

Document of  
The World Bank

Report No: 27522

IMPLEMENTATION COMPLETION REPORT  
(PPFB-P3540 SCL-43880)

ON A

LOAN

IN THE AMOUNT OF US\$191.0 MILLION

TO THE

REPUBLIC OF TURKEY

FOR AN

EMERGENCY FLOOD AND EARTHQUAKE RECOVERY PROJECT

February 23, 2004

**Infrastructure Sector  
Turkey Country Unit  
Europe and Central Asia Region**

## CURRENCY EQUIVALENTS

(Exchange Rate Effective September 30, 2003)

Currency Unit = Turkish Lira  
1369863.01 TL = US\$ 1.00  
US\$ 1.00 = 0.00000073 TL

## FISCAL YEAR

January I -December 31

## ABBREVIATIONS AND ACRONYMS

AGM	Afforestation and Erosion Center
AMU	Adana Management Unit
AWOS	Automated Weather Observation Stations
CAS	Country Assistance Strategy
DDY	General Directorate of Railways
DMI	State Meteorological Institute
DSI	State Hydraulic Works
EIE	General Electorate for Electrical Power
GD	General Directorate
GDGD	General Directorate of Civil Defense
GDDA	General Directorate of Disaster Affairs
GDAEC	General Directorate of Afforestation and Erosion Control
GDF	General Directorate of Forestry
GDI	General Directorate of Insurance
GDRS	General Directorate of Rural Services
GDTRI	General Directorate of Technical Research and Implementation
GIS	Geographical Information System
GOT	Government of Turkey
HDA	Housing Development Administration
HPC	High Performance Computer
IBRD	International Bank for Reconstruction and Development
KGM	General Directorate of State Highways
MARA	Ministry of Agriculture and Rural Affairs
MEER	Marmara Emergency Earthquake Reconstruction Project
MPWS	Ministry of Public Works and Settlement
PIU	Project Implementation Unit
PSR	Project Status Report
PM	Prime Minister
TCIP	Turkish Catastrophic Insurance Pool
TEFER	Turkey Emergency Flood and Earthquake Recovery Project
WBSR	Western Black Sea Region

Vice President:	Shiego Katsu
Country Director	Andrew Vorkink
Sector Manager	Sumter Lee Travers
Task Team Leader/Task Manager:	Christoph Pusch

**TURKEY**  
**Emergency Flood and Earthquake Recovery Project**

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<i>Project ID:</i> P058877	<i>Project Name:</i> EMGY FLOOD RECOVERY
<i>Team Leader:</i> Christoph Pusch	<i>TL Unit:</i> ECSSD
<i>ICR Type:</i> Core ICR	<i>Report Date:</i> March 22, 2004

## 1. Project Data

*Name:* EMGY FLOOD RECOVERY *L/C/TF Number:* PPFB-P3540; SCL-43880  
*Country/Department:* TURKEY *Region:* Europe and Central Asia  
Region

*Sector/subsector:* Housing construction (43%); General water, sanitation and flood protection sector (29%); General public administration sector (16%); Irrigation and drainage (6%); Roads and highways (6%)

*Theme:* Natural disaster management (P); Rural services and infrastructure (P); Other urban development (P); Water resource management (P)

### KEY DATES

	<i>Original</i>	<i>Revised/Actual</i>
<i>PCD:</i> 08/05/1998	<i>Effective:</i>	10/13/1998
<i>Appraisal:</i> 09/14/1998	<i>MTR:</i>	
<i>Approval:</i> 09/10/1998	<i>Closing:</i> 06/30/2002	09/30/2003

*Borrower/Implementing Agency:* REPUBLIC OF TURKEY/TREASURY & HOUSING DEVELOPMENT AGENCY (HDA)

*Other Partners:*

STAFF	Current	At Appraisal
<i>Vice President:</i>	Shigeo Katsu	Johannes F. Linn
<i>Country Director:</i>	Andrew N. Vorkink	Ajay Chhibber
<i>Sector Manager:</i>	Sumter Lee Travers	Ricardo A. Halperin
<i>Team Leader at ICR:</i>	Christoph Pusch	
<i>ICR Primary Author:</i>	Christoph Pusch; Sati Achath; Eric Peterson	

## 2. Principal Performance Ratings

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HL=Highly Likely, L=Likely, UN=Unlikely, HUN=Highly Unlikely, HU=Highly Unsatisfactory, H=High, SU=Substantial, M=Modest, N=Negligible)

*Outcome:* S  
*Sustainability:* L  
*Institutional Development Impact:* M  
*Bank Performance:* S  
*Borrower Performance:* S

*Quality at Entry:* QAG (if available) ICR  
S

*Project at Risk at Any Time:* No

### **3. Assessment of Development Objective and Design, and of Quality at Entry**

#### *3.1 Original Objective:*

On May 21, 1998, Turkey's Western Black Sea Region (WBSR) was affected by a flood estimated at a recurrence interval of 200 to years or greater (depending on location), accompanied by several hundred landslides lasting for several weeks thereafter. For the region, an area of about 37,000 square kilometers with a population of 2.2 million, this constituted the worst flooding of the last century, with some 151 rivers over-running their embankments, and 478 settlements left wholly or partially under water. The flood damaged private houses, public buildings (including schools, hospitals and housing), rural and urban infrastructure, telecommunication and energy transmission systems and destroyed crops and livestock. Total damage was estimated at about \$500 million.

In response to a Government request for assistance, the Bank began preparation of an emergency flood project. During project preparation, on June 27, 1998, a major earthquake struck southern Turkey. Around 150 people died in Adana Province and over 1,000 people were injured. Based on the information prepared by numerous official investigation teams within three weeks of the event, 74,303 housing units suffered collapse or damage, with total damage estimated in the range of US\$ 1 billion. As a result, the Bank agreed with the Government of Turkey (GOT) to include emergency earthquake response and recovery assistance under the flood project, in a US\$685 million multi-sectoral project, with a loan amount of US\$369 million.

The objectives of the project were to assist the GOT in: (a) restoring basic infrastructure in municipalities and rural areas affected by the flood by repairing structures and facilities of economic and social importance; (b) providing assistance to restore housing in the earthquake affected Province of Adana; and (c) reducing vulnerability to future floods and earthquakes.

The objectives were clearly stated, important to the country, and realistic in scale and scope. They were also timely and appropriate to the needs of Turkey, which is a disaster-prone country. The project was not listed in the Country Assistance Strategy (CAS) as a priority operation for GOT as it responded to a national emergency that occurred after the CAS discussion of September 4, 1997. However, the GOT saw the project as a priority operation to address the flood and the earthquake emergencies, and requiring Bank financial and technical support.

The project supported the CAS goal of sustaining private sector growth, especially in the area of increased private sector participation in insuring against disaster risk and corporate liability of the construction industry. Private sector development was also supported through infrastructure development, by engaging local vendors, contractors and technical service providers to implement infrastructure restoration. The project also supported the CAS goals for environmental and social sustainability of reforms by repairing environmental infrastructure damages from the flood and the earthquake, restoring basic infrastructure necessary for economic activity. Moreover, the project supported the CAS goal of poverty reduction as it benefited the poor who were hit by the disastrous flood and earthquake. While the poverty impact of this project was not directly measurable, it aimed to minimize the adverse effect on living conditions experienced by those affected by the flood and the earthquake. The project was also expected to have a significant positive impact in restoring normal living conditions to a large proportion of the population in rural areas and affected municipalities.

The involvement of the Bank brought to the response and recovery program an organizational framework and a clear process for identifying, selecting and implementing priority investments for municipal/rural infrastructure and flood management. Through the emergency project, the Bank could provide critical funding when it was most needed. By supporting expanded use of liability and house owner's insurance, the

Bank was able to contribute to the development of a GOT strategy to raise construction standards and to provide long term sustainable financing for future housing reconstruction.

The project took into account the following lessons learned from previous Bank-assisted projects:

*Infrastructure.* Reconstruction of damaged infrastructure after a disaster is imperative but insufficient by itself, and measures are needed to reduce the hazards of similar future disasters and to safeguard people at risk. A second lesson was that while quick response to disaster is important, it is equally important to identify underlying problems in the policy and institutional environments, and determine how to resolve them in ways that result in long-term sustainable solutions to managing the risks of natural disasters.

*Housing.* A review of past emergency loan projects ( Columbia Popayan, Mexico Earthquake, Jamaica Hurricane Emergency Reconstruction, El Salvador Earthquake) revealed (a) that a speedy response is critical; and (b) that cost recovery will be difficult to achieve.

The project envisioned the following benefits:

- Immediate benefits were the restoration of rural and municipal services and infrastructure serving the millions of inhabitants in the WBSR and in Adana Province. Project investments would enable basic or normal levels of operation of water supply, wastewater treatment, sewerage, and transportation systems and buildings in the target region, and thereby improving health, safety and environmental conditions for the affected population. Economic recovery of the affected regions and incremental tax revenues supporting the GOT budget would result from restoration of normal industrial and agricultural activity.
- The flood management component of the project aimed to strengthen Turkey's system for flood preparedness and response in the WBSR. The earthquake reconstruction component of the project would provide permanent housing for those who lost theirs due to the disaster.
- Major long-term public benefits expected from the project included: (a) strengthening the capacity of the government to respond rapidly to priority needs of its citizens in the face of natural disasters; (b) restoring dysfunctional community services to pre-flood normality; (c) providing employment in the construction industry and hydro-mechanical equipment industry; and (d) assisting in the development of a national insurance plan to shift the burden of future reconstruction of housing and infrastructure from individual families and the government to an insurance pool operated by private insurance companies.

The project benefited by having in place a functioning Project Implementation Unit (PIU) which had been created for the implementation of the Erzincan Earthquake Rehabilitation and Reconstruction Project (Loan 3511-TU). Thus, the Borrower was familiar with the implementation of Bank-supported emergency projects. Nonetheless, because of the involvement of numerous ministries and agencies, the combination of flood and earthquake disasters that were geographically separated, the effort to include institutional and policy reforms, as well as the higher demands for quick action from a larger number of affected communities, implementation was complex and demanding.

### *3.2 Revised Objective:*

Project objectives were not revised during implementation.

### *3.3 Original Components:*

The project consisted of four components directly related to achieving the project's objectives:

**Component A. Municipal and Rural Infrastructure** (US\$209.2 million equivalent; 30.6% of the total project cost)

This component covered repairs to water and wastewater systems, municipal, rural, and forest roads and bridges, irrigation facilities in more than 100 of the most damaged municipalities and villages. Over 500 specific investments were identified for various sectors.

*A.1 State Highways.* This sub-component covered repair and reconstruction of state highways and bridges including earth works, small structures, fortification, pavement, repair of rock embankments, construction of chutes, as well as construction of new bridges.

*A.2 Rural Services: Drinking Water Supply, Sewerage, Irrigation Facilities, Rural Roads and Bridges.* Under this subcomponent 2,004 meters of bridges, hundreds of culverts, 1,166 km of village road stabilization, 263 km of asphalt road, 268 facilities for drinking water supply and 12 facilities of sewerage were to be repaired or reconstructed in the five affected provinces.

*A.3 Forestry: Forest Roads.* This subcomponent included the repair and reconstruction of forest roads, bridges, culverts, and retaining walls. In order to guarantee the sustainability of the investments, technical assistance for supervision, as well as design for culverts and bridges were provided under the project.

*A.4. Municipal Roads and Bridges, Water Supply, and Sewerage.* The municipal infrastructure subcomponent covered the repair and reconstruction of waste water supply, sewerage and storm water system, as well as roads and bridges. The structures to be rebuilt were designed to minimize damage from future floods.

*A.5 Engineering Designs and Supervision.* Consulting services including engineering designs, preparation of tender documents and construction supervision were financed under this sub-component. This included the assessment of potential impact of the above works on the human and physical environment, consistent with Bank environmental and social assessment procedures.

**Component B. Flood Management and Hazard Reduction** (US\$158.6 million equivalent; 23.2% of the total project cost)

*B.1 Flood and Landslide Risk Reduction and Mitigation.* This sub-component addressed mitigation and mitigation planning on a broad scale: (i) assessing its current mitigation activities, determining the need for additional mitigation activities at the state level, and implementing the necessary changes in policy to make mitigation part of the decision-making process for all state government activities; (ii) examining mitigation at the provincial and municipal levels, and implementing pilot mitigation projects; and (iii) pursuing the development and implementation of disaster insurance to reduce the ongoing and increasing burden of disaster recovery on the state budget.

*B.2 Modernization of the Monitoring, Forecasting, and Warning Systems* This sub-component included collection and analysis of real-time hydrological and meteorological data, to produce flood forecasts, translation of those forecasts into specific warnings for specific locations, dissemination of these warnings, and improved response planning at the local level. This component provided for pilot projects in several areas in western Turkey to develop the capabilities of state and local agencies.

*B.3 Improvement of Disaster Response Capabilities.* Development of a national disaster management information system, improvement of disaster communications and transportation capabilities, and specified equipment for disaster response. This sub-component specifically included the communication system needed for disaster warning dissemination required for sub-component B.2.

*B.4 Repair and Improvement of Flood Protection Infrastructure.* This sub-component provided for the immediate repair of parts of this infrastructure, and the repair of other parts after studies were completed to determine what repairs were needed. It also provided for a pilot project to reduce sedimentation and erosion on selected watersheds and the development of watershed basin planning studies.

**Component C: Earthquake Reconstruction** (US\$308.3 million equivalent; 45.0% of the total project cost)

The Earthquake Reconstruction component covered technical assistance, design, supervision, training and investments to replace 4,000 collapsed or heavily damaged housing units in the Municipality of Adana, 1000 units in Ceyhan, and 3,800 units in the most affected rural areas:

*C.1 Demolition of Damaged Units.* Costs associated with the demolition and the removal of debris was estimated at about US\$ 1.0 million. Demolition and debris removal were eligible for retroactive financing under the Bank approved guidelines for this emergency project.

*C.2 Emergency Urban Housing Reconstruction.*

*C.2 a. Adana.* Approximately 11,601 units were destroyed; the project financed the construction of about 4,000 units on a site owned by Housing Development Administration (HAD).

*C.2 b Ceyhan.* Approximately 1,472 units were destroyed and heavily damaged; the project financed the construction of 1,000 units.

*C3: Emergency Rural Housing Reconstruction.* Under this sub-component, 3,800 household units were to be repaired or reconstructed.

*C 4: Consultant Services for Design, Construction Supervision and Management. C 4.1 Urban Housing.* Consultant services were required to prepare site plans, on site infrastructure, architectural and structural design for apartment blocks and supervision of construction during implementation of the sub-component.

*C 4.2 Rural Housing.* Consultants were to prepare standard designs and provide training, construction management and supervision. This included services to approximately 20 affected villages in the Province of Adana.

**Component D. Project Implementation Unit** (US\$4.8 million equivalent; 0.7% of the total project cost)

GOT entrusted the Housing Development Agency (HDA) with authority and responsibility for the implementation of the project. The HDA was to carry out its activities under the project through the PIU, and the Adana Management Unit (AMU), which was to be established and maintained within the HDA in Ankara and Adana, respectively, with staff and other resources. The PIU and the AMU were to carry out

the project with the overall policy guidance of the Steering Committee and in close coordination with the related Ministries/Agencies, pursuant to arrangements satisfactory to the Borrower and the Bank.

The PIU had the overall responsibility for managing and coordinating the implementation of the Project and in its work was to be supported by consulting firms (the consultants) to be engaged by the HDA, through the PIU, pursuant to arrangements satisfactory to the World Bank.

### *3.4 Revised Components:*

As the project was being launched, Turkey experienced yet another earthquake, one of its most devastating, in the Marmara region of Western Turkey with its epicenter approximately 55 miles southeast of Istanbul. In response to this disaster, the GOT and the Bank agreed to amend the project's loan agreement to cover emergency construction needs for Marmara. Under this amendment of September, 1999, US\$ 62.5 million was reallocated—about 17 percent of the original loan amount—for housing construction in the area affected by the Marmara earthquake, as well as to provide technical assistance to the government to prepare the launch of the Turkish Catastrophic Insurance Pool, as follows:

(a) *Emergency Housing Units.* Under the amendment, the Bank financed about 2,600 units in urban areas in the affected region, representing some 14 percent of the previously estimated rebuilding requirements. The total cost of reconstruction of buildings under this component, including on-site and off-site infrastructure (water, sewerage, municipal roads) and consultant services for quality control, was estimated to be US\$56.5 million. This operation aimed to use the model successfully implemented under the TEFER project, which supported the construction of housing built to seismic standards on sites selected for their safety following careful geological and environmental assessment.

(b) *The Turkish Catastrophic Insurance Pool (TCIP).* Inadequate levels of reserves against earthquake-related losses and the lack of sufficient expertise in underwriting catastrophic insurance was making the Turkish insurance industry reluctant to write earthquake coverage. The situation was exacerbated by the high frequency and severity of recent catastrophic events and substandard construction practices, which result in the low seismic resistance of apartment buildings. Another key challenge to the development of a viable national catastrophe risk management strategy in Turkey was that the reinsurance sector had no foundation upon which to build due to an extremely low level of insurance penetration, due in part to Turkey's Disaster Law, which required Government to provide replacement housing at virtually no cost to victims whose housing is collapsed or heavily damaged by natural disasters.

In response to this situation, GOT requested Bank assistance to create the Turkish Catastrophic Insurance Pool (TCIP), to provide standalone residential earthquake insurance to Turkish homeowners. Accordingly, under the insurance sub-component of the project, the Loan financed technical assistance to the General Directorate of Insurance (GDI) in preparing the launch of the TCIP, which included:

(i) Development of a business plan, operational and risk management guidelines for the TCIP and servicing agreements with local insurance companies; (ii) Enhancement and customization of earthquake loss and pricing models to be produced by the insurance strategy; (iii) Design of integrated databases of insurable residential properties and active policies; (iv) Training of future TCIP staff, and provision of some computer and office equipment for the TCIP; (v) Preparation of communications strategies and materials for potential lenders and investor, as well as for educating the general population about the benefits of catastrophic property coverage; (vi) Development of a national risk management strategy and regulatory work on revising the current catastrophic insurance legislation; and (vii) Operating costs of component supervision and implementation. The overall costs of technical assistance for the insurance

sub-component was estimated at US\$ 6.0 million

Preparation for a project in response to the Marmara earthquake (Marmara Emergency Earthquake Reconstruction—MEER) began immediately after the disaster. During negotiations for the MEER project it was agreed that activities outlined under sub-component B.3a for developing a disaster assistance information system would be taken over and financed by the MEER project. It was decided to consolidate these activities under the newly-created Turkey Emergency Management General Directorate (TEMAD) within the Office of the Prime Minister. Likewise, it was decided to integrate activities for improving disaster response capabilities (sub-component B.3b) into the search and rescue component to be developed under the MEER project.

Further, in May 2001 the Bank and TEMAD agreed that the *National Flood Mitigation Strategy* under sub-component B1 will be covered as a subcomponent to the National Disaster Mitigation Strategy to be prepared under the MEER project.

### *3.5 Quality at Entry:*

*Satisfactory.* There was no official assessment of the project design's quality at entry by the Quality Assurance Group (QAG). Nevertheless, the ICR review deems the quality at entry to be satisfactory. As mentioned in Section 3.1, the project objectives were consistent with the country assistance strategy and the government priorities and met the critical needs of the infrastructure sector and the affected population. During preparation of the project lessons learned from previous Bank-assisted emergency projects in Turkey and other countries were considered and incorporated into the project design. Extensive stakeholder consultations in project preparation substantially contributed to the project's quality at entry and readiness.

The project recognized and took into account the following three risk factors which could affect project implementation:

- *Possible use of funds for sub-optimal expenditures.* This risk was addressed through a carefully defined portfolio of activities under the Municipal and Rural Infrastructure, the Flood Management Components and the Earthquake Reconstruction.
- *Delay in project implementation.* This risk was to be reduced by Turkey's and the Bank's joint effort to adopt straightforward solutions to project design, flow of funds, and procurement methods, and by the PIU which had already proven effective in managing emergency programs.
- *Involvement of a large number of implementing agencies in the project.* This risk was addressed through effective coordination provided by the PIU, close project supervision by the task team, and clear implementing agreements between PIU and the implementation agencies.

During project preparation, alternative project designs were considered: Reallocation from existing projects was rejected due to inadequate resources and inadequate design. For Component C, providing soft loans with highly subsidized interest rates was considered as an alternative. But given the high inflation rate in Turkey, collection cost of these loans were higher than the principle amount. Another alternative considered was to give the beneficiaries grants to purchase units available on the market, with the option to obtain a larger unit by paying the difference between the grant amount and selling price of the unit. The advantage of this option was that the beneficiaries would be able to find suitable housing in a shorter time. Drawbacks to this option included the shortage of housing after the disaster, the difficulty of assuring the construction quality of the available units, as well as the administration of the grant procedure itself. This

alternative was ultimately rejected due to Bank procedures which do not allow for indirect transfers.

Project design faced the difficulty of quickly and accurately assessing the scale of the need for housing reconstruction; adding to this not uncommon problem of disaster response was the Turkish Disaster law, which commits Government to provide replacement units for every family that lost theirs in the earthquake. In identifying project scope, the Bank team and Turkish counterparts agreed to follow the approach of the Ministry of Public Works and Settlements, which was the GOT authority responsible for coordinating damage assessments, applying the Disaster Law and interpreting the associated complexities of eligibility. The MPWS approach was to coordinate and collect the damage assessments made by a number of local and national agencies under the pressure of time. The approach appeared to be thorough and comprehensive. However, while collapsed housing is relatively easy to quantify, structures that are moderately to heavily damaged and require demolition cannot always be identified without detailed surveys. In addition, some beneficiaries moved away from the region and failed to make timely claims. As a result of this and probable faulty estimating, the estimates of the number of eligible beneficiaries understandably changed in the aftermath the earthquake. Meanwhile, design and construction implementation was on a fast track; design contracts were signed before the Loan Effectiveness so as to be financed from the Project Preparation Facility (PPF), and construction contracts were signed 84 days later from the date of effectiveness of the Contract.

Recognizing the potential for inaccuracies, project design cut the estimate of need for purposes of the housing reconstruction component. Nonetheless, the number of housing units ultimately constructed was nearly double the amount required to meet the immediate claims of eligible beneficiaries. However, additional beneficiaries are still being identified as court cases resolve eligibility issues, and units that stood vacant in the aftermath of the disaster are being allocated to claimants under other programs, as well as for civil service use. While this is seen as a serious issue in project design, it is not clear whether in retrospect the damage estimating process might have been better managed, or whether it could have realistically been followed up by the Bank more rigorously. However, a possible safeguard against over-building might have been a plan to build in phases, with each phase triggered by a proven need, and thus giving the flexibility to revise the initial needs assessments while the first phases are under construction. The problem with this approach is that if the assessments had been accurate, many families would have been pushed into the winter of '98-'99 without shelter. This experience helped guide project design for the MEER program, in which case the government's estimates were more realistic.

The physical design of the units is appropriate and of good quality. However, it can be criticized for lack of variety and the initial omission of social infrastructure and site amenities. The lack of variety is the result mainly of the Disaster Law which mandates equal accommodations for all beneficiaries. The omission of amenities appears to have been due mainly to a determination to keep costs and construction schedules under control, and to focus on the timely provision of construction of high quality while reserving action on social infrastructure and site amenities. In addition, while local authorities were committed to building the needed social infrastructure, it has lagged well behind the housing construction. GOT committed itself to addressing social and environmental matters, but follow-up by Government and the Bank was engaged later during implementation, and has now largely been addressed. Final corrections—notably site drainage and critical paving—are being financed under MEER. The lack of early coordination of social and site needs with the main construction program is a shortcoming that was largely corrected in the MEER project.

## **4. Achievement of Objective and Outputs**

### *4.1 Outcome/achievement of objective:*

The project<sup>1</sup> achieved its objectives in terms of restoring basic infrastructure. All investments under the Municipal and Rural Infrastructure component, including municipal infrastructure, rural infrastructure, forestry roads, and afforestation of 10,000 ha in the Western Black Sea region were completed.

The project was also able to provide housing with minimal delay to people who lost them and to help the affected communities to stabilize quickly after the disaster.

For reducing vulnerability to future floods and earthquakes, the extended weather forecasting system at DMI is in full operation and the High Performance Computer (HPC)-System has been installed. The flood forecasting system at DSI has been also completed and the training of the nominated staff has started. All 227 VSAT stations for the DMI (State Meteorological Institute) were procured and tested. The total number of 129 VSAT stations for DSI (Directorate of Hydraulic Works) were purchased and installed. The training was completed.

Installation of all 206 Automated Weather Observation Stations (AWOS) stations was completed in January 2003, and the network is already working. All planned radars were installed and the radar network is operational since February 2003. In addition, all 129 Hydrometric Stations have also been installed. 13 flood protection schemes under Repair and Improvement of Flood Infrastructure component were completed by September 26, 2003. With regard to the strengthening of institutional capacity to reduce vulnerability to floods and earthquakes, most activities under this component were transferred to the MEER project for implementation.

The project has also contributed to the restoration of the industrial and agricultural activities in the affected area through the construction of basic infrastructure in West Black Sea Region, and housings in urban and rural areas in Adana Province and also to an increase in tax revenues. In addition, because of the installation and/or construction of early warning system and flood protection infrastructures, the project has directly contributed to reduce the vulnerability to future disasters and the risk of future economical losses. However, with the available data, it is difficult to find the percentages of economical recovery and/or performance of tax revenues in the affected region that could be directly attributed to the project. This would require specific data gathering and in-depth analyses.

1/-The closing date of the project was extended by 15 months for completing procurement of key items such as radars, and also for completing flood infrastructure activities.

#### *4.2 Outputs by components:*

##### **Component A: Municipal and Rural Infrastructure.** See Section 4.1

The outputs of the component A were the following:

###### *(i) Rehabilitation of roads.*

There were total 1,446 km of municipal and rural roads rehabilitated in Karabuk, Zonguldak, Bartin, Bolu, and Kastamonu.

*(ii) Repair/reconstruction of bridges.*

There were total 93 bridges repaired/reconstructed in the above provinces.

*(iii) Rehabilitation/construction of water supply.*

There were 165 water supply systems rehabilitated and constructed in municipal and rural areas of Karabuk, Zonguldak, Bartin and Bolu.

*(iv) Construction of irrigation systems.*

There were 31 irrigation systems constructed in villages of Karabuk, Zonguldak and Kastamonu.

*(v) Rehabilitation of sewerage systems.*

There were 10 sewerage systems rehabilitated in municipalities of Karabuk, Zonguldak and Bartin, and of 2 systems in rural areas of Zonguldak.

Achievement of this component is satisfactory.

#### **Component B1.(c): Natural Hazard Insurance**

The following studies were completed:

*(i) Improvement of Natural Hazard Insurance and Disaster Funding Strategy*

*(ii) Drafting the Compulsory Insurance Law and related legislation*

*(iii) Establishment of the Turkish Catastrophic Insurance Pool*

*(iv) Preparation of draft TOR for TCIP Public Relations Campaign*

*(v) Earthquake risk analysis model development*

In addition, research, study tours, training, and workshops necessary for the establishment of Turkish Catastrophic Insurance Pool were also conducted under this sub-component.

**Component B2: Modernization of the Monitoring, Forecasting, and Warning System.** See Section 4.1

**Component B4: Repair and Improvement of Flood Protection Infrastructure.** See Section 4.1

Achievement of this component is satisfactory.

**Component C: Housing.** 5,000 urban housing units were constructed in Adana and Ceyhan, of which 2600 were allocated to earthquake victims, and the remainder were either allocated to other agencies or held in reserve pending court cases concerning eligibility.

Achievement of this component is marginally satisfactory.

*4.3 Net Present Value/Economic rate of return:*

Not applicable.

*4.4 Financial rate of return:*

Note applicable.

*4.5 Institutional development impact:*

*Modest. The project resulted in modest institutional development impact.* For example, the project financed a disaster insurance study and the recommendations of this study are being implemented under the MEER project. In the context of dealing with natural disasters, the implementation of disaster insurance scheme is expected to have a major long-term institutional impact. The project also directly influenced the design of the MEER Project and has contributed to the Bank's understanding of disaster preparedness and response, including the ECA Disaster Management Strategy.

The project also facilitated institutional strengthening of line ministries. For example, the General Directorate of Meteorology has gained institutional experience and know-how from the project and has started developing its own meteorological monitoring software and is even selling it to other countries' meteorology departments. In addition to becoming familiar with procedures for the procurement of equipment and goods, the Directorate has also strengthened its capacity to prepare long-term plans for flood forecast warning. Likewise, the Ministry of Rural Development and Ministry of Forest which were involved with the project have improved their infrastructure plans for flood management.

The project did not directly contribute significantly in strengthening institutional arrangements for risk mitigation and emergency preparedness, as major activities under this component were overtaken by and incorporated into the subsequent MEER project. In this process, the joint Bank supervision missions linked the TEFER and MEER projects, with lessons being learned from TEFER.

## **5. Major Factors Affecting Implementation and Outcome**

*5.1 Factors outside the control of government or implementing agency:*

The Marmara earthquake of August 17, 1999, Turkey's most devastating natural disaster in recent history, struck as the project was being launched and delayed and restructured the implementation of several components. There were 15,370 registered fatalities and about 600,000 became homeless. The Marmara earthquake affected the TEFER project primarily in two ways: a) the scale of the catastrophe wholly absorbed Turkey's political and administrative attention, limiting the institutional restructuring that was under development under TEFER; b) it redirected the institutional restructuring and its scope, integrated it into the MEER program, recognizing the need for a more comprehensive reform effort. The proximity of the Marmara earthquake to Istanbul (55 miles southeast of the city) helped to galvanize GOT commitment.

*5.2 Factors generally subject to government control:*

(i) Emergency repair work on flood-damaged flood control structures in Bartın was envisioned under the TEFER loan, as part of the funding for emergency repair and up-grading of damaged flood protection infrastructure. During design of the repair works it became clear that the flood risk in Bartın justified a

more comprehensive flood protection scheme in order to substantially reduce future flood damage, and that a detailed feasibility study was required to identify solutions. This need had not been foreseen during the preliminary identification of emergency repair needs, as the focus was on the rapid repair of flood protection structures. It was therefore agreed to hold off on the emergency repair planned under TEFER while Government sought financing for the recommended feasibility study. It was subsequently agreed that this and the associated environmental and social assessment would be financed under the MEER project, at a cost estimated at US\$2 million.

(ii) Lack of coordination between DSI and other state organizations such as KGM (roads and bridges department) delayed implementation of activities under Component B4.

(iii) Overestimation of housing reconstruction needs. It is not clear whether the PIU might have been able to contribute to developing a more accurate estimate of housing need and avoid the excess of housing supplied under the project.

### *5.3 Factors generally subject to implementing agency control:*

The PIU had strong technical capacity for reconstruction activities, procurement, and financial management, and focused on the delivery of physical structures, with less attention to social and environmental aspects during the design and planning phases.

### *5.4 Costs and financing:*

The total cost of the project was US\$239.8 million compared with the PAD estimate of US\$685.0 million. The lower cost resulted mainly from savings because of high rate of inflation, transfer of tasks under the institutional component to the MEER project, tight control over costs and procurement, as well as overestimation of the damage to flood protection infrastructure. Following the Marmara earthquake of August 1999, \$62.5 million in savings was reallocated to help finance housing reconstruction in the earthquake region.

US\$120 million remained uncommitted and was cancelled at project closing. The Bank financed US\$191.0 million (79.6%), and the government contributed US\$48.8 million equivalent in local costs (20.3%).

## **6. Sustainability**

### *6.1 Rationale for sustainability rating:*

*Likely.* Sustainability of the project and the lessons learned for both the Borrower and the Bank is rated as likely, especially considering that many of the activities of the project will be continued under the MEER project. Weather forecasting is under normal operation and is expected to be sustainable as the DMI is fully committed and its experts are dedicated to using the newly installed system. The Borrower is also committed to flood warning system and in order to reduce flood risk, and further activities have already been incorporated into MEER project. Roads and flood protection measures are being maintained by the respective agencies and are sustainable. The site management system is well established and is under normal operation. The insurance study's recommendations are being implemented under the MEER project and an insurance pool has already been set up. The institutional strengthening is also under implementation through the MEER project.

Regarding housing, out of 5,000 urban housing units constructed in Adana and Ceyhan, 2600 have been

allocated to earthquake victims. 2188 of the remaining 2,400 units are now occupied by additional beneficiaries of TEFER and other government agencies, including 837 for civil service housing. The remaining 212 are either being held pending court claims by potential additional earthquake beneficiaries, for beneficiaries of other programs, returned to General Directorate of Real Estate, or reclaimed from Rural Affairs for disposition.

#### *6.2 Transition arrangement to regular operations:*

See Section 6.1

## **7. Bank and Borrower Performance**

### **Bank**

#### *7.1 Lending:*

*Satisfactory.* The Bank's performance in the identification, preparation, and appraisal of the project was satisfactory. The project's consistency with the government's development priorities and the Bank's country assistance strategy was assured. A harmonious team with a good skill mix brought state-of-the-art expertise to project design, providing for flexibility and responsiveness to local needs.

During preparation and appraisal, the Bank took appropriate account of the adequacy of project design including technical, financial, economic, and institutional, as well as procurement and financial management aspects. During appraisal, the Bank assessed adequately the project's risks and benefits. The Bank had a consistently good working relationship with the Borrower during preparation and appraisal. Stakeholder consultations at community, regional, and national levels were highly productive, and initiated a process of ownership that proved invaluable at the implementation stage.

#### *7.2 Supervision:*

*Satisfactory.* The Bank's performance during the implementation of the project was satisfactory. Sufficient budget and staff resources were allocated, and the project was adequately supervised and closely monitored. Over the five years of project implementation, there were 13 supervision missions, with an average of about 2.5 missions per year.

The Bank's client relationships were cordial and productive. Review teams included specialists in social safeguards, disaster management, disaster insurance, urban housing, flood protection infrastructure, institutional issues, service delivery, civil works, health program, operations, logistics, financial management, and procurement. External consultants were used for specific aspects of project components.

Aides-memoire were regularly prepared and transmitted, flagging outstanding issues and underscoring benchmarks for actions. These alerted the government and the implementing agencies to problems with project execution and facilitated remedies in a timely manner, in conformity with Bank procedures. The Project Status Report (PSRs) realistically rated the performance of the project both in terms of achievement of development objectives and project implementation. Whenever delays in implementation occurred, the Bank's task team was able to define concrete steps and timetable for putting the project back on track and pace. The Bank paid sufficient attention to the project's likely development impact. The quality of advice, and the follow-up on agreed actions were adequate. Loan covenants and remedies were enforced effectively.

The carrying out of joint TEFER/MEER Bank supervision missions enabled the Bank and Borrower to respond to challenges and opportunities for more effective resource allocation and follow-up within the projects, notably on institutional strengthening. The resulting synergy provided the chance to deepen and extend concepts initiated in TEFER and brought into greater focus after the Marmara earthquake.

With the decentralization of Bank functions to the Resident Mission in Turkey, the Bank was able to provide quick response and follow-up. The staff also showed flexibility in suggesting needed modifications in implementation. They worked closely with the government and the implementing agencies, and provided them with extensive assistance including technical advice. The Bank conducted workshops at the early stages of implementation on specific subjects, such as procurement and disbursement. During the execution of the project, meetings with the stakeholders such as DSI and DMI were held to follow up the performance and bottlenecks of the project.

### *7.3 Overall Bank performance:*

*Satisfactory.* Overall, the Bank performance was satisfactory during project preparation, appraisal and implementation.

### **Borrower**

#### *7.4 Preparation:*

*Satisfactory.* The Borrower covered the adequacy of design and all major aspects, such as, technical, financial, economic, institutional, environmental and sociological factors, including stakeholder commitment. Government officials and staff of the implementing agencies worked closely with the Bank's project team on a continual basis, with full cooperation and enthusiasm. Given the constraints of the emergency environment, time, cost, and existing regulations governing the provision of housing to victims, the physical designs for urban housing are adequate, but lack sensitivity to urban design variety and the need for basic site amenities. The Borrower is correcting the site deficiencies *ex post*.

#### *7.5 Government implementation performance:*

*Satisfactory.* The government's implementation performance was satisfactory, especially for the reconstruction activities. It maintained its commitment consistently throughout implementation. The Steering Committee which was responsible for the overall implementation of the project, consisted of senior policy makers and experienced managers. The Committee was responsive in taking corrective implementation measures, and effective in dealing with outstanding operational issues. Appropriate levels of review and approval were usually in place; financial accountability and follow-up was observed, and expenditures were duly authorized before they were incurred; documentation was maintained properly for periodic review. The Ministry of Finance ensured smooth funds flow to the implementing agencies. The project did not suffer from counterpart funding problems, as GOT took timely corrective measures and made appropriate budget provisions.

The audit reports from participating entities were generally available on or just after the due date, and had no major accountability issues.

#### *7.6 Implementing Agency:*

*Satisfactory.* The performance of PIU, which coordinated the project, was satisfactory. The PIU provided proactive follow-up to mitigate implementation bottlenecks. It was very well organized and effective in

dealing with procurement, disbursement, progress reports, and in maintaining proper records of the project, spending long hours as needed to meet construction schedules and cost estimates while ensuring high construction quality. Financial management procedures were conducted in line with the Bank's guidelines. PIU staff were receptive to Bank advice, and highly collaborative with respect to meeting demanding benchmarks and deadlines. Performance of other implementing agencies<sup>1</sup> was also satisfactory.

1/-Implementing agencies included: Adana Management Unit(AMU), General Directorate of State Highways, General Directorate of Rural Services, General Directorate of Forestry, and municipalities, State Hydraulic Works (DSI), the Meteorologic Institute (DMI), the General Directorate of Afforestation and Erosion Control (AGM), the General Directorate of Technical Research and Information (GDTRI), the General Directorate of Disaster Affairs (GDDA), the General Directorate of Civil Defense (GDCD) and the General Directorate of Electrical Power (EIE), Housing Development Administration (HDA) and the Ministry of Public Works and Settlement (MPWS)

### *7.7 Overall Borrower performance:*

*Satisfactory.* The overall performance of the Borrower was satisfactory.

## **8. Lessons Learned**

- Methodologies are needed for addressing the problem of reconciling damage and needs assessments after a disaster, and tailoring project implementation to the refining of the needs estimate, such as by phasing construction and instituting checkpoints for incremental stages during implementation of construction components.
- A strong, experienced and independent PIU familiar with Bank procedures is especially critical to effective implementation of fast-track emergency projects; staffing should be balanced to include experience and skills in both technical aspects as well as in institutional strengthening.
- Construction supervision by international consultants lent credibility to reconstruction activities—necessary in an environment of distrust of local code enforcement and construction quality. Beneficiaries were comfortable with the quality of construction for this reason.
- Activities that do not perform well in the early stages of the project, may perform very well later on, as demonstrated by the successful implementation of weather forecasting system; patience, along with careful monitoring and support is called for.
- In order to guarantee the sustainability of the apartment blocks and its environment including the landscaping arrangements, site and block management organizations should be established.
- Specification and monitoring of the interfaces between different contractors and systems is essential, as in component B2 where more than 15 different contractors from 8 different countries were active. It became necessary to engage the many stakeholders in project implementation by ensuring understanding of the overall goal of the project.
- The maximum momentum in an emergency project is normally in the first few months after the disaster. In view of this, any substantive changes that need to be introduced into the project design should be incorporated during this period.

- The design of residential sites under emergency construction should recognize that the sites will become permanent settlements and allow for the long-term needs of beneficiaries in the broadest sense, and allow for the higher costs of such an approach. This includes the provision or enabling of commercial development and social facilities, as well as complete environmental services such as adequate drainage and durable site amenities and finishes.
- The Bank needs to develop appropriate, operationally-oriented protocols, procedures and design criteria for responding to situations demanding large emergency construction programs, that can be applied soon after a disaster to ensure that design meets the needs of long-term urban development, as well as the short-term emergency needs; this would include methodologies for reviewing Borrower's estimation of needed construction volumes, a design check list covering both technical and social/environmental criteria to ensure comprehensiveness; governments in hazardous areas could consider developing building and site plan prototypes that are designed and engineered and kept for use when needed.

## 9. Partner Comments

*(a) Borrower/implementing agency:*

### *A. Borrower's comments on the ICR.*

*Republic of Turkey: Prime Ministry, The Undersecretariat of Treasury.*

“With reference to the Implementation Completion Report (ICR) for Turkey Emergency Flood and Earthquake Recovery (TEFER) Project, dated January 9, 2004, I would like to inform you that we have asked for the official comments of the implementing agencies and all have agreed with the contents of the said report.

On this occasion, I would like to thank all the Bank staff for their invaluable contributions to the project and hope we will have the opportunity to collaborate with the Bank in prospective projects.” - Acting Deputy Director General

### *B. Borrower's Evaluation Report.*

See Annex 8

*(b) Cofinanciers:*

N/A

*(c) Other partners (NGOs/private sector):*

N/A

## 10. Additional Information

*A. The Bank's ICR Team consisted of the following members:*

Christoph Pusch (Task Team Leader)

Sati Achath (Consultant)

Eric Peterson (Consultant)  
Koshie Michel (Program Assistant)

*B. List of Task Managers/Task Team Leaders of the project*

Piotr Wilczynski  
Christoph Pusch

## Annex 1. Key Performance Indicators/Log Frame Matrix

### Outcome / Impact Indicators:

Indicator/Matrix	Projected in last PSR <sup>1</sup>	Actual/Latest Estimate
Restoration of Infrastructure in affected municipalities and rural areas. Preparation of hydrotechnical infrastructure, modernization of flood management system and Improvement of forecasting and planning. Restoration of Urban Housing  Restoration of Rural Housing		The infrastructure in affected municipalities and rural areas restored in the affected area. Most of the works under this scope were completed and the system is operational .  4000 houses in Adana and 1000 houses in Ceyhan were constructed and delivered to beneficiaries. Totally 3131 beneficiaries completed their houses in rural area.

### Output Indicators:

Indicator/Matrix	Projected in last PSR <sup>1</sup>	Actual/Latest Estimate
<p>Component A:</p> <p>1) Highway Sector</p> <p>Works related to the repair, rehabilitation and reconstruction of the highways and their relevant structures damaged by the flood.</p> <p>2) Rural Service Sector</p> <p>Works related to the repair, rehabilitation and reconstruction of rural roads and infrastructure damaged by the flood.</p> <p>3) Forestry Sector</p> <p>Works related to the repair, rehabilitation and reconstruction of forest roads and relevant structures damaged by the flood and the procurement of equipment.</p> <p>4)Municipal Infrastructure Sector</p> <p>Works related to the repair, rehabilitation and reconstruction of infrastructural systems damaged by the flood and the procurement of equipment.</p> <p>Component B:</p> <p>The works related with the Flood Mitigation and Natural Hazard Reduction</p>		<p>In the provinces of Karabuk, Zonguldak, Bartin, Bolu, and Kastamonu the following works were completed:</p> <ul style="list-style-type: none"> <li>- 1,446 km of municipal and rural roads were rehabilitated;</li> <li>- 93 bridges were repaired/reconstructed;</li> <li>- 165 water supply systems were rehabilitated and constructed in municipal and rural areas;</li> <li>- irrigation systems were constructed in 31 villages;</li> <li>- 12 sewerage systems were rehabilitated in municipalities and villages.</li> </ul> <p>The institutional works related with the National Mitigation Strategy (B1.a), Local Mitigation Planning (B1.b), Development of Warnings (B2.b), Improvement of Local Response Plans (B2.c), Development of Disaster Assistance Information System (B3.a) were cancelled from the TEFER project and incorporated into the institutional component of the MEER project.</p> <p>The following studies were completed: Improvement of Natural Hazard Insurance and Disaster Funding Strategy; Drafting the Compulsory Insurance Law and related legislation; Establishment of the Turkish Catastrophic Insurance Pool; Preparation of</p>

<p>Component C:</p> <p>Reconstruction of 4000 housing units in Adana and 1000 housing units in Ceyhan with relevant infrastructure</p> <p>Reconstruction of rural houses in Adana and Ceyhan</p>		<p>draft TOR for TCIP Public Relations Campaign; Earthquake risk analysis model development. In addition, research, study tours, training, and workshops necessary for the establishment of Turkish Catastrophic Insurance Pool were conducted. The TCIP is financed under the MEER project.</p> <p>13 flood protection schemes in West Black Sea Flood Region were completed; 3 radars, the equipments for VSAT System, AWOS System, High Performance Computer System, hydrometric system, flood forecasting and warning systems, real time data management software and hardware system were provided to the relevant Implementing Agencies, including the training.</p> <p>Additionally, 18 twin cab pick-up for DSI, 14 units complete search and rescue vehicles and related equipment and 8 units rescue equipment set and 3 units field kitchen and 1035 units protective suits for GDCD, 8 twin cab pick-up and computers and office equipment for AGM were procured.</p> <p>5000 housing units were delivered to beneficiaries in Adana and Ceyhan.</p> <p>3131 beneficiaries completed their houses successfully.</p>
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<sup>1</sup> End of project

## Annex 2. Project Costs and Financing

### Project Cost by Component (in US\$ million equivalent)

Component	Appraisal Estimate US\$ million	Actual/Latest Estimate US\$ million	Percentage of Appraisal
Component A: Municipal and Rural Infrastructure	201.40	57.50	82
Component B: Flood Management and Hazard Reduction	145.70	80.30	59.1
Component C: Earthquake Reconstruction	291.30	98.10	62.8
Component D: Project Implementation Unit	4.50	3.90	94
Front End Fee	3.70		
<b>Total Baseline Cost</b>	646.60	239.80	
<b>Physical Contingencies</b>	28.40		
<b>Price Contingencies</b>	10.00		
<b>Total Project Costs</b>	685.00	239.80	
<b>Total Financing Required</b>	685.00	239.80	

### Project Costs by Procurement Arrangements (Appraisal Estimate) (US\$ million equivalent)

Expenditure Category	Procurement Method <sup>1</sup>			N.B.F.	Total Cost
	ICB	NCB	Other		
<b>1. Works</b>	120.75 (105.00)	135.50 (110.80)	35.00 (33.90)	257.10 (0.00)	548.35 (249.70)
<b>2. Goods</b>	48.30 (38.50)	51.00 (46.98)	0.00 (0.00)	0.00 (0.00)	99.30 (85.48)
<b>3. Services</b>	0.00 (0.00)	0.00 (0.00)	32.00 (28.48)	0.00 (0.00)	32.00 (28.48)
<b>4. Miscellaneous</b>	0.00 (0.00)	0.00 (0.00)	5.35 (5.15)	0.00 (0.00)	5.35 (5.15)
<b>5. Miscellaneous</b>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
<b>6. Miscellaneous</b>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
<b>Total</b>	169.05 (143.50)	186.50 (157.78)	72.35 (67.53)	257.10 (0.00)	685.00 (368.81)

### Project Costs by Procurement Arrangements (Actual/Latest Estimate) (US\$ million equivalent)

Expenditure Category	Procurement Method <sup>1</sup>			N.B.F.	Total Cost
	ICB	NCB	Other <sup>2</sup>		
<b>1. Works</b>	91.20 (72.00)	64.90 (47.50)	27.00 (25.00)	0.00 (0.00)	183.10 (144.50)
<b>2. Goods</b>	22.00 (20.20)	0.00 (0.00)	20.60 (18.00)	0.00 (0.00)	42.60 (38.20)
<b>3. Services</b>	0.00 (0.00)	0.00 (0.00)	14.10 (8.30)	0.00 (0.00)	14.10 (8.30)

<b>4. Miscellaneous</b>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
<b>5. Miscellaneous</b>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
<b>6. Miscellaneous</b>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
<b>Total</b>	113.20 (92.20)	64.90 (47.50)	61.70 (51.30)	0.00 (0.00)	239.80 (191.00)

<sup>1/</sup> Figures in parenthesis are the amounts to be financed by the Bank Loan. All costs include contingencies.

<sup>2/</sup> Includes civil works and goods to be procured through national shopping, consulting services, services of contracted staff of the project management office, training, technical assistance services, and incremental operating costs related to (i) managing the project, and (ii) re-lending project funds to local government units.

#### Project Financing by Component (in US\$ million equivalent)

Component	Appraisal Estimate			Actual/Latest Estimate			Percentage of Appraisal		
	Bank	Govt.	CoF.	Bank	Govt.	CoF.	Bank	Govt.	CoF.
<b>Component A: Municipal and Rural Infrastructure</b>	70.10	139.10		44.90	12.60		64.1	9.1	
<b>Component B: Flood Management and Hazard Reduction</b>	135.80	22.80		62.70	17.60		46.2	77.2	
<b>Component C: Earthquake Reconstruction</b>	156.10	152.20		80.18	18.02		51.4	11.8	
<b>Component D: Project Implementation Unit</b>	4.20	0.60		3.22	0.60		76.7	100.0	

### **Annex 3. Economic Costs and Benefits**

Not Applicable

## Annex 4. Bank Inputs

(a) Missions:

Stage of Project Cycle	No. of Persons and Specialty (e.g. 2 Economists, 1 FMS, etc.)		Performance Rating		
	Month/Year	Count	Specialty	Implementation Progress	Development Objective
<b>Supervision</b>					
	05/19/1999	5	INSURANCE SPECIALIST (1); INSURANCE SPECIALIST (1); SENIOR ECONOMIST (1); INFRASTRUCTURE (1); HOUSING CONSTRUCTION (1)	S	S
	05/01/2000	3	TEAM LEADER (1); ARCHITECT (1); URBAN SPECIALIST (1)	S	S
	08/30/2000	6	TEAM LEADER (1); HYDRAULIC ENGINEER (1); INFRASTRUCTURE EXPERT (1); PROCUREMENT (1); PLANNING SPECIALIST (1); TECHNICAL MANAGER (1)	S	S
	10/10/2000	3	TEAM LEADER (1); COMP B4A PER AIDE-MEM. (2)	S	S
	06/01/2001	2	TASK LEADER (1); DISASTER MGMT. SPEC. (1)	S	S
	10/12/2001	2	TEAM LEADER (1); SOCIAL SAFEGUARDS (1)	S	S
	04/12/2002	13	TEAM LEADER (1); HYDRAULIC ENGINEER (1); FLOOD WARNING (1); SOC. & ENV. SAFEGUARDS (1); EMERGENCY MANAGEMENT (1); URBAN HOUSING (1); RURAL HOUSING (1); FINANCIAL MANAGEMENT (1); PROCURE/OFF-SITE INFRA (1)	S	S
	11/20/2002	13	TEAM LEADER (1); DISASTER INSURANCE (2); FLOOD PROT INFRA/WARN (1); SOCIAL SAFEGUARDS (1); ENV SAFEGUARDS (1); INST PILOT PROJECTS (1); URBAN HOUSING (1); PROCURE/OFF-SITE INFRA (1); FINANCIAL MGMT (1)	S	S
	04/25/2003	8	TEAM LEADER (1); SOCIAL SAFEGUARDS (1); URBAN & RURAL HOUSING (1);	S	S

<b>ICR</b>	09/14/2003	6	PROCUREMENT SPECIALIST (1); FINANCIAL MGMT (1); FLOOD DEFENCE INFRA(1); OPERATIONS (1)	S	S
	09/14/'03	6	TEAM LEADER (1); SOCIAL SAFEGUARDS (1); PROCUREMENT SPECIALIST (1); FINANCIAL MGMT (1); OPERATIONS (1)		
			TEAM LEADER (1); SOCIAL SAFEGUARDS (1); PROCUREMENT SPECIALIST (1); FINANCIAL MGMT (1); OPERATIONS (1)		

(b) Staff:

Stage of Project Cycle	Actual/Latest Estimate	
	No. Staff weeks	US\$ ('000)
Supervision	332.6	1330.7
ICR	8.0	32.0
Total	340.6	1362.7

## Annex 5. Ratings for Achievement of Objectives/Outputs of Components

(H=High, SU=Substantial, M=Modest, N=Negligible, NA=Not Applicable)

	<u>Rating</u>				
<input type="checkbox"/> <i>Macro policies</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input type="checkbox"/> <i>Sector Policies</i>	<input type="radio"/> H	<input type="radio"/> SU	<input checked="" type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input type="checkbox"/> <i>Physical</i>	<input checked="" type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input type="checkbox"/> <i>Financial</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input type="checkbox"/> <i>Institutional Development</i>	<input type="radio"/> H	<input type="radio"/> SU	<input checked="" type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input type="checkbox"/> <i>Environmental</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA

### Social

<input type="checkbox"/> <i>Poverty Reduction</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input type="checkbox"/> <i>Gender</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input type="checkbox"/> <i>Other (Please specify)</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input type="checkbox"/> <i>Private sector development</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input type="checkbox"/> <i>Public sector management</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input type="checkbox"/> <i>Other (Please specify)</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA

## Annex 6. Ratings of Bank and Borrower Performance

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HU=Highly Unsatisfactory)

### 6.1 Bank performance

#### Rating

- |                                      |                          |                                    |                         |                          |
|--------------------------------------|--------------------------|------------------------------------|-------------------------|--------------------------|
| <input type="checkbox"/> Lending     | <input type="radio"/> HS | <input checked="" type="radio"/> S | <input type="radio"/> U | <input type="radio"/> HU |
| <input type="checkbox"/> Supervision | <input type="radio"/> HS | <input checked="" type="radio"/> S | <input type="radio"/> U | <input type="radio"/> HU |
| <input type="checkbox"/> Overall     | <input type="radio"/> HS | <input checked="" type="radio"/> S | <input type="radio"/> U | <input type="radio"/> HU |

### 6.2 Borrower performance

#### Rating

- |  |                          |                                    |                         |                          |
|--|--------------------------|------------------------------------|-------------------------|--------------------------|
| <input type="checkbox"/> Preparation                           | <input type="radio"/> HS | <input checked="" type="radio"/> S | <input type="radio"/> U | <input type="radio"/> HU |
| <input type="checkbox"/> Government implementation performance | <input type="radio"/> HS | <input checked="" type="radio"/> S | <input type="radio"/> U | <input type="radio"/> HU |
| <input type="checkbox"/> Implementation agency performance     | <input type="radio"/> HS | <input checked="" type="radio"/> S | <input type="radio"/> U | <input type="radio"/> HU |
| <input type="checkbox"/> Overall                               | <input type="radio"/> HS | <input checked="" type="radio"/> S | <input type="radio"/> U | <input type="radio"/> HU |

## **Annex 7. List of Supporting Documents**

1. Aide Memoires, Back-to-Office Reports, and Project Status Reports.
2. Project Progress Reports.
3. Consultant Study Reports financed under the Project.
4. Borrower's Evaluation Report dated December 2003; and
5. Project Appraisal Document for the Republic of Turkey Emergency Flood and Earthquake Recovery Project, dated August 24, 1998 (Report No. 18376-TU)

## **Additional Annex 8. [Borrower's Evaluation Report]**

### **REPUBLIC OF TURKEY PRIME MINISTRY**

(PROJECT IMPLEMENTATION UNIT)

### **IMPLEMENTATION COMPLETION REPORT (ICR)**

**FOR**

### **TURKEY EMERGENCY FLOOD AND EARTHQUAKE RECOVERY (TEFER) PROJECT**

#### **INTRODUCTION**

This Report is prepared for purposes of the Implementation Completion Report (ICR) in accordance with the World Bank procedures.

#### **THE PROJECT**

The Republic of Turkey has received a Loan from the International Bank for Reconstruction and Development (IBRD) towards the cost of the Turkey Emergency Flood and Earthquake Recovery Project in West Black Sea Region and Adana which is known as "TEFER".

On May 21, 1998, the West Black Sea Region (WBSR) was affected by a flood which caused numerous landslides for several weeks thereafter. In the region an area of about 37,000 square kilometers with a population of 2.5 million people suffered the worst flooding of the last century. Some 150 rivers overrun their beds and embankments 478 settlements were left wholly or partially under water. As a result, the flood damaged private houses, public buildings, rural and urban infrastructures and destroyed crops, livestock and caused people to die.

While the flood damage was assessed by World Bank mission, the Earthquake took place in Adana and in the nearby towns and has given huge damages to housing units in Urban and Rural areas. Upon the request of Treasury, the World Bank agreed to include the financial need of earthquake to Flood Disaster project and the project name become "Turkey Emergency Flood and Earthquake Recovery Project" known as "TEFER".

After the necessary work done in regards to completion of the project evaluation, the Loan Agreement was signed on 11 Sept. 1998 and subsequently become effective on 13 Oct. 1998. The responsibility for the implementation of "TEFER" Project was delegated to the Housing Development Administration (HDA) subject to a protocol dated 28 Sept. 1998 between HDA and Treasury (as GOT's borrower). The HDA has entrusted the HDA/PIU "The Project Implementation Unit" for overall Project Implementation. In November 1999, PIU was set up under the Prime Ministry and the title changed to PM/PIU.

The “TEFER” project has been in effect since 13 Oct.1998 and the Loan Agreement no. 4388-TU was approved by Council of Ministers on Sept 11, 1998 with decree no. 98/11702, The Scope of the Project is defined in greater details in World Bank’s Project Appraisal Document dated 24 Aug. 1998.

The Loan Agreement was revised in September 25, 2000, so as to include the construction of rural and urban household units, basic education schools and health facilities demolished after the Marmara earthquake in Adapazarý.

The closing date of Loan was extended until the end of September 30, 2003. US\$ 120 million of unused funds from the TEFER Loan was cancelled.

## **PROJECT MANAGEMENT**

The institutional framework for the execution of the TEFER is set out in the World Bank Report No. 18376-TU. The responsibility for the overall coordination of the Project has been allocated to the Housing Development Administration (HDA). The Housing Development Administration (HDA) has been entrusted with the authority and responsibility for the implementation of the Project. The HDA, in turn, HDA carried out its activities under the Project through the existing Project Implementation Unit (PIU) and the Adana Management Unit (AMU) established in Adana for earthquake component of the Project. Formal terms of reference have been implemented between HDA and PIU and AMU for this purpose. PIU was established in 1992 in Ankara and AMU was established in 1999 in Adana. AMU was closed down upon completion of the main site activities in Adana.

The Project was also subject to the overall policy guidance of a Steering Committee comprised of various Ministries and Agencies.

All Ministries/Agencies in the Project were required to procure their respective works, goods and services under the coordination of the HDA/PIU and as per the protocols signed with the HDA/PIU. Therefore the implementation of the Project involved the HDA/PIU, amongst others, in the following range of activities:

- Co-ordination of all project related activities of the various Ministries/Agencies for which works, equipment and goods formed part of the Project,
- Maintenance and disbursement of Finances in respect of the Project Works,
- Recruitment of Advisory Services,
- Responsibility for the day-to-day implementation of the Project,
- Administration of Contracts with Contractors and Consultants, etc. including review and approval of all documents prepared for the various contracts.

## **Project Description**

TEFER Project was financed to:

- Restore basic infrastructure in municipalities and rural areas affected by the 1998 flood,

- Restore housing in the areas affected by the 1998 earthquake, and
- Reduce vulnerability to future natural disasters.

A detailed description of the Project on component by component basis is given below.

## **PROJECT COMPONENTS**

### **Ø COMPONENT – A: MUNICIPAL AND RURAL INFRASTRUCTURE**

#### **Scope of the Component:**

Under this Component the water and wastewater systems, municipal, rural and forest roads and bridges and irrigation facilities in more than 100 of the most damaged municipalities and villages have been repaired.

#### **Implementing Agencies:**

The works under this component were carried out by the Implementation Agencies under the supervision of the HDA/PIU and as per the protocols signed between the HDA/PIU and the relevant agencies. The Project Implementation Agencies under this component were the General Directorate of Highways, the General Directorate of Rural Services, the General Directorate of Forestry and the relevant municipalities, i.e. Devrek, Bartýn, Yenice and Karabük Municipalities.

#### **Sub-Components:**

The details of the relevant sub-components under this component are summarized below and the details of the works, goods and consultancy services executed under this Component were given in ANNEX A enclosed herewith.

#### **Sub-component A1. Highway Sector: (Annex-A / Table I Refers)**

Highway sector included various works relating to the repair, rehabilitation and reconstruction of the highways and their relevant structures damaged by the flood. For such works under the TEFER Project, a protocol was signed with the General Directorate of Highways (KGM) on 24 November 1998.

For the execution of the works under the Protocol;

- 44 Minor civil works contracts, and
- 4 NCB type of contracts have been signed.

All works were completed and all the relevant payments were made to the respective contractors.

#### **Sub-component A2. Rural Service Sector (Annex-A / Table II Refers)**

Rural Service sector included various works relating to the repair, rehabilitation and reconstruction of rural roads and infrastructure damaged by the flood.

For such works under the TEFER Project, a protocol was signed with the General Directorate of Rural

Services (GDRS) on 25 November 1998.

Under this sub-component;

i) Civil Works

- 45 Minor civil works contracts, and
- 25 NCB type of contracts were signed.

ii) Consultants Services

2 Consultants' Contracts were signed for the design and the construction supervision services of the bridges in Kastamonu, Zonguldak, Bartın and Karabük

**Sub-component A3. Forestry Sector: (Annex-A / Table III Refers)**

Forestry Sector included various works relating to the repair, rehabilitation and reconstruction of the forest roads and relevant structures damaged by the flood and the procurement of equipment. For such works under TEFER Project, a protocol was signed with General Directorate of Forestry (GDF) on 24 November 1998.

Information related with the works executed and the equipment procured for the GDF are as follows:

*i) Construction Works;*

- 56 Minor Works Contracts were signed.

*ii) Procurement of Goods;*

The Contract for the procurement of computers for GDF was signed with BÝLTAM Mümessillik on 05.04.1999. All equipment was delivered to GDF.

*iii) Consultants' Services:*

**Consultants Services for the design and construction supervision of three bridges/culverts:**

The Consultants' Contract for the design and construction supervision of three bridges/culverts was signed with ARK-AKSA Joint Venture and the services were completed.

**Sub-component A4. Municipal Infrastructure Sector: (Annex-A / Table IV Refers)**

Municipal Infrastructure Sector consisted of the Municipal Infrastructure works relating to the repair, rehabilitation and reconstruction of the infrastructural systems damaged by the flood and the procurement of equipment. For such works under TEFER Project, a protocol was signed with each Municipality.

The details of the works executed and the equipment procured (if any) for each Municipality are given below:

#### **A4.1 Devrek Municipality**

A protocol for the works under TEFER Project was signed with Devrek Municipality on 19 November 1998.

The works under the Protocol are:

*i) Construction Works;*

- Repair of Sewerage System; (NCB)

The Contract for the construction works for Repair of Sewerage System was signed with CEREN Ýns. Tic. ve San. Ltd. and the works were completed.

- Rehabilitation of Water Supply System;

The contract for the construction works for Water Supply System was signed with ÇEVSAN A.<sup>a</sup> and the works were completed.

- Repair of Road and Bridge Construction;

The contract for the construction work for Road and Bridge construction was signed with KOÇKAN-ÖZARTAS Joint Venture and the works were completed.

*ii) Consultants' Services:*

- Consultants Services for Rehabilitation of Sewerage System;

The Consultants' Services Contract for the preparation of designs, technical specifications and BOQs was signed with KUYULULU Müh. Ins. Ltd. and all the necessary Works related with the Consultants' Contract were completed.

- Consultants' Services for Repair of Road and Bridge;

The Consultants Services Contract for the preparation of designs, technical specifications and BOQs, and the construction supervision works was signed with EMAY Müh. Müs. A.<sup>a</sup> and all the necessary Works related with the Consultants' Contract were completed.

- Consultants' Services for Soil Investigation for the Bridge in Devrek;

The Consultants' Services Contract for the geotechnical investigations for the damaged bridge in Devrek was signed with TOKER Sondaj ve Ýns. Ltd. <sup>a</sup>ti. and all the necessary Works related with the Consultants' Contract were completed.

#### **A.4.2 Yenice Municipality**

A protocol for the works under TEFER Project was signed with Yenice Municipality on 18 November 1998.

The works under the Protocol are:

*i) Construction Works;*

- Repair of Sewerage System;

**First Package**

The Construction Contract for Repair of Sewerage System was signed with ADA Ýnsaat and the works were completed.

**Second Package**

The Construction Contract for the Repair of Sewerage System was signed with KUMTA<sup>a</sup> Ltd. and the Works under this Contract were completed.

- Repair of Water Supply System;

The Construction Contract for Repair of Water Supply System was signed with SÜRMELY Ýnsaat and the works were completed.

- Repair of Road;

The Construction Contract for Repair of Road was signed with GÜRSAN Makina A.<sup>a</sup> and the works were completed.

*ii) Consultants' Services:*

- Consultants' Services for Rehabilitation of Sewerage System ( 2nd Package);

The Consultants' Services Contract for the preparation of designs, technical specifications and BOQs for the second package of sewerage was signed with ARTEK and all the necessary Services related with the Consultant's Contract were completed.

- Consultants' Services for Rehabilitation of Sewerage System ( 3rd Package);

The Consultants' Services Contract for the third package of sewerage was signed with ARTEK. All the designs, technical specifications and BOQs for the third package of sewerage system were prepared by the Consultant and submitted to the Municipality so as to be constructed by the Municipality's own resources.

**A.4.3 Karabük Municipality**

A protocol for the works under TEFER Project was signed with Karabük Municipality on 24 November 1998.

The works under the Protocol are:

*i) Construction Works;*

- Repair of Water Supply System:

**First Package**

The Construction Contract for construction of two Nos. of Reservoirs was signed with KÜTÜKOĞLU Ýns. Since the Contractor did not enable to fulfill the requirements of the Contract, the Municipality terminated this Contract and re-tendered the remaining works. The construction Contract for the remaining works was signed with the Contractor GÜRTAP Ltd. and the works were completed.

**Second Package**

The construction Contract for the second package of Water Supply System, including the connections to the reservoirs to be constructed in the first package was signed with the Contractor ÇEVSAN A.<sup>a</sup>. and the works were completed.

**Third Package**

The construction Contract for the third package of Water Supply System, was signed with the Contractor BAKÝ DUVAN Ýnsaat Mühendislik Müteahhitlik and the works were completed.

- Repair of Sewerage System:

The construction Contract for the repair of Sewerage System was signed with the Contractor BAKÝ DUVAN Ýnsaat Mühendislik Müteahhitlik and the works were completed.

- Bridge Construction:

The Construction Contract for the Bridge Construction for the sewerage and water supply pipes and transportation was signed with ÖZARTA<sup>a</sup> and the works were completed.

- Repair of Road:

The Construction Contract for Repair of Road was signed with GÜRSAN Makina A.<sup>a</sup>. and the works were completed.

**A.4.4 Bartýn Municipality**

A protocol for the works under TEFER Project was signed with Bartýn Municipality on 20 November 1998.

The works under the Protocol are:

*i) Construction Works;*

- Rehabilitation of Stormwater Drainage System:

During the visits to the project sites together with the World Bank mission, the Municipality raised his request related with the repair of the road adjacent to the Kozcagýz river instead of this rehabilitation work in the Stormwater Drainage System. Under DSI Component (Bartýn 1 and Bartýn 2 components) a

retaining wall at the same site were constructed.

ii) *Procurement of Goods;*

The Contract was signed with ASLAR Otomotiv San. ve Tic. A.ª. for 1 No of Sewerage Truck and with ÇUKUROVA İthalat ve Ýhracat A.Đ. for 1 No of Loader with rubber tires. Both of the equipment were delivered to the Municipality.

**Ø COMPONENT B: FLOOD MITIGATION AND NATURAL HAZARD REDUCTION COMPONENT**

**Scope of the Component:**

This Component included to upgrade hydrotechnical infrastructure, modernize flood management systems, improve flood forecasting and introduce measures to improve construction standards and reduce potential losses from future natural disasters.

**Implementing Agencies:**

The works under this component were carried out by the Implementation Agencies under the supervision of the HDA/PIU and as per the protocols signed between the HDA/PIU and the relevant agencies. The Project Implementation Agencies under this component were the General Directorate of State Hydraulic Works, the General Directorate of State Meteorological Institute, the General Directorate of Electrical Power, the General Directorate of Civil Defense, the General Directorate of Disaster Affairs, the General Directorate of Insurance, the General Directorate of Technical Research and Implementation and the General Directorate of Aforestation and Erosion Control.

Due to the various delays occurred under Component B, the World Bank hired a consultant firm, namely Posch and Partners to assist and supply the technical support to the PIU and the Implementation Agencies and the most of the works were completed under this Component.

**Sub-Components;**

- National Mitigation Strategy (B.1.a),
- Local Mitigation Planning (B.1.b),
- Development of Warnings (B.2.b),
- Improvement of Local Response Plan (B.2.c),
- Development of Disaster Assistance Information System (B.3.a)

are cancelled since similar type of activities are being carried out within the context of MEER Project.

**Sub-Components:**

The details of the relevant sub-components under this component are summarized below and the details of the works, goods and consultancy services executed under this Component were given in ANNEX B enclosed herewith.

**Sub-component B1. Natural Hazard Risk Reduction and Mitigation**

- **B1.(a) National Mitigation Strategy** (*Cancelled*)

The General Directorate of Disaster Affairs (GDDA) was the Implementation Agency for this

sub-component. The Protocol between the HDA/PIU and the GDDA was signed on May 31, 1999.

· **B1.(b) Local Mitigation Planning** (*Cancelled*)

The General Directorate of Technical Research and Implementation (GDTRI) was the Implementation Agency for this sub-component. The Protocol between the HDA/PIU and the GDTRI was signed on June 16, 1999.

· **B1.(c) Natural Hazard Insurance**

The General Directorate of Insurance (GDI) was the Implementation Agency for this sub-component. The Protocol between the HDA/PIU and the GDI was signed on June 11, 1999.

An Implementation Unit has been established in the General Directorate of Insurance (GDI) to organize the works under this sub-component. The Protocol between PM/PIU and GDI was signed on June 11, 1999.

Overall progress for Sub component B1(c) is as follows;

The contract for Consulting Services on “**Improvement of Natural Hazard Insurance and Disaster Funding Strategy**” was signed between GDI and Cordis Consulting Ltd. On June 23, 2000. This study has been completed and the consulting firm has totally been paid.

Regarding the “**Legislation for EQ insurance**”, GDI has completed the study of drafting the Compulsory Insurance Law and related legislation by hiring three individual consultants.

The contract for Consulting Services on “**The Establishment of the TCIP**” was signed between GDI and Marsh San Sigorta ve Reasürans Brokerligi on November 16, 2000. The consultant has completed this study, however, GDI has not approved the report on “Producing the Operational Guidelines that will establish the procedures to be followed within the whole TCIP scheme”. Hiring an individual consultant to produce the operational guidelines, GDI has completed the entire study. The firm and the individual consultant have been paid.

The study on “**Preparation of draft TOR for TCIP PI Campaign**” has been completed by an individual consultant. He has been paid after the report was approved by GDI.

The study on “**EQ risk analysis model development**” has been completed by an individual consultant. He has been paid after the report was approved by GDI.

Necessary procurement has been completed under the item of “**Hardware Purchase for GDI risk modeling**”.

Necessary procurement has been completed under the item of “**Software Purchase for GDI risk modeling**”.

Requests of GDI on “**Research and Study Tours, Training and Workshops**” necessary for the establishment of Turkish Catastrophic Insurance Pool (TCIP) have been covered under this sub-component.

The materials procured under “**TCIP Public Information Campaign**” were delivered in May 2003 and related consultants as well as suppliers were paid on time.

Financing some of the activities that were planned to carry out under TEFER from TCIP funds, GDI has decided to transfer some activities to be studied under MEER, such as;

- TCIP Public Information Campaign,
- Background Research on Housing Vulnerability Functions and Cost-effectiveness of Mitigation.

### **Sub-component B2. Modernization of the Forecasting, Warning and Response Systems**

#### **B2.(a) Threat Recognition: Modernization of Monitoring and Forecasting Systems**

The Implementation Agencies for this sub-component were the General Directorate of State Hydraulic Works (DSI), the General Directorate of State Meteorological Institute (DMI) and the General Directorate of Electrical Power (EIE) and the Protocols between HDA/PIU and them were signed on January 04, 1999, February 10, 1999 and February 10, 1999 respectively.

##### i) Construction Works

The contract was signed with EBÝ A.Ş. for the extension of DMI’s existing building to arrange it as Radar Operation Center and the works were completed.

##### ii) Consultancy Services

DMI signed contract with PROKON Ltd. for the preparation of design work and the supervision of DMI’s aforementioned building and the services were completed.

DMI signed the contract with Australian Bureau of Meteorology to decide on the most appropriate places of the radars to be procured and the services were completed.

DSI signed contract on behalf of DSI, DMI and EIE with the ECOWISE Ltd. for Hydrometric Network Review, Design and Automated Weather and Hydrometric System Design to decide the necessities of the goods to be procured for the improvement of the existing systems in DSI, DMI and EIE and the services were completed.

DSI signed the contract with Danish Hydraulic Institute of Water and Environment (DHI) for the Flood Forecasting Model Development services to develop the most suitable model to be applied for the flood forecasting and all the works and the training were completed.

##### iii) Procurement of Goods

DMI signed the contract with Mitsubishi/Hazama Consortium for the procurement of 3 radars which was originally 5, but due to the time limitation for the manufacturing period, it was decided to procure only 3. The radars were procured and installed to the places decided after the relevant consultancy services and the system is operational now.

DMI signed the contract with Gilat Satellite Network Ltd. on behalf of DMI and DSI for the procurement

of VSAT System and the system is operational now.

DMI signed the contract with Elite + LSI Spa + Alfa Ltd. Consortium for the procurement of Automated Weather Observation Systems (AWOS) and the system is operational now.

DMI signed the contract with IBM-Italia S.p.a for the procurement Data Processing High Performance Computer System and the system is operational now.

DSI signed the contract with ITOCHU Corporation to procure 18 twin cab pick-up for the improvement of regional offices, also indicated in the Consultants' Report, namely Ecowise, and the goods were delivered to DSI.

DSI signed the contracts with the relevant Suppliers in 5 lots for the procurement of hydrometric equipment indicated in Ecowise's report and all the equipment was delivered to DSI.

DSI signed the contract with Seba Hydrometrie GmbH for the procurement of Real Time Data Management Software and Hardware and the services were completed.

DSI signed the contracts with the relevant Suppliers in 4 lots for the procurement of flood forecasting and warning system equipment indicated in the Consultants' Report, namely DHI, and all the equipment was delivered to DSI.

· **B2.(b) Development of Warnings** (*Cancelled*)

The General Directorate of Disaster Affairs (GDDA) was the Implementation Agency for this sub-component. The Protocol between the HDA/PIU and the GDDA was signed on May 31, 1999.

· **B2.(c) Improvement of Local Response Plans** (*Cancelled*)

The General Directorate of Technical Research and Implementation (GDTRI) was the Implementation Agency for this sub-component. The Protocol between the HDA/PIU and the GDTRI was signed on June 16, 1999.

**Sub-component B3. Improvement of Disaster Response Capabilities**

· **B3.(a) Development of Disaster Assistance Information System** (*Cancelled*)

The General Directorate of Disaster Affairs (GDDA) was the Implementation Agency for this sub-component. The Protocol between the HDA/PIU and the GDDA was signed on May 31, 1999.

· **B3.(b) Improving Disaster Response Capability**

The General Directorate of Civil Defence (GDCD) was the implementation agency for the realization of the works to be done under this component. The Protocol between HDA/PIU and GDCD was signed on March 1, 1999.

i) Procurement of Goods

GDCD signed the contracts with the firms to purchase search and rescue equipments. The name

of the firms are as follows:

- 1- Albert Ziegler GmbH&Co.KG (Germany)- 14 units complete search and rescue vehicles and related equipments and 8 units rescue equipment set on palettes
- 2- Alfred Karcher GmbH&Co. (Germany)- 3 units Field Kitchen and 1035 units Complete Carbon Based NBC(Nuclear, Biological and Chemical) Protective Suits

#### **Sub-component B4. Repair and Improvement of Flood Protection Infrastructure**

##### **B4.(a) Repair and Improvement of Flood Protection Infrastructure**

The General Directorate of State Hydraulic Works (DSI) was the Implementation Agency for this sub-component. The Protocol between the HDA/PIU and the DSI was signed on January 04, 1999.

##### **i) Consultancy Services**

DSI signed the contract with Gibb – Delft – Temelsu Consortium for the Sediment Transport Investigation in West Black Sea Flood Region to prepare the designs for the construction works accordingly and the services were completed.

DSI signed the contract with Temelsu – Knight Piesold Consortium for the preparation of designs and the bidding documents for the construction works to be done for the Repair and Improvement of Flood Protection Infrastructure in West Black Sea Flood Region and the services and the construction works were completed.

DSI signed the contract with an individual consultant for the training of DSI's personnel, supervision of DSI's minor construction works and 4 NCB works, decision of the priority for the remaining NCB works and checking the designs prepared by the aforementioned Consultants.

DSI signed the contracts in 6 lots with the consulting firms for the supervision of DSI's 24 NCB works and the services were completed.

DSI signed the contract with three individual consultants, namely Project Controlling Team (one chief and two deputies) for the coordination of aforementioned 6 consulting firms and the overall supervision of the construction works. The services were completed.

DSI signed the contract with ENCON Ltd. for the Environmental Study of Bartýn Flood Protection Scheme and the services were completed.

##### **ii) Construction Works**

DSI signed the contracts with the relevant firms for the construction of 19 minor civil works and 19 NCB works in West Black Sea Region and the works were completed.

DSI also signed the contracts with the relevant firms in 4 lots for Survey and Mapping Works for Bolu, Bartýn, Kastamonu and Düzce groups and in 1 lot for Geotechnical and Material Investigation Works to help in preparing the designs for the construction works for repair and improvement of flood protection infrastructure in West Black Sea Flood Region and all studies were completed.

#### **B4.(b) Afforestation and Erosion Control Pilot Sub-Projects**

The General Directorate of Afforestation and Erosion Control (AGM) was the Implementation Agency for this sub-component. The Protocol between the HDA/PIU and the AGM was signed on December 11, 1998.

##### **i) Construction Works**

AGM signed the contracts for 57 minor works totally with the relevant firms for the afforestation and erosion control purposes and all works were completed.

##### **ii) Procurement of Goods**

AGM signed the contract with ITOCHU Corporation for the procurement of 8 twin cab pick-up to improve their regional offices and the goods were delivered to AGM.

AGM signed the contracts with the relevant firms for the procurement of computers and office equipment to improve their regional offices and all the goods were delivered to AGM.

#### **B4.(c) New Flood Protection Strategies and Facilities**

The General Directorate of State Hydraulic Works (DSI) was the Implementation Agency for this sub-component. The Protocol between the HDA/PIU and the DSI was signed on January 04, 1999.

Since the studies to be done under this sub-component were directly related with the studies done under other sub-components and those studies were not done or the remaining time left was not enough to complete the studies to be done under this sub-component, DSI didn't do any studies under this sub-component.

The details of the works, goods and consultancy services executed under Component B were given in ANNEX B.

### **Ø COMPONENT C: EARTHQUAKE RECONSTRUCTION:**

#### **Scope of Component:**

This Component consisted of the reconstruction of housing units in Adana and Ceyhan demolished after the earthquake experienced by Turkey in Adana caused extensive damage in Adana and Ceyhan.

#### **Implementing Agencies:**

This Component directly executed by the HDA/PIU and AMU established under HDA/PIU under the earthquake.

#### **Sub-Components:**

The details of the works and consultancy services executed under Component C were given in ANNEX C enclosed herewith.

### **Sub-component C1. Construction of Urban Houses**

This sub-component consisted of the reconstruction of 4000 housing units in Adana and 1000 housing units in Ceyhan together with the all infrastructure works.

#### i) Construction Works

HDA/PIU signed the contracts with the relevant firms in 7 lots for Adana and 2 lots for Ceyhan and all the construction works were completed and the houses were delivered to the beneficiaries.

The additional works related with the infrastructural works in Adana and Ceyhan will be completed under MEER Project with necessary allocation for financing.

#### ii) Consultancy Services

HDA/PIU signed the contracts with Dar Al-Handasah Consultants + Dar Mühendislik ve Müsavirlik A.<sup>a</sup>. + Kentkur A.<sup>a</sup>. Joint Venture and Dorsch Consult + Ants Ltd. Joint Venture in two lots for Adana houses and with Dorsch Consult + Ants Ltd. Joint Venture in one lot for Ceyhan houses and the services under the signed contracts were completed.

HDA/PIU signed the contract with Onay-SU Ltd. for the preparation of designs, technical specifications and the BOQs for the additional drainage system and paving of unpaved parking lots in Adana site.

### **Reconstruction of houses in Adapazarý City in Marmara Region**

This Component consisted of the reconstruction of housing units in Adapazarý city in Marmara Region demolished by the earthquake experienced by Turkey in Marmara Region in 1999.

Under this sub-component: Construction of 2572 housing units ,two schools (1 high school + 1 primary school) and 1 health post together with all infrastructure works were also carried out in Adapazarý by the re-allocated amount from TEFER Loan.

PM/PIU has signed the contracts with the relevant firms in 5 lots for Adapazarý and all the construction works were completed and the houses were delivered to the beneficiaries.

PM/PIU signed Consultants' contract with NBCC-CES Joint Venture for the relevant Consultants' Services.

### **Sub-component C2. Construction of Rural Houses**

#### i) Construction Works

The beneficiaries were determined by the General Directorate of Disasters (GDDA) and the names of 3903 beneficiaries given to PIU by the end of May 1999. Later, in total, names of the 395 beneficiaries were cancelled by GDDA due to different reasons. 255 no. beneficiaries gave up their rights before signing contract with PIU. The remaining 3253 beneficiaries signed an agreement with PIU. However, 93 beneficiaries gave up their rights after signing the contract and the agreements of the 29 beneficiaries were cancelled by PIU since they did not perform their obligations. Finally, 3131 beneficiaries completed their

houses until the end of May 2000 and the Project was completed successfully.

## ii) Consultancy Services

Considering the area where beneficiaries are distributed, two consultants were employed, namely Yüksel Proje Uluslararası Anonim  irketi for Region I and  çer M savir M hendislik Anonim  irketi for Region II. The beneficiaries constructed their houses under the guidance and supervision of the Consultants. The Consultants Services completed as end of May 2000 on site and completion reports were received at the end of June 2000.

The details of the works and consultancy services executed under Component C were given in ANNEX C enclosed herewith.

## **FINANCIAL OBJECTIVES**

### Accounting and auditing

PIU developed its own accounting and budgeting system, on the basis of acceptable accounting principles in accordance with the International Accounting Standards and in line with the provisions of the Loan Agreement NO. 4388-TU.

All functions of the Accounting Department have been fully computerised. The billing system, general edger, receivables, collections, fixed assets, inventories etc. have been computerised through a fully integrated system.

Financial statements consisting of balance sheet, income and expenditure account, cash flow statements etc.. were prepared annually. Annual audits of the financial statements and the special account were systematically carried out by the Auditor of the Treasury of the Republic of Turkey.

