

Energy Efficiency and Climate Change

The daily growth of the urban population, rising urbanisation and changes in consumption habits, and the increasing demand for energy which they bring with them, pose important threats to our climate and planet. Realizing that climate change is a serious reality, ENKA is making efforts to fulfil its responsibilities for leaving future generations a world that can be lived in, and to reduce the negative impacts of its activities on the environment and the climate to a minimum.

Climate change is an important issue that constitutes a risk to the activities that ENKA carries out around the world, in terms of them

being sustainable. At the same time, climate change constitutes an opportunity for the construction and real estate sectors, in which ENKA is active. The design of buildings and the production of technologies that use less energy and are environmentally friendly form part of ENKA's sustainability strategy.

In 2017, ENKA embarked on an effort to measure its carbon and water footprints to make the potential impacts of its activities that might lead directly or indirectly to climate change visible, and to be able to set targets for its efforts to reduce those impacts.

Carbon footprint calculations have been calculated in the scope of ENKA Headquarters, the ENKA Power Adapazarı, Gebze and İzmir power plants; Çimtaş Steel; Cimtas Pipe; ENKA Pazarlama; ENKA Schools - Istanbul; ENKA Sports Club; ENKA TC, CCI, MKH and OMKH investments in Russia, and two of ENKA's projects - namely, the Kashirskaya Multi-Functional Trade Center in Moscow and the CSG-1, CSG-2 and Area 81 sites of the SCPx Pipeline Project in Georgia.

Another important aspect of ENKA's energy efficiency and climate change efforts is the training it provides to its employees with the intent to increase the level of awareness and increase their sensitivity on energy conservation. As part of the Environmental

Management System, environmental engineers and trainers are employed at ENKA Headquarters, in the subsidiaries and on the projects. Environmental training starts from the induction and continues throughout the project, ensuring that all employees become part of the energy and climate change efforts.

Energy Consumption

The levels of energy consumption stemming from fuel consumption, electricity consumption, consumption for heating and cooling purposes and hot water consumption in 2016 and 2017, measured in terajoules (TJ), are shared in the following table:

Annual In-House Energy Consumption

	2016	2017
Fuel Consumption (TJ)	161,468	157,873
Electricity Consumption (TJ)	858	881
Consumption for Heating and Cooling Purposes (TJ)	11.3	14.7
Hot Water Consumption(TJ)	492	461
TOTAL (TJ)	162,829	159,230

Total energy consumption is observed to have declined from 162,829 TJ in 2017 to 159,230 TJ in 2017. This 2.2% decline is thought to have stemmed from fluctuations

in production activities. In 2018, systematic efforts will start to be made with the aim of increasing energy efficiency further.



Region/Site	Fuel Consumption	Energy Consumption			Energy Sold
	Fossil Fuels (TJ)	Electricity (TJ)	Heating & Cooling Purposes (TJ)	Hot Water Consumption for Heating & Cooling Purposes (TJ)	Electricity (TJ)
ENKA İnşaat	213.10	75.61	-	-	-
Çimtaş Çelik İmalat Montaj ve Tesisat A.Ş. & Çimtaş Boru İmalatları ve Ticaret Ltd. Şti.	38.16	59.62	-	-	-
ENKA Power	157,532.28	4.69	14.68	-	89,884.18
ENKA Real Estate	55.59	726.08	-	461.21	-
Istanbul ENKA Schools	6.56	3.65	-	-	-
ENKA Sports Club	19.60	7.26	-	-	-
ENKA Pazarlama İhracat İthalat A.Ş.	8,333	4.21	-	-	-
TOTAL	157,873	881.12	14.68	461.21	89,884.18

Energy Intensity

The energy intensity of 12 ENKA Group companies and two projects has been calculated, taking into account all the energy consumed as a result of their activities. In order to report energy intensity, annual turnover in US dollars was used as an indicator. The energy intensity of the ENKA workplaces covered by the calculations was found to be 78.2 TJ per million US dollars of turnover.

Direct and Indirect Greenhouse Gas Emissions

In the scope of ENKA's greenhouse gas emissions calculations for 2017, the greenhouse gas emissions arising from ENKA's

activities constitute "Scope-1 direct greenhouse gas emissions", and the greenhouse gas emissions stemming from the consumption of energy obtained from outside the organisation in the form of electricity, heat and steam were classed as "Scope-2 indirect energy greenhouse gas emissions". As it was not possible to obtain sufficient and accurate data, emissions falling into "Scope-3 other indirect greenhouse gas emissions" were excluded from the calculations for the 2017 reporting period.

Scope-1 emissions account for about 98% of all emissions. This high ratio is due to the amount of fuel consumed by the natural gas combined cycle power plants. When the fuel used for electricity generation in the power

plants is excluded from the calculations, the share of Scope-1 emissions in total emissions falls to 12%.

The Scope-1 greenhouse gas emissions stemming from fuel consumption, cooling gases and fire extinguishers accounted for a large percentage of ENKA's carbon footprint in 2017. In terms of CO₂ equivalent, the total amount of Scope-1 emissions in 2017 was 9,380,851 tonnes.

The greenhouse gas emissions that arise during ENKA's construction activities stem largely from the fuel consumption of vehicles, equipment used for construction projects and the consumption of electricity on the project sites.

The Scope-2 emissions resulting from the consumption of electricity, steam and heat

energy at the workplaces in question in 2017 added up to a total of 192,502 tonnes of CO₂ equivalent.

The aggregate carbon footprint of all of the ENKA workplaces where measurements were made in 2017 worked out at 9,573,355 tonnes of CO₂ equivalent.

In the activities conducted in the 2017 reporting period, there were declines of 2.22% in direct (Scope-1) greenhouse gas emissions and 2.16% in total (Scope-1 + Scope-2) greenhouse gas emissions, by comparison with the preceding year, owing to fluctuations in production and other policies and practices. Indirect (Scope-2) greenhouse gas emissions were 0.96% higher than in 2016. Conscious and systematic work on reducing greenhouse gas emissions is planned to begin in all workplaces as of 2018.



Company/Project	2016 Scope-1 (tonnes CO ₂ e)	2017 Scope-1 (tonnes CO ₂ e)
Adapazarı Elektrik Üretim Ltd. Şti.	1,883,730	1,829,315
Cimtas Boru İmalatları ve Ticaret Ltd. Şti.	506	1,022
City Center Investment B.V.	264	303
Çimtaş Çelik İmalat Montaj ve Tesisat A.Ş.	625	1,104
ENKA Headquarters	220	202
ENKA Pazarlama İhracat İthalat A.Ş.	142	660
ENKA TC Limited Liability Company	5,047	4,162
ENKA Sports Club	161	147
Gebze Elektrik Üretim Ltd. Şti.	3,874,829	3,897,160
Istanbul ENKA Schools	84	84
İzmir Elektrik Üretim Ltd. Şti.	3,811,620	3,631,000
Moskva Krasnye Holmy	581	676
Hotel Moskva Krasnye Holmy	101	95
Kashirskaya Multi-Functional Trade Center	1,949	2,753
SCPX-Area 81 Site	3,617	2,217
SCPX-CSG- 1 Site	3,727	3,587
SCPX-CSG-2 Site	7,183	6,363
TOTAL (tonnes)	9,594,386	9,380,851

Company/Project	2016 Total (Scope-1+ Scope-2) (tonnes CO ₂ e)	2017 Total (Scope-1+ Scope-2) (tonnes CO ₂ e)
Adapazarı Elektrik Üreti Ltd. Şti.	1,883,811	1,829,478
Cimtas Boru İmalatları ve Ticaret Ltd. Şti.	5,747	5,910
City Center Investment B.V.	42,557	43,660
Çimtaş Çelik İmalat Montaj ve Tesisat A.Ş.	5,866	4,075
ENKA Headquarters	1,058	1,042
ENKA Pazarlama İhracat İthalat A.Ş.	640	1,239
ENKA TC Limited Liability Company	109,719	106,522
ENKA Sports Club	1,226	1,145
Gebze Elektrik Üretim Ltd. Şti.	3,874,991	3,897,485
Istanbul ENKA Schools	559	585
İzmir Elektrik Üretim Ltd. Şti.	3,811,766	3,631,157
Moskva Krasnye Holmy	16,668	15,821
Hotel Moskva Krasnye Holmy	9,606	8,918
Kashirskaya Multi-Functional Trade Center	3,236	8,707
SCPX-Area 81 Site	4,477	2,774
SCPX-CSG- 1 Site	5,376	5,132
SCPX-CSG-2 Site	7,734	9,702
TOTAL (tonnes)	9,785,037	9,573,355

The following policies have been put into effect within the ENKA Group with the aim to minimise the level of emissions from activities and managing environmental risks:

- At the power plants, resource efficiency and advanced emission control technologies (AGP.DLN2,+6) are in use to meet the need for power while lowering greenhouse gas emissions. This investment has reduced emissions by approximately 225,000 tonnes of CO₂.
- The food waste generated in the canteen of the SCPx project under way in Georgia is dried in a food drying unit, resulting in a lower volume of dry, hygienic food waste through waste minimisation. The dry food waste is then converted to energy in a Biomass System, and the energy produced is used to provide the camp area with hot water. This arrangement leads to fuel savings.
- When purchasing construction machinery and equipment, preference is given to

those, which are more efficient in terms of energy consumption, with the aim of achieving a reduction in the total amount of energy consumed.

- All the equipment in our machinery park is subject to regular and timely maintenance. This prevents any increase in their fuel consumption and hence in their potential emission levels.
- Speed limits introduced for vehicles on work sites serve to reduce fuel consumption and the volume of emissions stemming from vehicles.
- The materials to be used in offices and worksite buildings are chosen with a view to reducing the energy consumption that may arise due to variations in temperature.
- Posters and signs are used to increase the awareness and knowledge of employees working in our projects regarding energy conservation and environmental matters and to ensure that they integrate this approach into the work they perform.

Greenhouse Gas Emission Intensity

The intensity of the greenhouse gas emissions of the various companies and sites for which calculations have been made is reported here in relation to their annual turnovers in

US dollars. The greenhouse gases included in the intensity calculations are made up of Scope-1 and Scope-2 emissions. All kinds of greenhouse gas emissions have been concerned into their CO₂ equivalents.

ENKA Sports Club	14 tonnes CO ₂ e*per one million US dollars
ENKA Pazarlama İhracat İthalat A.Ş.	5.6 tonnes CO ₂ e per one million US dollars
İzmir Elektrik Üretim Ltd. Şti.	6,967tonnes CO ₂ e per one million US dollars
Adapazarı Elektrik Üretim Ltd. Şti.	6,900tonnes CO ₂ e per one million US dollars
Gebze Elektrik Üretim Ltd. Şti.	7,308 tonnes CO ₂ e per one million US dollars
Çimtaş Çelik İmalat Montaj veTesisat A.Ş.	65.3 tonnes CO ₂ e per one million US dollars

Cimtas Boru İmalatları ve Ticaret Ltd. Şti.	43 tonnes CO ₂ e per one million US dollars
ENKA TC Limited Liability Company	1,076 tonnes CO ₂ e per one million US dollars
Moskva Krasnye Holmy	559 tonnes CO ₂ e per one million US dollars
Hotel Moskva Krasnye Holmy	537 tonnes CO ₂ e per one million US dollars
City Center Investment B.V.	399 tonnes CO ₂ e per one million US dollars
Istanbul ENKA Schools	35 tonnes CO ₂ e per one million US dollars

*CO₂ equivalent

Greenhouse Gas Emission Intensities of ENKA Buildings

The greenhouse gas emission intensities of the buildings used in the activities of ENKA have been calculated in terms of the volume of greenhouse gas emissions, expressed in CO₂ equivalent, per square metre

of construction area. The great majority of the buildings for which these calculations have been made are used as offices. In some cases, open areas where energy consumption or other activities that lead to emissions take place have also been included in the calculations.

Emission Intensity by Total Construction Area (m²)

ENKA Sports Club	0.10 tonnes CO ₂ e/m ² /year
ENKA Pazarlama İhracat İthalat A.Ş.	0.05 tonnes CO ₂ e/m ² /year
ENKA Power (Adapazarı, Gebze, İzmir)	16.37 tonnes CO ₂ e/m ² /year
Çimtaş Çelik İmalat Montaj ve Tesisat A.Ş.	0.08 tonnes CO ₂ e/m ² /year
Cimtas Boru İmalatları ve Ticaret Ltd. Şti.	0.11 tonnes CO ₂ e/m ² /year
ENKA TC Limited Liability Company	0.16 tonnes CO ₂ e/m ² /year
City Center Investment B.V.	0.27 tonnes CO ₂ e/m ² /year
Istanbul ENKA Schools	0.03 tonnes CO ₂ e/m ² /year

Emission Intensity Per Employee

Çimtaş Çelik İmalat Montaj ve Tesisat A.Ş.	6.7 tonnes CO ₂ e per person
Cimtas Boru İmalatları ve Ticaret Ltd. Şti.	4.8 tonnes CO ₂ e per person
ENKA Headquarters	1.89 tonnes CO ₂ e per person
ENKA Pazarlama İhracat İthalat A.Ş.	6.5 tonnes CO ₂ e per person
Istanbul ENKA Schools	5.9 tonnes CO ₂ e per person
ENKA Sports Club	3.9 tonnes CO ₂ e per person
İzmir Elektrik Üretim Ltd. Şti.	25,042 tonnes CO ₂ e per person
Gebze Elektrik Üretim Ltd. Şti.	35,432 tonnes CO ₂ e per person
Adapazarı Elektrik Üretim Ltd. Şti.	33,263 tonnes CO ₂ e per person
City Center Investment B.V.	364 tonnes CO ₂ e per person
Moskva Krasnye Holmy	158 tonnes CO ₂ e per person
Hotel Moskva Krasnye Holmy	30 tonnes CO ₂ e per person
ENKA TC Limited Liability Company	324 tonnes CO ₂ e per person

Greenhouse Gas Emission Intensity in Construction Activities

Construction work is one of the most important fields of activity of ENKA İnşaat, and construction sites are responsible for a portion of the ENKA Group's greenhouse gas emissions. All of the Scope-1 and Scope-2 greenhouse gas emissions stemming

from the SCPx Project in Georgia and the Kashirskaya Multi-Functional Trade Center in Russia have been calculated in terms of CO₂ equivalent, and these have been set against the total number of person-hours worked per year on the projects in question in order to calculate the emission densities of these projects.

Kashirskaya Multi-Functional Trade Center	0.02 tonnes CO ₂ e/person-day
SCPX-CSG- 1 Site	0.04 tonnes CO ₂ e/person-day
SCPX-CSG-2 Site	0.05 tonnes CO ₂ e/person-day
SCPX-Area 81 Site	0.06 ton tonnes CO ₂ e/person-day
ENKA Headquarters	0.02 ton tonnes CO ₂ e/person-day