benefit from Romanian Gendarmerie emergency interventions.** Higher priority was assigned to buildings serving more than 1 million people and providing support to Bucharest and county-level operational and coordination support. Further, priority was given to buildings housing higher numbers of Romanian Gendarmerie personnel who would be able to respond in the event of an emergency.

Data Collection

3. Building data sheets developed by the World Bank and the Technical University of Civil Engineering of Bucharest team were completed by the GIRG for each of the 27 buildings. The data sheets requested core building structural and functional information, which is relevant for the building prioritization process. The information collected from the data sheets was then used to undertake a tentative ranking of the buildings. The data sheets were also used to support development of the ESMF, the economic analysis for the project, and preliminary cost estimates of the investments.

Prioritization of Buildings

4. To ensure that there are no delays in implementation, the GIRG applied a prioritization framework to rank the buildings on the long list and tentatively sequence the technical evaluations of the buildings

once the project has started. This prioritization process was undertaken by first considering the scores from a set of weighted technical parameters, and then assessing the optimal sequencing of undertaking the technical evaluations and physical works during implementation.

5. The process for prioritization was as follows:

Step 1: Group the buildings by operational importance criteria.

(a) National importance refers to buildings housing units with attributions at the national level.

(b) Regional importance refers to buildings housing units with attributions at regional level, including several counties, and serving between 2 million and 5 million citizens.

(c) County importance refers to buildings housing units with attributions at county level serving between 1 million and 5 million citizens.

(d) Local importance refers to buildings housing units with local attributions, including part of a county, between 100,000 and 1 million citizens.

Step 2: Apply scoring within each group established in Step 1 according to three technical criteria.

(a) **Seismic hazard:** Horizontal PGA according to the seismic design code in force, P100-1/2013

(b) **Year of construction:** Before 1900, between 1901 and 1939 (before the November 10, 1940, Vrancea earthquake), between 1940 and 1977 (before the March 4, 1977, Vrancea earthquake), and after 1977

(c) **Building structural system:** URM+FF, URM+RF, RM+RF, RC+RF, or S+RF (where URM = unreinforced masonry, RM = reinforced masonry, RC = reinforced concrete, S = steel, FF = flexible floors, and RF = rigid floors)

Table 5.1. Prioritization Matrix

Score / Parameter[a]	1	2	3	4
Seismic hazard, horizontal PGA (a_g)	≥0.35g	0.3g or 0.25g	0.20g	≤0.15g
Year of construction	<1900	1901–1939	1940–1977	>1977
Structural type	URM+FF	URM+RF	RM+RF	RC+RF or S+RF

Note: a. The values of the parameters were developed with the support of the Technical University of Civil Engineering of Bucharest team based on the data sheets for each building.

6. Weighting factors were applied to each of the three technical parameters above. The weighting factors are provided in Table 5.2:

Table 5.2. Weighting Factors for Parameters

Parameter	Weighting Factor
Seismic hazard, horizontal PGA (a_g)	0.33
Year of construction	0.33
Structural type	0.33

7. A final weighted average score was calculated for each building in each group. The buildings with lower scores were given higher priority for technical evaluation during implementation, whereas the buildings with relatively higher scores were assigned lower priority within each group. To complete the ranking and the four batches of buildings, the sequencing of building construction and redundancy of building functions was considered to minimize disruption (annex 6).

8. To speed up implementation, the GIRG will prepare the necessary technical documentation for the first batch of five buildings ranked highest on the prioritization list using Government funds before the start of the project. The terms of reference for the technical studies will need to be reviewed by the World Bank technical team for clearance before technical services are procured by the Government.

9. The World Bank team recommends that the following requirements be included in the terms of reference for the aforementioned technical services: The fundamental requirements of seismic assessment for the existing buildings and the fundamental requirements of seismic design for the retrofitting solutions must be performed with consideration of the ground motion with 20 percent probability of exceedance in 50 years (225-year MRP) for the life safety requirement.

10. The retrofitted and/or rehabilitated buildings must be fully operational after the design earthquake. This can be achieved by using the seismic action with a 225-year MRP for the life safety requirement, amplified by the importance and exposure factor of 1.4, as required by the Romanian seismic design code in force.

ANNEX 6: TENTATIVE LIST OF BUILDINGS IDENTIFIED BY GIRG

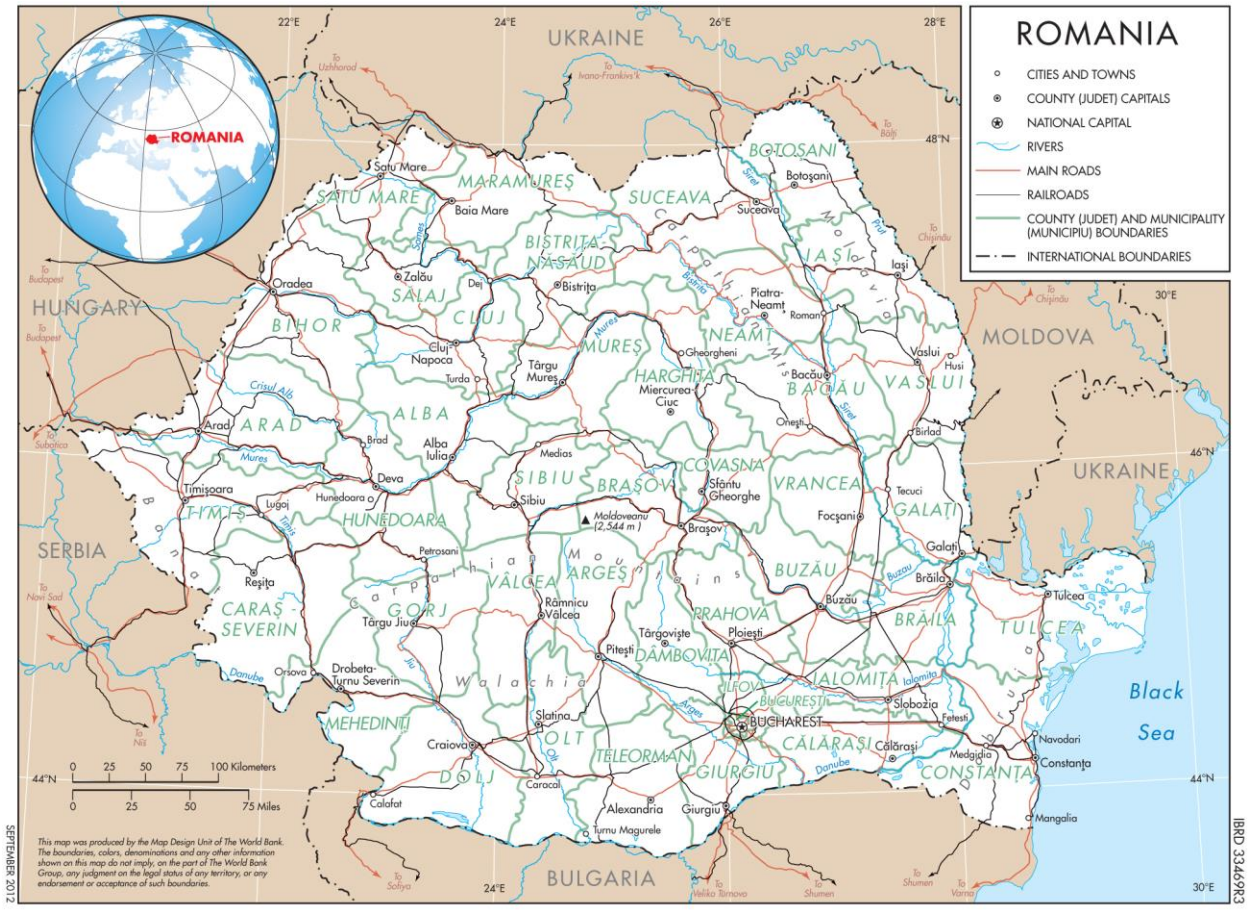
No.	Batch	Operational Importance	Name	Type	Address	Year	Built Area (sq. meters)	Total (sq. meters	Technical Survey (Y/N)	Prioritization Score			
										Seismic Hazard	Year	Structural Type	Total
1	BATCH I	NATIONAL	Training Centre for the Improvement of Gendarme Staff Ochiuri	TRAINING CENTRE	Ochiuri Village, municipality of Gura Ocniței, Dâmbovița County	1922	289	340	Yes/2016	1	2	1	4
2		NATIONAL	Warrant Officers Gendarmes School Fălticeni	EDUCATION HEADQUARTER	Armatei Street, nr. 1-3, Fălticeni Municipality, Suceava County	1898	841	1,682	No	3	1	1	5
3		NATIONAL	Warrant Officers Gendarmes School Drăgășani	EDUCATION HEADQUARTER	I.C. Brătia, No Street, nr. 25, Drăgășani Municipality, Vâlcea County	1915	661	661	Yes/2017	3	2	3	8
4		REGIONAL	Gendarme Inspectorate of Ilfov County	DECOMMISSIONED	Bucharest Municipality, Intrarea Liniei Street, nr. 2-4, sector 6	1980	559	2,795	No	2	4	4	10
5		LOCAL	Gendarme Inspectorate of Olt County	OPERATIONAL TROOPS HEADQUARTER	Balș Municipality, Nicolae Titulescu Street, nr.12, Olt County	1909	261	261	Yes/2017	3	2	1	6
1	BATCH II	NATIONAL	Training Centre for the Improvement of Gendarme Staff Ochiuri	HOUSING HEADQUARTER	Ochiuri Village, municipality of Gura Ocniței, Dâmbovița County	1922	148	402	Yes/2016	1	2	1	4
2		NATIONAL	Training Centre for the Improvement of	OPERATIONAL TROOPS HEADQUARTER	Ochiuri Village, municipality of Gura Ocniței, Dâmbovița County	1922	283	364	Yes/2016	1	2	1	4

No.	Batch	Operational Importance	Name	Type	Address	Year	Built Area (sq. meters)	Total (sq. meters	Technical Survey (Y/N)	Prioritization Score			
										Seismic Hazard	Year	Structural Type	Total
			Gendarme Staff Ochiuri										
3		REGIONAL	Mobile Gendarmerie Group of Timişoara County	OPERATIONAL TROOPS HEADQUARTER	Timişoara Municipality, Gheorghe Barițiu Street, nr.19-21	1856	1,296	2,592	Yes/2013	3	1	1	5
4		NATIONAL	Warrant Officers Gendarmes School Fălticeni	OPERATIONAL TROOPS HEADQUARTER	Armatei Street, nr. 1-3, Fălticeni Municipality, Suceava County	1898	651	1,302	No	3	1	1	5
5		REGIONAL	General Directorate of Gendarmerie of Bucharest Municipality	OPERATIONAL TROOPS HEADQUARTER	Alexandriei Highway nr. 158-160, sector 5, Bucharest	1951	477	477	No	2	2	3	7
6		REGIONAL	General Directorate of Gendarmerie of Bucharest Municipality	OPERATIONAL TROOPS HEADQUARTER	Alexandriei Highway nr. 158-160, sector 5, Bucharest	1951	303	303	No	2	3	3	8
7		REGIONAL	General Directorate of Gendarmerie of Bucharest Municipality	OPERATIONAL TROOPS HEADQUARTER	Alexandriei Highway nr. 158-160, sector 5, Bucharest	1951	506	506	No	2	3	3	8
1	BATCH III	REGIONAL	General Directorate of Gendarmerie of Bucharest Municipality	OPERATIONAL TROOPS HEADQUARTER	Leaota Street nr. 2B, sector 6, Bucharest	1950	589	1,516	No	2	3	3	8

No.	Batch	Operational Importance	Name	Type	Address	Year	Built Area (sq. meters)	Total (sq. meters	Technical Survey (Y/N)	Prioritization Score			
										Seismic Hazard	Year	Structural Type	Total
2		REGIONAL	General Directorate of Gendarmerie of Bucharest Municipality	OPERATIONAL TROOPS HEADQUARTER	Jandarmeriei Street nr. 9-11, Bucharest Municipality	1950	1,086	3,258	No	2	3	3	8
3		REGIONAL	Mobile Gendarmerie Group of Ploieşti County	OPERATIONAL TROOPS HEADQUARTER	Ploiesti Municipality, Gheorghe Grigore Cantacuzino, no.257, Prahova County	1981	622	1,479	No	1	4	4	9
4		REGIONAL	Mobile Gendarmerie Group of Braşov County	OPERATIONAL TROOPS HEADQUARTER	Braşov Municipality, Vasile Goldiş Street, nr.1-3, Braşov County	1950	327	654	No	3	3	3	9
5		COUNTY	Gendarme Inspectorate of Dâmboviţa County	OPERATIONAL TROOPS HEADQUARTER	Târgovişte Municipality, Regele Carol I Boulevard, nr. 49, Dâmboviţa County	1910	768	768	No	2	2	1	5
6		COUNTY	Gendarme Inspectorate of Dâmboviţa County	OPERATIONAL TROOPS HEADQUARTER	Târgovişte Municipality, Regele Carol I Boulevard, nr. 49, Dâmboviţa County	1910	208	416	No	2	2	1	5
7		COUNTY	Gendarme Inspectorate of Mehedinţi County	OPERATIONAL TROOPS HEADQUARTER	Portului Street, nr.2, Drobeta TurNo Severin, Mehedinți County	1833	1265	1,266	No	4	1	2	7
1	BATCH IV	REGIONAL	General Directorate of Gendarmerie of	OPERATIONAL TROOPS HEADQUARTER	Ring road nr. 24, Măgurele town, Ilfov County	1976	1,516	4,548	No	2	3	3	8

No.	Batch	Operational Importance	Name	Type	Address	Year	Built Area (sq. meters)	Total (sq. meters	Technical Survey (Y/N)	Prioritization Score			
										Seismic Hazard	Year	Structural Type	Total
			Bucharest Municipality										
2		REGIONAL	Mobile Gendarmerie Group of Braşov County	HOUSING HEADQUARTER	Braşov Municipality, Vasile Goldiş Street, nr.1-3, Braşov County	1954	891	2,673	No	3	3	3	9
3		COUNTY	Gendarme Inspectorate of Buzău County	DECOMMISSIONED	Buzău Municipality, Bazalt Street, nr. 15	1978	569	2,276	Yes/2016	1	4	4	9
4		COUNTY	Gendarme Inspectorate of Braşov County	OPERATIONAL TROOPS HEADQUARTER	Braşov Municipality, Vasile Goldiş Street, nr.1-3, Braşov County	1951	901	1,802	No	3	3	3	9
5		COUNTY	Gendarme Inspectorate of Hunedoara County	OPERATIONAL TROOPS HEADQUARTER	Deva Municipality, Dr. Victor Suiaga Street, nr. 10, Hunedoara County	1970	385	781	Yes/2016	4	3	2	9
6		LOCAL	Gendarme Inspectorate of Hunedoara County	OPERATIONAL TROOPS HEADQUARTER	Orăştie Municipality, Armatei Street, nr. 1, Hunedoara County	1890	964	964	Yes/2017	4	1	2	7
7		LOCAL	Gendarme Inspectorate of Teleorman County	OPERATIONAL TROOPS HEADQUARTER	TurNo Magurele, Taberei Street, nr. 1, Teleorman County	1973	810	3,240	No	3	3	3	9
8		LOCAL	Gendarme Inspectorate of Teleorman County	OPERATIONAL TROOPS HEADQUARTER	Zimnicea, Cuza Voda Street, Bl. XI E, Teleorman County	1984	270	1,310	No	3	4	4	11

ANNEX 7: COUNTRY MAP



Source: World Bank, 2019.