Policy Research Initiative | Projet de recherche sur les politiques

SUSTAINABLE DEVELOPMENT
BRIEFING NOTE

# Do European Water Abstraction Taxes Affect Competitiveness?

## Highlights

- The European Union (EU) recently adopted a Water Framework Directive supporting the application of economic instruments as a tool for integrated water resource management.
- One of the main challenges to implementing environmental tax reform is a fear of losing competitiveness as costs rise following the introduction of economic instruments.
- Tax rates imposed on industrial water abstraction across the EU are low when compared with the total water-related costs borne by industry, and industry is often exempted from the taxes.
- The fear of losing competitiveness is unfounded, since water-related taxes are a very small component of total production costs.

## Background

Ecological tax reform, which started in Europe in the 1990s, aims to use environmental taxes to internalize environmental externalities in a revenue-neutral way. In this context, the EU Water Framework Directive, adopted in 2000, promotes the use of water pricing as part of integrated water resource management.

Fearing a loss of competitiveness, the private sector often attempts to block the introduction of environmental taxes (which internalize environmental externalities caused by private sector activities). This Note examines the rationale for implementing water abstraction taxes, and considers their effects in the European context. Is the industrial competitiveness of European countries affected by existing water abstraction

### Water Abstraction Taxes in Selected European Countries

| Country | Basis of Charge | Use of Revenues | Exemptions, Discounts | Success |
|---|---|---|---|---|
| Denmark | 0.7 EUR/$m^3$ on actual groundwater volume | General revenue | Industry and agriculture exempt | Household water consumption and leakage rates decreased |
| Netherlands | 0.1785 EUR/$m^3$ on actual groundwater volume | General revenue | Agriculture almost completely exempt | Industrial water consumption declined between 2 and 12% |
| Germany | 0.005 to 0.06 EUR/$m^3$ on actual volume | Research and pollution abatement | Depending on water quality, some sectors eligible for reductions | Rate too low to have any significant incentive effect |
| France (Seine-Normandy basin) | 0.00071 to 0.04 EUR/$m^3$ on actual volume | Earmarked for water agency investment programs | Small municipalities exempt; industrial sectors partly exempt | Effective in raising revenues but no incentives. Charge promotes metering for irrigation water |
| UK | 0.006 to 0.03 EUR/$m^3$ on licensed volume | Administration costs | No exemptions | Rate too low to have any significant incentive effect |

Canada

taxes? Have countries adopted any special provisions for industry to mitigate possible losses of competitiveness due to water abstraction taxes? Other Notes in this series examine other aspects of economic instruments for water demand management, including the use of markets and pricing strategies.[1]

## The Theoretical Framework for Environmental Taxes and Competitiveness

The European Treaty (Article 174.2) asserts the polluter-pays principle (PPP) as a foundation of European environmental policies. Economic instruments have been introduced as a cost-effective alternative to regulations for implementing the PPP. To fulfil this objective, policies must integrate economic, environmental and social principles, and must assess costs and benefits of water use by taking into account financial as well as environmental and resource costs.

In some areas in Europe, the main motivator for using water abstraction taxes is over-abstraction, which threatens the sustainability of some aquifers and is causing salinization of others. At the same time, wetlands are shrinking and rivers are degrading as over-abstraction reduces flows and exacerbates water quality problems.

The untaxed costs of water abstraction are below the marginal social costs because the user does not pay for these environmental externalities. This leads to an inefficient allocation of water resources among competing uses, including ecosystem services. Economic instruments have an advantage over command-and-control instruments: they result in efficiency gains because the market can allocate scarce resources more efficiently. However, they still do not achieve an overall optimum level of water use because of problems in accurately valuing external (environmental and resource) costs. Thus, the aim of water abstraction taxes (beyond raising revenue) is to reflect the environmental costs associated with water abstraction, thus providing an incentive for efficient use of water.

Environmental costs are difficult to calculate, but a UK study suggests that the monetary value is on the order of only several pence per $m^3$ in even the most severely affected parts of the UK. Thus, even if the taxes were environmentally based, they would most often be too low to affect competitiveness or behaviour, and thus too low to offer any significant environmental benefit (Department for Environment, Food and Rural Affairs, 2000).

At the company level, the logic behind the fear that environmental taxes may hurt competitiveness is nonetheless simple and persuasive: taxes on business inputs inevitably add to business costs. When these taxes are imposed in one country only, the extra costs will impair the international competitiveness of the business or sector concerned. However, the costs may not actually be substantial enough to affect competitiveness, or the policy may even generate benefits for the firm (e.g., by removing regulatory burdens, or by prompting efficiencies) that will partially or entirely offset the costs.

## Water Abstraction Taxes in Europe

European environmental taxes have been introduced to meet a range of objectives: raising revenue, covering administrative and other immediate costs, and providing incentives. In the case of incentive taxes, the success of such a tax may be judged by the extent to which initial revenues from it fall through time, as behaviour changes. Water abstraction taxes are generally levied on either the amount of water actually abstracted or the quantity for which an abstraction permit has been given.

The rates applied in most European countries are low, with the exception of Denmark and the Netherlands. It is worth noting that the rates often depend on the actual use of the water, or on the source. The exceptions to this are Denmark, the Netherlands and Slovenia, where single rates apply.

In Denmark, groundwater supplies about 99% of domestic and drinking water. As part of a 1994 ecological tax reform, a tax on tap water was introduced for groundwater management. Its purpose is to secure supply by avoiding excess use by households and industry. The implementation was phased in gradually, with successive increases of 1 DKK/$m^3$ per year from 1994, reaching 5 DKK/$m^3$ (0.7 EUR/$m^3$) in 1998. The total average user charge for the provision of water and sewerage services was around 4.4 EUR/$m^3$ in 2002, and

1 Accessible through the "Publications" link at <www.policyresearch.gc.ca>.

the 0.7 EUR/$m^3$ tax on tap water accounted for 15 to 20% of the total charge for water supply and wastewater services. This tax raises revenues while lowering income tax, and also has an incentive function: a reduction of demand for water. Nevertheless, distinct reductions in water demand and leakage rates have been reported. However, industry and agriculture are exempt from the tax.

In the Netherlands, the introduction of a groundwater tax was also part of a 1995 ecological tax reform. The primary aim of this tax is to raise revenues. Its secondary aim is to address environmental considerations connected to the goals of Dutch water policy, since the tax should contribute to a substitution of surface water for groundwater. This tax applies to the abstraction of groundwater by waterworks as well as by industry and agriculture. It applies to both public water supply and self-abstraction. The only exemptions are for emergency purposes and environmental reasons (such as rinsing of reusable packaging). However, the tax is not paid for water used for irrigation if the abstracted amount is below 40,000 $m^3$ per year. This effectively exempts agriculture. Although self-supplied industry initially paid a reduced rate, all now pay the same rate of 0.1785 EUR/$m^3$. In 1996, this was equivalent to 0.33% of pre-tax profits in industry.

Despite the complaints from Dutch industry that followed the introduction of the tax, it has not significantly affected their competitiveness. This may be because the groundwater tax is a minor element of the total water bill, in particular when all costs for sewerage services are included.

In France, the *Loi n 64-1245 du 16 décembre 1964 relative au régime et à la répartition des eaux et à la lutte contre leur pollution* (Law on Water) created six regional water basin agencies responsible for designing their own water abstraction charges and setting rates. Both abstraction and consumption are accounted for in the design of the charge, which is equal to the quantity abstracted multiplied by an abstraction charge rate, plus the quantity consumed multiplied by a consumption charge rate. However, the total charge remains only 2 to 5% of the aggregate cost of water supply and sewerage, and is explicitly for raising revenue rather than for environmental purposes.

Abstraction charges in the UK are based on the maximum quantity of water licensed for abstraction rather than the actual quantity abstracted. The charge rates are determined by the Environment Agency's costs of monitoring and administering the abstraction license scheme; charges do not reflect environmental and resource costs. The abstraction charge accounts for around 1% of total water supply and sewerage costs, and thus cannot be considered to affect the UK's international competitiveness.

In Germany, water management is under the responsibility of the regions (*Länder*). Water resource taxes were introduced in 1988. The tariff structure differs depending on the intended use, such as public water supply, cooling or irrigation. Water-intensive industries, such as forestry and irrigation, routinely enjoy up to 90% lower tax rates. Revenues generated from the Baden-Württemberg water abstraction tax have been used to financially compensate farmers whose fertilizer use is restricted by regulation.

Water abstraction levies are widespread in Central and Eastern Europe. They are usually set depending on the quantity and quality of abstracted water, its end use, and whether it is from surface or groundwater. No studies are available that analyze whether these charges have any negative impact on competitiveness.

A study of water pricing and industrial competitiveness in Germany, Italy and Ireland showed a significant correlation of the costs of freshwater and wastewater treatment with the number of initiatives to reduce water use and pollution (Hitchens et al, 1998). It also showed the absence of clear links between average productivity and costs, suggesting that low costs are not necessary to achieving international competitiveness. A study of the competitiveness of industry in Romania found that water-intensive industries, such as oxygenated water production, caustic soda and paper production, could be affected by an increase of the raw water price (Popovici, 2001). Another study estimated the impact of full water supply cost recovery on different economic sectors in Cohesion Fund countries (Greece, Spain, Portugal and Ireland); full cost recovery would increase costs by 1.6 to 3.5% of the food and drink sector's turnover, but only from 1.1 to 1.4% for the pulp and paper industry, and from 0.3 to 0.4% for the chemical industry (ECOTEC, 1996).

Thus, the total costs of water account for a low share of total industrial turnover. Therefore, the risk of loss of competitiveness is negligible for all but the most water-intensive industries.

## Conclusions

Loss of competitiveness is currently of no great significance with regard to the imposition of water abstraction taxes because the tax rates are generally low or because special provisions apply to industrial users in some countries. Environmental considerations and efficiency issues may have been promoted publicly, but they were generally marginalized in the design process. The relatively high Danish tax might have some impact on international competitiveness, were industry not exempt.

Although European countries are regularly hailed as leaders in implementing environmental taxes, the main motive for introducing water taxes and charges in most European countries appears to have been a purely fiscal one: to generate revenues, either for the general budget, as in the Netherlands and Denmark, or to cover administrative costs, as in the UK.

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## Further Reading

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