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The World Bank

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IMPLEMENTATION COMPLETION AND RESULTS REPORT
(IBRD-45170)

ON A

LOAN IN THE AMOUNT OF
US\$ 294.4 MILLION

TO THE

REPUBLIC OF TURKEY

FOR

MARMARA EARTHQUAKE EMERGENCY RECONSTRUCTION
PROJECT

June 7, 2007

Environmentally and Socially Sustainable Development
World Bank Office: Ankara
EUROPE AND CENTRAL ASIA

CURRENCY EQUIVALENTS

(Exchange Rate Effective February 6, 2007)

Currency Unit = New Turkish Lira (TRY)

TRY 1.00 = US\$ 0.71

US\$ 1.00 = TRY 1.41

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ARIP	Agricultural Reform Implementation Project
CAS	Country Assistance Strategy
GDCD	General Directorate for Civil Defense
GDDA	General Directorate for Disaster Affairs
GDI	General Directorate for Insurance
GDLRC	General Directorate for Land Registration and Cadastre
GOT	Government of Turkey
ICR	Implementation Completion and Results Report
ISMEP	Istanbul Seismic Risk Mitigation and Emergency Preparedness Project
ISR	Implementation Status Report
JICA	Japan International Cooperation Agency
MERLIS	Marmara Earthquake Region Land Information System
M&E	Monitoring and Evaluation
MPWS	Ministry of Public Works and Settlement
PAD	Project Appraisal Document
PDO	Project Development Objective
PIU	Project Implementation Unit
QAG	Quality Assurance Group
TA	Technical Assistance
TCIP	Turkish Catastrophe Insurance Pool
TEFER	Turkey Emergency Flood and Earthquake Recovery Project
TEMAD	Turkish Emergency Management Agency

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TURKEY
Marmara Earthquake Emergency Reconstruction Project

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A. Basic Information			
Country:	Turkey	Project Name:	Marmara Earthquake Emergency Reconstruction Project
Project ID:	P068368	L/C/TF Number(s):	IBRD-45170
ICR Date:	06/07/2007	ICR Type:	Core ICR
Lending Instrument:	ERL	Borrower:	REPUBLIC OF TURKEY
Original Total Commitment:	USD 505.0M	Disbursed Amount:	USD 294.4M
Environmental Category: B			
Implementing Agencies: Prime Ministry PIU			
Cofinanciers and Other External Partners:			

B. Key Dates				
Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	08/25/1999	Effectiveness:	12/29/1999	12/29/1999
Appraisal:	10/11/1999	Restructuring(s):		
Approval:	11/16/1999	Mid-term Review:		09/14/2003
		Closing:	05/31/2005	12/31/2006

C. Ratings Summary	
C.1 Performance Rating by ICR	
Outcomes:	Satisfactory
Risk to Development Outcome:	Moderate
Bank Performance:	Satisfactory
Borrower Performance:	Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)			
Bank	Ratings	Borrower	Ratings
Quality at Entry:	Satisfactory	Government:	Satisfactory
Quality of Supervision:	Satisfactory	Implementing Agency/Agencies:	Satisfactory
Overall Bank Performance:	Satisfactory	Overall Borrower Performance:	Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators			
Implementation Performance	Indicators	QAG Assessments (if any)	Rating
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA):	None
Problem Project at any time (Yes/No):	Yes	Quality of Supervision (QSA):	Satisfactory
DO rating before Closing/Inactive status:	Satisfactory		

D. Sector and Theme Codes		
	Original	Actual
Sector Code (as % of total Bank financing)		
Central government administration	25	15
Health	1	2
Housing construction	47	56
Law and justice	2	2
Non-compulsory pensions, insurance and contractual savings	25	25
Theme Code (Primary/Secondary)		
Health system performance	Primary	Secondary
Injuries and non-communicable diseases	Secondary	Secondary
Land administration and management	Primary	Secondary
Law reform	Primary	Secondary
Natural disaster management	Primary	Primary

E. Bank Staff		
Positions	At ICR	At Approval
Vice President:	Shigeo Katsu	Johannes F. Linn
Country Director:	Ulrich Zachau	Ajay Chhibber
Sector Manager:	Marjory-Anne Bromhead	Joseph R. Goldberg
Project Team Leader:	Wael Zakout	Piotr M. Wilczynski
ICR Team Leader:	Jolanta Kryspin-Watson	
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F. Results Framework Analysis

Project Development Objectives (from Project Appraisal Document)

The main objectives are to help restore the living conditions in the region of Turkey that was affected by the August 17, 1999 Marmara earthquake, support economic recovery and resumption of growth, and develop an institutional framework for disaster risk management and mitigation.

Revised Project Development Objectives (as approved by original approving authority)

(a) PDO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Living conditions in Marmara region are resumed after the August 17, 1999 earthquake, and institutional framework for disaster risk management and mitigation is improved.			
Value quantitative or Qualitative)	Destruction of urban and rural houses; no catastrophe insurance mechanism; no central capable emergency management agency.	About 12,000 housing units reconstructed; central disaster management agency fully operational and equipped with adequate information and communication tools; catastrophe insurance established.		Reconstruction of 12,299 urban and rural housing with on and off-site infrastructure completed; TEMAD established and operating; Turkish Catastrophe Insurance Pool (TCIP) is effective and sustainable.
Date achieved	11/01/1999	05/31/2006		12/31/2006
Comments (incl. % achievement)	72% of achievement. Majority of physical deliverables, such as housing reconstruction, the basic institutional set-up, the operational center for disaster management, along with some legal framework, has been accomplished.			

(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	National capacity to respond to and prepare for natural disaster is strengthened.			
Value	No national emergency	Creation of a		TEMAD is

(quantitative or Qualitative)	coordination agency.	national emergency management agency equipped with an operations center, communications and data networks, and with staff well trained in emergency management.		established and staffed. The operations center was constructed and the emergency management information system software completed.
Date achieved	11/01/1999	12/31/2006		12/31/2006
Comments (incl. % achievement)	40% achieved. The central agency was established, equipped and is currently recognized in Turkey as the emergency response coordinating organization. However, many of activities originally envisaged under the component were not completed.			
Indicator 2 :	Government financial exposure to seismic risk is reduced via sustainable catastrophe insurance mechanism.			
Value (quantitative or Qualitative)	TCIP does not exist.	Viabale financial mechanism for risk transfer is established.		The TCIP is established, sustainable and successfully operating.
Date achieved	11/01/1999	12/31/2006		12/31/2006
Comments (incl. % achievement)	80% achieved. Sustainable mechanism for risk transfer was established and its effectiveness already tested in a number of smaller earthquakes. The penetration rate (20%) remains below expectations, though as high as in Japan and California.			
Indicator 3 :	Vulnerability of Marmara region to potential future disasters is reduced.			
Value (quantitative or Qualitative)	Constructions in risk prone areas; building codes are violated.	Urban development planning takes into account natural disaster risks and is based on adequate studies and data.		Pilot microzonation studies feed into the planning and development standards; building inspection system strengthened; building and retrofitting code revised.
Date achieved	11/01/1999	12/31/2006		12/31/2006
Comments (incl. % achievement)	50% achieved. While a number of pilot studies and development of the regulatory framework were carried out, the enforcement remains a long-term, unfinished agenda.			
Indicator 4 :	Reliable, modern land information system for Marmara region developed and operational.			
Value (quantitative or Qualitative)	Outdated land information system; obsolete registers and	Cadastre renovation in Marmara region		Cadastre renovation completed through densification of

	maps.	completed.		geodetic network, new cadastre and renovation for 194 villages completed; maps produced for 3 cities; digitization completed; MERLIS established; 5 district offices constructed and equipped.
Date achieved	11/01/1999	12/31/2006		12/31/2006
Comments (incl. % achievement)	100% achieved the goal through renovation of the cadastre system, reconstruction of offices and creation and operation of modern land information system. The project also initiated a country-wide modernization of land information system.			
Indicator 5 :	The health care system response to emergencies in Marmara region is improved.			
Value (quantitative or Qualitative)	Very low awareness of mental health issues; insufficient equipment of the medical emergency teams.	Raised awareness on mental health consequences of disasters; better medical response to emergencies.		National Mental Health Strategy finalized; information campaign completed; emergency medical response services strengthened through procurement of necessary equipment for Command and Control Centers in 9 provinces and for National Medical Rescue Teams.
Date achieved	11/01/1999	12/31/2006		12/31/2006
Comments (incl. % achievement)	65% achieved. The project built a foundation for better awareness of mental health issues in Turkey. The capacity of emergency medical response has been strengthened; however, improvement in the response was not measured.			
Indicator 6 :	Urban and rural houses are reconstructed.			
Value (quantitative or Qualitative)	0 units reconstructed.	12,000 urban and rural housing are reconstructed and people well settled.		11,502 urban, 797 rural housing units reconstructed to seismic resilience standards; people settled in high quality settlements. In addition, 17 health facilities

				were constructed.
Date achieved	11/01/1999	12/31/2006		12/31/2006
Comments (incl. % achievement)	100% achieved through the reconstruction of housing and social facilities in the earthquake affected areas, built to the high seismic standards and provided with off-site infrastructure, site management, amenities, etc.			

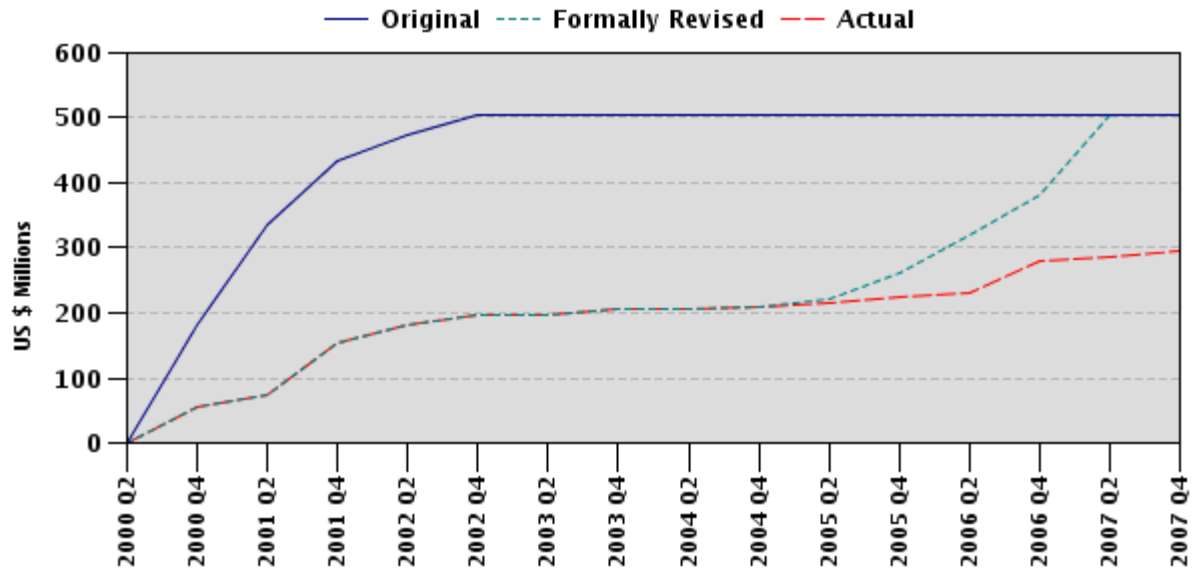
G. Ratings of Project Performance in ISRs

No.	Date ISR Archived	DO	IP	Actual Disbursements (USD millions)
1	12/14/1999	Satisfactory	Satisfactory	0.00
2	02/22/2000	Satisfactory	Satisfactory	15.05
3	06/27/2000	Satisfactory	Satisfactory	55.28
4	09/18/2000	Satisfactory	Satisfactory	55.28
5	03/15/2001	Satisfactory	Satisfactory	109.06
6	04/12/2001	Satisfactory	Satisfactory	130.38
7	07/06/2001	Satisfactory	Satisfactory	153.07
8	12/14/2001	Satisfactory	Satisfactory	180.12
9	06/11/2002	Satisfactory	Satisfactory	197.01
10	12/24/2002	Satisfactory	Satisfactory	197.58
11	06/04/2003	Satisfactory	Satisfactory	204.87
12	11/11/2003	Satisfactory	Satisfactory	204.87
13	05/10/2004	Satisfactory	Unsatisfactory	204.87
14	05/11/2004	Satisfactory	Unsatisfactory	204.87
15	11/11/2004	Satisfactory	Unsatisfactory	213.03
16	01/04/2005	Satisfactory	Satisfactory	214.53
17	05/31/2005	Satisfactory	Satisfactory	220.64
18	11/09/2005	Satisfactory	Satisfactory	229.13
19	03/01/2006	Satisfactory	Satisfactory	250.64
20	07/11/2006	Satisfactory	Satisfactory	279.90
21	10/17/2006	Satisfactory	Satisfactory	287.09

H. Restructuring (if any)

Not Applicable

I. Disbursement Profile



1. Project Context, Development Objectives and Design

(this section is descriptive, taken from other documents, e.g., PAD/ISR, not evaluative)

1.1 Context at Appraisal

(brief summary of country and sector background, rationale for Bank assistance)

On August 17, 1999 an earthquake measuring 7.4 on the Richter scale devastated the Marmara region of Turkey. Over 15,000 lives were lost, about 200,000 people were left homeless, and Turkey's industrial heartland was extensively damaged. International support for Turkey for the immediate relief effort was rapid and generous. However, a major reconstruction effort and recovery plan was needed, in addition to a mechanism to reduce the costs of future natural disasters in the country.

An assessment undertaken by the Bank to outline the likely impact of the earthquake on the economy and the cost of reconstruction and recovery estimated the total fiscal burden arising from the earthquake to be in the range of US\$1.8-2.2 billion. The largest direct cost to the budget, estimated to be in the range of US\$740 million to US\$1.2 billion, came from reconstruction and repair of damage to the housing stock of the region. Costs from infrastructure replacement and rehabilitation were estimated to add a further US\$450 million.

In addition to the physical and social damages, the gravity of the event pointed out the need for upgrading the existing emergency response system, the lack of effective enforcement of Turkey's building codes and the inadequate coverage of earthquake insurance in the housing sector.

At the request of and in cooperation with the Government of Turkey (GOT) and other international donors, the Bank led the preparation of a framework program as a comprehensive response to the August 17 Marmara earthquake. The Bank-financed elements of this program comprised the Marmara Earthquake Emergency Reconstruction project (MEER). Implementation of the program was supported by the Bank and other co-financiers, mainly the European Investment Bank which financed construction of permanent housing in other than Bank project-supported localities, business rehabilitation, rebuilding and repair of key infrastructure and lifelines.

1.2 Original Project Development Objectives (PDO) and Key Indicators *(as approved)*

The main objectives of the framework program were to help restore the living conditions in the region of Turkey that was affected by the August 17, 1999 Marmara earthquake, support economic recovery and resumption of growth, and develop an institutional framework for disaster risk management and mitigation.

The key performance indicators were the following:

- Timely replacement of housing units;

- Reducing the likelihood of damage to physical infrastructure and housing in the event of future earthquakes, especially in most recent construction; and
- Prompt recovery of the social sector.

It should be noted that the above project development objective and its indicators were meant for an entire framework program. MEER project specific objectives, as elaborated in the PAD, were to build a sustainable emergency management response system as a way to reduce the future impact of earthquakes on the country, by establishing a competent emergency management agency, a disaster insurance scheme and improving land use management and enforcement of building codes and to re-establish normal living conditions in the areas hit by the earthquake by supporting a trauma program for adults and reconstructing new houses.

The format currently used in the ISR and ICR differs from the results framework of 1999, when the project was approved and was adjusted to reflect better the intermediate outcome indicators rather than outputs of the project. The outcome indicators used to monitor project implementation are presented in section F of this document and are the following:

- National capacity to respond to and prepare for natural disaster is strengthened.
- Government financial exposure to seismic risk is reduced via a sustainable catastrophe insurance mechanism.
- Vulnerability of Marmara region to potential future disasters is reduced.
- Reliable, modern land information system for Marmara region developed and operational.
- The health care system response to emergencies in Marmara region is improved.
- Urban and rural houses are reconstructed.

1.3 Revised PDO (as approved by original approving authority) and Key Indicators, and reasons/justification

Not applicable.

1.4 Main Beneficiaries,

(original and revised, briefly describe the "primary target group" identified in the PAD and as captured in the PDO, as well as any other individuals and organizations expected to benefit from the project)

The primary beneficiary of the project was the population affected by the Marmara earthquake which was in acute need of housing and infrastructure and more broadly, in need breaking the dependency cycle of life in the temporary camps. This was achieved through the construction of urban and rural housing units and associated public infrastructure, and the health care centers for the affected population.

Turkey at large was another beneficiary of the project which aimed to: (i) strengthen the capacity of the government to respond to natural disasters; and (ii) develop a national insurance scheme which would decrease the financial burden of future reconstruction from the individual families and the government to the new Turkish Catastrophe Insurance Pool, international re-insurers and capital markets.

1.5 Original Components *(as approved)*

The following are the components originally envisaged under the project:

Component A - Disaster Response System and Risk Mitigation

The component supported substantial institutional and regulatory reforms and capacity building measures to upgrade the country's ability to respond more effectively to natural disasters, to reduce future risk and financial liability, and to improve land use planning and building code enforcement practices. The following were main sub-components:

A1: Emergency Management and Response System. The objective of this sub-component was to create a comprehensive emergency management organization (Turkish Emergency Management Agency) focusing on the coordination and integration of risk reduction, preparedness, response, and recovery. This sub-component was to finance the design and implementation of a restructured emergency management and response system through institutional strengthening activities for disaster prevention, mitigation, planning and public awareness. Funds for a headquarters building in Ankara, sophisticated equipment for this complex, and equipment packages for regional sites all across Turkey were included in this component.

A.2: Disaster Insurance Scheme. The principal development objective of this sub-component was to support the government's Earthquake Insurance Program with the view of establishing and expanding national catastrophic risk management and risk transfer capabilities. To meet these objectives, the sub-component intended to create an insurance mechanism, which would make liquidity readily available to insured owners of residential dwellings destroyed or damaged by an earthquake for the purpose of their repairing or replacement; reduce government fiscal exposure and the risk to the national economy due to major earthquakes; ensure the financial solvency of the Pool after all but the most catastrophic of events; and reduce government financial dependence on the Bank and other donors' financial assistance in the aftermath of major earthquakes.

A3: Land Use Planning and Enforcement of Construction Codes. This sub-component's objective was to reduce the physical vulnerability of the Marmara region to natural hazards and future disaster losses in Turkey through support to: (i) the review of ongoing modifications in the current legal system and additional modifications as required, and (ii) the strengthening of the municipal capability to regulate, plan and implement disaster resistant development.

A4: Cadastre Renovation and Land Management. The primary objective of this sub-component was to establish a land information system to support the reconstruction and development of the Marmara region. In particular, the sub-component was to support

activities to: (i) supply current and reliable land ownership information to cope with the post-earthquake situation, and update and improve the obsolete registers and maps; (ii) facilitate land supply operations, with emphasis on housing schemes and the overall improvement of the land market.

Component B - Trauma Program for Adults. This component was designed to finance the development of a trauma program for adults to complement the UNICEF/Ministry of Education program for children. The objectives were to contribute to the immediate reduction of the negative effects on health and functional ability among adults affected by the earthquake, including the restoration of normalized living and working conditions in the affected area, support the strengthening of community mental health services, ensuring that the whole country is better prepared for future disasters, and to support the reconstruction of working life and the reinsertion of adults into the workforce in the earthquake zone.

Component C - Construction of Permanent Housing in Bolu, Kocaeli and Yalova. The main objective of this component was to assist the Government of Turkey in reconstructing permanent housing in the urban and rural areas affected by the earthquake. Assistance under this project was limited to the collapsed and heavily damaged rural housing and urban multi family units, to be implemented under controlled and sound construction practices, utilizing appropriate cost effective design standards which would protect against future seismic events. The component financed technical assistance, design, supervision, training and investments.

Component D - Project Management. The component financed costs of expanding and maintaining the existing Project Implementation Unit (PIU), set up for the TEFER (Turkey Emergency Flood and Earthquake Recovery) project, and its local offices during the implementation period.

1.6 Revised Components

The components were not substantially revised but some changes in the scope, allocations and activities were introduced, as described in section 1.7 below.

1.7 Other significant changes

(in design, scope and scale, implementation arrangements and schedule, and funding allocations)

In December 2001, after less than a year of project implementation, based on feed-back from the project building sites and a request from the Government, it was decided that the project should also provide funding for the construction of health posts and medical equipment and supplies. After reallocation and amendment of the Loan Agreement, the project financed under component C the construction of health facilities in Bolu, Kocaeli, Yalova, Düzce and Sakarya.

Later, following the mid-term review of September 2003, taking into account actual performance under various components and expected financing needs over the remaining life of the project, the proceeds of the loan were reallocated again. Notably, due to long

delays in implementation of Emergency Management component A.1, the original allocation was reduced by about \$52 million. These delays stemmed from the complex institutional set-up in Turkey for disaster risk management which MEER was to reform through creation and support to TEMAD, intended to be a single agency responsible for coordinating preparedness, planning and response efforts. Traditionally, these functions were divided mainly between the General Directorate of Disaster Affairs (GDDA) under the Ministry of Public Works and Settlements and the General Directorate of Civil Defense (GDCD) under the Ministry of Interior. The project was to support fusion of their functions and, potentially, of relevant activities in other agencies, and vesting them in TEMAD. Despite the early signs of political will to carry out such a restructuring in the aftermath of the Marmara earthquake, this commitment was not further manifested and TEMAD was institutionally too weak to carry out originally foreseen investments. Eventually, a more modest headquarters was designed and built, releasing a large block of funds for other purposes, including the below.

The reallocation of an additional US\$80 million to the insurance contingency facility, which was allocated US\$100 million at project start-up, was made to accelerate the process of further reserve accumulation and to allow TCIP (Turkish Catastrophic Insurance Pool) to withstand major catastrophic events in the early years, and, at the same time, improve the creditworthiness of the pool.

In addition, a new sub-component to support the preparation of feasibility studies of a comprehensive flood management scheme for Bartın city was included in the project. This sub-component was a follow-up on the work initiated under the TEFER (Emergency Flood and Earthquake Recovery)¹ project to reduce vulnerability of Bartın to disasters. As the government priorities changed, the sub-component was later dropped.

The reallocation also made funding available to finance feasibility studies to support the preparation of the Istanbul Seismic Risk Mitigation and Emergency Preparedness Project (ISMEP), approved by the Board in May 2005. Istanbul is the site of greatest probable damage from earthquake in the entire Europe and Central Asia Region, and thus deserved a separate program.

Following the mid-term review, activities under component B shifted focus from the mental health issues arising from post-catastrophe trauma to strengthening capacities of the health sector to respond to disasters and other emergencies. As a result, additional funds were allocated to that component.

2. Key Factors Affecting Implementation and Outcomes

¹ The objectives of TEFER project were to (i) restore basic infrastructure in municipalities and rural areas affected by 1998 floods; (ii) provide assistance to restore housing in the 1998 earthquake affected province of Adana; and (iii) reduce vulnerability to future floods and earthquakes. The project closed on June 30, 2003.

2.1 Project Preparation, Design and Quality at Entry

(including whether lessons of earlier operations were taken into account, risks and their mitigations identified, and adequacy of participatory processes, as applicable)

The quality at entry was satisfactory. At the request of the Government of Turkey the Bank team was dispatched to the field within a week of the devastating earthquake to assist Turkey in responding to this disaster, which drew the attention of the whole world, bringing generous international support for immediate relief. The preparation of this large and complex project took a record short time (3 months), encompassing both the reconstruction and recovery activities, and disaster risk mitigation and emergency preparedness.

In the aftermath of the disaster, the Bank reallocated \$267 million from 8 existing loans and then, prepared the Emergency Earthquake Recovery Loan (EERL; US\$252 million) providing financing for urgent import needs and budgetary support, and the MEER project for the reconstruction and preparedness. MEER project was prepared within the framework of a comprehensive program totaling US\$1,796.75 million, out of which US\$505 million was financed by the Bank. The project was developed by the Bank in cooperation with other donors, such as UNDP, the European Union, the European Investment Bank, and a wide range of government institutions: ministries, technical agencies, provincial and municipal authorities. Its design reflected the findings of assessments and surveys carried out during project preparation.

The preparatory team comprised experts from multiple fields, both external and from within the Bank, bringing international best practice from the countries similarly prone to disasters. During preparation, lessons from previous post-disaster operations in Turkey and world-wide were taken into consideration and reflected in the design. The MEER project was preceded by two earlier Turkey disaster recovery operations, i.e., Erzincan Emergency Earthquake and Reconstruction (1992) and Emergency Flood and Earthquake Recovery (1998) projects. These two operations not only provided valuable lessons but also a good basis for implementation of an innovative approach in the Turkey context with respect to hazard risk mitigation, strengthening of disaster response capacity, creation of an emergency management information system as well as the establishment of a catastrophe insurance scheme. The design of the housing component was also guided by the experience from these projects. Lessons learnt from these operations allowed for much better estimation of reconstruction needs (previous projects, especially the Erzincan, resulted in over-building of the housing units), more diverse housing designs, strong focus on the social infrastructure and site amenities, and sites management. In addition, MEER project implementation arrangements were taking advantage of some tested solutions under the previous projects. The PIU structure was sustained, using the experienced implementation team. Its leverage and coordination capability was strengthened by positioning the unit under the Prime Ministry's Office. Also, the legal and operational arrangements with the various government agencies, implementing their respective components, were further streamlined and more precisely defined.

Most of the assumptions, risks and external factors were well identified. These particularly concerned the legislative revisions and the reconstruction program. However,

the project failed to anticipate the degree of institutional resistance and political difficulty entailed in introducing changes in the emergency management set-up and redistribution of ministerial responsibilities in this area. One reason for this was control of different ministries by different parties the then ruling coalition. The failure to foresee the political risk can be attributed to the perception of the government's initial very strong commitment to carry out wide-sweeping reforms of the disaster management system. The weaknesses of the initial institutional set-up were obvious taking into account inadequate coordination of response, planning and preparedness which came clearly to light in the Marmara earthquake. As further explained, while the Turkish Emergency Management Agency (TEMAD) was formally created in 2000, its ability to fully function as designed still falls below expectations thus, undermining one of the key objectives of the project. Most importantly, the time required to build a new, strong coordination agency was seriously underestimated. The failure to anticipate this risk was addressed during the implementation of the project through the continuous engagement in a dialog on this issue between the Bank team, strongly supported by the country management unit, and the government counterparts, including the highest level state authorities.

Overall, while designing the project and Emergency Management component in particular, the team took a “revolutionary” approach to institutional reforms. In retrospect, support to “evolutionary” and incremental changes in the way hazard risk management functions are performed could have been a valid alternative. Either way, establishing an effective and well-coordinated institutional framework and strengthening the capacity for disaster management was not likely to be achieved within one project cycle.

2.2 Implementation

(including any project changes/restructuring, mid-term review, Project at Risk status, and actions taken, as applicable)

During project implementation and after the mid-term review several changes were introduced which were mainly responding to the slow implementation of component A.1 (Emergency Management) and savings in the housing reconstruction program, on the one hand, and needs in other areas of the project, on another. An increased allocation was mainly made for the contingency funding under the insurance program, which ensured favorable re-insurance conditions for the pool.

- (i) reduction by half in financing of the institutional support component (A.1), from US\$95.01 to US\$42.08 million;
- (ii) increased funding of the insurance program under component A.2 from US\$144 million to US\$220.61 million, including additional allocation of US\$80 million to the National Catastrophic Insurance Program;
- (iii) additional support of US\$3.91 million to the Ministry of Public Works and Settlements (MPWS) to carry out studies on the development of a legal framework for urban planning and code enforcement under component A.3;

- (iv) additional funds for pilot municipalities sub-component A3.2 to finance technical preparatory work (feasibility studies) for the Istanbul region, in the amount of US\$10.7 million;
- (v) allocation of US\$2 million for a feasibility study for a flood protection scheme in Bartın, including the preparation of environmental and social assessments, as an additional component of the project (later dropped at the request of the government);
- (vi) new funding of US\$6.97 million for strengthening capacity of emergency health stations and command control centers, under component B;
- (vii) reduced allocation for the earlier completed housing reconstruction by about US\$45.05 million;
- (viii) inclusion of additional site works carried over from the Emergency Flood and Earthquake Recovery Project (TEFER) of US\$6 million;
- (ix) allocation of US\$13.3 million for pilot building retrofitting works in Istanbul region; and
- (x) reduction by US\$2.4 million in the allocation for project management, component D.

2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization

As originally designed, the Monitoring and Evaluation framework seemed to better define inputs and outputs, than broader project outcomes and their indicators. This concentration on tangibles and outputs, as much as or more than on ultimate long-term outcomes, is justified in this disaster emergency project, considering the very nature of the emergencies in question where it is tangible improvements (compared with the "without" counterfactual) that account for a large part of the immediate positive impact of disaster recovery activities.

Where the longer-term outcomes were provided, they were more difficult to evaluate, e.g., Annex 1 of PAD (Logframe) states as one of the key performance indicators: "reduction of damages to physical infrastructure and housing in the event of future earthquakes". This indicator can be only verified following earthquake in the project area.

As for the M&E process and tools, the implementation of M&E was carried out by the PIU and consultants in the specific subject areas. Particularly sound data were collected for the housing reconstruction part of the project. For this purpose, PIU staff made frequent site visits and contracted studies (e.g., on needs for additional social infrastructure; participation in rural housing reconstruction; compensation of the resettled population; off-site infrastructure, etc.). The results of these M&E efforts constituted bases for adjustments, such as: inclusion in the project of the construction of health facilities supplied with medical materials and equipment; creation at the sites of paths,

sport fields, playgrounds and other common spaces; grassing of slopes, building stairs, guardrails and other landscaping works; or support to the site management system, etc. An early feedback from the housing reconstruction beneficiaries, received during the public meetings led also to some changes and adjustments in the units' designs. The M&E activities of the PIU and consultant reports resulted in additional public outreach efforts to the beneficiaries of the rural housing reconstruction program. As part of this outreach, a monthly newsletter was published and distributed at the MEER project sites. From the Bank side, the continuous supervision and the mission reports provided input to the M&E efforts. The project monitoring and evaluation by both the Borrower and Bank team pointed to the need for the reallocations and necessary adjustments made during implementation (see sections 1.7 and 2.2).

2.4 Safeguard and Fiduciary Compliance

(focusing on issues and their resolution, as applicable)

The project was developed and implemented in a full compliance with applicable Bank safeguard policies, i.e., regarding environmental assessment and involuntary resettlement. With regard to the latter, during the preparation stage, the sites proposed by the Government for the urban housing construction were planned to be on public land but early on in the implementation phase, it became clear that some expropriation would be necessary. As a result, the Bank team did its due diligence and engaged in the process to ensure compliance with O.P. 4.12, including development of and adherence to the Resettlement Plan and a close supervision of the compensation process. As part of the monitoring of compliance with Bank Resettlement Policy, studies were carried out (compensation assessment and socio-economic baseline survey, and impact assessment of the expropriation) and regular visits to sites were made by the PIU's social scientist. The compensation mechanism and the progress were very closely monitored through the system set up between the PIU, the General Directorate for Disaster Affairs and the Ministry of Finance, tracking the release of funds and outstanding payments.

The environmental safeguards were closely monitored by the PIU, its local branches and Bank team, through reviews of compliance with the Environmental Management Plan (EMP). The PIU provided training in environmental aspects to the contractors, and the PIU staff had constant presence at the construction sites. Monthly environmental reports were prepared and submitted to the Bank for review. Both the PIU and the Bank were actively involved in assuring high environmental standards of the reconstruction. This is well exemplified by establishment of a sewage plant at Golcuk to ensure an adequate treatment of sewage from the project site before discharge into the Bay of Izmit. Also, as a result of site monitoring, additional erosion control measures were taken, e.g., construction of retaining walls, drainage channels, etc. Towards the end of the project and in accordance with new Turkish regulatory requirements, a comprehensive study to assess environmental impact of all reconstruction works was carried out.

Compliance with fiduciary requirements was satisfactory. With regard to Procurement, the project benefited from considerable experience of the PIU's and Bank Office's staff in previous Bank emergency operations in Turkey. Ex-ante and ex-post reviews were

carried out and properly documented. Also, Financial Management reviews were conducted regularly and audit reports were delivered on time, evaluated and discussed with the PIU. Both Bank Procurement and Financial Management staff were very actively involved in project supervision.

2.5 Post-completion Operation/Next Phase

(including transition arrangement to post-completion operation of investments financed by present operation, Operation & Maintenance arrangements, sustaining reforms and institutional capacity, and next phase/follow-up operation, if applicable)

The housing reconstruction program was completed after two years of project implementation and the sites by now are well established and maintained. The other activities initiated under the project are being continued, carried on and maintained by the government agencies (e.g., TCIP, MERLIS – Marmara Earthquake Region Land Information System, new and renovated cadastral offices, health facilities, emergency management information and communication systems, enhanced medical command and control centers, emergency health centers, etc.).

The establishment of TEMAD was an important step towards building institutional capacity for emergency management. Nonetheless, Turkey continues to face institutional challenges in coordinating disaster management at the national level. The government recognizes the lack of institutional coordination at the central level and the importance of further strengthening of provincial emergency management functions. Nonetheless, uncertainties over the political will to create an effective institutional arrangement for disaster risk management coordination remains. Until this aspect is resolved, any follow-up efforts by the authorities, with or without the Bank's or other partners' support, would be unable to bring substantial, long-term benefits in the area of institutional development.

Seismic risk mitigation efforts are being continued through the Istanbul Seismic Risk Mitigation Project (ISMEP) with respect to strengthening emergency management functions and enforcement of building codes and land use plans in Istanbul province. Lessons learned under MEER project were integrated in the design of relevant components of the ISMEP project. Furthermore, the Istanbul Municipal Infrastructure project includes several activities aimed at reducing the impact of a major earthquake on the municipal infrastructure and services.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

(to current country and global priorities, and Bank assistance strategy)

The objectives, design and implementation of the MEER project were highly relevant to the country's priorities, and are identified in the current CAS (of 2003) as a priority area. Given the high level of vulnerability to natural hazards of Turkey, and the fact that natural disasters tend to have a significant impact on the lives of the poor, the CAS included disaster prevention as a pillar of Bank support in order to protect the most vulnerable and facilitate equitable social and economic development. The housing reconstruction component provided direct support to the lives and livelihoods of those

affected by the August 1999 earthquake, and the remaining activities related to building a national emergency management system, establishing a national insurance scheme, improving land use planning and enforcement of building codes, and renovating cadastre and land management, all contributing directly to the Government priority of making the economy and communities more resilient to natural hazard shocks.

3.2 Achievement of Project Development Objectives

(including brief discussion of causal linkages between outputs and outcomes, with details on outputs in Annex 2)

Overall, the project achieved the objective of helping to restore the living conditions of the communities affected by the August 1999 earthquake through the reconstruction of urban and rural housing built to higher, more disaster resilient construction standards. The development objective concerning improvement of hazard management and preparedness was partially achieved.

Housing reconstruction. The project fully achieved its objectives of restoration of normal living conditions in the disaster-affected areas, through the timely reconstruction, i.e., in less than two years, of about 12,000 urban housing units along with the social infrastructure, including health facilities, off-site infrastructure as well as about 800 rural houses for people who lost their homes in the Marmara earthquake. It should be noted that the needs for rural housing were originally estimated at 2,000 rural household units. Commonly, in the post-disaster period, outside factors and other options eventually available to the affected people have impact on the reconstruction. In this case, some rural residents moved to the urban settlements and others decided not to participate in the program for a variety of personal reasons.

Building of national emergency management system. With assistance from the project, the Government of Turkey established the Turkish Emergency Management Agency (TEMAD), with a mandate to coordinate both the emergency response, mitigation and preparedness activities. However, even though TEMAD was created at the outset of the project, there was a significant delay in the implementation of the activities this new agency was responsible for. TEMAD has had low capacity and political support and leverage, despite being set up under the Prime Ministry. Nevertheless, the implementation pace of this component moved faster in the last two years. The new TEMAD headquarters was completed and systems for emergency information management and emergency communications were designed and implemented. With this progress, it is likely that management of disaster response has to some extent improved, but still requires significant strengthening. There remains an overlap between responsibilities of the General Directorate of Disaster Affairs under MPWS, TEMAD and Civil Protection under the Ministry of Interior, combined with lack of coordination among these agencies. The institutional arrangements for disaster risk management are still the most challenging issue in Turkey. Based on worldwide experience, building of the institutional capacity for disaster management constitutes a longer-term agenda, not likely to be resolved within one project cycle.

Development of building retrofitting code, revisions to the urban development law and advancing the enforcement agenda. Through the activities supported by the project and implemented by the Ministry of Public Works and Settlements (MPWS), the project contributed to the formulation of the Building Retrofitting Code, previously non-existent in Turkey, which will allow for a more uniform and technically solid approach to the efforts carried out by the Government as well as the private sector to strengthen the vulnerable building stock. Similarly, the project supported the regulatory framework and formulation of the Development Law which will ensure that urban planning and development activities are carried out with recognition of the risks and vulnerabilities of given areas. In addition, the project contributed to strengthening building code enforcement through establishment of provincial laboratories for testing construction materials and modernization of the computerized building code inspection system. Poor quality of building materials has been a persistent problem and a large proportion of structures not only cannot resist earthquakes, but moreover, cannot be even seismically retrofitted at a reasonable cost due to low quality construction. MEER project efforts are merely a start which provides the foundation for improved ex-ante disaster risk reduction. Enforcement, however, is a broader, deeply rooted problem which cannot be resolved only through the new technical standards and regulations. To a large degree it derives from social behavioral factors. Consequently, it needs more effort and time to tackle. This objective will remain one of the most critical challenges for the country.

Establishment of the Turkish Catastrophe Insurance Pool (TCIP). The establishment of the TCIP has been an important innovation, both for the Bank and Turkey that will reduce the fiscal burden on the government budget in case of future earthquakes. It has facilitated the transfer of over €1 billion of loss potential from GoT to the international reinsurance markets. Therefore, designing, creation and operation of the earthquake insurance pool is an important achievement of the project. Since the program began in September 2000, the insurance penetration for catastrophic coverage more than tripled. Nowadays, the TCIP is one of the largest government insurance programs in the world (second largest after the Japanese earthquake program), providing coverage to 2.6 million Turkish homeowners (about 20 percent of the eligible housing stock). The program has developed into a viable and sustainable insurance pool, and penetration continues to increase, though it is far from the original projection of 60%. This optimistic projection was based on the assumption that the new Disaster Insurance Law would be swiftly passed. The Law, which however was never enacted could allow for tighter enforcement of the compulsory character of the insurance, as originally foreseen under the project.

Piloting strengthening of municipal capacity to plan, regulate and implement disaster resistant development. This objective was achieved through implementation of a pilot program in six vulnerable municipalities of Marmara region. The program resulted in multi-hazard risk analyses, hazard mapping, loss estimation and mitigation plans. These, in turn, will lead to improved land use plans, based on particular risks of the municipality, and allow for informed decisions in regard to its urban development. However, this latter result is expected to be achieved by pilot municipalities after MEER project completion. The work with pilot municipalities resulted in development of a methodology, described

in a manual for vulnerability assessment in the disaster-prone areas, and further legislative recommendations.

Renovation of cadastre. The physical effects of the 1999 earthquake exacerbated and revealed deficiencies in the cadastral maps and land information. The project achieved its objective of upgrading the land information system in the Marmara region through creation of the Marmara Earthquake Region Land Information System (MERLIS), updating and improvement of obsolete registers and maps as well as reconstruction of local cadastral offices damaged by earthquake. Overall, the renovation of cadastre and land information was particularly successful. The establishment of MERLIS not only contributed to incorporating hazard risk data into the land information, but now has the potential to inform the development planning process.

Strengthening of emergency health services. The project achieved its goal of better disaster preparedness of the health sector in the Marmara region through support to command centers of ten Marmara region provinces with needed equipment (communication, IT, medical equipment, emergency operation units, ambulances, specialized rescue vehicles, etc.). Hence, the project strengthened capacity of the health sector in the region to respond to emergencies. The project was not able to ensure provision of trauma counseling services to the affected population in the aftermath of the disaster, due to lack of commitment and ownership of the program by the government. The level of awareness of mental health issues, including those resulting from disasters, is still very low. Nonetheless, the project financed development of the first mental health strategy in Turkey which lays a foundation for better management of mental health services which would lead in future to more effective treatment of trauma associated with natural disasters.

In short, the MEER project has significantly contributed to the recovery after the Marmara earthquake and, to some extent, to the country's ability to mitigate its vulnerability to natural disasters. Project activities were critical first steps which need to be followed by a more comprehensive risk management system, particularly, in light of risks Turkey faces from natural disasters.

3.3 Efficiency

(Net Present Value/Economic Rate of Return, cost effectiveness, e.g., unit rate norms, least cost, and comparisons; and Financial Rate of Return)

N/A (Emergency Recovery Loan)

3.4 Justification of Overall Outcome Rating

(combining relevance, achievement of PDOs, and efficiency)

Rating: *Satisfactory*

The project's development objectives were relevant to Government priorities, and to a large extent they were achieved. In particular, restoration of living conditions of people who lost their houses to the earthquake and were sheltered in the temporary camps should be considered as a major successful outcome of the project. The housing reconstruction program was completed efficiently and within a short time frame, with dwellings built to higher construction standards to withstand future seismic events. A number of important

studies were completed, and draft legislation related to reducing risk was undertaken. In the future, it will be important to focus on the application and enforcement of the revised laws. The establishment of the Turkish Catastrophe Insurance Pool was an important innovation (both for the Borrower and the Bank) and a step towards reducing the financial exposure of the Government to hazard shocks, and towards building a culture of insurance and risk management. The objectives related to strengthening of the institutional arrangements and capacity for emergency management, were not fully achieved. The clarification and improvement of institutional arrangements for disaster management remains an outstanding task which is of key importance to the country's capacity to manage the hazard risk, though in itself, it will not make the country resistant to the catastrophes. Therefore, other elements of the hazard risk management framework (risk assessment, risk mitigation investments, emergency preparedness, response equipment, communication and information systems, building codes and their enforcement, public awareness, catastrophe risk financing, etc.) promoted by the MEER project are equally crucial and should be further enhanced beyond project completion.

It is important to note that the achievement of project outcomes is considered satisfactory, with about \$300 million of the original loan amount of \$505 million having been disbursed. The project included \$180 million as a contingency fund for the TCIP Insurance Program to be used to cover losses in case of an earthquake. This "reserved" contingency helped keep the insurance premiums down, which made it affordable to many people and thus increased the TCIP penetration rate. It also made possible for the pool to continue accumulating own funds and maintain liquidity. According to provisions of the Loan Agreement, once the loan was closed, the government had an option to withdraw the funds to increase TCIP equity but the government decided not to do so as the TCIP no longer needed additional funds. This is a positive result which indicates that the catastrophe insurance pool is already sustainable.

3.5 Overarching Themes, Other Outcomes and Impacts

(if any, where not previously covered or to amplify discussion above)

(a) Poverty Impacts, Gender Aspects, and Social Development

The provision of assistance for housing reconstruction greatly facilitated the recovery of the region in the areas affected by the earthquake and brought substantial improvement in lives of many people, including the poor. A survey of households living in tent camps one month after the earthquake determined that their household income was less than half of the regional average. The successful completion of the housing reconstruction component made a tremendous impact by bringing over 12,000 families from the homelessness resulting from the disaster and restoring their homes.

(b) Institutional Change/Strengthening

(particularly with reference to impacts on longer-term capacity and institutional development)

The objective of building local and national capacity for emergency management was partially achieved. Some positive institutional changes were made, such as establishment of TEMAD to coordinate emergency management at the national level. The agency was

provided with an operations center and emergency management information system software. Other emergency management institutions made a number of important steps to improve their capacity, e.g., MPWS and GDDA revised the building codes and prepared a new retrofitting code (which was approved and became effective in 2007), and strengthened construction materials laboratories in various regions of the country. Also, the GDCD's search and rescue teams are now well equipped and capable to respond to emergencies, both domestically and internationally. In fact, Turkish Search and Rescue teams were one of first teams to arrive in Pakistan after the 1996 earthquake.

However, there is a recognized need to further strengthen the national capacity for emergency management. The coordination mechanism between the key disaster risk management institutions, such as TEMAD, GDDA, and Civil Protection, remains deficient. In addition, continued efforts are particularly needed to develop local capacity for disaster management following the decentralization of emergency response functions.

A major institutional development resulting from the project is the creation of TCIP, a new institution being a prime example of a joint public/private solution aimed at reducing the hazard risk borne by the government and property owners. Operation of TCIP also facilitated development of local professional liability insurance capacity. By the end of the project, the TCIP is fully sustainable with the penetration rate of around 20% level. The reinsurance of potential losses stands now at about €1 billion.

(c) Other Unintended Outcomes and Impacts (positive or negative)

The implementation of the project initiated major work in Turkey on cadastre renovation, records digitization and land registration. These activities have been continued beyond the Marmara region with the Agricultural Reform Implementation Project (ARIP) under the same agency, GDLRC, who stressed that the experience gained through the MEER project allowed for the swift progress of activities under the ARIP.

In the context of the cadastral and land management work, it was a first time in Turkey that the GDLRC contracted out service in cadastre renovation to the private sector. According to the agency, this outsourcing process positively affected supply and quality of these services provided by the private sector.

MEER project also contributed to the preparation of the first project in Turkey, fully dedicated to mitigation – Istanbul Seismic Risk Mitigation and Emergency Preparedness Project (ISMEP). The preparatory studies included under MEER allowed for completion of the preparation of ISMEP. The project is currently under implementation and aims at strengthening Istanbul's resilience to earthquakes. The city is of crucial importance to Turkey and the most vulnerable in the country, due to its location in a seismically highly active zone, high density, as well as economic and cultural assets.

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

(optional for Core ICR, required for ILI, details in annexes)

N/A

4. Assessment of Risk to Development Outcome

Rating: *Moderate*

The reconstruction of the housing units is fully sustainable and the housing sites are well established, with site management systems set up early on. The social (health facilities and schools) infrastructure is operated under the authority of the relevant sectoral ministries and off-site infrastructure (utilities) by the local governments. Therefore, the risk to this developmental outcome of the project is low.

Based on the experience from this and other disaster recovery projects, the sustainability of the reconstruction sites often stems from the assurance that the construction program not only focuses on the provision of housing units but equally on making the settlements livable and attractive for the residents. The MEER project included many elements, often missed when the key drive is to provide a shelter for the affected people, such as well-designed public spaces (e.g., with playgrounds for children, recreational areas, additional amenities, etc.) which adhere to the local standards and customs.

Sustainability of already achieved institutional outcome of the project, i.e., the improvement of the institutional framework for disaster risk management and mitigation, is likely. However the progress that was made might not to be sustained without further efforts and political support. There is recognition of outstanding need to strengthen the institutional set-up through dialogue and endorsement by key stakeholders, such as the GDDA under Ministry of Public Works and Settlements, GDCC under the Ministry of Interior and TEMAD. Further improvement of division of responsibilities and functions will be necessary to ensure existence of truly effective disaster management in Turkey. For this process to happen, stronger political backing of the reforms would be required, which was lacking throughout MEER project implementation period. The activities aimed at strengthening the institutional arrangements got underway relatively late in the project and the push for major institutional changes was not sufficiently strong. In addition, the government needs to continue investments in the emergency management information and communication systems' hardware. These outstanding issues are recognized by the government.

5. Assessment of Bank and Borrower Performance

(relating to design, implementation and outcome issues)

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry

(i.e., performance through lending phase)

Rating: *Satisfactory*

The Bank team responded with extraordinarily swift and effective effort, resulting in a very rapid preparation of a large and innovative program. The speed of preparation and approval of the project was accorded a highest priority by the Government.

The preparation team included a wide range of experts in the fields of seismic engineering, disaster management and preparedness, insurance, land management, health, etc., and comprised both Bank staff and external experts. The safeguard, legal, procurement and financial management staff constituted an integral part of the team.

Throughout project preparation, client input at the local and national levels regarding specific needs for investments was sought and formed the basis for the content of the project. A rapid damage and social assessment conducted during preparation and a follow-up monitoring at the implementation stage helped the Bank team and the Government to understand and better address the needs of those made homeless by the earthquake.

Notably, the main emphasis and financing provided by the Bank in the aftermath of a disaster was no longer limited to addressing reconstruction of infrastructure and damaged housing. More than half of the project financing supported innovative and forward-looking measures to mitigate future losses through an improved emergency preparedness and response planning system, better land use planning and enforcement of construction codes, cadastre renovation and land management, and through the introduction of a new disaster insurance scheme establishing and expanding national catastrophic risk management and risk transfer capabilities.

In recognition of the extraordinary effort put in the preparation of MEER project and the quality of its design, the project and its team received in 2001 the World Bank's Award for Excellence.

(b) Quality of Supervision

(including of fiduciary and safeguards policies)

Rating: *Satisfactory*

The quality of project supervision was assessed twice by the Quality Assurance Group (QAG) of the Bank, in 2002 and 2004, which rated it "Highly Satisfactory" and "Satisfactory" respectively. In their assessments, the panels pointed to several very strong aspects considered best practice, in particular the effectiveness of response to the urgent needs generated by the earthquake combined with development of a long-term agenda for disaster risk management and the strategic focus and effective deployment of a large, diverse and highly skilled task team. The supervision assessment also indicated high satisfaction of contacted stakeholders with the Bank's supervision.

One interesting aspect of the highly complex supervision effort was the need for the team to work out a method for procuring reinsurance which was compatible with Bank Guidelines and with realities and practices of the world reinsurance industry. This project was the first time reinsurance (of about €1 billion of coverage) was ever

purchased with Bank funds; this occurred while TCIP was building its penetration and working capital. The project team also advised the government on setting the premia with automatic adjustments based on relevant cost indices, to prevent erosion of capital.

On balance, the performance monitoring and evaluation efforts were found by QAG review a weaker aspect of the supervision, due to the predominant concentration on tracking project inputs and outputs and to lesser degree the social and economic impacts of reconstruction works.

Fiduciary and safeguards policies supervision was also rated “Satisfactory”, reflecting an adequate attention to compliance with resettlement policies, particularly to the compensation of the affected people, to the environmental safeguards and the financial management supervision.

(c) Justification of Rating for Overall Bank Performance

Rating: *Satisfactory*

Overall, the Bank’s performance was satisfactory during project preparation, appraisal, and implementation. The relationships with the PIU and implementing agencies were productive, and the Bank team brought in its global experience in disaster reconstruction and risk management, and specialized expertise from many countries.

5.2 Borrower Performance

(a) Government Performance

Rating: *Satisfactory*

The Government’s performance was satisfactory during project preparation and implementation, particularly for the reconstruction activities, which were completed efficiently and effectively. Ownership related to the establishment of the national institutional framework for disaster risk management was lacking in the early years. However, there now seems to be an improved understanding of what is needed in terms of the institutional set-up and the willingness to take decisive steps to achieve this important objective. In part this may be due to unified control of the government by a single political party. Since this commitment was not apparent during most of project implementation period, the important institutional outcomes could not be fully achieved. On the other hand, the commitment to the longer-term goal of improving disaster risk management demonstrated in the ISMEP project is a strong indicator of government ownership.

(b) Implementing Agency or Agencies Performance

Rating: *Satisfactory*

The performance of the PIU was satisfactory. The Unit was already in existence implementing the preceding TEFER project. The PIU staff were skilled in Bank procurement, disbursement, and reporting procedures and had well qualified engineering staff. Under MEER project, the PIU reported directly to the Prime Ministry’s Office instead of any line ministry or agency, which reflected the multi-sectoral character of the project.

The operation of the PIU fully dedicated to the project was particularly important for the emergency reconstruction where speed of the construction works had to be combined with the incorporation of the social and environmental considerations into the development of the new settlements. Moreover, the PIU worked very closely with a multitude of government agencies involved in project implementation, such as GDI, GDLRC, GDDA, TEMAD and local governments in pilot municipalities. The performance of these agencies in their respective components was also satisfactory. Overall, the PIU was proactive in addressing any implementation bottlenecks that arose, and were highly collaborative with the Bank team and the other government agencies.

(c) Justification of Rating for Overall Borrower Performance

Rating: *Satisfactory*

Overall, the Borrower's performance was satisfactory as reflected in the outputs and outcomes achieved through the close collaboration in project implementation with the multitude of agencies, timely provision of the counterpart funding, adequacy of the financial and procurement processes and compliance with Bank safeguards.

Moreover, the Government of Turkey has proved to be one of the champions among Bank borrowers in its proactive approach and openness to innovations in the field of disaster risk management, by undertaking a major program under the MEER project, such as the creation of the Turkish Catastrophe Insurance Pool. Much has been accomplished since launching the project and those areas which were not fully completed are by their nature long-term developmental issues.

6. Lessons Learned

(both project-specific and of wide general application)

Lessons from MEER project provide valuable learning for Bank provision of post-disaster reconstruction and recovery assistance and for ex-ante disaster risk management. These include:

- While it is tempting to take advantage of the post-disaster window of opportunity to introduce institutional and regulatory reforms to promote disaster prevention and mitigation, there is a need to be realistic about what can be practically achieved in the context of an emergency recovery project.
- Establishing effective institutional framework and building capacity for disaster risk management institutions is a long-term agenda that is not likely to be achieved within the life span of one project, in a course of 4-5 years.
- The existence of a post-disaster recovery project implementation unit, solely dedicated to the reconstruction efforts does accelerate and strengthen the process. This applies to the physical reconstruction but not necessarily to the mitigation activities and institution building. Therefore, in providing support for post-

disaster reconstruction and recovery, the Bank needs to weigh very carefully the advantages and disadvantages of having a PIU to manage the process vs. building on the existing capacity of the country.

- In case of MEER project, the budget allocation for the reconstruction was made for the entire duration of the reconstruction period and not as an annual sectoral appropriation. This minimized the uncertainties caused by annual budgeting and administrative procedures for releasing of funds. Such an approach enabled the government to move swiftly with the reconstruction program. This flexibility as well as the specialized and dedicated PIU are key factors that contributed to the success of the reconstruction program.
- Post-disaster recovery needs tend to be overestimated, therefore, while designing the housing reconstruction projects, the teams should be very prudent in needs assessments and take into account other factors and housing options affected people have in the medium- or longer-term following the disaster.
- The successful reconstruction program should pay close attention and support not only to reconstruction of housing units but also to adequate social infrastructure, such as schools, clinics, shopping areas, as well as public spaces, etc., which contribute to the improvement of living conditions of the affected communities.
- The issues which involve complex and deeply-rooted factors are unlikely to be resolved within one project cycle. This is well exemplified by the enforcement of building codes as well as building capacity for the response to the post-disaster trauma. Both are long-standing problems that can only be tackled through incremental changes.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

(a) Borrower/implementing agencies

In its comments to the issues raised in this report, the government agreed with its main conclusions, stressing that the experience from MEER project shows that the design and implementation of capacity building activities take much longer than the reconstruction activities. This is particularly true when a project, as in the MEER case, promotes a major change and restructuring of the existing institutional setting. While there may be a good justification for putting the institution building and physical reconstruction under the same financing package, the need for acceleration of post-disaster recovery takes away a focus from institutional components. An alternative would be to tackle institutional issues under a separate project.

The government also highlighted a lesson from the project, which is that at a design stage, a strong participation of key stakeholder agencies should be incorporated, allowing

enough time for them to analyze given options in order to ensure their full ownership and commitment. This approach could likely decrease delays in the project implementation.

Issues raised by individual implementing agencies in their own evaluations indicate their satisfaction with the project implementation and its outcomes. Overall, the implementing agencies appreciated the experience and knowledge gained through the implementation of MEER project. Unanimously, all of them emphasized that the agenda of hazard mitigation which includes numerous elements, such as risk assessment, emergency preparedness, institutional capacity building, mitigation investments, land use planning, code enforcement, risk financing, etc., has been well initiated but these efforts need to be further continued.

(b) Cofinanciers

(c) Other partners and stakeholders

(e.g. NGOs/private sector/civil society)

Annex 1. Project Costs and Financing

(a) Project Cost by Component (in USD Million equivalent)

Components	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
SUB-COMPONENT A1: NATIONAL EMERGENCY MANAGEMENT SYSTEM	110.17	16.83	15.27
SUB-COMPONENT A2: DISASTER INSURANCE SCHEME	273.00	71.46	26.18
SUB-COMPONENT A3: LAND USE PLANNING AND ENFORCEMENT OF CONSTRUCTION CODES	11.78	17.81	151.20
SUB-COMPONENT A4: CADASTRE RENOVATION AND LAND MANAGEMENT	24.21	24.44	100.97
COMPONENT B: TRAUMA PROGRAM FOR ADULTS	6.89	7.67	111.26
COMPONENT C: CONSTRUCTION OF PERMANENT HOUSING IN BOLU, KOCAELI AND YALOVA	293.32	290.67	99.10
COMPONENT D: PROJECT MANAGEMENT	12.69	12.35	97.36
COMPONENT A5: FLOOD PROTECTION SCHEME IN BARTIN	0.00	0.00	0.00
Total Baseline Cost	732.05	441.23	60.27
Physical Contingencies	0.00	0.00	0.00
Price Contingencies	0.00	0.00	0.00
Total Project Costs	0.00	441.23	60.27
Project Preparation Fund	0.00	0.00	.00
Front-end fee IBRD	5.05	5.05	100.00
Total Financing Required	737.11	446.23	60.96*

* The **contingency funding** under component A.2 (Insurance) was **US\$180 million**. Therefore, estimated at the appraisal **project cost** without the contingent facility was **US\$557.11**. Consequently, the total actual cost was **79.20%** of **the appraisal estimate**.

(b) Financing

Source of Funds	Type of Cofinancing	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
International Bank for Reconstruction and Development	Joint	505.00*	306.66	60.78
Govt. of Borrowing Country	Joint	176.18	63.89	36.27
LOCAL: BENEFICIARIES	Joint	55.93	50.18	89.71

* Including the contingent part of the loan of \$180 million. If the loan is considered without this facility, triggered by certain conditions specified in the Loan Agreement, it comes to \$325 million.

Annex 2. Outputs by Component

Component A.1: National Emergency Management System

- Establishment of the Turkish Emergency Management Agency (TEMAD) as a permanent central emergency response coordinating body;
- Design and construction of an emergency management facility;
- Design and establishment of the emergency communication and information management systems;
- Organization of the “International Emergency Management Symposium” gathering participants from six risk-prone countries and international organizations (UN, JICA, NATO and World Bank);
- Organization of the “Earthquake Summit” as part of development of the national strategy for earthquake risk reduction.

Component A.2: Disaster Insurance Scheme

- Establishment of the Turkish Catastrophe Insurance Pool (TCIP), backed by the contingent capital facility;
- Preparatory studies for TCIP;
- Public information campaigns;
- Training sessions and workshops;
- Coverage of reinsurance premiums (in the first year of operation and in 2006).

Component A.3: Land Use Planning and Enforcement of Construction Codes

- Organization of workshops to develop draft Development Law and Urban Regeneration Law;
- Development of a manual for municipalities on “Redefinition of Planning and Development Standards for Disaster-Prone Areas”;
- Preparation of a manual on the “Integration of Ground Scientific Data into Planning”;
- Workshops to develop the Code for Building Retrofitting and the Code for Soil Improvement;
- Training program for civil engineers and designers on building construction and retrofitting according to the new Turkish Earthquake Resistant Design Code;
- Upgrading software design and provision of hardware for the Building Inspection System within the Ministry of Public Works and Settlements;
- Refurbishment and equipping provincial laboratories for testing of construction materials
- TA for upgrading of seismic hazard maps;
- Development and establishment of the National Disaster Data Archives and the Disaster Information System;

- Microzonation and Hazard Vulnerability Studies in six pilot municipalities of Marmara region (Bakirköy, Tegirdağ, Gemlik, Bandırma, Eskişehir and Körfez);
- Provision of TA and training to the planning and development departments of the pilot municipalities;
- Development of Disaster Mitigation Guidelines for each pilot municipality;
- Feasibility studies for Istanbul seismic risk mitigation (studies included: emergency management information system, upgrading emergency response, emergency communication system, retrofitting of high priority public assets, retrofitting of selected residential buildings as well as building code enforcement study).

Component A.4: Cadastre Renovation and Land Management

- Establishment of a multi-layer Marmara Earthquake Land Information System (MERLIS);
- Densification work of TUTGA (Turkish National Basic GPS Network) carried out in cities of Kocaeli, Sakarya and Yalova;
- Reconstruction of five local land registration and cadastre offices in Yalova, Kocaeli, Sakarya, Kandira and Hendek;
- Scale 1:1000 digital photogrametric maps covering area of 58,734 ha;
- Completed cadastre and land registry renovation of 103,877 parcels in 93 villages;
- Establishment of first cadastre of 90,650 parcels in 101 villages;
- Provision of equipment (electronic takeometers, GPS devices, computers and other IT equipment for local offices and the server room for the headquarters)
- Procurement of orthorectified satellite images in Sakarya region;
- Organization of a workshop on a final review and results assessment of the component.

Component B: Trauma/Emergency Health Care

- Development of the National Mental Health Strategy;
- Training, educational materials and office equipment for central and provincial mental health departments;
- Software and hardware for call recording and operation management systems for the Command and Control Centers in 9 provinces;
- Equipment sets for the National Medical Rescue Teams;
- Specialized medical equipment, 200 ambulance equipment sets, 2 mobile emergency operation units, 200 mechanical ventilator devices, etc., for 9 provinces;
- IT equipment (including 150 computers and printers);
- Provision of 105 desktop radio units, 105 mobile radios, 120 generators for the Command and Control Centers;
- Procurement of 9 specialized rescue vehicles;

Component C: Permanent Housing and Health Facilities

- Construction of 11,502 urban housing units in the provinces of Düzce, Kocaeli and Sakarya;
- Construction of 17 health centers and 10 logging facilities at the project sites;
- Landscaping works and public spaces;
- Reconstruction of 797 rural houses in 137 villages in provinces of Yalova and Kocaeli;
- Provision of designs and training for rural houses' owners in seismically resistant construction and maintenance techniques.

Annex 3. Economic and Financial Analysis
(including assumptions in the analysis)

N/A

Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit	Responsibility/ Specialty
Lending			
Supervision/ICR			
Ibrahim Akcayoglu	Operations Officer	ECSHD	Health Component
Ayse Seda Aroymak	Sr Financial Management Specialist	ECSPS	Financial Management
Eugene N. Gurenko	Lead Financial Sector Specialist	FPDSN	Insurance Component
Ulker Karamullaoglu	Program Assistant	ECCU6	Overall Assistance
Jolanta Kryspin-Watson	Operations Analyst	ECSSD	Institutional Components
Zeynep Lalik Mete	E T Consultant	ECSPS	Financial Mangement
Rodney Lester	Sr Adviser	FPDSN	Insurance Component
Beatrice Koshie Michel	Program Assistant	ECSSD	Overall Assistance
Serap Oguz Gonulal	Consultant	FPDVP	Insurance Component
Norval Stanley Peabody	Consultant	ECSSD	Social Safeguards
Ibrahim Sirer	Sr Procurement Spec.	ECSPS	Procurement

(b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
FY00	111	459.89
FY01		0.00
FY02		0.00
FY03		0.00
FY04		0.00
FY05		0.00
FY06		0.00
FY07		0.00
Total:	111	459.89
Supervision/ICR		
FY00	63	307.76
FY01	60	260.01

FY02	40	209.46
FY03	35	181.46
FY04	30	147.52
FY05	22	128.31
FY06	32	138.11
FY07	13	45.86
Total:	295	1418.49

Annex 5. Beneficiary Survey Results
(if any)

Annex 6. Stakeholder Workshop Report and Results
(if any)

Annex 7. Summary of Borrower's ICR and/or Comments on Draft ICR

The agencies implementing MEER project (SPO, TEMAD, GDI, MPWS, MOH, PIU) carried out their own evaluations of the project. The key points emerging from these assessments are listed below:

- MEER project objectives were adequately stated in the context of the post-disaster conditions and the mitigation;
- The project was beneficial and the activities should be further continued;
- The Catastrophe Insurance Scheme provided significant benefits, giving a successful example to other countries;
- The World Bank has not only provided the financing required for implementation of the compulsory earthquake insurance system but also shared its global knowledge and expertise in implementation of the scheme;
- The coverage of the catastrophe insurance program should be expended to other disasters and types of buildings;
- The institutional reform of the disaster management could not be completed, as originally foreseen under component A-1, mainly due to the limited capacity of TEMAD, and overlapping functions and responsibilities of a number of government institutions;
- Within the scope of the project, new earthquake resistant buildings were constructed for the Land Registry and Cadastre Directorates in the region, works related to densification of TNBGN (Turkish National Basic GPS Network) in the region were completed, electronic equipment and GPS systems were procured, cadastral renovation works completed for 93 villages and first cadastral plans were developed for 101 villages;
- In the context of the cadastral and land management work, the project facilitated development of private sector in this area; it was a first time that the GDLRC contracted out service for the cadastre renovation;
- The project had extremely positive results in terms of rehabilitating the health care infrastructure, rendering them efficient and bringing the services to places where they were needed;
- The project considerably strengthened Emergency Healthcare Services in 10 cities of Marmara region, and brought world standards to the response teams, thereby, improving availability and quality of the emergency healthcare services;

- The project had a positive impact through the support to the construction materials laboratories allowing for building materials inspections and helping improve quality of the construction;
- The activities carried out under the project and the outcomes were very important, by supporting draft report on basic ground surveys and ground strengthening, development of principles regarding seismic risk maps, and improvement of technical capacities of GDDA staff;
- Project components contributed to the preparation of some legislations but more work and support is needed;
- The project has helped to learn external financing procedures. The problems have been expediently resolved thanks to collaboration between the staff from World Bank's country office in Ankara and the Prime Ministry Project Implementation Unit.
- Through MEER, agencies acquired knowledge and experience in project management and procurement processes;
- The World Bank procurement procedures are different than the national public procurement regulations which caused delayed project results;
- More flexibility in the procurement rules would improve project implementation;
- Involvement of Prime Ministry PIU delayed clearance procedures;
- PIU should have maintained its capacity and staffing till the end of the project in order to effectively assist the implementing agencies.

Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders

Annex 9. List of Supporting Documents

“Turkey: Marmara Earthquake Assessment”; World Bank; 1999

Project Appraisal Document; 1999

“Evaluation of TEFER Housing Project in Adana and Ceyhan and Public Participation for Reconstruction of Housing under MEER”; Strateji/Mori; 2000

“Resettlement Action Plan” ; 2000

“Environment Management Plan”; 2000

Assessments of MEER Project by Implementing Agencies