



2016 Top Markets Report **Environmental Technologies** Country Case Study

Turkey

The overall environmental technologies market in Turkey including goods and services is valued at an estimated USD 7.3 billion (2016). Growth in the Turkish market is driven by European Union (EU) mandates and a national effort to provide basic sanitation services. Turkey ranks eighth in the 2016 Top Markets Report overall with a composite environmental technologies score of 22.1. Turkey ranks fourth for air pollution control markets with a score of 17.4. It ranks 24th for water with a score of 2.8 and 11th with a score of 1.82 for waste and recycling.



State of the Environmental Regime

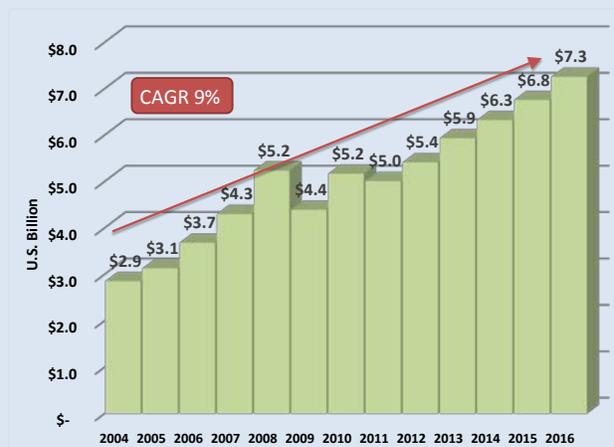
Turkey’s environmental regime is steadily improving, both in terms of rulemaking and enforcement. Turkey’s EU accession agenda is working to advance both areas as part of the environmental and climate acquis. Improvements in this area are evidenced in the Environmental Business Journal-OECD Environmental Stringency Survey, which ranks environmental regimes on a scale from 1 to 7 (with 1 being lax and 7 being the most stringent) and scored Turkey a 3.3 in 2012, a 0.8 point improvement from its 2005 score of 2.5.

Turkey’s ranking on the World Economic Forum’s 2011 Index for Regulatory Stringency of 62nd globally with a Score of 3.65 (on a similar scale to that of EBJ-OECD) echoes the results of the EBJ-OECD survey, while Turkey’s ranking in the same survey for enforcement is 55th globally with a score of 3.47. At the national level, the Ministry of Environment and Urbanization is the procurement agency for environmental projects.

On August 11, 1983, the Turkish government published Law Number 2872, better known as the Environment Law. The purpose of this law is to protect and improve the environment. Environmental law is overseen by the Ministry of Environment and Forestry, which was organized for this purpose in 2003.

While substantial progress has been made in implementation of environmental rules, the European Commission notes that additional national legislation is needed in the areas of ambient air quality, national emissions ceilings, volatile organic compounds, waste separation and reducing biodegradables in waste disposal. Furthermore, requirements related to the EU Waste Framework Directive, as well as legislation consistent with both the Mining Waste Directive and the Industrial Emissions Directive, need to be implemented.¹

Figure 1: Turkey's Environmental Technologies Market



Source: Environmental Business International with OEEI Analysis, 2016.

Market Barriers

Market barriers in Turkey in general are associated with the differences in regulation and standards' development approaches of the United States and the EU. The following barriers are most problematic for environmental technologies companies attempting to export to or work in Turkey:

1. Failure to recognize many international standards

The existing European Regulation on Standardization (EU) No 1025/2012 recognizes international standards from only three international standards bodies: the International Organization for Standardisation (ISO), the International Telecommunications Union (ITU) and the International Electrotechnical Commission (IEC). Failure to recognize other international standards bodies prohibits the application of equivalent U.S. technologies in market.

2. A preference for design based standards over performance based standards

In the United States, standards for environmental technology generally meet a performance threshold, such as mitigation of pollution below a level that the scientific method has determined is consistent with protection of human health. This

performance based approach allows for both innovation and a diversity of approaches to meet a specific goal. In the EU, many standards require technology to meet a design specification, thus prohibiting use of any technology that meets the same performance standard but lacks the design specifications.

3. Application of the precautionary principle in standards and regulations

In Europe, the identification of hazards and subsequent limitations on application is tied to unknown future costs as opposed to the risk based approach, which assesses the likelihood of both unknown and known risks against known benefits. Application of the precautionary principle in standards and regulations levies many billions of dollars on manufacturers and services providers for testing and redesign without a clear definition of the resulting benefits. Furthermore, applying the precautionary principle to environmental technologies slows their delivery to market even when the pollutant stream that is addressed poses greater harm to human health than the chemical or technology under evaluation.

4. EU assistance and subsidies for environmental projects

In an effort to help Turkey meet EU environmental standards, the EU often funds or subsidizes the development of environmental infrastructure. Within tenders, there is a strong preference for European providers, placing U.S. bidders at a competitive disadvantage.

5. Lag in implementation of EU environmental rules

Despite the differences in the regulatory and standards systems of the EU and the United States, adoption of and adherence to EU environmental rules drives development of environmental projects. The lag in adherence to EU mandates in this area has created a corresponding lag in the development and tendering of projects, thus slowing market growth overall.

6. Tendency of corruption in public tenders

U.S. companies acknowledge that transparency is common in EU funded projects and in dealing with the private

sector, as the instance of corrupt practices in tendering does occur for some public sector and local public sector tenders.

Market Opportunities

Air Pollution Controls

Turkey has made great strides in improving monitoring of air quality and has instituted a national air pollution monitoring program. The By-law on Ambient Air Quality Assessment and Management (BAQAM) set air quality standards for 13 pollutants² and expanded the network of air monitoring stations. As of early 2016, Turkey had, in place, 199 national stations in its clean air network, including four mobile stations and eight regional Clean Air Centers, with a future target total of 330 stations.³ Turkey also is in the early stages of developing a national monitoring, verification and reporting (MRV) system. Together with the World Bank Group's Partnership for Market Readiness (PMR), Turkey has mandated for approximately 2,000 firms in the electricity, cement and refining sectors to participate in a MRV pilot prior to launch of a full program.⁴

Although monitoring and control regulation is present, implementation of control measures has been slow, according to the Commercial Service Istanbul. The main sources of ambient air pollution in Turkey, according to the Ministry of Environment and Forestry, include thermal energy generation through coal-fired power plants, home heating units, motor vehicles and industrial sources.⁵ Turkey is in the process of aligning its standards with the EU *acquis*, including its national emissions limits and ambient air quality requirements, particularly volatile organic compounds (VOCs).⁶ The government is requiring the installation of flue gas desulfurization (FGD) units on all new and existing power plants, opening up high-value projects in the air pollution control market.

Technologies and Services in Demand:

- Continuous emissions monitoring systems
- Ambient air quality monitoring equipment
- Source emissions measurement technologies
- Analytical and laboratory testing goods and services
- Air pollution control equipment
- Fuel vapor control systems

Water and Wastewater Treatment

Turkey's 10th Development Plan (2014- 2018) outlines a series of challenges in protecting the country's water resources; these include institutional shortcomings, fragmented legal frameworks for water resources management, lack of a common data collection system and inadequate monitoring systems. Turkey faces imminent problems with water scarcity and, as a result, plans to implement improved monitoring systems for both surface and groundwater resources.

Municipal Water and Wastewater Treatment

The Ministry of Environment and Urbanization is leading the charge in implementing universal wastewater treatment by the 2023 deadline. Consequently, USD 50 billion of water infrastructure investments are planned through 2023 for both drinking and wastewater.⁷ The Turkish government estimates that approximately USD 2 billion annually must be invested in water infrastructure projects to meet EU standards.⁸ Roughly one-quarter of Turkey's 2,950 municipalities currently have a wastewater treatment plant.

The lack of functional treatment of wastewater has become an issue of national importance, as untreated sewage in recent years has corrupted reservoirs and other surface fresh water sources that large urban populations, such as Istanbul, rely upon.⁹ Substantial problems with non-revenue water in its existing infrastructure will drive demand for leak detections systems, smart meters and loss prevention technologies.

Technologies and Services in Demand:

- Engineering, procurement and construction services
- Pumps and conveyance systems
- SCADA systems
- Metering
- Membrane filtration
- Anaerobic digestion
- Monitoring equipment
- Testing equipment
- Sludge treatment

Process Water, Industrial Wastewater Treatment and Water Reuse

The Turkish government estimates that the private sector will need to invest USD 15 billion in water treatment technologies to mitigate pollution to levels required by EU mandates. Key sectors for process and industrial wastewater include power plants, mining, textiles, cement, iron and steel foundries, food processing, and automotive sectors and manufacturing industries.

The Action Plan on Climate Change outlines several strategies to improve water efficiency and promote reuse. Turkey is currently revising its industry strategy document to integrate water efficiency practices and is developing a national strategy to promote the use of treated wastewater and sludge products in agriculture. The plan also calls for the implementation of loss detection technology and the expansion of SCADA water management systems nationally by 2020.¹⁰

Technologies and Services in Demand:

- Engineering and construction services
- Water reuse equipment and services (process specific)
- Leak detection equipment and services
- SCADA Systems
- Smart meters
- Advanced filtration
- Membrane filtration
- Reverse osmosis
- UV disinfection
- *Anaerobic digestion*
- Nitrification
- Biological denitrification
- Testing equipment

Waste Management and Recycling

Municipal Solid Waste

Turkey has two fundamental pieces of legislation to govern waste management: the Regulation on General Principles of Waste Management and the Regulation on Solid Waste Control.¹¹

Implementation of programming has been slow, however, and capacity to develop comprehensive waste management systems is lacking.¹²

According to the Turkish Statistical Institute, 113 controlled landfill sites, four incineration facilities, four composting plants and 864 other types of recovery facilities were in operation as of 2014. Of the 28 million tons of waste collected by municipal waste collection services that year, 63.5 percent was transferred to controlled landfills, 35.5 percent was disposed of in municipal dumping sites and 1 percent was disposed of by other methods.¹³

To meet universal waste management goals via the Waste Management Action Plan, 2.1 billion Euros of investment is needed between now and the 2023 goal deadline. The plan stipulates the development of regional solid waste processing and recycling facilities and sanitary landfills. In addition, 1.9 billion Euros of the action plan budget is to be allocated toward landfill creation and management, with the remaining directed toward plastics and packaging recycling facilities. Both Turkey's Climate Change Action Plan and the Waste Management Action Plan stipulate increased resource utilization through recycling.

Remediation and upgrading of existing unsanitary landfills is also a major effort the government plans to undertake through the Waste Management Action Plan. The Ministry of Environment and Urbanization estimates that there are 1,400 of these sites, necessitating a 350 million Euro investment for closure and improvement. Full implementation of the EU Landfill Directive is to be carried out by 2025.

Technologies and Services in Demand:

- Waste collection technologies
- Sanitary landfill systems
- Environmental monitoring and analytical equipment
- Sorting machines
- Crushing and grinding machines
- Materials handling equipment
- Collection services, containers and vehicles
- Recycling process expertise
- Waste incinerators

Environmental Consulting and Engineering

Businesses that may cause environmental problems via their operations are obliged to obtain Environmental Impact Assessment reports (EIA's). Turkey's EIA requirement was first imposed in 1993, followed by various revisions over time. EIAs are evaluated by the Evaluation and Assessment Commission, which was convened by the Ministry of Environment and Forestry, and ultimately the Ministry adjudicates the environmental feasibility of the project in conjunction with the Evaluation and Assessment Commission. The Ministry of Environment and Forestry is also responsible for implementing a monitoring program.

As of November 25, 2014, further provisions were added to the Environmental Impact Assessment Regulation. These newly adopted provisions include lower thresholds with respect to the capacity and size of the proposed projects, and EIAs are now required for railways not exceeding 100 kilometers, airport runways not exceeding 2,100 meters, housing projects with a maximum of 500 residences and tourist facilities with a maximum capacity of 100 rooms. Shopping centers and ceramic facilities (with a production activity of 300,000 tons/year) are no longer exempt from EIA regulation. Further changes to Turkey's EIA policies are expected as it seeks to harmonize with the European Union EIA Directive.

Key Technologies in Demand:

- Environmental Impact Assessment

ETWG Agency Initiatives and Programs

U.S. Environmental Solutions Toolkit

The Toolkit compiles the U.S. Environmental Protection Agency's (U.S. EPA) environmental regulations, related underlying research and a list of U.S. companies that provide technologies necessary to implement similar environmental regulatory actions abroad. The Toolkit is used by U.S. EPA officials or environmental consultants as a reference tool within bilateral activities that focus on addressing environmental concerns.

Power-Gen International Buyer Program

Power-Gen, one of the leading U.S. power generation equipment and services trade shows, has partnered with the U.S. Department of Commerce's International Buyer Program to encourage foreign participation in the show. This platform is leveraged to discuss policies and exchange technical information regarding power plant emissions control with Turkish participants and to foster business relationships between Turkish end-users and U.S. emissions control providers.

WasteExpo International Buyer Program

WasteExpo, one of the leading U.S. waste management trade shows, has partnered with the U.S. Department of Commerce's International Buyer Program to encourage foreign participation in the show. This platform was leveraged to exchange relevant technical information with Turkish participants and to introduce Turkish buyers to U.S. waste management technology providers.

Water Environment Federation Technical Exhibition and Conference (WEFTEC) International Buyer Program

The U.S. Department of Commerce, through its International Buyer Program, leads a delegation of Turkish officials and business representatives to WEFTEC to explore relevant U.S. technologies and work with U.S. exporters on approaches to water resource management.

Market Contacts and References

Ministry of Environment and Urbanization
<http://www.csb.gov.tr/>

General Directorate of State Hydraulic Works
<http://www.dsi.gov.tr/>

Iller Bank
<http://www.ilbank.gov.tr/>

Environment Protection and Packing Wastes Utilization Foundation <http://www.cevko.org.tr/>

Istanbul Water and Sewerage Authority – ISKI
<http://www.iski.gov.tr/>

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⁶ European Commission. EU Accession Progress Report 2014.

⁷ U.S. Commercial Service Istanbul.

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⁹ Business Monitor International, Water Industry Forecast, 2015

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¹² U.S. Commercial Service Istanbul

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