

Eurasia Tunnel Project

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T.C. ULAŞTIRMA VE
ALTYAPI BAKANLIĞI



yapı
merkezi



Index

- ✓ 1. Project Overview
- ✓ 2. Environmental and Social Impact Assessment
- ✓ 3. Sustainability Goals



AVRASYA TUNELİ



Part 1. Project Overview



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TOTAL PROJECT LENGTH 14.6 KM

PART 1 - 5.4 km

PART 2 - 5.4 km

PART 3 - 3.8 km

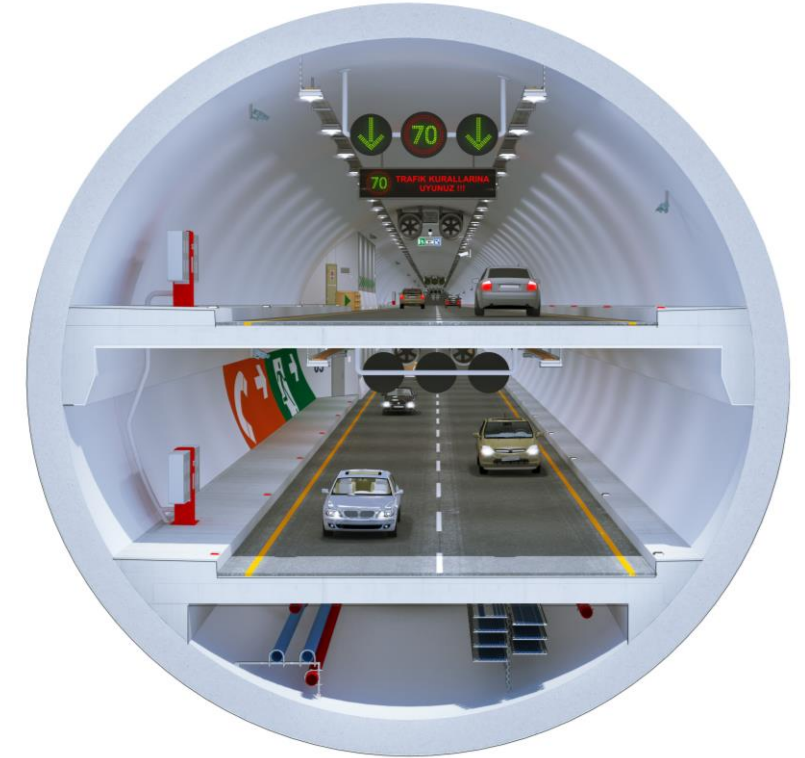
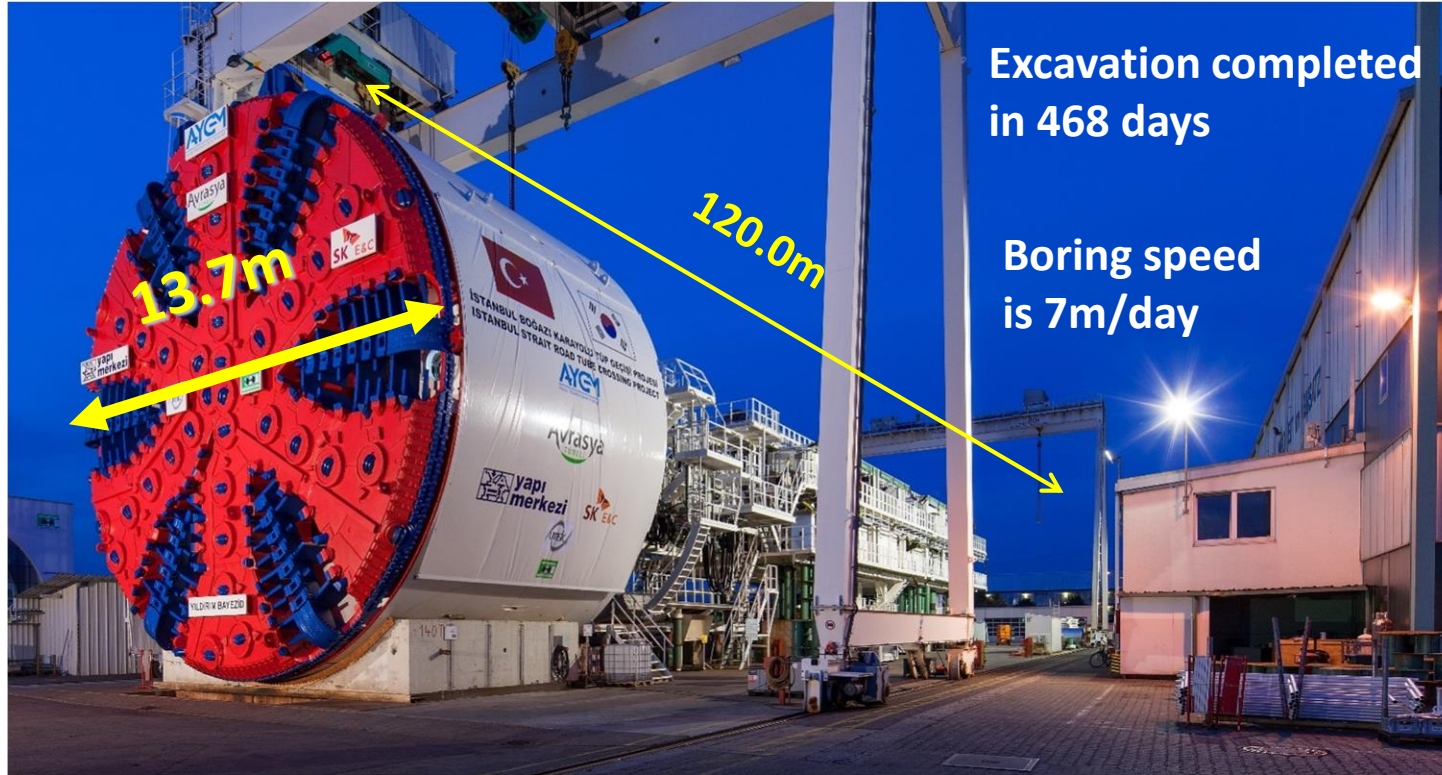


- **Project Model** : Build – Operate – Transfer
- **Total Investment** : 1,245 Billion \$
- **Traffic Capacity** : 120,000 vehicle/day
- **Date of Operation** : 22.12.2016

- **Administration** : Ministry of Transportation and Infrastructure
- **Investors** : Yapı Merkezi (Turkey), SK Ecolant (South Korea)
- **Contractor** : YMSKJV
- **Operation Period** : 25 Years 28 Days

1. Project Overview

TBM – Tunnel Boring Machine



- ❖ TBM;
- 1st in the World with cutter head power, 33,3 kW/m²
- 2nd in the World with excavation pressure, 12 bars
- 6th in the World excavation diameter, 13.7 m

1. Project Overview

Financial Structure

USD Million

EIB	150
EBRD	150
KEXIM	250
TOTAL DIRECT	550

EIB (by İşbank, Yapı Kredi, Garanti)	200
Standart&Chartared (by KSURE)	75
SMBC (by KSURE)	60
MIZUHO (by KSURE)	45
SMBC (by KEXIM)	30

TOTAL COVERED 410

TOTAL LOAN 960
%77,1

+

EQUITY 285
%22,9

=

TOTAL INVESTMENT 1,245
%100



➤ Longest tenor with 18 years in Türkiye

Part 2. Environmental and Social Impact Assessment



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❖ Out of scope of local EIA Regulation

- In accordance with International Standards
- Equator Principles
- IFC, EBRD and EIB Environmental and Social Performance Requirements
- OECD Common Approach

«Environmental and Social Impact Assessment»

❖ Course of proceeding steps

- Protection
- Mitigation Measures
- Observation
- Improvement

❖ Main subjects

- Health and Safety
- Resources and Wastes
- Air Quality
- Land Acquisition
- Vegetation and natural habitat
- Noise and Vibration
- Archaeology and Cultural Heritage
- Stakeholder Engagement

European Bank for Reconstruction and Development
«Environmental and Social Best Practice Award, 2015»



❖ Resources and Wastes

«Waste Management Procedure»

- Reduce, Reuse and Recycle
- Waste Separation



❖ Air Quality

«Air Quality Reports»

- Modelling studies
- Air Quality Monitoring Stations and sensors
- Continues observation and reporting



❖ Health and Safety

«Health and Safety Plan»

- During construction and operation
 - 93,000 and 4,402 hours HSE training
 - 14.000.000 and 1.464.249 man-hour worked with no fatalities (December'22 cut-off)
 - 19,5 and 15,2/1.000.000 hours accident rate (61,4 – industry)

❖ Land Acquisition

«Land Acquisition & Compensation Resettlement Plan»

- 81% existing road and public land
- Individual Plans (77 PAPs)

❖ Stakeholder Engagement

«Stakeholder Engagement Plan»

- Continues communication with all stakeholders and compensation
- Meeting, information note to NGOs
- Press release, brochure distribution, posters, exhibitions, ESIA reading room
- Website, call center, complaint forms etc.

❖ Noise and Vibration

«Modelling and Measurements»

- Effective control and continues measurements during construction
- Noise modelling and periodical measurements during operation



❖ Archaeology and Cultural Heritage

«Archaeogeophysical Study»

- Coordination with Museum Directorate, Cultural and Natural Heritage Conservation Council, Site Directorate, UNESCO
- Design changes and improvements (Marble Tower, ventilation stack, toll structures etc.), harmony with Historic Peninsula
- Inspiration of dome structure and Great Architect Sinan



❖ Landscaping

«Coastal Park Reinstatement Plan»

- Tree Survey (transplantation)
- 50% of the total facility is planted
- **7.300 m2** Biofiltration
- **4 times increase** in the number of trees,
- Felling of trees were not undertaken during the nesting period, trees to be felled were inspected considering bats
- A bicycle road of **2,7 km** long
- Increase in **the pedestrian band from 55m to 277m**



Part 3. Sustainability Goals



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The O&M building of the Eurasia Tunnel is designed as a **LEED Gold Certified** green building; It is managed in accordance with

- ❖ energy saving,
- ❖ recycling, and
- ❖ sustainability criteria.



LEED Gold Certificate

Eurasia Tunnel Operation and Maintenance Building is awarded with LEED Gold Certificate in 2017 by US Green Building Council.

❖ Sustainable Sites



- Site Assessment
 - ❑ **Hydrology** (Flood hazard areas, rainwater collection and reuse opportunities)
 - ❑ **Climate** (Solar exposure, minimized heat island effect potential)
 - ❑ **Vegetation** (Greenfield area)
- Construction activity pollution prevention is ensured.
- Site Development is obtained.
 - ❑ Preserve and protect from all development and construction activity 40% of the greenfield area.
- Open Space is maximized.
 - ❑ Outdoor space greater than or equal to 30% of the total site area is provided.
- **Rainwater (Stormwater) Management** is implemented.
 - ❑ Underground water tank is implemented in order to use this water in landscape irrigation.
- Heat-Island Reduction is obtained by the following.
 - ❑ **White Canopy** is implemented on car park, light color stone is used in roof.

❖ Indoor Environmental Quality



- Environmental Tobacco Smoke Control
 - ❑ Compartmentalization of Smoking Areas are provided by signage.
- Enhanced Indoor Air Quality Strategies
 - ❑ All air condition products are isolated in construction period in the site.
- **Low-Emitting Materials** including adhesives, sealants, paints and coatings are controlled according to their VOC values
- Controllability of Systems
 - ❑ **Lighting** : Individual lighting is provided for the users.
 - ❑ **Thermal Comfort** : Individual air condition controllers are provided for rooms.
- Daylight and Views
 - ❑ All windows and glasses are selected according to their **solar factors and u-values**.
- Comfort Verification
 - ❑ A survey to be held for the building users about their environmental quality.

❖ Water Efficiency



➤ Water Use Reduction

- ❑ **35 % water use reduction** provided by using LEED Certificated reservoirs, sinks, urinals and relevant products.

➤ Innovative Wastewater Technologies

- ❑ Selected relevant products provides the innovative wastewater Technologies.

➤ Water Efficient Landscaping

- ❑ All landscape plan is examined plant and tree based in compliance with water efficient landscaping.
- ❑ **Underground water tank** is implemented in order to use this water in landscape irrigation

❖ Material And Resources



➤ Storage and Collection of **Recyclables**

- ❑ Recyclable materials to be stored and collected separately including mixed paper, corrugated cardboard, glass, plastics, and metals.

➤ Construction Waste Management

- ❑ To reduce construction and demolition waste disposed of in landfills and incineration facilities by recovering, reusing, and recycling materials..

➤ Recycled Content

- ❑ Reuse or salvage building materials are transferred according to the recycling requirements and reported periodically.

➤ Regional Materials

- ❑ Product Manufacturer Supply Chain Optimization is applied and regional materials are selected.

❖ Energy And Atmosphere

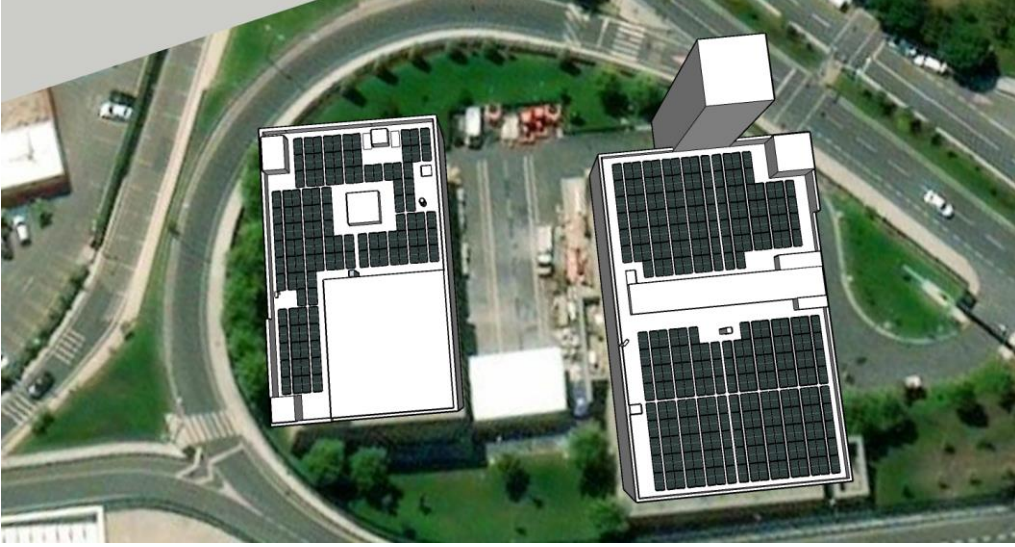


- Optimized Energy Performance
 - ❑ All systems and materials are examined including boilers, chillers, air conditioners, lighting etc.
 - ❑ **22 % Energy Performance** improvement is provided.
- Enhanced Commissioning
 - ❑ Test & Commissioning procedures are determined according to LEED requirements.
- Measurement and Verification
 - ❑ Energy Consumption of all systems listed below to be monitored separately in O&M Building.
 - ❑ Heating & Cooling
 - ❑ Ventilation and Air Conditioning
 - ❑ Pumps
 - ❑ Lighting
- Green Power
 - ❑ Carbon credit purchase agreement is accepted to help **reducing greenhouse gases.**
- Infrastructure for Electrical Vehicle Charging Stations

❖ Innovation And Design

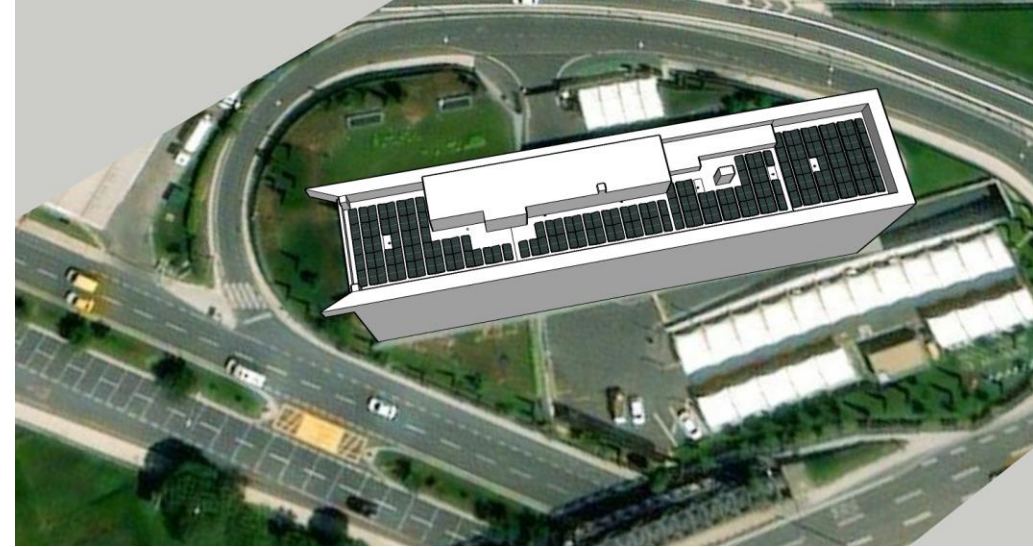


- Green Education
 - ❑ LEED oriented Green Education Plan is presented in building and project web-site.
- Sustainable Landscape Plan
 - ❑ Sustainable Landscape Plan is provided according to LEED requirements.
- LEED Accredited Professional
 - ❑ Altensis is assigned as LEED Consultant.
- Alternative Transportation
 - ❑ Public transportation with bus and minibus stations in 400 m.
 - ❑ Bicycle Storage is provided in building area.
- Recycled Content and Regional Materials
 - ❑ Extra credits are achieved due to high percentage of these items.



- ❖ Roof solar panel system which has a **240 kWe capacity** will be installed within 2023.

- ❖ Roof solar panel system will be installed to our O&M Building and Ventilation Building Asia roof.





- ❖ Eurasia Tunnel equalized the carbon footprint of its operational activities.
- ❖ All of the electricity consumed in tunnel operations is met from renewable sources and it is certified with the **I-REC** International Renewable Energy Certificate every year, thus helping to **reduce the carbon footprint** caused by electricity needs.
- ❖ ISO 14064 Carbon Neutral Certificate was received for 2021.



New Civil Engineers Magazine in UK
«Innovation award in Tunnelling Systems,
Maintenance and Renewal Method, 2021»



❖ The Pacemaker Application

- It is regulating the traffic flow speed as **70 km** reduced sudden speed changes by **69%** in the deepest point at the end of one year.
- **No traffic accident** occurred in the area of application where the traffic efficiency increased by 8,5% while traffic congestion reduced by about 53%.
- **The exhaust emissions reduced by almost 12%** contributing to the prevention of environmental pollution.



❖ LED lighting in tunnel

- It is used for the first time in Turkey which was **beyond** the Employer's Requirements.
- The LED lighting system **reduces energy consumption** and also allows drivers to easily adapt to the tunnel and daylight at the entrance and the exit of the tunnel. **Thus, comfort and safety.**



❖ Ventilation Optimization

- Studies on the ventilation modes determined during the design period have been carried out and axial fan operation mode optimized with the results, energy is saved approximately **80 % daily**.
- This study was awarded the "**Maintenance and Renewal Method**" award by the UK's most respected engineering magazine, **New Civil Engineers** in 2018.



What is the Blue Dot Network?

- ❖ It is a mechanism to certify infrastructure projects that meet robust international quality standards in respect to **environment, social, economical and governance**
- ❖ The United States, Japan, Australia, the United Kingdom, and Spain launched the Blue Dot Network as a multilateral effort to promote principles of sustainable infrastructure development around the world.
- ❖ Eurasia Tunnel Project is **selected as pilot project of Blue Dot Network** from among over 20 proposals.
- ❖ The project **successfully completed piloting progress** in April 2023 after a 3 month-auditing progress by **OECD**.
- ❖ **Official certificate** is expected to be received in Q1 of 2024 following the **establishment of BDN secretariate.**

Thank you!



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