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PROJECT PERFORMANCE ASSESSMENT REPORT



ROMANIA

Hazard Risk Mitigation and Emergency Preparedness Project

Report No. 135542

MARCH 26, 2019

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PROJECT PERFORMANCE ASSESSMENT REPORT

ROMANIA

**HAZARD RISK MITIGATION AND EMERGENCY PREPAREDNESS PROJECT
(IBRD-47360)**

March 26, 2019

Financial, Private Sector, and Sustainable Development

Independent Evaluation Group

Currency Equivalents (as of June 30 of each year)

Currency Unit = Romanian Lei

2004	\$1.00	33490.70	2009	\$1.00	2.98
2005	\$1.00	2.99	2010	\$1.00	3.52
2006	\$1.00	2.86	2011	\$1.00	2.93
2007	\$1.00	2.36	2012	\$1.00	3.54
2008	\$1.00	2.32			

All dollar amounts are U.S. dollars unless otherwise indicated.

Abbreviations

CAS	Country Assistance Strategy
Cat DDO	Catastrophe Deferred Drawdown Option
DRM	disaster risk management
EMIS	emergency management information system
EU	European Union
GEF	Global Environment Facility
GIES	General Inspectorate for Emergency Situations
HRMEP	Hazard Risk Mitigation and Emergency Preparedness (project)
ICR	Implementation Completion and Results (report)
IEG	Independent Evaluation Group
IRR	internal rate of return
M&E	monitoring and evaluation
NARW	National Administration Romanian Waters
PAD	Project Appraisal Document
PAID	(Insurance) Pool against Natural Disasters
PDO	project development objective
PPAR	Project Performance Assessment Report
SMISU	Sistemul de Management Informațional pentru Situații de Urgență

Fiscal Year

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This report was prepared by Richard J. Tobin, who assessed the project in October and November 2018, under the supervision of Stephen Hutton. Gheorghe Caraseni provided technical support and local knowledge in Romania. The report was peer reviewed by Diana Vargas and panel reviewed by Lauren Kelly. Jean Jacques Ahouansou and Richard Kraus provided administrative support.

Principal Ratings

Indicator	ICR	ICR Review	PPAR
Outcome	Moderately Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory
Risk to development outcome	Moderate	Significant	Significant
Bank performance	Moderately Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory
Borrower performance	Moderately Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory

Note: The Implementation Completion and Results Report (ICR) is a self-evaluation by the responsible Global Practice. The ICR Review is an intermediate Independent Evaluation Group product that seeks to independently validate the findings of the ICR. PPAR = Project Performance Assessment Report.

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IEG Mission: Improving the World Bank Group's development results through excellence in independent evaluation.

About This Report

The Independent Evaluation Group (IEG) assesses the programs and activities of the World Bank for two purposes: first, to ensure the integrity of the World Bank's self-evaluation process and to verify that the World Bank's work is producing the expected results, and second, to help develop improved directions, policies, and procedures through the dissemination of lessons drawn from experience. As part of this work, IEG annually assesses 20–25 percent of the World Bank's lending operations through fieldwork. In selecting operations for assessment, preference is given to those that are innovative, large, or complex; those that are relevant to upcoming studies or country evaluations; those for which Executive Directors or World Bank management have requested assessments; and those that are likely to generate important lessons.

To prepare a Project Performance Assessment Report (PPAR), IEG staff examine project files and other documents, visit the borrowing country to discuss the operation with the government, and other in-country stakeholders, interview World Bank staff and other donor agency staff both at headquarters and in local offices as appropriate, and apply other evaluative methods as needed.

Each PPAR is subject to technical peer review, internal IEG panel review, and management approval. Once cleared internally, the PPAR is commented on by the responsible World Bank Country Management Unit. The PPAR is also sent to the borrower for review. IEG incorporates both World Bank and borrower comments as appropriate, and the borrowers' comments are attached to the document that is sent to the World Bank's Board of Executive Directors. After an assessment report has been sent to the Board, it is disclosed to the public.

About the IEG Rating System for Public Sector Evaluations

IEG's use of multiple evaluation methods offers both rigor and a necessary level of flexibility to adapt to lending instrument, project design, or sectoral approach. IEG evaluators all apply the same basic method to arrive at their project ratings. Following is the definition and rating scale used for each evaluation criterion (additional information is available on the IEG website: <http://ieg.worldbankgroup.org>).

Outcome: The extent to which the operation's major relevant objectives were achieved, or are expected to be achieved, efficiently. The rating has three dimensions: relevance, efficacy, and efficiency. *Relevance* includes relevance of objectives and relevance of design. Relevance of objectives is the extent to which the project's objectives are consistent with the country's current development priorities and with current World Bank country and sectoral assistance strategies and corporate goals (expressed in Poverty Reduction Strategy Papers, country assistance strategies, sector strategy papers, and operational policies). Relevance of design is the extent to which the project's design is consistent with the stated objectives. *Efficacy* is the extent to which the project's objectives were achieved, or are expected to be achieved, taking into account their relative importance. *Efficiency* is the extent to which the project achieved, or is expected to achieve, a return higher than the opportunity cost of capital and benefits at least cost compared with alternatives. The efficiency dimension is not applied to development policy operations, which provide general budget support. *Possible ratings for outcome:* highly satisfactory, satisfactory, moderately satisfactory, moderately unsatisfactory, unsatisfactory, highly unsatisfactory.

Risk to development outcome: The risk, at the time of evaluation, that development outcomes (or expected outcomes) will not be maintained (or realized). *Possible ratings for risk to development outcome:* high, significant, moderate, negligible to low, and not evaluable.

Bank performance: The extent to which services provided by the World Bank ensured quality at entry of the operation and supported effective implementation through appropriate supervision (including ensuring adequate transition arrangements for regular operation of supported activities after loan or credit closing, toward the achievement of development outcomes). The rating has two dimensions: quality at entry and quality of supervision. *Possible ratings for Bank performance:* highly satisfactory, satisfactory, moderately satisfactory, moderately unsatisfactory, unsatisfactory, and highly unsatisfactory.

Borrower performance: The extent to which the borrower (including the government and implementing agency or agencies) ensured quality of preparation and implementation, and complied with covenants and agreements, toward the achievement of development outcomes. The rating has two dimensions: government performance and implementing agencies' performance. *Possible ratings for borrower performance:* highly satisfactory, satisfactory, moderately satisfactory, moderately unsatisfactory, unsatisfactory, and highly unsatisfactory.

Preface

This Project Performance Assessment Report (PPAR) is for Romania's Hazard Risk Mitigation and Emergency Preparedness Project (HRMEP, P075163), including a grant from the Global Environment Facility (GEF, P081950). The report evaluates how the project performed against its project development objective and seeks to determine whether the project achieved its intended outcomes. This PPAR was completed at the request of the World Bank's Social, Urban, Rural, and Resilience Global Practice, which indicated significant learning potential from the project and is based on an Independent Evaluation Group (IEG) strategy to conduct a cluster of project assessments on disaster risk management (DRM).

The World Bank's Board of Executive Directors approved the HRMEP on May 20, 2004. The project became effective in October 2004. After several restructurings the project closed on June 30, 2012. Total project costs were \$174.83 million against an appraisal estimate of \$203.65 million.

This PPAR is based on findings and conclusions of reviews of the World Bank's project documentation and other relevant documentation, expert interviews, and a field mission to Romania carried out by Richard J. Tobin and Gheorghe Caraseni, consultants to IEG, between October 22 and November 2, 2018.

The consultants met with project stakeholders, including staff of project management units, project beneficiaries, government counterparts and partners, and World Bank staff.

The contributions of all stakeholders, including World Bank staff in Washington DC and Bucharest and stakeholders in Romania, are gratefully acknowledged. Following standard IEG procedures, copies of the draft PPAR were shared with the relevant government officials and agencies for their review and feedback, and are published in full in Appendix C.

Summary

Romania's Hazard Risk Mitigation and Emergency Preparedness (HRMEP) project, which was implemented between 2004 and 2012, was one of the World Bank's first efforts to provide ex ante assistance to reduce or mitigate a country's vulnerabilities to natural disasters related to floods, landslides, and earthquakes. In the one hundred years before the project began, Romania had experienced more than a dozen earthquakes of magnitude 7.0 or greater. An earthquake in 1977, for example, caused the death of almost 1,600 people, mostly in Bucharest, and as much as \$2 billion in economic losses.

Flooding is common throughout Romania. Nearly 500,000 people and 1.3 million hectares are at serious risk of flooding each year. A flood in 1991, for example, caused damages of almost \$500 million and damaged more than 12,000 buildings, almost 1,000 kilometers of roads, and 150 bridges. Between 1992 and 2003, the government estimated that damages due to flooding exceeded \$6.1 billion.¹ Approximately 50,000 households, 250,000 people, and 700,000 hectares are also at risk of landslides.

The government sought the support of the World Bank to reduce vulnerability to these and other natural disasters in a proactive manner, leading to the approval of the HRMEP. The project development objective (PDO) was to assist the government in "reducing the environmental, social, and economic vulnerability to natural disasters and catastrophic mining accident spills of pollutants." The PDO also included how the objective would be achieved: (i) the strengthening of emergency management and risk financing capacity; (ii) earthquake risk reduction; (iii) flood and landslide risk reduction; and, (iv) risk reduction of mining accidents in the Tisza Basin in northwest Romania.

The development objective was relevant to the country context and well aligned with the government's and the World Bank's priorities at the start of the project. That relevance diminished in the following years as shown by the relatively lower prioritization of disaster risk management in the two country partnership strategies developed during the life of the project. Despite that change in emphasis, the project's relevance is rated as **substantial** due to the high and continuing risk of natural disasters in Romania.

The project was innovative in its design as one of the first World Bank projects focusing on ex ante risk reduction rather than responding to a specific disaster. The World Bank and the government chose what they identified as a comprehensive, multihazard multisector approach for the project while rejecting a design that focused only on a single hazard in the belief that coordinated disaster management brings better results. The approach involved four project components, each with a separate project management unit (PMU) in different ministries. The contents of each component were logical: in most

instances the linkages between the interventions, their outputs, and the desired outcomes were clear, though how they would achieve the PDO was sometimes less clear. But despite the high expectations for what was labeled as a “new Bank paradigm for disaster risk management,” in Romania the approach proved to be complicated, cumbersome, and operationally inefficient, in part because of weak incentives for cooperation or coordination between the PMUs. As a result, the inability to operationalize the multisectoral approach effectively led the design of subsequent projects to address different sectors through separate projects in a series. For those and other deficiencies, the project’s relevance of design is rated as **modest**.

The project’s efficacy is **modest** as it did not fully achieve its intended development results. The project did not measure reductions in vulnerability (environmental, social, or economic), thus it lacked clear metrics to permit a direct assessment of efficacy. As an alternative, the efficacy of the project was assessed summing up the achievements of the individual interventions.

A long-delayed emergency management information system, intended to strengthen technical and institutional capacity, has been of limited practical value during floods. The seismic retrofitting of 44 public buildings has reduced vulnerability, but performance was undermined by not following established selection criteria for identifying high-priority sites, such as, for example, the headquarters of the General Inspectorate for Emergency Situations. The ten flood-protection measures completed during the project have reduced vulnerability to floods, though one such measure is already in need of substantial repair. Seven at-risk dams were rehabilitated, but the work is incomplete. One large dam has not yet received final certification of its operational safety. Pilot studies on landslides were not completed and did not produce meaningful benefits or reduce vulnerability.

The rating for efficiency is **modest**. The project carried out an economic analysis for only one of the four components. The analysis estimated the average internal rates of return for the flood-control projects to be 19.4 percent, which was less than the 28.8 percent projected at appraisal. The internal rate of return of dam safety investments was estimated to be 22.4 percent versus the 26.5 percent estimated at appraisal. The estimated end-of-project benefit-cost ratios of the flood-protection and dam-safety measures were 2.15 and 3.60, respectively. There were discrepancies in the data used in the analysis.

The rating for outcome is **moderately unsatisfactory**. Not all the project’s major and initial objectives were achieved. There were successes with several construction works and with the creation of a program that provides catastrophe risk insurance, but the

vulnerabilities reduced were modest in line with the evidence supporting the ratings for relevance of design, efficacy, and efficiency.

The risk to development outcome is rated as **significant**. When the project ended in mid-2012, the World Bank's and the government's attention to the project's objectives had diminished. Many public buildings essential to emergency planning and response, which had been identified as priority candidates for retrofitting, remained in their at-risk condition. Several vulnerable dams experienced the same situation. The project-funded emergency management information system remains largely unused. It has yet to serve well the purposes for which it is intended. The absence of follow-on training on the system, its aging equipment, and its outdated software put the system's value at risk.

The World Bank's project appraisal stated that the project would enhance the government's institutional capacity to be better prepared for natural disasters. The World Bank concluded in 2018, however, that the current policy, legal, institutional environment is exacerbating the losses associated with natural disasters. The World Bank further noted persistent underfunding for flood protection and a lack of investment in seismic risk reduction in the building sector. Many of the problems identified in 2004 thus remain.

The project's quality at entry is rated as **moderately unsatisfactory**. The organizational and institutional arrangements were overly complex and not designed to readily facilitate envisioned synergies or operational efficiencies. The World Bank also overestimated the project's readiness for implementation. At appraisal the World Bank asserted that completed designs were available for the retrofitting of 23 public buildings. In contrast, only one design existed when the project started and it was incomplete. The cost of the construction works and the time needed for the completion of several tasks were significantly underestimated.

The Bank's quality of supervision and the overall rating for Bank performance are rated as **moderately unsatisfactory**. The project encountered multiple delays (and the need for several extensions); problems with procurement; understaffing of the four project management units (PMUs); and situations in which agreed-criteria for construction works were not followed. Each of those situations provided opportunities for active project supervision, which was not always apparent. Through the project's first third (or 24 months), less than 4 percent of the loan had been disbursed (and less than 8 percent at the project's original midpoint). An extension of the project's completion date appeared unavoidable as early as 2006, but the first of two extensions were not initiated until 2009.

The rating for the borrower's performance is **moderately unsatisfactory**. Although the government strongly supported the project during preparation, it became less of a

priority as the country moved towards accession to the European Union, which Romania joined in 2007. Evidence of these events was reflected in lack of attention to timely resolution of critical issues and insufficient funding, support, and supervision by responsible officials and a diminished interest in Bank financing. The government missed the deadline for establishing a project steering committee. Once the committee was established it rarely met in the project's initial years. When the committee met, it often limited its activities to hearing reports on the project's implementation rather than guiding and critiquing its implementation.

The rating for implementing agency performance is **moderately unsatisfactory**. Throughout much of the project its four PMUs faced considerable challenges. One unit was staffed to manage contracts for the seismic retrofitting of buildings but later was also tasked with managing the associated and more expensive contracts for returning those buildings to full functionality. Less than a year into the project the World Bank considered that the efforts of another PMU to prevent accidental spills of mine wastes to be at risk due to the absence of effective management. The creation of a third PMU was delayed for more than two years because of the weak performance of its original host agency.

Key lessons from the experience of the project include the following (see section 7 for other lessons):

Depending on multiple, functionally independent implementing agencies for multisector projects can increase complexity without providing commensurate benefits. Responsibility for reducing the identified vulnerabilities was divided among four PMUs, each of which was in a different agency or ministry. There were few reasons for collaboration among them. The project's design was unduly complex and provided few discernible benefits for the project's implementation.

Multisectoral, multihazard efforts to reduce vulnerability to disasters may not offer synergies or economies of scope in the absence of clear logical links between activities and incentives for coordination by the institutions responsible for them. The project was unsuccessful in demonstrating the advantages of these efforts in Romania and did not achieve efficiencies in implementation that had been expected at appraisal. Subsequent disaster risk management projects in Romania are targeting one sector at a time through a series of projects approach.

In a project designed to mitigate the risk of natural disasters, it is essential that sites critical for vulnerability reduction are both properly identified and systematically supported throughout the life of a project. Adjustments may be necessary, but projects should ensure that selectivity criteria are respected. When criteria for prioritizing sites

are not followed, the result may be a suboptimal allocation of project funds. In this project the appraisal stressed that the project would focus on high-priority measures and construction works capable of reducing social, economic, and environmental vulnerabilities. Despite this aim, a portion of the project's resources were devoted to sites with lower risks.

When supporting structural retrofits, financing only the retrofitting and not the cost of returning buildings to functionality is likely to lead to problems with implementation. Separating the source of funds for retrofitting buildings from the funds for the return to functionality was undesirable, especially because the distinction was not clearly communicated upfront in the project appraisal document or to beneficiaries. The result was that many high priority buildings were unable to carry out retrofits because they were unable to cover the cost of return to functionality.

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¹ Ministry of Environment and Water Management, *Flood Management in Romania: Present and Future*, no date. Available at https://www.inbo-news.org/en/file/262113/download?token=_qdFXrlq

1. Background and Context

1.1 In the 100 years before the HRMEP project began, Romania had experienced more than a dozen earthquakes of magnitude 7.0 or greater and more are anticipated. An earthquake in 1977 caused the death of almost 1,600 people, mostly in Bucharest, and as much as \$2 billion in economic losses due largely to the more than 32,000 buildings that were damaged or destroyed. During the project's development, the World Bank estimated that two-thirds of Romania's urban population is exposed to seismic risks from the Vrancea fault zone, which includes Bucharest. As much as 80 percent of the country's GDP was produced in highly seismically prone areas.²

1.2 Flooding is common throughout Romania. According to the World Bank's appraisal of the project, nearly 500,000 people and 1.3 million hectares (ha) were at serious risk of flooding each year. A flood in 1991 caused damages of almost \$500 million and damaged more than 12,000 buildings, almost 1,000 km of roads, and 150 bridges. Between 1992 and 2003, the government estimated that damages due to flooding exceeded \$6.1 billion.³ Landslides are also common and place at risk at least 50,000 households, 250,000 people, and 700,000 ha.

1.3 Romania has nearly 250 large dams and over 1,200 small dams. Many of these dams were at risk of failure or collapse due to damage or flawed construction. Some dams store mine tailings, many of which contain toxic pollutants that can threaten public health and damage surface waters, including the Danube River, which flows into the Black Sea. Poor management, insufficient maintenance, and inadequate monitoring have led to major spillage events in the past.

1.4 Although natural disasters are common and persistent, Romania's disaster-response agencies were typically underfinanced and without the necessary technical, institutional, and financial capacity.⁴ As the project appraisal document (PAD) explained, "Deficiencies in protective investments, equipment, communication systems and limited access to up-to-date knowledge and technical schemes" provided examples of the shortcomings that hampered emergency preparedness, mitigation, and management. The government lacked sufficient resources relative to other competing priorities to implement the actions needed to reduce the country's social, and economic, and environmental vulnerabilities.

1.5 In an effort to be proactive and to reduce the country's vulnerabilities to natural disasters, the government sought the World Bank's technical and financial assistance. This request led to the development of HRMEP, which was intended to be an innovative, flagship project to address the risks of natural hazards before they occurred and to promote preparedness for hazards likely to occur. As World Bank staff noted, the

project would also provide valuable lessons for future Bank-funded projects on disaster risk management.

2. Relevance of the Objectives and Design

Objectives

2.1 The project development objective (PDO) in the loan agreement was to assist the “Borrower in reducing the environmental, social, and economic vulnerability to natural disasters and catastrophic mining accidental spills through: (i) strengthening the institutional and technical capacity for disaster management and emergency response; (ii) implementing specific risk reduction measures for floods, landslides, and earthquakes; (iii) improving the safety of selected water retention dams; and (iv) improving the management and safety of tailings dams and waste dump facilities.”⁵ Following IEG evaluation methodology, this assessment evaluates against the intended outcome (reduced environmental, social and economic vulnerability to natural disasters and catastrophic mining spills).⁶

2.2 The PAD included the same objective but with three changes. The PAD added “through upgrading communication and information systems” to the end of item (i) above, used “investments” rather than “measures” for item (ii), and changed item (iv) to “improving *on a pilot basis* the management and safety of tailings dams and waste dump facilities.”

2.3 The project also included a \$7 million grant from the Global Environment Facility (GEF) to support item (iv) above and the protection of international waters in the Tisza Basin, an area of more than 150,000 km² in five countries, including large parts of western Romania. The project’s global environmental objective was to “demonstrate and provide for replication for the reduction of catastrophic mining spills of transboundary pollution loads.”

Relevance of the Objectives

2.4 Romania has an unfortunate propensity to suffer from frequent natural disasters, especially those related to floods and landslides. No less important, Romania, and especially Bucharest, are at a high risk of potentially catastrophic earthquakes. The Vrancea earthquake zone, which encompasses 16 counties in eastern Romania, is one of the most active seismic areas in Europe. These possible disasters pose environmental, social, and economic vulnerabilities due to gaps in management capacity and insufficiently mitigated risks. Mining waste had been identified as posing an environmental hazard. The project was timely, initially relevant, and responsive to

Romania's high susceptibility to natural disasters. Nonetheless, the specific framing of "environmental, social, and economic vulnerability" was not separately articulated, though these have overlapping but distinct characteristics. In practice the project focused on general disaster vulnerability reduction and these lenses did not substantially inform implementation or the measurement of results.

2.5 The PDO was appropriately relevant and compatible with the World Bank's Country Assistance Strategy (CAS), which had been approved in May 2001. Although the CAS predated the project's approval by several years, the CAS noted the World Bank's intent to extend a loan to "assist in Romania's efforts to mitigate the costs of damage from earthquakes..., floods, droughts, toxic waste, and other natural and man-made disasters which, taken together, regularly plague the country." The forthcoming loan, the CAS explained "would focus on disaster preparedness and strengthening Romania's existing rapid response capacity... This could include changes in land-use planning, community involvement and education, flood protection works, safety of flood control dams, some retrofitting of public buildings in Bucharest to meet earthquake building codes, and the establishment of a national catastrophic insurance scheme."

2.6 The project's objective to reduce Romania's vulnerability to natural disasters remained relevant throughout the project. Nonetheless, the objective did not represent a clear and continuing priority for either the World Bank or the government. The World Bank's Country Partnership Strategy for FY06–09 neither discussed the project nor the mitigation of natural disasters. Furthermore, the strategy had no benchmarks or targets for hazard risk mitigation, thus suggesting that the project was no longer relevant to the World Bank's objectives in Romania. The next partnership strategy, issued in June 2009 (and covering the next four fiscal years), did mention the mitigation of risks from earthquakes, unsafe dams, and waste deposits from the mining industry but not from floods or landslides. The 2009 strategy also mischaracterized the project, stating that it was reducing vulnerabilities to natural and *technological* disasters, which the HRMEP was never intended to do. The project's relevance to the World Bank's strategic objectives was also unclear. The project, according to the partnership strategy, was supposedly contributing to crisis-management measures in the financial sector and establishing the building blocks for sustainable convergence to the average living standards in the European Union (EU).⁷

2.7 Given Romania's high and continuing vulnerability to natural disasters, the relevance of the project's primary objective is rated as **substantial**.

2.8 The relevance of the GEF-supported activities to reduce accidental spills of mine wastes is not separately rated (here or elsewhere in this report), but the activities were

compatible with the facility's operational strategy. The activities supported long-term protection of international waters as well as the financing of innovative demonstrations for reducing contaminants in these waters. One purpose of such demonstrations would be to identify reduction measures with the highest benefits.

Design

2.9 The project, according to the PAD, was designed to use a comprehensive, multihazard risk-management approach in the context of a framework program. Four separate project components would support activities complementary to the government's. Furthermore, the design was intended to promote close coordination among the agencies (and their corresponding PMUs) responsible for mitigating the vulnerabilities associated with floods, landslides, earthquakes, and accidental spills of mine wastes.

Components

2.10 Component A sought to strengthen emergency management and Romania's risk-financing capacity. The design included development of an emergency management information system (EMIS), technical assistance to support an insurance program covering disaster risks, and developing a scenario modeling the effects of earthquake in the Vrancea seismic zone.

2.11 Component B focused on the reduction of risks to due to earthquakes. The design focused on retrofitting high-priority public facilities, providing training on retrofitting, and reviewing building codes.

2.12 Component C addressed the reduction of risks associated with floods and landslides. The design supported construction works to reduce risks from flooding and potentially unsafe dams and pilot studies for modeling and remediating the risks of landslides.

2.13 Component D addressed risk reduction of mining accidents in the Tisza Basin, through monitoring, remediation, and response capacity.

Restructuring

2.14 The project was restructured six times, including three times in the project's last six months.⁸ When the government realized that not all tasks could be completed by the original closing date, a restructuring in 2009 extended the project until December 2011. In addition, the project's scope and number of activities were reduced due to currency depreciation and the increased costs of construction. The PDO indicators remained unchanged but several targets in Components B and C were revised downward. The

project underwent a second restructuring in August 2010 to apply the World Bank's Safeguard Policy on Involuntary Resettlement.

2.15 A third restructuring, in December 2010, reallocated resources among components to permit completion of activities in Components B and C and to improve the use of the GEF grant in Component D. Another restructuring in December 2011 also reallocated resources among components, extended the closing date to June 30, 2012, and cancelled \$6.68 million of the loan in response to the government's request. Two additional restructurings, in 2012, further reallocated resources among components.

2.16 Extending the project life was appropriate given the delays in implementation for some activities. The World Bank correctly applied a restructuring to trigger its Involuntary Resettlement policy once it was realized that this would be an issue. Other restructurings aimed at reallocating resources were likely necessary given the World Bank's rules at the time and the need to balance resources across many activities.

2.17 The restructurings did not change the PDO or the GEF's global environmental objective.

Implementation Arrangements

2.18 Project management units (PMUs) were created within ministries with ministry staff for the four project components, as follows:

- Component A: Ministry of Administration and Interior
- Component B: Initially in the Ministry of Transport, Construction, and Tourism and then in the reconstituted Ministry of Regional Development and Tourism.
- Component C: Initially in the National Administration Romanian Waters and then in the Ministry of Environment and Forests.
- Component D: National Agency for Mineral Resources

2.19 Each PMU was intended to have full responsibility for all technical aspects of implementation, monitoring, procurement, and financial management. The PMU for Component B was also responsible for consolidation of financial and implementation reports from the other PMUs. The PMUs were closed at or shortly after the project's closure.

Relevance of the Design

2.20 The HRMEP represented one of the World Bank's first ex ante emergency preparedness projects intended to provide assistance to reduce or mitigate a country's vulnerabilities to natural disasters and thus to enhance resilience. The project's central assumption was that its interventions would reduce the social, economic, and

environmental vulnerabilities to natural disasters. In most instances the assumed linkage between the interventions, their outputs, and the desired outcomes are clear. Effective flood protection measures, for example, reduce the likelihood of floods and the social, economic, and environmental harms they can cause. When aging dams are rehabilitated and become less likely to fail, similar benefits follow. Retrofitting of buildings reduces their occupants' vulnerability to death or injury, the costs of responding to earthquakes, and the costs of repairing damaged buildings. Retrofitting also reduces the potential environmental consequences of earthquakes, which include fires, explosions, debris, exposure to hazardous substances, and dust that can diminish air quality.

2.21 In choosing a comprehensive, multihazard approach, the World Bank and the government had considered but rejected an approach focusing only on a single hazard in the belief that coordinated disaster management brings better results than a unisectoral approach.⁹ As the World Bank explained, "Development of separate operations based on the type of disaster was determined as inefficient as it can lead to overlapping activities and lack of coordination" among the responsible authorities.¹⁰ This reasoning reflects the World Bank's belief that a coordinated, multisector approach represents best practice.

2.22 **The multisector, multihazard approach was unsuccessful in Romania. The design's causal assumptions about the need for multisectoral collaboration were valid, but the design lacked the institutional linkage to achieve this collaboration.**¹¹ At appraisal, the World Bank declared that the project's proactive approach to risk mitigation would demonstrate its institutional merits and that advanced planning and investment would reduce the social and economic costs of disasters. By the time of completion, however, the World Bank concluded in its self-evaluation of the project that what was supposed to be a "new Bank paradigm for disaster risk management" was unsuccessful, adding that neither the project design nor the implementation arrangements have any relevance for future projects.¹² Future Bank projects on DRM in Romania have adopted a Series of Projects approach where different sectors are covered by separate projects.¹³

2.23 Despite the project's reliance on best practice there were no natural synergies between several project components. Remediation of toxic substances from mining operations does not complement retrofitting of buildings, especially when different ministries were responsible for these tasks. Representatives from the Ministry of Finance noted that it was "extremely difficult" to coordinate the public agencies' implementation of the project. To succeed, a multisector approach for risk reduction requires strong government mandate and leadership and the coordinating entity's commitment, which were not present in this case.

2.24 The design reflected a decision to fund only structural retrofits but not buildings' return to functionality. The latter task involved such things as restoring electricity, plumbing, heating, and air conditioning and updating or installing elevators and lighting fixtures and, in the case of hospitals, ensuring that they met the newly applicable standards of the EU. Restoring functionally was typically much more expensive than the retrofitting, and the tasks required compatible architectural and engineering designs. Perhaps most important, the decision to fund only the retrofitting was not sufficiently communicated to key stakeholders or building owners until after they had agreed to have their buildings retrofitted.

2.25 Relevance of the original and restructured design is rated as **modest**.

3. Implementation

Planned versus Actual Expenditure by Component

3.1 The loan was approved for \$150 million, of which 92 percent or \$138.45 million was disbursed. The GEF provided a grant of \$7 million for Component D. The government also allocated \$46.66 million to the project, but its actual expenditures were \$35.9 million. The difference between planned and disbursed amounts shown in Table 1 resulted from fluctuations in exchange rates, the inability to commit all resources by the project's end, and the government's request in December 2011 to cancel \$6.68 million of the loan.

Table 1: Project Cost by Component (in millions of \$)

Component	Appraisal Estimate	Actual Costs
A – Strengthening of Emergency Management and Risk Financing	10.90	14.74
B – Earthquake Risk Reduction	71.20	56.49
C – Flood and Landslide Risk Reduction	101.09	99.31
D – Risk Reduction of Mining Accidents	15.25	4.29
E – Project Management ^a	5.21	
Total	203.65	174.83

^a Costs for project management are included in the actual costs of Components A – D.

Implementation Experience

3.2 The loan and the GEF grant were appraised in January 2004 and approved in May 2004. Both became effective on October 20, 2004. The original closing date was December 31, 2009, but it was twice extended until June 30, 2012. The World Bank acknowledged that the originally planned implementation period of 5.5 years was

unrealistic. The team that designed the project had recommended seven years, but a decision was made to start with the shorter duration with the hope that it would instill a sense of urgency and encourage rapid implementation. However, this did not occur.

3.3 At least two key events adversely affected the project's implementation. First, Romania's membership in the EU shifted the government's attention to its new responsibilities and obligations as a member of the union and, in turn, the borrower's performance (see section 6.21). As an example, designs for retrofitting had to be amended to comply with the EU's standards, and this process delayed the project's implementation. No less important, membership encouraged the export of labor and expertise but imported inflation. Accession to the EU permitted Romanians to move freely to other EU countries in search of higher wages while the cost of labor and construction within Romania increased by more than 20 percent after 2007.

3.4 Second, Romania experienced a severe financial crisis beginning in late 2008. In an effort to improve management of public debt, the Ministry of Public Finance decided that funds for the project would be advanced from the state budget and then reimbursed from the loan beginning in 2009. Given the government's financial constraints, the ministry could not guarantee that it would be able to prefinance sufficient funds for the project. The World Bank rated this risk as substantial.¹⁴ Although ministry staff disagree, the new arrangement led to delays in the project's implementation as well as uncertainty about whether project activities would be funded and when.

3.5 The government also mandated that salaries of public employees be cut by as much as 75 percent in early 2009.¹⁵ Further reductions in salaries were imposed when the government accepted the terms of a Standby Arrangement for €18.5 billion from the International Monetary Fund in March 2009. The reduced salaries devastated morale among the PMUs and compromised their ability to fill the positions of those who left the PMUs as a result of the salary reductions. This situation exacerbated a related problem, namely understaffed PMUs that predated the economic crisis.

Safeguards Compliance

3.6 The World Bank initially applied four safeguards:

3.7 Environmental Assessment (Bank Operational Policy 4.01) as it would apply to the construction works for Components B, C, and D. To implement the policy, the World Bank reviewed and approved the government's environmental assessments and management plans for the three components. In addition, separate environmental plans were developed and applied to individual construction contracts. The World Bank monitored adherence to these plans as part of its ongoing supervision responsibilities.

- Cultural Property (Bank Operational Policy 11.03) because some of the buildings to be retrofitted to mitigate seismic risk under Component B were historical monuments or culturally important.
- Safety of Dams (Bank Operational Policy 4.37).
- Projects in International Waters (Bank Operational Policy 7.50 and GEF Operational Policy 7.50) for the prevention and remediation of spills of toxic substances from mine sites under Component D.

3.8 The World Bank's implementation support mission in mid-2012 concluded that "the overall status of [the] environmental program implemented...is considered satisfactory, and all works were implemented in compliance with the local and [the] Bank's environmental safeguards."¹⁶

3.9 During appraisal the government had confirmed that all construction works would occur on publicly owned land, so it was not deemed necessary to apply the World Bank's policy on Involuntary Resettlement (Operational Policy 4.12). During implementation, however, it became necessary to acquire some privately owned land for construction works at three sites in early to mid-2009.

3.10 A project restructuring, in August 2010, triggered operational policy 4.12 to systematize treatment of any future land acquisition.¹⁷ The restructuring paper claimed that the acquisition had occurred in accordance with Romanian law and consistent with the World Bank's operational policy.¹⁸ Despite this claim, the acquisition had occurred without the World Bank's review or prior knowledge, so some of the policy's requirements had not been applied. The policy requires a resettlement plan that has been disclosed to the public in advance of land acquisition, but no plan had been prepared or disclosed. The restructuring paper explained how the government had addressed the resettlement to the land owners' satisfaction and identified other sites where the policy might apply.

Financial Management and Procurement

3.11 The project's financial management was well and timely supervised. The project was in compliance with the financial covenants included in the legal agreements between the World Bank and the government. The PMUs had adequate internal controls, including regular reconciliation of bank accounts and disbursement summaries. Reports from independent auditors provided clean audit opinions, and no internal control issues were identified.

3.12 The project's success with procurement was mixed. There were many complex contracts successfully consummated but there were also situations in which problems

existed with procurement. Several PMUs were understaffed, inadequately staffed for procurement, and lacked relevant capacity.

3.13 There were also several instances of long delays in procurement due to the need for multiple internal clearances within ministries and the PMUs' inability to assess the technical quality of some proposals for construction works. Other problems included imprecise or unclear terms of reference in tender documents, with the procurement of a contractor for the development of the EMIS as the best of several examples. Concerns about procurement were evident throughout much of the project. The World Bank identified procurement and contracting as the HRMEP's "main challenge" in early 2007.¹⁹ Due to the slow rate of procurements and disbursements and the World Bank's concern about "serious deficiencies" in procurement, the HRMEP was included in the World Bank's list of projects at risk.

3.14 In other instances contracts had to be terminated due to missed deadlines, flawed designs for construction works, poor performance of contracted firms, or because of a PMU's inability to resolve differences of opinion with these firms. Examples of the latter include contracts for the retrofitting of Iasu City Hall (Component B), a pilot study on landslides (Component C), and for training on monitoring of mine wastes (Component D).²⁰

3.15 Some site supervisors for construction works were hired after the construction they were expected to monitor had already begun. One PMU issued contracts with completion dates after the end of the HRMEP, when no money would have been available to pay the contracted firms. Another PMU issued contracts to consultants after they had completed their work, an approach the World Bank forbids.

4. Achievement of the Objectives

Objective: reducing the environmental, social, and economic vulnerability to natural disasters and catastrophic mining accidental spills

4.1 The project's central assumption was that its interventions would reduce the social, economic, and environmental vulnerabilities to natural disasters. Were these outcomes achieved and, equally important, were the project's resources allocated to sites with "high public benefit," as the PAD claimed would be the case?²¹ The sections that follow address this question, but do so in the context of two fundamental concerns. First, the project did not have a clear causal theory of what it means to reduce the vulnerabilities associated with floods, landslides, and earthquakes. Second, none of the

PDO-level indicators included measurable outcomes that depict the magnitude of the expected reductions in the three vulnerabilities or for the number of people expected to benefit from the project. Rather than outcomes causally linked to the PDO, the original indicators and their targets shown in Appendix D reflect outputs and supply-side deliverables (e.g., number of buildings retrofitted). Of the eight original targets for outputs, only three were fully achieved when the project closed. As a result of the two concerns, assessment of the project's efficacy is based on the summed achievement of the project's interventions.

Reducing Social and Economic Vulnerability through the Establishment of an EMIS and Catastrophe Risk Insurance

4.2 An effective EMIS that provides information on disaster risk to the end-user in a timely way is critically important to reduce social and economic vulnerabilities and to respond to disasters when they occur. The project's efforts to create an effective EMIS have not been fully successful. There is a limited evidence that it has improved responses in the aftermath of natural disasters (notably floods) or have had positive long-term effects by "providing a range of tangible outcomes, including avoided loss of life, property and livelihood," as the PAD had forecast.²² A contract for the development of an EMIS, which was the project's only effort to strengthen emergency management related to floods, landslides, and earthquakes, was issued in May 2008.²³ The World Bank had projected that final acceptance of what would become the Sistemul de Management Informațional pentru Situații de Urgență (SMISU) would occur in 2013 – after the project closed. This optimism was unjustified. After multiple delays, problems with the software, disagreements with the contractor, and a legal challenge involving allegations of flawed procurement, SMISU gained final acceptance from the General Inspectorate for Emergency Situations (GIES) in September 2017.

4.3 The system was described as difficult to operate, user unfriendly, not particularly helpful during a flood, unduly burdensome in terms of entering data, and requiring constant updating of information. Among the county inspectorates for emergency services visited for this review, including three that had experienced flooding in 2018, there was agreement that SMISU is not contributing to or enhancing management of emergency responses at the local or county level. As multiple respondents observed, and which the GIES and the system's developer agreed, much of the SMISU-related hardware is outdated, close to obsolescence, and nearly incapable of performing its intended functions. The counties' computer operating system, Microsoft Vista, is similarly outdated. Microsoft stopped retail sales of Vista in 2010 and stopped providing bug fixes and security updates in April 2017. These problems do not reflect flaws in the system's design but rather a decision not to invest resources to ensure the system's continued functional viability after the project closed.

4.4 Some training was provided to SMISU's users in 2011, but no agency, including GIES, now provides any training on a system that is considerably different than the one initially created. Furthermore, with the exception of the GIES, which is part of the Ministry of Internal Affairs, other key ministries only occasionally add or update their data for SMISU. This is unfortunate. The system was intended to promote information sharing among ministries. In contrast, GIES is using the system to collect and aggregate data on the damages that disasters cause.

4.5 In October 2018 GIES conducted a mock exercise, which simulated an earthquake of 7.5 magnitude in Bucharest. According to the GIES, SMISU was not used during the exercise, perhaps because of its limitations and because not all the government agencies involved in the simulation are familiar with the system.

4.6 **A catastrophe insurance program was established with the project's support, but the program's low penetration has only a small effect on reducing the social and economic vulnerabilities associated with the covered perils.** A private-sector Pool against Natural Catastrophes (PAID) was created in 2008 and issued its first policies in 2010. PAID provides coverage (for residences only) for damages suffered from earthquakes, floods, and landslides. The insurance provides social as well as economic benefits by using an insurance instrument to manage the risks that households face.

4.7 The coverage is legally mandated for all residences, but the actual penetration rate was 19 percent in December 2018.²⁴ Penetration tends to be higher in areas with new construction and in Bucharest. Local authorities are responsible for enforcement but are disinclined to act due to the unpopularity of enforcement. There is also a problem of moral hazard. According to interviews with insurance experts and other stakeholders, local or county governments, though legally prohibited, often indemnify victims of natural disasters, including those without PAID insurance, financially or through the donation of building materials.

4.8 PAID is financially sound and one of the most efficient insurance providers in Romania.²⁵ Interviews with staff at PAID revealed that the program has about €900 million in reinsurance, a solvency ratio well about the average for insurance companies in Romania, has never had a year in which payouts exceeded the program's income, and its average claim is about €1,000.²⁶

4.9 If homeowners should bear some or even all financial responsibility for their homes and address that responsibility through insurance, then PAID provides an inexpensive way to do so. Depending on the type of building materials used, premiums are either €10 or €20 per year. There is no deductible and damages are covered up to

€20,000. As penetration rates increase, PAID can assume much of the financial burden of disasters while decreasing the government's fiscal exposure to them.

4.10 This fiscal exposure may lead to a perverse incentive. The World Bank approved a €400 million Catastrophe Deferred Drawdown Option (Cat DDO) for Romania in 2018. The Cat DDO is a contingent financing line that provides immediate liquidity to address shocks related to natural disasters or health-related emergencies. The government can use the financing in any way it chooses, including indemnification of those suffering damages from floods, landslides, or earthquakes.²⁷ There was strong but mixed reaction to the possible effects of the Cat DDO on PAID. PAID and some Bank staff raised concerns that the Cat DDO enables the government to indemnify private disaster losses with the consequence that the incentive for homeowners to insure their own losses through PAID could be undermined. Other Bank staff correctly noted that if this incentive is present, then it existed before the introduction of the Cat-DDO. Moreover, the fiscal discipline of a government to ensure homeowners have insurance and are not awaiting government support for rebuilding or reconstruction is rare in any country regardless of whether a Cat-DDO is in place. PAID does not provide any coverage for public buildings so the government bears a substantial financial risk in the event of a major earthquake. The Cat DDO can mitigate at least some of this risk.

4.11 **An earthquake scenario for the 16-county Vrancea seismic zone was completed, but its contribution to reducing social and economic vulnerabilities is uncertain.** The scenario was intended to model potential damages to residential, commercial, industrial, and public buildings from the zone's maximum probable earthquake. In addition, the scenario formed the basis for the development of revised response plans in the event of an earthquake. The World Bank's implementation and results report (ICR) claimed that the scenario would be transferred to PAID for its risk modeling. This transfer did not occur. PAID was informed that transferring a government-owned resource for the economic benefit of a private entity is not legally possible. For the same reason the scenario was not shared with Romania's academic experts on earthquakes who could use it for teaching and research.

Reducing Social, Economic, and Environmental Vulnerability by Addressing Earthquake Risk Reduction

4.12 **The project's retrofitting of public buildings moderately reduced the social, economic, and environmental vulnerability to damage from earthquakes.** Among the buildings that were retrofitted, not all were essential for Romania's social functioning, as the PAD had indicated.

4.13 Over the life of the project the number of buildings to be retrofitted changed frequently. The government had initially identified 84 structures to be retrofitted with project funds; the project was partially successful in achieving this objective.²⁸ By mid-2011, however, 36 buildings had been withdrawn at the owners' request for several reasons or as a result of the PMU's reprioritization and slow performance. After these changes the net result was that 48 public structures were supposed to be retrofitted; 44 were eventually retrofitted including eight completed after the project's closure with government funding. The 44 included 17 emergency and disaster response facilities, 14 hospitals, 10 educational facilities, and 3 buildings categorized as essential public buildings. About 23,350 people working in these buildings were protected.

4.14 The World Bank had identified four criteria to rank buildings to be retrofitted: criticality to response and recovery operations; safety and higher risk for the population; cost effectiveness or benefit-cost analysis; and, feasibility and appropriateness of the retrofit measures. The actual selection process did not consistently apply these criteria. Buildings to be retrofitted would be, according to the World Bank, "critical public facilities" that have "a paramount role in the emergency response and preparedness system and those that are essential for the country's social functioning."²⁹ Several respondents noted in interviews, however, that some buildings were selected on the basis of political favoritism and thus did not fully adhere to the selection criteria. In addition, some occupants were unsure why their buildings had been selected for seismic retrofitting, thus suggesting that their buildings may not have been essential to recovery and response.

4.15 The headquarters of the GIES in Bucharest (which coordinates postdisaster emergency response) was one site about which there was no disagreement about its urgent need for retrofitting. The building is seismically vulnerable and was to be the core location of the SMISU. The headquarters was not retrofitted before the HRMEP closed, so the building was dropped from the project.³⁰ Staff at GIES indicated that retrofitting was expected to begin in 2019 with financing from the National Investment Company (under the Ministry of Regional Development).

4.16 **The project's approach of covering only structural retrofits but not the costs of returning buildings to full functionality weakened efforts to retrofit critical public facilities.**³¹ The government's preference was to use the loan to finance the retrofitting of buildings but to use its annual budgetary resources for financing the buildings' return to functionality. This separation, the government believed, would allow it to keep the latter costs under strict control and maximize the use of the loan's resources for retrofitting.

4.17 The government first signed memoranda of understanding with the buildings' owners, which were not necessarily the same as the occupants as in the case of hospitals.

Only upon completion of the memoranda, according to several respondents, were the buildings' owners or occupants informed that they would be responsible for obtaining the funds to cover the buildings' return to functionality. The process of obtaining cofinancing was rarely prompt or efficient. The "extra" funds typically comprised as much as 50 percent or more of the total costs, and the PMU did not have control over the cofinancing or its sources.

4.18 The World Bank had initially declared that the loan's resources could not be used to retrofit a building unless there was a binding commitment of resources to cover the functionality-related costs of construction and equipment. Given the delays and challenges in obtaining funding for the functionality-related costs the World Bank subsequently offered to amend the loan to cover the costs of return to functionality. Doing so would have eased the ability to follow selection criteria and to target the most critical buildings but would have reduced the funds available for retrofitting and thus the number of buildings to be retrofitted. The PMU rejected this option; the number of buildings retrofitted was deemed to be important in terms of meeting the project's targets for Component B. Instead, a compromise was implemented in which the World Bank and PMU agreed that the loan could be used to finance the functionality-related design costs but not their implementation.

4.19 The consequence of not using the project to cover return to functionality was that the targeting criteria were compromised. Selection of buildings for retrofit was made substantially because of the availability of financing for the return to functionality. High-priority buildings based on the criteria would not be retrofitted unless funds were also available for the cost of returning them to full functionality, and this was not always present. The low quality of many functionality-related designs, which were beyond the World Bank's control, also affected the selection process as well as the costs of the construction.

4.20 Among the original list of 84 public buildings to be retrofitted, the World Bank had estimated that there were as many as 30 separate owners. To address the likely complexity associated with multiple owners, the World Bank and the government agreed to bring the targeted public buildings under the temporary authority of a single ministry during their retrofitting. This innovative approach had mixed results. On the one hand, a single ministry (and its PMU for Component B) would be able to manage the retrofitting. On the other hand, having multiple owners increased the number of ministries, agencies, and local or county governments with which the PMU needed to collaborate. The situation also created the possibility that the contracted firms for each of the two tasks – the retrofitting and the return to functionality – would be managed separately. In the belief that it would be inefficient to have separate project managers for each task, the World Bank and the government agreed that the PMU would manage

both tasks, thus increasing substantially the PMU's workload without a commensurate increase in the size of its staff.

4.21 In several instances, a building's permanent owners or occupants did not themselves have sufficient resources for the functionality-related costs and thus had to request funds from a ministry or their local governments, several of which had no other involvement with the project. Other owners were unable to provide all the funding required for the costs of returning their buildings to full functionality. Near the project's closing the World Bank reported that the owners of two buildings requested that contracts be halted – after the retrofitting had been completed – because they lacked the money to complete the rehabilitation.³²

4.22 The project facilitated and promoted introduction of innovative and cost-effective methods for seismic retrofitting through review and revision of the country's building codes for construction of new and retrofitting of existing buildings to meet the EU's requirements. The project also supported the piloting of the new retrofitting methods. As the World Bank noted, however, "the implementation of new methods for seismic retrofitting failed because of the poor performance of consultants and delays in preparation of the designs falling beyond the project timeframe."³³ The project included resources to fund professional training in cost-effective retrofitting methods "as soon as practical after funding is approved" that would lead to certification that academic institutions would recognize.³⁴ The firm hired to develop the training materials was scheduled to deliver them two days before the project closed, but a lengthy, unresolved dispute between the firm and the PMU meant that neither the training nor a proposed study tour occurred. This situation thus represented a missed opportunity to enhance Romania's capacity, including that in the private sector, to mitigate seismic risks after the project's end. The World Bank's postproject review concluded that "the benefits of capacity building under this component could not be identified."

Reducing the Social, Economic, and Environmental Vulnerabilities Associated with Floods

4.23 More than 43,500 people benefited from flood protection measures at 10 locations (versus the 12 locations originally proposed) but not all priority locations identified during appraisal benefited from the project.

4.24 The World Bank's postproject assertion that people covered by protection works were no longer at risk of damage from floods was overstated; protective measures are never completely effective.³⁵

4.25 Like the retrofitting of buildings described above, two high priority areas for flood protection did not benefit from the project. As an illustration, Babadag had been

identified as a site with a high vulnerability to floods at appraisal. A design was developed for the site, but the project did not fund any construction there.

4.26 Fifty-five large, publicly owned dams had been identified at appraisal as being unsafe and in need of rehabilitation. Of these the project intended to rehabilitate eight large dams (plus five small dams). Four large and three small dams were rehabilitated and provided protection for almost 223,000 people, a notable achievement.

4.27 Upon completion of the rehabilitation of the seven dams each should have been issued licenses for their full operation. Work on the Dridu dam was finished in 2012, but the dam had not received final certification as of November 2018 due possibly to concerns about some unfinished work for which there is no clear solution.

4.28 Six dams were dropped from financing because the loan amount proved insufficient due to the government's initial underestimation of costs in feasibility studies. This situation required a restart of the design process that produced new estimates leading to a doubling of the costs of the dams on the priority list.³⁶ This situation highlights the problem of proceeding with the project without valid and defensible feasibility studies (and parallels a similar situation with the problematic designs for retrofitting of public buildings noted in section 6.11).

4.29 Designs or feasibility studies were completed for the rehabilitation of six dams, but then not subsequently used. Several respondents noted that a large dam at high risk of failure, at Lake Siriu, was more in need of attention than some of the dams that were rehabilitated. In two instances feasibility studies were deemed to be deficient but neither dam had been rehabilitated through 2018 despite having been identified as in need of immediate rehabilitation in 2004. The World Bank had wanted to increase the size of the loan to permit completion of the rehabilitation but the government declined. It did not want to incur more debt.

4.30 The pilot studies on landslides were not completed and did not produce any meaningful benefits or reduce any vulnerabilities. The studies were intended to develop mathematical models to determine the conditions under which landslides might occur and a manual on monitoring and interpreting data collected from two pilot sites. The studies were not completed and no tangible results were produced due to the contracted firm's unacceptable performance and the PMU's poor management.

4.31 Monitoring equipment had been installed at Sinaia, an urban site, and on the right bank of the Sacele dam. In October 2018, however, there was no ongoing monitoring at Sinaia. As Sacele, the monitoring continued sporadically due to problems with the equipment. More important, even when the monitoring is operational, its value

is minimal. No public employees at the dam have been trained to analyze the data or to assess their implications for possible landslides that could damage the dam.

4.32 A draft manual for monitoring landslides was prepared but not submitted to project staff until one day before the project's closing. The manual had not been completed as of late 2018. International training on landslide forecasting was supposed to be provided to Romanian researchers, but that training did not occur due to the problems with the contracted firm mentioned above.

Reducing the Social, Economic, and Environmental Vulnerabilities Associated with Mining Accidents in the Tisza Basin

4.33 The GEF's global environmental objective was to demonstrate and provide for replication for the reduction of catastrophic accidental spills of transboundary pollution loads from mine operations flowing into the Danube and Black Sea Basins. The project's primary means to achieve this objective was remediation and hazard prevention interventions at high-priority, government-owned mining sites.

4.34 This was the project's smallest component, using less than 2.5 percent of the project's resources. With these resources the component had several successes. At the project's completion six remediated sites (versus three that had been projected) had ceased to be a significant environmental risks, emissions of contaminated dust were reduced, surface runoff, and groundwater infiltration had been terminated, and levels of toxic pollutants from mine spills entering the Danube River and Black Sea had declined.³⁷

4.35 These achievements represent a significant success, but the postproject situation is not as compelling. At remediated sites where monitoring equipment was placed, some of it has been damaged or stolen since 2012. The project provided extensive training intended to build capacity, but the training's benefits and consequences remain uncertain. There was no effort to evaluate its success. Finally, one of the component's objectives was to promote transboundary cooperation. The project sponsored multiple international events and meetings, but there does not appear to be any sustained long-term transboundary cooperation due to the project according to those interviewed for this assessment.

Summarizing the Outcomes Achieved

4.36 When the project ended in mid-2012, the World Bank's and the government's attention to the project's objectives had diminished. Many public buildings essential to emergency planning and response and that had been identified as priority candidates for retrofitting remained in their at-risk condition. The same situation exists with several dams. Although much remained to be done, no follow-up projects were planned at

closure. Several ministries had expressed some interest, but they did not pursue this interest with the Ministry of Finance.³⁸

4.37 In terms of outcomes achieved related to efforts to reduce the vulnerabilities associated with floods, landslides, and earthquakes, the rating for efficacy is **modest**. In accordance with IEG practice, no rating is assigned to the GEF's global environmental objective to reduce pollution from accidental mine spills.

5. Efficiency

5.1 **The PAD's postproject economic analysis focused solely on the projected benefits of investments in the reduction of flood risks and the safety of dams, which represented 57 percent of the project's expenditures.** The analysis estimated the average internal rates of return (IRR) for the flood-control projects to be 19.4 percent, which was less than the 28.8 percent projected at appraisal. For the investments related to dam safety, the IRR was estimated to be 22.4 percent versus the 26.5 percent estimated at appraisal. For the flood-protection and dam-safety measures the estimated end-of-project benefit-cost ratios were 2.15 and 3.60, respectively.³⁹ The analyses did not estimate the value of human life or explain how monetary values were determined or assigned for any of the projected costs or benefits.

5.2 Neither the economic analysis at appraisal nor in the ICR considered or justified economically any of the investments associated with Components A, B, or D. In the case of the seismic retrofitting, the original selection of buildings was based partially on the government's estimates of cost effectiveness or benefit-cost analysis.⁴⁰ For component D, the PAD observed that the project would "institutionalize a consistent risk management approach to identify cost-effective risk reduction measures..., so available resources can be channeled to those measures with the highest benefits."⁴¹

5.3 There were six high-priority dams for which designs or feasibility studies were completed at a cost of several hundred thousand dollars but then not turned into contracts for the designed work. None of these costs were included in the economic analysis. The analysis prematurely calculated the benefit-cost ratio for the rehabilitation of a small dam at Sanmihaiu, but most of the required work had not been completed by the project's end (or by late 2018).

5.4 Several numbers used in the ex post economic analysis do not correspond with the numbers in the preproject social assessment or the actual, contracted costs of rehabilitation. The World Bank (and the economic analysis included in the ICR) estimated that there would be nearly 108,000 beneficiaries from the rehabilitation of that dam. At the project's closing the PMU estimated that number to be less than 31,000.

5.5 To assess the sustainability of the HRMEP's investments, a preproject social assessment declared that a baseline survey of the income and employment situation in the project areas "shall be carried out for all subprojects" at the HRMEP's beginning, midpoint, after implementation. None of these surveys were initiated.

5.6 The project's administrative efficiency in implementing the project cannot be assessed. Project management costs had been estimated to be \$5.21 million including \$3.14 million from the loan, but the four PMUs did not individually track their actual costs for implementing their components.⁴²

5.7 The rating for efficiency is **modest** due to the absence of analysis on the costs and benefits associated with Components A, B, and D and the discrepancies in the data used in the economic analysis for Component C.

6. Ratings

Outcome

6.1 The project's development objective was relevant to country conditions, to the government's strategies at appraisal, and to the World Bank's CAS in effect when the project started. Although the project remained relevant to country conditions during its implementation, the relevance to the World Bank's and the government's priorities diminished considerably soon after the project started (see section 2.6).

6.2 Despite a weak and overly complex project design, the project financed several outputs that modestly contributed to the reduction of disaster-related vulnerabilities. These included the seismic retrofitting of 44 public buildings, flood protection measures at 10 sites, and the rehabilitation of 7 dams at risk of failure.

6.3 Efficacy was undermined because the project did not consistently target sites with the greatest vulnerabilities. Measurement was also a challenge. The project did not include outcome indicators that could causally connect the outputs to the objective of reduced vulnerability. Critical technical capacity building was not achieved as evidenced by the lack of application of the EMIS. The project did mitigate risks related to toxic pollutants from mine spills entering the Danube River and the Black Sea. The latter was achieved at a much lower cost than had been anticipated. The project also contributed to the creation of a low-cost insurance scheme to cover losses due to Romania's most common natural disasters. Penetration rates are lower than desired, but this is not an outcome for which the World Bank bears responsibility.

6.4 The project's efficiency is uncertain due to questions about the validity of the data used and the World Bank's decision not to conduct any economic analysis of three project components.

6.5 Overall, the project's outcome is rated as **moderately unsatisfactory**.

Risk to Development Outcome

6.6 The EMIS remains largely unused; it has yet to serve well the purposes for which it is intended. Furthermore, the lack of follow-on training on the system, its aging equipment, and its outdated software imperil the system's value.

6.7 PAID, the catastrophe risk insurance, covers less than one in five households. Concern exists about its continued viability in the face of the Cat DDO, which the World Bank provided in 2018. PAID helps to reduce the government's contingent liability by transferring highly concentrated catastrophe risk to the international reinsurance and capital markets and, in turn, reduces Romania's economic vulnerabilities. Some Bank staff argue that the Cat DDO does the opposite; it retains this risk within Romania while ignoring the willingness of international reinsurance markets to accept the risk.

6.8 The PAD had stated that the project would enhance the government's institutional capacity to be better prepared for natural disasters. At appraisal the World Bank had also predicted that the existing level of scientific and technical expertise in Romania provided assurance that the project's benefits would not only be sustained but further advanced in the future.⁴³ Despite these claims, the World Bank concluded in 2018 that the current policy, legal, institutional environment is exacerbating the losses associated with natural disasters. The World Bank further noted persistent underfunding for flood protection and a lack of investment in seismic risk reduction in the building sector.⁴⁴ Many of the problems identified in 2004 thus remain. There is also little evidence that the institutional capacity and knowledge the government gained during the project has benefitted the private sector's capacity for emergency preparedness or response in the event of an earthquake.⁴⁵

6.9 The risk to development outcome is rated as **significant**.

Bank Performance

Quality at Entry

6.10 Suitable specialists were involved in the project's preparation, and they were provided with adequate resources in terms of budget and time. When the project began its task team leader was based in Washington but soon changed to a well-respected Romanian staff member based in Bucharest. This was a positive development in terms of

the HRMEP's day-to-day management and fortuitous as well because this team leader remained with the project until its completion in 2012.

6.11 The World Bank overestimated the project's readiness for implementation. The World Bank asserted at appraisal that completed designs were available for the retrofitting of 23 public buildings. In contrast, the World Bank concluded that only one incomplete design existed when the project started.⁴⁶ The cost of the construction works and the time needed for completion of several tasks was significantly underestimated. The World Bank projected that all the tasks associated with Component A would be completed within three and one-half years, after which time the PMU would cease operations.⁴⁷ When the project ended after almost eight years (and after two extensions) the PMU was still in operation and not all of its tasks had been completed.

6.12 The project's multihazard approach added complexity, caused project funds to be spread too thinly across more than 60 project sites, and created a complex implementation structure. Four PMUs were deemed necessary to match the organizational responsibilities of the four ministries involved with the project.

6.13 An overly detailed projected budget did not appropriately allocate resources among the four components. One Bank official deemed the loan's disbursement schedule to be "extremely and unusually fragmented." The actual expenditure for reducing the risks of mining accidents in the Tisza Basin were about 70 percent lower than had been projected due to overestimation of the costs and the withdrawal of a high-risk site from the project when it was transferred to private ownership.⁴⁸ The costs for strengthening emergency management were 35 percent higher than had been projected due to a miscalculation of the time needed to achieve its objectives and the higher-than-expected costs for completing the EMIS. Reallocating resources was cumbersome, time consuming, and required cabinet-level approval as well as four restructurings of the project.

6.14 The quality at entry is rated as **moderately unsatisfactory**.

Quality of Supervision

6.15 Over the life of the project the World Bank completed more than 20 supervision missions to review the status of the project's implementation and its financial management and to identify issues that needed the government's or the PMUs' attention. The missions typically led to lengthy summary reports on the status of all project activities. A midterm review was completed in late 2007.

6.16 The reports were comprehensive and candid about the project's strengths and weaknesses, especially the latter during the HRMEP's early and middle years. As

already discussed, the project encountered multiple delays, problems with procurement, understaffing of the PMUs, and situations in which agreed-criteria for construction works were not followed. Each of these situations provided opportunities for supervisory proactivity. That trait was not always apparent. There is limited evidence that Romania's membership in the EU caused the World Bank to reconsider the project's approaches, its objectives, or the government's alternative sources of funding.

6.17 Through the project's first third (or 24 months), less than 4 percent of the loan had been disbursed (and less than 8 percent at the project's original midpoint). An extension of the project's completion date appeared unavoidable as early as 2006, but the first of two extensions was not initiated until 2009.⁴⁹ The first reallocation of resources did not occur until December 2010 (see section 2.15), but the need for reallocation had been identified less than six months after the project began. The PMUs were continually understaffed. The World Bank often informed the government of this concern but was seemingly unsuccessful in obtaining the desired results.

6.18 The World Bank rated the project's implementation as "moderately unsatisfactory" in mid-2006. In the World Bank's judgment, a project is at risk when a rating is less than "moderately satisfactory."⁵⁰ Proactive supervision is essential in such instances. The World Bank's increased supervision was only partially successful. Problems with procurement and contract management were persistent, but the World Bank's supervision was not completely successful in addressing this problem. Likewise, the World Bank was not successful in its efforts to ensure effective coordination among the four PMUs in terms of monitoring and evaluation (M&E) (see section 6.33).

6.19 Once the project ended the World Bank had no further role in ensuring or overseeing completion of the retrofitting of eight buildings for which work had started but left unfinished during the project. The same situation existed for several dams and for the EMIS.

6.20 The Bank's quality of supervision is rated as **moderately unsatisfactory** as is the overall rating for Bank performance.

Borrower Performance

Government Performance

6.21 The government strongly supported the project during preparation. The project became less of a priority as the country moved toward membership in the EU. Evidence of the transition's effects was reflected in lack of attention to timely resolution of critical issues and insufficient funding, support, and supervision by responsible officials as well

as diminished interest in Bank financing. These circumstances created problems for the project's timely implementation.

6.22 The government agreed to establish a project steering committee with representatives of the key ministries as a condition of the loan's effectiveness. It would oversee the project's implementation, ensure cooperation among the implementing agencies, and resolve critical issues that might arise during implementation. The government missed the deadline for establishing the committee. Once the committee was established it rarely met in the project's initial years. When the committee did meet, it often limited its activities to hearing reports on the project's implementation rather than guiding and critiquing implementation.

6.23 The rating for government performance is **moderately unsatisfactory**.

Implementing Agency Performance

6.24 The key tasks included in the Component A – the EMIS, PAID, and the Vrancea earthquake scenario – were not naturally related. This meant the staff expertise in one area, such as catastrophe insurance, would likely be irrelevant to the oversight or management of tasks related to the EMIS. Furthermore, there were no natural synergies between the tasks in this component and the construction-related tasks for retrofitting buildings or the flood-protection activities.

6.25 The PMU for Component B had to manage relations with multiple owners of the public buildings to be retrofitted, explain to these owners the need for cofinancing for returning the buildings to functionality, and then manage contracts of far greater value than the World Bank had envisaged. The cost of returning buildings to full functionality was, on average, about 50 percent more than the cost of retrofitting them.⁵¹ Understandably then, the owners or occupants of the buildings were entitled to their opinions – and often expressed them – about how the PMU should manage the single contracts that combined retrofitting and functionality. The PMU had insufficient capacity to manage the dual-function contracts. As one key respondent concluded, managing such contracts was “horrible.”

6.26 The PMU for Component C was initially intended to be in the National Administration Romanian Waters (NARW) (within the Ministry of Environment and Water Management, which subsequently became the Ministry of Environment and Forests). Dissatisfaction with the NARW's lack of performance led the World Bank to recommend that a PMU be relocated to the ministry, which it was. A PMU was then created in mid-2006. The new location did not solve all the problems. Two years later the World Bank expressed concerns about flaws in the PMU's procurement and poor communications with World Bank staff.

6.27 The PMU for Component D was also challenged. Less than a year into the project the World Bank deemed the component to be at risk due to the absence of any management from the National Agency for Mineral Resources (NAMR). Inadequate salaries and weak incentives discouraged suitable levels of productivity, but the NAMR was unresponsive to the World Bank's request that these issues be addressed. Furthermore, the World Bank expressed concern about the PMU's technical expertise and poor and inadequate supervision of consultants.

6.28 The rating for implementing agency performance is **moderately unsatisfactory** and **moderately unsatisfactory** for borrower performance.

Monitoring and Evaluation

Design

6.29 Indicators were insufficient to demonstrate achievement of the project's intended outcomes, and the social/economic/environmental language from the PDO was not well reflected in the selection of indicators.

6.30 The project's M&E system included five outcome indicators for the PDO, two outcome indicators for the GEF's global objective, and ten intermediate outcome indicators. The indicators were intended to monitor the implementation progress of each component, but they did not suitably measure progress in reducing vulnerabilities to natural disasters.

6.31 There were incomplete measures for some indicators. The first PDO-level indicator addressed the strengthening of institutional and technical capacity for emergency management and response, but not a reduction in vulnerabilities. The target was the installation of EMIS software and equipment at 23 sites.⁵² Providing software and equipment is not equivalent to increasing capacity.

6.32 The PMU for Component B was assigned responsibility for overall coordination and reporting, including consolidation of implementation progress reports from the other three PMUs. The PAD noted that the four PMUs would hire monitoring and evaluation specialists to conduct periodic reviews of the project's social development objectives to ensure that the objectives would be achieved.

Implementation

6.33 The four PMUs collected monitoring data as they were expected to do for each component, including data on the status of implementation. Although the M&E-related efforts of the individual PMUs might have been sufficient, submissions of their implementation progress reports to the PMU for Component B were often late or

inconsistent. The World Bank had recommended the creation of a joint M&E system overarching the four PMUs. All the participating agencies agreed, but there was no progress in implementing the system so the idea was dropped.

Use

6.34 The project's M&E influenced decisions about the reassessment of priority sites for construction works and the selection of new sites.

6.35 The rating for M&E is **modest**.

7. Lessons

7.1 **Depending on multiple, functionally independent implementing agencies for multisector projects can increase complexity without providing commensurate benefits.** Responsibility for reducing the identified vulnerabilities was divided among four PMUs, each of which was in a different agency or ministry. There were few reasons for collaboration among them. The project's design was unduly complex and provided few discernible benefits for the project's implementation.

7.2 **Multisectoral, multihazard efforts to reduce vulnerability to disasters may not offer synergies or economies of scope in the absence of clear logical links between activities and incentives for coordination by the institutions responsible for them.** The project was unsuccessful in demonstrating the advantages of these efforts in Romania and did not achieve efficiencies in implementation that had been expected at appraisal. Subsequent disaster risk management projects in Romania are targeting one sector at a time through a series of projects approach.

7.3 **In a project designed to mitigate the risk of natural disasters, it is essential that sites critical for vulnerability reduction are both properly identified and systematically supported throughout the life of a project.** Adjustments may be necessary, but projects should ensure that selectivity criteria are respected. When criteria for prioritizing sites are not followed, the result may be a suboptimal allocation of project funds. The World Bank's project appraisal stressed that the project would focus on high-priority measures and construction works capable of reducing social, economic, and environmental vulnerabilities. Despite this aim, a portion of the project's resources were devoted to sites with lower risks.

7.4 **When supporting structural retrofits, financing only the retrofitting and not the cost of returning buildings to functionality is likely to lead to problems with implementation.** Separating the source of funds for retrofitting buildings from the funds for the return to functionality was undesirable, especially because the distinction was

not clearly communicated upfront in the project appraisal document or to beneficiaries. The result was that some high priority buildings were not retrofitted because their owners were unable to cover the cost of return to functionality.

7.5 When there are opportunities to enhance a government's capacity and to increase institutional knowledge, these opportunities can usefully be extended to the private and nonprofit sectors. Although the project had intended to enhance capacity in the private sector, legal barriers limited the extent to which this occurred.

7.6 Emergency management information systems are most useful when matched with the needs, capabilities, and technological capacity of intended users. Development of the EMIS took far longer than had been anticipated, but the end result has not fulfilled the needs of its intended users at the local or county level.

7.7 Economic analysis of individual construction works, as was the case with the HRMEP, is insufficient and potentially misleading when the results are extrapolated to the entire project without including all costs incurred during implementation. Had these and other costs been included in the economic analysis, the calculated economic benefits might not have been as large.

² PAD, p. 5.

³ Ministry of Environment and Water Management, *Flood Management in Romania: Present and Future*, no date. Available at https://www.inbo-news.org/en/file/262113/download?token=_qdFXrlq

⁴ World Bank, HRMEP, Identification Mission, December 5-21, 2001.

⁵ A tailings dam is used to store byproducts of mining operations. Waste-dump facilities similarly contain the toxic wastes of mining operations.

⁶ The IEG project evaluation methodology makes this clear: *"Some PDO statements articulate objectives (i.e. expected outcomes) but also include components or activities or outputs contributing to those objectives, usually following statements such as "by means of," "through," or "by." In this case, the element whose achievement should be assessed is only the expected outcomes. Components, activities, and outputs should be factored into the results chain analysis – in other words, they may help to demonstrate the causal (or, at least, plausibly causal) relationship between the project's interventions and achieved outcomes."*

⁷ World Bank, *Country Partnership Strategy, FY06-FY09*, May 16, 2006; *Country Partnership Strategy for the Period July 2009-June 2013*, June 12, 2009, p. 33 and Annex C, p. 13.

⁸ Bank projects must be restructured: (i) when a PDO is modified or there are changes in a safeguard category (a Level One restructuring) or (ii) when there are any other project modifications, such as a reallocation of resources, that do not change a project's PDO (a Level Two restructuring).

⁹ PAD, p. 16.

¹⁰ *Ibid.*

¹¹ For example, the World Bank noted that the project would “support the ongoing structural changes in emergency management in Romania - especially the creation of effective linkages and coordination between the key institutions involved in disaster management functions, both at the central and local levels.” PAD, p 11.

¹² Implementation Completion and Results Report (ICR) for the HRMEP, Report No. ICR 2384, December 27, 2012, p. 10.

¹³ This approach means that there are individual PIUs for different sectors where the progress against one project is not affected by lack of progress by another – and where the World Bank can scale up its engagement slowly sector by sector.

¹⁴ World Bank, *Restructuring Paper on a Proposed Project Restructuring of the HRMEP*, Report No. 55569-RO, August 24, 2010. Soon after the new procedure began the World Bank noted overdue payments for completed work and nearly a year’s delay in the government’s decision making about the scope, source of financing, and timetable of remaining project activities. World Bank, Aide Memoire, Implementation Support Mission, May 5-15, 2009.

¹⁵ Relatively high inflation also reduced the purchasing power of the compensation of the PMUs’ staff.

¹⁶ World Bank, Aide-Memoire, Implementation Support Mission, May 21-31, 2012.

¹⁷ World Bank, *Restructuring Paper*, August 24, 2010.

¹⁸ *Ibid.*

¹⁹ World Bank, Aide Memoire, Project Supervision Mission, January 22-25, 2007.

²⁰ These examples suggest that some consultants and contractors should never have been hired but context is important here. The project did not always have a wide choice of possible contractors. Several requests for expressions of interest drew either no responses or only one or two responses. In at least four instances for Component B the tendering process had to be repeated for these reasons. Firms that did respond to requests for expressions of interest were occasionally unqualified. The World Bank also concluded that the PMU for the component had insufficient capacity to handle its large portfolio of procurement and technical activities.

²¹ PAD, p. 8.

²² *Ibid.*, p. 21. The PAD also observed that the emergency preparedness measures would reduce “losses and damage to public and private assets occurring as [a] result of the catastrophic events...”

²³ The PAD described separate tasks for: (a) upgrading emergency communications at the national, regional, and local levels and (b) development of an EMIS. When the project was restructured in August 2010 these tasks were combined. The new task was the implementation of a modernized management information system to integrate data management and voice communications.

²⁴ PAID website, <https://www.paidromania.ro/harta-pad>. There were 1.7 million policies in force as of December 21, 2018.

²⁵ See *The Romanian Journal*, “PAID able to pay EUR 900 M in case of major disaster in Romania,” June 20, 2017. The article noted that the rate of PAID’s total expenses was the lowest of all insurance companies in Romania in 2016. Available at <https://www.romaniajournal.ro/paid-able-to-pay-eur-900-m-in-case-of-major-disaster-in-romania/>; See also Marius Dan Gavriltea,

“Catastrophe risk management in Romania and Transylvania’ specifics. Issues for national and local administrations,” *Economic Research Ekonomska Istraživanja*, 30:1, 761-776, 2017.

²⁶ Interview with PAID staff, Bucharest, November 1, 2018.

²⁷ The indemnification of private losses is commonly prohibited by law, but money is fungible. Moreover, several respondents noted that local governments in Romania often use public resources to indemnify private losses.

²⁸ PAD, p. 52. Prior to appraisal, a government assessment had identified 1,100 schools, 128 university buildings, and 65 hospitals as being at risk of damage due to earthquakes. The 84 structures chosen for retrofitting thus represented only a small fraction of the buildings that would benefit from retrofitting. PAD, p. 6.

²⁹ *Ibid.*, p. 8.

³⁰ World Bank, Aide Memoire, Implementation Support Mission, October 25-November 5, 2010. The GIES building had legal problems of ownership that were not resolved until 2009. Furthermore, the feasibility study and technical design for the retrofitting had been rejected at review stage, and this triggered a technical dispute that lasted four years and required redesign. New designs were available only in 2011, too late for procurement and implementation of the retrofitting.

³¹ A World Bank supervision in June 2006 incorrectly declared that the project’s design had “emphasized the need for beneficiary cofinancing to cover the works not eligible for project financing.” World Bank, Aide Memoire, Supervision Mission, June 26-30, 2006.

³² World Bank, Aide Memoire, Implementation Support Mission, November 9-18, 2011.

³³ World Bank, Aide Memoire, Implementation Support Mission, May 21-31, 2012.

³⁴ PAD, p. 55.

³⁵ ICR for the HRMEP, Report No. ICR 2384, December 27, 2012, p. viii.

³⁶ Designs or feasibility studies were completed for the rehabilitation of six dams, but then not subsequently used.

³⁷ World Bank, Implementation Status and Results Report, HRMEP, June 26, 2012.

³⁸ This situation and the World Bank’s approach to DRM in Romania changed in 2018. The World Bank provided a \$60 million loan in that year for strengthening DRM in Romania. Additional loans for DRM will follow. The loans will aim for a multisectoral approach but recognize that coordination across ministries (or even agencies within a single ministry) is problematic because of their distinct mandates. Hence the World Bank is using a series-of-projects approach (rather than an approach that combines distinct hazards in a single project) together with broad policy reforms and advisory services. The loans will rely on individual project implementation units. This will avoid a situation in which progress in one project might suffer from lack of progress in another. This approach will also allow the government to increase its attention to DRM slowly sector by sector. The initial loan’s objective is to enhance the resilience of critical disaster and emergency response facilities and to strengthen the institutional capacities in investment planning for disaster risk reduction and climate change adaptation. The project seeks to improve the seismic safety and disaster resilience of critical disaster and emergency response buildings through investments in building infrastructure, structural strengthening, and modernization. The project also seeks to enhance institutional capacity for

risk reduction and to accelerate risk reduction through improved understanding of disaster and climate risks in Romania.

³⁹ These benefits were calculated as avoided flood damage to assets over the life of the construction works and were estimated using a loss-probability function based on data collected from the project area.

⁴⁰ The World Bank's identification mission in December 2001 stated that buildings would be "retrofitted if proven economically justifiable."

⁴¹ PAD, pp. 8 and 52 for Component B and p. 9 for Component D.

⁴² With the exception of a procurement specialist, the host agency financed the project management costs for the PMU for Component C.

⁴³ PAD, pp. 11 and 34.

⁴⁴ World Bank, *From Uneven Growth to Inclusive Development: Romania's Path to Shared Prosperity*, 2018, pp. 55, 61-62.

⁴⁵ Romania-Insider.com, "40 Years after the Great Earthquake of 1977, Bucharest Is Not Prepared to Withstand a Similar Event," March 4, 2017. Available at <https://www.romania-insider.com/40-years-after-the-great-earthquake-of-1977-bucharest-is-not-prepared-to-withstand-a-similar-event/>

⁴⁶ PAD, p. 52: the project will finance "the review of designs for about 23 objects for which designs are already completed by international structural engineering consultant." ICR, p.1: "Detailed (but incomplete) designs existed only for one building; for all other construction activities, only feasibility studies had been prepared."

⁴⁷ *Ibid.*, p. 74.

⁴⁸ The PAD had identified Rosia Poiani, the second largest copper mine in Europe, as a high-risk, high-priority site requiring emergency action. The government requested that project-funded remediation activities be cancelled when a private investor restarted mining operations and agreed to spend \$50 million on remediation and environmental protection. World Bank, "Mid-Term Review Mission," November 15-December 7, 2007.

⁴⁹ Extension of a project's completion date is "considered a measure of proactivity on the task team's side when carried out in an appropriate and *timely manner*" (italics added). World Bank, *Investment Project Financing Implementation Support Guidance Note*, 2013.

⁵⁰ World Bank, *Investment Project Financing Implementation Support Guidance Note*, 2013.

⁵¹ World Bank, Aide Memoire, Implementation Support Mission, May 21-31, 2012.

⁵² The value reported in the ICR was 48 sites. The system did not become fully available for the counties' use until early 2018.

Appendix A. Basic Data Sheet

Hazard Risk Mitigation and Emergency Preparedness (IBRD-473601 TF-53472)

Table A.1. Key Project Data

Financing	Appraisal Estimate (\$, millions)	Actual or Current Estimate (\$, millions)	Actual as Percent of Appraisal Estimate
Total project costs	203.65	174.83	85.8
Loan amount	150.00	138.45	92.3
Cofinancing (GEF grant)	7.00	5.88	84.0
Cancellation		6.68	

Table A.2. Cumulative Estimated and Actual Disbursements

Fiscal Year	Disbursements		
	Appraisal Estimate (\$, millions)	Actual (\$, millions)	Actual as percent of appraisal
FY04	0.53	0.1	19%
FY05	12.9	2.6	20%
FY06	47.42	7.9	17%
FY07	89.2	26.3	29%
FY08	129.0	55.7	43%
FY09	150	87.0	58%
FY10	150	102.0	68%
FY11	150	117.0	78%
FY12	150	138.3	92%

Table A.3. Project Dates

Event	Original	Actual
Concept review	3/8/2002	3/8/2002
Negotiations	3/15/2004	3/15/2004
Board approval		5/20/2004
Signing		5/26/2004
Effectiveness	7/1/2004	10/20/2004
Closing date	12/31/2009 ^a	6/30/2012

^aThe Loan Agreement identified the expected closing date as June 30, 2009.

Table A.4. Staff Time and Cost

Stage of Project Cycle	World Bank Budget Only	
	Staff time (no. weeks)	Cost ^a (\$, thousands)
Lending		
FY04	37.20	182.33
Total	37.20	182.33
Supervision or ICR		
FY05	23.88	73.68
FY06	31.32	109.12
FY07	46.43	134.68
FY08	41.70	188.22
FY09	29.91	119.50
FY10	32.25	139.28
FY11	26.02	87.31
FY12	13.85	67.78
Total	245.36	919.57

Note: ICR = Implementation Completion and Results Report.

^a Including travel and consultant costs.

Appendix B. List of Persons Met

World Bank staff

Tatiana Proskurakoya	Country Manager, Romania
Christoph Pusch	Practice Manager, Southeast Asia Climate Change (and the first task team leader for the HRMEP)
Eugene Gurenko	Lead Financial Sector Specialist
Marcel Ionescu-Heriou	Senior Urban Specialist
Alanna Simpson	Senior Disaster Risk Management Specialist
Elif Ayhan	Senior Disaster Risk Management Specialist
Vica Bogaerts	Senior Disaster Risk Management Specialist
Tafadzwa Dube	Disaster Risk Management Specialist

Public officials

Boni Florinela	Director General, International Financial Relations, Ministry of Public Finance
Diana Blindu	Head of Division, International Financial Relations, Ministry of Public Finance
Aura Tudor	Senior Advisor, International Financial Relations, Ministry of Public Finance
Adelina Caracostea	Ministry of Internal Affairs (and former PMU member, Component A, HRMEP)
Adrian Radescu	Ministry of Internal Affairs
Daniela Mihaila	Ministry of Internal Affairs
Damian Mihai	Deputy Inspector General, General Inspectorate for Emergency Services
Petru Hurezanu	Logistic Specialist, General Inspectorate for Emergency Services
Laura Chiscop	Procurement Expert, General Inspectorate for Emergency Services
Bulea Virgil	Communication and Information Technology, General Inspectorate for Emergency Services
Daniel Danaila	Head of National Dispatch, General Inspectorate for Emergency Services
Dorel Dume	Deputy Adjacent General, Ministry of Environment, Waters and Forests

Gheorghe Tuluc	Deputy Adjacent General, Ministry of Environment, Waters and Forests
Beatrice Popescu	Ministry of Environment, Waters and Forests (and former Director, PMU Component C, HRMEP)
Altan Abdulamit	Director, Flood Risk Management and Dam Safety Directorate, Ministry of Environment, Waters and Forests
Sorin Randasu	Director for Risk Management, Romanian Waters
Petrisor Mazilu	Romanian Waters
Egreta Bassi	Romanian Waters, Maneciu Dam
Bragos Barbu	Romanian Waters, Maneciu Dam
Gheorghe Bedreaga	Romanian Waters, Maneciu Dam
Roxana Adam	Romanian Waters, Maneciu Dam
Gheorghe Mocanu	Romanian Waters, Dridu Dam
Mariana Negroiu	Romanian Waters, Dridu Dam
Busca Madalin	Chief of Operational Unit, Inspectorate for Emergency Situations, Teleorman County
Manea Pompiliu	First Deputy Chief, Inspectorate for Emergency Situations, Teleorman County
Trifu Eugen	Adjunct, Inspectorate for Emergency Situations, Teleorman County
Marian Zlatescu	Chief of Consolidation Works, Romanian Waters, Teleorman County
David Valeriu Dan	Deputy Prime Adjutant, Inspectorate for Emergency Situations, Brasov County
Riciu Cosmin	Deputy Chief, Operational Controls, Inspectorate for Emergency Situations, Brasov County
Nan Stefan	Chief, Communications and Information Technology, Inspectorate for Emergency Situations, Brasov County
Pomirleanu Dorin	Chief Engineer, System of Water Management, Romanian Waters, Brasov
George Spanu	Chief, Sacele Dam, Brasov County
Adrian Simtea	Chief Inspector, Inspectorate for Emergency Situations, Covasna County
Borboly Bela-Claudiu	Temporary Chief, Operational Center, Inspectorate for Emergency Situations, Covasna County
Adrian Nastuta	Deputy Chief Inspector, Inspectorate for Emergency Situations, Covasna County

Elisei Dumitru	First Deputy of Chief Inspector, Inspectorate for Emergency Situations, Prahova County
Mascolu Alexandru	Adjunct Chief Inspector, Inspectorate for Emergency Situations, Prahova County
Chivu Florin	Chief Deputy, Operational Center, Inspectorate for Emergency Situations, Prahova County

Others

Gabriel Ionita	Task Team Leader, HRMEP
Stela Petrescu	Director, PMU Component B, HRMEP
Beatrice Popescu	Director, PMU Component C, HRMEP (and with the Ministry of Environment, Waters and Forests and former at the time of the review)
Anca Baci	Director, PMU Component D, HRMEP
Radu Vacareanu	Rector, Technical University of Bucharest
Daniel Lungu	Professor, Technical University of Civil Engineering
Marian Moiceanu	Rector, Ian Mincu University of Architecture
Horia Moldovan	Vice Rector, Ian Mincu University of Architecture
Christina Olga Gociman	Director, Urbanrisk National Research Project, Ian Mincu University of Architecture
Sorina-Georgiana Rusu	Head of Communications and Information Office, Ian Mincu University of Architecture
Alexandru Gavozda	President, Ordinul Arhitecilor din Romania
Mariana Ionescu	International Relations Advisor, Ordinul Arhitecilor din Romania
Eduard Mircea	Chief Engineer, Spitalul Grigore Alexandre SCU
Marian Rosoi	Director, Financial Control, Spitalul Clinic de Urgenta Bagdasar-Arseni
Ana Mares	Director, Nursing, Spitalul Clinic de Urgenta Bagdasar-Arseni
Julia Nicola	General Insurance Specialist, <i>National Association of Insurance and Reinsurance Companies in Romania</i>
Flavius Baias	Dean, Faculty of Law, University of Bucharest
Anca Cont	Operations Director, S&T Romania
Victor Gradinescu	Solution Architect, S&T Romania
Dan Moraru	Software Developer, S&T Romania
George Constantin	Infrastructure Administrator, S&T Romania
Catalin Mititelu	Customer Service Team Lead, S&T Romania

Cojocaru Mihai
Nicoleta Radu
Natalia Man
Daniel McElhenny

Team Lead, S&T Romania
Director General, PAID
Deputy General Manager, PAID
National Preparedness Coordinator, U.S. Federal
Emergency Management Agency

Appendix C. Borrower Comments

Regarding the Report of the Independent Evaluation Group, please have in view that we would ask for the re-evaluation of the ratings, meaning that we support the initial ratings of the project.

Please receive our best regards,

Boni Florinela CUCU
General Director
International Financial Relations General Directorate
Ministry of Public Finance

Appendix D. PDO-level Indicators, Targets, and Values Achieved

Strengthened institutional and technical capacity for emergency management and emergency response through upgrading communication and information systems^a			
Original Target, 2004	Revised Target Value, October 2009	Value Reported, December 2012	Value during PPAR mission, 2018
--Modernized communication and information management systems are designed, procured, and implemented with a daily use, national coverage, and sufficiently staffed --Conceptual and legal framework for the catastrophe financial risk transfer is formulated and disseminated to key policy makers	--EMIS installed in 23 central and local administration institutions involved in emergency management. --Program for catastrophe insurance of dwellings is operational	--EMIS software developed and the system is ready to be used in real mode at 48 sites after final operational acceptance in 2013, but see next column. --Technical work to support drafting the legislation and institutional building for the insurance program was completed.	--System in place at 48 sites but not available for use at county level until 2018. Practical value of the system at the county level in doubt. --Catastrophe risk insurance program (PAID) is operational, but penetration rate is lower than anticipated.
Increased earthquake risk mitigation with some key, prioritized public facilities retrofitted			
More than 80 high-priority public facilities are retrofitted to a level that allows for functioning after an earthquake of up to 7.5 magnitude.	Forty high-priority public facilities retrofitted to protect them from collapse in case of a severe earthquake.	Seismic retrofitting of 44 public buildings completed (including 8 after project closure). About 23,350 people working in the buildings are protected.	Seismic retrofitting of 44 public buildings completed. Not all these buildings are essential for the country's social functioning.
Increased level of protection against floods of population exposed to high risk of recurrent floods			
--Nine flood mitigation schemes are upgraded or rehabilitated --Three critical Danube River areas are rehabilitated	--Eight flood mitigation schemes upgraded or rehabilitated --Two critical Danube River areas are rehabilitated	Construction works for flood protection completed at ten sites, including two along the Danube River. Protection against floods provided to over 43,500 people.	Construction works for flood protection completed at ten sites. Two hundred meters of concrete wall at Slanic collapsed during flood in 2018. Reconstruction required.
Improved dam safety of the selected priority structures			
Eight large dams and five small dams are rehabilitated.	Four large and three small dams are rehabilitated to increase safety.	Work contracts for increasing the safety of four large and three small dams completed. Licenses for operation at full capacity issued.	Dridu dam not fully certified as of late 2018. Project funded only phase 1 work at Sanmihaiu, which was about 30-40 percent of total work required. Work on phase 2 to begin in 2019.

Demonstrate and provide a model for replication for the reduction of the catastrophic accidental spills of transboundary pollution loads from mine operations flowing into the Danube and Black Sea			
<p>--Gradual reduction in number and negative impacts of mining accidental spills of pollutants [from publicly owned mines] into the Tisza Basin and the volume of toxic releases from mines into the Danube River.</p> <p>--Improved factors of safety in tailings facilities and increased standards in risk awareness and emergency preparedness</p>	<p>--No spills.</p> <p>--Significantly improved safety of at least three high risk sites</p> <p>--Management and maintenance at level of best practice and internationally accepted performance standards achieved for at least 70 percent of the inventory of mine waste facilities.</p>	<p>--No spills from mines addressed in project.</p> <p>--Remediation works at six sites completed. Sites no longer pose a significant environmental risk.</p> <p>--70 percent target achieved.</p> <p>--Seven guidelines for tailings dams and waste facilities developed. Emergency response plans completed for seven types of sites.</p>	<p>--no spills from mines addressed with project funds. Recurring problems with monitoring equipment. Spillage accident at publicly owned Bozanta mine in October 2017.</p> <p>--Guidelines and management in place but effectiveness unknown.</p>
Source: PAD	Source: World Bank, Project Paper, October 26, 2009	Source: World Bank, ICR, December 27, 2012.	Source: PPAR field mission, 2018.

^a The restructuring of the project in 2010 changed the last few words of the indicator to "...through upgrading the information systems."