Turkey

Country spotlight

Population (million) (World Bank, 2016a):	78.6
Urban population (% of total) (World Bank, 2016b):	73%
GDP per capita (2014 USD/year) (World Bank, 2016c):	9 000
Average price gasoline and diesel (USD cent per L, 2014) (GIZ, 2015):	206; 190

Fuel tax class (2014) (GIZ, 2015): highly taxed petroleum fuels

In 2015, about 940 000 LDVs were sold in Turkey (IHS Markit, 2016). The LDV stock reached 7.5 million in the same year (IEA, 2016a), and LDV ownership attained 0.095 cars per capita, lower than in countries with a comparable income level (e.g. Brazil). Turkey does not have dedicated fuel economy policies in place, but it imposes gasoline and diesel taxes that are among the world's highest (GIZ, 2015). Turkey also imposes an annual vehicle circulation tax that is a function of engine size (with progressive increases above 1.6 L) and vehicle age (the circulation tax decreases with vehicle age) (IA-HEV, 2016).

Market profile and vehicle characteristics

Turkey's LDV market size fluctuated between 750 000 and 850 000 vehicles in the period 2010-14. However, the LDV market suddenly grew by 25% to 940 000 vehicles in 2015 (IHS Markit, 2016). Turkey produces more LDVs than it registers; in 2015, the country produced 1.3 million vehicles, which is 16% more than the year before (OICA, 2016).

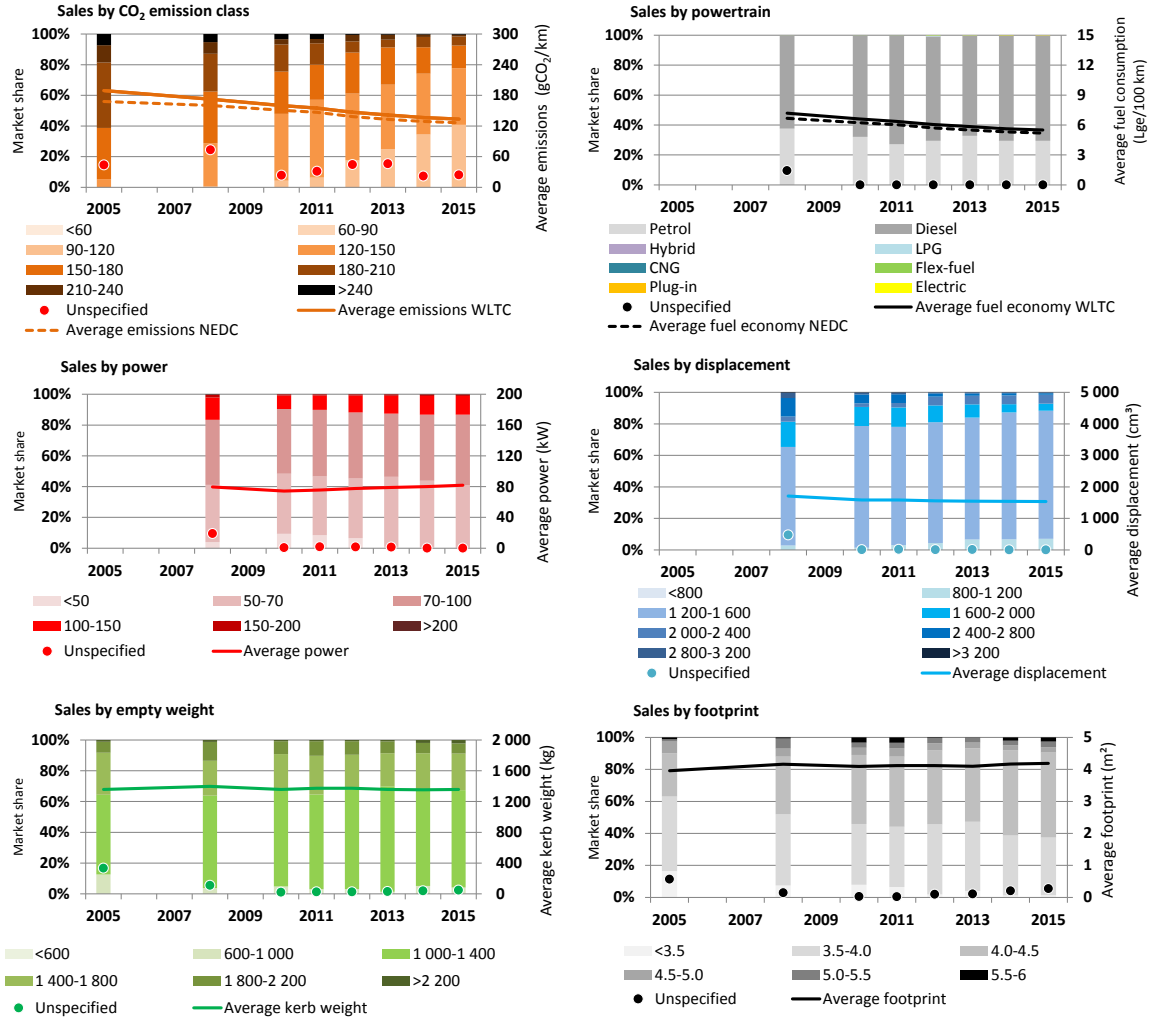
Turkey's average CO_2 emissions per km continuously fell between 2005 and 2015. In 2015, CO_2 emissions were approximately 135 g CO_2/km. High-emission vehicles (more than 180 g CO_2/km) quickly lost market share to low-emission vehicles (60-90 g CO_2/km). Average fuel economy improved by more than 30% in the same period. Turkey's average fuel economy was the second-best in the world, improving another 2.5% to 5.5 Lge/100 km in 2015. Between 2010 and 2015, almost 70% of LDV registrations were diesel powered, topping France as the country with the highest share of diesel sales. Sales of alternative powertrains remained very marginal.

Between 2010 and 2015, the average engine power of new LDVs rose by 10%, reaching 82 kW in 2015, similar to that in France. During the same five-year period, average displacement decreased to close to 1.5 L, down 4% from 2010. Increasing power while decreasing displacement indicates that Turkey's LDV market experienced similar technological improvements to EU countries.

The average weight of Turkish vehicles underwent little change, with a small drop from 1 375 kg to 1350 kg between 2011 and 2015. Almost 70% of the new LDVs weighed 1 000-1 400 kg. Surprisingly, vehicles above 2 200 kg more than doubled their market share between 2013 and 2015. Analysis of average footprint shows that Turkey's footprint floated between 4.1 m^2 and 4.2 m^2, increasing a little due to the increased popularity of SUVs in all segments.

This summary is taken from GFEI Working Paper 15. For more complete information and references, see https://www.globalfueleconomy.org/data-and-research/publications/gfei-working-paper-15

Figure 1 ● LDV market by g CO_2/km, powertrain, power, displacement, weight and footprint, Turkey, 2005-15



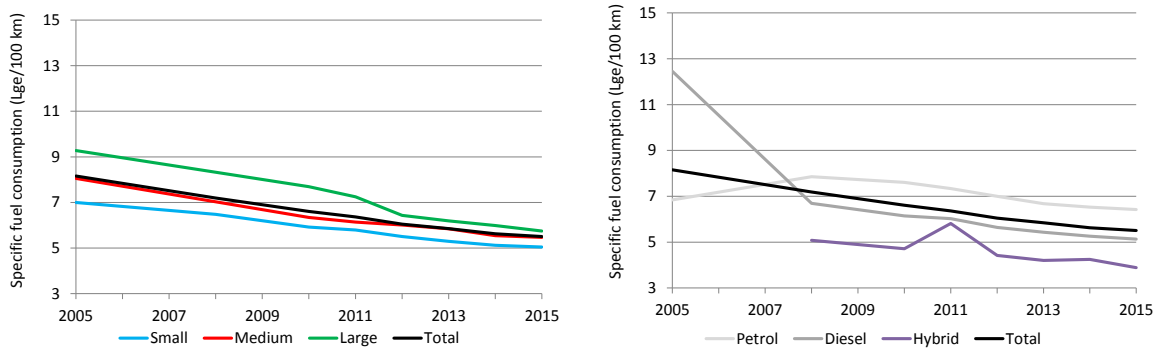
Source: IEA elaboration and enhancement for broader coverage of IHS Markit database.

Analysis of fuel economy trends

All segments saw a continuous downward trend for the period 2005-15 (Figure 2, left). The period 2011-15 was characterised by converging specific fuel consumption, particularly with respect to large vehicles. In the absence of fuel economy standards, this is evidence that wider vehicle efficiency and fuel policies also have the potential for substantial impacts on LDV fleet efficiency, partially driven by the popularity of regulated European OEM models in the Turkish market (IEA, 2016a). Also, both diesel- and gasoline-driven vehicles saw constant improvement from 2008 until 2015. In 2015, new diesel LDVs had an average fuel economy that was 25% better than their gasoline counterparts. Hybrid vehicles had the best fuel economy rating across all powertrains, exceeding diesels by 30% in 2015.

This summary is taken from GFEI Working Paper 15. For more complete information and references, see https://www.globalfueleconomy.org/data-and-research/publications/gfei-working-paper-15

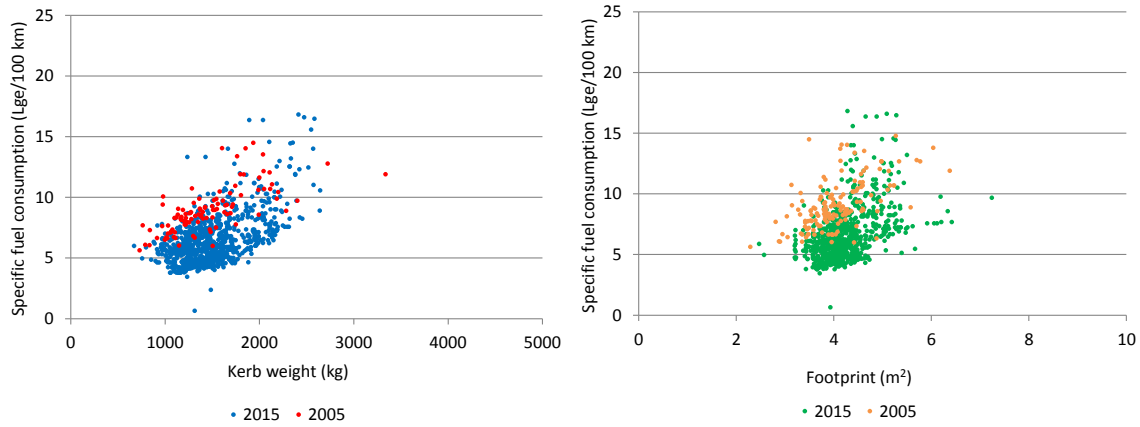
Figure 2 ● Average new LDV fuel consumption per km by vehicle segment and powertrain, Turkey, 2005-15



Source: IEA elaboration and enhancement for broader coverage of IHS Markit database.

Plotting vehicle model specific fuel consumption against weight and footprint (Figure 3) demonstrates progress similar to major European countries, such as France and Germany. LDVs with the same weight clearly had a better specific fuel consumption in 2015 compared with 2005. The same improvement is seen for LDV footprint. Between 2005 and 2015, Turkey's LDV market experienced an more extreme diversification of models compared with European economies (as demonstrated by the much greater 2015 clouds in Figure 3), even if newly registered LDV models hardly changed weight or size during the ten years up to 2015.

Figure 3 ● Fuel consumption per km of new LDVs plotted against vehicle weight and footprint, Turkey, 2005 and 2015

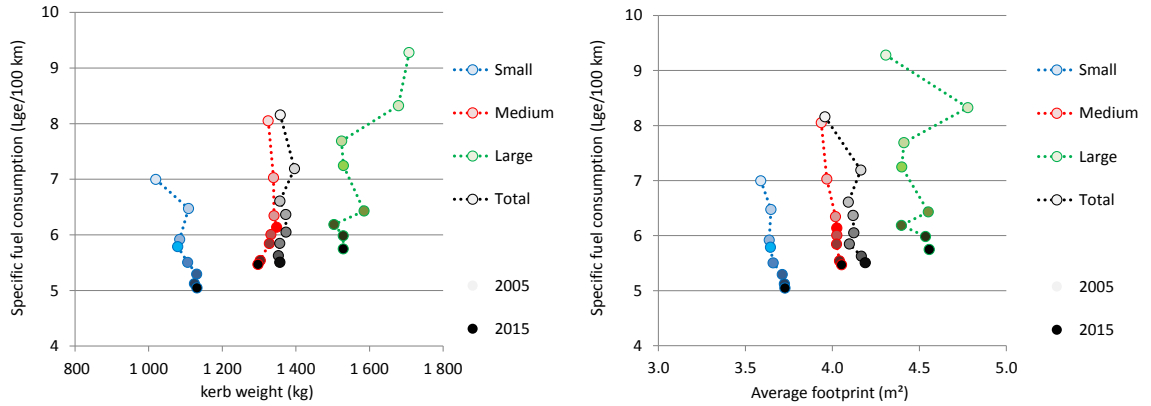


Source: IEA elaboration and enhancement for broader coverage of IHS Markit database.

New small LDVs gained weight, while improving their specific fuel consumption (Figure 4, left). Medium and large LDVs lost weight while rapidly advancing in fuel efficiency. Large vehicles experienced the greatest improvement in specific fuel consumption. All three segments showed signs of stagnating average fuel economy improvement in the last three years up to 2015.

When comparing average fuel economy to footprint (Figure 4, right), newly registered small and medium LDVs experienced a small increase in footprint, while improving their average fuel efficiency. Large vehicles had fluctuating footprints, while average fuel economy improved at a faster pace than the other size segments.

Figure 4 ● Average new LDV fuel consumption per km by segment plotted against vehicle weight and footprint, Turkey, 2005-15



Source: IEA elaboration and enhancement for broader coverage of IHS Markit database.

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