OECD Environmental Performance Reviews

Turkey

HIGHLIGHTS

2019

OECD

BETTER POLICIES FOR BETTER LIVES

OECD Environmental Performance Reviews

WHAT ARE EPRs?

OECD Environmental Performance Reviews (EPRs) provide evidence-based analysis and assessment of countries' progress towards their environmental policy objectives.

They promote peer learning, enhance government accountability and provide targeted recommendations to help countries improve their environmental performance. They are supported by a broad range of economic and environmental data. Each EPR cycle covers all OECD member countries and selected partner countries.

All reports, and more information, are available on the EPR website: http://oe.cd/epr.

THE THIRD EPR OF TURKEY

Turkey is a founding member of the OECD. The previous *Environmental Performance Reviews* of Turkey were published in 1999 and 2008. The report reviews Turkey's environmental performance since 2008. The process involved a constructive and mutually beneficial policy dialogue between Turkey and the countries participating in the OECD Working Party on Environmental Performance (WPEP). The OECD is grateful to the two examining countries: Korea and Portugal.

The EPR provides 36 recommendations, approved by the WPEP on 7 November 2018. They aim to help Turkey to advance towards a greener, low-carbon economy, to better manage its natural assets and to improve its environmental governance and management. Particular emphasis is on climate change mitigation and adaptation, as well as urban wastewater management.

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BETTER POLICIES FOR BETTER LIVES

"Turkey has significant opportunities for accelerating the transition towards a low-carbon, greener and more inclusive economy, especially by investing in energy efficiency and renewables to mitigate its climate change impact."

Rodolfo Lacy
OECD Environment Director

Turkey

Overview

Since 2008, Turkey's strong economic growth has been relatively decoupled from air emissions, energy use, waste generation and water consumption. However, in absolute terms these environmental pressures will continue to increase. More progress is needed in the transition to a low-carbon, circular economy.

OPPORTUNITIES

- **Large potential and increased installed capacity of renewable energy sources**
- **Major progress in wastewater management**
- **Regulatory framework increasingly aligned with EU standards**
- **Substantial environmentally related tax revenues**
- **Growing environmental investment by the private sector.**

CHALLENGES

- **Highly carbon-intensive economy reliant on fossil fuels**
- **Rapidly increasing greenhouse gas emissions**
- **Poor air quality in large cities and industrialised regions**
- **Insufficient recovery and recycling of municipal solid waste**
- **Substantial environmentally harmful subsidies**
- **Exposure to climate change impacts.**

TURKEY 2017

Population
80.7 million

GDP/capita
(current purchasing power parity)
USD 26 500
(OECD average is 43 700)

Total area
770 000 km^2

Population density
102.8 inhabitants/km^2
(OECD average is 35.4)

Currency
Turkish lira (TRY)
In 2017, USD 1 = TRY 3.65

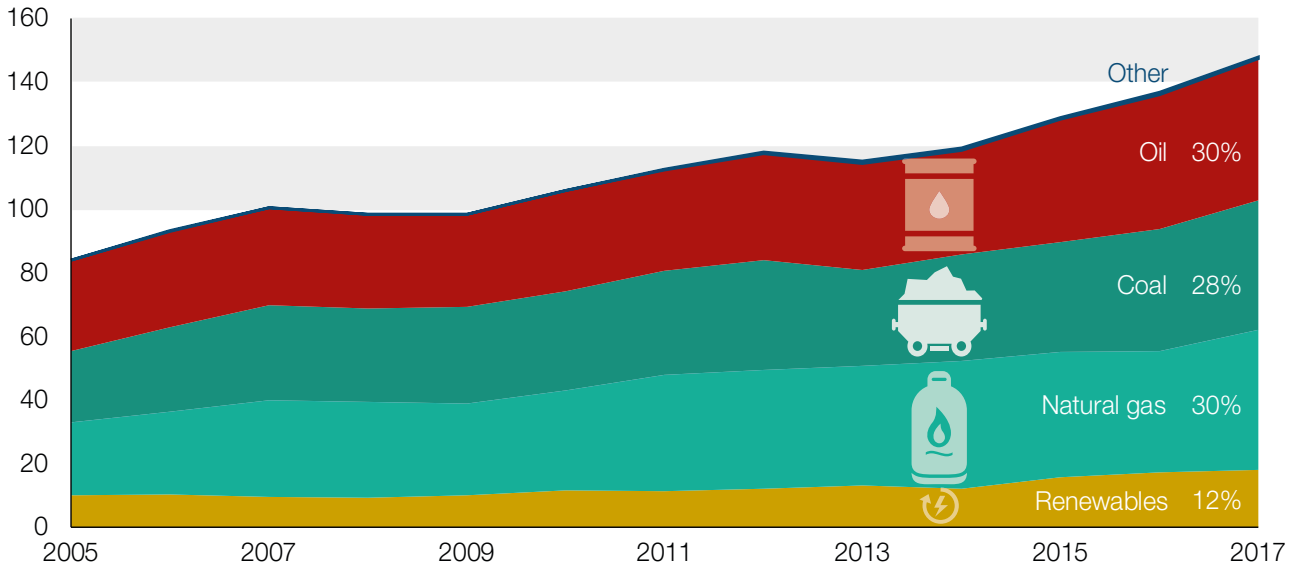
Environmental performance | **key trends**

Turkey is the eighth largest OECD economy and the fastest growing. The country's rapid economic development and population increase are likely to aggravate environmental pressures.

ENERGY

- Fossil fuels represent 88% of the energy mix. The country is highly dependent on imported energy, notably oil and natural gas (Figure 1).
- The total primary energy supply has increased by 76% since 2005 to meet the fast-growing energy demand.
- Turkey plans to reduce import dependency and ensure energy security by increasing domestic production of coal, renewables and nuclear energy, and promoting energy efficiency.
- Installed capacity of renewable energy sources has increased substantially in recent years, but the share of renewables in the energy mix has remained stable since 2005.

Figure 1. **Fossil fuels represent 88% of Turkey's energy mix,** total primary energy supply, million tonnes of oil equivalent



Note: Breakdown excludes electricity trade.
Source: IEA (2018), World Energy Statistics and Balances (database).

Next steps | Energy

- Reduce the share of fossil fuels, especially coal, in the energy mix and increase the share of geothermal, solar and wind energy.
- Set measurable energy efficiency objectives in the power, residential and transport sectors.
- Provide more economic incentives for energy efficiency investments in public and private buildings.

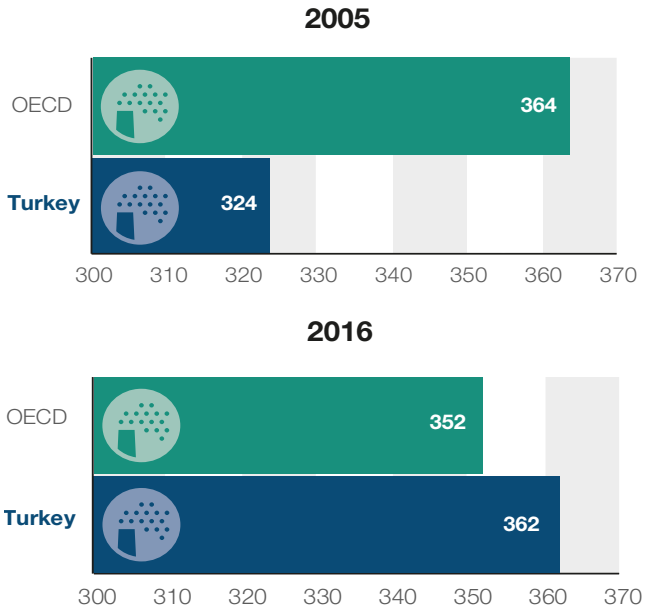
AIR QUALITY

- Ambient air quality requirements for most pollutants are expected to align with EU standards by 2024.
- Population exposure to fine particulate matter exceeds WHO guidelines, resulting mortality and welfare costs of premature deaths have increased since 2005 (Figure 2).

WASTE AND MATERIAL MANAGEMENT

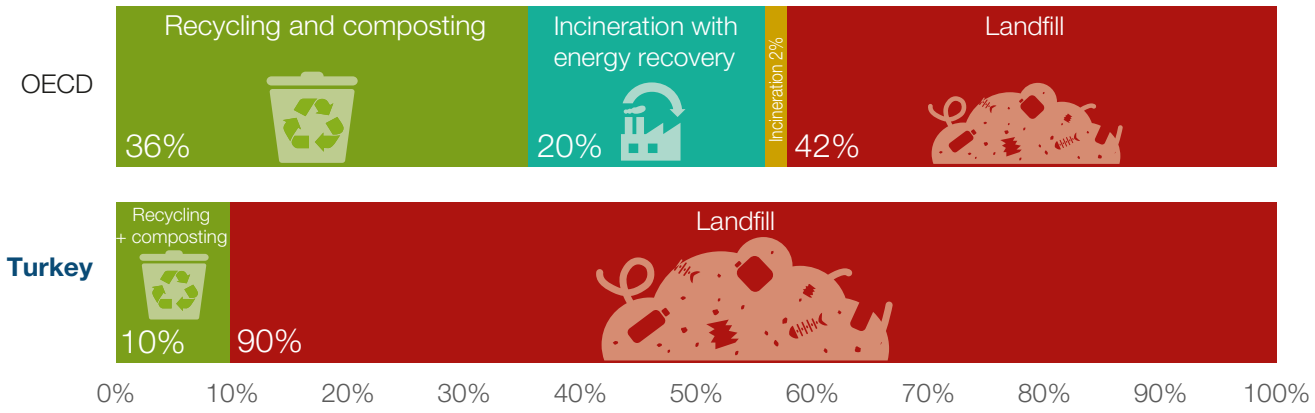
- Some progress has been made in expanding waste treatment infrastructure. About 90% of municipal waste is sent to landfills, and only a small quantity is recovered (Figure 3). Only 9% of municipal waste was collected separately in 2016.
- Material productivity is well below the OECD average and started growing only in recent years.

Figure 2. **Mortality and welfare costs of air pollution have risen since 2005,** mortality from exposure to particulate matter and ozone, per year per million people



Source: OECD (2018), "Mortality and Welfare Cost from Exposure to Air Pollution", OECD Environment Statistics (database).

Figure 3. **Over 90% of waste is landfilled**



Source: OECD (2018), "Municipal waste, generation and treatment", OECD Environment Statistics (database)

BIODIVERSITY

- Turkey has exceptionally rich biodiversity, 31% of species are endemic. A relatively low share of threatened species compared to other OECD member countries.
- Progress has been made in expanding forest cover thanks to afforestation, erosion control, rehabilitation and regeneration.
- Terrestrial and marine protected areas have increased to 9% of the territory, which is still significantly below the Aichi targets.

Next steps | Air quality, waste management and biodiversity

- Formulate a nationwide air pollution reduction strategy, integrated with energy and transport policies and plans.
- Adopt a comprehensive material resource policy and promote separate collection of municipal solid waste.
- Clarify responsibilities for biodiversity protection across ministries, improve biodiversity monitoring and inventory activities.

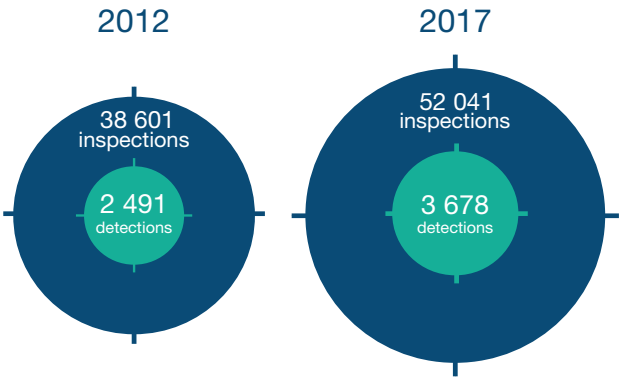
Environmental **governance** and management

The environmental regulatory framework has been substantially strengthened, primarily as a result of continued efforts to harmonise its environmental legislation with EU directives. However, progress in implementing EU standards and best practices has been uneven across policy areas.

INSTITUTIONAL AND REGULATORY FRAMEWORK

- A centralised system of environmental governance, with environment-related responsibilities fragmented across several ministries.
- Strategic environmental assessment does not cover local spatial plans, leaving an important evaluation gap in land-use planning.
- Turkey plans to introduce environmental permitting based on best available techniques in 2024.

Figure 4. **Inspection numbers have been rising faster than non-compliance detection**

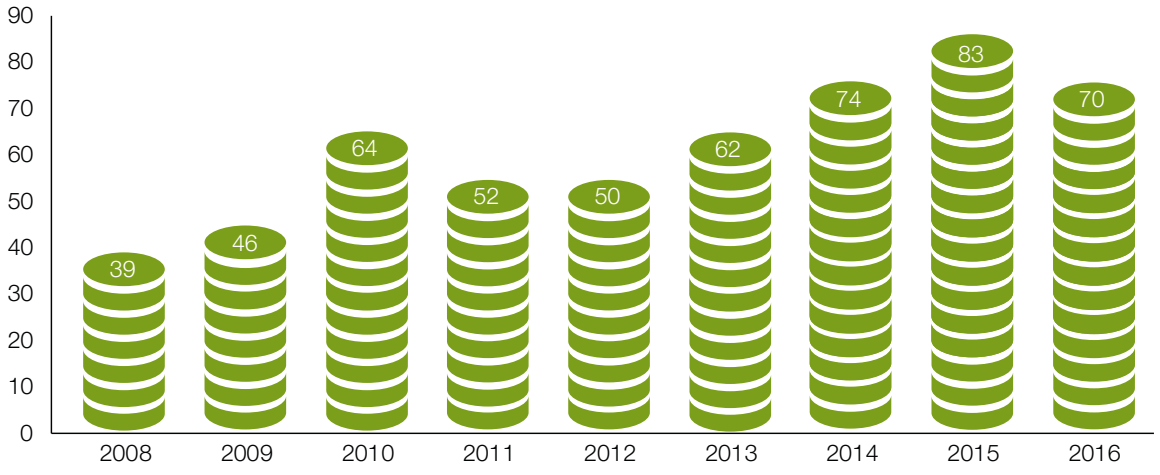


Source: Country submission.

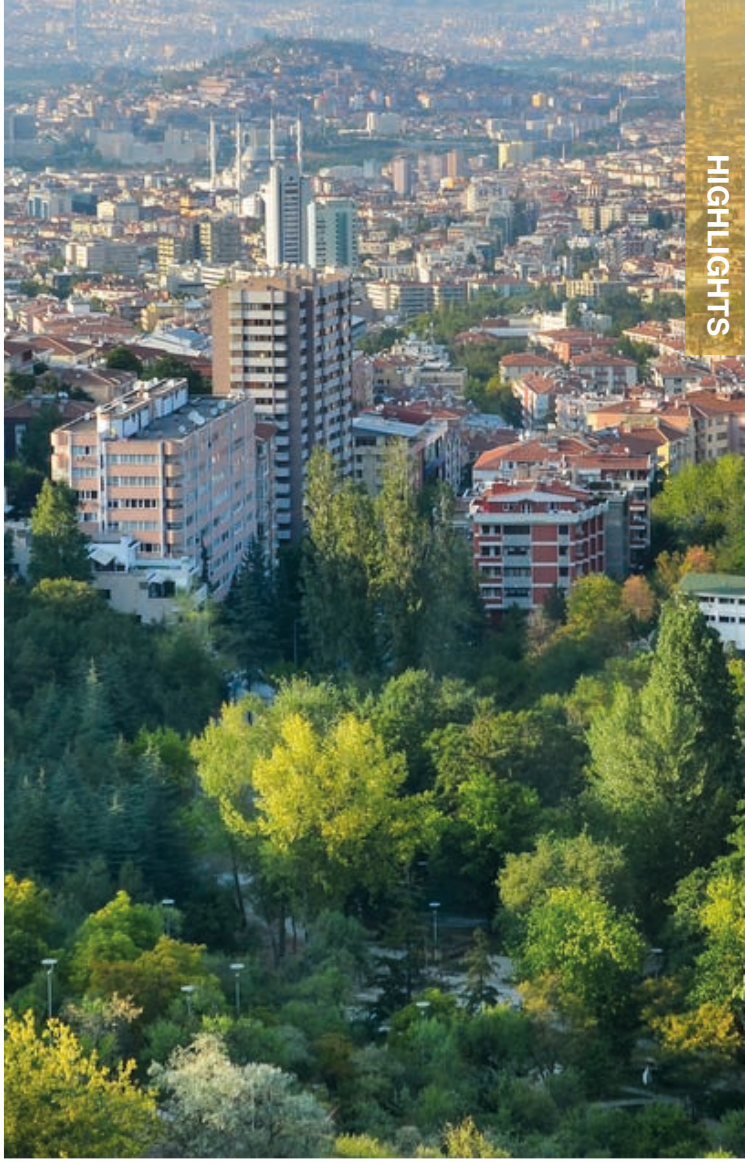
COMPLIANCE ASSURANCE

- Turkey is starting to implement risk-based planning of compliance monitoring. However, Inspection numbers have been rising faster than non-compliance detection (Figure 4).
- Environmental enforcement relies largely on administrative fines, whose annual amount has nearly doubled in real prices since 2008 (Figure 5).

Figure 5. **Administrative fines are increasingly used in enforcement,** revenue, million Turkish liras, 2010 prices



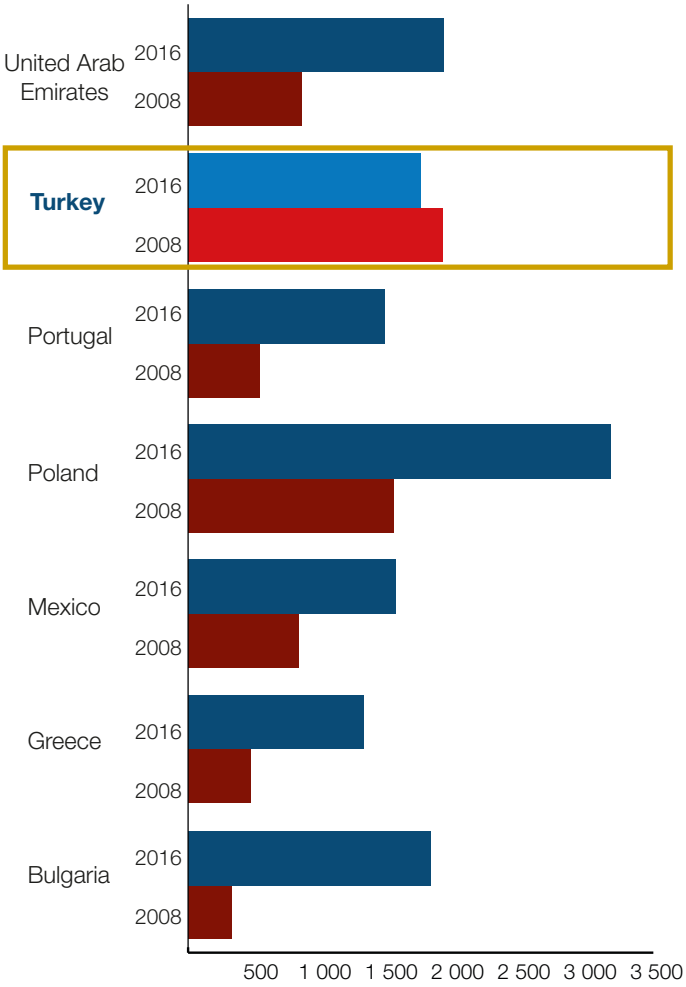
Source: MEU (2016), Environmental Inspection Report of Turkey: 2015, Ministry of Environment and Urbanization, Ankara.



COMPLIANCE ASSURANCE

- Environmental authorities are not proactive in promoting green business practices. Turkey lags behind similar-size OECD economies in environmental management system certifications, which have declined since 2008 (Figure 6).

Figure 6. **Turkey lags behind in EMS certifications,** number of new certifications per year



Source: ISO (2017), ISO Survey 2016, International Organization for Standardization, Geneva.

ENVIRONMENTAL INFORMATION

- Some environmental data are available to the public online, but access to information held by public institutions is hampered by "economic interest" restrictions and fees.
- Turkey has not yet created a pollutant release and transfer register (PRTR); environmental information on private enterprises is not publicly available.

Next steps | governance

- Strengthen the role of environmental boards in horizontal co-ordination of environmental aspects of energy, transport and other sectoral policies.
- Implement risk-based planning for environmental inspections in all provinces.
- Expand sector-specific green certification programmes, establish binding environmental criteria for public procurement.
- Remove restrictions and fees for access to environmental information, establish a PRTR open to the public.

Case studies

ZERO-WASTE PROJECT IN PUBLIC BUILDINGS

In the context of the "zero-waste" initiative, under the patronage of the First Lady, the MEU has recently implemented a zero-waste project in the ministry's premises. Waste is collected separately, and food leftovers are sent to animal shelters. Compost units have been installed to produce manure. Thanks to this initiative, waste from the ministry's premises is no longer sent to landfills.

Awareness campaigns are organised across the country. The government aims to expand this project to all ministries in 2018 and to all public institutions and public spaces by 2023.

ENHANCING INCENTIVES FOR INDUSTRIAL ENERGY EFFICIENCY

Turkey requires industrial establishments using more than 1 000 toe to be certified to the ISO 50001 standard. Energy management systems (EnMS) help monitor consumption and identify cost-saving opportunities while improving environmental performance. EnMS are particularly valuable in energy-intensive industrial sectors, where it is a significant input cost. The use of EnMS is growing around the world. Global certifications for the ISO 50001 standard for energy management grew to nearly 12 000 in 2015 (85% in Europe). In 2016, Turkey was estimated to have only around 100 of 1 200 (8%) large energy-intensive industrial installations applying the standard. Firms in Turkey can volunteer to reduce their energy intensity by an average of 10% over three years in exchange for having 20% of their energy costs subsidised in the first year. Only seven voluntary agreements have been completed; another eight are within the three-year monitoring period.

AGRICULTURAL INSURANCE SYSTEM: A RISK-SHARING MECHANISM TO INCREASE RESILIENCE TO CLIMATE DISASTERS

The Agricultural Insurance System (TARSIM) was devised to compensate farmers for losses in their agricultural activities resulting from extreme weather conditions. Before that, only a small share of producers had sufficient funds to be covered by private insurance. TARSIM's coverage has grown significantly over the past decade, and now reaches about 400 000 agricultural producers. The system works as a public-private partnership, with the government covering part of the insurance costs to be paid by producers. Continued government support and diversification in insurance should lead to more insurance applications. The system will have to ensure its sustainability in a context of increased transaction and implementation costs and uncertain climate change impacts.

PRIVATE SUSTAINABILITY INITIATIVES ILLUSTRATE POTENTIAL FOR PROGRESS

Arçelik A.Ş., a Turkish firm which manufactures household appliances, air conditioners and televisions, is listed on the Borsa Istanbul Sustainability Index. It is on the "A list" ranking on CDP's Climate Performance Leadership Index, and was rated "AAA" on the MSCI Global Sustainability Index. It reduced CO_2 emissions from its Turkish operations by 56% between 2010 and 2016, and reduced water withdrawal per product by 31% between 2012 and 2016. The company's annual Sustainability Report provides detailed accounting of GHGs, energy consumption, water withdrawal, use of raw materials and waste. With 10 research and development (R&D) centres in Turkey and more than 1 300 R&D staff, the company has significant potential for eco-innovation. A Supplier Sustainability Index planned by Arçelik A.Ş. will also help drive improved environmental performance across suppliers and increase demand for environmental goods and services.

Green growth

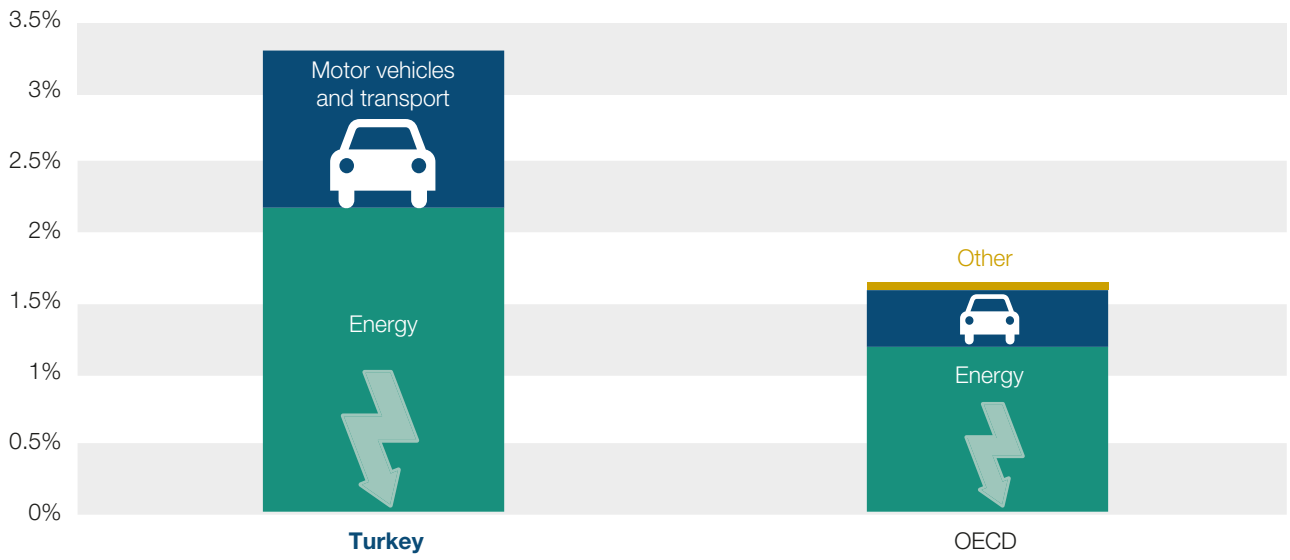
Environmental and sustainable development considerations have been increasingly integrated into National Development Plans. There are signs of emerging eco-innovation, particularly in the automotive and renewable energy sectors, and new industry-led initiatives in improving environmental sustainability.

GREENING TAXES

- Turkey has among the highest rates of environmentally related taxes as a percentage of GDP in the OECD, largely as a result of high taxes on gasoline and diesel (Figure 7).
- The feed-in tariff for renewable energy provided a strong incentive for investment.
- The vehicle taxation system provides some environmental incentives, but generally pushes consumers towards older, used vehicles with higher emissions.
- Tax exemptions for petroleum products and coal aid to poor families for heating are the bulk of environmentally harmful subsidies.

51% of carbon emissions from energy use were unpriced in 2015, only **21%** of emissions were prices above EUR 30 per tonne of CO_2

Figure 7. **Share of environmentally related tax revenues is among the highest in the OECD,** Environmentally related tax revenues as percentage of GDP in 2016

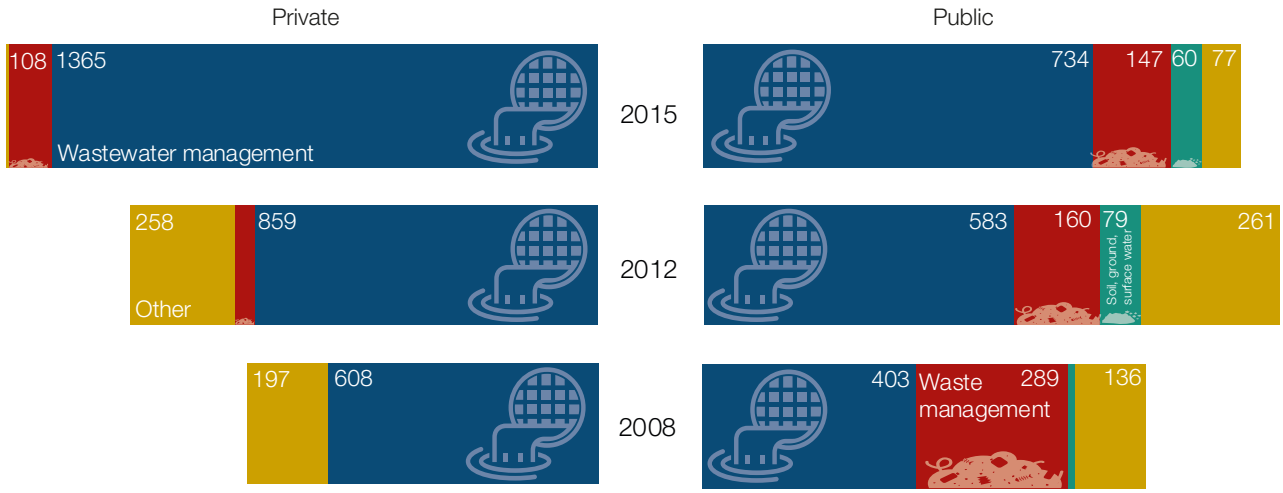


Source: OECD (2018), "Environmental Policy: Environmental Policy Instruments", OECD Environment Statistics (database).

GREEN INVESTMENT AND ECO-INNOVATION

- Business environmental spending has increased since 2008, but public environmental investment has not, both going primarily to wastewater management (Figure 8).
- About 33% of EU funding in Turkey was allocated to environment-relevant areas, more than EUR 1 billion over 2014-20.
- Investments in renewable energy and new ecolabel legislation are expected to boost the domestic market for environmental goods and services, but R&D expenditure remains low.

Figure 8. **Private sector environmental investment has increased, while public investment has not,** million USD, 2010 prices, purchasing power parities



Note: Gross fixed capital formation and acquisition less disposals of non-produced non-financial assets.
Source: Eurostat (2018), Environmental protection expenditure (database); OECD (2018), "OECD Economic Outlook No. 102 (Edition 2017/2)", OECD Economic Outlook: Statistics and Projections (database); OECD (2018), "PPPs and exchange rates", OECD National Accounts Statistics (database).

Next steps | green growth

- Reform the system of vehicle and fuel taxation to remove exemptions and integrate emissions criteria.
- Phase out tax exemptions for fossil fuel consumption; gradually replace coal aid to poor families with support for transition to cleaner alternatives.
- Expand the use of instruments that leverage private sector investment in environmental projects, including public-private partnerships, green banks and green bonds.
- Strengthen the policy framework for eco-innovation by increasing spending on environmental R&D, supporting technology demonstration and commercialisation.

Climate change

Driven by strong economic and population growth, rising income levels and continued reliance on a carbon-intensive fuel mix, Turkey's greenhouse gas (GHG) emissions have increased substantially over the past decade. Nonetheless, it remains the only OECD member country without a climate mitigation pledge for 2020.

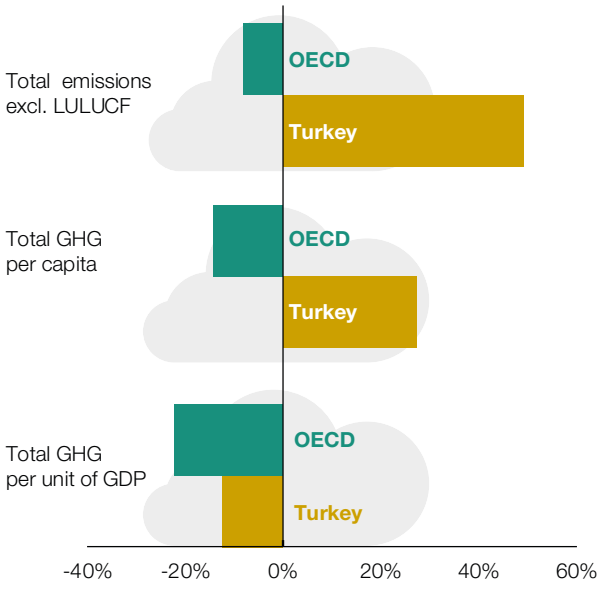
GREENHOUSE GAS EMISSION TRENDS

- Turkey's increase in GHG emissions over 2005-16 (+49%) was the largest in the OECD.
- Emissions per capita are still below the OECD average but are rising rapidly. Emissions intensity is declining, but not as much as the OECD average. (Figure 9).

MITIGATION GOALS AND STRATEGIES

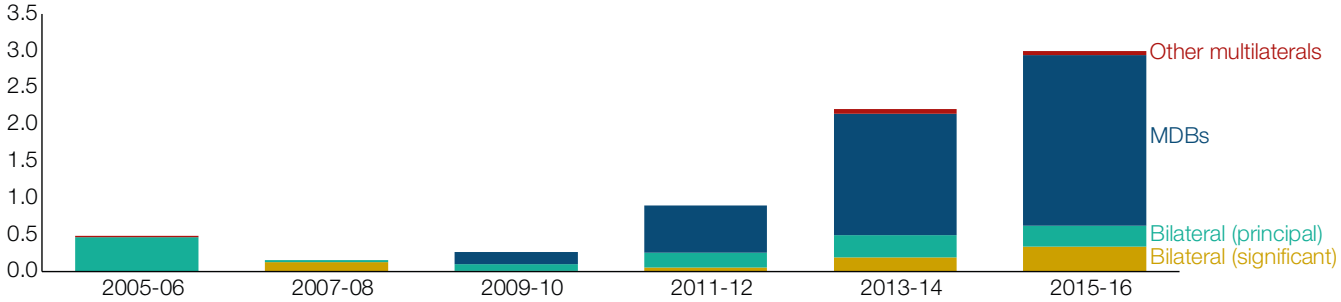
- Turkey has signed but not ratified the Paris Agreement. Its Intended Nationally Determined Contribution (INDC) 2030 mitigation target would entail more than doubling of GHG emissions from the 2015 level. Turkey does not plan a peak in its emissions.
- The National Climate Change Strategy and Action Plan have set out milestones and activities but lack implementation monitoring.
- Turkey benefits from significant levels of bilateral and multilateral funding for mitigation activities (Figure 10). However, it sees access to the Green Climate Fund as a precondition to ratifying the Paris Agreement.

Figure 9. **Emissions are expected to continue growing rapidly,** percentage change 2005-16



Note: Projections include emissions/removals from land use, land-use change and forestry (LULUCF). GDP is expressed in 2010 USD prices, purchasing power parities. *Source:* MEU (2016), Turkey's Sixth National Communication under the UNFCCC, Ministry of Environment and Urbanization, Ankara; OECD (2018), "Air and climate: Greenhouse gas emissions by source", OECD Environment Statistics (database); OECD (2018), "Aggregate National Accounts, SNA 2008 (or SNA 1993): Gross domestic product", OECD National Accounts Statistics (database).

Figure 10. **Climate-related development finance to Turkey has increased,** USD billion, commitments, 2016 prices

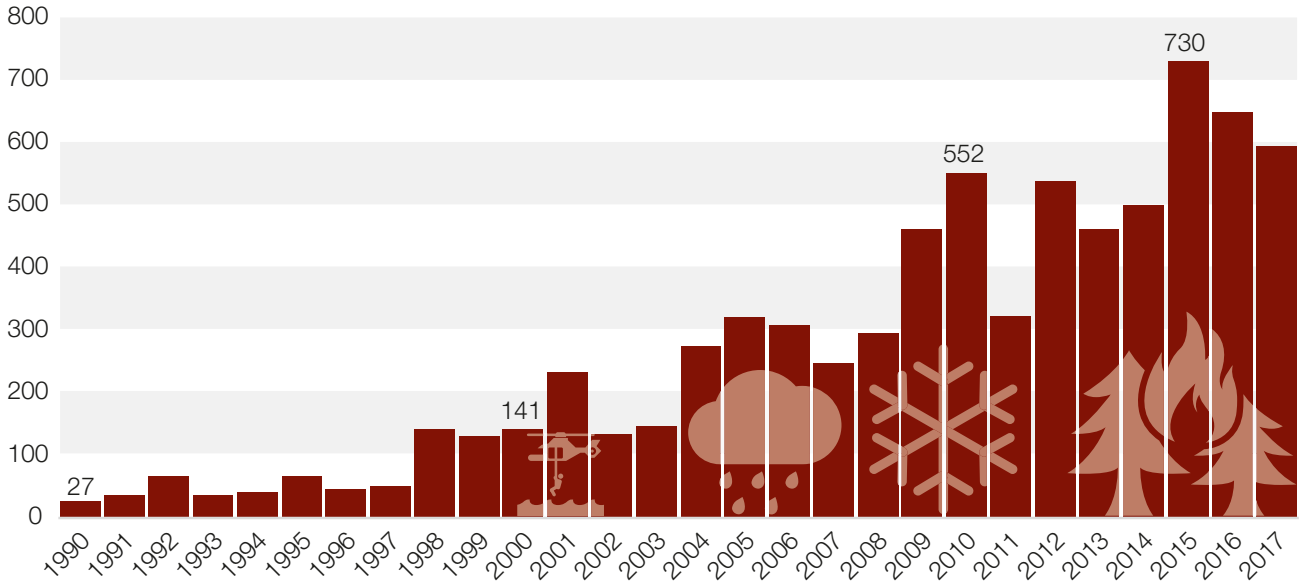


Note: Increase after 2012 is largely due to enhanced reporting of multilateral finance to the OECD Creditor Reporting System. A "principal" objective score is given to an activity specifically promoting the objectives of the UNFCCC as one of the principal reasons for undertaking the activity. Activities marked "significant" have other prime objectives, but have been formulated or adjusted to help meet climate concerns.
Source: OECD (2018), "Creditor Reporting System: Aid activities", OECD International Development Statistics (database).

ADAPTATION POLICY

- There is increasing evidence of climate change impacts, including serious floods and droughts (Figure 11).
- The National Adaptation Strategy and Action Plan calls for mainstreaming adaptation in relevant sectors. These efforts have mainly taken place in the water sector.
- Adaptation activities have so far focused on building the evidence base. Knowledge gaps remain on sectoral vulnerability and socio-economic impacts.

Figure 11. **The number of extreme weather events has increased**



Source: TSMS (2018), State of the Climate in Turkey in 2017, Turkish State Meteorological Service, Ankara.

Next steps | climate change

- Ratify the Paris Agreement and strengthen the INDC, adopt a long-term low-emission strategy that integrates climate and energy objectives.
- Regularly monitor and evaluate implementation of all climate-related policy documents.
- Reduce carbon intensity of power and heat generation by increasing energy efficiency and renewable energy use.
- Set and implement priority actions and quantitative energy efficiency targets in key economic sectors.
- Strengthen mainstreaming of adaptation into relevant policy areas and in policy and project appraisal, support local authorities in preparing their climate change adaptation plans.

Urban wastewater management

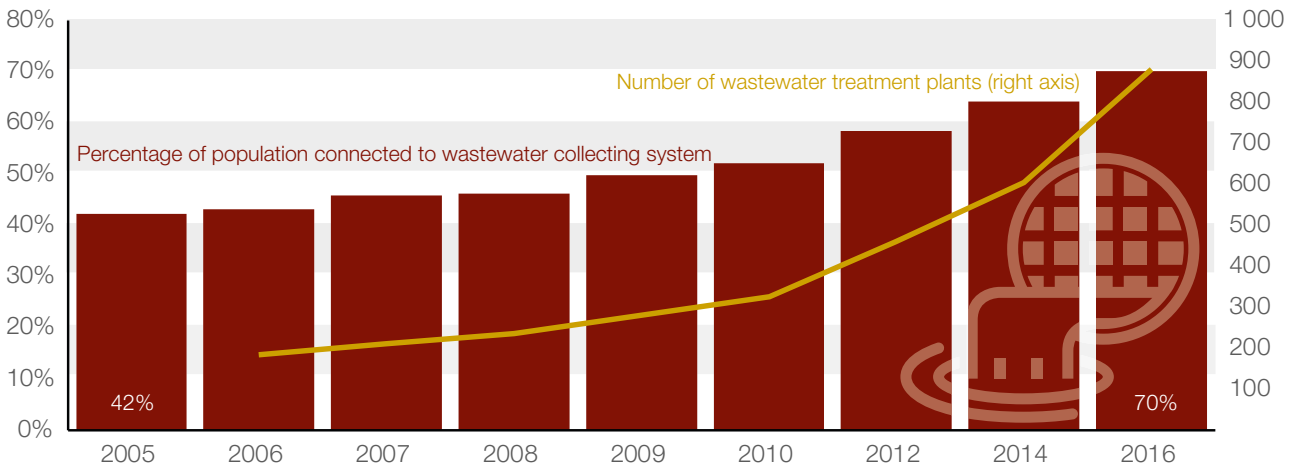
Surface water quality, considered low in many water bodies, is deteriorating due to insufficient pollution control. The problem of discharges of untreated wastewater from urban and industrial areas is exacerbated by the buoyant economy. At the same time, Turkey has made a remarkable effort to increase wastewater collection and treatment in metropolitan areas.

POLICIES AND REGULATIONS

- Turkey has identified 25 hydrological basins, completed river basin protection action plans in all of them and designated water bodies sensitive to eutrophication.
- Regulation of water pollutants is increasingly based on conditions of water bodies at the river basin level, water quality monitoring has improved.

Population access to wastewater treatment plants increased from **42%** to **79%** over 2005-16

Figure 12. **Water supply and wastewater treatment expenditures are growing fast,** billion USD, 2010 purchasing power parities

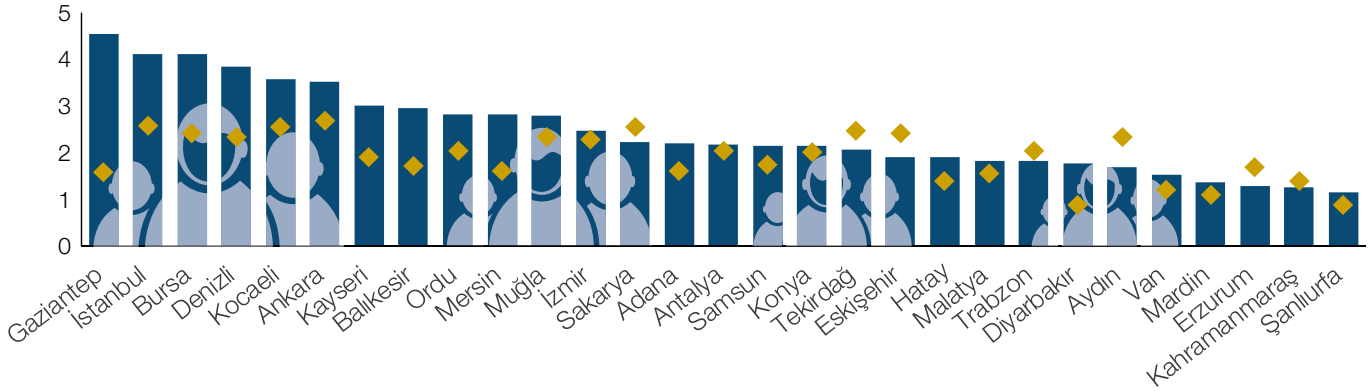


Source: OECD (2018), "Water: Wastewater treatment", OECD Environment Statistics (database). TurkStat (2018) Wastewater statistics

INVESTMENT AND FINANCING

- Turkey has made significant progress in urban wastewater management as a result of continuous investment of national and international funds. However, 14% of residential wastewater is discharged without treatment (Figure 12, see p. 14).
- There is a risk of overinvestment to reach stringent national effluent standards that go beyond EU standards for nutrient removal.
- Only a small number of Turkish water utilities have potential for tariff increase to finance new investments without harming the poorest households. (Figure 13).
- The government has taken first steps to establish a benchmarking system for the provision of water supply and sanitation services, including the structure and level of tariffs, and quality of service.

Figure 13. **Household water and wastewater tariffs exceed affordability limits in many provinces,** US dollars per square metre, household tariff (blue), affordable tariff (gold)



Note: Data are from 2016 and expressed in USD 2010 PPP; the threshold used for calculation of the affordable tariff per cubic metre is 2.5% of household income of the lowest quintile in the SKI service area.
Source: World Bank (2016), Turkey Sustainable Urban Water Supply and Sanitation, Washington, DC; OECD (2018), "Aggregate National Accounts, SNA 2008 (or SNA 1993): Gross domestic product", OECD National Accounts Statistics (database).

Next steps | urban wastewater management

- Adjust wastewater treatment standards based on consideration of carrying capacity of receiving water bodies and robust cost-benefit analysis to avoid excessive capital and operational infrastructure costs.
- Harmonise national and municipal planning of water infrastructure development and management.
- Develop and endorse robust and realistic financing strategies that cover operation and maintenance costs of existing assets, new investments and further developments identified in river basin management plans.
- Issue national guidelines for improving water supply and sanitation services, encourage better utility performance to facilitate financing of further investments and operational costs and keep tariffs affordable.

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Turkey 2019

MORE INFORMATION

OECD Environmental Performance Reviews: Turkey: 2019
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