Environmental Protection Agency

Submission to the Commission on Taxation

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Environmental Protection Agency

This submission covers the following topic area, as outlined under the Commissions' terms of reference

- **Investigate fiscal measures to protect and enhance the environment including the introduction of a carbon tax**

1. Overview

Green or environmental taxes are taxes that are designed to have a direct environmental effect. However, it should be noted that many taxes cause indirect environmental effects, as they incentivise behaviours that may ultimately have an effect on the environment. This submission focuses specifically on taxes with intended direct environmental impacts.

There are a wide variety of environmental taxes applied across European countries and, on average, environmental tax revenues constitute 2.9% of GDP in the EU25. However, Ireland, with environmental tax revenue at just 2.3% of GDP is among the countries with the lowest environmental tax revenue.[1] For the majority of European countries energy taxes predominate environmental taxation. In the case of Ireland energy taxes in 2005 were the lowest in the EU, whereas, unlike most other European countries, transport taxes in Ireland constitute a substantial share of environmental tax revenue. For instance, transport taxes account for almost half of Irish environmental taxes, whereas in the UK transport taxes account for 20% of environmental taxes. Overall, Irish environmental tax revenue has declined from 3.1% of GDP in 1995 to 2.3% in 2005, moving from a position of being above the EU average in 1995 to being significantly below the average in 2005. Based on that simple analysis there is scope to increase taxation as an instrument to change environmental quality, and remain within European norms for environmental taxation.

In the past two decades countries have started to use environmental taxation both as an environmental policy instrument and as an integral element of their taxation and revenue policy. For example, The Netherlands, which has the second highest level of environmental taxation in the EU, manages to balance this apparent contradiction between tax policy, which is to generate a stable flow of revenue, and environmental tax policy, which is designed to influence or possibly eliminate certain environmentally damaging activities. They recognise that the environmental impact of some taxes is limited and that the tax base and revenue will continue indefinitely, and that this facilitates the switch in tax burden from clean to polluting activities. The switch in tax burden to polluting activities is considered one of the successes of environmental taxation in The Netherlands.[2]

2. Fiscal instruments

A number of specific proposals for fiscal instruments are presented here. The proposals are suggested as potential instruments to address specific environmental problems, however, we have not given consideration to the full economic or social impacts of the measures, perspectives that are likely to be raised in other parties' submissions.

[1] Taxation trends in the European Union Data for the EU Member States and Norway, European Commission/Eurostat, 2007

[2] Summarised from a speech by The Netherlands' State Secretary for Finance, Jan Kees de Jager. http://www.minfin.nl/en/actual/speeches,jan-kees-de-jager/2007/03/Dutch-tax-system-greener.html

2.1 Landfill levy

The EPA propose that consideration be given to the following:

(i) An increase in the landfill levy;
(ii) Announcing a schedule of planned further levy increases;
(iii) An annual review of the landfill levy to ensure that the levy is responsive to market conditions and to guarantee that the levy's environmental objective matches the economic incentive;
(iv) Ensuring that revenue from the landfill levy, via the Environment Fund, continues to fund very worthwhile environmental protection initiatives.

Contextual Framework

- The purpose of the landfill levy is to deter the landfill of waste and provide a financial incentive to increase the level of more environmentally sustainable activities such as waste recovery and recycling. An increase in the landfill levy would bring several environmental benefits. The diversion of waste from landfill would reduce environmental externalities such as methane emissions and potential odours. An increased levy would also increase resource efficiency in consumption and production, which would reduce greenhouse gas emissions both at the point of disposal and further up the production chain.

- A schedule of future landfill levy rates would reduce the high level of uncertainty that currently exists within the waste management sector. Uncertainty concerning the scale of the levy affects investment decisions, which is particularly problematic given the current underinvestment in the sector, especially in the treatment of biodegradable municipal waste.[3] The landfill levy affects the economic viability of a range of complementary and substitute waste management technologies, therefore, a clear signal on the scale and timing of landfill levy increases (subject to annual review) would help reduce that uncertainty, which in turn would encourage investment that is critical to achieve biodegradable municipal waste landfill targets, as prescribed in the Landfill Directive.

- The landfill levy needs to be reviewed on a regular (annual) basis to ensure that it is remains an effective instrument consistent with waste policy. The objective of the landfill levy is to divert waste streams to treatment options further up the waste policy pyramid.[4] In 2002 when the landfill levy was introduced the additional cost of landfill created an incentive to increase recycling. Since then the cost of landfill has declined (due to additional landfill capacity supply) and the amount of landfilled waste has increased.[5] As the total cost of landfill, including the landfill levy, has declined the same strong incentive to recycle no longer prevails. Landfill has become a

[3] For a discussion see EPA discussion paper, "Hitting the targets for Biodegradable Municipal Waste: Ten Options for Change" February 2008
[4] http://www.environ.ie/en/Environment/Waste/LandfillLevy/
[5] National Waste Report 2006, Environmental Protection Agency

more financially advantageous option for the treatment of waste. The landfill levy, and the administration of same, should be sufficiently flexible to ensure that the economic incentive to use landfill is consistent with the policy objective that it is the least preferred option. To create that flexibility a framework should be established to review the landfill levy on an annual basis.

- The stated objective of the landfill levy itself provides guidance on the appropriate scale of the levy - "The levy is designed to encourage the diversion of waste away from landfill…"[6]. Therefore, the levy should be fixed to make some treatment options further up the waste pyramid (e.g. recycling) price competitive versus landfill. To determine the appropriate magnitude for the levy therefore requires information on the cost of landfill and other treatment alternatives.

  An alternative approach to quantifying the landfill levy is to equate it to the marginal cost of the environmental externality (i.e. environmental damages) but this is practically more difficult to implement.[7] In the first instance it is quantitatively difficult to estimate the environmental externalities of landfill. For instance, estimates of landfill externalities vary substantially from as low as €10/tonne[8] to €61/tonne.[9] A second problem is that the estimated externality cost may not be a sufficient market incentive to divert waste from landfill, consistent with the waste policy pyramid. For example, a levy of €10/tonne is less than the existing levy and would therefore not incentivise the diversion of additional waste from landfill in the current market.

- Revenue from the landfill levy is hypothecated to the Environment Fund, which finances a range of necessary environmental protection measures. A number of the items financed by the Environment Fund are listed below and it is critical that these initiatives continue, maintaining a high level of environmental protection.

  The National Waste Prevention Programme (NWPP)
  The National Waste Prevention Programme undertakes a number of initiatives to prevent waste thereby eliminating the need to handle, transport, treat and dispose of waste. Initiatives include the Local Authority Prevention Demonstration Programme, the Green Business Initiative, the Packaging Prevention Programme, Accredited Prevention Training and the Green Home Programme. The NWPP also engages in support and enforcement actions for Producer Responsibility Initiatives including Waste Electrical & Electronic Equipment, Packaging, Restriction of Hazardous Substances, Solvents and Decorative Paints. Regulations in relation to Ozone Depleting Substances, Persistent Organic Pollutants and Polychlorinated Biphenyls are implemented within NWPP also.

[6] http://www.environ.ie/en/Environment/Waste/LandfillLevy/
[7] See "The Political Economy of Environmentally Related Taxes" OECD, 2006
[8] "The Political Economy of Environmentally Related Taxes" OECD, 2006
[9] "Meeting Ireland's Waste Targets: The Role of MBT, Eunomia Research & Consulting Ltd, 2008

Regional Enforcement Special Activities within the Office of Environmental Enforcement including technical assessment/special investigations, priority studies/development of environmental guidance, Environmental Enforcement Network activities and the Illegal Dumping Hotline.

The environmental research programme - Science, Technology, Research and Innovation for the Environment (STRIVE)
The research programme is the primary source of funding for environmental research in Ireland and contributes to the protection of the natural environment by addressing key environmental management issues through the provision of world-class scientific knowledge. STRIVE and its predecessor programme ERTDI have produced vital environmental research in a number of important policy relevant areas and have increased the capacity of Irish researchers and institutions in environmental research. They have also contributed, and continue to contribute to the objectives of the Strategy for Science Technology and Innovation (SSTI), and in 2007 awarded the 100th PhD fellowship in the environmental area. Up until 2003, these programmes were funded from Exchequer funding in a direct grant in aid to the EPA. However, since Budget 2004, the programmes have been funded from the Environment Fund (landfill levy and plastic bag tax). It is vital that these programmes continue and that the environmental research funding pipeline is maintained so as to continue to inform the development and implementation of environmental and sustainable development policies.

Environmental Enforcement activities undertaken by local authorities
The fund also finances environmental enforcement activities undertaken by Local Authorities, including over 100 Waste Enforcement Officers and Environmental Enforcement Network activities, including significant numbers of inspections. For example, in 2007 over 68,000 inspections were undertaken by Local Authorities, of which almost 13,700 were in respect of waste (excluding litter).

- Increases in the landfill levy pose a risk of increased incidences of littering/fly-tipping. The precedent for such an assertion is the experience of the early part of the decade when landfill costs were significantly higher. There are several current initiatives financed via the Environment Fund that reduce risk of such activities recurring, for example, the Illegal Dumpers Hotline, Environmental Enforcement Network activities and special investigations. For instance, the recent €1 million fine secured through the courts for large scale illegal dumping will prove a deterrent to engaging with such behaviour. However, it would nevertheless be prudent that landfill levy increases are signalled in advance and phased in on a gradual basis to allow households/business adjust to the higher costs and source alternatives to landfill disposal.

2.2 Carbon Levy

The EPA propose that consideration be given to the following:

(i) The introduction of a carbon levy as an instrument to tackle climate change;

(ii) That the introduction of the carbon levy is preceded by an extensive public consultation and debate on the issue, concentrating in particular on how the levy can be designed to effectively reduce carbon emissions;

(iii) That a levy to tackle greenhouse gas emissions not be restricted to carbon dioxide emissions but also cover the other five classes of greenhouse gases recognised under the United Nations Framework Convention on Climate Change namely, methane (CH_4), nitrous oxide (N_2O), halofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphurhexafluoride (SF_6).

Supporting documentation

Research on the impact of a carbon tax/levy on emissions suggests that the impact of the tax will take several years to fully realise because the effect has both short-term effects (reduced fuel consumption, fuel switching, and efficiency measures) as well as longer term effects (e.g. due to technology change). Empirical evidence on the effect of the tax therefore will take many years to materialise. Among the first countries to introduce carbon taxes were some Scandinavian countries in the early 1990s and it is there that the most clear-cut evidence of the effects of a carbon tax can be found.

Sweden enacted a tax on carbon emissions in 1991. The application of the tax is quite complicated with a number of exemptions applicable (e.g. no tax applied to fuels used for electricity generation) and other complementary taxes (e.g. on electricity). The Swedish Ministry of Environment estimated that 1995 carbon dioxide emissions were 15% lower than would have been if previous policy instruments were still in use.[10] They also estimated a further decline to 20-25% by 2000 and that roughly 90% of the reduction was due to the reformed tax system, with the remainder the result of investment grants and energy efficiency programmes. In September 2007, Sweden's government announced further increases in their carbon tax to address climate change. In 1990 Finland enacted the first carbon tax, which at its current level is € 18.05 per tonne of carbon dioxide (€ 66.2 per tonne of carbon). Similar to Sweden the tax is credited with reducing carbon dioxide emissions, estimated at a seven per cent reduction between 1990 and 1998.[11]

While carbon taxes have long been discussed in Europe the concept is now being actively considered in North America as an instrument to curtail carbon emissions. Quebec, Canada, is the first North American state or province to charge a carbon tax. Beginning July 2008 British Colombia will introduce a revenue-neutral carbon tax at a rate of CAD$10 per tonne of carbon dioxide rising annually by CAD$5/tonne to reach $30 per tonne of carbon dioxide in 2012. Tax revenues will be returned to taxpayers through personal income and business income tax cuts. Boulder City, Colorado implemented the first US carbon tax on emissions in April 2007.

[10] Bengt Johansson, "Economic Instruments in Practice 1: Carbon Taxes in Sweden" (Swedish Environmental Protection Agency) 8.

[11] Lester R. Brown, "Shifting Taxes," Plan B: Rescuing a Planet under Stress and a Civilization in Trouble (New York: W.W. Norton & Co., 2003).

The ESRI's Medium Term Review 2008-2015 suggests that a carbon tax initially set at €20 per tonne in 2010 and steadily rising will lead to approximately a 1% reduction in carbon dioxide emissions nationally (excl. power generation sector) by 2020. The ESRI acknowledge that 1% is possibly an underestimate, as their model does not incorporate technical change. It is generally agreed that the greatest effect of a carbon tax will arise through technical innovation but that the impact of such innovation will not substantially materialise for at least a decade or more, so some of the most significant effects of a tax implemented in 2010 may only begin to become apparent in 2025-2030. The shorter-term effects (i.e. the 1% reduction by 2020) will contribute to existing policy targets, such as the reduction in emissions of 20% by 2020.

A carbon levy will help discourage 'fuel tourism', which relates to transport fuel purchased within the Republic of Ireland but consumed abroad. Greenhouse gas emissions associated with this fuel are attributed to the country of purchase. As transport fuels are significantly cheaper in Ireland compared to the UK a significant level of fuel tourism occurs between Ireland and the UK. The ESRI have estimated that fuel tourism accounts for 5-9% of petrol and 15-20% of diesel sales in Ireland.[12] A carbon levy on transport fuels would help narrow the price differential, reduce fuel tourism, and reduce Ireland's greenhouse gas emissions. The ESRI estimate that a carbon levy of €20/tonne of carbon dioxide would reduce transport fuel emissions by 0.5% or 285,000 tonnes.

Irish carbon dioxide emissions represent roughly 70 per cent of total greenhouse gas emissions. The balance comprises methane, nitrous oxide, and halocarbons. As can be seen from the table below, the lifetimes and global warming potential (GWP) of some of the greenhouse gases are significantly greater than carbon dioxide. As the purpose of the carbon levy is to prevent or limit climate change caused by greenhouse gas emissions, the fiscal instrument of the carbon levy should be considered for extension to the other main greenhouse gas emissions.

Gas	Lifetime (years)	GWP (Over 100 years)
Carbon Dioxide CO_2	-	1
Methane CH_4	12	21
Nitrous Oxide	114	310
HFC-23 (hydrofluorocarbon)	270	11700
HFC-134a (hydrofluorocarbon)	14	1300
Sulphur hexafluoride	3200	23900

Source: IPCC Second Assessment Report, Working Group 1 - http://www.ipcc.ch/ipccreports/ar4-wg1.htm

Contextual framework

- Climate change is an urgent global issue and the primary environmental challenge facing us this century. Increased levels of greenhouse gases, such as carbon dioxide, act to enhance the natural greenhouse effect and

[12] Fitz Gerald et al., 2008, Medium Term Review 2008-2015, Economic and Social Research Institute. See Box 5.4.

accelerate irreversible changes in the climate. Among a suite of policy instruments (e.g. Emissions Trading, IPPC licence conditions, energy efficiency programmes, awareness campaigns, etc.) a carbon levy has been advocated as a means to curtail greenhouse gas emissions.

- The introduction of the levy should be preceded by an extensive public consultation and debate. Case studies of environmental tax measures have repeatedly emphasised the critical role of public support and acknowledgement of the environmental issues in the successful implementation of the taxes.[13]

- The careful design of the carbon tax, its integration with other climate change policies, as well as the availability of alternatives (i.e. for those wishing to switch behaviour) is critical for the successful implementation and public acceptance of the tax. As an example, British Colombia's Budget and Fiscal Plan (2008) provides a good template of careful planning and implementation of a carbon tax.[14] It spells out the rationale, expected impacts and mechanics of the British Columbia carbon tax, including the revenue return provisions. The British Colombia carbon tax is built on five principles:
    - Revenue neutrality – switching taxation from 'goods' to 'bads;'
    - Phased implementation – allowing business and household time to search out alternatives;
    - Low income households protected from falling into fuel poverty – a special tax credit compensates lower income households but is designed to ensure that low income households still face the same incentive to change behaviour as other households;
    - The broadest possible coverage ensuring fairness across all sectors of the economy;
    - The tax is integrated with other climate change measures.

- The carbon levy should be initially introduced at a relatively low level to signal the government's intentions and allow time for households and businesses to adjust to the new tax. Over time the levy can be fine tuned to the desired level and the revenues used to shift tax burdens elsewhere in the economy.

- Businesses in the European Union Emissions Trading Scheme (ETS) should be exempt from the levy, as they already face an incentive to reduce emissions. Within the EU Commission's proposal to revise the ETS it is proposed that a much larger share of allowances will be auctioned instead of allocated free of charge, therefore, businesses within the ETS will face a cost for carbon emissions in the future. In the interim period to full auctioning of allowances the windfall gains enjoyed by

[13] See "The Political Economy of Environmentally Related Taxes" OECD, 2006
[14] http://www.bcbudget.gov.bc.ca/2008/bfp/2008_Budget_Fiscal_Plan.pdf

companies in the ETS could be taxed, as currently the free allocation of permits constitutes a subsidy.[15]

- The long-term level of the carbon levy (initial transition period aside) should not be set in isolation from the ETS price of carbon. This would mean that the price per tonne of carbon would be similar for everybody. If the carbon levy and ETS allowance price differ substantially a potential distortion will be introduced into the economy because the difference in carbon price will encourage businesses to manage activities to minimise tax rather than focus on emissions reductions.

- Research[16] has shown that a carbon levy is a regressive tax, i.e. making low-income households relatively worse off than high-income households and that compensatory measures may be necessary to avoid fuel poverty. However, if compensation measures to avoid fuel poverty involve direct monetary transfers the incentive created by the carbon levy to reduce emissions may be negated. Compensatory measures that preserve the incentive of the carbon tax to change polluting behaviour would be more preferable, for example, tax credits or schemes that target energy efficiency within households threatened by fuel poverty.

Summary

The EPA supports the proposal in the Programme for Government to introduce a carbon levy as an instrument to tackle climate change. A carbon levy will reduce carbon dioxide emissions and most importantly signal that such polluting activities are no longer without cost. The use of a carbon levy to tackle emissions in Ireland is a significant step in taxation policy in Ireland, and as with any taxation measures, careful planning is necessary. The environmental objectives need to be clearly identified and the tax designed accordingly. The administered tax must complement other climate change policy measures. A clear communications plan for the tax, including advice on how to reduce emissions (reduce taxation), is necessary. With energy prices at historic highs it is critical that the rationale for the tax is clearly communicated, as well as the estimated impact and how the tax revenues will be spent. Finally, consideration should be given to extending the levy to the other main greenhouse gases, as the current focus on carbon dioxide curtails the levy to just 70 per cent of Irish greenhouse gas emissions.

2.4 Tax expenditure incentives

The EPA propose that consideration be given to using tax expenditures to incentivise the universal adoption of basic cost effective, energy efficient technologies: cavity wall and roof insulation

[15] Assuming a permit price of €20 per tonne of carbon dioxide, the subsidy to companies in the ETS is approximately €400 million.
[16] Scott, Susan and J.Eakins, Carbon Taxes: Which Households Gain or Lose? Economic and Social Research Institute, (2001-EEP/DS7-M1) Final Report prepared for the Environmental Protection Agency

Contextual framework

- Ireland's plan of action on climate change (http://change.ie/) recommends insulation of wall and attic spaces as an important personal action to improve greenhouse gas emissions performance. Considerable focus and public funding has already been expended on grant support for technically complex renewable heating technologies. The cheapest and easiest approach to improving energy efficient in homes is through the installation of insulation.
- A large number of houses have no wall or roof insulation. Approximately one-quarter of dwellings have no wall insulation, while 18% of dwellings have no roof insulation. The situation is even worse for older dwellings, for instance, of dwellings build before 1940 over 60% have no insulation.[17]
- Already a number of very worthwhile and successful grant schemes are underway delivering environmental benefits, for example, in the area of renewable energy. While these grant schemes could be expanded they are administratively onerous both for the applicant and government. In many instances the administrative burden arises due to the technical complexity of the technologies, and to ensure the environmental benefits are actually realised. The potential benefit of using tax expenditure, as opposed to a grant aid scheme, is that the administrative burden of the scheme would be reduced, the scheme would be quick to establish, and it would be easy for homeowners to avail of the support, i.e. no application form etc. As installation of wall and roof insulation is not a technically complex technology a simple installation verification process could be easily incorporated within the scheme.

3. Conclusion

The EPA welcomes and fully supports the Commission on Taxation's work investigating the use of fiscal measures to protect and enhance the environment. Greater use of fiscal instruments will create an ongoing incentive to protect the environment, and will complement other policy instruments, such as regulatory controls and standards, education and awareness campaigns.

Compared to EU member states the level of environmental taxation in Ireland is relatively low and therefore there is scope for increased use of fiscal instruments compared to our European peers. Climate change and management of biodegradable municipal waste are two of the current most pressing environment issues facing Ireland and both are instances where fiscal instruments, i.e. taxation, can make a significant contribution to environmental goals.

This submission outlines three topics for consideration by the Commission on Taxation in its work. In the case of the landfill levy our proposal addresses a number of issues to make the levy a more effective fiscal instrument. When the landfill levy was first introduced it was a very effective instrument in diverting waste away from

[17] Irish National Survey of Housing Quality 2001-2002, Economic and Social Research Institute

landfill, however, circumstances have reduced the effectiveness of the measure, highlighting the need to regularly review performance of the levy as a fiscal instrument. Climate change is a complex and global issue and no single policy instrument will succeed in delivering national targets. A carbon levy would contribute to our national climate change targets but its implementation requires careful design and public consultation to ensure that the levy will be an effective environmental policy instrument. Carbon dioxide constitutes roughly 70 per cent of Ireland's greenhouse gas emissions and the other main greenhouse gases merit consideration for inclusion in a levy designed to curtail greenhouse gas emissions.

The final topic presented for consideration by the Commission is a simple measure that could make a significant contribution to the residential sector's national climate change targets. It is well recognised that the payback period on investment in household insulation is quite short but a significant proportion of households have either poor or no insulation installed. The taxation system may be an effective means to incentivise households to make such an investment.