ENERGY AND ENVIRONMENTAL TAXES

Tax Strategy Group – TSG 17/08

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Tax Strategy Group - Energy and Environmental Taxes

Contents

Overview

1. This paper examines how the tax system can be used to help meet Ireland's ambitious climate change goals of reducing emissions, increasing energy efficiency and developing less environmentally harmful policies. It puts forward options in respect of energy and environmental taxes including vehicle registration tax for Budget 2018.

2. A number of key milestones establishing a framework to develop the pathway to decarbonisation have been met and Ireland's first National Mitigation Plan has been adopted this summer which provides a roadmap for this transition out to 2050.

3. The Climate Action and Low Carbon Development Act 2015, which sets out a legislative obligation for the introduction of a National Mitigation Plan, also provides for the establishment of the Climate Change Advisory Council with the remit of advising on the best pathway to decarbonising the economy.

4. The Programme for Partnership Government identifies climate change as being the global challenge of our generation which requires radical and ambitious thinking to respond to a changing environment. At COP21 in December 2015 Ireland, along with over 190 other nations, adopted and subsequently signed the Paris Agreement which aims to keep the increase in global temperatures well below 2 degrees Celsius.

5. Ireland already has a number of other climate targets such as those in the EU 2020 Climate and Energy package. The EUs Effort Sharing Decision sets targets which apply to emissions not included in the EU Emissions Trading System (ETS). For Ireland these comprise of: a 20% reduction in greenhouse gas emissions; a 16% target of energy to come from renewable sources; a 20% improvement in energy efficiency. Currently Ireland's emissions are projected to significantly exceed these 2020 targets (see emissions profile section) which, as well as contributing to climate change, may result in costs for purchasing compliance.

6. A Proposal for an Effort Sharing Regulation covering the period from 2021 to 2030 was published by the European Commission last July and announced a target for Ireland of reducing emissions by 30% in 2030 compared to 2005, the final figure is still to be decided.

7. Taxation is a key tool towards achieving these objectives, especially in relation to the price of carbon. Carbon tax places a price on CO2 emissions which provides a financial barrier to the gratuitous combustion of fossil fuels as well as increasing the financial incentive for the development and adoption of renewable and less pollutant energy alternatives. However, accepting that the tax system can be a useful mitigation tool, it is important to ensure efficacy that it is used to complement other

measures rather than bluntly distorting the competitiveness of the overall economy through cost increases without providing viable cleaner alternatives.

8. Recent taxation developments such as the introduction of a carbon tax and linking vehicle registration tax and motor tax to CO2 emissions have contributed to reduced levels of emissions. However, the bigger challenge of decoupling economic activity from emissions remains.

Emissions Profile

9. Ireland's EU greenhouse gas emission targets and reduction obligations are split into two broad categories. The first category covers the large energy and power industry and is known as the Emissions Trading System (ETS). This is a cap and trade system and the instillations operating within the ETS are responsible for their emissions and can be fined for failing to cover the emissions with allowances. The second category, known as the non-ETS, includes emissions from agriculture, transport, residential, commercial, waste and non-energy industry. Non-ETS emissions are the responsibility of each Member State and therefore subject to Government policy in order to meet binding targets.

10. The breakdown of emissions between ETS and non-ETS emissions at EU level has the non-ETS sector accounting for almost 60% of total emissions while in Ireland non-ETS emissions account for a significantly higher proportion at 71.5% the total. In 2015, Agriculture and Transport emissions accounted for 75% of non-ETS emissions.

11. For 2015, the Environment Protection Agency[1] estimated the total national greenhouse gas emissions in Ireland to be 59.88 million tonnes carbon dioxide equivalent (Mt CO2eq). This is 3.7% higher (2.1 Mt CO2eq) than emissions in 2014. Emissions in the ETS category increased by 5.5% or 0.88 Mt CO2eq whereas non-ETS emissions increased by 3.0% or 1.24 Mt CO2eq. The below figures shows Ireland's overall greenhouse gas emissions for 2015 broken down by sector and projected non-ETS emissions for 2017.

[1] http://www.epa.ie/pubs/reports/air/airemissions/ghgemissions/GHG%201990-2015%20April%202017.pdf

Figure 1 - Emissions in Ireland 2015

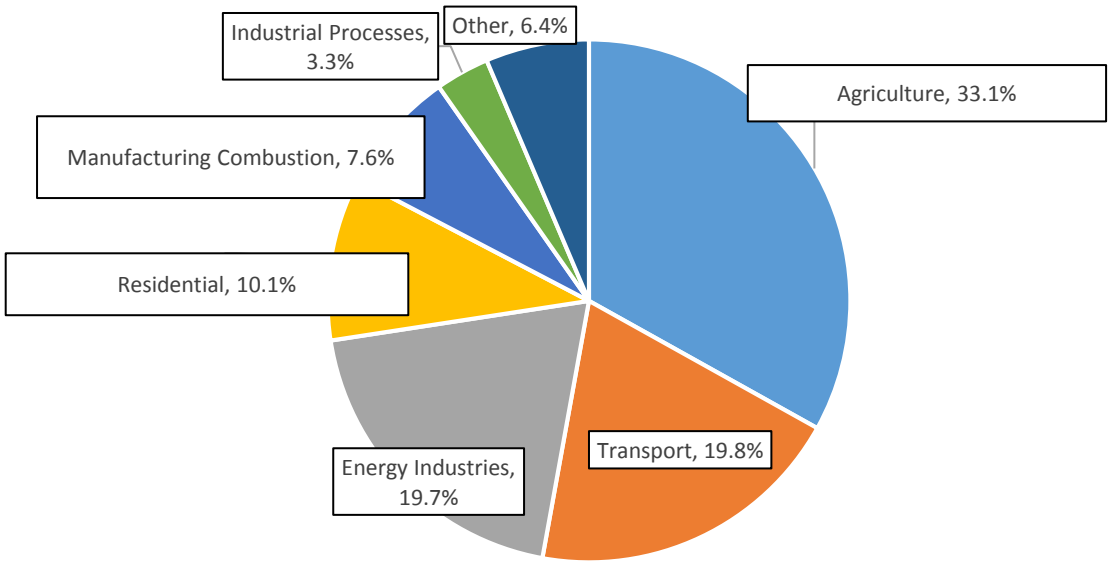
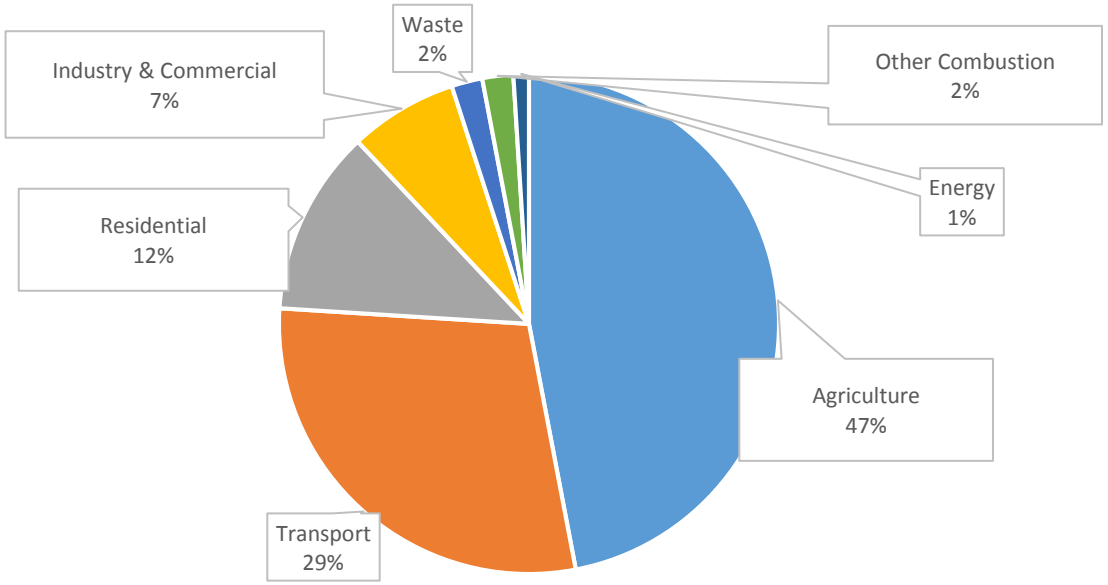


Figure 2 - Projected Non-ETS Emissions 2017 by Sector



Source: EPA

12. Ireland is projected to miss the 2020 emission target of a 20% reduction in emissions in the non-ETS sectors. Non-ETS greenhouse gas emissions are projected using two scenarios: *with measures* which assumes no additional policies beyond those in place at the end of 2015; and *with additional measures* which assumes full achievement of all existing measures and planned measures and policies.

13. By 2030, based on the EPA's current projections, Ireland's non-ETS emissions are expected to be between 1% and 3% lower than in 2005. With a likely target of a 30% reduction as part of the EU Effort Sharing Decision, it is evident that a radical transformation must take place to achieve this goal.

14. Given the potential environmental consequences, as well as the possible financial sanctions for failing to meet these binding targets, it is essential that all means, including the tax system, are utilised to assist in achieving these climate goals. The greater the gap to achieving these 2020 targets the more difficult the task of achieving our 2030 targets becomes.

Introduction to Environmental Taxes

15. The consensus is that the release of greenhouse gases into the atmosphere from the burning of fossil fuel is contributing to global warming. Environmental taxes are seen as a way to limiting emissions as well as generating Exchequer revenues. In 2016 environmental taxes amounted to €3.35bn and are projected to yield €3.45bn in 2017.

Receipts €m	2011	2012	2013	2014	2015	2016	2017*
Light Oils (Petrol)	€993m	€904m	€850m	€800m	€768m	€721m	€682m
Heavy Oils (Diesel, MGO etc.)	€1130m	€1116m	€1177m	€1219m	€1351m	€1447m	€1500m
LPG	€0.03m	€0.06m	€0.14m	€0.23m	€0.3m	€0.27m	€0.27m
Carbon Tax	€298m	€354m	€388m	€385m	€419m	€430m	€445m
Electricity Tax	€6.9m	€7m	€6.3m	€5.5m	€4.5m	€4.6m	€4.8m
VRT	€388m	€379	€437m	€542m	€650m	€745m	€820m

*2017 Estimated

16. The above table indicates the breakdown of receipts from environmental taxation. Motor tax is not considered as it forms part of the Local Government Fund (see section on motor tax). It is evident that the consumption of fossil fuels is intrinsically linked to overall economic growth. This is particularly notable with the gradual increase in carbon tax receipts following the final phase of its implementation in 2014, in spite of the introduction of measures to mitigate carbon emissions, such as the better energy schemes, during that time period.

17. Receipts from Vehicle Registration Tax (VRT), which is heavily influenced by economic activity, increased significantly over the last number of years and are expected to increase again in 2017. This is evidence of returning consumer confidence coupled with pent up demand for new vehicles following the economic recession. VRT is covered in depth later in this paper.

18. In 2015, environmental taxes were equivalent to 1.92% of GDP[2] accounting for 8.02% of overall taxation. This is significantly lower than the EU average of 2.44% GDP and the Euro area (19 Member States) of 2.39% GDP but proportionally higher that the average 6.11% of overall tax. As the below chart highlights, the low proportion of receipts when compared to GDP is due to a one off rise in overall GDP. This is evidenced by the proportion environmental taxation make up of overall tax receipts.

19. Dieselisation continues to be a growing issue and, if left unaddressed, will result in negative environmental and health outcomes. Dieselisation of the car fleet is resulting in the increase in diesel consumption and corresponding decrease in petrol consumption by private motorists who have switched from petrol engine vehicles to diesel ones following the introduction of emissions based VRT and motor tax in 2008 and subsequent revision in 2013. This issue is examined in more detail in the section on transport fuels.

20. The sales of Marked Gas Oil (agricultural diesel/green diesel) following a decline remain stable. This is believed to be due in part to Revenue's successes in tackling the laundering of Marked Gas Oil. In early 2016 and again in early 2017, Revenue carried out a random sampling programme which tested for the presence of the new marker in road diesel in the storage tanks of almost 10% of auto fuel traders. No samples tested positive for the fuel marker. The sampling, which was carried out under the independent supervision of Revenue's Statistics and Economics Research Branch, demonstrates that the selling of laundered fuel in the market is negligible and close to being fully eliminated. Tackling the laundering of Marked Gas Oil continues to be a priority for Revenue. Any increase in the excise rate applied to diesel will increase the differential with Marked Gas Oil and increase the incentive for fuel fraud.

21. The success of Revenue's strategy to combat fuel laundering is evident in the drop in volumes of Marked Gas Oil released for consumption and corresponding increase in auto diesel. Demand in 2016 was 8% lower than in 2012 in spite of a recovering economy.

Fossil Fuel Subsidies

22. Fossil fuel subsidies make consumption of fossil fuels more attractive relative to other, more sustainable alternatives. There is no globally accepted definition of Fossil Fuel Subsidies. However, the OECD define a subsidy as "any measure that keeps prices for consumers below market levels, or for producers above market

[2] GDP surged in 2015 as the result of reclassifications related to a number of exceptional one-off factors. These reclassifications did not reflect changes to the real economy, nor did they reflect activity levels.

levels or that reduces costs for consumers or producers". The origin of the subsidy is usually for broader social reasons, such as to prevent fuel poverty by ensuring that everyone can afford to heat their home, however, these reduced rates fail to properly account for the externalities caused by the combustion of fossil fuels.

23. On the basis of the above it can be assumed that the tax system gives rise to a number of fossil fuel subsidies in Ireland:

- Marked Gas Oil (often referred to as green diesel or agricultural diesel), is fuel which contains a marker and is used for a variety of reasons such as in agriculture, home heating, commercial fishing or by trains.
- The diesel rebate scheme is another subsidy which results in an increased incentive towards the combustion of fossil fuels via the remission of some of the excise duty applied to that diesel.
- An exemption for domestic users from electricity tax also fails to take account of the carbon emissions which have gone into the generation of that electricity.
- Reduced rates of VAT applied to energy, for example on home heating fuels, also fail to fully account for the externalities caused by their combustion.

24. As part of a commitment made in the National Mitigation Plan an examination of each of these subsidies is required to evaluate if they offer the best use of Government resources or if there is an alternative way to achieve the same outcomes without incentivising the use of fossil fuels. These could be as complementary measures, such as applying a uniform excise rate across all fuel use and developing balancing measures via grants or other awards to make up for the additional cost. This will encourage a re-examination of pollutant practices and make cleaner, more sustainable, alternatives more affordable.

Transport Fuels

25. Following annual increases in excise on both petrol and diesel from 2009 to 2012 the excise rates have remained constant since then. The rate of excise on petrol is 58.7c, including 4.6c carbon charge, per litre while the excise on a litre of diesel is 47.9c, including 5.3c carbon charge.

Increase in Excise (VAT inclusive) from 2009 - 2012				
Budget	2009	2010	2011	2012
Petrol	8c (Oct 08)	4.2c*	4c	1.4c*
Diesel	5c (Apr 09)	4.8c*	2c	1.6c*

*increase applied via carbon tax.

26. Of the 28 Member States in the EU, the excise rate on a litre of petrol in Ireland is the 11th highest while diesel is the 7th highest. The applicable excise rates for all Member States are contained in Appendix II.

Figure 3 - Petrol and Diesel Consumption '000 Litres

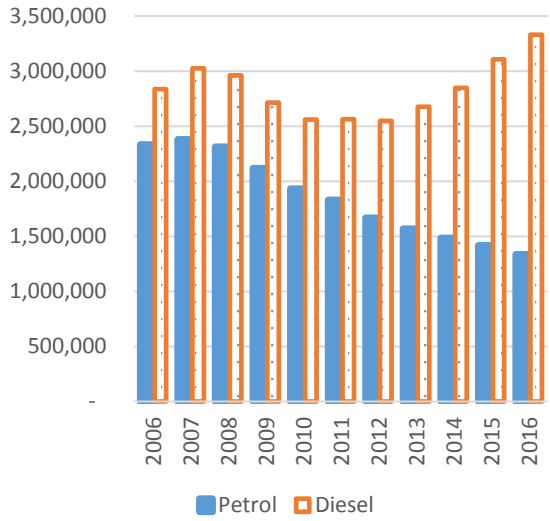
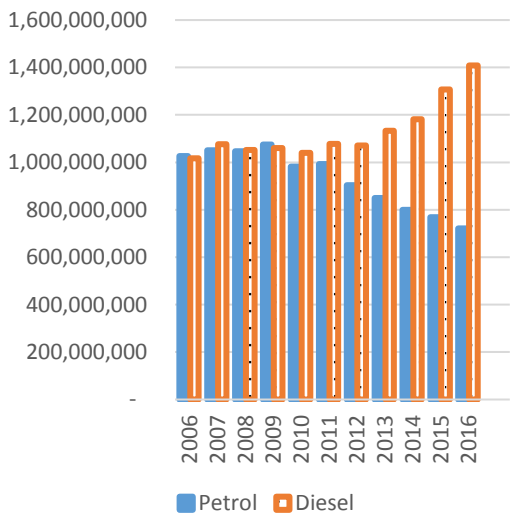


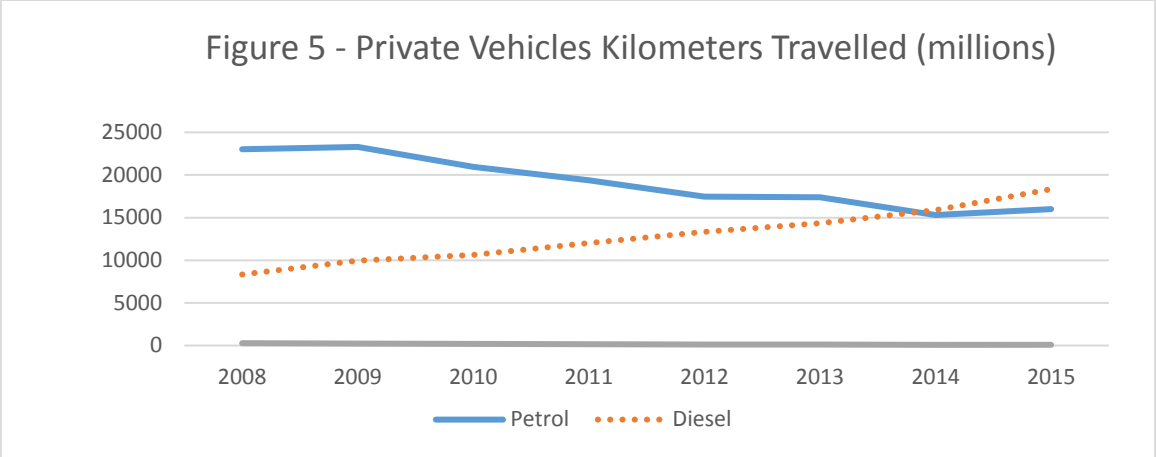
Figure 4 - Petrol and Diesel Excise Receipts €m



Source: Revenue Commissioners

27. As the above figures show, the consumption and excise receipts from petrol are declining year on year while diesel consumption and receipts are increasing. Figure 5 shows that in 2008 private vehicles travelled 31,346 million kilometres with petrol vehicles accounting for 73.4%. By 2014, private vehicles travelled a similar distance of 31,189 million kilometres with diesel accounting for more than half of that distance, 50.9%. In 2015 the number of kilometres travelled jumped to 34,609 with diesel accounting for 53% of this figure.

28. Examining recent trends indicates how much of an issue dieselisation is becoming. Using data from 2015 (the latest available from CSO) of the new private cars purchased in that year diesel accounted for 83% of kilometres driven by private vehicles compared to 16% by petrol vehicles.



Source: CSO

29. As of the end of 2015 Ireland has 2.57 million vehicles on the road, over 77.4% of which are private cars. Goods vehicles account for 12.7%, tractors 3.6%, motor cycles 1.4% and all other vehicles accounting for the remaining 4.8%. Of the 1.99 million private cars 55.4% are petrol and 43.6% are diesel. When comparing the composition of the vehicle fleet in 2008 prior to the revision of the VRT and motor tax basis there were 2.50m vehicles on the road with private cars accounting for 77% of the fleet. Petrol driven private cars accounted for 62% of the overall fleet compared to 15% for diesel powered private cars. Looking at 2015, the size of the overall fleet is similar at 2.57m vehicles while the composition is entirely different with petrol powered private cars accounting for 44% of the overall fleet and diesel powered private cars having jumped to 33%. Over the 7 year period, an additional 471,711 diesel powered private cars took to our roads while the stock of petrol powered vehicles reduced by 425,903.

Excise Gap

30. Diesel has traditionally been viewed as the fuel of business and for that reason has enjoyed a reduced rate of excise. Prior to the economic crisis the excise gap stood at 7.46c per litre, throughout the crisis this gap was increased by 44% and now stands at 10.81c. The logic behind broadening the excise gap at the time was to limit, as far as possible, the impact on the competitiveness of business. However, as the above illustrates the move towards diesel powered private vehicles has negated the once targeted nature of the excise gap.

The Future of Excise on Transport Fuels

31. Policy changes to VRT and motor tax in 2008 and 2013 as well as widening the excise gap between petrol and diesel have had the unintended consequence of increasing the up-take of diesel cars by private motorists. In 2016, diesel cars outsold petrol at a rate of more than 2.5 to one. Larger transport vehicles such as heavy goods vehicles, up until recently, had no viable alternative and therefore enjoyed a reduced rate. During the economic recession the gap between the excise on petrol and diesel increased further offering a further incentive for private motorists to switch to diesel.

32. The resulting increase in the number of diesel vehicles, particularly in cities, is giving rise to health concerns due to health implications of higher NOX (nitric oxide and nitrogen dioxide), sulphur oxide and particulate matter emissions associated with these vehicles. A number of cities are moving to ban diesel engine vehicles from within their boundaries, London, Paris, Madrid, Athens and a number of German cities among them. In August last the Dutch Parliament approved a proposal to ban the sale of all cars with combustion engines beginning in 2025.

33. There have been a number of calls seeking the equalisation of excise duty on petrol and diesel for climate policy reasons. In their 2017 stability programme update the EU stated that the excise gap is environmentally unjustifiable. The OECD have recommended at least an equalisation of excise rates on petrol and diesel to address negative externalities caused by the combustion of these fossil fuels. The basis of this suggestion is the lower tax rate on diesel fails to account for the social and health environmental externalities caused by its combustion.

34. Our closest trading partner, the UK, already has equalised excise rates on petrol and diesel. A number of countries, notably France and Belgium, are in the process of doing so.

35. A pathway to achieving equalisation is included in the options part of this paper. By delivering this over a 5 year period it allows certainty for business and consumers alike to make informed decisions.

36. The National Mitigation plan commits to examining the possibility of including some of the technology necessary to adopt natural gas as a transport fuel in the Accelerated Capital Allowance Scheme. This would further incentivise the adoption of this cleaner fuel.

37. In May of this year, the Minister for Transport, Tourism and Sport, published the National Policy Framework on Alternative Fuels Infrastructure for Transport in Ireland for the period 2017 to 2030. This sets out the obligations on Ireland to enable a transition to alternative fuels in transport such as electricity, compressed natural gas, liquefied natural gas and ultimately

hydrogen. The Framework represents a first step in communicating a longer term vision for the Irish transport sector. It sets an ambitious target that by 2030 all new cars and vans sold in Ireland will be zero emissions (or zero emissions capable) with the use of fossil fuels vehicles rapidly receding. This is designed to provide certainty to the industry and consumers regarding the future of transport in Ireland.

38. An economy which overwhelmingly depends on fossil fuels for transport is susceptible to any shocks what may occur due to a spike in oil prices. In recent years the tax system has been aligned to provide credible cleaner alternatives to all consumers of auto-diesel. The Accelerated Capital Allowance scheme allows companies to write down the capital cost of environmentally friendly equipment in year one instead of over the traditional 8 year period. This includes the electrification of private vehicles as outlined earlier and larger vehicles powered by compressed or liquefied natural gas. For private motorists relief from vehicle registration tax was extended in last year's Budget for electric and hybrid vehicles. This, together with the SEAI grant of €5,000 towards the cost of a new EV, can assist motorists in moving away from diesel powered vehicles.

Carbon Tax

39. The Commission for Taxation 2009 recommended the introduction of a tax on carbon emissions from energy products released for consumption in Ireland.

40. This policy was adopted and the carbon tax was introduced on a phased basis beginning in 2009. Initially it applied to motor fuels, in 2010 it was extended to other non-solid fuels and finally extended to solid fuel in 2013 and 2014. Since its introduction carbon tax receipts have grown steadily mirroring the overall economic recovery and this trend has continued since the final phase of its roll out in 2014.

History of Irelands Carbon Tax Yield		
Year	**Rate Per Tonne**	**Yield**
2010	€15	€223m
2011	€15	€298m
2012	€20	€354m
2013	€20	€388m
2014	€20	€385m
2015	€20	€419m
2016	€20	€430m
2017*	€20	€445m

* estimated

41. The breakdown of carbon tax receipts illustrates the declining trend in petrol consumption and corresponding increase in diesel consumption. Following a 10% decrease from 2013 to 2014, excise receipts from marked gas oil remain relatively stable with incremental increases in consumption as the economy continues to recover. This is an indication that the Revenue's sustained work to tackle the illicit use of this product is achieving a desirable outcome.

Year	Auto Diesel	Petrol	Aviation Gasoline	Kerosene	Marked Gas Oil	Fuel Oil	LPG (Other)	Auto LPG	Natural Gas	Solid Fuel	Total Net Receipts
2010	€98m	€65m	€0.04m	€17m	€27m	€1.6m	€2.6m	€0.01m	€11m	-	**€223m**
2011	€98m	€60m	€0.04m	€41m	€49m	€2.3m	€5.6m	€0.01m	€43m	-	**€298m**
2012	€131m	€75m	€0.05m	€40m	€55m	€2.3m	€6.5m	€0.03m	€45m	-	**€354m**
2013	€137m	€70m	€0.03m	€47m	€60m	€2.3m	€7.6m	€0.07m	€57m	€7.3m	**€388m**
2014	€145m	€66m	€0.02m	€42m	€54m	€1.8m	€7.6m	€0.11m	€52m	€17.2m	**€385m**
2015	€158m	€62m	€0.05m	€53m	€55m	€2.0m	€8.4m	€0.14m	€57m	€23.5m	**€419m**
2016	€171m	€59m	€0.04m	€53m	€56m	€2.2m	€8.8m	€0.14m	€56m	€24.4m	**€430m**
2017	€187m	€57m	€0.04m	€54m	€58m	€1.7m	€8.9m	€0.14m	€54m	€24.3m	**€445m***

* estimated

42. There have been reports of sourcing of solid fuel from Northern Ireland resulting in a loss of carbon tax receipts. This is examined in the Cross-Border Trade section. While it is not possible to accurately estimate the impact of any potential cross-border trade the SEAI estimate[3] that greenhouse gas emissions from the residential sector were 5.2% higher in 2015 than in 2014. When weather adjusted for a colder winter consumption increased by 3.5% overall. These increases can be attributed to a 47% decrease in the price of oil which resulted in a 20% reduction in the retail price to consumer driving an 11.5% increase in consumption. At the same time consumption of coal decreased by 5.8%.

[3] SEAI, Energy in Ireland 1990-2015

The Future Price of Carbon in Ireland

43. It is telling that in the first report of the Climate Change Advisory Council[4] the number one priority is the importance of an effective price[5] for carbon emissions in Ireland. The price of carbon emissions is split between Emissions Trading System (ETS) and domestic emissions in Ireland (Non-ETS). The ETS is controlled at EU level and has, thus far, failed to achieve its purpose of placing a sufficient burden on fossil fuel consumption to make cleaner more sustainable alternatives attractive for investment.

44. The rate of the carbon tax on the other hand is set by the Government. Upon its introduction, in line with the Commission for Taxation recommendation of parity with the ETS carbon price, it was introduced at a rate of €15 per tonne. It subsequently rose to €20 per tonne in 2012, with a double income tax relief made available to farmers to compensate them from the price increase, but has remained at that level since.

45. The EU, the OECD, the Climate Change Advisory Council and others believe there is a need to examine the approach to carbon tax with the rate considered as part of the annual Budget process in order deliver a pathway to decarbonisation. A proposed option is to set a long term pathway which would give certainty and incentive for business and decision makers to make informed choices now. This would allow for more assured investment in research and development into renewable alternatives. A long term price signal would also make investment in energy efficiency more attractive. Holding the rate at the same level for sustained periods of time results in the tax losing environmental efficacy as consumers adjust and accept the rate. Year on year rate increases would ensure continued visibility as well as incentivising cleaner alternatives not subject to the tax.

46. A similar policy has been adopted in France where the rate is set to ramp up significantly over the long term. The rate for 2013 was zero, by 2017 it has jumped to €30.50 per tonne of CO2 emissions, this will increase to €56 in 2020 and in 2030 it will be €100 per tonne.

47. The adoption of such a long term policy would not be without difficulties, least of all politically. However, Ireland along with most countries have committed to decarbonising the global economy, through radical policies if necessary.

48. The use of complementary supports to assist with the additional expenses of the carbon tax in Ireland has ensured its successful implementation as a tax. The Better Energy Homes scheme is available to all homeowners and has provided grants of over €208m to over 200,000 homes since its introduction in 2009. The SEAI also operate the Better Energy Warmer Homes which provides grants for the full costs of energy efficiency improvements in the homes of the elderly and most vulnerable. The use of these schemes helps reduce fuel consumption and other complementary measures could be devised if necessary.

[4] http://www.climatecouncil.ie/media/CCAC_FIRSTREPORT.pdf

[5] The OECD define an effective carbon price using a combination of 3 components: ETS price, Carbon Tax and Specific Tax on Energy Use i.e. Excise.

49. A thorough examination of the likely impact of such a policy in areas such as economic competitiveness, regional impacts and how to protect the most vulnerable from fuel poverty must inform the design of any such policy.

50. The ERSI as part of a joint research initiative with the Department of Finance will conduct a study to examine some of the issues mentioned above in 2018. The 2018 commencement date is dependent on the ESRI having a working model in place at the time.

Electricity tax

51. Electricity tax has applied in Ireland since October 2008 and applies at the minimum rate allowable, under the EU Energy Tax Directive, of €0.50 per MegaWatt Hour (MWh) for business and €1.00 per MWh for non-business. This is significantly lower than the EU average of €4.76 per MWh for Business use and €11.3 per MWh for non-Business use. A small number of electricity consumers, such as Government agencies and local authorities, fall into the non-business category and this has led to administrative difficulties for Revenue. Domestic users of electricity are exempt from the electricity tax.

52. Appendix III provides a comparison of the rates across all Member States with the average rate of tax for business use at €7.47 per MWh compared to the €0.50 applied in the State and an average of €14.02 for non-business compared with €1.00 in Ireland.

53. Electricity generation is often criticised for the lack of progress in the area of decarbonisation. The Public Service Obligation provides financial support for the generation of electricity using peat, which is among the most carbon intensive fossil fuels. This incentivises the use of this fossil fuel to generate electricity, when coupled with the absence of electricity tax from domestic consumers, fails to account for the externalities for power from this source.

54. The National Mitigation Plan commits to examining all fossil fuel subsidies including the subsidisation of peat used for electricity generation through the PSO. In the meantime, the European Commission, through the Environmental Fiscal Reform recommendations, has recommended the equalisation of electricity tax for business and non-business consumers in Ireland. This would eliminate the administrative difficulties and ensure a clear application of electricity tax. As the below chart illustrates receipts from the electricity tax are relatively stable at in or around €4.5m per annum in recent years, an option for equalising rates is included in the options section of this paper.

Cross Border Trade

Cross Border Comparisons (Prices & rates in € as of 25 May 2017)

Product	ROI Price	N.I. Price	Price Differential	Total Tax/Duty in this State	Total Tax/Duty N. Irl	Difference Total Tax/Duty
Petrol (litre)	€1.36	€1.37	€-0.01	€0.84	€0.90	€-0.06
Auto-diesel (litre)	€1.25	€1.39	€-0.14	€0.71	€0.90	€-0.19

55. Cross border trade is inevitable along any border with price differentials attracting consumers from one side to purchase goods in another jurisdiction. The auto-fuel price differential is based on three discreet variables - excise, VAT and the currency exchange rates. A survey taken on 25 May 2017 indicates that petrol and particularly diesel are cheaper in the South than in Northern Ireland. This price differential has led to a significant level of 'fuel tourism' where fuel is purchased in the South and consumed in Northern Ireland. These sales of fuel consumed elsewhere are recorded as Ireland's greenhouse gas emissions under Kyoto protocol and European Commission accounting rules.

56. In relation to fuel tourism, a joint research programme between the Department of Finance, Revenue and the ESRI examined the issue of cross-border transport fuel sales using data from April 2013 to March 2015. The findings of this report estimate that fuel tourism contributed €202m in tax in the case of diesel and €28m in the case of petrol annually. However, this also makes up in the region of 1.17 million tonnes carbon emissions which amounts to almost 2% of Ireland overall emissions.

57. Any future policy direction must balance the net revenue loss together with the resultant impact excise increases place on the competitiveness of the overall economy.

58. Solid fuel is cheaper in Northern Ireland due to the reduced VAT rate of 5% in the North compared to 13.5% in the South and the application of the solid fuel carbon tax in the South. This has given rise to reports of consumers sourcing solid fuel in the north whose sulphur content is not compatible with environmental standards set out in the SWiFT 7 verification mechanism. Any increase in the rate of carbon tax in the South would increase the price differential and further exacerbate these issues.

59. The decision of the United Kingdom (UK) to leave the EU has given rise to uncertainty in the markets and has resulted in a drop in Sterling against the Euro. While the UK remains a full

member until such time as it formally leaves, developments will need to be monitored closely as this could give rise to an increase in cross border trade.

60. Another area of cross-border activity arises in the construction industry, where Northern Irish operators purchase aggregates in the south as unlike in Northern Ireland they are not subject to an aggregates levy. This issue is covered in more detail later in this paper.

Electric Vehicles

61. Transport emissions account for 20% of all emissions and 29% of non-ETS emissions in the State. Our vehicle fleet has an overwhelming dependence on oil. As the economy recovers emissions from this sector will continue to grow, emphasising the need to diversify our sources of fuel to cleaner alternatives.

62. The Programme for Partnership Government outlines this Government's intention to become a leader in the take-up of electric vehicles.

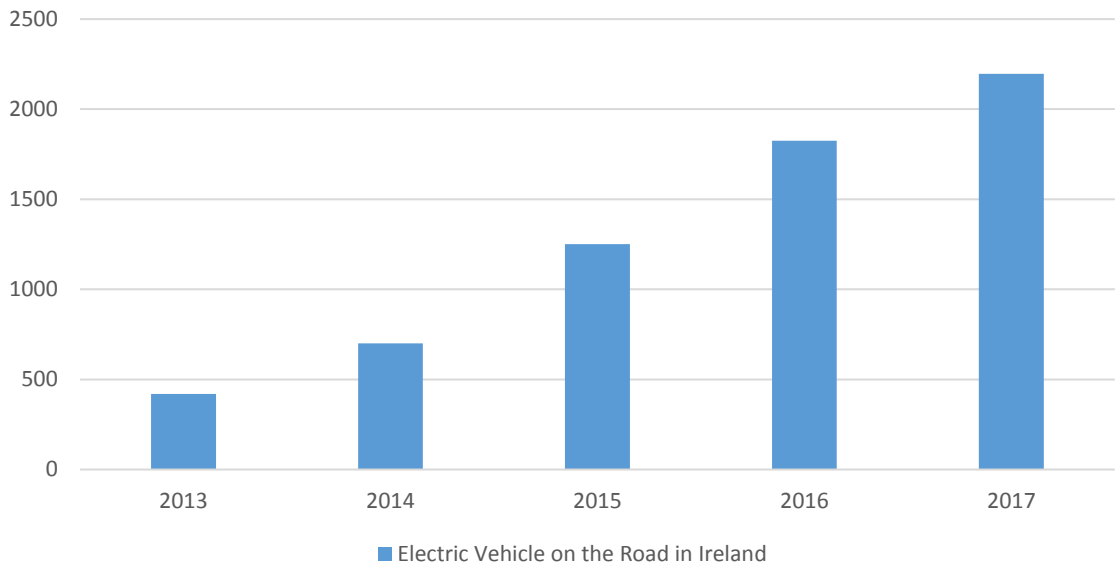
    'We want Ireland to become a leader in the take-up of electric vehicles. We will establish a dedicated taskforce involving relevant government departments, agencies, industry and representative groups, to work on this goal and to set ambitious and achievable targets. The taskforce will also investigate the potential role and use of other future fuels such as hydrogen.'

63. Ireland's target under the Renewable Energy Supply Directive (Directive 2009/28/EC) is to ensure that 10% of its transport energy comes from renewable sources by 2020. Currently, progress towards this target is largely reliant on liquid biofuels such as biodiesel. As the number of Electric Vehicles (EV) grows this will allow wind power to contribute towards this target. The SEAI have stated that to meet our 2020 renewable targets 1 in 5 vehicles sold in 2020 must be an EV. The biggest obstacle preventing consumers adopting electric vehicles in Ireland is *range anxiety*, which is the fear of running out of power far from the nearest charging point or destination. Manufacturers are keen to address these fears through increasing battery life, however, for long distance driving the technology will need to be proven before large scale adoption.

64. To date, despite the relative generosity of the VRT relief for less environmentally harmful vehicles, a Sustainable Energy Authority of Ireland (SEAI) grant of up to €5,000 and low annual motor tax rates, EVs sales remain relatively low. As the below graph indicates, there are currently around 2,200 EVs on Irish roads. Ireland currently has a well-developed infrastructure for electric vehicles with over 1,200 public charging points and every town with a population of over 1,500 is equipped with at least one. The ESB have also provided free home charging

points for consumers who purchase a new EV. As the up-take of EVs increases so will the number of public charging points.

Figure 6. Electric Vehicle on the Road in Ireland



65. In line with the Programme for Partnership Government, a Low Emission Vehicles Taskforce (LEV) has been established to examine options which may be beneficial to the early adoption of this cleaner technology. Work by this taskforce is ongoing and it is expected to bring recommendations to Government in the second half of this year.

Tax Incentives

66. A number of tax incentives already exist for EVs: (i) VRT relief, (ii) inclusion of EVs on the list of products qualifying for accelerated capital allowances which allows for the write off of the capital cost in year 1 rather than over the traditional 8 year period (iii) reduced rate of motor tax, and (iv) for charging purposes it should be noted that domestic users of electricity are currently exempt from electricity tax.

67. Officials from Department of Finance prepared a paper for the LEV on Benefit in Kind (BIK) treatment of EVs. BIK can be an especially useful tool to incentivise the up-take of less environmentally harmful vehicles. The Finance Act 2008 provided that BIK should be emissions based rather than the current application of engine size. This legislation was not commenced at that time due to the overall economic landscape. Given the potential environmental benefits it may now be an opportune time to commence this legislation. Prior to commencement the 2008 BIK provision needs to be updated and linked to the current VRT and motor tax categories to allow for technological advancements in the intervening period. A separate provision for EV's has been examined.

Benefit-in-Kind

68. A benefit that an employee receives from their employer but is not included in their salary, is known as Benefit-in-kind (BIK). BIK, such as the private use of a company car, received from an employer is taxable subject to certain conditions. BIK for cars provided by employers in Ireland is currently based on engine size and kilometres driven and ranges from 6% to 30% of the value of the vehicle.

69. EVs receive favourable BIK treatment in a number of other countries, such as the UK, France and Germany. The most significant incentive available is a 0% BIK rate on vehicles with zero emissions. The cost of introducing a 0% benefit-in-kind for the EV's are set out in the table below. As can be seen the table indicates a large window of between €2,700 and €50,000 per annum depending on the Original Market Value (OMV) of the vehicle.

70. The cost of implementing a BIK rate of 0% on the most popular EV on the Irish market is almost €9,000 per annum for those using the vehicle for less than 24,000km. In the absence of BIK data it is difficult to estimate the number of EVs which may avail of a 0% rate should it be introduced, however, on the basis of 5,000 vehicles availing of 0% then the annual tax forgone would be in the region of €45m annually.

Make	Model	Price From	Maximum Potential Tax Forgone Per Annum
Nissan	Leaf XE	€24,336	€7,300
	Leaf SV	€29,661	€8,898
	Leaf SVE	€32,260	€9,678
BMW	i3	€45,502	€13,650
	i8	€168,960	€50,688
Renault	Twizy	€8,995	€2,698
	Zoe	€21,640	€6,492
Tesla	Model S	€104,795	€31,438
	Model E	€94,536	€28,360

71. The Department of Finance has examined a number of BIK options incentivising EVs. The details of the examination are beyond the scope of this paper. However, is worth outlining the results for the purposes of evaluation.

72. The examination used 2 scenarios based on EV sales, low growth and high growth. A number of other factors were also considered with thresholds of 5% and 10% of projected sales availing of BIK as well as a glide path providing an introductory 0% BIK which is gradually phased out.

73. The overall range of costs would depend on the number of EV sales and the number of those availing of BIK. If adopted in 2018 the projected costs range from €163,000 per annum using the 5% low growth revised BIK system, to €2.25m for the 10% high growth halved BIK system with glide path. By 2024 the ranges have increased to €1.35m to €16.7m annually. A complete exemption from BIK would result in an annual tax loss of €45m on the basis of 5,000 vehicles availing of the relief.

74. In Budget 2017 the VRT relief for EVs was introduced for a period of 5 years, rather than the rolling 2 year period which has been standard to date. The VRT relief provides up to a maximum of €5,000. The removal of this ceiling could be considered as a policy option and would build on the signal to the car sales industry the 5 years extension announced in Budget 2017 provided allowing for an investment in electric vehicles thus providing more options for customers. The Society of the Irish Motor Industry (SIMI) have requested the VRT reliefs are extended to 2025 to provide a long term signal to industry and consumers.

Aggregates Levy

75. There have been a number of calls from environmental organisations[6] to introduce an Aggregates Levy on aggregates extracted from the ground or lifted from the surface, such as rock, sand and gravel and used in construction.

76. A similar levy was introduced in the UK in 2002 and the current charge is £2 per tonne of extracted aggregate in Northern Ireland. Following the introduction of the aggregates levy in the UK aggregate recycling increased from 5% to 25%. The EU average of aggregate recycling is 5%.

77. The introduction of a similar levy on aggregates in Ireland would reduce demand and encourage recycling of previously used construction materials as well as compensating for environmental externalities caused by quarry activities.

78. A significant number of quarries have appeared on the southern side of the border to supply aggregates to meet the demand for use in construction in the North. The environmental

[6] Environmental Pillar, EUNomia and the European Environmental Agency

consequences of this activity are not limited to the emissions caused by extraction, processing and transport of aggregates but impact negativity on local rural communities. This can be through noise pollution, air pollution as well as the impact of the heavy goods vehicles damaging the road infrastructure which hasn't been designed to cater for such laden vehicles.

79. It would be necessary to put in a place a system to properly regulate this activity which may result in a long lead in time prior to implementation. This measure would likely be met with opposition from the construction sector at a time when significant residential construction is needed to address supply side issues.

80. The implementation of such a levy would require the development of system of collection. This would likely be on a self-assessed basis with quarries registering with the relevant authority and paying the levy at a rate per tonne extracted in arrears possibly similar to the system of VAT collection.

81. It is difficult to estimate the yield the introduction of an Aggregates Levy would generate for the Exchequer. The Irish Concrete Federation estimate that there was approximately 30 million of aggregate produced for sale in 2016. If a levy was introduced in line with the UK rate, i.e. €2.50 per tonne, and assuming no change in behaviour this, would yield €75m.

Vehicle Registration Tax

82. Vehicle Registration Tax (VRT) is a tax chargeable on the registration of motor vehicles in the State, and has been in place since 1993, when it replaced the Motor Vehicle Excise Duty (MVED). VRT is levied as a percentage of the open market selling price (OMSP) of a passenger motor car. Since 1 July 2008, both VRT and Motor Tax on private motor cars have been calculated on the basis of CO2 emissions, so that motor cars with higher emissions attracted a higher tax liability.

83. The bulk of revenue from VRT (nearly 94%) is raised on private motor cars. VRT is, by virtue of the nature of the Irish motor car market, an extremely pro-cyclical tax. Car registrations and VRT receipts declined significantly from a peak in 2007. New car registrations fell by 19% in 2008 and 63% in 2009. The operation of a scrappage scheme between January 2010 and June 2011 led to a temporary boost in registrations in 2010 and 2011, though new car sales again rapidly declined in 2012 and 2013. New car registrations increased in 2014, and accelerated in 2015. This growth has continued in 2016 and into 2017. As a result of the UK decision to leave the EU and the subsequent decline of sterling, there has been a significant upsurge in the number used car registrations in the second half of 2016 and early 2017.

Year	VRT Yield	New Car registrations	Used Car registrations
2008	€1,121m	146,637	55,819
2009	€375m	54,055	45,055
2010	€383m	85,264	37,125
2011	€388m	87,086	38,214
2012	€379m	76,237	37,902
2013	€437m	71,317	48,146
2014	€542m	92,613	32,806
2015	€659m	125,221	48,398
2016	€814m	146,806	72,718
2017 *	€820m	145,910 (Est)	65,143 (Est)

*estimate

84. The introduction of a second registration period beginning in July 2013 changed the pattern of car sales, with a 58% increase in car sales taking place in July 2013, the first month the new second registration period was introduced, over July 2012. This has smoothed car sales somewhat over the calendar year, improving cash flow in the motor trade. The levels and patterns of car sales in recent years has led to a relative aging of private cars. In 2002, over 45% of private cars were under four years old, while in 2013 18% of private cars were under four

years old. By 2016, 78% of private cars were 4 years old and over while 66.9% were 6 years old and over. However, the recent increase in new cars sales may address this issue over time.

85. In Budget 2013, the emissions bands were adjusted to increase the incentive to purchase less environmentally harmful motor cars and to increase revenue. These changes are set out below:

Old VRT Band	Old VRT Rate	New VRT Band	CO2 g/km	New VRT Rate
A	14%	A1	0-80	14%
		A2	81-100	15%
		A3	101-110	16%
		A4	111-120	17%
B	16%	B1	121-130	18%
		B2	131-140	19%
C	20%	C	141-155	23%
D	24%	D	156-170	27%
E	28%	E	171-190	30%
F	32%	F	191-225	34%
G	36%	G	Over 225	36%

Structural Reduction in VRT Yields

86. There has been a marked shift towards lower CO2 emitting vehicles in recent years, as consumers have moved towards purchasing cleaner and cheaper motor cars, and car manufacturers have produced more fuel efficient motor vehicles. The table below indicates the percentage of new cars sold by CO2 emission. 79% of new motor cars sold emitted between 0 and 120 CO2 g per kilometre in 2016 to date, compared to 35% of motor cars sold in 2010.

CO2 g/km	2010	2011	2012	CO2 g/km	2013	2014	2015	2016	2017*
0-120	35.4%	42.7%	54.6%	0-80	0.1%	0.3%	0.9%	1.2%	1.6%
				81-100	12.4%	19.4%	21.1%	23.0%	21.2%
				101-110	13.6%	20.4%	28.8%	29.6%	29.8%
				111-120	35.7%	28.3%	21.1%	24.8%	25.1%
121-140	45.4%	48.0%	38.0%	121-130	17.6%	14.6%	13.6%	13.2%	13.6%
				131-140	14.8%	12.4%	10.1%	4.8%	5.2%
141-155	10.1%	4.9%	3.9%	141-155	3.6%	2.9%	2.7%	2.5%	2.4%
156-170	6.2%	2.6%	1.8%	156-170	0.9%	0.9%	0.9%	0.6%	0.7%
171-190	2.0%	1.0%	1.0%	171-190	0.8%	0.4%	0.6%	0.4%	0.5%
191-225	0.7%	0.6%	0.6%	191-225	0.3%	0.4%	0.1%	0.1%	0.1%
>225	0.3%	0.2%	0.0%	Over 225	0.3%	0.3%	0.0%	0.0%	0.0%

*To end of May 2017

87. EU Regulation 443/2009 (as amended) mandated average CO2 emissions targets for motor vehicle manufacturers that new cars do not emit more than an average of 130g CO2/km by 2015 and an average of 95g CO2/km by 2020/2021. These targets will further shift the new cars registered into the lower VRT bands, thus reducing VRT receipts. Evidence for this can been seen in the VRT yield table where car registrations in 2016 at similar levels to 2008, yet the VRT yield is down €300m. This structural reduction may be addressed through incremental increases in VRT rates, as a greater number of car sales move into the lowest emissions bands.

Recent Developments and Challenges to VRT system

88. In addition to the need to reduce CO2 emissions, the current manufacturer tests, the New European Driving Cycle (NEDC), for CO2 and fuel consumption is due to be replaced by the newly developed Worldwide Harmonised Light Vehicles Test Procedure (WLTP). The WLTP will provide stricter test conditions and more realistic fuel consumption and CO2 emission values to the benefit of consumers. The WLTP was developed to address the deviation between official laboratory and real-world fuel consumption and CO2 values. The drive to adjust the tests for the type approval of vehicles received increased political focus as a result of the Volkswagen emissions scandal in Autumn 2015. While the Volkswagen emissions issue did not relate to carbon emissions, but rather to emissions of other oxides, the scandal led to a renewed political impetus to address the issue of a discrepancy between real-world emission and laboratory based emissions testing.

89. The EU Commission has instructed that the WLTP should be phased-in as follows:

1 September 2017	New types of passenger vehicles should be tested with WLTP and these values reflected on the Certificate of Conformity (CoC)
1 September 2018	All new passenger vehicles should be tested with WLTP and these values reflected on the CoC
1 September 2019	A 12 month period of grace for NEDC tested vehicles ends. No new NEDC tested vehicles on the road after this date

90. This means that from 1 September 2018 all new passenger cars will have to be tested under WLTP conditions and the values will be recorded on the CoC. During the transition period both the NEDC and WLTP values will appear on the CoC. However, the Commission is looking for a clean transfer from 1 January 2019. This would indicate that there will be no requirement to include NEDC values on vehicles' CoCs after this date. The use of this different standard will likely require the current system of bands for VRT and motor tax in Ireland to be redrawn.

Leasing Case – Case C-552/15

91. In January 2011 the European Commission began infringement proceedings against Ireland based on the perception that, by not providing a refund of VRT on vehicles exported from the State, Ireland's rules around VRT infringed the freedom to provide services in relation to motor vehicle rental and leasing services. The VRT Export Repayment scheme was initiated in Finance Act 2012 to comply with the infringement proceeding. However, shortly after the scheme was introduced the Commission wrote stating that the scheme should also comply with the Dutch VAV case which found that VRT charged upfront should be proportionate to the duration of the lease. At present, VRT is based on the 'Open Market Selling Price' (OMSP) of the vehicle, which is calculated by reference to a broad range of factors including the age, mileage and general condition of the vehicle. Introducing a system whereby VRT is charged based on the length of use of the vehicle would be incompatible with OMSP, and accordingly would require significant re-arrangement of the VRT system.

92. The Commission have continued to pursue the case despite Ireland's efforts to comply and referred the issue to the Court of Justice of the European Union (CJEU) seeking a ruling such that the level of VRT charged upfront on leased and rented vehicles should be proportional to the duration of the lease. The CJEU has not given its ruling yet. The Advocate General delivered his opinion on the Case on 2 March 2017 and it was largely along the lines of that which the Commission had sought. A judgment is expected in the next few months. A negative outcome would mean a change to the VRT system in the way we deal with temporarily imported vehicles.

93. It is imperative that if the VRT system needs to be amended to deal with leased vehicles, that it is amended with a view to avoiding potential detrimental consequences, such as: (i) losses in tax receipts; (ii) emergence of cross-border leasing business models; (iii) damage to the Irish car industry.

Reliefs for Less Environmentally Harmful Vehicles

94. Reliefs for hybrid electric vehicles were first introduced in the Finance Act 2001. At that time the relief amounted to 50 per cent of the VRT payable on such a vehicle. In Finance Acts 2006 and 2007, the 50 per cent relief was extended to flexible fuel vehicles, whose engines utilise a mix of ethanol and petrol, and to electric vehicles respectively. In concert with movement of VRT to a CO2 basis, the reliefs for hybrid electric, and flexible fuel vehicles (FFVs) were reduced in the Finance Act 2008, and electric motorcycles and vehicles were exempted from VRT. Reliefs of up to €2,500 were provided in respect of hybrid electric and flexible fuel vehicles. The Finance Act 2010 extended the relief to plug-in electric hybrid, to encourage their entry onto the Irish car market.

95. The Finance Act 2011 reduced the maximum relief available for flexible fuel vehicles and hybrid electric vehicles from €2,500 to €1,500, which recognised the reduction in price of those vehicles and that plug-in hybrid electric vehicles, which retained relief of up to €2,500, were less environmentally damaging. The VRT relief in respect of electric vehicles was also limited to a maximum of €5,000. In the Finance (No. 2) Act 2013 the relief for FFVs were phased out, as those type of vehicles were no longer available on the market.

96. In Finance Act 2016 relief for hybrid electric vehicles and plug-in hybrid electric vehicles was extended up until 31 December 2018. Also in that Act, electric vehicles and motorcycles registered before 31 December 2021, were made eligible for relief from VRT up to a maximum amount of €5,000. Electric motorcycles are exempt from VRT until 31 December 2021.

Type of vehicle	Maximum Relief	Average CO2 emissions
Hybrid Electric Vehicles	€1,500	92g/km
Plug-in Hybrid Electric Vehicles	€2,500	50g/km
Electric Vehicles	€5,000	0g/km
Electric Motorcycles	Exempt	0g/km

Light Goods Vehicles

97. The Department of Transport has proposed the application of an emissions based VRT system to light commercial vehicles (category B vehicles below).

Category	Type of vehicle
Category A	Vehicles include cars (saloons, estates, hatchbacks, convertibles, coupés, MPVs, Jeeps etc.) and minibuses with less than 10 seats
Category B	Light Commercial Vehicles
Category C	larger commercial vehicles, agricultural tractors and buses

98. Light commercial vehicles are subject to a rate and structure of VRT lower than that applied to private vehicles. Light commercial vehicles, less than 3.5 tonnes, are classified as Category B vehicles for VRT purposes. They are currently liable for VRT of 13.3%, subject to a minimum of €125, of the Open Market Selling Price (OMSP). Larger commercial vehicles (over 3.5 tonnes) make up the vast majority of commercial vehicle sales and are currently categorised in VRT Category C and incur a flat rate charge of €200.

99. The Department of Transport proposal aims to incentivise the purchase of vehicles which produce less CO2 emissions by introducing three bands of VRT for category B vehicles. These three bands would be based on carbon emissions, as already applies to private vehicles, and would be set at rates of 10%, 14% and 18%. These rates would provide businesses with the opportunity to lower their VRT liability from 13% to 10% if they purchase carbon efficient vehicles.

100. The proposal seeks to address the discrepancy whereby 11 different rates for Category A vehicles are applied while the Category B and Category C vehicles are both subject to 1 flat rate, with no incentive to purchase vehicles with lower carbon emissions.

101. If VRT were applied in this way to the 7,986 vehicles registered in Category B in 2016, the average increase in VRT per vehicle would be €1,819. The increased yield would be €14.5m based on 2016 figures. (see Appendix IV)

102. As Appendix V shows, the proposed introduction of 10%, 14% and 18% rates would present businesses with the opportunity to reduce their VRT liability, should they opt to purchase a vehicle in the first four bands with a maximum CO2 emissions (CO2g/km) up to and including 120g/km. These bands are subject to the 10% rate, and would have led to a €686 to €914 decrease in VRT liability on 2016 figures in those bands. Purchasing vehicles in bands B and C would have caused a €266 to €367 increase in VRT liability, at the 14% rate in 2016. Finally purchasing vehicles in the highest emission bands would have led to an increase of up to €2,737 in VRT liability in 2016, applying a rate of 18%.

103. The potential benefits of introducing banded rates of VRT on light commercial vehicles are twofold; an increase in revenue to the exchequer and a positive environmental impact via a reduction in CO2 emissions as companies choose vehicles which are more cost effective and fuel efficient.

104. The implementation of the proposal would require significant administrative and system changes for Revenue and industry. The introduction of the emissions based VRT system for private cars in 2008 was preceded by a public consultation process announced in Budget 2007 and allowed for a lead in time of six months from its introduction in Budget 2008.

105. While the measures above would raise revenue and may have a positive effect on CO2 emissions in the long term, they may have a negative effect on the economy by increasing the costs of doing business and in turn increasing the price of consumer goods. However, the proposal also offers businesses the opportunity to reduce their VRT liability by purchasing vehicles with lower emissions, which in turn would also reduce their fuel costs as such vehicles have greater fuel efficiency. Companies that benefit from reduced fuel costs and the lower rate of 10% (than the current 13.3% rate) could in turn reduce the price of consumer goods. The business effects of the banded VRT proposal for light commercial vehicles is dependent on the degree to which business respond to the new bands and the availability of vehicles in this range.

Gender and Equality Implications

106. There are no specific gender or equality implications with regard to these tax issues.

Options

Transport Fuel

107. The products which offer the largest yield from increases in the rate of both excise and carbon tax are petrol and diesel. If the equalisation of excise duty rates is to be implemented as a policy it may be prudent to do so over a period of 5 years. By sending the signal that this policy will be implemented gradually over a number of years this will minimise the impact on competitiveness as it allows scope for decisions by businesses, who are the primary users of diesel, over the medium-term to be future-proofed. A 5 year period may also provide for greater incentive for the adoption of natural gas as a transport fuel which was introduced in Budget 2015 with the excise to be held at the minimum rate (€9.36 per megawatt hour) allowable under the Energy Tax Directive for a period of 8 years. As the below table shows equalising the excise rates over a 5 year period would yield, on average, an additional €67.4m (VAT Exclusive) per annum giving an estimated cumulative yield over the 5 year period of €337m (VAT Exclusive), assuming no change in behaviour.

Pathway to Equalisation of Petrol and Diesel Excise Rates

	Petrol excise	Diesel excise	Yield					Cumulative yield
Current Rates Per Litre	58.77	47.90						
2018	58.77	50.08	€68.0m					€68m
2019	58.77	52.25	€67.7m	€68.0m				€136m
2020	58.77	54.42	€67.4m	€67.7m	€68.0m			€203m
2021	58.77	56.60	€67.1m	€67.4m	€67.7m	€68.0m		€270m
2022	58.77	58.77	€66.8m	€67.1m	€67.4m	€67.7m	€68.0m	€337m

108. The estimated revenue from straight-forward increases in excise on petrol and diesel are set out below.

Increase (VAT inclusive)	Petrol	Auto-diesel
Cent per litre	**Yield**	**Yield**
1	€11m	€26m
3	€32m	€76m
5	€53m	€127m
10	€105m	€251m

Options around Carbon Tax

109. An increase in the rate of carbon tax by €5 per tonne of CO2 emitted would raise in the region of €110.4m annually while a corresponding increase of €10 per tonne of CO2 emitted would yield €220m. It is important to be cognisant of the impact the application of carbon tax is reported to be having on solid fuel traders, any increase would exacerbate this as well as impacting negatively on fuel poverty.

Impact of Increases in Carbon Tax (including VAT)			
Product	**Unit**	**€5**	**€10**
Petrol	Litre	1.40c	2.80c
Diesel	Litre	1.64c	3.27c
Coal	40kg bag	60c	120c
Peat briquettes	Bale	13c	26c

110. SIMI have advised caution in relation to diesel equalisation initiatives as it would likely affect the market value of used cars and have a knock-on effect on Irish car dealers.

Options around Electricity Tax

111. Should the tax rates for business and non-business be equalised as outlined earlier in this paper, it would lead to an increase in yield of €4.5m per annum.

Options around Benefit in Kind

112. Updating and commencing the benefit in kind provisions in Finance Act 2008 would offer incentives for the adoption of less environmentally harmful vehicles. The inclusion of a new category for EV should also be considered to allow for early adoption of this developing technology.

113. The taxable benefit of benefits-in-kind, including in respect of company cars, are not separately identified on returns so it is not possible to estimate accurately the likely cost of this measure in the absence of such information.

114. A range of options around the introduction of BIK for electric vehicles are considered earlier in this paper and costs could vary across a broad range from €163,000 to €45m per annum depending on the approach adopted and the number of electric vehicles sold.

Vehicle Registration Tax Options

115. SIMI have requested that there should be no increase in VRT in 2017.

116. It should be noted that as consumers move to lower CO2 emitting vehicles, the VRT yield per motor car declines given the structure of the VRT rates. In terms of revenue raising option, the following table outlines estimates of additional revenue yields in 2018 where the rates increased by 1%.

No. of new car sales	130,000	135,000	140,000	145,000
1% increase	€43.0m	€44.7m	€46.4m	€48.0m

Appendix I – Carbon Tax Options

Estimate of additional Revenue yield from an increase of €5 /Tonne CO2 in rate of 'Carbon Tax'

			VAT Exclusive	VAT Inclusive						
Fuel Type	Unit	Price	Carbon tax per unit	Carbon tax per unit	% price increase	Gross Carbon Tax	Exempt under ETS	Net Carbon Tax	VAT	Revenue yield VAT inc. € m
Auto-diesel	litre	**1.267**	0.0133	0.01635	1.3%	40.4*	0.0	40.4*	1.6*	42.0*
Petrol	litre	**1.374**	0.0114	0.014	1.0%	11.7*	0.0	11.7*	2.7*	14.4*
Kerosene	k/litre	**630**	12.6224	14.3264	2.3%	13.2	0.0	13.2	1.8	15.0
Marked Gas Oil	k/litre	**680**	13.5084	15.332	2.3%	13.8	0.1	13.8	0.7	14.5
LPG	k/litre	**710**	8.1229	9.2195	1.3%	2.2	0.0	2.2	0.2	2.4
Fuel Oil	k/litre	**730**	15.3926	17.4706	2.4%	0.9	0.4	0.5	0.0	0.5
Natural Gas	1 MWH	**68**	0.9247	1.0495	1.5%	48.1	34.1	13.9	1.1	15.1
Peat Briquette	Bale	**4.75**	0.1146	0.1301	2.7%	1.4	0.00	1.4	0.2	1.6
Coal	40kg	**18.3**	0.5323	0.6042	3.3%	25.2	20.9	4.3	0.5	4.8
Total						**157**	**55.5**	**101.5**	**8.9**	**110.4**

Estimate of additional Revenue yield from an increase of €10 /Tonne CO2 in rate of 'Carbon Tax'

			VAT Exclusive	VAT Inclusive						
Fuel Type	Unit	Price	Carbon tax per unit	Carbon tax per unit	% price increase	Gross Carbon Tax	Exempt under ETS	Net Carbon Tax	VAT	Revenue yield VAT inc. € m
Auto-diesel	litre	**1.267**	0.0266	0.0327	2.6%	80.6*	0.0	80.6*	3.3*	83.8*
Petrol	litre	**1.374**	0.0228	0.02801	2.0%	23.4*	0.0	23.4*	5.1*	28.5*
Kerosene	k/litre	**630**	25.2448	28.6528	4.5%	26.5	0.0	26.5	3.6	30.1
Marked Gas Oil	k/litre	**680**	27.0168	30.6641	4.5%	27.6	0.1	27.5	1.5	29.0
LPG	k/litre	**710**	16.2457	18.4389	2.6%	4.4	0.1	4.3	0.5	4.8
Fuel Oil	k/litre	**730**	30.7852	34.9412	4.8%	1.8	0.8	1.0	0.0	1.0
Natural Gas	1 MWH	**68**	1.8494	2.0991	3.1%	96.2	68.3	27.9	2.3	30.1
Peat Briquette	Bale	**4.75**	0.2292	0.2601	5.5%	2.8	0.00	2.8	0.4	3.2
Coal	40kg	**18.3**	1.0647	1.2084	6.6%	50.4	41.7	8.6	1.0	9.7
Total						**313.7**	**111.0**	**202.7**	**17.6**	**220.2**

*** Elasticities applied to calculations relating to auto-fuels**

Appendix II – EU Excise Tax Rates

Comparison of Excise Tax Rates for Petrol and Diesel in EU Member States

Unleaded petrol			Diesel	
Member State	**€ per 1,000 litres**		**Member State**	**€ per 1,000 Litres**
Netherlands	769.9	**1**	UK*	674.87
Italy	728.4	**2**	Italy	617.4
Finland	702.5	**3**	France	530.7
Greece	700	**4**	Finland	530.2
UK*	674.87	**5**	Belgium	507.65
Portugal#	671.1	**6**	Netherlands	484.47
Germany	654.5	**7**	**Ireland**	**479.02**
France	650.7	**8**	Malta	472.4
Belgium	623.21	**9**	Germany	470.4
Denmark	616.14	**10**	Portugal#	455.92
Ireland	**587.71**	**11**	Cyprus	450
Malta	549.38	**12**	Estonia	448
Slovakia	514.5	**13**	Slovenia	426.05
Croatia	514.3	**14**	Denmark	419.4
Slovenia	507.8	**15**	Greece	410
Austria	482	**16**	Croatia	407.71
Cyprus	479	**17**	Czech Republic	405.24
Czech Republic	475.19	**18**	Austria	397
Estonia	465	**19**	Slovakia	368
Luxembourg	462.09	**20**	Hungary	358.07
Latvia	436	**21**	Romania	341.09
Lithuania	434.43	**22**	Latvia	341
Spain	424.69	**23**	Poland	339.84
Sweden	404.46	**24**	Luxembourg	335
Hungary	389.38	**25**	Spain	331
Poland	388.84	**26**	Bulgaria	330.3
Romania	372.17	**27**	Lithuania	330.17
Bulgaria	363.02	**28**	Sweden	259.56
EU Average (28)	**537.19**		**EU Average (28)**	**425.73**
EU minimum Rate	**359**		**EU Minimum Rate**	**330**
*** UK: Exchange rate @ 16/05/2017 of £ .85868 used (source central bank of Ireland) # Latest data for Portugal from 2016**				
Source: EU Commission Tables of Excise Rates in MS (July 2017)				

Appendix III - EU Electricity Tax Rates

Member State	Business use MWh	Non-business use MWh
Netherlands[1]	100.700	100.700
France	22.500	22.500
Germany	15.370	20.500
Austria	15.000	15.000
Italy[2]	12.500	22.700
Finland	7.030	22.530
Greece[3]	5.000	5.000
Cyprus	5.000	5.000
Poland	4.658	4.658
Estonia	4.470	4.470
Slovenia[4]	3.050	3.050
Belgium	1.926	1.926
Malta	1.500	1.500
Slovakia	1.320	0.000
Czech Republic	1.047	1.047
Bulgaria[5]	1.023	0.000
Latvia	1.010	1.010
Hungary[6]	1.008	1.008
Portugal[9]	1.000	1.000
Denmark	0.537	122.208
Romania	0.530	1.070
Sweden[7]	0.521	30.752
Lithuania	0.520	1.010
Spain[8]	0.500	1.000
Ireland[6]	**0.500**	**1.000**
Luxembourg	0.500	1.000
Croatia	0.500	0.999
UK	0.000	0.000
EU Average	**7.47**	**14.02**
EU Minimum	**0.500**	**1.000**

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[1] Netherlands: **Consumption > 10 MWh< 50MWh rate = €49.96; >50 < 10,000 rate = €13.31**

[2] Italy: **Business use rate where monthly consumption > 2000 MWh and < 1,200 MWh rate = 7.5; where monthly consumption >1,200 MWh rate = 4.82**

[3] Greece: **Business use rate = 2.5 for high-voltage users; non-business household use rate = 2.2**

[4] Slovenia: **Over 10,000 MWh per year Rate = €1.8 (Bus. & non-Bus.)**

[5] Bulgaria: **household use rate = zero**

[6] Hungary / Ireland: **Household use exempt**

[7] Sweden: **Business use = Electricity in the manufacturing process. Non-bus rate in Northern parts Sweden = €20.7443/MWh**

[8] Spain: **AV rate of 5.127%; may not go below 0.5 (business) or 1 (non-business)**

[9] Portugal: **No Rate shown for 2017; Rates from 2016 version of tables used.**

Appendix IV

The table below demonstrates possible changes to the structure of VRT on Category B. The table also shows the increased yield per band if such a regime were introduced.

CO2 Emissions CO2g/km)	Percentage payable of the value of the vehicle (Category A)	Current Commercial VRT Rate (Category B)	CO2 Emissions (CO2g/km)	Proposed Commercial VRT Rate (Category B)	Current Yield at 13.3%	Proposed Commercial VRT Yield	Difference
0g/km up to and including 80g/km	**14%** or €280 whichever is the greater	13.30%	0g/km up to and including 120g/km	**10%**	€20,454	€17,059	-€3,395
More than 80g/km up to and including100g/km	**15%** or €300 whichever is the greater	13.30%			€419,807	€306,465	-€113,342
More than 100g/km up to and including 110g/km	**16%** or €320 whichever is the greater	13.30%			€816,321	€594,638	-€221,683
More than 110g/km up to and including 120g/km	**17%** or €340 whichever is the greater	13.30%			€258,363	€189,726	-€68,637
More than 120g/km up to and including 130g/km	**18%** or €360 whichever is the greater	13.30%	More than 120g/km up to and including 155g/km	**14%**	€2,737,397	€2,931,626	€194,229
More than 130g/km up to and including 140g/km	**19%** or €380 whichever is the greater	13.30%			€756,713	€811,168	€54,455
More than 140g/km up to and including 155g/km	**23%** or €460 whichever is the greater	13.30%			€1,150,249	€1,233,744	€83,495
More than 155g/km up to and including 170g/km	**27%** or €540 whichever is the greater	13.30%	More than 155g/km	**18%**	€3,103,672	€4,496,316	€1,392,644
More than 170g/km up to and including 190g/km	**30%** or €600 whichever is the greater	13.30%			€7,378,923	€10,743,180	€3,364,257
More than 190g/km up to and including 225g/km	**34%** or €680 whichever is the greater	13.30%			€15,831,926	€23,092,535	€7,260,609
More than 225g/km	**36%** or €720 whichever is the greater	13.30%			€2,434,431	€3,548,844	€1,114,413
Unclassified (CO2 = 999)	€1,898,350	€3,366,076	€1,467,726				
Total	7,986				**€36,806,606**	**€51,331,379**	**€14,524,773**

Appendix V

VRT is calculated on the Open Market Selling Price (OMSP) of the motor vehicle. Applying the new rates to N1 vehicles registered in 2016 as Category B vehicles would have had it would have raised €51.3m rather than the €36.8m raised using the 13.3% rate. The table below indicates the effects on the liability of each vehicles in each class:

Category B

VRT Band	NO. of Vehicles	Average New OMSP	Average New VRT	Category B VRT	Difference
A1	4	€55,149*	€5,515*	€6,363*	-€848
A2	127	€24,131	€2,413	€3,305	-€892
A3	323	€18,410	€1,841	€2,527	-€686
A4	75	€25,297	€2,530	€3,444	-€914
B1	717	€29,205	€4,086	€3,817	€269
B2	205	€28,264	€3,957	€3,691	€266
C	228	€38,651	€5,411	€5,044	€367
D	551	€45,335	€8,160	€5,632	€2,528
E	1229	€48,563	€8,741	€6,004	€2,737
F	2909	€44,102	€7,938	€5,442	€2,496
G	598	€32,970	€5,935	€4,070	€1,865
Unclassified (CO2 999)	1020	€18,331	€3,300	€1,861	€1,439
Total	7986	€37,321	€6,428	€4,609	€1,819