

## Simplified Ex-Post Evaluation for Technical Cooperation Project

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Project Name	The Geologic Remote Sensing Project	February 2010 – December 2010

### I Project Outline

Country Name	Republic of Turkey			
Project Period	August 2002-July 2006			
Executing Agency	General Directorate of Mineral Research and Exploration (MTA) / Remote Sensing Center (RSC)			
Cooperation Agency in Japan				
Total Cost	477 million yen			
Related Projects (if any)	N/A			
Overall Goal	MTA/Remote Sensing Center (RSC) plays the central role in providing advanced remote sensing services in Turkey and neighboring countries.			
Project Objective(s)	MTA/RSC is able to utilize the advanced remote sensor data such as ASTER and/or PALSAR data for geological analysis aiming at mineral resources exploration, natural disaster prevention and environmental conservation.			
Output[s]	<ol style="list-style-type: none"> <li>1. The project operation unit (RSC) is established.</li> <li>2. Equipment and advanced satellite data necessary for utilizing satellite data are operated and maintained properly.</li> <li>3. Image processing of ASTER data for mineral resources exploration can be carried out by the counterpart personnel.</li> <li>4. Case studies for mineral resources exploitation utilizing ASTER data are accumulated.</li> <li>5. Spatial analysis with GIS is carried out by the counterpart personnel.</li> <li>6. Counterpart personnel can provide reliable products of SAR and ASTER data for improved hazard analysis by the staff of the relevant section of MTA and other related organizations.</li> <li>7. Counterpart personnel can provide reliable products of advanced remote sensor data for improved environmental analysis by the staff of the relevant section of MTA and other governmental offices.</li> <li>8. MTA/RSC can provide necessary technical support to implement training courses.</li> </ol>			
	Inputs (Japanese Side)		Inputs (Turkish Side)	
Experts	5 for Long term, 14 for Short term		Staff allocated	8 (Full-time)
Equipments	89 million yen		Equipments	-
Local Cost	-		Local Cost	1,003 thousand Turkish Lira
Trainees Received	8		Land etc provided	-
Others	-		Others	-

### II Result of the Evaluation

Summary of the evaluation
<p>Nearly all activities planned in this project have been implemented, and counterpart personnel have learned image processing and spatial analysis techniques related to advanced remote sensing technologies and have established analytical methods for mineral resources exploration and diagnostic methods for prevention of natural disasters and environmental conservation. Since the project period, human-resources development has taken place through sharing among RSC staff of the skills transferred from experts, with full-time counterpart personnel playing a core role, and MTA/RSC has utilized transferred skills, providing services to public- and private-sector end users and providing training to other institutions including those from neighboring countries. In these and other ways, MTA/RSC is playing a central role in use of advanced remote sensing technologies in Turkey and in neighboring countries.</p> <p>In light of the above, this project is evaluated to be highly satisfactory.</p> <p>&lt;Recommendations&gt; As recommendations for the executing agency, it would be desirable to prepare well-planned budgets to ensure that the necessary funds are secured, taking into consideration the useful life of equipment. It would be also desirable to study measures to ensure that thorough maintenance is conducted through renovation of equipment as well as software and that analytical and training activities in connection with such renovation are not interrupted, so that the renovation of equipment and software expected in the future takes place smoothly.</p>

## 1 Relevance

### (1) Relevance with the Development Plan of Turkey

One of the main goals of the Eighth Five-Year Development Plan (2001-2005) calls for the development of Turkey's wealth of underground resources, through exploration employing advanced technologies, and the production of these resources. One of Turkey's key policies in the environmental field is development of environmental information and data systems, and use of advanced remote sensing and geographic information systems (GIS) is useful for this purpose.

### (2) Relevance with the Development Needs of Turkey

The MTA's main activities include exploration and evaluation of mineral resources, and as such it faces the need for efficient exploration of underground ore deposits. The MTA also carries out surveys and research on disaster prevention and environmental conservation from a geological perspective. Since in light of factors such as earthquake damage in recent years, There is a need for highly precise information for disaster-prevention purposes as a result of earthquakes occurred in recent years. Therefore, there was a pressing need for the MTA to introduce advanced remote sensing technologies.

### (3) Relevance with Japan's ODA Policy

Of the five priority sectors for aid to Turkey described in the JICA Country Program, this project provides aid in the following four sectors: (1) environmental improvements, (2) human-resources development for promotion of socioeconomic development (e.g., introduction of advanced technologies), (3) aiding South-South cooperation (third-country training), and (4) recovery from earthquake damage and strengthening disaster-prevention structures.

The ASTER sensors were developed based on a background of Japanese technology, and this is an area in which Japan is recognized to have technological advantages.

This project has been highly relevant with the country's development plan, development needs, as well as Japan's ODA policy, therefore its relevance is high.

## 2 Effectiveness / Impact

### (1) Achievement of Project Outputs and Project Objective(s)

The equipment necessary for utilizing satellite data has been installed and put into operation. Using the equipment, counterpart personnel have acquired skills enabling them to conduct, on their own, image processing of ASTER data for mineral-resources exploration and have analyzed promising areas for mineral-resources exploration.

Counterpart personnel have conducted spatial analysis using GIS, and while technology transfer using actual PALSAR data could not be conducted during the period of this project due to satellite launch delays, transfer of natural-disaster geographical analysis technologies did take place using substitute data, so that counterpart personnel acquired skills enabling them to conduct on their own analysis of regions prone to natural disasters and environmental analysis, including identification of areas at risk of landslides and analysis of seawater surface temperatures using SAR and ASTER data.

In addition, the MTA/RSC conducted third-country training, accepting trainees from other countries. For these reasons, the project outputs can be said to have been achieved.

The MTA/RSC has acquired skills enabling it to use data collected from advanced remote-sensing sensors to conduct on its own geological analysis for purposes of mineral-resources exploration, natural-disaster prevention, and environmental conservation, and it identifies promising areas for mineral exploration and analyzes regions subject to environmental hazards, providing the results of such analysis to other agencies. Also, regarding advanced remote sensing it conducts training for and releases research results to other agencies and other countries. For these reasons, the project objectives can be said to have been achieved, for the most part.

### (2) Achievement of Overall Goal, Intended and Unintended Impacts

In 2006, in addition to publication of a collection of analysis images, the MTA/RSC established a system for distribution of data, and it conducts surveying, analysis, and other tasks as requested from the public and private sectors. Also, landslide analysis by the MTA/RSC has generated strong analytical results, advancing the spread of understanding of and uses for advanced remote-sensing data among end users, for example through receipt of new requests for subsurface exploration and other activities.

This project has largely achieved its objectives, therefore its effectiveness is high.

## 3 Efficiency

### (1) Outputs

As mentioned under "Effectiveness / Impact" (1) above, technology transfer has taken place in important areas of technologies for use of advanced remote-sensing data, counterpart personnel have come to be able to prepare the images needed by end users in each sector, as remote-sensing technicians, and this project has produced the outputs hoped for.

Also, as of the time of the ex-post evaluation as well, since with the exception of the above inputs were analyzed to have been converted efficiently in terms of quality, quantity, and timing, it can be said that in the end there was no effect on generation of outputs.

### (2) Project Period of Cooperation

Since the actual project period of cooperation was three years, vs. the planned period of three years, the period was as planned (100% of planned period).

### (3) Project Cost of Cooperation

The actual Project Cost of Cooperation totaled 480 million yen, vs. a planned cost of 380 million yen. As such, the cost grew by approximately 100 million yen (to 125% of the planned cost).

Although project costs were higher than planned, this was due primarily to procurement of computers and other equipment for use in preparation of additional teaching materials and in training. As such, inputs can be considered to have been appropriate because this avoided interference with analytical tasks and training through use of procured equipment and ensured efficient utilization through improving the efficiency of each operation.

The inputs are appropriate for producing outputs and achieving the project objective, therefore efficiency of the project is high.

## 4 Sustainability

(1) Related Policy towards the Project

Utilizing the potential of mining sector at maximum level is included in Turkey's 2010 Annual Programme, with revision of laws and regulations concerning the establishment of the MTA proposed as a measure for doing so. As such, the MTA is expected to contribute to this sector in the future as well.

(2) Institutional and Operational Aspects of the Executive Agency

A structure is maintained that enables implementation of operations without impediment.

(3) Technical Aspects of the Executive Agency

Counterpart personnel are acting to a sufficient degree. Since the project period, efforts have been made to share technologies, with full-time counterpart personnel playing a core role. Also, during and after the project period multiple counterpart personnel have earned doctoral degrees in fields related to remote sensing, so that there are no major technological concerns.

(4) Financial Aspects of the Executive Agency

The agency has secured funding from the government, and according to the Ministry's Budget for the year 2010 (Ministry of Energy and Natural Resources) the MTA's investment in research from the perspectives of mineral and geothermal resources is on the increase in recent years. For this reason, there are no particular concerns regarding financial aspects of the executive agency.

(5) Continuity of Effectiveness and Impact

Requests have been received from industry as well concerning use of remote-sensing data, and services are being provided to industry. Also, each study is released on the MTA's website and through other means, so that the MTA/RSC can be said to be conducting on a continual basis operations using transferred technologies.

No major problems have been observed in the policy background, the structural, technical, financial aspects of the executing agency, therefore, sustainability of the project effects is high.