3. Water Services

In the *absence of universal metering and charging*, and the resulting absence of basic water balance information, Ireland may be consuming and producing unnecessarily large amounts of water. If so, completely aside from the environmental cost, Ireland is overspending on water treatment and distribution, as well as on wastewater collection and treatment. For example, in November 2008, the city of Dublin announced proposals to pipe water from the Shannon River catchment, more than 100 km away, to augment its water supply at an estimated cost of EUR 600 million. The city has been pursuing a range of water conservation measures (*e.g.* leak control, by-laws promoting installation of water-efficient appliances, reuse of grey water). The question remains, however: by how many years might Dublin be able to postpone this large investment if Irish law allowed it to use volumetric charges to curb demand growth?[17]

The *Renewed Programme for Government of 10 October 2009* includes a commitment "to introduce charging for treated water use that is fair, significantly reduces waste and is easily applied. It will be based on a system where households are allocated a free basic allowance, with charging only for water use in excess of this allowance. In keeping with the allocation of greater responsibility to local government, Local Authorities will set their own rates for water use."

Water pricing

Any appraisal of Ireland's water services sector must start from the *government's 1997 policy exempting households from both the capital and operating costs* associated with delivering drinking water and collecting and treating sewage.[18] As households do not pay for water, their usage has so far not been metered, so there are no incentives to save water. *Few Irish water managers appear to favour the current household water pricing policy.* Its drawbacks have been well rehearsed (Fitzpatrick Associates, 2005; Dresner and Ekins, 2006; Convery 2008) (Box 3.1). Similarly, the OECD experience with water management unequivocally underlines the environmental and economic merit of water charges.

In contrast, *commercial use of water is not gratis*. Under the DoEHLG pricing guidelines for commercial water use, commercial users are expected to pay the average operating cost of service provision and the marginal capital cost (beyond the capital cost necessary for service to households). The average combined charge for water and wastewater services in Ireland's gateways and hubs is EUR 2.03/m^3. Costs vary across local authorities from a low EUR 1.50/m^3 in Galway County to the most expensive EUR 2.71/m^3 in Wexford. At EUR 1.67/m^3, average water costs in the largest five Irish cities are much lower than the European average of EUR 3.24/m^3. This price difference should probably be attributed to the easy access to water and low purification needs of the water abstracted. However, commercial users have criticized the manner in which local authorities apply the guidelines (opacity and lack of uniformity among authorities). Many farmers refuse to pay for water.[19] During the review period Ireland all but completed the metering of commercial use (the target date had been 2006).

Water financing

All water infrastructure investment related to households is financed from the *capital budget of the DoEHLG*, while operating costs are funded from the Local Government Fund through the *General Purposes Grant* from which much of local authority activity is financed.[20] The Exchequer has also paid for all or most of the investment cost of group water schemes, even though their assets are privately owned. Under the NDP Water Services Investment Programme, local authorities are eligible for 90% of the cost of rehabilitating existing drinking water supply networks to reduce leakage.

When applying for central funding, local authorities must assess whether a project could beneficially be dealt with as a *public-private partnership* (PPP). During the review period, under DoEHLG guidance, various types of PPP became an accepted method of procurement for water service infrastructure and operation. Examples include design-build-operate (DBO) and, to a lesser extent, operation and maintenance (O+M) partnerships ("management contracts"). DBO projects, in the form of long-term (*e.g.* 20 year) contracts between local authorities and service providers, are now widespread.

Public investment in water service infrastructure truly hit its stride with the 2000-06 NDP. Investment had amounted to just EUR 1.2 billion in the 1994-99 NDP, but rose to EUR 3.7 billion in the 2000-06 plan and is set to reach EUR 4.7 billion in the 2007-13 NDP, even though EU financial support ended in 2004. In the 2000-06 NDP, 52% of investment was allocated to wastewater treatment, 12% to public water supply, 17% to rural water supply and the remaining 19% to rehabilitation (leakage reduction) and infrastructural support (*e.g.* providing water services for greenfield industrial and housing development).

Box 3.1 **The Irish debate on domestic water charges**

The wider OECD experience suggests that levying water charges that reflect the full costs of supplying water services helps ensure that water ecosystems are adequately protected and sufficient funds are available to maintain and expand water infrastructure. It also helps reduce demands on limited public budgets and gives individual users incentives to use water sparingly (OECD 2003b).

There is considerable popular resistance in Ireland against household water charges. The arguments most often heard are that water is a gift of nature and should not be charged for, that charges would unfairly affect the less well-off and that charges mean paying for water twice. It is not hard to parry these claims, but it is true that the Irish model of central government funding for all capital and current costs of household water provision has the advantage of being relatively straightforward and easily understood. Moreover, to the extent that the tax system is progressive, so is the water funding model. It also avoids capital and administrative costs for metering and charging.

On the other hand, the absence of metering and volumetric charging for households:

- gives domestic users zero incentive to save water or minimise waste in the form of leaking pipes, running taps, unnecessary use of garden hoses, etc.;
- perpetuates users' low awareness of consumption levels and the real cost of water services, again doing nothing to discourage wasteful behaviour, whereas a better understanding of the costs might in itself promote some reduction in consumption;
- creates inequities between households , including wealthy households with large gardens and/or swimming pools, and the commercial sector for which the use of water is not gratis;
- contributes to a lack of incentives, in the planning system and in building regulations and practices, to focus on water economy, *e.g.* through separate run-off water systems; hence houses are not fitted with the relatively simple devices that facilitate use of rainwater for uses not requiring potable water.

The familiar adage that you can't manage what you don't measure holds for water. Even metering alone, without volumetric charges, can help reduce use significantly by allowing proper tracking and tracing of leaks.

Source: Fitzpatrick Associates, 2005; Dresner and Ekins, 2006; Convery, 2008.

Annual operating expenditure on water and wastewater facilities during the review period was estimated at EUR 400 million, so total annual public expenditure (operating and investment) was of the order of EUR 1.0-1.2 billion annually, or about 0.8% of GDP on average. It would be useful for the Irish authorities to identify the

share of public expenditure (local and national) that now goes to the water sector but could be allocated elsewhere if all water services were priced. Water pricing could not only help reduce water consumption, and hence investment, but also relieve a burden on the public budget.

Further investment needs

During the review period, Ireland made *striking progress in implementing the EU's Urban Waste Water Directive* (91/271/EEC). In the 155 urban areas subject to the directive, the compliance rate with the directive's targets rose from 25% in 2000 to 92% by the end of 2007. Full compliance is expected to be achieved by 2011, *i.e.* five to six years behind the directive's schedule. Progress was not limited to areas subject to the directive (*i.e.* those with a load in excess of 2 000 p.e.): by the end of 2007, 82% of the 478 urban areas with a load of more than 500 p.e. were receiving secondary treatment (the level was 29% in 2000). The government expects to have met its commitment to provide secondary wastewater treatment to all population centres over 1 000 inhabitants by the end of the 2007-13 NDP. In 2006, 65% of households were connected to public sewage treatment facilities (Figure 3.3). In considering this Figure it should be borne in mind that around one-third of the population lives in rural areas.[21]

Compliance with effluent limits by existing wastewater treatment facilities has shown some improvement over time, but remains below par as a whole (Table 3.5). It may be worth considering the creation of larger management units that could use economies of scale to put more rigorous quality assurance procedures in place. An assessment of whether economies of scale could be achieved if municipal water systems were grouped together might be made a condition for subsidies, as is the case in Austria.

Table 3.5 **Compliance of urban wastewater plants with discharge limits**, 1998-2005

(% of plants)

Plant category	1998-99	2000-01	2002-03	2004-05
< 2 000 p.e	18	18	22	19
2 000-15 000 p.e	22	28	29	38
10 000 p.e. with nutrient reduction	56	68	57	86
> 15 000 p.e	53	64	52	67

Source: EPA, *www.epa.ie/whatwedo/enforce/pa/wwater*.

Moreover, partly because of the absence of household water pricing, *insufficient progress has been made in reducing losses of drinking water from the major towns' supply networks*. For example, while Dublin reduced the level of unaccounted-for water from 42.5% in 2003, it was still 37% in 2008.[22] However, unaccounted-for water outside the Greater Dublin Area remains high, with levels in some localities exceeding 50% in 2008. The national average level for 2008 was 44%. These levels are high compared with figures observed in other OECD countries. Ireland should be able to achieve losses no greater than 15-20%.[23]

There is also a need to continue upgrading *drinking water treatment capacity*. In 2000-07 treatment capacity was upgraded for 20% of Irish households. This is partly a result of the 2002 ECJ judgement that many private group water schemes were not delivering water that met drinking water standards (DoEHLG, 2007). A programme initiated to address the court's findings is now 80% complete, with contracts for the remaining work under way.

Settlement patterns and the proximity of water sources in most places have shaped the structure of the Irish drinking water supply sector, which is characterised by a few large systems and many smaller, widely scattered ones. This dispersal was exacerbated by a rural housing *building boom* for much of the review period.[24] Such sprawl reinforces the need for financing both the efficient provision of water services and the protection of water resources.

Affordability issues

Water pricing creates incentives to reduce wastage, but it may have a regressive impact by disproportionately affecting poorer households. In some cases, the poorest households may not be able to afford access to water services. Evidence in OECD countries suggests that affordability of water charges for low-income households is a *politically sensitive issue*. For example, in Northern Ireland the introduction of household water charges has been deferred because of potential adverse social impacts.[25]

The preferred policy in most OECD countries is to *target support to low-income groups* rather than providing across-the-board subsidies through low water prices (OECD, 2003a). A variety of approaches have been deployed for this purpose; most involve either direct support from the public budget (*e.g.* additional direct income support for consumption and/or subsidised connection fees) or cross-subsidisation through the tariff structure (*e.g.* increasing-block water tariffs, where those who use only a small amount of water pay very little for it while higher levels of consumption are subject to higher tariffs). A balance must be struck between economic/ environmental efficiency and equity objectives.

Agri-environmental measures

The DAFF's *Rural Environment Protection Scheme (REPS)* has been the main mechanism for promoting voluntary agri-environmental measures since 1994, in accordance with EU provisions for rural development.[31] Spending on agri-environmental measures under REPS rose to more than EUR 300 million in recent years (Chapter 5). In 2007, 55 000 farms participated, accounting for about half of Ireland's farmers and almost 40% of its farmland. Although REPS has increasingly focused on biodiversity, participating farms follow farm-specific nutrient management plans and adhere to the 170 kg/ha nitrogen limit from livestock manure. Farmers spreading up to 250 kg/ha under the Nitrates Directive derogation are also eligible, as are all Irish farmers. One component of REPS – increasing watercourse margins – has direct water quality benefits. The last programme (REPS 4) ended in 2009. It will be followed by another agri-environmental scheme (probably in 2010).

Box 4.3 **The Environment Fund and the plastic bag and landfill levies**

The Environment Fund was established in 2002 to manage the revenue generated by the *plastic bag levy*, introduced in March 2002, and the *landfill levy*, introduced in July 2002. The DoEHLG manages the fund.

The *levy on plastic bags* was designed to control litter from discarded plastic shopping bags. Initially set at EUR 0.15 per bag, it is collected by the Revenue Commissioners on behalf of the DoEHLG. Since its introduction, over EUR 98 million has been collected, including over EUR 19 million in 2006 and over EUR 22 million in 2007. The introduction of the levy led to an immediate decrease of 90% in the use of plastic bags, to an average 21 bags per capita compared with 328 previously. However, the usage rate gradually increased again, reaching 31 bags per capita in 2006. As a result, the levy was raised to EUR 0.22 per bag in 2007. While no immediate increase to the levy is currently sought new legislation is expected to increase the levy by the Consumer Price Index from the date of the last increase, plus up to 10% of the base in the given year, with a defined cap of EUR 0.40.

The purpose of the *landfill levy* is to encourage waste recovery and recycling by increasing the gate fee at landfills, thereby making landfilling less commercially attractive. The levy applies to both local authority and private landfills and is collected by local authorities on behalf of the DoEHLG. Initially EUR 15 per tonne, it was raised in 2006 to EUR 20 per tonne. Local authorities can retain 2% of levies collected from private landfills to cover administrative costs. They can retain 80% of levies collected in connection with dealing with unauthorised sites, to defray the additional costs incurred in pursuing these cases. Since 2001, over EUR 165 million has been collected, including EUR 30 million in 2006 and EUR 32 million in 2007 (DoEHLG, 2007b). Existing legislation allows the levy to be increased by EUR 5 in any 12 month period. As with the plastic bag levy, consideration is being given to substantially increasing the levy and to raising the maximum increase allowed in future years. A further proposal would broaden the scope of the levy to include incineration.

The *revenue from the Environment Fund*, which came to over EUR 50 million in 2006, supports a range of activities in waste management, including prevention and reduction programmes, recovery activities, research and development, enforcement of laws relating to waste management and both regional and national environmental awareness-raising campaigns. In 2006, the largest expenditures supported recycling operating costs (EUR 10 million), research and development by the EPA (EUR 7 million) and local authority enforcement initiatives, particularly those combating illegal dumping and other unauthorised waste activities (EUR 7.5 million).

3.2 *Agriculture and rural development*

As agriculture accounts for over 60% of land use, farming practices are an important factor in biodiversity conservation. On the positive side, some of Ireland's biodiversity is associated with traditional, semi-natural farming systems, such as permanent pasture and rough grazing. On the debit side, *intensive farming has put pressure on habitats*, including aquatic habitats (Chapter 3); overgrazing in some western regions has led to erosion in hilly areas and increased the threat facing rare plant species in lowland areas (Box 5.2). As a result, an increasing number of wild species and of habitats of high nature value associated with farming are confined to marginal areas (OECD, 2008).

Efforts to reduce agricultural pressure on biodiversity were enhanced under the 2003 reform of the Common Agricultural Policy (CAP). In 2005, Ireland was among the first EU countries to switch to the system of a *single payment per farm*, which separates payments from production (decoupling) and requires farmers to keep land in "good agricultural and environmental condition" (cross-compliance).

While all farmers are subject to the single farm payment rules, about half participate in the voluntary *Rural Environment Protection Scheme* (REPS) administered by the Department of Agriculture, Fisheries and Food (DAFF). Since 1994, REPS has been the mechanism for delivering EU payments for agri-environmental measures that go beyond good farming practice (Box 5.3). REPS currently covers about 40% of the farmed area; uptake is strongest in the west, where farmland often has a high nature value (*e.g.* peatlands, species-rich grasslands) and where farming is not so intensive; large-scale intensive farms are significantly under-represented. REPS has been credited with some success in addressing biodiversity concerns. For example, in some areas where habitat conservation has been under REPS, bird species diversity and populations started to recover during the review period; also, plant species richness in hedgerows and the margins of tilled fields tends to be somewhat higher in areas under REPS (OECD, 2008). Even so, these seem *modest results for the considerable amount spent on the programme*, which amounts to multiples of the NPWS budget. There could be greater emphasis still in tailoring REPS to ecological needs (*e.g.* of Natura 2000 sites).[15] DAFF and the NPWS could work together to define measurable farm-level outcomes and agree on more intensive monitoring of results to improve effectiveness of expenditure on agri-environmental measures.

3.3 *Forestry*

Next to Iceland, Ireland is the least forested OECD country (less than 10% of the land area). Overall, native broadleaves occupy 22% of the total stocked forest area, *making native woodlands the rarest of the major habitat types* in Ireland. Sitka spruce, an exotic coniferous species, occupies half the total forest area. Inappropriate planting in the past damaged many peatlands and other habitats of conservation value (EPA, 2008). The national target of 30% broadleaves in all new planting has been reached in recent years.[16] Monocultures (stands with one tree species) make up 45% of all stands.

Progress was made over the review period in better integrate biodiversity concerns in forestry policy.[17] Felling licences and government financial assistance for afforestation are subject to compliance with *i)* the Irish National Forest Standard of 2000, which sets out the principles of sustainable forest management (conforming to the six pan-European criteria for sustainable forest management); *ii)* the Code of Best Forest Practice; and *iii)* a series of environmental guidelines, including two, also issued in 2000, on biodiversity and landscape. A further guideline on forestry and the protection of the pearl mussel was issued in 2008 (Chapter 3).

Financial incentives are available to encourage landholders to plant broadleaves and enhance biodiversity. The Afforestation Grant Scheme (under EU Regulation No. 2080/92) is aimed at agricultural land: farmers receiving the CAP single payment can plant up to 50% of their property in trees; broadleaves, in particular oak and

Box 5.2 **Wethers, ewes and the commonage**

Commonage is a *traditional form of landholding in Ireland*, which economists call a "common pool resource". It is rooted in early systems of land tenure in which collective agriculture and common resources were widespread. The commonage used to be managed for livestock production, crops and hunting, but today grazing is the main use. Such property dominates Ireland's uplands, amounting to some 440 000 ha (about 10% of all farmland) and involving around 12 000 farmers (about 10% of the total).

In response to headage payments to farmers (payments based on numbers of head of sheep) under the CAP, which encouraged a change from wethers (castrated rams) to ewes (female sheep), *sheep numbers on the commonage increased from 1.5 million to 4.6 million* in the 1980s. At about the same time, shepherding practices in upland areas changed. These two factors resulted in overgrazing damage to hill areas in the west, notably in counties Galway and Mayo. Overgrazing depleted heather and other bog plant species. In severe cases, bare peat was exposed to erosion. Livestock trampling caused riverbanks to collapse, leading to sedimentation of riverbeds and impairing salmon and trout spawning.

Although sheep numbers fell again during the 1990s, the need to *manage the commonage more sustainably* remained. The ECJ condemned Ireland in June 2002 for not protecting the 25 000 ha Owenduff-Nephin Beg Complex, an SPA in County Mayo, from erosion damage caused by overstocking of sheep, and for not protecting the wider habitats of the red grouse. From 2005, a joint effort by DAFF and the NPWS resulted in the adoption of Commonage Framework Plans covering the entire commonage, including sites in lowland peat and coastal areas. Agricultural management units were delineated, and the extent of overgrazing was defined for each unit. Among the problems addressed were scrub invasion due to undergrazing; nutrient enrichment caused by supplementary feeding; habitat loss to drainage, fertilisation and forestry; uncontrolled burning; turf cutting; weeds and pollution caused by unauthorised dumping; and the use of quad bikes. About 4 500 commonage plans were drawn up, identifying the amount of destocking and other measures required, including monitoring of results. Farmers are compensated for income losses and additional costs associated with measures such as destocking, changes in farm practices, fencing and reseeding.

Source: National University of Ireland, Galway; Institute of Ecology and Environmental Management, Winchester, UK.

Box 5.3 **The Rural Environment Protection Scheme**

The Rural Environment Protection Scheme provides financial incentives to farmers who adopt voluntary measures that benefit the environment and that go beyond good agricultural practice. Its objectives are:

- establish farming practices and production methods that take conservation, landscape protection and wider environmental issues into account;
- protect wildlife habitats and endangered species;
- produce good-quality food in an extensive and environmentally friendly manner.

REPS participants commit themselves to farming for five years in accordance with a farm-specific agri-environmental plan prepared by a DAFF-approved agency. Participants must:

- follow a farm nutrient management plan prepared for the total area of the farm;
- adopt an appropriate grassland management plan for the total area of the farm;
- protect and maintain all watercourses and wells;
- retain wildlife habitats;
- maintain farm and field boundaries;
- stop using herbicides, pesticides and fertiliser in and around hedgerows, lakes, ponds, rivers and streams, except with the consent of the minister;
- protect features of historical and/or archaeological interest;
- maintain and improve the visual appearance of the farm and farmyard;
- produce tillage crops without burning straw or stubble;
- leave a specified field margin uncultivated and use no nutrients or sprays on it;
- become familiar with environment-friendly farming practice;
- prepare, monitor and update an agri-environmental plan;
- keep prescribed farm and environmental records.

Participants receive annual payments of EUR 200 per hectare for the first 20 hectares, EUR 175 per hectare for the next 20 hectares, EUR 70 per hectare for the next 15 hectares and EUR 10 per hectare for the remainder. Higher rates apply to eligible commonage, Natural Heritage Areas, SACs and SPAs. Additional payments may be made if participants adopt supplementary measures such as farming organically, raising rare breeds, growing traditional orchards, setting aside riparian strips or protecting corncrakes, a rare bird species.

Source: DAFF.

beech, attract higher rates of support (up to an annual EUR 573/ha tax-free for 20 years). Under the Forestry Environmental Protection Scheme, introduced in 2007, farmers participating in REPS became eligible for additional afforestation grants (up to EUR 200/ha more than under the Afforestation Grant Scheme) if they established high nature value woodland by undertaking 12 mandatory measures and a further 6 (out of 20) optional measures. The Native Woodland Scheme, aimed at protection and expansion of native woodlands in which native tree, shrub and herb species dominate, pays for initial conservation or establishment work plus annual premiums (up to EUR 574/ha for 20 years).

4. Economic Aspects of Biodiversity Conservation

4.1 Economic value of biodiversity

A 2008 report commissioned by the DoEHLG estimated that the marginal *annual value of biodiversity to Ireland was at least EUR 2.6 billion*, *i.e.* about 1.4% of GDP (Bullock *et al.*, 2008). The estimate is conservative, furthermore, since not all benefits could be evaluated. The report drew a comparison between the value of ecosystem services provided by biodiversity and the cost of implementing biodiversity protection policies in certain key sectors, including agriculture, forestry, infrastructure development, human health and climate change.[18]

4.2 Expenditure on nature and biodiversity

The *budget of the NPWS* (not including salaries) increased from EUR 22 million in 2002 to EUR 34 million in 2007, then leapt by 36% to EUR 47 million in 2008.[19] Capital expenditure (for the purchase of Natura 2000 sites, habitat-rich sites and designated raised bogs) represents half of total spending. Owing to severe financial restraints, budgets were reduced in 2009 (by 10% in current and 30% in capital expenditure).

The NPWS has two *financial instruments to compensate landowners* for income loss incurred through restrictions stemming from designation of land by the competent authority (National Parks and Wildlife Service) as a protected area. Farmers who do not participate in REPS (agri-environmental measures) but designate part of their land as a SAC, SPA or NHA are eligible for the Farm Plan Scheme; in 2007, 148 farm plans were approved.[20] Also, the Cessation of Turf Cutting Scheme allows the NPWS to buy raised or blanket bogs or turbary (turf cutting) rights in SACs and NHAs; in 2007, 500 hectares were either purchased or the rights obtained.[21]

In 2007, the Forest Service provided grants totalling EUR 2.6 million to landowners under the *Native Woodland Scheme*; these grants supported the conservation of 900 hectares of native woodland. In 2008 grants totalling EUR 1.7 million were provided in respect of a further 500 hectares.

4.3 Financing of nature and biodiversity

The scope for cost recovery (*e.g.* through national park entry fees or licensing of commercial enterprises in parks) has not been fully explored.[22] As a result, the NPWS budget is entirely financed by the *central government*.[23] In addition, the government established the *Biodiversity Fund* in 2005 to support implementation of the NBP. The Heritage Council administers grants from the fund (EUR 0.6 million per year in 2006-08), which are available to individuals, community groups, NGOs and other parties.

Most government spending on biodiversity is financed from *EU funds*. DAFF spending on agri-environmental measures under REPS rose significantly throughout the review period, from EUR 150-200 million in the first half of the 2000s to EUR 300-330 million in recent years (Table 5.5). In 2007, a total of EUR 103 million was paid in afforestation support. This level of spending (more than EUR 400 million per year for agri-environmental measures and afforestation) is expected to continue during 2007-13, representing an 85% increase over the 2000-06 expenditure.

Table 5.5 **Expenditure on the Rural Environmental Protection Scheme**, 2000-07

Year	EUR million
2000	205.6
2001	164.8
2002	172.6
2003	183.9
2004	208.9
2005	284.6
2006	330.8
2007	310.7

Source: DAFF.

A further source of EU funding with biodiversity benefits is the Disadvantaged Area Compensatory Allowance, which provided EUR 257 million in *area-based compensation payments* in 2006. The allowance primarily aims at preventing abandonment of agricultural land (75% of Ireland farmland is classified as "less favoured"). But payments may also be granted in "areas facing special environmental requirements laid down by Community law", including Natura 2000 sites, for up to 10% of a country's surface area.

1.4 The environmental dimension of national investment plans

The National Development Plan (NDP) is the principal *strategic framework for public investment*. The NDPs for 2000-06 and 2007-13 took account of the environmental sustainability principle, both directly, with investment in environmental infrastructure, and indirectly, as a guiding principle for NDP implementation and project selection. An Environment Co-ordinating Committee, established for the former NDP, included representation from managing departments, social partners, environmental NGOs, Comhar, the EPA and the European Commission. Its mandate was to promote and co-ordinate environmental integration across programmes and report to the NDP monitoring committee. Comhar and the EPA have been full members of the NDP monitoring committees in both programming periods.

Programming period 2000-06

The *NDP 2000-06* aimed at continuing sustainable national economic and employment growth, consolidating and improving Ireland's international competitiveness, fostering balanced regional development and promoting social inclusion. It allocated about EUR 57 billion of public funds, mainly from the Exchequer, for major investments in infrastructure, health services, social housing, education, industry and rural development.[11] The plan consisted of seven programmes: four national, two regional and one cross-border.

The national programmes on economic and social infrastructure supported investment in *environmental infrastructure* (almost exclusively in the water sector), which accounted for 5.5% of overall planned NDP expenditure. Investment in the water and waste sectors, mainly for rural areas, were also supported by the two regional programmes. *Public transport* attracted a considerable amount of resources, but its weight in the total financial plan was less than half that of road transport (Table 6.2). The EPA managed an environmental research programme of about EUR 39 million.

The 2000-06 plan substantially contributed to the development of *urban and inter-urban transport infrastructure* (Chapter 2) and *water supply and wastewater infrastructure* (Chapter 3) (DoF, 2007; and DoT, 2007).[12] However, when measuring the impact of the NDP infrastructure investments in terms of *convergence with the EU*, the picture is mixed. Ireland's energy productivity is outstanding, but the country's performance needs to improve to converge with the EU15 average in areas such as waste treatment, sustainable transport modes and renewable energy. Some trends in the period were also of concern, such as a decrease in freight transport by rail (Figure 6.3). This confirms the conclusions of the 2005 mid-term evaluation (Fitzpatrick Associates, 2005) that, despite progress in many environmental respects, Ireland lost relative position since other EU countries performed better, although without the NDP, Ireland's relative position would have been worse. Comhar argued that despite the considerable funding available, NDP implementation did not fully reflect the NSDS.

Programming period 2007-13

The *NDP 2007-13* was approved before the economic crisis hit the country and is based on forecasts of growth in the economy and population. Major goals include filling infrastructure gaps, enhancing enterprise development (leveraging research and innovation), investing in long-term environmental sustainability, strengthening all-island co-operation, and improving social inclusion and, ultimately, quality of life. The planned expenditure is almost entirely funded from domestic sources (mainly the Exchequer), and amounts to EUR 184 billion over seven years.[13] The plan would probably need to be revised to reflect the changes in the economic situation. Public spending was severely cut in 2009, and it is unlikely that Ireland will be able to fully implement the NDP as initially approved.

Environmental sustainability is a horizontal objective of the strategic framework, together with regional development, all-island co-operation and the rural economy. Project selection must take full account of these principles. The plan reserves some EUR 25 billion for investment in environment services and waste management, public transport, renewable energy, sustainable agriculture, natural heritage preservation and environmental research. This is the equivalent of 14% of the overall funds; environmental services account for about 3% of the planned NDP expenditure, a smaller share than in the previous period (Table 6.2).

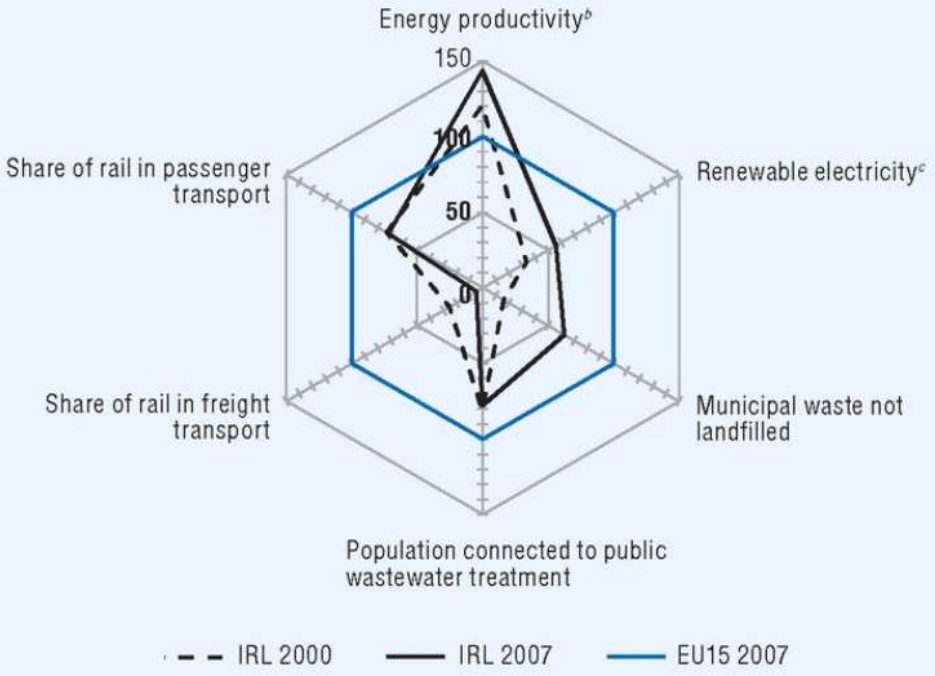
One NDP objective is to support implementation of the 2002 *National Spatial Strategy*, concentrating investment on a network of nine "gateways" the strategy identifies, and the surrounding areas.[14] The plan also commits to taking account of the revised NSDS, once adopted, in the implementation phase. The first implementation report noted that measuring the "environmental dividend" of the NDP would require improving the set of indicators and the information available to assess the progress made and the remaining distance to targets.

Table 6.2 **Planned expenditure in National Development Plans,**[a] 2000-06 and 2007-13

Programmes[b]	2000-06[c]		Programmes[b]	2007-13[g]	
	EUR million	(%)		EUR million	(%)
Economic and social infrastructure, *of which:*	28 267	*50.0*	Economic infrastructure, *of which:*	54 660	*29.8*
National roads	7 728	*13.7*	Roads, airports and ports	19 964	*10.9*
Public transport	3 534	*6.3*	Public transport	12 951	*7.0*
Environmental infrastructure[d]	3 129	*5.5*	Environmental services[h]	5 772	*3.1*
Sustainable energy	176	*0.3*	Energy[i]	8 526	*4.6*
–	–	–	Communications, broadband	435	*0.2*
–	–	–	Government infrastructure	1 413	*0.8*
Housing, health facilities	13 698	*24.2*	Social infrastructure, *of which:*	33 611	*18.3*
			Built and natural heritage	540	*0.3*
Employment, human resources	14 876	*26.3*	Human capital	25 796	*14.0*
Productive sector	4 489	*7.9*	Enterprise, science, innovation, *of which:*	20 006	*10.9*
–	–	–	Environmental research	93	*0.1*
–	–	–	Enhancement of environment and countryside	6 028	*3.3*
–	–	–	Coastal protection	23	. .
Regional operation programmes,[e] *of which:*	8 713	*15.4*	–	–	–
Local infrastructure[f]	5 037	*8.9*	–	–	–
Local enterprise development	1 045	*1.8*	–	–	–
Agriculture, rural development	1 093	*1.9*	–	–	–
Social inclusion, childcare	1 538	*2.7*	Social inclusion	49 636	*27.0*
Peace II operational programme	141	*0.3*	–	–	–
Technical assistance	20	. .	–	–	–
Total	56 505	*100.0*	Total	183 709	*100.0*

a) At current prices.
b) Some programmes and subprogrammes are merged for the sake of presentation.
c) Planned expenditure as of end 2004.
d) Includes water supply and wastewater treatment infrastructure, water conservation, rehabilitation of the water network, and coastal protection.
e) For the Border Midland and Western (BMW) Region and the Southern and Eastern (S&E) Region.
f) Includes rural water and waste management, which account for about 35% of the BMW programme and 27% of the S&E programme.
g) Indicative planned expenditure as of 2007.
h) Includes water services (EUR 4 748 million), waste management (EUR 753 million) and climate change (EUR 270 million).
i) Includes sustainable energy (EUR 276 million).
Source: Irish Government, Department of Finance; OECD, Environment Directorate.

Figure 6.3 **Impact of the National Development Plan 2000-06 on convergence with the EU[a]**



a) Standardised performance indicators: EU15 = 100.
b) Inverse of energy intensity.
c) Share of electricity produced from renewable sources in gross national electricity consumption.
Source: OECD, Eurostat.

1.6 Market-based integration

Environmentally related taxes

Revenue from environmentally related taxes increased in real terms by 5.8% between 2000 and 2007, but decreased by over 8% in 2008 as a consequence of the economic crisis. The share of environmentally related taxes in GDP decreased to 2.4% in 2008. The share of such taxes in total tax revenue has also decreased (it was 7.8% in 2007) but has always remained above the OECD Europe average (6.6% in 2006) (Table 6.6). As in all OECD countries, most of this revenue comes from *energy and vehicle taxes*. Despite the rapid increase in final energy consumption, revenue from energy taxes (mainly on transport fuel) has increased only slightly, and its share in environmentally related tax revenue has fallen steadily since 2002. This indicates that excise rates have not been adequately adjusted to inflation, which has been relatively high in Ireland. Revenue from vehicle taxes has increased faster with growth of car ownership. Revenue from the *waste related levies* has nearly doubled in real terms since 2002, when the plastic bag and landfill levies were introduced (Box 4.3).

Table 6.5 **Energy prices in selected OECD countries,** 2008

	Electricity		Oil			Natural gas	
	Industry (USD[c]/kWh)	Households (USD[d]/kWh)	Industry[a] (USD[c]/tonne)		Households[b] (USD[d]/1 000 litres)	Industry (USD[c]/10[g] kcal)	Households (USD[d]/10[g] kcal)
			High-sulphur oil	Low-sulphur oil			
Ireland	0.186	0.185	447.4	..	887.4	616.2	716.3
United States	0.070[e]	0.114[e]	558.4	..	892.0	368.1	525.3
New Zealand	0.071	0.149	682.6	522.0[f]	..	208.8[f]	1 094.8[f]
Italy	0.290	0.240	..	643.3	1 492.6	645.5	905.9
Norway	0.064	0.098	x	..	942.2	x	x
Poland	0.119	0.232	486.8	634.0	1 495.6	531.7	1 122.9
Portugal	0.131	0.214	x	789.6	1 335.1	531.9	1 037.9
OECD Europe	0.117[f]	0.179	..	660.7	951.2	..	..
OECD	0.102	0.135	352.3[g]	..	951.6	428.9	657.1
IRL/OECD Europe (%)	*128*[f]	*103*	..	..	*93*	..	..
IRL/OECD (%)	*182*	*137*	*119*[g]	..	*93*	*144*	*109*

.. : not available, x: not applicable.

a) High-sulphur oil or low-sulphur oil.

b) Light fuel oil.

c) At current exchange rates.

d) At current purchasing power parities.

e) Price excluding tax.

f) 2007.

g) 2005.

Source: OECD-IEA, *Energy Prices and Taxes*, 3rd quarter 2009.

The role of environmentally related fiscal measures in government budgets has been recently strengthened. The *fiscal package for 2009*, designed to tackle the economic recession, introduced a number of environmentally related taxes, such as the air travel tax and a car parking levy, and increased the rates of the motor and mineral oil taxes (Table 6.7). Environmentally related taxation accounts for about 9.5% of estimated additional annual tax yield and 0.27% of GDP.[23]

The Programme for Government 2007-12 mandates the *Commission on Taxation* to review the structure and efficiency of the Irish taxation system and, more specifically, to investigate fiscal measures to protect the environment, including a carbon tax. The commission reported to the finance minister in September 2009, recommending comprehensive tax reform to broaden the tax base while keeping the overall tax burden low, especially as regards corporate tax (GoI, 2009). In particular, the commission recommended: *i)* introducing a tax on the CO_2 content of energy products in non-ETS sectors, excluding agriculture (Chapter 8); *ii)* phasing in domestic volume-based water charges over five years and increasing charges on waste and commercial water use to assure full cost recovery; *iii)* phasing out the vehicle registration tax over ten years and replacing it with charges based on car use; *iv)* restructuring house and land property taxation; *v)* strengthening local government financing through property taxes and waste and water charges, among other instruments. The report also suggests reviewing tax expenditures (public expenditures in the form of tax breaks and exemptions) with a

Table 6.6 **Revenues from environmentally related taxes and levies**, 2000-08

		2000	2001	2002	2003	2004	2005	2006	2007	2008
Energy	EUR million	1 495.6	1 369.3	1 626.4	1 696.4	1 958.2	2 042.4	2 141.3	2 204.1	2 170.1
Vehicles	EUR million	1 479.7	1 333.8	1 373.8	1 488.6	1 702.8	1 950.8	2 167.1	2 362.8	2 178.8
Waste[a]	EUR million	0.0	0.0	25.1	42.2	40.3	45.3	49.5	54.9	26.3
Environmentally related tax revenue	EUR million	2 975.3	2 703.1	3 025.3	3 227.1	3 701.3	4 038.5	4 357.9	4 621.8	4 375.2
Share of total tax revenue	%	*8.96*	*7.84*	*8.25*	*8.06*	*8.29*	*8.18*	*7.82*	*7.79*	..
Share of GDP	%	*2.84*	*2.31*	*2.32*	*2.31*	*2.48*	*2.49*	*2.46*	*2.42*	*2.36*
OECD Europe: share of tax revenue	%	*6.99*	*6.99*	*7.00*	*7.17*	*7.09*	*6.91*	*6.58*	..	..
OECD Europe: share of GDP	%	*2.73*	*2.68*	*2.66*	*2.71*	*2.66*	*2.63*	*2.53*	..	..

a) Levies on plastic bags and landfills. 2008: plastic bag levy only.
Source: OECD; OECD/EEA database on economic instruments for environment; European Commission; Irish Tax and Customs; CSO.

view to discontinuing some of them, such as income tax relief for service charges (including commercial water charges). The report states that these environmental fiscal measures are important tools for pursuing Ireland's green economy goals.

Transport-related taxes

Until 2008, the *vehicle registration tax (VRT)*, for first-time registration of a vehicle in Ireland, and the *annual motor vehicle tax* were linked to engine size. They had little influence on consumer behaviour as disposable income increased and Irish citizens bought more and larger cars.[24] VRT relief of 50% was available for new hybrid, electric and flexible fuel vehicles (those that can use a bioethanol mix).

In line with the National Climate Change Strategy 2007-12, *the rates for calculating the VRT and the motor tax were increased and revised in 2008 to reflect CO_2 emission levels*, and have since been linked to a new mandatory labelling system (Table 6.8). The 50% VRT relief for hybrid, electric and flexible fuel cars was converted to relief of up to EUR 2 500 on the payable VRT, decreasing with vehicle age and applicable until 2010. Electric cars and electric or battery-assisted cycles are exempt from the VRT in 2008-10. However, heavy duty vehicles pay a fixed registration tax of EUR 50, far below that for cars. Ireland should consider extending the emission-based VRT rates to heavy duty vehicles. Consistent with the new VRT system, capital allowances and deductions from the corporate tax for leasing business cars are higher for more CO_2 efficient vehicles.

The revision of the car taxation system is a *remarkable step forward*, which places Ireland among the leaders in Europe and the OECD. It provides an *immediate incentive* to buy more CO_2-efficient cars. At the same time, differentiation of the annual motor tax gives an incentive to switch to cars with lower emissions. This also applies during the transition period from one system to the other, because the emission-based rates are lower for smaller cars than the engine-based rates (and they are higher for larger cars). The same rates apply to petrol and diesel vehicles in the same band since, distance travelled being equal, the level of emissions is the same irrespective of the fuel used. However, the lower excise rate applied to diesel fuel is an incentive to buy diesel cars and to drive longer distances over the lifetime of a vehicle. The VRT rate (per car) and the motor tax rate (per year) are higher in Ireland than in other OECD countries that differentiate vehicle taxes on the basis of CO_2 emissions. Moreover, the estimated tax rate that car owners face per tonne of CO_2 emitted over a vehicle's lifetime is much higher than the price of carbon applied to other sectors of the economy (*e.g.* in the EU ETS) (OECD, 2009b). There would seem to be an argument for finding a more cost-effective *balance between taxation on purchase and ownership of vehicles and that on vehicle use*, *i.e.* on fuels and road use

Table 6.7 **Environmental fiscal measures in the government budget,**[a] 2009

Measure	Type	Yield/cost[b] (EUR million)	Description
Increase in mineral oil tax on automotive diesel fuel	Tax	100	Increase of the tax on automotive diesel, jet kerosene for non-business use and diesel used for private pleasure navigation, by EUR 0.05/litre (including VAT).
Increase in mineral oil tax on petrol	Tax	166	Increase of the tax on petrol and aviation petrol by EUR 0.08/litre (including VAT).
Cycle to work scheme	Tax exemption	–0.4	Benefit-in-kind[c] tax exemption consisting of bicycles and associated safety equipment provided by employers to employees who cycle to work.
Levy on car parking facilities	Charge	10	Flat rate levy of EUR 200 per year payable by employees who are entitled to use parking facilities provided by their employers in the main urban centres (Cork, Dublin, Galway, Limerick and Waterford) (implemented from 2010).
Benefit-in-kind charge for company cars[c]	Charge	–	Change of the calculation basis of the charge on the private use of company cars by employees, to relate it to CO_2 emission levels.
Air travel tax	Tax	150	Tax applying to all departures from Irish airports at the general rate of EUR 10 per passenger, with a lower rate of EUR 2 for journeys under 300 km.
Increase in motor tax rates	Tax	40[d]	4% increase for cars below 2 500 cc and 170 g CO_2/km; 5% increase for cars above 2 500 cc and 170 g CO_2/km; 4% increase for all other vehicles except electric vehicles.
Increase in car trade licence plate	Tax	..	4% increase.
Capital allowances scheme for energy efficient equipment	Tax allowance	–5	Extension of the capital allowances introduced by the Finance Act 2008 to purchase energy efficient technology (100% of expenditure incurred by companies) to four other categories of equipments (pending European Commission clearance).
Seveso-listed industrial facilities	Tax incentive	..	Ring-fenced tax incentive to facilitate removal and relocation of Seveso-listed industrial facilities (subject to European Commission clearance).
Farm pollution control relief	Tax allowance	–10	Extension of the capital allowances for expenditure on pollution control to 2010.

a) Includes the 2009 government budget (14 October 2008) and supplementary budget (7 April 2009).
b) Yield of taxation or cost of tax exemptions/allowances in a full year of implementation.
c) Benefits in kind are usually taxable in Ireland. *d)* Includes yield of the increase in the car licence plate.
Source: Department of Finance.

(road pricing proportional to mileage and environmental damage caused per kilometre). The annual motor tax could also be modulated on the basis of actual vehicle use.

The *air travel tax* introduced in the 2009 budget has been in effect since March 2009. Paid by airline operators, it applies to all departures from Irish airports, with a reduced rate for flights to destinations not more than 300 km from Dublin Airport (Table 6.8). In practice, the reduced rate applies to all domestic flights and those to some UK destinations (*e.g.* Cardiff, Glasgow, Liverpool, Manchester). The reduction favours air travel to Irish destinations that are also reachable by direct train, some of which are already subsidised through a PSO.

Energy taxes

Excise duties (mineral oil tax) on energy products are relatively low in Ireland compared to many OECD countries. For many energy products, the tax rate is set at the *minimum level* defined by the EU directive for taxation of energy products (2003/96/EC), such as heavy fuel oil for heating, liquid petroleum gas for automotive use and heating coal (Table 6.8). The mineral oil tax was extended to coal only in 2005, in compliance with EU requirements. The implicit tax rate on energy was EUR 147.9/toe in 2007, below the euro-area average of EUR 188.3/toe.[25] While energy prices are relatively high by OECD standards, the share of taxes in end-use prices is comparatively low and decreasing over time. A *national oil reserve levy* of EUR 0.02/litre is imposed on oil products, except jet kerosene and oil used for bunkers, to fund the National Oil Reserves Agency.

Concerning *motor fuels*, the excise rate on diesel is lower than that on unleaded petrol, while the carbon content of diesel is higher. This differentiated taxation has encouraged the sale of diesel vehicles, which emit more NO_X and PM per kilometre than petrol vehicles. In addition, Ireland's lower tax rates on petrol and diesel have translated into lower prices than in some OECD countries, especially the United Kingdom. This significant tax differential, along with the exchange rate differential between the euro and the pound sterling, has resulted in "fuel tourism" at the border with Northern Ireland (Chapter 2). The tax differential has been progressively reduced in recent years. The mineral oil tax on automotive diesel and petrol was further increased in 2009 (Table 6.7).

In accordance with the EU energy tax directive, in 2008 Ireland introduced excise duty on electricity supplies. This *electricity tax*, charged on the final supply of electricity to the consumer, is paid by electricity suppliers. However, the rates are set at the minimum level required by the directive; domestic customers are fully exempted (Table 6.8).

Table 6.8 **Energy and transport taxes**, 2009[a]

	Rate	VAT[b] (%)
Mineral oil tax		
Petrol	EUR 508.79/1 000 litres	*21.5*
Aviation petrol[c]	EUR 508.79/1 000 litres	*21.5*
Heavy oil used as propellant (automotive diesel)	EUR 409.2/1 000 litres[d]	*21.5*
Heavy oil used for air navigation[e]	EUR 409.2/1 000 litres[d]	*21.5*
Jet kerosene[e]	EUR 409.2/1 000 litres[d]	*13.5*
Kerosene used other than as a propellant[e]	–	*13.5*
Fuel oil (for electricity generation)	EUR 14.78/1 000 litres	*13.5*
Other heavy oil[f]	EUR 47.36/1 000 litres	*13.5*
Liquefied petroleum gas used as a propellant	EUR 63.59/1 000 litres	*21.5*
Other liquefied petroleum gas[f]	–	*13.5*
Coal for electricity generation	–	
Coal for business use	EUR 4.18/tonne	*13.5*
Coal for other use	EUR 8.36/tonne	*13.5*
Natural gas	–	*13.5*
Electricity tax		
Business use	EUR 0.50/MWh	*13.5*
Non-business use	EUR 1/MWh	*13.5*
Domestic use	–	*13.5*
Vehicle registration tax[g]		
Passenger cars		
0-120 g CO_2/km	14% of OMSP[h]	*21.5*
121-140 g CO_2/km	16% of OMSP[h]	*21.5*
141-155 g CO_2/km	20% of OMSP[h]	*21.5*
156-170 g CO_2/km	24% of OMSP[h]	*21.5*
171-190 g CO_2/km	28% of OMSP[h]	*21.5*
191-225 g CO_2/km	32% of OMSP[h]	*21.5*
226g CO_2/km and over	36% of OMSP[h]	*21.5*
Car derived vans and jeep derived vans	13.3% of OMSP[h] (min EUR 125)	*21.5*
Heavy good vehicles	EUR 50	*21.5*
Motor tax[b]		
0-120 g CO_2/km	EUR 104/year	..
121-140 g CO_2/km	EUR 156/year	..
141-155 g CO_2/km	EUR 302/year	..
156-170 g CO_2/km	EUR 447/year	..
171-190 g CO_2/km	EUR 630/year	..
191-225 g CO_2/km	EUR 1 050/year	..
226g CO_2/km and over	EUR 2 100/year	..

Air travel tax		..
Short flights (up to 300 km from Dublin airport)	EUR 2/passenger	..
All other flights	EUR 10/passenger	..

a) As of April 2009.
b) VAT for industry, commercial activities, automotive diesel for commercial use and electricity generation is refunded.
c) For commercial aviation: tax rebate of EUR 232.27/1 000 litres.
d) From 8 April 2009. The previous rate was EUR 368.05/1 000 litres.
e) Commercial aviation is exempted; excise duty applies only to private pleasure navigation.
f) Business and non-business use, including heating.
g) VRT and motor tax are based on engine size for cars registered before 1 July 2008 and motorcycles, and on unladen weight for heavy good vehicles.
h) Open market selling price: expected retail price, including all taxes. For each category, the minimum rate is set equal to the rate applied to EUR 2 000.
Source: Irish Tax and Customs; European Commission; OECD-IEA, *Energy Prices and Taxes*, 1st quarter 2009.

Tax concessions

Several *exemptions apply to the mineral oil tax*, including for *i)* coal used by households and for electricity generation, combined heat and power generation, agriculture, aquaculture and forestry, and mineralogical processes; *ii)* coal used by energy-intensive firms that hold a greenhouse gas emission permit (a half rate applies to non-energy-intensive firms with such a permit); *iii)* fuel for commercial aviation,[26] shipping and fishing navigation; *iv)* oil used in the production of mineral oil and alumina; *v)* electricity for household use, chemical reduction or electrolytic or metallurgical processes, and combined heat and power generation; and *vi)* electricity generated from renewable sources and combined heat and power plants. A number of partial exemptions, reduced rates and rebates also apply, including on fuel oil and diesel used in agriculture, building and mining. Under EU rules, Ireland qualifies for a full exemption of natural gas from excise duty. It is difficult to justify the exemption on domestic coal use for social reasons, since low-income households benefit from a lump-sum *fuel allowance* in winter to help with the cost of heating. In addition, a *reduced VAT rate* of 13.5% (against the standard rate of 21.5%) applies to fuel use, with the exception of motor fuels. The VAT on diesel purchased for business use can be claimed back from corporate tax, whereas the VAT on petrol is not regarded as a deductible business expense. These exemptions and discounts discourage efficient use of energy and create market distortions, notably among fossil fuels for electricity generation and heating, economic sectors and transport modes.

Since 2006, *biofuels* (pure plant oil, biodiesel and bioethanol) have benefited from full relief from the mineral oil tax on a competitive quota basis. Biofuel produced outside this programme is taxed at the same rate as petrol or diesel. It is estimated that, over the lifetime of the programme (2006-10), the tax relief will cost nearly EUR 220 million in forgone excise revenue and save 1.2 Mt CO_2. This implies a relatively high cost for the government budget per tonne of CO_2 abated (EUR 180/t CO_2), compared with the estimated cost of buying Kyoto carbon credits (EUR 15/t CO_2) (Chapter 8).[27] The full economic cost is even higher when environmental impacts are taken into account, including those linked to the production of biofuels from first generation feedstock. After the programme ends in 2010, it is to be replaced by a biofuel obligation. A reduced VAT rate of 13.5% applies to supply of miscanthus rhizomes, seeds, bulbs, roots and similar goods used for growing biofuel stock.

The VAT rate on *fertiliser* is zero for purchases above 10 kg. Since VAT on inputs is deductible from that on output, a reduced VAT rate has generally no impact on farmers' income. However, in Ireland, as in a number of European countries, small farmers can operate within a special VAT system, under which they are neither liable for VAT nor entitled to claim the tax paid on inputs, receiving a flat rate compensation instead of the VAT they cannot reclaim. Since for fertiliser the VAT is zero, farmers receive an implicit and highly non-transparent subsidy linked to fertiliser consumption (Copenhagen Economics, 2008). Pesticides benefit from a reduced VAT rate of 13.5%.

Ireland has one of the most favourable *tax treatments for housing* in the OECD: while mortgage interest payments and other costs relating to a house are deductible from income tax, there is no tax on property of first homes (private principal residences), or on capital gains when such a property is sold. The resulting tax distortions favoured housing over other assets and contributed to the housing bubble of the first half of the 2000s (OECD, 2008a). Moreover, property owners do not pay for the benefits of public investment in infrastructure which accrue through the increase in property values. These include expenditure on environmental infrastructure and services, such as wastewater treatment and public transport. In 2009, a flat charge on second homes was introduced. There should in addition be a gradual move towards a more neutral system of housing taxation, such as a property tax based on imputable rents or a reduction in mortgage interest tax relief (OECD, 2008a).

Businesses can offset service charges (including water and waste charges) against their tax bill. Since 1995, *income tax relief has been granted to individuals for service charges* paid to local authorities and to independent contractors. The abolition of domestic water charges in 1997 has meant the tax credit is applied mainly to domestic waste charges for collection and disposal, including fixed charges and "bin

tags". The relief is given at the standard rate of tax (20%), up to EUR 400. Nearly one-quarter of Irish households benefitted from this tax credit in 2006, at a cost to the national budget of over EUR 20 million. The Commission on Taxation, in its 2009 report, recommended ending this tax relief because it weakens incentives to reduce waste generation and increase waste recycling.

Subsidies

The government provides various types of *financial assistance* to enterprise in the form of capital grants and product subsidies. Over the review period, subsidies averaged 0.5% of GDP and capital grants 0.35%. Some support measures can have a harmful environmental effect, as they distort prices and resource allocation decisions. Ireland needs to regularly review its subsidies to verify that the rationale behind them remains valid and that the benefits are higher than the associated costs, including environmental costs. *Removing perverse subsidies* and tax concessions should be the first step in a comprehensive environmental fiscal policy reform, with a view to increasing cost-effectiveness of policy measures – particularly important at times of economic crisis – and getting to grips with climate change.

Electricity generation from peat is subsidised through a PSO: ESB is requested to purchase electricity generated from peat and is compensated for the extra cost incurred. The cost of the subsidy is distributed among electricity consumers, who are charged a PSO levy set by the CER. Between 2003 and 2006, the peat PSO cost Irish consumers some EUR 200 million (at 2006 prices). Since 2007, the levy has been set at zero, mainly because of over-recovery of costs in previous years. Peat-fired plants are subsidised primarily to maintain peat-harvesting jobs and limit dependence on fuel imports. Despite the upgrade of peat-fired plants, however, electricity generation from peat remains less efficient than that from other fuels, and associated air and carbon emissions are higher per unit of power produced. Moreover, the environmental impact of peat harvesting is severe (EPA, 2008a).

In addition to the total and partial exemptions from excise duties on aviation fuel, some *internal air routes have been subject to a PSO* and subsidised since mid-1990s.[28] Airlines servicing the PSO routes must operate a minimum number of flights per day/week, with a fare ceiling on a set of seats per flight. The cost of the PSO has been growing, both per passenger trip and in absolute terms, amounting to about EUR 15 million annually. For every euro a passenger pays, the Exchequer contributes between EUR 1 and EUR 5, depending on route. These subsidy rates are well above those available for other long-distance public transport modes carrying much higher traffic per year, and enable air carriers to offer lower fares than railways. The PSO air services provide passengers with limited time savings over bus and rail on the same routes (DKM, 2003). While these air services are valuable to the regions they serve,

further analysis is needed to assess whether the benefits are commensurate with the financial costs to the state as well as the environmental costs, especially given the growing impact of aviation on climate change.

In addition to the motor oil tax relief for biofuels, Ireland has subsidised *bioenergy crops*. The National Energy Crop Scheme has provided a premium of EUR 80 per hectare over 2007-09, in addition to the EU premium of EUR 45 per hectare available under the EU Energy Crops Scheme. Some 500 applicants have benefitted from this grant. The Bioenergy Scheme provides capital grants to farmers to cover up to 50% of the cost of setting a crop, with a maximum rate of EUR 1 450 per hectare. Since its introduction in 2007, some 220 farmers planting over 1 500 hectares have benefited from the grants.

2.4 Economic instruments

The use of economic instruments, other than environmentally related taxes, has been on the rise. Particular progress has been made in *waste management*, where weight/volume waste collection charges were introduced on a wide scale from 2005 (Chapter 4). The charges consist of an annual flat fee for collection of a 2 40l bin (ranging from EUR 80 in Dublin to EUR 466 in Wexford) plus a volumetric fee (ranging from EUR 1.5 to EUR 13) (OECD, 2008). The use of charges increased the waste service cost recovery rate to 80% and contributed to expansion of collection and recycling infrastructure. Nationwide landfill and plastic bag levies, introduced in 2002, met their objectives of encouraging waste recovery and recycling, diverting waste away from landfills and reducing the use of plastic bags. Revenue from the levies (Table 6.6) has supported waste prevention/reduction programmes, enforcement of waste legislation and national and regional waste prevention campaigns. However, because the regulatory framework for waste collection is insufficient, the charging system has also triggered illegal dumping and backyard burning, especially in rural areas (Chapter 4).

Ireland has participated in the *EU Emission Trading Scheme for* CO_2 since its launch in 2005. The ETS covers over 100 major industrial sites, in sectors including power generation, cement, lime, glass and ceramics, pharmaceuticals, semiconductors, food and drink, and oil refining. The EPA manages the National Emissions Trading Registry, serves as licensing authority for participating installations and oversees the monitoring, reporting and verification of emissions (Chapter 8).

In the area of *nature and biodiversity conservation*, financial instruments have been introduced to compensate landowners for income lost after designation of land as a protected area. However, the scope for cost recovery in nature conservation (*e.g.* through national park entry fees or licensing of commercial enterprises in parks) has not been fully explored (Chapter 5).

In the *water services sector*, a 1997 policy exempts households from paying for the capital and operating costs associated with delivering drinking water and collecting and treating sewage. However, commercial users pay the average operating cost of service provision as well as the marginal capital cost (beyond that necessary for service to households). Experience with water management in other OECD countries has demonstrated the benefits of water charges when all economic, social and environmental considerations are taken into account (Chapter 3).

Promoting environmental performance of industry

Voluntary approaches have been used in Ireland in environmental management and energy efficiency efforts. *Repak, which in 1996 became Ireland's first voluntary initiative*, expanded during the review period. In particular, it helped Ireland meet and then exceed its EU packaging recovery targets in 2001 (25%) and 2005 (50%), bringing packaging recycling close to 60% in 2007 (from under 15% in 1998). Over 2 000 companies are members, and Repak funds the recycling of over 60% of all packaging on the Irish market. Similarly, the *Large Industry Energy Network* has grown from a 1993 pilot project involving energy efficiency efforts in 10 companies to an 85 member Energy Agreements Programme (SEI, 2008).[42]

New agreements introduced over the review period include *i)* a 2002 commitment by importers and distributors of solid fuel to reduce the sulphur content in coal and petroleum coke and to extend the ban on the marketing, sale and distribution of bituminous coal in urban areas (Chapter 2); *ii)* a 2006 negotiated agreement between the DoEHLG and the chewing gum industry for a EUR 7 million three year programme, funded entirely by industry, to tackle chewing gum litter; and *iii)* a 2007 agreement between the DoEHLG and the Irish Banking Federation aimed at reducing litter from ATM slips. Achievements of these agreements are recognised and contribute to national environmental and energy objectives on efficiency, competitiveness, energy security and environmental protection. They mostly involve large companies, many operated by major multinational firms, capable of meeting high environmental standards.

Several initiatives *support small and medium-sized facilities*, which have less

capacity for environmental management systems. The support focuses on development of environmental technology and eco-innovation. Enterprise Ireland, through its Environment and Green Technologies units, provides direct financial support that helped smaller Irish companies promote eco-efficiency in their operations.[43] These efforts are complemented by information-based measures such as *i)* the Envirocentre website, which provides up-to-date information on a range of environmental issues relevant to industry; *ii)* regional industrial environmental forums aimed at smaller firms; and *iii)* technical advice to client companies from in-house experts in various environmental fields.

Over 2000-06, the EPA funded environmental research with nearly EUR 40 million from the Environmental Research, Technological Development and Innovation programme. The research has led to the filing of patents for new products and technologies, licence agreements, non-disclosure agreements and new spin-off companies (EPA, 2006c, 2009b). Efforts will continue over 2007-13 under a reinforced successor programme, STRIVE, which in 2008 alone awarded over EUR 10 million for 30 eco-innovation projects. STRIVE provides support to *i)* researchers and innovators in the environmental technologies sector and *ii)* businesses participating in its Cleaner, Greener Production Programme, which was selected as exemplary in the 2007 EU review of eco-innovation programmes.[44]

The *environmental goods and services sector* in Ireland is relatively small, employing an estimated 6 500 persons, and has not matched the success of other high-growth sectors, such as biotechnology or information and communications technology. The market is estimated at EUR 2.8 billion, with exports worth EUR 106 million in 2006 (Forfás, 2008). Smaller firms dominate, with subsidiaries of UK and EU companies offering environmental consultancy services and competing in key sectors such as waste management. Because of the potential for further development (the Department of Enterprise, Trade and Employment estimates that exports of environmental goods and services will reach EUR 650 million and that the sector will employ around 10 000 people by 2020), several government programmes support the sector. Both Enterprise Ireland and IDA Ireland, which promotes investment in Ireland,

established environmental goods and services departments to support an expanding portfolio of start-up companies in the waste, water and energy sectors. Science Foundation Ireland's remit was recently extended to include sustainable energy and energy-efficient technology. A high-level group, established to advise on the development of green enterprise in Ireland, is expected to identify priority actions for providing new, quality employment opportunities in this growing sector.

Demand for environmental products, services and technologies will increase as cost savings and business-to-business supply chain pressures increasingly become key factors in motivating eco-innovation. Recognising these links, Ireland's National Roadmap for the Implementation of the EU Environmental Technology Action Plan was adopted in 2006. It emphasises improving competitiveness and economic benefits of Irish companies and bridging the gap between research and the market place. However, additional efforts are needed to stimulate eco-innovation and the environmental goods and services sector. These should include consistent enforcement and implementation of environmental legislation, the greening of Ireland's EUR 10 billion public procurement budget and additional financing for start-up projects. The last is recognised in the Framework for Sustainable Economic Renewal, which set out the Irish Government's response to the worsening economic situation in 2008. It includes a EUR 500 million venture fund, known as Innovation Fund – Ireland that would put particular focus on helping small, early-stage, R&D-intensive firms take advantage of opportunities for wider application of renewable energy and environmental technology (DoT, 2008).

2.6 *Environmental expenditure*

Public pollution abatement and control (PAC) expenditure increased by 63% in real terms during the review period. However, public PAC expenditure continues to represent a small share of GDP (0.7% in 2007) and the share of public expenditure devoted to environmental protection has steadily declined since 2001 (Table 6.10). Investment represents about 37% of public PAC expenditure, down from 44% in 2000. Expressed as share of Ireland's gross fixed capital formation, public PAC

Table 6.10 **Public environmental expenditure,**[a] 2000-07 (EUR million)

	2000	2001	2002	2003	2004	2005	2006	2007
Total public PAC expenditure	529	637	686	692	709	713	785	868
of which:								
Waste management	223.5	266.0	338.7	375.2	399.0	384.6	393.1	430.5
Wastewater management	288.5	353.9	329.0	298.1	292.4	311.3	375.3	419.4
Air management	17.1	16.6	18.5	18.4	17.8	16.8	17.0	18.4
Total public PAC investment	231.8	299.9	314.8	259.3	226.0	249.1	284.0	326.3
of which:								
Waste management	32.3	45.6	81.1	73.3	72.7	78.4	81.5	93.6
Wastewater management	198.5	252.8	231.1	183.6	151.0	168.1	200.0	229.9
Air management	1.0	1.5	2.6	2.4	2.4	2.6	2.4	2.8
Other public environmental expenditure[b]	22.5	30.9	26.1	25.4	27.6	28.5	30.9	33.0
Public PAC expenditure/GDP (%)	*0.5*	*0.58*	*0.6*	*0.6*	*0.62*	*0.6*	*0.63*	*0.67*
Public environmental expenditure/ GDP (%)	*0.53*	*0.61*	*0.63*	*0.62*	*0.64*	*0.62*	*0.65*	*0.69*
Public environmental expenditure/ total public expenditure (%)	*1.67*	*1.71*	*1.63*	*1.54*	*1.47*	*1.36*	*1.36*	*1.33*

a) At constant 2000 prices.
b) Environmental R&D and other environmental expenditure; no data available on water supply.
Source: Eurostat, Government Expenditure by Function (COFOG).

investment expenditure is fairly high by OECD standards at 4.2% in 2007, reflecting an ongoing, large-scale investment plan to fill Ireland's environmental infrastructure gap. The bulk of public PAC investment is devoted to wastewater management (70%), but overall public PAC expenditure, including operating costs, is almost equally divided between the waste and wastewater sectors.

Compared to many OECD countries, much more of Ireland's public expenditure on environmental protection is spent at local level – over 90%. The share of *local government budgets* devoted to environmental protection substantially increased, from 3.6% in 2000 to 9% in 2007. Reasons for this strong growth include the demands of a fast-growing economy and rising population. However, relative to other OECD countries, there is little local fiscal autonomy and the share of subnational revenue (as part of total government revenue) is very small (OECD, 2008b). All local authorities raise revenue from commercial and domestic waste charges, commercial water charges, housing rents, parking charges and planning application fees, with autonomy in setting the rates on most of these. Several reports over the last two decades have recommended an extension of local tax autonomy (OECD, 2008a). Some measures to this end have been taken in recent years. The 2009 budget introduced a charge of EUR 200/year on second homes, which is collected by local authorities and is expected to yield EUR 40 million a year to help cover local operating costs.

The central government fills the fiscal gap with grants, which are particularly important in rural areas. The largest *mechanism for grants from the central government* is the Local Government Fund (general purpose grant). Part of the DoEHLG's budget, it is partly funded by motor tax proceeds. The DoEHLG also manages the Environment Fund, which is funded by the levies on plastic shopping bags and landfills (Chapter 4). Other government grants target water services infrastructure and housing.

Box 8.1 **Emission trading**

Ireland has participated in the *EU Emission Trading Scheme for CO_2* since its launch in 2005. The ETS covers over 100 major industrial facilities in Ireland; power plants and cement factories account for most emissions. The EPA oversees the monitoring, reporting and verification of emissions, as well as the National Emissions Trading Registry. ETS facilities have to pay a EUR 150 fee to open an account on the registry. Auction revenue, although modest (less than 1% of emission allowances thus far), is used to cover the ETS operating cost.

At 57.7 $MtCO_2eq$ (excluding 9.2 $MtCO_2eq$ set aside for new entrants), the ETS *allocation for 2005-07* happened to be 12% below verified emissions (EEA, 2008). Ireland was among the few EU countries that were short on the market. It had to import 911 000 tCO_2, worth about EUR 5 million (Ryan *et al.*, 2008). The Commission for Energy Regulation allowed electric utilities to pass on to consumers only the additional cost of the allowances they had to purchase.

In the second trading phase, for *2008-12*, 22.3 $MtCO_2eq$ was allocated per year, representing 87% of projected ETS emissions (a third of projected total emissions). Excluding the reserve for new entrants, the annual allocation is 6.6% lower than in the previous phase. Since the all-island wholesale electricity market came into operation, electric utilities have been entitled to pass on to consumers the opportunity cost of their allowances (*i.e.* even when there is no actual purchase) (Ryan *et al.*, 2008). While this represents an important signal to consumers, it creates rents for utilities that received the allowances for free. Verified emissions in 2008 were lower than in 2007, confirming the downward trend since 2005, though the decrease partly reflected the economic downturn.

The full auctioning of emission allowances for the power sector *from 2013 onwards* (and gradually for other energy-intensive industrial sectors), as part of the new EU climate change package for 2020, will increase incentives for ETS facilities to curb emissions. It will also put an end to the rents created for utilities that currently receive allowances for free.

Box 8.2 **The carbon budget**

Ireland is the first country in the world, followed by the United Kingdom, to have introduced a national carbon budget as *part of the annual budgetary process*. The aim is to inform decisions on expenditure and taxation not only in terms of their financial and economic impacts but also regarding their impact on climate change. The carbon budget presents the additional emission reductions expected from new measures included in the budget (*e.g.* grants for residential renewable energy heating systems and revised vehicle taxation reflecting CO_2 emission ratings). The minister for environment, heritage and local government presents the carbon budget at the same time as the annual financial budget. The minister subsequently reports on Ireland's use of energy in the previous year, on progress in meeting Ireland's GHG emission reduction targets (EU burden-sharing as well as the government's target of a 3% annual cut) and on government plans to meet the targets. Two carbon budgets have been presented so far, accompanying the financial budgets for 2008 and 2009.

However, the carbon budget *does not assess the overall impact of the financial budget* on GHG emissions, nor does it outline the economic costs and benefits of the proposed measures. It only takes account of measures directly aimed at cutting emissions. The 2009 carbon budget presented the revised GHG emission outlook without reporting on the effects of the previous budget. Hence, there is scope to improve the analytical basis of the carbon budget and to make it better fit to serve as an accountability instrument.

Box 8.3 **Personal carbon allowances: cap and share**

While sectors such as power generation and large industry are included in the EU Emission Trading Scheme, others, such as transport, residential housing and agriculture are not. Thus new policy measures are needed to reduce emissions in the sectors not covered. One idea proposed by the Foundation for the Economics of Sustainability (FEASTA), an Irish NGO, is "cap and share" (C&S), based on the notion of *giving each citizen a carbon emission allowance* within a defined cap.

Essentially, C&S *would operate in a similar way as a carbon levy. However, it would address the problem of public acceptability* since the cap would be placed on upstream emissions from primary fossil fuel suppliers to the sectors included in the system. Certificates would be issued to all adults, entitling each to an equal share of the emissions permitted under that year's cap (Comhar, 2008). The certificates could then be sold to the fossil fuel suppliers via an intermediary such as a bank or post office.

Capping emissions upstream means *the price of emissions is built into the price of fossil fuel* which is passed through to the consumer. The consumer would have an incentive to use less fossil fuel than the average amount for which he is compensated through the sale of the certificates.

However, the C&S idea has important disadvantages. It gives individuals "ownership" of all transport-related emissions in the economy, but a large share of these emissions is caused by activities such as road haulage, public transport, taxi services and the like. Thus, *individuals would be over-compensated*, at least at first – they would earn "profit" on selling permits to the oil companies that need to cover emissions caused by the fuel they sell to the other activities.

Since the oil companies have to pay for the permits they need to cover the emissions caused by the products they sell, the idea can be compared to a cap-and-trade system with auctioned permits. However, in the C&S plan the government distributes the "revenues" in a lump sum to every adult, *forgoing the possibility to use the money to reduce distorting taxes, e.g.* on labour.

A C&S system would *interact with the current taxes on motor fuels*. But with such a cap on emissions from oil companies, the existing motor fuel taxes would have no impact on total motor fuel use – and hence on the related CO_2 emissions. It is easy to imagine the likely pressure to scrap the current motor fuel taxes, which would entail a major revenue loss.

Ireland already has very strong incentives to reduce emissions from light-duty motor vehicle use through one-off and recurrent motor vehicle taxes (Chapter 6). Policies to reduce emissions in other sectors would be more cost effective than seeking further emission reductions related to motor fuel.

Last but not least, the *transaction costs* for operating a C&S system would be very high compared with a carbon tax. Explaining the operation to 1.5 million individual households would be very burdensome. Operating and policing the resulting "market" as households cashed in their permits, the value of which would vary, would be a huge administrative challenge.

Box 8.5 **The debate on carbon taxation in Ireland**

The *2000 National Climate Change Strategy* included a commitment to introduce a framework for GHG taxation, focusing on CO_2 emissions. An *inter-departmental Green Tax Group* was established to assist in the design of such a tax. In 2003, more than half the authorities consulted on the introduction of a carbon tax were either against it or requested exemptions. As a result, the Green Tax Group proposed a tax of EUR 5 per tonne of CO_2 on sectors outside the ETS. The plan was to gradually increase the rate to reach the ETS carbon price. An 80% rebate was proposed for firms engaging in agreements with Sustainable Energy Ireland to reduce emissions and for combined heat and power plants. The group recommended spending the carbon tax revenue initially on Kyoto Protocol emission allowances, and later on measures to increase social welfare and improve energy efficiency in the housing stock. However, the carbon tax was not introduced. The government concluded that the reductions of GHG emissions would have been modest, and feared that the tax would have had adverse economic and social effects. The rapid oil price increase in 2004 was expected to provide enough incentive for energy saving.

With the entry into force of the Kyoto Protocol in 2005 and the development of an ambitious climate policy at EU level, the case for introducing a carbon levy in Ireland has been regarded as more compelling. The *National Climate Change Strategy 2007-12* and the *Programme for Government 2007-12* reiterated the commitment to gradually introduce environmentally related fiscal measures, including a carbon levy.

Much research has been conducted on the *appropriate design of a carbon levy* in Ireland (Ryan *et al.*, 2008). Cambridge Econometrics forecast that a EUR 20/tCO_2 tax would lead to a modest reduction in GHG emissions and that a much higher tax rate would be needed. However, even with tax rates in the range of EUR 200-300/tCO_2 (which would raise political and social acceptability issues), the Irish economy would grow, provided that the tax revenue was used to reduce income tax and increase social welfare benefits. In 2008, the Economic and Social Research Institute (ESRI) factored a carbon levy into its economic modeling for the period to 2015, under the following assumptions: *i)* introduction of a carbon tax in 2010 at the market price of carbon, *ii)* introduction of a similar tax elsewhere in the EU (limiting the effects on competitiveness) and *iii)* revenue recycling to reduce labour taxes (Fitzgerald *et al.*, 2008). ESRI's model showed a positive economic impact, with increased competitiveness of the Irish economy and higher employment. ESRI also assessed the *impact of a carbon levy on Ireland's GHG emissions and economy* (Tol *et al.*, 2008; Conefrey *et al.*, 2008), concluding that:

- a uniform tax is the cheapest way to reduce emissions;
- the tax should be imposed on all sources of GHG emissions not involved in the ETS (agriculture, transport, waste, residential and commercial sectors, industry not covered by the ETS);

- the tax should equal the futures price of emission permits in the ETS (estimated at EUR 20-38/tCO_2 in 2010);
- the tax revenue is likely to grow faster than the overall government budget between 2010 and 2020: the expected revenue from EUR 20/tCO_2 (on average, EUR 0.05 per litre of fuel) is EUR 550 million per year;
- the revenue would best be used to mitigate distributional implications and reduce labour costs;
- the tax would reduce emissions by a modest amount in the first decade, but the long-term effects would be much larger as new technology developed;
- a relatively modest increase in benefits and reduction in income tax would offset the mildly regressive nature of the tax;
- concerning emissions of methane, nitrous oxide and halocarbons from internationally exposed sectors, including agriculture, an equivalent tax could be charged to final consumers (rather than producers), as this would automatically exempt products for export and treat domestic and imported products alike.

Hence, there is an *overall consensus among economic researchers* that a carbon tax set at the EU emission allowance price would moderately reduce GHG emissions and benefit the Irish economy in terms of growth and employment. It would also provide some certainty for long-term investment in low-carbon technology. The economic impact would crucially depend on the use of the revenue. Accordingly, Comhar, the Sustainable Development Council, suggested introducing a carbon levy on all sectors not covered by the ETS, except for agriculture. Cohmar proposed using 40% of the revenue to reduce income taxes, 25-30% to compensate low-income households and address fuel poverty, and the rest on emission reduction measures in transport, agriculture, services and the residential sector. The Commission on Taxation was asked to review the issue of introducing a revenue-neutral carbon tax. It reported to the government in September 2009.

3. Trade and the Environment

3.1 Ozone-depleting substances

Ireland has ratified all amendments to the 1987 Montreal Protocol on ozone-depleting substances (ODS). It is also committed to following the EU timetable for elimination of ODS, pursuant to EU Council Regulation (EC) No. 2037/2000,[45] which is more stringent than the protocol (*e.g.* requiring HCFC consumption to be phased out by 2010 instead of 2030). As competent authority for Regulation (EC) No. 2037/2000, the EPA is engaged with the businesses and sectors involved in handling controlled substances. In particular, extensive efforts are underway to raise awareness about the final phase-out of HCFC-22 refrigerant – the principal controlled substance remaining in use in Ireland – and ensure compliance with the HCFC phase-out schedule. In addition, annual surveys of relevant sectors are carried out to gather information for annual reporting to the European Commission, as required under the Regulation.

There were no legal cases against attempts to trade ODS in the review period. Irish regulations issued in 2006 require the Customs Division of the Revenue Commissioners to tighten control of imports and exports of ODS. In addition, the EPA and Customs are co-operating to combat potential illegal trade of ODS. Arrangements are being made to carry out *profiling of imported goods*. In particular, to prevent imports of controlled substances[46] under incorrect tariff codes (CN codes, *e.g.* HFC instead of HCFC), related codes will be profiled to determine if illegal use of ODS is at issue in Ireland.[47]

Until 2005, local authorities accepted *waste refrigerators and freezers* at no charge as part of the All-Island Scheme for the Management of Waste Domestic Fridges and Freezers. Since then, the EU Directive on Waste Electrical and Electronic Equipment has made producers responsible for recovery, recycling and disposal of such equipment. Manufacturers, importers and retailers of fridges and freezers have to establish systems allowing customers to recycle obsolete devices free of charge. Regulation (EC) 2037/2000 requires the removal of controlled ODS from refrigeration equipment before such appliances are scrapped. CFCs and HCFCs can be destroyed only by approved methods, most commonly high-temperature incineration. As Ireland has no such facilities, it has to export under transfrontier shipments equipment containing ODS, such as refrigerators and freezers, to other

countries for environmentally sound management, including recovery of ODS.[48]

3.2 *Hazardous substances*

Irish law requires the EPA to prepare a national plan for hazardous waste management that sets objectives on prevention, minimisation and recovery of hazardous waste. The 2008-12 National Hazardous Waste Management Plan recommends striving for self-sufficiency in hazardous waste recovery and disposal (Chapter 4). Over the review period, Ireland produced 250 000 to 300 000 tonnes of hazardous waste per year (Table 8.7). It exported 120 000 to 160 000 tonnes per year, a *significant increase in volume* from the second half of the 1990s.[49] The National Hazardous Waste Management Plan expects that, as treatment infrastructure develops, hazardous waste exports will decrease from the current 40-50% of the total generated. However, treatment capacity has not increased over the past decade: off-site treatment (at commercial facilities) increased, but on-site treatment at facilities with integrated pollution prevention and control licences decreased (Table 8.7).

Table 8.7 **Hazardous waste management,**[a] 1996-2007

('000 tonnes)

	1996	1998	2001	2004	2006	2007
Treatment in Ireland	175	170	144	142	149	174
On-site treatment	140	130	96	86	88	83
Off-site treatment	35	40	48	56	61	91
Exports	50	75	115	166	135	147
Total	225	245	259	308	284	305[b]

a) Not including contaminated soil.
b) Excluding (to avoid double counting) 16 573 tonnes of waste solvents treated in Ireland prior to their export as waste for use as a fuel.
Source: EPA, 2009c.

There is no evidence to suggest any *illegal trade in hazardous waste* from Ireland, where all shipments of waste are controlled in accordance with Regulation (EC) 1013/2006. The EU Network for the Implementation and Enforcement of Environmental Law (IMPEL) recently reported that only 1% of Ireland's transboundary waste shipments violated legislation, which is low by EU standards (Table 8.8). The violations detected were administrative, involving paperwork. To comply with Regulation (EC) 1013/2006, border-area agreements are to be drafted with Northern Ireland to simplify the notification procedure for cross-border shipments of waste. The two have carried out joint enforcement to tackle illegal cross-border movements of waste. In 2007, Dublin City Council was designated as the single national competent authority for exports and imports of waste – the National Transfrontier Shipment Office (NTFSO), which replaced 35 competent authorities that existed up to then. This has led to stricter enforcement of waste movement. In 2008, the NTFSO carried out 4 830 inspections. In the first five months of 2009, 1 500 inspections prevented 3 000 tonnes of waste from being exported due to breaches of waste regulation.

Ireland became a party to the 1989 *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal* in 1994. Ireland implements the 1995 ban amendment to the convention, which has been in force in the EU since 1998 and bans exports to non-OECD countries of any hazardous waste intended for recovery, recycling or final disposal. But Ireland did not ratify the 1999 protocol providing for liability and prompt compensation for damage resulting from transboundary movements of hazardous waste and "other" waste[50] and its disposal, including illegal traffic.

Table 8.8 **Inspection of waste shipments**, 2007-08

	Inspections		Violations[a]	
	Total shipments	Transboundary shipments	Number	% of transboundary shipments
Ireland	707	328	4	*1*
Austria	3 060	212	32	*15*
Belgium	1 616	98	20	*20*
Denmark	154	125	3	*2*
England and Wales	78	4	0	*0*
Germany	1 767	384	32	*8*
Netherlands	2 725	613	127	*21*
Northern Ireland	312	55	14	*25*
Poland	2 118	110	33	*30*
Portugal	657	20	1	*5*
Scotland	12	12	6	*50*

a) In regard to requirements of Regulation (EC) No. 1013/2006 of the European Parliament and of the Council on shipments of waste.

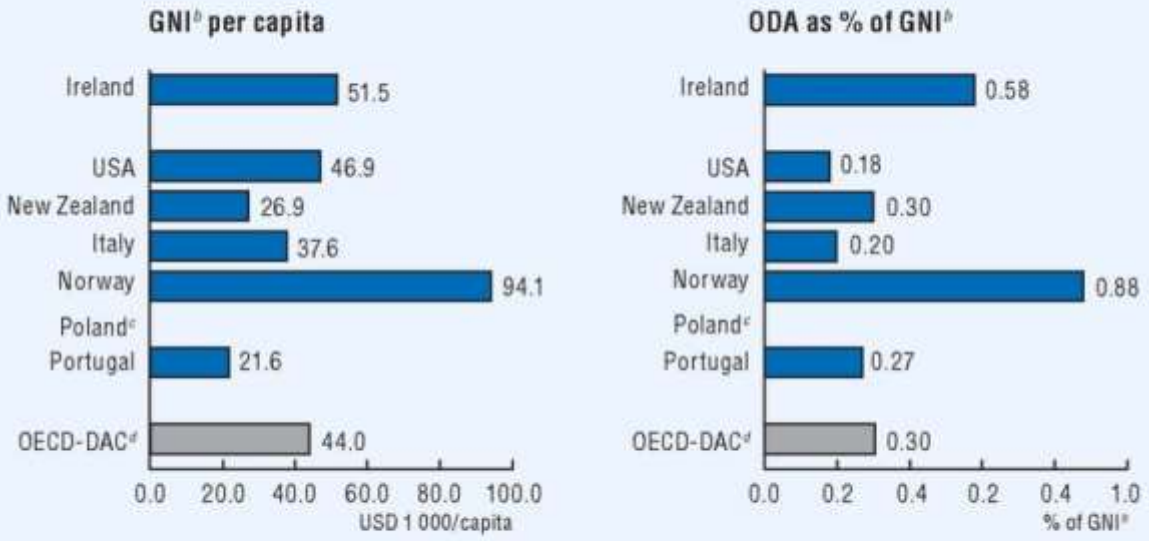
Source: IMPEL, 2008.

5. Official Development Assistance

Ireland's official development assistance (ODA) *significantly increased over the review period,* rising from EUR 254 million in 2000 to EUR 900 million in 2008. In 2007, it amounted to 0.58% of the country's gross national income (GNI). However, following the sharp economic downturn, the ODA budget was cut to EUR 696 million in 2009, which is projected to amount to 0.48% of GDP (Irish Aid, 2009). Ireland remains committed to reaching the UN target of 0.7% of GNI by 2012, ahead of the EU target date of 2015, and to expanding the aid programme when economic growth resumes. Achieving the target will be difficult. Nevertheless, Ireland remains closer to achieving the 2015 target than all but a few EU member states, and ODA is higher than the OECD-DAC average, both per capita and as a share of GNI (Figure 8.4).

In 2009, a DAC review concluded that "Ireland is a champion of making aid more effective … [and has] a strong, cutting-edge development programme" (OECD, 2009). ODA is provided entirely in the form of grants, is fully untied and involves some of the lowest administrative costs of any DAC member. The government's first white paper on Irish Aid, published in 2006, identified the environment as a priority

Figure 8.4 **Official development assistance,** 2008[a]



a) Provisional data.
b) Gross national income in USD at current exchange rates.
c) Poland is not a member of the OECD Development Assistance Committee.
d) Member countries of the OECD Development Assistance Committee.
Source: OECD-DAC.

issue to be mainstreamed in Ireland's development co-operation, along with gender equality, HIV and AIDS, and good governance. Ireland is one of the donors most committed to mainstreaming these four cross-sectoral issues into development co-operation and is generating experience that is useful for other donors (OECD, 2009). A strategic decision was made to stagger implementation of cross-sectoral mainstreaming priorities in order to enhance aid effectiveness. Ireland is on its way to mainstreaming environment across its development co-operation programme, as was done earlier for the other three issues.

The Irish Aid *Environment Policy for Sustainable Development*, released in 2007, provides a policy framework on the environment, which applies both to mainstreaming and to environment as a sector. The policy defines four key objectives: *i)* raise awareness of the links between environmental sustainability and poverty reduction; *ii)* integrate the principles of sustainable development into Irish Aid's policies and programmes; *iii)* continue to engage with key multilateral environmental agreements and agencies; and *iv)* assist developing countries to prepare for and adapt to changing environmental conditions while taking action to reduce negative impacts on the most vulnerable members of society. Ireland is committed to promoting the use of strategic environmental assessment in partner countries to promote the integration of environmental issues in development plans and strategies, as agreed in the Paris Declaration on Aid Effectiveness.[59]

In view of the emphasis on mainstreaming, Irish Aid's direct *contributions to environment activities are limited*, although they grew over the review period. As part of bilateral aid (70% of Irish ODA), direct environmental contributions amounted to EUR 3 million in 2007.[60] Higher amounts (*e.g.* EUR 62 million in 2007) have been devoted in recent years to activities contributing to climate change adaptation, as part of the mainstreaming approach. In 2007, Irish Aid assigned a person to work full time on environment and sustainable development issues.

Irish Aid and the DoEHLG have co-operated to assure coherent input by the Irish Government to negotiations under the UN Framework Convention on Climate Change. At the Conference of the Parties to the Climate Change Convention in Poznan, Poland (1-12 December 2008), Irish Aid led the EU in the discussion on the least developed countries fund, which aims to support developing countries in adaptation to the impacts of climate change. Both Irish Aid and the DoEHLG contribute to the fund. Through engagement with developing country partners, Irish Aid's support was instrumental in improving the funding delivery and getting agreement on timelines and feedback mechanisms.

Ireland also provides modest contributions to the activities conducted under other *multilateral environmental agreements*, including through the United Nations

Environment Programme and the Global Environment Fund. This form of assistance amounted to EUR 6 million in 2007. Irish Aid committed USD 5.4 million over 2006-08 to the UN Poverty and Environment Initiative (PEI) in Rwanda and Mozambique.[61] In the area of biodiversity, Irish Aid has committed EUR 3 million to date to the Global Crop Diversity Trust, which works to assure long-term conservation of crop diversity for food security worldwide. Irish Aid also provides funding (EUR 4.4 million in 2008) to the Consultative Group on International Agricultural Research (CGIAR), a group of agencies carrying out research on issues such as water resource management, agro-forestry and drought-resistant crops. In addition, EUR 1 million per year is allocated to the 2006-08 programme of strategic partnerships.[62]