

YÜKSEL PROJE

Yüksel Proje Uluslararası A.Ş.
Birlik Mahallesi 9. Cadde No: 41 Çankaya 06610 ANKARA
Tel: +90 (312) 495 70 00 Faks: +90 (312) 495 70 24

ANKARA-ISTANBUL HIGH-SPEED TRAIN PROJECT

ENVIRONMENTAL IMPACT ASSESSMENT (NON-TECHNICAL SUMMARY)



DOKAY Engineering and Consultancy Ltd.
Öveçler 4. Cadde No: 140/A 06460 Dikmen ANKARA
Tel: +90 (312) 475 7131 • Faks: +90 (312) 475 7130
www.dokay.info.tr

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1 INTRODUCTION

Ankara-Istanbul High-Speed Train (AIHST) Project is carried out by Turkish Republic State Railways (TRSR) in order to provide a time-efficient, comfortable and safe transportation opportunity (see Figures 1-3). The major objectives of the Project are summarized below:

- To decrease the travelling time between Ankara and Istanbul;
- To provide a comfortable and safe transportation opportunity; and
- To increase the share of railway in the national transportation network.



Figure 1. A view of the train to be used in the Project.



Figure 2. General compartment interior view of the train to be used in the Project.



Figure 3. General view of the train to be used in the Project.

Ankara-Istanbul transportation corridor is the busiest transportation route of Turkey in terms of highway, railway and airline traffic. As shown in Figure 4, as the most-preferred form of transportation, Ankara-Istanbul highway bears a heavy traffic load.



Figure 4. A view from the existing Ankara-Istanbul highway .

The Project is also anticipated to decrease the traffic load on the state highway in between Ankara and Eskisehir. Hence, accident risks as well as environmental pollution due to exhaust gases will also be minimized.

Prior to the route development process, all data and pertinent documents were gathered from the relevant institutions and organisations regarding all existing and/or planned infrastructure and transportation facilities in the region, and the proposed route was developed on the basis of this information.

TRSR, as the project-owner of the AIHST, has applied to the European Investment Bank (EIB) for a loan. Since, the proposed Project falls under the Annex II of the Council Directive 97/11/EC on the assessment of the effects of certain public and private projects on the environment, the EIB requested that a comprehensive Environmental Impact Assessment (EIA) study must be carried out for the AIHST Project.

The EIA carried out for the AIHST Project comprised of studies on ecology; air, water and soil quality, noise levels and socio-economic conditions. In this context, potential impacts of the Project on the environment were identified and assessed together with adequate mitigation measures to be taken against these impacts.

Further, in compliance with the pertinent EU policies and legislation, the EIA team has also evaluated whether there exists any impact on identified sites of nature conservation importance.

2 PROJECT DESCRIPTION

The AIHST route comprises the following sections (see Figure 5):

- Ankara-Sincan
- Sincan-Esenkent;
- Esenkent-Eskisehir;
- Eskisehir-Kosekoy; and
- Kosekoy-Gebze.

The AIHST route between Ankara (Main Train Station) and Sincan is a completely inhabited section within Ankara metropolitan area. This section of the proposed route follows the existing railway, which is currently being operated by the TRSR. The initial screening exercises of the EIA team revealed that Ankara-Sincan section of the AIHST route is not expected to create any additional adverse effect on the environment, and concluded that there is no need for a comprehensive survey for this particular section of the route traversing a fully urbanized and altered environment with a rather high population density.



Figure 5. AIHST route.

In the first and last sections (i.e., Ankara-Sincan and Kosekoy-Gebze), only rehabilitation works will be carried out within the existing railway corridor. In other sections (i.e., Sincan-Esenkent, Esenkent-Eskisehir and Eskisehir-Kosekoy), rehabilitation works are being carried out together with construction of new dual-lined railway tracks (see Figure 6).



Figure 6. A typical view of a newly constructed dual-line.

The railway route to be rehabilitated and/or reconstructed in between Sincan and Kosekoy is being tendered and constructed in two separate phases. As seen in Figure 7, the first phase is in between Ankara and Eskisehir, and has a total length of 278 km. The second phase in between Eskisehir and Gebze has a total length of 244 km.

Construction works in Phase 1 started in December 2003 with infrastructure works. As of October 2006, over 95% of the earthworks (including quarries, excavations, fills and sub-ballast laying) in between Sincan and Eskisehir have been completed. Art structures, superstructure, electrification, signalisation and telecommunication works are in progress. According to the current plans, Ankara-Eskisehir section of the AIHST will be in operation in the first half of 2007.

As per Phase 2, the tendering and tender evaluation processes have been completed for the Inonu-Vezirhan segment. Tendering of Vezirhan-Kosekoy segment will be launched later.

All necessary precautions are taken so that the construction and production works being carried out along the AIHST route do not intervene with the operation of the existing railways in the vicinity of the proposed route. The general characteristics of the AIHST Project are listed in Table 1.

Table 1. General Characteristics of AIHST

CHARACTERISTIC	DESCRIPTION
Operation purpose of the line	Public transportation
Length of the line	Approximately 492 km
Line characteristics	Dual-lined, signposting, electrical
Line capacity	60 trains/day
Project speed	250 km/hour
Maximum planned slope	16‰
Minimum planned radius	4 km
Travel duration of passenger train	3 hours 10 minutes
Percent of passengers to be drawn from highway transportation	78%
Provinces and districts on the route	Ankara province – Centre
	Ankara province – Sincan district
	Ankara province – Polatli district
	Eskisehir province – Mihaliccik district
	Eskisehir province – Beylikova district
	Eskisehir province – Alpu district
	Eskisehir province – Centre
	Eskisehir province – Inonu district
	Bilecik province – Bozuyuk district
	Bilecik province – Pazaryeri district
	Bilecik province – Centre
	Bilecik province – Osmaneli district
	Sakarya province – Pamukova district
	Sakarya province – Sapanca district
	Sakarya province – Geyve district
	Sakarya province – Hendek district
Kocaeli province – Izmit	
Kocaeli province – Gebze	
Proposed stations	Ankara, Sincan, Malikoy, Yenidogan, Polatli, Bicer, Beylikova, Hasanbey, Eskisehir, Cukurhisar, Bozuyuk, Bilecik, Vezirhan, Mekece, Pamukova, Arifiye, Sapanca

3 GOVERNING LEGISLATION

All phases of the Project shall comply with the associated rules and regulations of Turkish Environmental Law (No.2872). Local legislations to be complied with are listed in the Appendix.

TRSR applied to the EIB for the financing of the Project. In this regard, in addition to Turkish legislation, TRSR needs to comply with both the guidelines of the EIB and the relevant directives of the European Union (EU). EU directives to be complied with are also listed in the Appendix.

As mentioned in the Corporate Operational Plan (2005-2007) of the EIB, and outlined in the Environmental Statement (2004) of the Bank, the protection and improvement of the environment is a priority objective of the EIB. In this respect, the EIB promotes and follows the environmental policy of the EU. In particular, the Sixth Environment Action Programme of the EU is of prime importance.

In accordance with sustainable development objectives, the EIB finances those projects which protect and improve the environment, and promote social well-being at the same time. The Bank seeks to ensure that all projects financed by the EIB

- Promote EU environmental policy;
- Comply with EU environmental law (within EU or acceding and candidate countries);
- Fulfil the requirements of the EU Directive on EIA, where applicable;
- Apply 'best available techniques', as appropriate; and
- Apply good environmental management practices, including public disclosure of the environmental information.

The current EU Directive on EIA (Council Directive 97/11/EC on the assessment of the effects of certain public and private projects on the environment dated 3 March 1997) is an amendment of the Directive 85/337/EEC introduced in 1985. The EIA study carried out for the AIHST Project complies with the requirements of the current EU Directive on EIA.

Further, taking the requirements of Article 6(3) of the EU Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora into account, the specialists of the General Directorate of Nature Protection and National Parks of the Turkish Ministry of Environment and Forestry (MoEF) have examined both the Project and the EIA Report prepared for the Project, and approved that the AIHST Project is not likely to have any significant effect on a site of nature conservation importance. In this regard, Form A (“No risk of significant effect”) was issued for the Project by the MoEF.

Besides the directives mentioned above, such well-known environmental assessment standards and criteria as those stated in the “World Bank Pollution Prevention and Abatement Handbook of 1998 were also utilised in the course of the EIA studies. In addition, relevant limit values and guidelines determined by such international agencies as the World Health Organisation (WHO) are also taken into account.

4 ENVIRONMENTAL IMPACT ASSESSMENT STUDIES

Being a relatively old project, the AIHST was planned conceptually prior to 1993, and thus it is exempted from the Turkish EIA Procedure. As mentioned earlier, however, an EIA study has been carried out as a requirement for project appraisal of the EIB. In this context, the EIA Report prepared for the Project comprises the following sections:

- Identification of existing characteristics of the Project area;
 - Studies on ecology;
 - Studies on air quality;
 - Studies on water resources;
 - Studies on existing noise levels;
 - Studies on socio-economic conditions; and

¹ In all other countries of operations, compliance with EU environmental law is subject to local conditions.

- Identification and assessment of the potential impacts of the Project on environment;
- Determination of national and/or international measures to be implemented for the prevention or mitigation of potential environmental impacts; and
- Development of suggestions regarding the measures to be taken against possible permanent impacts which might exceed the respective national and international limit values.

The primary environmental targets identified for the construction phase (particularly the first four items) of this high-speed train project are as follows:

- Zero environmental accidents;
- Control of oil spills;
- Reduction of natural resource consumption;
- Dust control;
- Noise control; and
- Minimisation of wastes and encouragement of recycling;

The EIB aims to promote sustainable development in developing countries. In this context, the interest in social issues is increasing. Thus, a pro-active approach was followed in this EIA study and due consideration was paid to social issues. With this intention, a specific public consultation and disclosure (PCD) program was prepared and implemented. In order to ensure that environmental issues received full consideration, all relevant local authorities were consulted during the PCD works.

Potential impacts and the relevant mitigation measures for the construction phase of the Project are summarized below:

- In order to minimise the potential impacts of the construction works, a relatively narrow working corridor (i.e., 20 to 50 m) was selected along the AIHST route.
- The working corridor is being expropriated in order to compensate the rights of the land owners adequately.
- Access roads are being constructed for construction vehicles and machinery in order to avoid damage to the agricultural lands located nearby.
- In cases where construction activities are needed to be carried out in agricultural areas, the actual locales of construction are being fenced so that no additional harm is given to the vegetation around the point of activity.
- Transportation of both material and equipment is being carried out in a way that adverse impacts on natural wild life are minimised.
- In order to reduce fugitive dust emissions, water is being sprayed in construction sites as well as along the access roads. In addition, during rainy days, the tires of the trucks are being washed to avoid spreading of mud from the access roads.
- The domestic solid wastes are being disposed off according to the instructions of the relevant municipality.

- The domestic wastewater generated at the sites are being collected in leak-proof septic tanks and transferred to a nearby sewerage system of the relevant municipality.
- In order to minimise potential noise impacts, construction activities are being carried out in day-time as much as possible.

The potential impacts and the relevant mitigation measures for the operational phase of the Project are summarised below:

- Domestic wastewater generated during the cruises will be collected on the train and then will be discharged to the sewerage system either in Ankara or in Istanbul stations.
- Domestic solid wastes generated during the cruises will be collected on the train and then will be disposed off either in Ankara or in Istanbul.
- If necessary, noise barriers will be constructed in order to minimise noise impacts on sensitive areas (e.g., residential areas, hospitals and schools).

5 ALTERNATIVES

5.1 Corridor Alternatives

Prior to the design of the proposed route for the AIHST, another corridor traversing the “Ankara-Sincan-Ayas-Beyazari-Cayirhan-Nallihan-Goynuk” route and joining the present route at Arifiye was considered. This route, which constitutes a shorter alternative as compared to the present AIHST route, can be visualised as a straight line in between Ankara and Adapazari shown in Figure 7. Partial construction of the “Sincan-Cayirhan” segment of this alternative high-speed train route was started in 1975. However, planning, design and construction of this segment comprising a rather long tunnel between Ayas and Cayirhan was ceased in late 1980’s mainly due to the following facts:

- At that time, the design was made for a maximum speed of 160 km/h, and this design is not in compliance with current “high speed railway” understanding and standards.
- More importantly, this alternative corridor can only operate in between Ankara and Istanbul, and has no connection to both Polatli and Eskisehir, which in the present route serve as vital junction points for Ankara-Istanbul, Ankara-Konya and Ankara-Izmir high-speed tracks.

As shown in Figure 7, the proposed route of the AIHST passing through these important junction points (i.e., Polatli and Eskisehir) forms a high-speed rail network connecting such large cities as Izmir, Konya and Bursa to both Ankara and Istanbul. Region-wise, this network planned by the TRSR will achieve an interconnection in between Marmara, Central Anatolia and Aegean regions.

Further, the AIHST Project is of considerable regional importance as it improves the transportation links in between Europe and Anatolia and even ultimately with the Middle East.



Figure 7. Planned high-speed train routes of TRSR.

5.2 Route Alternatives

Route alternatives were evaluated by the Project Engineers (YUKSEL PROJE) as well as the contractors of Phase 1 (ALARKO/OHL/G&O Joint Venture), who carried out the Feasibility and the Final Route Selection studies, respectively.

Route narrowing was accomplished considering technical and economical issues as well as environmental constraints. The current AIHST route has been finalized considering the criteria listed below:

- Physical feasibility and accessibility;
- Cost of construction;
- Duration of construction;
- Fulfilment of Project-Specific criteria;
- Maintenance and operation options and cost; and
- Easy access to stations and destinations.

The details pertinent to the route alternatives considered in Phase 1 are explained in the EIA Report of the AIHST Project.

6 CONSULTATION

The relevant EU Directives are being complied with during both the construction and operation phases of the AIHST. According to the consultation requirements of the EU Directive on EIA, the local residents to be affected by the Project and other stakeholders were informed about the Project. This PCD process was carried out diligently to inform the entire public along the AIHST route about the Project and its potential impacts. The PCD works of the AIHST Project were completed in four stages:

- Preparation of a PCD Plan and Project information documents;
- Informing key stakeholders about the Project;
- Carrying out PCD meetings; and
- Evaluation of the outcomes of the PCD works.

In this context, three PCD meetings were held in Polatli, Bozuyuk and Pamukova districts. These three districts were selected due to their importance in terms of social issues, including land acquisition and segmentation among others.

In all three locations, sufficient transportation means were provided for the local people residing in neighbouring districts and settlement areas so that all interested groups were represented in the PCD meetings (see Figures 8-10).

The major concerns raised and discussed during the PCD meetings are summarized below:

- There were no major objections and/or recommendations in the meeting at Polatli.
- In Pamukova, the main issue raised by the participants of the PCD meetings was expropriation. Questions and concerns were received regarding determination of land values as well as the time and method of payments. It is stated that the values would be determined by negotiations and mutual understanding. TRSR officials clearly stated that the land values will be determined according to the market prices.
- In Bozuyuk, the Municipality requested a route change and/or construction of bridges or underpasses to allow passengers and vehicles to cross over (or under) the proposed route and thus avoid segmentation of the residential and commercial areas.



Figure 8. Photograph from Bozuyuk meeting.



Figure 9. Another photograph from Bozuyuk meeting.



Figure 10. Photograph from Pamukova meeting.

Following the PCD meetings, the authorities of Bozuyuk Municipality visited the TRSR and requested underpasses or bridges along the part of the route traversing Bozuyuk city centre. Then, the officials of the TRSR re-visited Bozuyuk Municipality and confirmed that necessary number of underpasses and/or bridges will be constructed in the city centre.

7 ENVIRONMENTAL MANAGEMENT PLAN

In general, an Environmental Management Plan (EMP) is a tool for the regulation and control of potential adverse impacts and for the enhancement of environmental protection. With this intention, EMP's introduce and establish the standards of good practice to be adopted throughout the entire spectrum of Project works.

For the construction works along Phase 1, an adequate EMP was prepared by the contractor of the TRSR, and this document describes all necessary actions to minimise and avoid (if possible) all potential negative environmental impacts via the application of:

- Generic good practice measures which ensure construction activities are being carried out according to the standards of international best practice;
- Site-specific measures, implementation of which is mandatory in order to protect the environment;
- Environmental training;
- Contingency planning for emergencies and environmental incidents;
- Inspection and auditing;
- Proper reporting; and
- Adequate public relations.

The EMP for Phase 1 specified the requirements to ensure effective mitigation of potential bio-physical and socio-cultural impacts identified within the EIA Report. The following information are presented for each impact or activity giving rise to an impact:

- A description of the mitigation measures (actions) to be implemented;
- Designation of responsibility for ensuring full implementation of that action;
- Parameters to be monitored to track how effectively mitigation measures are being implemented; and
- Timing for implementation of the action to ensure that the objectives of mitigation are fully met.

In the course of construction, the contractors shall be committed to the adoption of all of these measures and carry out periodical inspections and audits to ensure implementation and effectiveness of these mitigation measures.

8 CONCLUSION

TRSR is promoting a high-speed train in between Ankara and Istanbul which will equal the best in Europe, providing a step change in the quality and capacity of public transport in Turkey. The AIHST will help the achievement of a number of key transport objectives; namely (i) reducing the traffic load on the state highways between the cities of Ankara, Eskisehir, Kocaeli and Istanbul; (ii) reducing the risk of traffic accidents, and (iii) reducing motor vehicle emissions.

The construction works of the AIHST could create temporary visual impacts, noise and some disruption to road traffic. These temporary effects are being minimised by strictly following the EMP's of the respective phases of the Project. In turn, construction phase of the AIHST would create direct and indirect employment opportunities in the areas located in the vicinity of the route.

Major operational impacts are not expected. In particular, landscape impacts will be at a minimum since the proposed route is mainly located in the corridor of the existing railway. Operational noise impacts would be mostly negligible along most segments of the route, but rather moderate negative impacts can be foreseen for sensitive areas like residential areas, schools and hospitals.

The present air quality of those regions where highway traffic is intense (e.g., Cankurtaran on Ankara-Istanbul Motorway and Bozuyuk on the state highway between Eskisehir and Kocaeli) is expected to improve as a result of reduction in the vehicle traffic.

As a consequence, the findings of the EIA revealed that the AIHST Project is not anticipated to generate any significant negative impact beyond the limits accepted worldwide.

In this regard, it is believed that the Project Finance to be provided by the EIB will help and catalyse the achievement of both national and international targets of the Ankara-Istanbul high-speed train.

APPENDIX – National and International Environmental Legislation

National Legislation

- Environment Act (Official Gazette dated 11.08.1983, #18132);
- Aquatic Products Act (Official Gazette dated 27.07.1973, #14607);
- Aquatic Products Regulation (Official Gazette dated 10.03.1995, #22223);
- Occupational Health and Safety Act (Official Gazette dated 11.01.1974 #14765);
- Air Quality Protection Regulation (Official Gazette dated 02.11.1986, #19269);
- Noise Control Regulation (Official Gazette dated 11.12.1986, #19308);
- Water Pollution Control Regulation (Official Gazette dated 04.09.1988, #19919);
- Solid Waste Control Regulation (Official Gazette dated 14.03.1991, #20814);
- Medical Waste Control Regulation (Official Gazette dated 20.05.1993, #21586);
- Hazardous Waste Control Regulation (Official Gazette dated 25.12.1996, #22858);
- Environmental Audit Regulation (Official Gazette dated 05.01.2002, #24631);
- Environmental Monitoring Regulation (Official Gazette dated 24.07.2002, #24825);
- Waste Oil Control Regulation (Official Gazette dated 21.01.2004, #25353);
- Industrial Air Pollution Control Regulation (Official Gazette dated 07.10.2004, #25606);
- Vegetative Waste Oil Control Regulation (Official Gazette dated 19.04.2005, #25791);
- Soil Pollution Control Regulation (Official Gazette dated 31.05.2005, #28831);
- Notice on Petroleum Waste and Waste Oil (dated 21.11.1997);
- Excavation Soil, Construction and Debris Waste Control Regulation (Official Gazette dated 18.03.2004, #25406);
- Occupational Health and Labour Safety Regulation on Temporary or Limited Time Works (Official Gazette dated 15.05.2004, #25463 numbered);
- Regulation on Control of Waste Batteries and Accumulators (Official Gazette dated 31.08.2004, #25569);
- Regulation on Protection and Use of Arable Land (Official Gazette dated 25.03.2005, #25766);
- Hazardous Chemical Substances and Products Control Regulation (Official Gazette dated 11.07.1993, #21634);
- Regulation Concerning Pit Holes in Areas Where Sewer Channels Cannot be Constructed (Official Gazette dated 13.03.1971, #13783);
- Regulation on Structures in Disaster Areas (Official Gazette dated 02.09.1997, #23098);
- Health and Safety Regulation Regarding Structural Works (Official Gazette dated 23.12.2003, #25325);
- Cultural and Natural Assets Preservation Act (Official Gazette dated 27.07.2004, #25535);

EU Legislation

- Environmental Impact Assessment Directive (97/11/EC);
- Air Quality Framework Directive (96/62/EC);

- Water Framework Directive (2000/60/EC);
- EU Waste Management Legislation (96/350/EC)
- Directive on Environmental Noise (2002/49/EC);
- Council Directive on Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC);
- Directive on The Conservation of Wild Birds (79/409/EEC);
- Commission Decision Concerning a Site Information Format for Proposed Natura 2000 Sites (97/266/EC); and
- CITES Convention and Related European Regulations (EEC/362/82, EEC/3418/83 and EC/338/97).