

## Environmental Sustainability: *Trends in Energy Emissions and Taxation*

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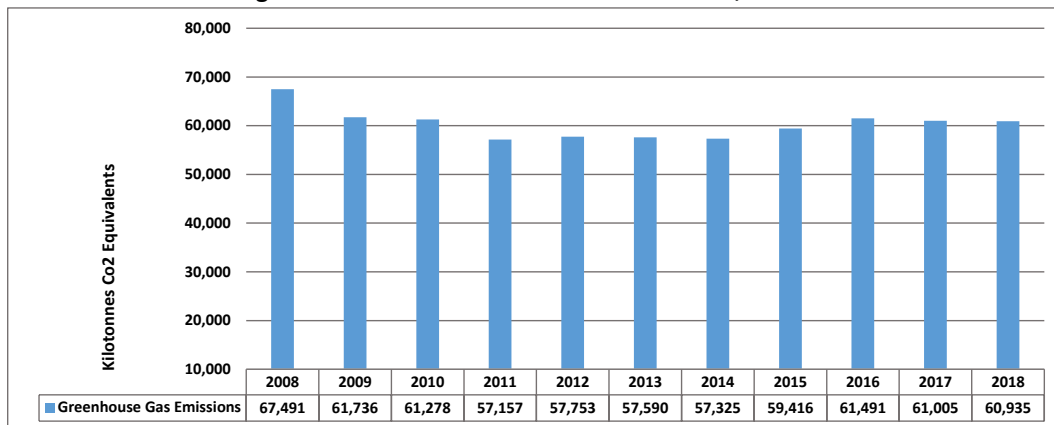
### **Key Point:**

In 2018, total greenhouse gas emissions in Ireland amounted to over 60,900 kilotonne (kt) Co<sub>2</sub> equivalents: representing a decrease of almost 6,600 or 9.7% from almost 67,500 kt Co<sub>2</sub> eq in 2008. The largest contributor to greenhouse gas emissions came from the energy sector: accounting for 36,600 kt Co<sub>2</sub> eq or 60% of total emissions in 2018. Within this sector, transport accounted for the largest share of total energy emissions at over 12,220 kt Co<sub>2</sub> eq: of which total emissions from road transportation amounted to 11,677 kt Co<sub>2</sub> eq. Despite the decrease in emissions during these years (2008-18), Ireland is among the highest emitters of greenhouse gases in the EU. In per capita terms, Ireland produced 13 tonnes Co<sub>2</sub> eq in 2018, compared to the EU-28 average per capita of 9 tonnes. The taxation of energy use can create incentives to limit emissions as well as generate exchequer revenue. In the energy sector total revenue (excise receipts and carbon tax) increased by over €400m from €2.2bn in 2009 to €2.6bn in 2019. Notwithstanding, the substantial increases in diesel fuel consumption and the dieselisation of the car fleet, over alternative cleaner transport fuels, during these years, raises significant environmental concerns.

### **Greenhouse Gas Emissions Profile**

Figure 1 shows the total greenhouse emissions between the years 2008 and 2018. In 2018, total greenhouse emissions amounted to over 60,900 kilotonne (kt) Co<sub>2</sub> equivalents (eq): a decrease of almost 6,600 or 9.7% from almost 67,500 kt Co<sub>2</sub> eq in 2008. During the Great Recession and its aftermath, total greenhouse emissions decreased from almost 67,500 kt Co<sub>2</sub> eq in 2008 to over 57,300 kt Co<sub>2</sub> eq in 2014: representing a decrease of 15% on 2008. Since then, total emissions increased to almost 61,500 kt Co<sub>2</sub> eq in 2016 before decreasing to over 60,900 in 2018.

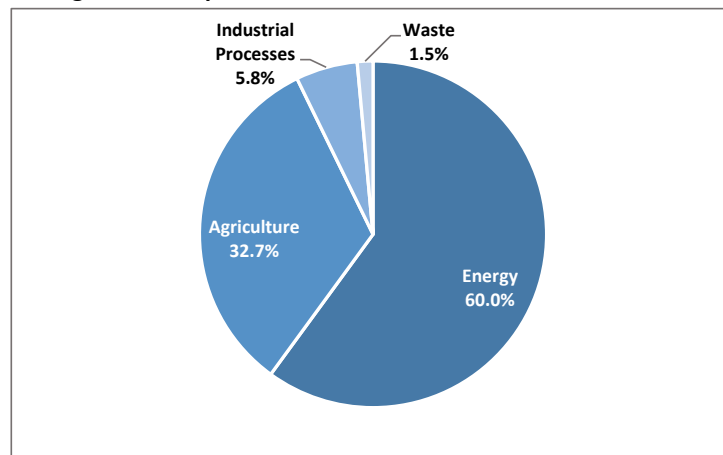
**Figure 1: National Greenhouse Gas Emissions, 2008-18**



Source: EPA (2020)

Figure 2 shows a breakdown of greenhouse emissions by source in 2018. The largest contribution to greenhouse gas emissions came from the Energy sector, at 60% of total emissions in 2018. This sector was followed by agriculture which accounted for 33% of total greenhouse emissions in 2018. Emissions from industrial processes and product use accounted for 6% and waste accounted for 1.5% of total greenhouse emissions in 2018.

**Figure 2: Composition of Greenhouse Gas Emissions, 2018**

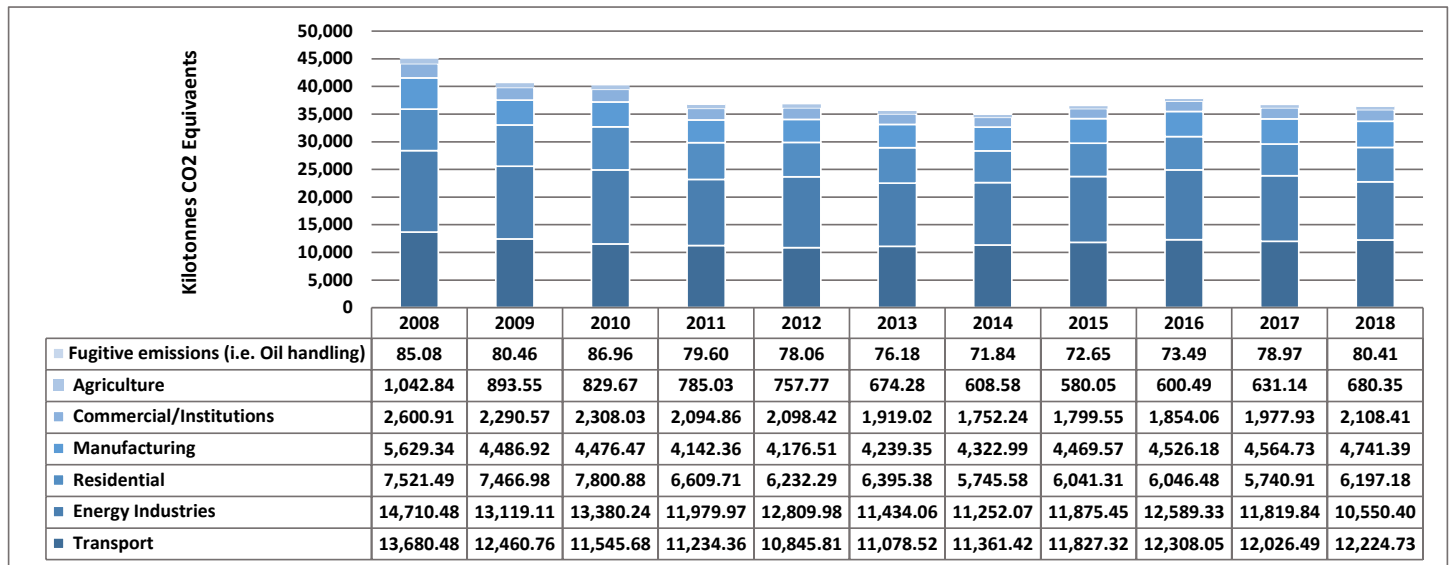


Source: EPA (2020)

Since 2008, there has been an overall decrease in emissions across all energy subsectors. Figure 3 shows trends in emissions from the energy sector between the years 2008 and 2018. Emissions from the energy sector accounted for almost 36,600 kt Co2 eq in 2018: representing a decrease of 19% or almost 8,700 kt Co2 eq from 45,270.6 Kt Co2 eq in 2008. During the Great Recession and its aftermath, total emissions decreased by over 10,100 kt Co2 eq between the years 2008 and 2014, reflecting the overall decline in outputs and consumption during these years. However, as economic growth resumed, total emissions in the energy sector increased to almost 38,000 kt Co2 eq in 2016, before a slight decrease to almost 36,600 kt Co2 eq in 2018.

In 2018, the transport sector accounted for the largest share of total energy emissions at over 12,220 kt Co2 eq (33%): of which domestic aviation accounted for 16.78 kt Co2 eq and road transportation accounted for 11,677 kt Co2 eq. This sector was followed by Energy Industries (10,550 kt Co2 eq), residential (6,197 kt Co2 eq), manufacturing (4,741 kt Co2 eq), commercial/institutions (2,108 kt Co2 eq) sectors. Agriculture and Fugitive energy subsectors accounted for the lowest emissions produced at 680 kt Co2 eq and 80 kt Co2 eq respectively.

**Figure 3: Trends in Emissions from Energy, 2008-18**

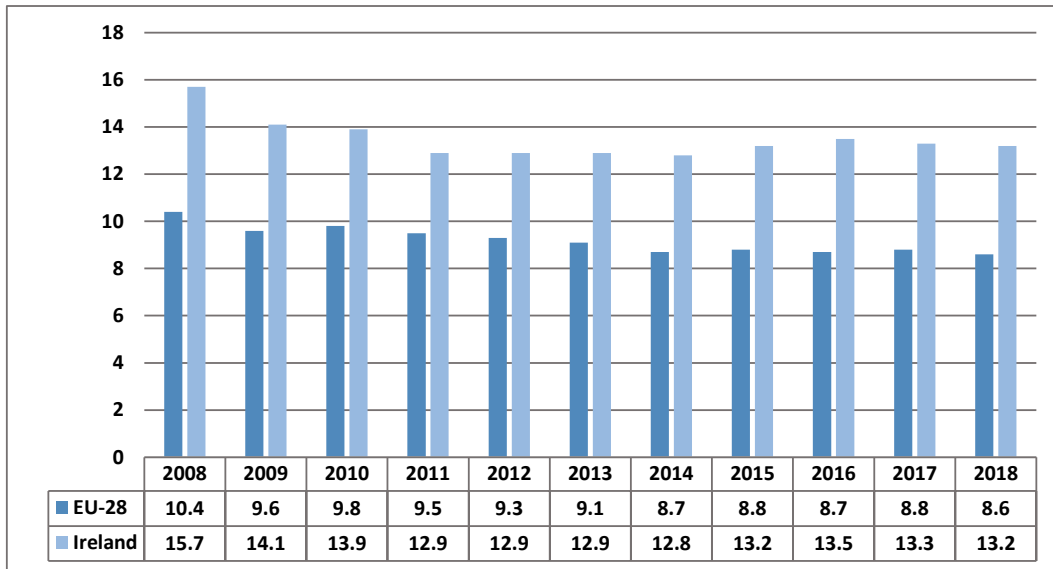


Source: EPA (2020)

Despite the decrease in emissions during these years (2008-18), Ireland is among the highest emitters of greenhouse gases in the EU. Figure 4 shows the tonnes of Co2 eq between the years 2008 and 2018. In per capita terms, total greenhouse emissions amounted to 13.2 tonnes in 2018. During the Great Recession and its aftermath total emissions per capita fell by 3 tonnes of Co2 eq per capita: decreasing from 16 tonnes in 2008 to almost 13 tonnes in 2014. The decrease in total emissions per capita reflects the overall decline in economic outputs and consumption during the recessionary years (2008 to 2012). However, once economic growth resumed, emissions per capita rose from 12.8 tonnes in 2014 to 13.2 tonnes in 2018. This highlights the significant structural issues that exist within the Irish economy in terms of reliance on Co2 eq.

When compared to the EU average, the total emissions produced per capita in Ireland are much higher. In 2008, Ireland's total emissions per capita were 6 tonnes higher than the EU average of 10 tonnes of Co2 eq. Since 2008, the EU average of Co2 eq per capita has decreased slightly by 1 tonne: decreasing from 10 tonnes in 2008 to 9 tonnes of Co2 eq per capita in 2018. However, a gap remains between the Irish and EU average in terms of the total emissions produced per capita. In 2018, Ireland produced 13 tonnes Co2 eq per capita, whereas the EU average was 9 tonnes.

**Figure 4: EU and Irish Co2 Emissions Per Capita, 2008-18**

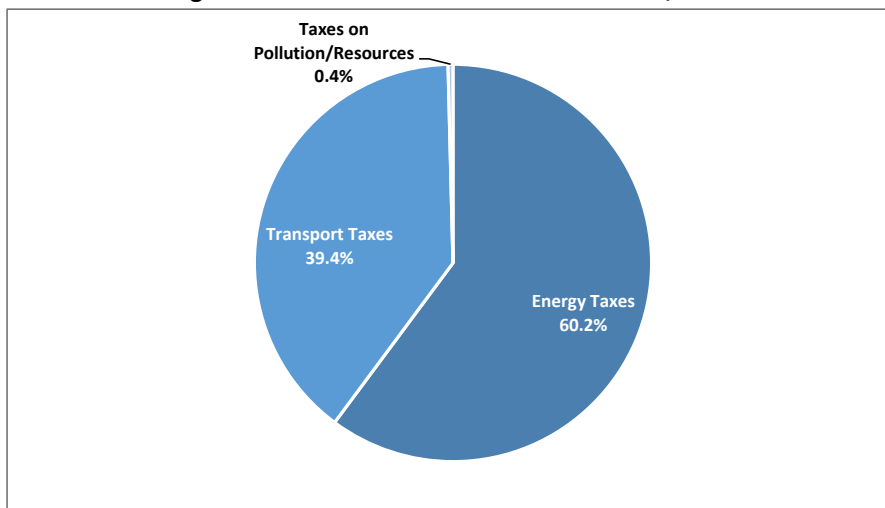


Source: Eurostat (2020a)

### Energy Taxation Overview

The taxation of energy use can create an incentive to limit emissions as well as generate Exchequer revenues. In 2019, total environmental taxes amounted to just over €5bn or 6.5% of total tax revenue, increasing from €3.0 billion in 2000, but down from a peak of €5.2 billion in 2017 (CSO, 2020). Figure 5 shows a breakdown of environmental taxes in 2019. Energy taxes accounted for 60% of total environmental tax revenue in 2019, compared to transport taxes which accounted for 39%<sup>a</sup>. Pollution and Resource taxes contributed less than 1% of total environmental taxes in 2019.

**Figure 5: Breakdown of Environmental Taxes, 2019**



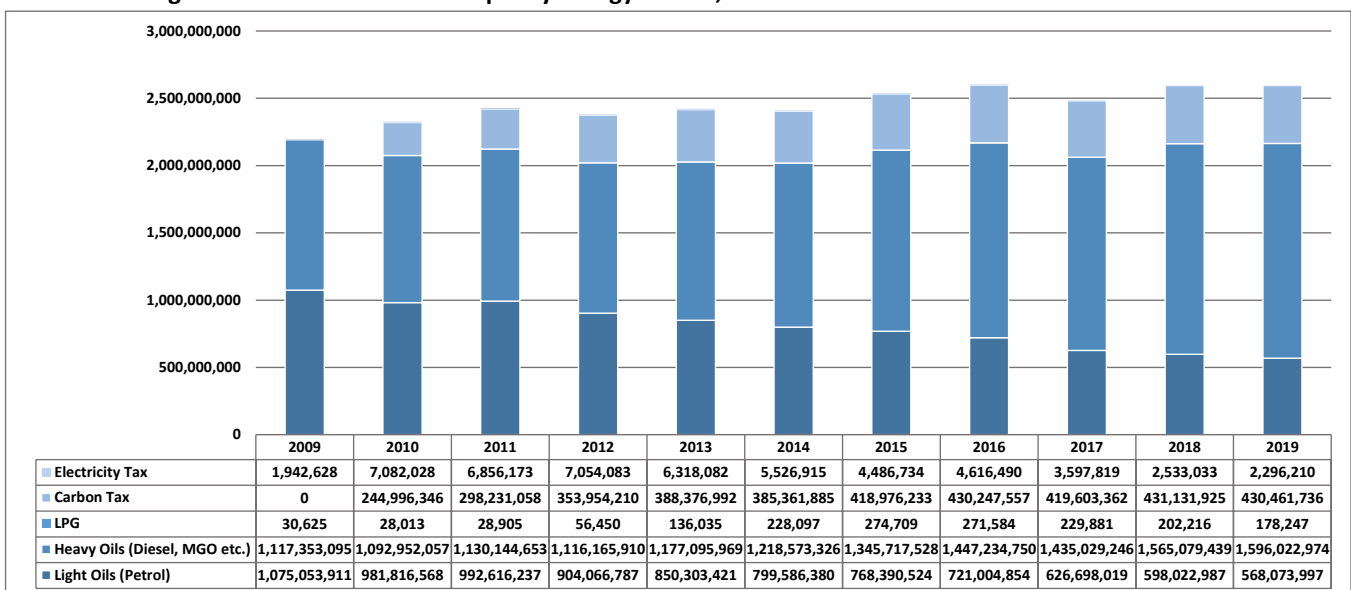
Source: CSO (2020)

### Trends in Excise and Carbon Taxes by Energy Source

Figure 6 shows the breakdown of excise and environmental taxes between the years 2009 and 2019. Since 2009, total revenue from environmental taxes (i.e. excise receipts and carbon taxes) has increased from €2.2bn to almost €2.6bn in 2019: representing a rise of €400m. The energy source which had the greatest increase in taxation revenue was heavy oils (Diesel, Marked Gas Oil (MGO), etc.), with an increase of almost €500m from over €1.1bn in 2009 to almost €1.6bn in 2019. By contrast, excise revenue from light oil (petrol) energy sources have fallen substantially from almost €1.1bn in 2009 to almost €600m in 2019: a decrease of over €500m. Between the years 2008 and 2012, revenue from electricity tax increased from €1.9m in 2009 to over €7m in 2012: representing an increase of over €5m. Since then, electricity tax revenue has fallen by €4.7m, decreasing from over €7m in 2012 to almost €2.3m in 2019. Revenue from Liquefied Petroleum Gas (LPG) energy sources rose steadily between these years from almost €31,000 in 2009 to almost €275,000 in 2015, before decreasing to €178,000 in 2019.

In 2009, the Commission for Taxation recommended the introduction of a carbon tax on emissions from energy products released for consumption in Ireland. Initially, the tax was applied to motor fuels and later was extended to solid fuel in 2013 and 2014. Since 2010, total revenue from carbon taxes increased from over €245m to €430m: representing an increase of €185m.

**Figure 6: Taxation Excise Receipts by Energy Source, 2009-19**



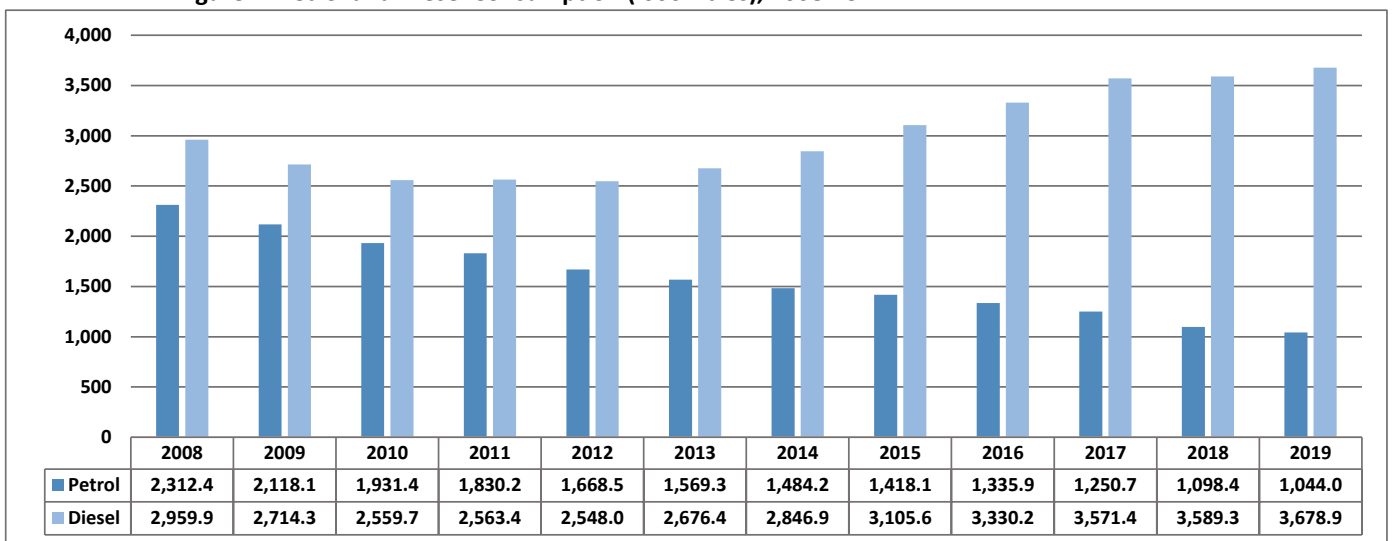
Source: Revenue (2020a)

### Transport – Excise Revenue and Consumption

Since the introduction of emissions based VRT and motor tax policy changes in 2008, the tax revenue and consumption of diesel increased steadily. The current rate of excise on petrol in 2020 is 54c, with an additional 6c carbon charge, per litre, compared to the excise rate on a litre of diesel which is 43c, with an additional 7c carbon charge (Department of Revenue, 2020b). A key recommendation from the Climate Change Advisory Council in

2018 advocated that, in addition to raising the carbon tax on fuel, excise duty on diesel should be raised to that on petrol, in order to generate environmental and health benefits due to the air pollution associated with diesel (Climate Change Advisory Council, 2019). Figure 7 shows the consumption and excise receipts of petrol and diesel between the years 2008 and 2019. Since 2008, the consumption of diesel increased steadily by 719 million litres or 24%: increasing from 2.9 billion litres in 2008 to almost 3.7bn litres in 2019. By comparison, petrol consumption declined steadily during these years by almost 1.3bn litres: decreasing from over 2.3bn litres in 2008 to over 1bn litres in 2019.

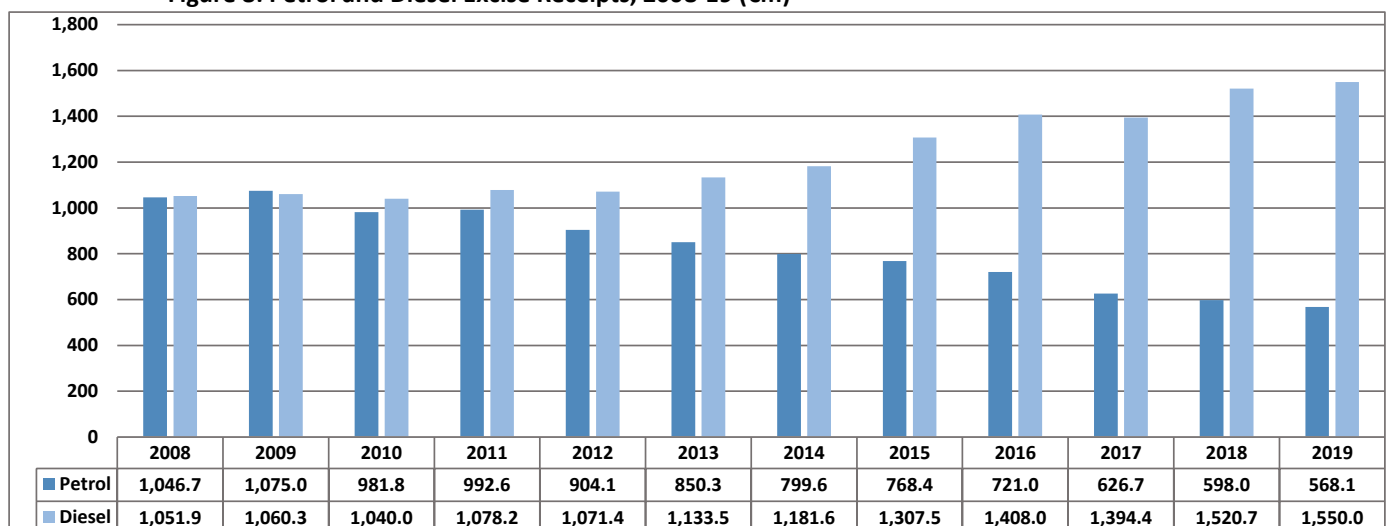
**Figure 7: Petrol and Diesel Consumption ('000 Litres), 2008-19**



Source: Revenue (2020a). Note: petrol consumption figures also include aviation fuel.

Figure 8 shows the excise receipts for petrol and diesel between the years 2008 and 2019.

**Figure 8: Petrol and Diesel Excise Receipts, 2008-19 (€m)**



Source: Revenue (2020a). Note: petrol excise receipts also include aviation fuel.

Total revenue receipts for diesel fuel increased by almost €500m or 47%: increasing from €1.05bn in 2009 to over €1.5bn in 2019. In contrast, excise revenue from petrol fell

substantially from €1.05bn in 2008 to almost €570m in 2019: representing a decrease of €480m or 46%.

## References

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<sup>a</sup> Energy taxes are applied to products used to generate energy (which includes fuel for transport as well as the greenhouse gases produced (i.e. carbon content of fuels and emissions). By contrast transport taxes are applied to non-fuel components such as: motor vehicles imports or sales; registration or use of motor vehicles (i.e. yearly taxes); road usage (i.e. motorway taxes); and congestion charges etc. (Eurostat, 2020b).