

3

WATER MANAGEMENT*

Features

- Ambient water quality
- Pressure from agriculture
- Water pricing
- Water infrastructure and services

* This Chapter reviews progress in the last ten years, and particularly since the 2000 OECD Environmental Performance Review. It also reviews progress with respect to the objectives of the 2001 OECD Environmental Strategy.

Recommendations:

- further consolidate *water-related legislation* into a coherent framework;
- consider establishing *dedicated river basin agencies* to implement the Water Framework Directive;
- introduce *water pricing for households*, in a way that takes account of environmental, economic and social considerations;
- strengthen measures to achieve “*good*” *quality status, at least, for Irish waters* by 2015, paying special attention to eutrophication; improve protection of drinking water sources;
- further integrate water quality and flood risk management considerations into *spatial planning and development management processes*.

Conclusions

Ireland generally enjoys *good biological quality in its rivers*, lakes and in-shore and marine waters. A small improvement in the biological quality of rivers and lakes has been observed in recent years. Substantial *investments in drinking water and wastewater treatment infrastructure* were made since the 2000 OECD review. As a result, the compliance rate with the EU Urban Waste Water Directive rose from 25% to 92%. Treatment plants removing nutrients now serve most eutrophication-sensitive areas, as the directive requires. More than 99% of drinking water supplied by public utilities meets health standards. Ireland has also improved the institutional arrangements for water management: a *new water services law* and more than a dozen new regulations (most transposing EU directives) have been adopted. The role of the Environmental Protection Agency in making sure local government carries out its water-related functions has been strengthened, including through good monitoring systems and a national auditing system producing comprehensive, publicly accessible summary reports. Ireland has met all deadlines to date for *implementing the Water Framework Directive*. A new approach to minimising flood risk is being put in place.

Nevertheless, the rate of progress so far is unlikely to prove sufficient to meet the Water Framework Directive goals for 2015. *Nitrogen levels in rivers and groundwater* are still on the rise in many areas. There has also been a rise in the trophic status of rivers. The clean-up of point sources of nutrients has been compromised by tardy implementation of the Nitrates Directive, which improved only after a judgement by

the ECJ in 2004. Bacterial contamination is an issue for groundwater used as drinking water supply. Despite the high compliance rate with drinking water health standards, problems persist with *bacterial contamination in many group water schemes* serving small settlements. The city of Galway experienced outbreaks of cryptosporidium in 2002 and 2007, and old lead pipes cause unacceptably high lead levels in more than a few towns. Ireland still has an uncommonly high leakage rate from its urban supply systems despite recent improvements. Moreover, the country will not be in full compliance with the Urban Waste Water Directive until 2011, six years late. Many sewage treatment stations have a poor record regarding statutory effluent limits, and there is no inspection regime for septic tanks. A fundamental and politically sensitive issue in Irish water policy is *pricing household consumption of water*; the absence of household water charges impedes the development of an economically, environmentally and socially efficient water services sector.



1. Water Management Framework and Objectives

Institutional arrangements for water management became somewhat more centralised during the review period. The 2007 Water Services Act consolidated earlier legislation and updated standards of public health and environmental protection in the area of water services provision. The 2007 regulations on drinking water gave the Environmental Protection Agency (EPA) new powers to enforce drinking water quality standards for public water supply by the Water Services Authorities (WSAs).¹ Under the 2007 regulations on wastewater discharge, local authorities now must obtain prior authorisation from the EPA to discharge effluents from their sewage treatment stations.²

The EPA also regulates more than 700 facilities subject to the EU's Integrated Pollution Prevention and Control (IPPC) Directive, including large livestock operations.³ Local authorities are responsible for licensing effluent discharges to sewers and natural waters from smaller commercial facilities. Implementation of the EU Water Framework Directive (WFD, 2000/60/EC), which Ireland transposed in 2003, has enhanced co-operation among local authorities within specified river basin district regarding preparation of river basin plans.

Throughout the review period, Ireland actively kept its *legislative framework* up to date, mostly to comply with EU requirements (Table 3.1). The 2000 OECD Environmental Performance Review recommended that Ireland consolidate its water

legislation in order to clarify responsibilities and increase accountability. Adoption of the Water Services Act, which deals comprehensively with the needs of the industry, is a major step in the right direction. However, much of Ireland's water-related legislation is in the form of regulations under a variety of laws, including the European Communities Act, the Local Government (Water Pollution) Act, the Environmental Protection Agency Act and the Waste Management Act. None of these laws were drafted with integrated water management in mind. Hence, the case remains for consolidating the regulations into a coherent framework. This would provide greater clarity both for water managers and for various stakeholder groups (*e.g.* users, recreational interests, environmental associations).

*All of Ireland's water management objectives spring from EU directives, except the objective of providing secondary wastewater treatment to all settlements of more than 1 000 people, which is more stringent than EU requirements.*⁴ Implementation of EU water directives gained impetus as a result of judgements by the European Court of Justice (ECJ) on drinking water quality (2002), nitrates (2004), pollution from dangerous substances (2005), shellfish water quality (2003, 2007), protection of groundwater against pollution by hazardous substances (2007) and urban wastewater (2008).

Irish water management performance can also be assessed against the recommendations of the *2000 OECD Environmental Performance Review* (Table 3.2).

2. Water Quality

Overall, the quality of Irish inland and coastal waters remained high during the review period, except for nitrate levels in the intensively farmed east and bacterial contamination of some groundwater. However, compliance with the *more demanding classification system* required by the WFD, which Ireland should adopt soon, will be much more challenging.⁵ A preliminary EPA assessment concluded in November 2008 that considerable strengthening of resolve and effort would be required to achieve the target under the new classification of at least "good status" in all waters by 2015.⁶

As for drinking water quality, compliance with standards is good overall (less so for small private supplies), but a *series of incidents in recent years* suggests unresolved equipment or management shortfalls.

Freshwater

The *biological water quality of Irish rivers improved somewhat* over the review period. The proportion of river length classed as unpolluted (or satisfactory) increased from 67% in 1995-97 to 71% in 2004-06, whereas the share classed as seriously polluted

Table 3.1 Water legislation, 1998-2008

Integrated Pollution Prevention Licensing Regulations 1992-2007 ^a	Requires IPPC (integrated) licences for large production units of poultry (more than 40 000 birds) and pigs (more than 2 000 pigs)
Surface Water Regulations (S.I. 272/2009) ^b	Requires local authorities to prepare Phosphorus Implementation Reports and sets water quality standards for 14 pesticides, solvents and metals
Drinking Water Regulations (S.I. 439/2000) ^a	Transposes the Drinking Water Directive (98/83/EC)
Quality of Shellfish Waters Regulations (S.I. 459/2001, S.I. 268/2006) ^a	Transposes Directive 79/923/EEC on shellfish water quality
Water Policy Regulations (S.I. 722/2003) ^a	Transposes the Water Framework Directive (2000/60/EC)
Urban Waste Water Treatment Regulations (S.I. 254/2001) and Urban Waste Water Treatment (Amendment) Regulations (S.I. 440/2004) ^c	Transposes the Urban Waste Water Treatment Directive (91/271/EEC) and amendment 98/15/EC
Good Agricultural Practice for Protection of Waters Regulations (S.I. 788/2005, S.I. 378/2006 and S.I. 101/2009) ^a	Transposes the Nitrates Directive (91/676/EEC); aka “Nitrates Regulations”, giving statutory effect to the Nitrates Action Programme
Waste Water Discharge (Authorisation) Regulations (S.I. 684/2007) ^a	Requires local authorities to obtain EPA authorisation to discharge effluent from wastewater treatment plants
Bathing Water Quality Regulations (S.I. 79/2008) ^a	Transposes the Bathing Water Directive (2006/7/EC)

a) Regulations under the European Communities Act 1972 and 2007.

b) Regulations under the Local Government (Water Pollution) Act 1977 and 1990.

c) Regulations under the Environmental Protection Agency Act 1992.

Source: Irish Statute Book.

decreased from 1% to 0.6% (Table 3.3). Unsurprisingly, water is of higher biological quality in the less developed Western and South Western river basins (Table 3.4).

However, the *trend towards ever-higher nitrate levels has not been broken*, particularly in the rivers draining the east and south-east of the country where nitrate levels may be as much as 4-5 mg N/l and where the EPA has observed a positive correlation between nitrate levels and the proportion of ploughed land in their catchments (Figure 3.1).⁷ The fact that implementation of the codes of good agricultural practice under the Nitrates Directive (91/676/EEC) remained voluntary until 2006 may explain this poor performance. *Phosphate levels* also are highest – well above the target level stipulated in the phosphorus regulations⁸ – in the rivers with high nitrate levels, although they decreased somewhat during the review period. Overall, though, there has been a long-term (30-year trend) increase in algal growth in the rivers of the south-east (EPA, 2007).

Table 3.2 Progress in environmental performance

Recommendations from the 2000 OECD Environmental Performance Review	Action taken since 2000
– strengthen <i>catchment management</i> , with a greater role for river basin districts, and promote participatory approaches to catchment management plans;	Ireland has done well in implementing the successive steps stipulated under the WFD. The institutional arrangements for river basin districts may not prove sufficiently robust.
– consolidate <i>water legislation</i> in order to increase accountability and clarify responsibilities;	The 2007 Water Services Act represents a step in the right direction, but further consolidation of regulations into a coherent framework would enhance transparency.
– accelerate development of statutory nutrient management plans and by-laws for controlling <i>water pollution from agriculture</i> ;	Codes of good agricultural practice remained voluntary until 2006, when new regulations (S.I. 378/2006) put in place the Nitrates Action Programme.
– develop <i>voluntary initiatives</i> aimed at water quality enhancement, such as contracts between fishermen and farmers to protect rivers;	Not followed up during the review period.
– progressively apply the User Pays and Polluter Pays Principles to <i>water pricing policy</i> concerning both households and economic sectors, taking account of social and distributional concerns;	Progress was made with installing meters and charging for the commercial use of water, but the policy of not charging for household use of water remains in place.
– promote greater <i>private sector involvement</i> in providing water services, technical expertise and access to finance;	Design-build-operate contracts between local authorities and service providers became a common way of providing water services during the review period.
– improve <i>drinking water quality</i> where necessary, especially regarding group water schemes;	Much has been done to improve water supply infrastructure and operational practices, but problems remain (lead in old pipes, cryptosporidium, <i>E. coli</i>).
– continue efforts to reduce <i>leakage</i> from water supplies to acceptable levels;	Progress has been made since 2003 under the National Water Conservation Sub-programme of the NDP Water Services Investment Programme, but much more remains to be done.
– develop ecosystem-based <i>water quality objectives</i> that are more holistic than current water management objectives, and that take into account nature conservation objectives;	The WFD will bring this about (S.I. 272/2009).
– extend the highly effective surface water monitoring system to consider nature conservation issues, including habitat issues.	A monitoring system meeting the requirements of the WFD was put in place.

Source: OECD, Environment Directorate.

Table 3.3 **Biological water quality in rivers and streams**

(% of total length of 13 240 km)

Quality status	1995-97	2004-06 ^a
Unpolluted (satisfactory)	67.0	71.4
Slightly polluted (unsatisfactory, eutrophic, excessive deposition of silt)	18.0	18.1
Moderately polluted (unsatisfactory, typically extremely eutrophic)	14.0	10.0
Seriously polluted (unsatisfactory, deoxygenation, bacterial and fungal slime)	1.0	0.6

a) Includes 2 985 sampling locations on 1 151 rivers.

Source: EPA, 2007.

Table 3.4 **Water quality in river basin districts, 2004-06**(% of river length in each district)^a

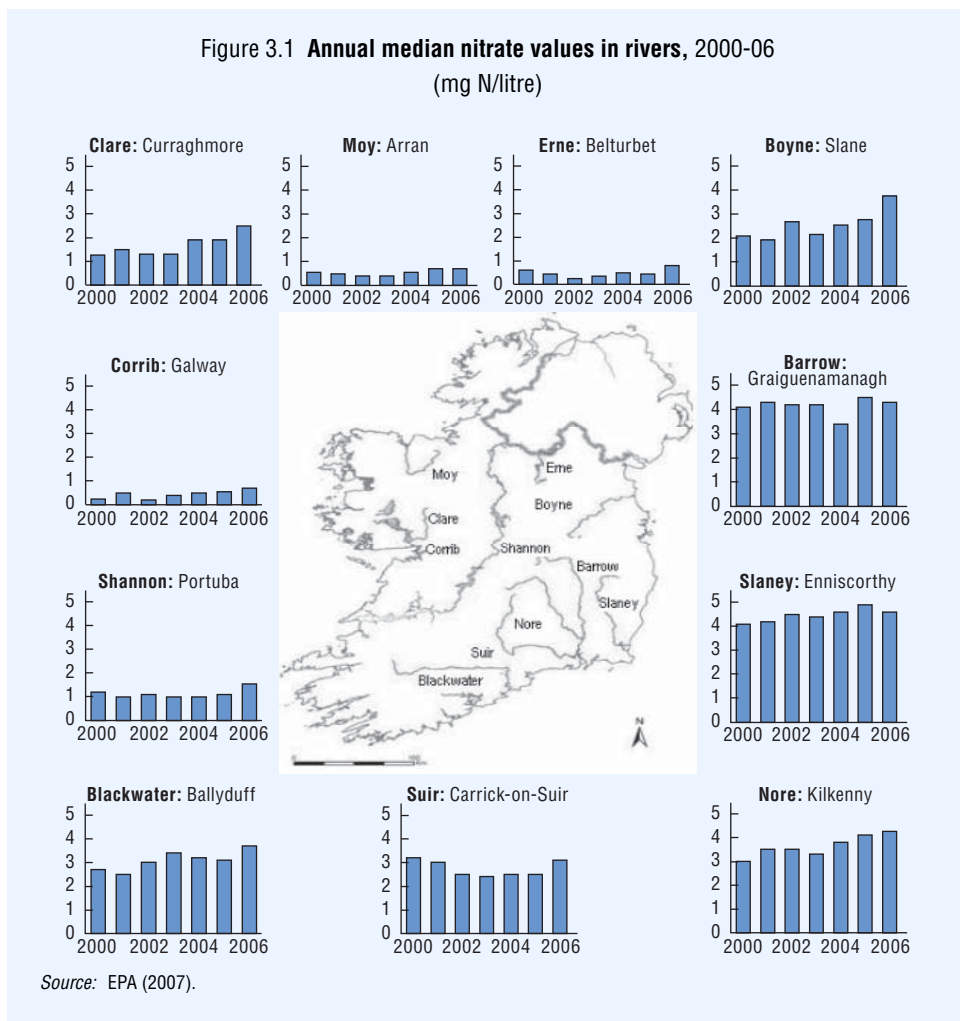
River basin district/international river basin district	Unpolluted	Slightly polluted	Moderately polluted	Seriously polluted
South Western	90 (89)	8 (8)	2 (3)	0.2 (0.1)
Western	84 (84)	10 (11)	5 (5)	0.1 (0.3)
North Western (South)	71 (76)	15 (10)	13 (12)	0.5 (0.8)
Shannon	67 (63)	22 (21)	11 (15)	0.7 (0.6)
South Eastern	62 (58)	26 (28)	12 (13)	0.4 (0.6)
Eastern	54 (41)	27 (28)	18 (30)	1.2 (1.9)
Neagh Bann (South)	49 (55)	30 (15)	20 (30)	0.6 (0.1)

a) Data in brackets refer to 1998-2000.

Source: EPA, 2007.

The *trophic status of Irish lakes remained fairly stable* over the review period. In 2004-06, 383 lakes (out of 449 monitored), accounting for 92% of total lake surface area, had a satisfactory status (*i.e.* were either oligotrophic or mesotrophic), whereas the remainder were classed as moderately eutrophic (2.3% of surface area), highly eutrophic

Figure 3.1 Annual median nitrate values in rivers, 2000-06
(mg N/litre)

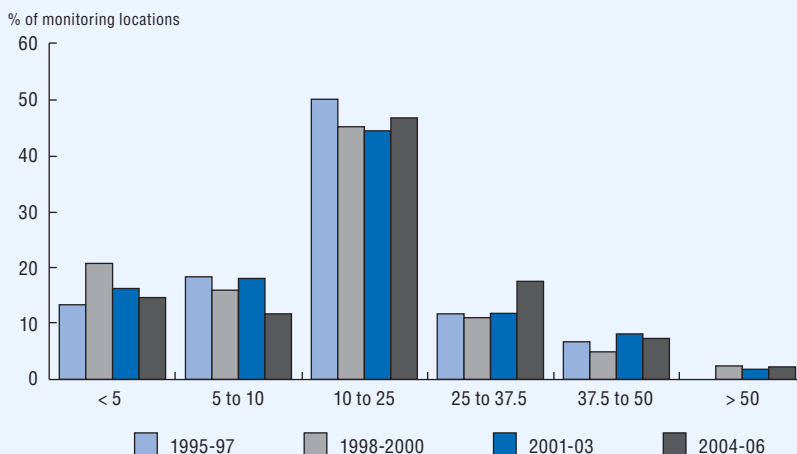


(1.0%), strongly eutrophic (1.3%) or eutrophic (3.5%). Compared to previous surveys, carried out 15 years ago, nearly 60% of the 66 eutrophic lakes had deteriorated in status, 20% had shown no improvement and 20% had improved. Zebra mussels, an invasive alien species, are known to be present in 33 of the country's lakes.

The *status of Irish groundwater is generally fair*, despite a higher risk of contamination than in most other OECD countries.⁹ More than 70% of sampling sites continue to display a nitrate concentration below 25 mg NO₃/l (the guide value), and the

maximum admissible concentration of 50 mg/l NO₃/l is exceeded at only three of the 137 sites (Figure 3.2). Nevertheless, the proportion of sites with high concentrations (above 25 mg NO₃/l) increased over the review period. As for *bacterial contamination*, almost 75% of the 1 330 samples taken in 2004-06 had a faecal coliform count of zero, a marked improvement from about 52% ten years before. Even so, as much as 11% of the samples still had a faecal coliform count in excess of 10 per 100 ml, a level regarded as gross contamination. The most likely causes are land spreading of manure and poorly sited single house wastewater treatment systems.

Figure 3.2 Nitrate concentration in groundwater, 1995-2006
(mg/l)



Source: EPA (2008).

Coastal waters

The *water quality of most estuarine and coastal waters has remained high*. No clear trends can be discerned from the results of the EPA's rolling five-year monitoring programme of the trophic status of 69 water bodies in 21 estuarine and coastal areas. Nevertheless, several major estuaries, predominantly in the south-east and south, have persistently displayed symptoms of nutrient enrichment since the EPA began to assess their trophic status in the early 1990s. Offshore areas are generally not affected by pollution or excessive nutrient enrichment.

The *shellfish water quality is high* with respect to most substances monitored (e.g. PCBs, heavy metals) particularly for the first 14 areas designated under the EU directive (79/923/EEC) on the quality of shellfish water. As a result of two ECJ judgements in 2003 and 2007, a further 49 areas have been designated, for which pollution reduction programmes have yet to be adopted.¹⁰ Recurrent outbreaks of dinoflagellates (marine plankton) during the review period (probably from natural causes) led to the closure of other shellfish producing areas, causing significant economic damage. In November 2008, Ireland transferred responsibility over shellfish water issues to the Department of Environment, Heritage and Local Government (DoEHLG).

Bathing waters

Coastal bathing water quality is largely satisfactory. Between 95% and 100% of the 122 Irish coastal bathing sites, depending on weather conditions, comply with mandatory values and 75-92% meet the more stringent guide values. Over the review period, monitoring results varied little and no bathing site had to be closed for not meeting mandatory values. All nine *freshwater bathing* sites have complied with mandatory values since monitoring began in 1992, except for three that did not in 2008 due to higher-than-usual summer rainfall. Four sites met guide values in 2008.

Drinking water

Some 78% of Irish households are connected to public water supplies, 12% to group water schemes¹¹ and 10% to individual private supplies. According to the 2006-07 EPA audit of drinking water quality, 99.3% of *public water supplies* comply with chemical standards, though improvement is needed for fluoride, nitrates and lead. Performance with microbiological standards is less satisfactory, with coliforms detected in 8.3% of public supplies at least once.¹² Similarly, the chemical quality of both public and private *group water schemes* is generally good but coliforms have been detected at least once in 35.8% of private schemes.¹³ Several private schemes suffer from elevated nitrate levels.¹⁴

There have been several *cryptosporidium outbreaks* associated with public water supplies since 2002, when the first such outbreak was recorded.¹⁵ One that occurred in Galway in 2007 affected 90 000 people and left 242 ill (EPA, 2009). In 2007 and 2008, local authorities had to issue “boil water notices” after *E. coli* was found in supplies in Limerick, Galway, Monaghan, Sligo and Meath, suggesting that insufficient attention had been given to protection of drinking water source areas. In 2008, the EPA issued a Remedial Action List identifying 339 public water supplies – which together supply drinking water to 36% of the population – as falling short on at least one of several counts, such as failure to meet the *E. coli* standard. Also in 2008, the EPA issued public health notices because *supplies showed excessive lead*

levels in parts of Galway city, Mallow in County Cork, Bruff in County Limerick and Ballintra in County Donegal.

The string of non-compliance events that have recently come to light partly shows that the more rigorous compliance and *enforcement regime put in place by the EPA is having the desired effect*.¹⁶ Without remedial action, however, many public supplies will be unable to meet the more stringent standards for bromate and trihalomethanes (by-products of disinfection) that entered into force in December 2008.

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/m³. Costs vary across local authorities from a low EUR 1.50/m³ in Galway County to the most expensive EUR 2.71/m³ in Wexford. At EUR 1.67/m³, average water costs in the largest five Irish cities are much lower than the European average of EUR 3.24/m³. 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.

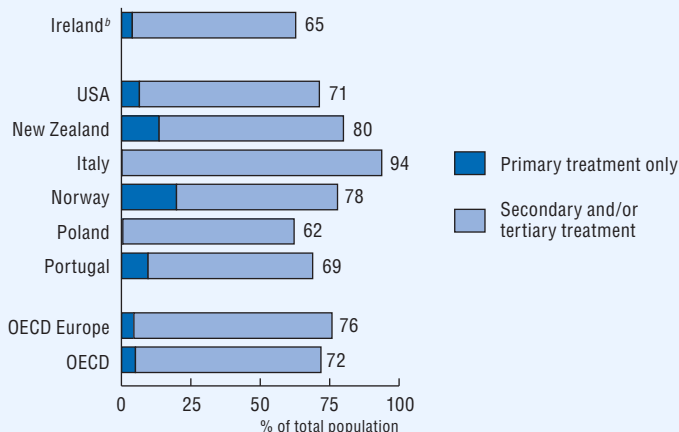
Annual operating expenditure on water and wastewater facilities during the review period was estimated at EUR 400 million, so total annual public expenditure (operating and investment) was of the order of EUR 1.0-1.2 billion annually, or about 0.8% of GDP on average. It would be useful for the Irish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

Figure 3.3 **Population connected to public wastewater treatment plant, 2007^a**



a) Or latest available year.

b) Share of households connected in agglomerations greater than 500 population equivalent. Primary treatment includes preliminary treatment (3.2%); 2.5% of the collected wastewater does not receive any treatment.

Source: OECD, Environment Directorate.

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.

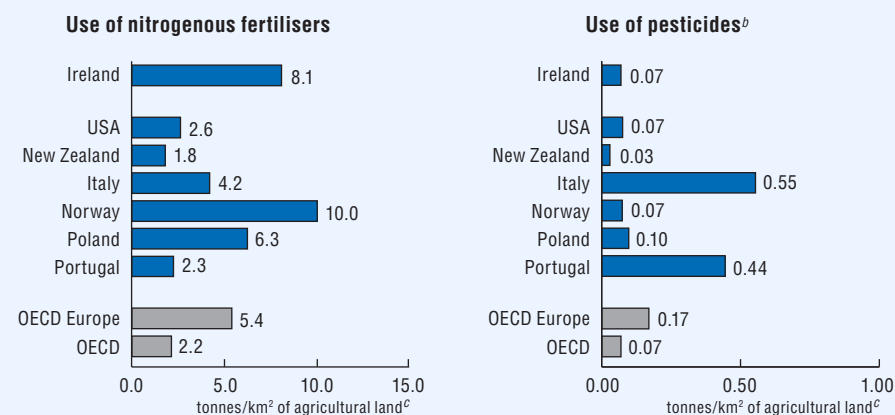
Affordability issues

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.

4. Pollution from Agriculture

Eutrophication remains Ireland's most serious water pollution problem and agriculture is the *largest source of nutrients to Irish waters*, contributing an estimated 73% of phosphorus and 82% of nitrogen (OECD, 2008). Not enough has been done to address nutrient management in agriculture. The use of nitrogenous fertiliser in Ireland is well above the OECD Europe average (Figure 3.4). The 1991 EU Nitrates Directive, transposed into Irish law in 2006, applies to the whole country, without regional or local differences. There is a *need for better targeted measures*, best achieved within the river basin management framework required by the WFD. Improvements in targeting could also be associated with the delineation of vulnerable areas under the Nitrates Directive, as appropriate.

Figure 3.4 Agricultural inputs, 2006^a

a) Or latest available year.

b) For many countries, sales are used as a proxy for pesticide use.

c) Arable area, permanent crop land and permanent grassland.

Source: IFA; OECD, Environment Directorate.

Implementation of the Nitrates Directive

Over the review period, nitrate levels rose in four of the six large rivers in the east and south, and remained high in the other two (Figure 3.1).²⁶ Aerial surveys have shown that damage to riverbanks by cattle, and release of nutrients into rivers from spreading manure and fertiliser close to riverbanks, are still common and widespread (Clenaghan *et al.*, 2005). Agriculture has contributed to the decline of the pollution-sensitive pearl mussel, a protected species of which Ireland hosts internationally important populations (Box 3.2).

Implementation of the Nitrates Directive was mainly limited at first to a voluntary, little-monitored code of good agricultural practices promulgated in 1996.²⁷ Now a four-year *Nitrates Action Programme* (NAP), given statutory effect in 2005 and operating since 2006, regulates manure storage and the spreading of chemical and organic fertiliser.²⁸ The directive sets an annual limit of 170 kg N per hectare from general land spreading of manure.²⁹ In October 2007, the EU Commission granted Ireland a derogation allowing up to 250 kg.³⁰

Farmers received additional support for implementing the NAP through the Farm Waste Management Scheme, introduced in 2006 as part of the 2000-06 Rural

Box 3.2 Saving the freshwater pearl mussel

In 2005, the European Court of Justice, in relation to Directive 76/464/EEC on water pollution by dangerous substances, ruled that Ireland had to establish a coherent and general system of quality objectives for surface waters. In 2007, the EU Commission further stipulated that Ireland should *set legally binding objectives for water quality in rivers, or parts of rivers, inhabited by freshwater pearl mussels* and designated as special conservation areas, so as to protect the species; and take steps necessary to attain the objectives.

Two species of pearl mussel are found in Irish freshwater bodies. *Margaritifera margaritifera* is found in rivers flowing over granite or sandstone. *M. durrovensis* is a hardwater species found only in Ireland and restricted to a small population in the River Nore. Both species are listed as critically endangered in the most recent review of Irish molluscs in terms of local IUCN threat status. Their overall conservation status is bad, and the single population of the Nore mussel is deemed not viable and on the verge of extinction.

Pearl mussels are *found only in well-oxygenated rivers with little mineral or organic content*, and with clean gravel and sand riverbeds. Hence, many activities and factors at catchment level may affect the animal or its habitat. These include point-source pollution; diffuse pollution from sources such as agriculture, forestry, road building and drainage; river bank and bed erosion and modification; water abstraction; introduction of exotic species and salmonid stocks; climate change; septic tanks; and inappropriate storage and application of manure.

Under the *Habitats Directive* (92/43/EEC), Ireland has a legal obligation to restore both species to favourable conservation status, including by designating habitats as special conservation areas. Where the more stringent water quality requirements of designated pearl mussel populations are not met, action must be taken under the WFD to restore waters to the required condition within a prescribed timeframe.

The Irish Government is taking a *multi-pronged approach* in its effort to protect pearl mussels. In 2009, the DoEHLG released regulations on the freshwater pearl mussel. The regulations *i)* set environmental quality objectives for the habitats of freshwater pearl mussel populations, *ii)* set out the duties of public authorities with respect to achieving the objectives; and *iii)* require the formulation and implementation of sub-basin management plans and related measures. The National Parks and Wildlife Service, meanwhile, is carrying out monitoring and research (including breeding in captivity) on the mussels' demographics and recruitment rates. It is also drafting a species action plan. In addition, in 2008 the Forest Service, which is part of the DAFF, set out a range of measures intended to reduce potential negative impacts on the pearl mussel arising from forest operations. These "Requirements" supplement all other Forest Service guidelines and regulations.

Source: DoEHLG, 2009.

Development Programme and operated by the Department of Agriculture, Fisheries and Food (DAFF). It provided investment support (60% of capital cost, to a ceiling of EUR 120 000 per holding) for building manure storage, winter livestock housing and silage storage. It also paid 20% of the cost of manure spreading equipment. Almost 35 000 farmers benefited from the programme. In 2007 the programme was replaced by the Farm Improvement Scheme. Approximately 7 000 farmers benefit from the new programme, which has a grant rate of 40% for storage facilities.

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).

5. Water Governance Issues

Institutional arrangements within river basin districts have worked well thus far, but may not be sufficiently coherent and integrated for the long-term challenges of river basin management. As Irish local authorities are generally small and already charged with quite a diverse range of functions, it would be worth considering whether *dedicated basin agencies*, with technical/scientific support from the EPA and possibly with their own funding base, would be better suited to the task. Such agencies could be made responsible not just for implementing the WFD and other water directives, as appropriate, but also for some related catchment management functions (*e.g.* with respect to land use practices and flood risk management).

Essential elements of managing flood risk have been put in place, but the experience of many other countries shows that, even with the clearest flood risk maps and most stringent planning rules, it is very difficult to adhere to these measures on the ground, where local authorities often come under intense pressure to allow

development on flood-prone land. The Office of Public Works (OPW), through its regional offices, could be charged with *monitoring and reporting on compliance with planning rules* so that any problems could be identified and corrected.

River basin management

Ireland has made good progress towards implementing the WFD.³² It has characterised the various types of waters and established monitoring networks, and is working on *setting environmental quality objectives*, with a final goal of meeting them by 2015. Ireland has seven river basin districts. The Eastern, South Eastern, Western and South Western districts are wholly within the country, while the Shannon, Neagh-Bann and North Western are international river basin districts, shared with Northern Ireland. *Draft river basin management plans* were completed for all districts by the end of 2008.

The local authorities within each basin district have joint responsibility for implementing the WFD, with one among them having been designated as the *co-ordinating local authority*. The EPA and other public agencies have been assigned certain responsibilities, such as monitoring. Inter-authority projects, funded by the DoEHLG, have been set up in each district. Several nationwide working and technical co-ordination groups help create a degree of uniformity and avoid duplication of effort.

Flood management

Serious flooding struck Ireland in November 2000, February 2002 and November 2002.³³ In response, in 2003 the government set up a National Flood Policy Review Group, which delivered its report the following year. The construction of structural flood defences had been the main response to floods, but the review group recommended shifting to a *sequential approach to flood risk management based on avoidance, reduction and then mitigation* of flood risk as the overall framework, in development planning processes, for new development siting assessment. The government endorsed the finding.

The OPW, which had long been responsible for constructing flood defences, was entrusted with the wider responsibility of flood risk management. The government's aim is to identify all flood-prone areas as part of a National Flood Hazard Mapping Programme, and to prepare *flood risk maps* by 2013 and *catchment flood risk management plans* by 2015.³⁴ In 2009-10, the OPW and relevant local authorities will carry out four pilot studies that will serve as a model for the risk management plans.³⁵ The formulation of these plans is a complex exercise entailing hydrologic, hydraulic and spatial planning as well as economic, environmental and social aspects, not to

mention biodiversity issues and forecasts of climate change effects. The maps and plans will be publicly accessible, as they will be produced through a dedicated website.

Draft *flood risk guidelines for planning authorities* were published in September 2008. Once the final version is approved, they will have statutory force. The planning system will thus have a pivotal role in avoiding inappropriate development in flood-prone areas and ensuring that flood risk is considered in planning applications and appeals.

Notes

1. The WSAs have a similar role in relation to the supervision of group water and private water supplies.
2. Authorisation requires appropriate remedial actions within specified timeframes to be undertaken for each discharge location within the agglomeration. The remedial action is to ensure that appropriate protection is afforded to the receiving water environment.
3. The IPPC Directive has recently been codified (*Directive 2008/1/EC*). The codified act includes all previous amendments to Directive 96/61/EC, the substance of which is unchanged.
4. The Urban Waste Water Directive requires secondary treatment for loads in excess of 2 000 population-equivalent (p.e.).
5. For instance, biological water quality is currently assessed in terms of macro invertebrates only. The new classification will take account of phytoplankton, aquatic flora, invertebrates and fish.
6. The same holds, *a fortiori*, for water bodies in nature protection areas that need to achieve “high status”.
7. Good and high status rivers typically record less than 1.8 and 0.9 mg N/l, respectively.
8. Statutory Instrument 272/2009 (Surface Water Regulations).
9. Ireland’s aquifers are predominantly bedrock aquifers. They have fissure permeability only, where water flow is through fissures or fractures and not through pore spaces in the rock itself, and hence lack the pollution filtering function typical of the sand aquifers that prevail in most OECD countries.
10. Ireland is under the threat of being referred back to the ECJ.
11. Groupings of dwellings whose owners co-operate to provide and maintain a common water supply.
12. Drinking water standards do not allow any presence of *E. coli*.
13. When a group scheme gets its water from the local authority (*e.g.* from a public main), it is called a public scheme. One that distributes water from its own intake or well is called a private group water scheme. In both cases, all assets are privately owned by the group.
14. Small individual private supplies, serving fewer than 50 people or delivering less than 10 m³/day, have not been comprehensively monitored thus far, but existing data suggest that their performance should be improved.
15. Cryptosporidium is a small parasitic organism that infects the small intestine of a variety of mammals, including humans.
16. The 2007 Water Services Act gave the EPA powers to mandate remedial action by local authorities where risks to public health become evident.
17. In the new Länder of Germany water consumption decreased from 140 litres per capita per day (lcd) at the time of German unification to about 90 lcd following introduction of full cost recovery pricing. In Ireland, wastewater generation in individual family houses, which can be used as a proxy for water consumption, is probably close to 120 lcd (EPA, 2005).

18. A majority of local authority revenue is through bulk funding from the Exchequer. All water-related expenditure is financed from this source.
19. In January 2009, some local authorities reported that substantial arrears had accumulated over the previous three years (*e.g.* EUR 9 million in County Galway alone).
20. Local authorities have access to lending facilities through the Housing Finance Agency to cover the capital cost of providing services to non-household users, who pay capital contributions over time; hence, loan charges are recouped from these users.
21. According to the 2006 Census, 38% of the population lived in settlements with less than 1 500 inhabitants.
22. Unaccounted-for water is the difference between the amount of water produced or purchased, and the amount sold. It includes underground leakage, unauthorised use and inaccurate metering.
23. The economically optimum loss rate depends on the cost of rehabilitating the pipe network relative to that of building additional supply capacity.
24. By the time of the 2006 Census, 22.5% of all households lived in single (stand-alone) houses in rural areas.
25. The proposed water reform in Northern Ireland sought to phase in household water pricing (over three years from 2007) in line with a similar change in England and Wales; it would have provided a reduced tariff for the 200 000 households on low incomes (11% of the population) to ensure that their water bills would not exceed 3% of income.
26. Livestock production is mainly concentrated in the east and south.
27. Ireland's efforts to prevent eutrophication initially focused on phosphorus, which is the limiting factor in terms of the nutrient enrichment of freshwater bodies. The 1998 Phosphorus Regulations set receiving water quality standards for rivers.
28. The NAP also sets rules for application of non-selective herbicides, in response to the 2005 ECJ decision with respect to the 1976 directive on pollution by dangerous substances discharged to water.
29. This is considered equivalent to the output of two dairy cows.
30. Ireland sought the derogation to benefit some 6 000 dairy farmers.
31. Currently Council Regulation (EC) 1698/2005.
32. With a score of about 75%, Ireland does better than the EU average with respect to implementing Article 5 of the WFD (analysis of the river basin district characteristics, review of the environmental impact of human activity and economic analysis of water use) (CEC, 2007).
33. The insured damage alone amounted to an estimated EUR 138 million, the Irish Insurance Federation reported.
34. These activities are pursuant to the EU Flood Risks Directive (2007/60/EC).
35. The basins concerned are the Lee, Dodder, Suir and Fingal East Meath.

Selected Sources

The government documents, OECD documents and other documents used as sources for this Chapter included the following. Also see list of websites at the end of this report.

Clenaghan, C., F. Clinton and M. Crowe (2005), *Phosphorus Regulations National Implementation Report 2005*, EPA, County Wexford.

Commission of the European Communities (CEC) (2007), “Towards Sustainable Water Management in the European Union – First Stage in the Implementation of the Water Framework Directive 2000/60/EC”, Communication from the Commission to the European Parliament and the Council, COM(2007) 128 final, CEC, Brussels.

Convery F. J. (2008), *The Elephant in the Room: Meeting Dublin’s Water Needs -the Shannon or Pricing?* Comhar, Dublin.

Dresner, S. and P. Ekins (2006), “Design of Environmentally and Socially Conscious Water Metering Tariffs for the UK”, *Journal of Environmental Planning and Management*, Vol. 49, No. 6, 909-928, November.

Department of the Environment, Heritage and Local Government (DoEHLG) (2007), *Review of the Rural Water Programme 2003-2006*, December, DoEHLG, Dublin.

DoEHLG (2008), *The Status of EU Protected Habitats and Species in Ireland*, National Parks and Wildlife Service, Dublin.

Environmental Protection Agency (EPA) (2005), *An Investigation into the Performance of Subsoils and Stratified Sand Filters for the Treatment of Wastewater from On-site Systems*, Synthesis Report, EPA, County Wexford.

EPA (2007), *Water Quality in Ireland 2006, Key Indicators of the Aquatic Environment*, EPA, County Wexford.

EPA (2008), *Ireland’s Environment 2008*, EPA, County Wexford.

EPA (2009), *The Provision and Quality of Drinking Water in Ireland, a Report for the Years 2007-08*, EPA, County Wexford.

Fitzpatrick Associates (2005), *NDP investment in water services 2000 to 2006*, National Development Plan, September, Dublin.

OECD (2003a), *Social Issues in the Provision and Pricing of Water Services*, OECD, Paris.

OECD (2003b), *Improving Water Management. Recent OECD Experience*, OECD, Paris.

OECD (2008), *Environmental Performance of Agriculture in OECD Countries Since 1990*, Ireland Country Section, OECD, Paris.



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