

Environmental and Social Review Summary

Istanbul Otogar-Ikitelli Rail Transportation System

This Environmental and Social Review Summary (ESRS) is prepared by MIGA staff and disclosed in advance of the MIGA Board consideration of the proposed issuance of a Contract of Guarantee. Its purpose is to enhance the transparency of MIGA's activities. This document should not be construed as presuming the outcome of the decision by the MIGA Board of Directors. Board dates are estimates only.

Any documentation which is attached to this ESRS has been prepared by the project sponsor, and authorization has been given for public release. MIGA has reviewed the attached documentation as provided by the applicant, and considers it of adequate quality to be released to the public, but does not endorse the content.

Country: Turkey
Sector: Infrastructure
Project Enterprises: West LB Istanbul Branch, Istanbul Metropolitan Municipality Electricity, Train and Tramways General Directorate (IETT)
Environmental Category: B
Date ESRS Disclosed: November 16, 2010
Status: Due Diligence

A. Project Description

First phase of the Project, "Otogar-Kirazlı Light Rail Train" will extend the existing light rail train (LRT) from the Otogar (intercity bus terminal) to densely populated residential areas in Bağcılar and Kirazlı. The second phase of the Project, "Kirazlı-İkitelli-Başakşehir/Olimpic Village Metro" will connect Ikitelli Organized Industrial Area and recently developed residential areas in Ikitelli to the rail network of Istanbul.

Otogar-Kirazlı LRT track (phase I) comprises of a double track system of 5.510m to serve 5 stations between Otogar and the Bağcılar-Kirazlı. Kirazlı-Ikitelli-Başakşehir/Olimpic Village Metro track (phase II) comprises of a double track system of 15.834m to serve 12 stations between Kirazlı and Ikitelli-Başakşehir/Olympic Village.

Project highlights are the construction of 46.682m single track railway (including parking areas), 25.500m bored tunnel, 3.490m NATM tunnel, 1.565m viaduct, 5.514m cut and cover, 5.560m station length, one ground and 16 underground stations. The maximum capacity of the system is 70,000 passenger/hour. The existing metro line between Taksim and Levent which has been operational since 2000 currently carries 140,000 passenger/hour.

The contract of the construction of the new metro line was awarded to a joint venture formed by Gulermak and Dogus (G&D)¹ companies by Istanbul Metropolitan Municipality Electricity, Train and Tramway (IETT) General Directorate in 2005. More than 90 percent of the station and tunnel constructions had been completed by November 2010.

B. Environmental and Social Categorization

The project is a Category B under MIGA's Environmental and Social Review procedures. The key social and environmental issues are land acquisition and resettlement, community and workers' health and safety, air quality, noise, spill management (particularly during the construction phase). These impacts can be mitigated by adhering to generally recognized mitigation measures and standards. Key among the most relevant prevention and mitigation measures during construction and operation include minimization of water and energy consumption and emissions, improved tunneling safety, appropriate waste management (including disposal and excavation spoils), adoption of proper workers' health and safety measures, and fair and transparent compensation for affected people through land acquisition. The project is expected to have largely positive environmental and social impacts as it will provide a clean mass transport alternative that will alleviate road congestion and reduce fossil-based mass transport.

C. Applicable Standards

Based on our current information it is expected that the following Performance Standards are applicable:

- PS1: Social and Environmental Assessment and Management System
- PS2: Labor and Working Conditions
- PS3: Pollution Prevention and Abatement
- PS4: Community Health, Safety and Security
- PS5: Land Acquisition and Resettlement

Since there are no protected natural habitats or recognized indigenous communities in the area of influence of the project, PS 6: Biodiversity Conservation & Sustainable Natural resources Management and PS7: Indigenous Peoples do not apply for the purpose of MIGA's review of this project. Significant effects on cultural resources were not expected, though a "chance finds" policy consistent with PS8 had been established for paleontological and archeological artifacts that might be uncovered. Information presented by G&D indicates no archeological artifacts were encountered during the excavation and construction.

¹ Gulermak Agir Sanayi Insaat ve Taahhüt (Heavy Industry Construction and Contracting) Anonim Sirketi, and Dogus Insaat ve Ticaret (Construction and Trade) Anonim Sirketi.

D. Key Documents and Scope of MIGA Review

MIGA's review of this project consisted of appraising environmental and social information submitted by West LB, G&D (construction joint venture), IETT, and two site visits by MIGA social and environment staff and meeting with West LB in Istanbul, IETT Land Acquisition Department, the joint venture G&D and with project affected households and business owners.

Documents presented to MIGA and reviewed:

- Project Presentation File (PPF) – Construction of Tunnel and Portal Structures of the Connection between Otogar and Bagcilar – Appendix (August 2005);
- Project Presentation File (PPF) – Construction of Tunnel and Portal Structures of the Connection between Bagcilar-Basak Konutlari Metro Line and Olympic Village – Appendix (May 2006);
- Environmental Management Plan Otogar-Bagcilar Transportation System Construction, Electromechanical Works and Vehicle Supply Project (October 2005)
- Environmental Management Plan Kirazli Ikitelli – Basak Konutlari Metro and Olympic Village Connection Construction and Electromechanical Works Project (March 2007)
- Environmental Management Plan (EMP) Kirazli-Ikitelli-Basakkonutlari, Metro and Olympic Village Connection – Additional Works (September 2008).
Emergency Procedure (June 2005)
- Annual Environmental Monitoring Report II (December 2008)
- Monthly Monitoring Report #44 (July 2009) presented to IETT by Dogus & Gulermak (in Turkish)
- Annual Progress Report (July 2009) – in Turkish
- Labor Contract copy (in Turkish)
- Workers' Health and Safety regulations for the construction phase (in Turkish)
- Workers' Health and Safety Handbook
- Workers' Health and Safety Procedures applied to subcontractors (in Turkish)
- Accident report forms (in Turkish)
- Workers' training documents (in Turkish)
- Traffic Management Plan Approval by the Metropolitan Municipality Traffic Department (in Turkish)
- Land expropriation tables and summary report by IETT – sent to MIGA in October 2009.

E. Key Issues and Mitigation

PS1: Social and Environmental Assessment and Management Systems

A Project Presentation File (PPF) was completed in May 2006 by G&D (under a contract by the Metropolitan Municipality of Istanbul) in order to comply with Turkish environmental permitting requirements - which are aligned with the European Union standards and regulations. The PPF contains a preliminary evaluation of potential

environmental impacts and descriptions of mitigation measures of the physical environment including issues such as land use, water and energy consumption, liquid and solid wastes, and emissions. The project was reviewed by a commission by the Governorate of Istanbul Environment Directorate (on behalf of the Ministry of Environment and Environment) and it was resolved that no full environmental impact assessment is required for the project. Then all land use changes were inserted in master plans of the areas affected (1/1000 scale and 1/5000 scales maps and plans).

The project's technical feasibility studies further included geotechnical assessments and seismic analysis carried out by the Middle East Technical University and Bogazici University - Kandilli Rasathanesi. Feasibility assessments also included detailed land use surveys along the proposed project corridor, including existing building structures located above the tunnel in consideration of potential risks to community health and safety due to vibration impacts of tunnel construction.

Construction phase management: G&D has developed an Environmental Management Plan which presents appropriate measures for noise and vibration, spoil, ground water, waste, dust, vehicle and plant emissions management, emergency responses, and occupational health and safety measures consistent with ISO 14001 and OHSAS 18001. Operational procedures and a manual for occupational health and safety and workers' training are also in place and being implemented by G&D.

During the entire construction phase G&D presents monthly progress reports to IETT and monitored by an independent engineering firm contracted by IETT. During the first 30 months of the construction TEKFEN Engineering Company carried out independent monitoring tasks, since then Emay International Engineering Consulting Company has been in charge of independent monitoring.

During the operation phase it is IETT's responsibility as a project owner to ensure that the operation of the project will be performed in compliance with national regulations. Ulasim AS will be operating the system through a contract awarded by IETT. Potential risks and mitigation measures for operational phase are also discussed in the PPF submitted to the Ministry of Environment and Forestry.

PS2: Labor and Working Conditions

Turkey has ratified the core ILO Conventions on freedom of association, discrimination, child labor and forced labor. The contractor's (G&D) labor practices for its direct and contracted workforce and HR policy are designated to be aligned with Turkish Labor Law which is consistent with MIGA's PS2.

Currently the project employs 2,300 workers, of which 450 are G&D employees, and 1,900 are sub-contractors' workers. The project enterprise will exert due effort to ensure relevant requirements of Performance Standard 2 will be applied to all such non-employee workers. G&D has a clear Human Resources (HR) policy and applies it in a transparent manner. Main principles of their HR policy include provision of appropriate personal protective equipment to all workers; detailed recordkeeping of accidents,

incidents, and injuries; and monitoring and control by company safety officer (with oversight by the Ministry of Labour and Social Security). All workers go through regular health checks once a year. Their HR policy also reflects transparent worker relations, terms of employment, retrenchment and grievance mechanism, non-discrimination. These principles and procedures are consistent with PS2.

PS3: Pollution Prevention and Abatement

During construction phase, solid and liquid waste, noise and vibration, dust, vehicle and plant emissions, hazardous material (waste oil, cleaning solvents from equipment maintenance and repair) are the main sources of pollution. Construction of tunnels and stations and excavation of foundations generate predominantly sand spoils, building demolition wastes, and general waste from construction camps and offices. The quantity of excavation is estimated to be 451,771.43 m³ during tunnel excavation and 1.285.686 m³ for station excavation. Excavation waste is recycled and used to the extent possible. Excess material is disposed to the excavation disposal sites licensed by the Istanbul Metropolitan Municipality. Other solid waste is generally domestic type, and they are collected in the solid waste containers at construction sites and then removed by the Municipality in accordance with the requirements of Solid Waste Control Regulation (# 20814 of 14/3/1991).

Dust is a major source of pollution and of a key community concern as all 12 stations construction sites are within densely populated residential areas. Watering haul roads and unsealed access roads, washing wheels of trucks leaving construction zones, covering loaded trucks leaving the site, tunnel ventilation are among the mitigation measures implemented. MIGA requires that emissions are monitored and the above mitigation measures are used systematically throughout the construction phase.

Traffic related with construction and use of construction equipment produce emissions. G&D ensures that construction equipment and vehicles are properly maintained to comply with local emission standards; if visible smoke is detected from any equipment, it is taken out of the service and repaired; delivery and spoil handling hours are restricted.

Noise and vibration impacts associated with the construction are due to tunneling and surface works, demolition of existing structures, road works, cut and cover, and construction of new surfaces, from spoil removal. Noise impact is one of the key concerns by communities and requires a careful management. Vibration impact is less significant, but is a potential concern. Restricting operating hours, community consultation, regular information bulletins and monitoring noise levels to respond complaints are among the measures presented in the EMP and being implemented by the G&D.

Construction and operation activities generate hazardous material wastes, such as waste oil and cleaning solvents, goggles and gloves from equipment maintenance and repair activities. These materials are temporarily stored in closed containers and placed in designated areas, and then sent to the licensed disposal sites in accordance with the requirements of the Hazardous Wastes Control Regulation (#25755 of 14/3/2005). This is

consistent with the Hazardous Materials section of the World Bank Groups General EHS Guidelines). Project enterprises committed to continue this practice.

Wastewater discharges from sanitary facilities and from dewatering of tunneling operations will be discharged into the public sewage network following applicable regulations and under conditions permitted by the Sewerage Authority.

Runoff from construction has the potential to impact on the surrounding water ways by increasing suspended solids, oil and grease and chemical pollutants; causing localized scoring and erosion; and increasing flow on the existing storm water system and therefore altering local flood regime. Mitigation measures described in the management plan included:

- catchment analysis to determine the impact of construction site runoff and water treatment plant volumes on storm water and drainage system;
- minimizing the amount of disturbed land on site by progressive regeneration therefore reducing the amount of sediment;
- preventing the export of sediment from disturbed land by providing sediments fences, road grids, and sediment basins at the downstream end of disturbed catchments;
- separating clean water where ever possible to reduce the volume of water to be treated;
- provision of oil separators at the downstream end of vehicle maintenance and parking areas and treat water onsite prior to discharge;
- provision of spill kits and training on site to prevent pollutant entering the drainage system.

During the operation phase it is IETT's responsibility as a project owner to ensure that the operation of the project will be performed in compliance with national regulations. Istanbul Ulasim AS. will be operating the system through a contract awarded by IETT.

Following impacts will be addressed and monitored periodically.

- Solid wastes resulting from people using metro will be collected into containers and delivered to the waste collection system of the municipality. Stations will provide service to maximum 840.000 people per day, the quantity of solid waste generated by 840.000 people will be 50,400 m³ per day.
- Wastewaters/liquid wastes will be collected in special containers and pumped to the sewage system. Stations will provide service to maximum 840.000 people per day. The quantity of liquid wastes generated is assumed to be as 60 L. Possible leakage waters or other unexpected waters will be collected in the certain chambers in the lowest points of the metro lines and pumped to sewage system.
- Noise and vibration: Planned daily working time of metro vehicles will be between 06:30 and 24:00 hours daily. At certain points periodical noise and vibration values will be detected.
- Gases/emission: Expected levels of gas emission will be very low during operation as electrical energy will be used. Dust and other emissions occurring at

arrival and departure of trains will be sucked and transferred out of the stations to surface by ventilation systems.

These procedures and mitigation measures are consistent with MIGA's Performance Standard 3.

PS4: Community Health and Safety

All the station construction sites are in densely populated urban settlements and solid measures are required to mitigate risks to general public by construction equipment and vehicles. All construction sites are fenced clearly and closed to public access. Gates are controlled by unarmed security guards. G&D have prepared traffic plans and approved by the Metropolitan Municipality Traffic Department.

All buildings (including residential) along the route of the tunnels were tested against vibration and risk of collapse. Technically unsound ones were demolished before tunnel construction starts. As the Marmara Region of Turkey is classified a high risk earthquake zone, an earthquake analysis conducted, and the project structural design and construction techniques were chosen accordingly.

Project infrastructure, including underground tunnels and stations, has been designed to meet internationally recognized standards. Connection tunnels at about 300 meters will be built between twin tunnels for any fire, overflow, earthquake etc. that may occur after the construction. Safety specifications for electromechanical equipment include emergency alarms and communications systems in the trains and stations. Stations will also provide safety communication information in the trains such as instructions for passengers on proper evacuation routes from tunnels. More than one exit will be built in each station so as to allow emergency evacuations. To minimize hazard of gases that forms in case of accidents and emergencies a *scada* system will be established, and ventilation system will be automatically operated. Istanbul Ulasim AS (operator of the system) will implement a railway hygiene program consisting regular disinfection of metro surfaces, escalators, elevators and stations.

Unarmed contracted guards control and monitor the construction sites. As all construction sites in urban areas there are police stations in close proximity. During operation phase Istanbul Ulasim As. will be in charge of implementing security programs which will consist of armed and unarmed security personnel and security systems (including video surveillance) to monitor stations and tunnels.

PS5: Land Acquisition and Resettlement

Land acquisition for this project commenced in 2006 and had been completed by the end of 2007. Minimizing land acquisition and resettlement was among the criteria for the choice of station locations. In addition to land acquisition required for stations, the project caused resettlement as several buildings along the metro line were found technically unsound to resist vibration during construction. As it is a major risk to community safety, 375 households (320 owners+55tenants) and 200 businesses were resettled temporarily during retrofit work of those buildings. The project also required

218 households (141 homeowners+77 tenants) and 3 businesses to be resettled permanently. IETT compensated the project affected households and businesses in accordance with the following principles:

- All tenants resettled permanently or temporarily entitled to cash compensation equivalent of two months rents of apartments that they find, and all moving and real estate agent expenses;
- All homeowners resettled permanently or temporarily are entitled to cash compensation of rents until they are resettled again to new apartments to be bought by IETT or they are allowed to return to their original apartments (after retrofit), and all moving and real estate agent expenses;
- All homeowners who do not live in their apartments but rented to other tenants are entitled to be paid monthly rents of the vacated apartments until IETT buys new apartments for compensation or their apartments are ready again for renting/living (after retrofit);
- Business owners are entitled to cash compensation for their property if moved permanently. Those who lose their material in case of emergency evacuations are entitled to cash compensation for material and equipment losses, commercial losses due to business disruptions;
- All households are to be paid cash compensation for their furniture in emergency evacuations. Also down payments to landlords, relocation costs, furniture costs (for damages during transportation), hardship compensation, school bus fees are to be paid by IETT to all affected households.

All land was acquired also by IETT. Like other public agencies in Turkey, IETT has the authority to expropriate land for public benefit. All properties acquired had free-hold titles. Once the expropriation process is initiated each property owner is informed in writing and list of properties affected by the project is disclosed for one month by neighborhood authorities (*muhtarliklar*) as well as district municipalities. An evaluation commission comprised of three experts is formed by IETT to define compensation values. In this project the commission took the real estate market values established by district municipalities (updated annually) as the basis for negotiations. Before using power of eminent public domain, IETT (as other Turkish public agencies) needs to negotiate with affected people in a transparent and fair manner first by offering real estate values established by district municipalities and in consultation with a committee established by IETT. Only in cases where the property has multiple owners and it is not possible to reach an agreement (“willing seller and willing buyer”), IETT acquires land by expropriation. The Expropriation Law, which was revised in 2001 to speed up the process and mitigate negative impacts of expropriation on property owners, encourages fair and timely compensation with reference to market values by establishing a valuation committee and requires evaluation to be made by applying several different sources.

If an agreement is reached, the compensation amount deposited in a bank account for the owner and the title is transferred to the investor. Land cannot be acquired before the compensation amount agreed is deposited. If an agreement cannot be reached, land owners have the right to bring their cases to a different court (Asliye Hukuk Mahkemesi -

AHM). But still the amount decided by the commission needs to be deposited before the court case starts. The court AHM also establishes a commission to re-evaluate the compensation value offered. Members of this commission generally consist of agricultural experts, civil engineers and other professionals from the locality who have licenses to work as evaluation commission members. Information presented to MIGA by IETT indicates that in majority of cases affected properties were acquired through willing buyer and willing seller arrangements. Only in cases where properties have multiple owners (some are abroad) were expropriated.

All 218 home owners relocated permanently were given new apartments with clear titles in Basak Sehir Konutlari. As the project owner, IETT bought apartments and paid for relocation costs of all resettled families. As was agreed all tenants were paid rents and other costs as described above. The process explained to MIGA by IETT during the mission visit, and written information presented to MIGA by West LB Istanbul Branch indicate that the land acquisition and compensation process and practice are consistent with MIGA's PS5 (Land Acquisition and Involuntary Resettlement).

Interviews with 12 of the project affected families confirmed that they were compensated properly and satisfied with the relocation and compensation process. However, there are still some outstanding cases being processed in the civil courts, including one business case, for more than two years. Both West LB and IETT are committed to seek resolutions in these outstanding cases. MIGA will be kept informed and updated on the progress.

F. Environmental Permitting Process and Community Engagement

Two different Project Presentation Files (PPFs) were completed in 2005 for phase I and in 2006 for phase II by G&D (under a contract by the Metropolitan Municipality of Istanbul) in order to comply with Turkish environmental permitting requirements which are aligned with the European Union standards and regulations. The PPF contains a preliminary evaluation of potential environmental impacts and descriptions of mitigation measures including issues such as land use, water and energy consumption, liquid and solid wastes, and emissions. The project was reviewed by a commission by the Governorate of Istanbul Provincial Directorate of Environment and Forestry (on behalf of the Ministry of Environment) and it was resolved that no full environmental impact assessment is required for the project. The project received the environmental approval from the Provincial Directorate of Environment and Ministry on 28 August 2005 for phase I and on 01 August 2006 for phase II.

The approval indicates that no full environmental impact assessment is required for the Project, however this resolution does not relieve the Contractor from obligations of observing the provisions stated in the Project Presentation File and its appendices submitted to the Directorate, and also the provisions of the Environmental law no. 2872 and regulations issued in relation with the Law and of the delivery of permits and licenses obtained in accordance with the regulation of environmental impact assessment and reports issued for the start, operation and post operation phases.

Since before starting construction the Istanbul Metropolitan Municipality has been implementing a public information program which uses means including TV, newspapers and website to disclose information about the project and construction phases, land acquisition, underground blasting, and traffic disruptions.

Istanbul Metropolitan Municipality, and its Electricity, Train and Tramways (IETT) Directorate have in place channels to receive, register and process public grievances and comments regarding public services and urban infrastructure and development projects, including this project. These channels include a call center and an e-mail address managed by a public relations unit known as “beyaz masa” (white table).

G. Availability of Documentation

Please see the attached documents – [Project Presentation](#) and Environment Management Plans ([Phase 1](#) and [Phase 2](#)). Project presentation files, Environment Management Plans, and the Turkish Translation of the final version of this ESRS will be also be disclosed in the offices of the affected district municipalities by IETT.