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Directorate-General for Research

WORKING PAPER

**EFFLUENT CHARGING SYSTEMS
IN THE EU MEMBER STATES**

Environment Series

ENVI 104 EN

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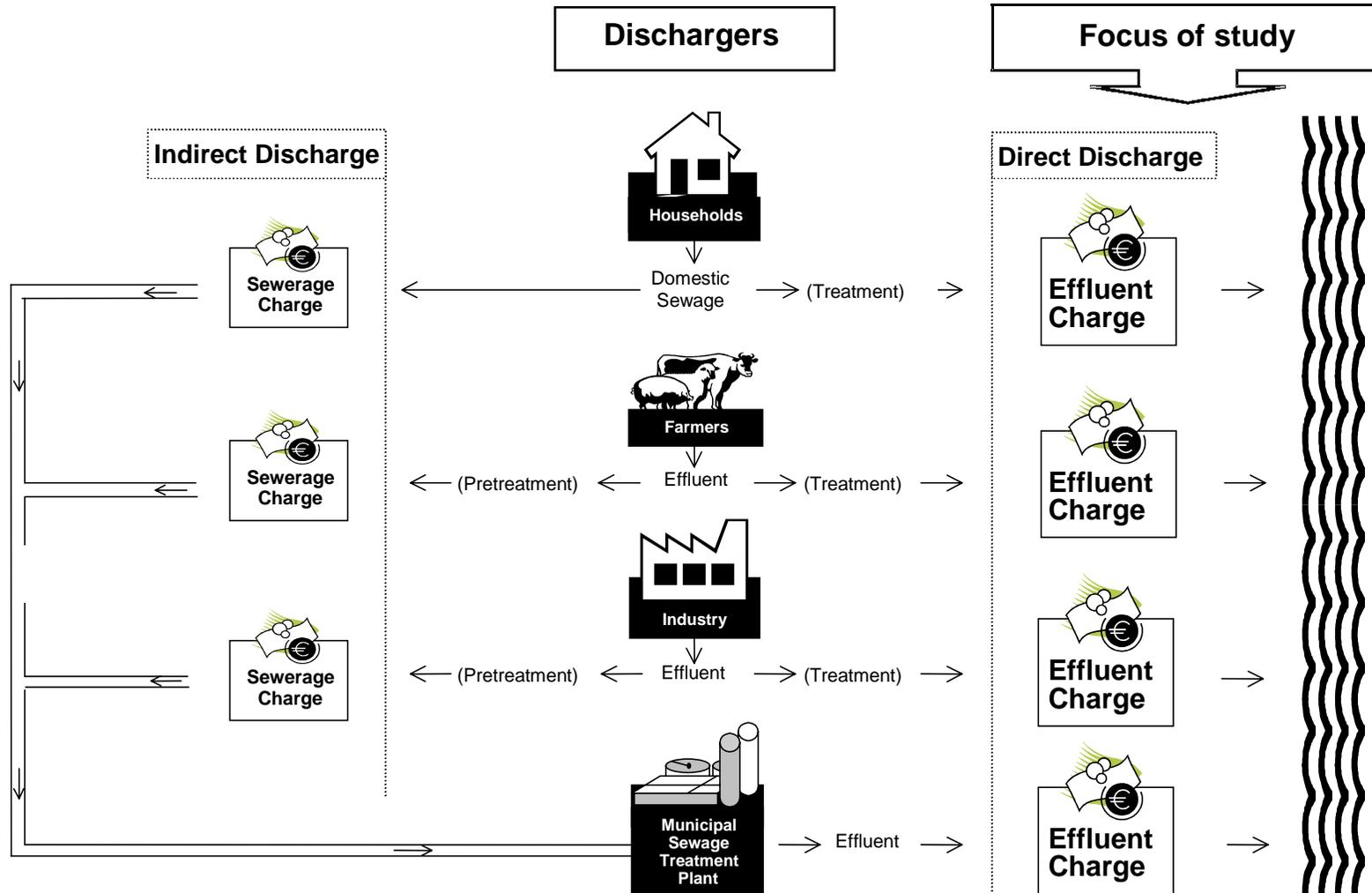
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GLOSSARY

Administrative fee for discharge permits	A one-off or recurring payment for a discharge permit (to discharge effluents into natural waters). This is distinct from the effluent charge.
Direct discharge	The discharge of effluents or domestic sewage directly into natural waters (with optional treatment before discharge).
Direct discharger	Someone who discharges effluents or domestic sewage directly into natural waters, e.g.: industrial plants that discharge effluents directly into natural waters (with or without treatment); farmers that discharge effluents directly into natural waters (with or without treatment); households that discharge effluents directly into natural waters (with or without treatment); or operators of municipal sewage treatment plants.
Domestic sewage	Used water from households discharged into the sewer (system), or – after treatment – into natural waters.
Effluent	Used water from industry, farms and others discharged directly into natural waters or into the sewer (system) as well as the water discharged from a municipal sewage treatment plant into natural waters.
Effluent charge	The money paid by direct dischargers for the direct discharge of effluents into natural waters. Usually, the charge is paid to a public or para-statal authority.
Indirect discharge	The discharge of effluents or domestic sewage into the sewer system (with or without pre-treatment).
Indirect discharger	Someone who discharges effluents or domestic sewage into the sewer system (with or without pre-treatment), e.g.: households discharging domestic sewage into the sewer system; industry discharging effluents into the sewer system; or farmers discharging effluents into the sewer system.
Inland waters	Rivers, streams and lakes.
Inspection at installations	Examination by an official authority which controls whether limit values are met. Inspections may take place at the installations with or without prior notification, usually several times a year.
Monitoring at installations	Permanent observation of the effluents of an installation by analysing samples on a regular basis. This is generally carried out by the operators themselves (self-monitoring) with records sent to the relevant authorities.
Monitoring of water quality	Permanent observation of the quality of natural waters. In the context of this questionnaire, the monitoring of water quality focuses on water quality monitoring near installations that discharge effluents into natural waters.
Natural waters	Surface waters and groundwater.
Sewage treatment plant	Installation that treats effluents, domestic sewage and rainwater discharged into the sewer system. The operators or owners of municipal sewage treatment plants may be municipalities, regional authorities, private companies, or others
Sewer (system)	Canal (system) that collects the effluents of different users and directs them to a municipal sewage treatment plant.
Sewerage charge	The money paid for indirect discharges, i.e. domestic sewage or effluents discharged into the sewer (system).
Surface waters	Inland and coastal (brackish + marine) waters.
Threshold for categorising firms	The minimum size of a firm (e.g. water use, pollution load, or production units per year) before it is subject to effluent charges. There may exist a range of thresholds that categorise firms into different groups with different levels of effluent charges.
Threshold value (for pollution parameters)	The minimum value of a pollution parameter (concentration or load). A charge is only paid for discharging effluents that exceed this value.
Water pollution by dangerous substances	The discharge of (a) dangerous substance(s) into natural waters.

GRAPHIC GLOSSARY



ABBREVIATIONS

a	Annum
A	Austria
AbwAG	Abwasserabgabengesetz / Federal Effluent Charges Act, Germany
AbwV	Abwasserverordnung / Federal Effluent Ordinance, Germany
AED	Administration de l'Équipement et de Déplacement / Administration for Equipment and Transport, Belgium (BCR)
AERMRBC	Administration des Finances et du Budget du Ministère de la Région de BC / Administration of finance and budget of the Ministry of the Brussels Capital Region, Belgium (BCR)
AMI	Afdeling Milieu-inspectie/Environment Inspection Division (of AMINAL), Belgium (FLA)
AMINAL	Administratie Milieu-, Natuur -, Land- en Waterbeheer / Flemish Administration for Environment, Nature, Land and Water Management, Belgium (FLA)
ANPA	Agenzia Nazionale per la Protezione dell Ambiente / National Agency for the Protection of Environment, Italy
AOX	Adsorbable organic halogens
ARPA	Agenzia Regionale per la Prevenzione Ambiente / Local Environmental Protection Agency, Italy
B	Belgium
BATNEEC	Best available techniques not entailing excessive cost (IPC regulations)
BAT	Best available techniques (IPPC regulations)
B (BCR)	Brussels Capital Region, Belgium
BEP	Best environmental practice
B (FLA)	Flemish Region, Belgium
BIM	Brussels Instituut voor Milieubeheer / Brussels Institute for Management of the Environment, Belgium (BCR)
BMM	Bestuur Mathematisch Model van de Noordzee / Belgian Scientific and Administrative Agency on Environmental Matters, Belgium (FLA)
BOD	Biological oxygen demand
BREF	BAT reference document
BRF	Belgish Franc, Belgium
B (WAL)	Walloon Region, Belgium
CAB	County Administration Board, Sweden
CIW	Commissie Integraal Waterbeheer / Commission on Integrated Water Management, Netherlands
CN	Cyanide
COD	Chemical oxygen demand
CRIET	European Textile Finisher's Organisation
d	Day
DBA	Drainage Basin Authority, Spain
DGRNE	Direction Générale des Ressources Naturelles et de l'Environnement du Ministère de la Région Wallonne / Directorate General of Natural Resources and the Environment of the Ministry of the Walloon Region, Belgium (WAL)
DIREN	Directions Régionales de l'Environnement / Regional Directorates for the Environment, France
DK	Denmark
DKR	Danish Crown, Denmark
DM	German Mark, Germany

DRIRE	Directions Régionales de l'Industrie et de l'Environnement / Regional Directorates for Industry and the Environment, France
E	Spain
€	Euro
EA	Environment Agency, United Kingdom
EACS	Environment Agency charging scheme, United Kingdom (E&W)
EC	European Community
ECS	Effluent charging system
EEA	European Environmental Agency
EEC	European Economic Community
EHS	Environment and Heritage Service, United Kingdom (NI)
ELV	Emission limit values
ENEA	Ente per le nuove Tecnologie, l'energia e l'ambiente / Agency for New Technologies, Energy and the Environment, Italy
EPHC	Local Environmental and Public Health Committee, Sweden
EQS	Environmental quality standards
EU	European Union
Febeltex	Belgian employer's organisation of industrial textile firms, Belgium
FF	French Franc, France
FMK	Finmark, Finland
GAT	Generally accepted techniques
GR	Greece
HFL	Dutch Florins, Netherlands
I	Italy
i.e.	id est
IBGE	Institute Bruxellois pour la Gestion de l'Environnement / Brussels Institute for Management of the Environment, Belgium (BCR)
IMPEL	Implementation and Enforcement of Environmental Law
IPC	Integrated Pollution Control (Environmental Protection Act 1990), United Kingdom (E&W, NI, SCO)
IPPC	Integrated Prevention and Pollution Control (IPPC Directive 96/61/EC)
IPRI	Industrial Pollution and Radiochemical Inspectorate, United Kingdom (NI)
IRL	Ireland
IR £	Irish Pound, Ireland
kg	Kilogram
LIT	Italian Lira, Italy
LUX	Luxembourg
LWG	Landeswassergesetze / State Water Acts, Germany
mill.	Million
m³	Cubic meter
N	Nitrogen
N-Kj	Kjeldahl (reduced) nitrogen
N_{tot}	Total nitrogen
NL	Netherlands
NLG	Netherlands Guilder
NO_x	Nitrogen oxides

OECD	Organisation for Economic Cooperation and Development
OETH	L'Observatoire Européen du Textile et de l'Habillement / European Observer of Textile and Clothing Industry
OSPAR	Oslo Paris Commission for the Protection of the Marine Environment of the North-East Atlantic
P	Phosphorus
P	Portugal
£	Pound Sterling, United Kingdom
P_{tot}	Total phosphorus
PAH	Polycyclic aromatic hydrocarbons
p.e.	Population equivalent
p.l.	Pollution load
PO₄-P	Phosphorus in the form of phosphate
PPP	Polluter pays principle
PTA	Spanish Pesetas, Spain
p.u.	Pollution units
RWS	Rijkswaterstaat / Water Management Agency, Netherlands
S	Sweden
SEPA	Scottish Environment Protection Agency, United Kingdom
SF	Suomi Finland
SME	Small and medium enterprises
SS	Suspended solids
STP	Sewage treatment plants
Swedish EPA	Swedish Environment Protection Agency, Sweden
t	Ton
TOX	Toxicity indicator
TVI	Textilveredlungsindustrie / Textile Finishing Industry, Germany
UK	United Kingdom
UK (E&W)	England and Wales, United Kingdom
UK (NI)	Northern Ireland, United Kingdom
UK (SCOT)	Scotland, United Kingdom
UWWT Directive	Urban Waste Water Treatment Directive
VMM	Vlaamse Milieumaatschappij / Flemish Environmental Agency, Belgium (FLA)
WFD	Water Framework Directive
WHG	Wasserhaushaltsgesetz / Federal Water Act, Germany
WVO	Pollution of Surface Waters Act, Netherlands

EXECUTIVE SUMMARY

The European Parliament asked "Ecologic" to investigate the „Effluent Charging Systems in the EU Member States“, focusing on economic instruments for regulating direct discharges of effluents into natural waters. Taxes and charges concerning other aspects of water management, such as taxes or charges for the abstraction of water from the environment, are beyond the scope of this study.

Economic instruments and principles such as the polluter-pays and cost-recovery principles have become a prominent feature in environmental policy debates and they are increasingly being incorporated into the environmental law of the EU Member States, most importantly with the recent adoption of the Water Framework Directive (WFD)¹. The WFD gives prominence to the principle of cost-recovery for water services, in accordance with the polluter pays principle. The main objective is to ensure that environmental and resource costs are no longer borne by society in general, but are instead allocated to water users, thus becoming an internal part of economic decision-making (a process known as 'internalisation'). In addition, Member States are required to ensure by 2010 that water-pricing policies provide adequate incentives for the efficient use of water resources. Incentives are meant to provide water users with correct and adequate signals on the scarcity of water resources, and on the sensitivity and vulnerability of water bodies or ecosystems that depend on water. The WFD also requires that Member States establish effective, proportionate and dissuasive penalties for breaches of national water management legislation.

The main purpose of this study is to analyse and evaluate the effluent charging and enforcement systems of the 15 EU Member States, including the institutional responsibilities and the conditions related to the issuing of permits to discharge effluents directly into natural waters. Another purpose is to collect information on the measures taken to secure the evidence in cases of water pollution by dangerous substances. The information on which this report is based was collected mainly from water authorities in the Member States, usually from the ministries responsible for environmental affairs. A model calculation of effluent charges was developed to estimate the effect of effluent charges on industry, using textile finishing as an example.

Administrative responsibilities for the collection of effluent charges generally rest with the same authorities – or level of authority in tiered systems – that issue the permits, but in some cases different departments or sections of the authority are in charge. However, the allocation of responsibilities varies significantly among the Member States. The task of investigating incidents of (unlawful) water pollution is divided. Environmental and police authorities are involved, with a strong role for the environmental authorities.

In most Member States, prosecution for unlawful water pollution can be brought against both, individuals (natural persons) and companies (legal persons). Unlawful water pollution is generally punishable by fines or prison sentences, and licences can be withdrawn in some

¹ Directive on establishing a framework for Community action in the field of water policy 2000/60/EC of 23 October 2000 (OJ, L327/1 of 22 December 2000).

cases. The legal terminology and the procedures for the prosecution of environmental offences vary among the European Member States. There have been recent initiatives – by the Kingdom of Denmark in the field of Justice and Home Affairs and the European Commission under the EC Treaty – to harmonise the legal framework².

Charges are collected for the discharge of effluents into natural waters in seven Member States of the European Union (Belgium³, Denmark, Germany, Spain, France, the Netherlands, and the United Kingdom⁴). Charging systems are at various stages of discussion or preparation in a further five Member States. However, it still appears to be difficult to establish new charging systems in spite of the economic elements of the Water Framework Directive and the general attention being paid to economic instruments in environmental policy.

Some Member States (Denmark, Germany, Spain, and the United Kingdom) collect charges only for direct discharges, leaving operators of sewage treatment plants to pass the cost of the effluent charges to indirect emitters. The other Member States (Belgium, the Netherlands, and France) also levy charges on indirect emitters, including households, and then exempt the operators of sewage treatment plants from paying the effluent charge or – in the case of the Netherlands – apply generous reductions. Either way, the indirect emitters including households, industrial indirect emitters, small and medium-sized enterprises, farmers and others, are brought into the charging systems and have to pay their share.

The charging systems differ considerably with respect to their calculation methods and the financial arrangements for the reductions available to some sectors, or in return for investments into effluent treatment, good environmental performance, or levels of pollution in the intake of raw water. At present, only Germany operates a system where investment in water pollution control may under certain circumstances be offset against the effluent charge.

The revenue from effluent charges is significant, especially in those Member States in which the systems are designed to provide funds for investment in water pollution control (Belgium, France, and the Netherlands). The recipients of the revenue tend to be the authorities responsible for water resource protection and management, which are equally competent for the authorisation and monitoring of discharges.

The charging systems in the various Member States are designed to fulfil different functions:

- Mainly incentive (Germany, Denmark⁵);
- mainly financial (Belgium, France, the Netherlands, and Spain⁶);

² Draft Framework Decision on the protection of the environment through criminal law (Justice and Home Affairs), to which the European Parliament gave its Opinion on 7 July 2000², and the Commission Proposal for a Directive on the Protection of the Environment through Criminal Law (COM(2001)139 final, 2001/0076(COD) of 13 March 2001).

³ In all three regions: the Walloon, the Brussels and the Flemish Region.

⁴ In England and Wales as well as in Scotland. In Northern Ireland no charging systems exists to date.

⁵ The Danish system is mainly incentive, but being a tax it contributes to the general budget and therefore also fulfils a fiscal function.

⁶ As no questionnaire was returned, information is very limited on the charging system in Spain.

- cost recovery for administration and control of discharge permits (England and Wales, Scotland).

The earmarking of the revenues from effluent charges is variable. In some countries, they are used to finance water quality measures and pollution control (sometimes including investment into sewage treatment plants), in others they serve solely to cover administrative costs (United Kingdom), and in Denmark the revenue constitutes a contribution to the general budget.

In essence however, the effluent charging systems are closely intertwined with other functions in the management of water pollution control. In Germany, for instance, the revenue from effluent charges must be used to improve water quality, and thus benefits directly or indirectly those liable to pay. Apart from its incentive to promote pollution abatement, the charge therefore has a financial function for the water quality improvement measures; its fiscal function is comparatively minor. Similar overlaps among the functions of effluent charges exist also in other Member States.

To provide adequate incentives, the charge must be high enough to be effective in directing and encouraging pollution control measures. In the Netherlands and in Germany, the charges are relatively high, and thus deter water pollution and have motivated considerable investment into pollution abatement measures. In Denmark, the charging system motivates the reduction of nitrogen (N) and phosphorus (P), but not of biological oxygen demand (BOD₅), because the charges for N and P are high, and the rate for BOD₅ is relatively low. In Germany, pollution parameters are eliminated from the calculation of the charge if they are beneath given thresholds. Further, the payable rate per pollution unit is reduced by 50% if the quantity and the toxicity of an effluent are improved to meet the minimum requirements under federal law.

The following effects of charging systems have been reported by the Member States:

- Investment in effluent treatment, to avoid or reduce water pollution and effluent charges;
- investment in cleaner production technology (adoption of BAT);
- pre-treatment or adoption of processes (by industry, small and medium-sized enterprises, and in municipal sewage treatment plants) to avoid discharges of dangerous substances, or of substances that are expensive to monitor;
- reduction of water consumption in production processes and establishment of recycling schemes (to reduce the volume and improve the quality of the effluent);
- reduction in pollution loads, notably nitrogen (N) and phosphorus (P);
- general improvements in the administration, monitoring and control of effluent discharges and in recipient water quality.

There appears to be no evidence of industries relocating in response to effluent charging systems. This is reported consistently both by Member States that have effluent charging systems and those that have not.

The questionnaires and interviews conducted for this report show that the existing effluent charging systems are seen as a good tool of environmental policy, and this assessment matches the generally positive evaluations found in the literature. The following non-economic factors are seen as responsible for the positive perception of the effluent charging systems in Europe:

- The revenue of effluent charges provides the environmental authorities in the Member States with a source of funds. This helps to build the administrative capacities needed to manage the water resources (analysis and monitoring of waters, funding of staff, outside services and expertise). In addition, financial resources become available for a range of water management activities, such as research and development, or the modelling of aquifers.
- The effluent charging systems create a need for up to date information and documentation on water pollution and on the state of natural water bodies. This strengthens the information base for administrative purposes, and the communication between the water management administrations and water polluters.
- The effluent charges motivate water users to review their water needs, study integrated prevention of pollution, and recycling and re-use of water, consider the potential for water savings and substitution, and look into possibilities for reducing pollution at its source by pre-treating the effluent. They underline the determination of legislators to provide the administrations with the resources they need to carry out their functions more effectively than before.

In view of the insufficient implementation and enforcement of environmental legislation in the Community and many Member States, the European Parliament may consider an initiative to promote economic instruments designed to strengthen the administrative capacities in the Member States.

A more detailed review of effluent charging systems in the Member States would be useful for this task. It should focus not only on the design characteristics of effluent charging systems (on the basis of this report), but also on the obstacles to introducing charging systems in various Member States, as well as specific characteristics of charging systems (e.g. earmarking of revenues).

Similarly, the European Parliament could promote a Community approach to the determination of penalties for breaches of the national provisions on water pollution control. To date, however, there appears to be no comprehensive overview of the exercise of police powers in water pollution control in the Member States, and the information collected in this study can only be regarded as an important preliminary step. Finally, an iterative process of feedback between the authorities of the Member States is required to ensure that information of similar quality is provided by each of them.

As the Water Framework Directive now requires that environmental and resource costs be taken into account, instruments are needed to assess them and to internalise them into the economic calculations and decisions of water users and water polluters. There are a number of methods and techniques to assess environmental and resource costs, but there are no

agreements on best practices and no standards to follow. By contrast, the relatively broad experience with effluent charging systems in a number of Member States is invaluable in designing effective approaches to internalisation. These can and should be adopted and implemented even before the levels of environmental and resource costs can be determined with accuracy.

An early implementation of effluent charges (and of water abstraction charges on the water supply side) would generate positive effects in terms of building administrative capacity, improving the information of water polluters, as well as for the innovation and diffusion of technology for water pollution control. After it becomes possible to determine environmental and resource costs better, the effluent charging rates can be increased to provide an effective internalisation, and the process of adapting the effluent charging systems will benefit from the knowledge gained in the meantime. This would greatly reduce the danger of unintended avoidable economic and social side effects.

ZUSAMMENFASSUNG

Das Europäische Parlament hat "Ecologic" damit beauftragt, eine Untersuchung über das Thema „Abwasserabgabensysteme in den EU-Mitgliedstaaten“ durchzuführen mit Schwerpunkt auf den wirtschaftlichen Instrumenten zur Regelung der direkten Ableitungen von Abwässern in natürliche Gewässer. Steuern und Abgaben, die andere Aspekte der Wasserbewirtschaftung betreffen, beispielsweise Steuern oder Abgaben für die Entnahme von Wasser aus der Umwelt, waren nicht Gegenstand dieser Studie.

Wirtschaftliche Instrumente und Grundsätze wie das Verursacherprinzip und das Kostendeckungsprinzip sind zu wichtigen Merkmalen in den umweltpolitischen Diskussionen geworden und werden zunehmend in das Umweltrecht der EU-Mitgliedstaaten einbezogen, wobei besondere Bedeutung der vor kurzem erfolgten Verabschiedung der Wasserrahmenrichtlinie (WRR) zukommt¹. Die WRR stellt den Grundsatz der Kostendeckung für Wasserdienstleistungen in Übereinstimmung mit dem Verursacherprinzip in den Vordergrund. Das Hauptziel besteht darin sicherzustellen, dass Umwelt- und Ressourcenkosten nicht länger von der Gesellschaft insgesamt getragen werden, sondern stattdessen den Wassernutzern angelastet werden, wodurch sie zu einem Bestandteil der wirtschaftlichen Entscheidungsfindung werden (ein als „Internalisierung“ bezeichneter Prozess). Außerdem sollen die Mitgliedstaaten bis zum Jahr 2010 dafür sorgen, dass es durch entsprechende Maßnahmen im Bereich der Festsetzung der Wasserpreise ausreichende Anreize für eine effiziente Nutzung der Wasserressourcen gibt. Die Anreize sollen den Wassernutzern die richtigen und angemessenen Signale über die Knappheit der Wasserressourcen und die Empfindlichkeit und Verletzlichkeit der Wasserkörper oder der von Wasser abhängigen Ökosysteme geben. Die WRR schreibt außerdem vor, dass die Mitgliedstaaten wirksame, angemessene und abschreckende Sanktionen bei Verstößen gegen die nationalen Vorschriften für die Wasserbewirtschaftung festlegen.

Der Zweck dieser Studie ist die Analyse und Bewertung der Abwasserabgaben- und Umsetzungssysteme der 15 EU-Mitgliedstaaten, einschließlich der institutionellen Zuständigkeiten und der an die Ausstellung von Genehmigungen zur direkten Ableitung von Abwässern in natürliche Gewässer geknüpften Bedingungen. Ein weiteres Ziel ist die Sammlung von Informationen über die ergriffenen Maßnahmen, um Nachweise in Fällen von Gewässerverschmutzung durch gefährliche Stoffe sicherzustellen. Die Informationen, auf die sich dieser Bericht stützt, wurden hauptsächlich bei den zuständigen Wasserbehörden in den Mitgliedstaaten eingeholt, normalerweise den für Umweltangelegenheiten zuständigen Ministerien. Es wurde eine Modellberechnung der Abwasserabgaben ausgearbeitet, um die Auswirkungen der Abgaben auf die Industrie abzuschätzen, wobei die Textilindustrie als Beispiel diente.

Die verwaltungsmäßige Zuständigkeit für die Einziehung der Abwasserabgaben liegt im allgemeinen bei denselben Behörden - oder Zuständigkeitsebenen in abgestuften Systemen -, die die Genehmigungen ausstellen, aber in einigen Fällen sind andere Abteilungen oder

¹ Richtlinie zur Schaffung eines Ordnungsrahmens für Maßnahmen der Gemeinschaft im Bereich der Wasserpolitik 2000/60/EG vom 23. Oktober 2000 (ABl. L 327 vom 22.12.2000)

Dienststellen der Behörde zuständig. Die Zuständigkeitsverteilung unterscheidet sich jedoch erheblich von Mitgliedstaat zu Mitgliedstaat. Die Aufgabe der Untersuchung von Fällen (unerlaubter) Wasserverschmutzung ist aufgeteilt. Es sind Umwelt- und Polizeidienststellen beteiligt mit einer starken Rolle für die Umweltbehörden.

In den meisten Mitgliedstaaten können sowohl Einzelpersonen (natürliche Personen) als auch Unternehmen (juristische Personen) wegen unerlaubter Wasserverschmutzung verfolgt werden. Für unerlaubte Wasserverschmutzung werden im allgemeinen Geldstrafen oder Gefängnisstrafen verhängt, und in bestimmten Fällen können die Genehmigungen eingezogen werden. Die Rechtsterminologie und die Verfahren für die Verfolgung von Umweltvergehen sind in den einzelnen Mitgliedstaaten unterschiedlich. Es hat in letzter Zeit Initiativen gegeben (durch das Königreich Dänemark im Bereich innere Angelegenheiten und Justiz und durch die Europäische Kommission im Rahmen des EG-Vertrags), um die rechtliche Grundlage zu harmonisieren².

Für die Ableitung von Abwässern in natürliche Gewässer werden in sieben Mitgliedstaaten der Europäischen Union Gebühren erhoben (Belgien³, Dänemark, Deutschland, Spanien, Frankreich, die Niederlande und das Vereinigte Königreich⁴). Abgabensysteme sind in weiteren fünf Mitgliedstaaten in der Diskussion oder Vorbereitung, mit jeweils unterschiedlichem Stand. Es erscheint jedoch schwierig, neue Abgabensysteme trotz der in der Wasserrahmenrichtlinie enthaltenen wirtschaftlichen Elemente und der allgemeinen Aufmerksamkeit für wirtschaftliche Instrumente in der Umweltpolitik festzulegen.

Einige Mitgliedstaaten (Dänemark, Deutschland, Spanien und das Vereinigte Königreich) erheben Abgaben nur auf direkte Einleitungen und überlassen es den Betreibern von Abwasseraufbereitungsanlagen, die Kosten für die Abwasserabgaben an die indirekten Emittenten weiterzugeben. Die anderen Mitgliedstaaten (Belgien, die Niederlande und Frankreich) erheben auch Abgaben bei den indirekten Emittenten, einschließlich der Haushalte, und nehmen dann die Betreiber von Abwasseraufbereitungsanlagen von der Zahlung der Abwasserabgabe aus oder – im Fall der Niederlande – wenden großzügige Senkungen bei den Abgaben an. Unabhängig davon sind die indirekten Emittenten einschließlich Haushalte, der indirekten Emittenten in der Industrie, kleine und mittlere Unternehmen, Landwirte u.a. in das Abgabensystem einbezogen und müssen ihren Anteil zahlen.

Die Abgabensysteme unterscheiden sich erheblich bei ihren Berechnungsmethoden und den finanziellen Vorkehrungen für verfügbare Vergünstigungen für verschiedene Sektoren oder als Gegenleistung für Investitionen in die Abwasserbehandlung, eine gute Umweltbilanz oder für die Berücksichtigung des Verschmutzungsgrads bei Aufnahme des unbehandelten Wassers. Gegenwärtig wendet nur Deutschland ein System an, bei dem Investitionen zur

² Entwurf eines Rahmenbeschlusses des Rates zur Bekämpfung der schweren Umweltkriminalität, zu dem das Europäische Parlament am 7. Juli 2000 seine Stellungnahme abgegeben hat, und Vorschlag der Kommission für eine Richtlinie des Rates über den strafrechtlichen Schutz der Umwelt (KOM(2001) 139 endg., 2001/0076(COD) vom 13.3.2001).

³ In allen drei Regionen: Wallonien, Brüssel und Flandern.

⁴ In England und Wales wie auch in Schottland. In Nordirland gibt es bislang keine Abgabensysteme.

Verringerung der Wasserverschmutzung unter bestimmten Bedingungen gegen die Abwasserabgabe aufgerechnet werden können.

Die Einnahmen aus den Abwasserabgaben sind erheblich, insbesondere in den Mitgliedstaaten, in denen die Systeme darauf ausgelegt sind, Mittel für Investitionen zur Verringerung der Wasserverschmutzung aufzubringen (Belgien, Frankreich und die Niederlande). Die Einnahmempfänger sind in den meisten Fällen die für den Schutz der Wasserressourcen und für die Wasserbewirtschaftung zuständigen Behörden, die ebenfalls für die Genehmigung und Überwachung der Abgaben zuständig sind.

Die Abgabensysteme in den verschiedenen Mitgliedstaaten sollen unterschiedliche Funktionen erfüllen:

- hauptsächlich auf Anreize ausgerichtet (Deutschland, Dänemark⁵);
- hauptsächlich auf Einnahmen ausgerichtet (Belgien, Frankreich, die Niederlande und Spanien⁶);
- Kostendeckung für die Verwaltung und Überwachung der Ableitungsgenehmigungen (England und Wales, Schottland).

Der Bestimmungszweck der Einnahmen aus den Abwasserabgaben ist unterschiedlich. In einigen Ländern werden sie zur Finanzierung von Maßnahmen zur Verbesserung der Wasserqualität und der Verringerung der Verschmutzung verwendet (in einigen Fällen einschließlich Investitionen in Abwasseraufbereitungsanlagen), in anderen Fällen dienen sie ausschließlich dem Zweck der Deckung der Verwaltungskosten (Vereinigtes Königreich), in Dänemark fließen die Einnahmen in den allgemeinen Haushalt ein.

Im Grunde jedoch sind die Abwasserabgabensysteme eng mit anderen Funktionen bei der Bekämpfung der Wasserverschmutzung verflochten. In Deutschland beispielweise müssen die Einnahmen aus den Abwasserabgaben zur Verbesserung der Wasserqualität verwendet werden und kommen somit direkt oder indirekt denen zugute, die die Abgaben zahlen müssen. Neben seiner Anreizfunktion zur Förderung der Verringerung der Verschmutzung hat die Abgabe deshalb eine finanzielle Funktion für Maßnahmen zur Verbesserung der Wasserqualität; die fiskalische Funktion der Abgabe ist relativ begrenzt. Ähnliche Überschneidungen zwischen den Funktionen der Abwasserabgaben gibt es auch in anderen Mitgliedstaaten.

Um ausreichend Anreize zu bieten, muss die Abgabe hoch genug sein, um als Lenkungs- und Förderungsinstrument für Maßnahmen zur Verringerung der Verschmutzung wirken zu können. In den Niederlanden und in Deutschland sind die Abgaben relativ hoch, sie haben eine verschmutzungsabschreckende Wirkung und zu erheblichen Investitionen in verschmutzungssenkende Maßnahmen geführt. In Dänemark bietet das Abgabensystem einen Anreiz für die Senkung für Stickstoff (N) und Phosphor (P), jedoch nicht des biologischen Sauerstoffbedarfs (BOD₅), weil die Abgaben für N und P hoch, für BOD₅ aber relativ niedrig

⁵ Das dänische System ist hauptsächlich anreizorientiert, aber da es sich um eine Steuer handelt, trägt sie zum allgemeinen Haushalt bei und erfüllt deshalb auch eine fiskalische Funktion.

⁶ Da kein Fragebogen zurückgesandt wurde, liegen uns sehr begrenzte Informationen über das Abgabensystem in Spanien vor.

sind. In Deutschland werden die Verschmutzungsparameter aus der Berechnung der Abgabe herausgenommen, wenn sie unter bestimmten Schwellenwerten liegen. Außerdem wird der zu zahlende Preis je Verschmutzungseinheit um 50% gesenkt, wenn die Menge und Toxizität von Abwässern verbessert wird, um die durch Bundesgesetz festgelegten Mindestanforderungen zu erfüllen.

Die Mitgliedstaaten haben folgende Auswirkungen der Abgabensysteme berichtet:

- Investitionen in die Abwasserbehandlung, um die Wasserverschmutzung und Abwasserabgaben zu vermeiden oder zu verringern,
- Investitionen in sauberere Produktionstechnologie (Anwendung der besten verfügbaren Techniken),
- Vorbehandlung oder Anwendung von Prozessen (durch die Industrie, kleinere und mittlere Unternehmen sowie in kommunalen Abwasseraufbereitungsanlagen), um Ableitungen von gefährlichen Stoffen oder von Stoffen, deren Überwachung kostenaufwendig ist, zu vermeiden,
- Senkung des Wasserverbrauchs in Produktionsprozessen und Festlegung von Recycling-Verfahren (um das Abwasservolumen zu verringern und die Abwasserqualität zu verbessern),
- Verringerung der Verschmutzungsbelastung, insbesondere durch Stickstoff (N) und Phosphor (P),
- allgemeine Verbesserungen bei der Verwaltung, Überwachung und Kontrolle von Abwasserableitungen und der Qualität der Vorfluter.

Es scheint keine Belege dafür zu geben, dass Unternehmen als Reaktion auf die Abwasserabgabensysteme an andere Standorte abwandern. Dies wird durchgehend von den Mitgliedstaaten, die Abwasserabgabensysteme haben, und von den Mitgliedstaaten, die nicht über solche Systeme verfügen, berichtet.

Die Fragebögen und die für diesen Bericht durchgeführten Befragungen zeigen, dass die bestehenden Abwasserabgabensysteme als ein gutes Instrument der Umweltpolitik angesehen werden, und diese Einschätzung deckt sich mit den generell positiven Bewertungen in der einschlägigen Literatur. Die positive Aufnahme der Abwasserabgabensysteme in Europa werden auf folgende nichtwirtschaftliche Faktoren zurückgeführt:

- die Einnahmen aus den Abwasserabgaben stellen für die Umweltbehörden in den Mitgliedstaaten eine Finanzierungsquelle dar. Dies trägt dazu bei, die verwaltungsmäßigen Vorkehrungen zu treffen, die zur Bewirtschaftung der Wasserressourcen erforderlich sind (Analyse und Überwachung der Gewässer, Finanzierung von Personal, externen Dienstleistungen und Sachverständigen). Zusätzlich werden finanzielle Ressourcen für eine Reihe von Wasserbewirtschaftungsmaßnahmen verfügbar, beispielsweise Forschung und Entwicklung oder Modelldarstellungen von wasserführenden Schichten.
- Die Abwasserabgabensysteme machen aktuelle Informationen und Dokumentation über die Wasserverschmutzung und über den Zustand der natürlich Wasserkörper notwendig.

Dies stärkt die Informationsgrundlage für Verwaltungszwecke sowie die Kommunikation zwischen den Wasserbewirtschaftungsbehörden und den Wasserverschmutzern.

- Die Abwasserabgaben motivieren die Wassernutzer, ihren Wasserbedarf zu überprüfen, eine integrierte Vermeidung der Verschmutzung sowie die Wiederaufbereitung und Wiederverwendung von Wasser zu untersuchen, das Potential für Wassereinsparungen und -ersatz zu prüfen und Möglichkeiten zu finden, die Verschmutzung an der Quelle durch eine Vorbehandlung des Abwassers zu senken. Die Abgaben machen die Entschlossenheit des Gesetzgebers deutlich, den Verwaltungen die Mittel bereitzustellen, die sie benötigen, um ihre Aufgaben wirksamer als zuvor wahrnehmen zu können.

Angesichts der unzureichenden Durchführung und Umsetzung der Umweltrechtsvorschriften in der Gemeinschaft und in zahlreichen Mitgliedstaaten könnte das Europäische Parlament eine Initiative erwägen, um wirtschaftliche Instrumente zu fördern, die auf die Stärkung der Verwaltungskapazitäten in den Mitgliedstaaten ausgerichtet sind.

Eine ausführlichere Übersicht über die Abwasserabgabensysteme in den Mitgliedstaaten wäre für diese Aufgabe sinnvoll. Sie sollte nicht nur auf die Gestaltungsmerkmale der Abwasserabgabensysteme abzielen (auf der Grundlage dieses Berichts), sondern auch auf die Hindernisse, die einer Einführung von Abgabensystemen in verschiedenen Mitgliedstaaten entgegenstehen wie auch auf die besonderen Merkmale von Abgabensystemen (z.B. zweckgebundene Einnahmen).

Das Europäische Parlament könnte sich in ähnlicher Weise für ein gemeinschaftliches Vorgehen bei der Festlegung von Sanktionen im Fall von Verstößen gegen die nationalen Vorschriften im Bereich der Wasserverschmutzung einsetzen. Bislang scheint es jedoch keine umfassende Übersicht über die Ausübung polizeilicher Befugnisse bei der Kontrolle der Verschmutzung von Gewässern in den Mitgliedstaaten zu bestehen, und die in dieser Studie gesammelten Informationen können nur als ein wichtiger erster Schritt betrachtet werden. Schließlich ist ein ständiger Prozess des Feedback zwischen den Behörden der Mitgliedstaaten notwendig, um zu gewährleisten, dass jede dieser Behörden Informationen mit vergleichbarer Qualität bereitstellt.

Da die Wasserrahmenrichtlinie jetzt eine Berücksichtigung der Umwelt- und Ressourcenkosten vorschreibt, sind Instrumente notwendig, um sie zu bewerten und in wirtschaftliche Berechnungen und Entscheidungen der Wassernutzer und Wasserverschmutzer einzubeziehen. Es gibt eine Reihe von Methoden und Techniken zur Bewertung der Umwelt- und Ressourcenkosten, aber es besteht keine Einigkeit über die besten Praktiken, und es gibt keine Normen, die es einzuhalten gilt. Die relativ breiten Erfahrungen hingegen mit den Abwasserabgabensystemen in einer Reihe von Mitgliedstaaten sind von unschätzbarem Wert bei der Festlegung wirksamer Konzepte für die Internalisierung der Kosten. Diese können und sollten festgelegt und durchgeführt werden, selbst bevor die Höhe der Umwelt- und Ressourcenkosten sich mit Genauigkeit bestimmen lässt.

Eine rasche Anwendung von Abwasserabgaben (und auf der Wasserversorgungsseite von Wasserentnahmeabgaben) hätte positive Auswirkungen auf die Schaffung der Verwaltungskapazität, die Verbesserung der Information der Wasserverschmutzer wie auch auf die Innovation und Verbreitung der Technologie für die Verschmutzungseindämmung. Nachdem

es möglich geworden ist, die Umwelt- und Ressourcenkosten besser zu bestimmen, könnten die Abwasserabgabensätze erhöht werden, um eine wirksame Internalisierung zu erreichen. Der Prozess der Anpassung der Abwasserabgabensysteme wird von den in der Zwischenzeit gewonnenen Erkenntnissen profitieren. Dies würde die Gefahr unbeabsichtigter, vermeidbarer wirtschaftlicher und sozialer Nebeneffekte weitgehend verringern.

NOTE DE SYNTHÈSE

Le Parlement européen a chargé "Ecologic" d'étudier les systèmes de taxation des eaux usées dans les États membres de l'UE en se concentrant sur les instruments économiques permettant de réguler les rejets directs d'eaux usées dans les eaux naturelles. L'étude n'aborde pas les impôts et les taxes concernant d'autres aspects de la gestion de l'eau, tels que ceux qui sont appliqués au prélèvement d'eau dans la nature.

Dans les débats entourant la politique de l'environnement, les instruments et principes économiques tels que celui du pollueur-payeur et de la couverture des frais occupent dorénavant une place de choix et sont de plus en plus souvent incorporés dans la législation sur l'environnement des États membres de l'UE, notamment avec l'adoption récente de la directive-cadre pour une politique communautaire dans le domaine de l'eau¹. La directive-cadre accorde la priorité au principe du recouvrement des coûts pour les services de l'eau, conformément au principe du pollueur-payeur. L'objectif essentiel est de faire en sorte que les coûts induits par l'environnement et les ressources ne soient plus supportés par la société dans son ensemble, mais par les utilisateurs de l'eau, devenant ainsi une partie interne de la prise de décision économique (processus appelé "internalisation"). De surcroît, les États membres sont invités à veiller à ce que, d'ici à 2010, la politique de fixation des prix génère les stimulants nécessaires à une utilisation efficace des ressources en eau. Les stimulants doivent transmettre aux utilisateurs d'eau des signaux corrects et adéquats concernant la rareté des ressources en eau ainsi que la sensibilité et la vulnérabilité des organismes ou des écosystèmes dépendant de l'eau. Selon la directive-cadre sur l'eau, les États membres doivent également instituer des sanctions efficaces, proportionnées et dissuasives applicables en cas de violation de la législation nationale sur la gestion de l'eau.

La présente étude se propose essentiellement d'analyser et d'évaluer les systèmes de taxation et leur mise en œuvre dans les quinze États membres de l'UE, y compris les compétences des institutions et les conditions liées à la délivrance de permis autorisant le rejet direct d'eaux usées dans les eaux naturelles. Elle se propose également de rassembler les informations recueillies sur les mesures prises pour établir des preuves dans les cas de pollution de l'eau par des substances dangereuses. Les informations sur lesquelles repose le présent rapport ont été recueillies principalement auprès des autorités chargées de la gestion de l'eau dans les États membres, c'est-à-dire, en règle générale, des ministères de l'environnement. Un modèle de calcul de la taxation des eaux usées a été élaboré pour évaluer ses incidences sur l'industrie, en prenant comme exemple le finissage des textiles.

La responsabilité administrative de la collecte des taxes sur les eaux usées repose en général entre les mains des mêmes autorités – ou niveaux d'autorité dans des systèmes à plusieurs niveaux – qui délivrent les permis, mais, dans certains cas, il s'agira d'autres départements ou services de l'autorité. Cependant, l'attribution des responsabilités varie considérablement d'un État membre à l'autre. La tâche qui consiste à enquêter sur les incidents provoqués par la

¹ Directive 2000/30/CE du Parlement européen et du Conseil du 23 octobre 2000 établissant un cadre pour une politique communautaire dans le domaine de l'eau (JO L 327/1 du 22 décembre 2001, p. 1).

pollution (illégal) de l'eau est divisée. Les autorités responsables de l'environnement et la police y sont associées, un rôle plus important revenant aux premières.

Dans la plupart des États membres, des individus (personnes physiques) aussi bien que des entreprises (personnes morales) peuvent être poursuivis pour pollution illégale de l'eau. Celle-ci est généralement sanctionnée par des amendes ou des peines de prison, et, dans certains cas, des licences peuvent être retirées. La terminologie juridique et les procédures de poursuite pour atteinte à l'environnement diffèrent entre les États membres européens. Récemment, des initiatives ont été prises pour harmoniser le cadre juridique, à savoir par le Royaume du Danemark dans le domaine de la justice et des affaires intérieures et par la Commission européenne dans le cadre du traité CE².

Une taxe est imposée sur le rejet d'eaux usées dans les eaux naturelles dans sept États membres de l'Union européenne (Belgique³, Danemark, Allemagne, Espagne, France, Pays-Bas et Royaume-Uni⁴). Des systèmes de taxation sont en cours de discussion ou d'élaboration dans cinq autres États membres. Cependant, il semble qu'il demeure difficile de mettre en place de nouveaux systèmes de taxation malgré les éléments économiques contenus dans la directive-cadre sur l'eau et l'attention globale qui est accordée aux instruments économiques dans la politique de protection de l'environnement.

Certains États membres (Danemark, Allemagne, Espagne et Royaume-Uni) n'imposent des taxes qu'aux rejets directs, laissant le soin aux opérateurs d'usines de traitement des eaux usées de répercuter le coût des taxes sur les émetteurs indirects. Les autres États membres (Belgique, Pays-Bas et France) taxent également les émetteurs indirects, y compris les ménages, et ne soumettent pas les opérateurs d'usines de traitement des eaux au paiement de la taxe ou bien, comme aux Pays-Bas, appliquent des réductions généreuses. En tout état de cause, les émetteurs indirects, qui englobent les ménages, les émetteurs indirects industriels, les petites et moyennes entreprises, les agriculteurs et d'autres catégories, sont intégrés dans les systèmes de taxation et doivent payer leur part.

Il existe des différences considérables entre les systèmes de taxation au niveau des méthodes de calcul et des dispositions financières concernant les réductions dont bénéficient certains secteurs ou, en retour, les investissements consentis dans le traitement des eaux usées, un bilan écologique positif ou la prise en compte du degré de pollution au niveau de la collecte d'eau brute. À l'heure actuelle, seule l'Allemagne possède un système en vertu duquel l'investissement dans le contrôle de la pollution de l'eau peut, sous certaines conditions, être compensé par la taxation sur les eaux usées.

Les revenus tirés de la taxation des eaux usées sont importants, notamment dans les États membres où les systèmes sont conçus de façon à dégager des moyens pour l'investissement dans le contrôle de la pollution de l'eau (Belgique, France et Pays-Bas). Les bénéficiaires de

² Projet de décision-cadre sur la protection de l'environnement par le droit pénal (justice et affaires intérieures), sur laquelle le Parlement européen a émis un avis le 7 juillet 2000, et proposition, élaborée par la Commission, de directive relative à la protection de l'environnement par le droit pénal (COM(2001) 139 final, 2001/0076(COD) du 13 mars 2001).

³ Dans les trois régions: Wallonie, Bruxelles et Flandre.

⁴ Angleterre, Pays de Galles et Écosse. L'Irlande du nord ne connaît jusqu'à présent pas de système de taxation.

ces revenus tendent à être les autorités responsables pour la protection et la gestion des ressources en eau, qui sont également compétentes pour l'autorisation et le contrôle des rejets.

Dans les divers États membres, les systèmes de taxation ont des objectifs différents:

- principalement incitatifs (Allemagne, Danemark⁵),
- principalement financiers (Belgique, France, Pays-Bas et Espagne⁶),
- couverture des frais pour l'administration et le contrôle de permis de rejet (Angleterre, Pays de Galles et Écosse).

L'affectation des recettes de la taxation des eaux usées est variable. Dans certains pays, elles sont employées pour financer des mesures de qualité de l'eau et le contrôle de la pollution (incluant parfois des investissements dans des usines de traitement des eaux usées), dans d'autres, elles ne font que couvrir des coûts administratifs (Royaume-Uni); au Danemark, la recette représente une contribution au budget général.

Fondamentalement néanmoins, les systèmes de taxation des eaux usées sont étroitement liés à d'autres fonctions dans la lutte contre la pollution de l'eau. Ainsi, en Allemagne, les recettes tirées de la taxation des eaux usées doivent être utilisées pour améliorer la qualité de l'eau et profitent donc directement ou indirectement à ceux qui seraient susceptibles de payer. Outre son caractère incitatif visant à promouvoir la réduction de la pollution, la taxe remplit par conséquent une fonction financière pour les mesures d'amélioration de la qualité de l'eau; comparativement, sa fonction fiscale est bien moindre. Ce type de recoupement entre les fonctions des taxes sur les eaux usées existe également dans d'autres États membres.

Afin d'être réellement incitative, la taxe doit être suffisamment élevée pour être efficace au niveau de l'orientation et de l'encouragement de mesures de contrôle de la pollution. Aux Pays-Bas et en Allemagne, les taxes sont relativement élevées, freinant ainsi la pollution de l'eau et encourageant considérablement les investissements dans les mesures de réduction de la pollution. Au Danemark, le système de taxation encourage la réduction de nitrogène (N) et de phosphore (P), mais non de la demande d'oxygène biologique (BOD₅), car les taxes sur N et P sont élevées, tandis que le taux appliqué à BOD₅ est relativement bas. En Allemagne, les paramètres de la pollution sont exclus du calcul de la taxe s'ils sont inférieurs à certains seuils. De plus, le taux à payer par unité de pollution est diminué de 50 % si la quantité et la toxicité d'un résidu est améliorée pour satisfaire les critères minima définis par la loi fédérale.

Selon les États membres, les systèmes de taxation ont les effets suivants:

- investissement dans le traitement des eaux usées, afin d'éviter ou de réduire la pollution de l'eau et les taxes sur les eaux usées;
- investissement dans des technologies de production plus propres (mise en œuvre des meilleures techniques disponibles);

⁵ Le système danois est essentiellement incitatif, mais, comme il s'agit d'un impôt, il contribue au budget général et assure par conséquent également une fonction fiscale.

⁶ Aucun questionnaire n'ayant été renvoyé, l'information sur le système de taxation en Espagne est extrêmement limitée.

- prétraitement ou adoption de processus (par l'industrie, les petites et moyennes entreprises et les installations municipales de traitement des eaux usées) pour éviter les rejets de substances dangereuses ou de substances dont le contrôle est onéreux;
- réduction de la consommation d'eau dans les processus de production et mise en place de schémas de recyclage (afin de réduire le volume et d'améliorer la qualité des eaux usées);
- réduction des charges polluantes, notamment par le nitrogène (N) et le phosphore (P);
- améliorations générales dans la gestion, le contrôle et la surveillance des rejets d'eaux usées et de la qualité des eaux réceptrices.

Apparemment, les industries ne délocalisent pas pour réagir aux systèmes de taxation d'eaux usées. C'est ce que ne cessent d'affirmer tant les États membres qui possèdent des systèmes de taxation d'eaux usées que ceux qui n'en ont pas.

Les questionnaires élaborés et les entretiens menés pour le présent rapport démontrent que les systèmes de taxation existant pour les eaux usées sont considérés comme un instrument satisfaisant de la politique de l'environnement, et cette affirmation correspond aux évaluations globalement positives que l'on trouve dans la littérature sur le sujet. Les facteurs non-économiques suivants sont jugés positifs au niveau de la perception des systèmes de taxation des eaux usées en Europe:

- les recettes tirées de la taxation des eaux usées fournissent aux autorités chargées de l'environnement dans les États membres une source de revenus qui contribue à mettre en place les structures administratives nécessaires à la gestion des ressources en eau (analyses et contrôle des eaux, financement de personnel, de services externes et d'experts). De surcroît, des ressources financières deviennent ainsi disponibles pour plusieurs activités de gestion de l'eau, telles que la recherche et le développement, ou la modernisation d'aquifères.
- Les systèmes de taxation des eaux usées requièrent la mise à jour d'informations et de documentations sur la pollution de l'eau et sur l'état des masses d'eau naturelle. Ainsi est renforcée la base d'information pour l'administration et la communication entre les administrations de gestion de l'eau et les pollueurs de l'eau.
- La taxation des eaux usées incite les utilisateurs d'eau à réexaminer leurs besoins en eau, à envisager la prévention intégrée de la pollution, le recyclage et la réutilisation d'eau, à étudier la possibilité d'économiser l'eau et de la remplacer ainsi que la possibilité de réduire la pollution à sa source en prétraitant l'eau usée. La taxation souligne la détermination du législateur de procurer aux administrations les ressources leur permettant de s'acquitter de leurs fonctions avec une efficacité accrue.

À la lumière de l'insuffisance de la mise en œuvre de la législation sur l'environnement dans la Communauté et de nombreux États membres, le Parlement européen pourrait envisager de prendre une initiative visant à promouvoir les instruments économiques conçus pour renforcer les capacités administratives dans les États membres.

À cette fin, il serait utile d'étudier plus en détail les systèmes de taxation des eaux usées dans les États membres, en ce concentrant non seulement sur les paramètres de conception des systèmes de taxation des eaux usées (sur la base du présent rapport), mais également sur les obstacles s'opposant à l'introduction de systèmes de taxation dans plusieurs États membres et sur les caractéristiques spécifiques de ces systèmes (par exemple recettes affectées).

De même, le Parlement européen pourrait promouvoir une approche communautaire de la définition de sanctions pour la violation de dispositions nationales relatives au contrôle de la pollution de l'eau. Jusqu'à présent, cependant, il semble qu'il n'existe pas d'aperçu global de l'exercice des pouvoirs de police dans le contrôle de la pollution de l'eau dans les États membres, et les informations recueillies dans le présent rapport ne peuvent être considérées que comme une phase préliminaire importante. Enfin, un processus itératif de retour entre les autorités des États membres est nécessaire pour faire en sorte que l'information fournie par chacun d'entre eux soit de qualité similaire.

Étant donné que la directive-cadre sur l'eau requiert que, dorénavant, les coûts relatifs à l'environnement et aux ressources soient pris en considération, des instruments sont nécessaires pour les évaluer et les internaliser dans les calculs économiques et les décisions prises par les utilisateurs et les pollueurs de l'eau. Il existe plusieurs méthodes et techniques permettant d'évaluer les coûts relatifs à l'environnement et aux ressources, mais aucun accord concernant les meilleures pratiques et aucune norme à respecter. En revanche, l'expérience relativement importante acquise dans plusieurs États membres avec des systèmes de taxation des eaux usées est très précieuse au niveau de la conception d'approches efficaces de l'internalisation. Celles-ci peuvent et doivent être adoptées et mises en œuvre avant même que les volumes des coûts relatifs à l'environnement et aux ressources puissent être définis avec précision.

La mise en œuvre, à bref délai, d'une taxation sur les eaux usées (et de taxes sur le prélèvement d'eau du côté de l'approvisionnement en eau) générerait des effets positifs en termes d'établissement de la capacité administrative d'amélioration de l'information des pollueurs ainsi que pour l'innovation et la diffusion des technologies permettant de contrôler la pollution de l'eau. À partir du moment où l'on peut mieux déterminer les coûts relatifs à l'environnement et aux ressources, les taux de taxation des eaux usées peuvent être augmentés afin de permettre une internalisation efficace, et le processus d'adaptation des systèmes bénéficiera de l'expérience acquise entre-temps. De la sorte, le risque entraîné par des effets secondaires économiques et sociaux non voulus et évitables serait considérablement réduit.

INTRODUCTION

Background and context of the Water Framework Directive

Economic instruments and principles such as the polluter-pays and cost-recovery principles have become a prominent feature in environmental policy debates and they are increasingly being incorporated into the environmental law of the EU Member States. On the one hand, this is a welcome development, because theory and practice have shown that economic instruments improve the effectiveness and efficiency of environmental policy. On the other hand, these instruments pose an additional and politically rather difficult challenge to the European Union. There may be a need to harmonise these instruments in some policy areas in order to avoid distortions of competition and an emergence of barriers to the functioning of the internal market. At the same time, however, there is considerable opposition to enhancing the role of the European Union in this regard. The next Intergovernmental Conference may remove the formal obstacle to the adoption of economic instruments in environmental policy and law at the European level, which consists of the unanimity requirement in Article 175 (2) of the EC-Treaty for "provisions primarily of a fiscal nature". It is therefore opportune for the European Parliament to study the use and the potential of economic instruments in environmental policy.

Water pollution control and water resource management policies are among the most highly developed areas of European environmental policy. Traditionally, European water policy has made use of a range of instruments, including:

- Identification and notification (of authorities, areas, projects, or facilities);
- authorisation and licensing (of installations, emissions, or products and their use);
- prior evaluations and impact assessments (of plans, projects, or emissions);
- action programmes or plans (quality improvement, investment, or pollution control);
- technology standards, such as best available techniques;
- limit values and standards (relating to quality, emissions, or products);
- information, consultation and participation procedures;
- monitoring and reporting mechanisms.

Economic considerations have often played a role in the formulation, adoption and implementation of water-related directives and regulations, although it has rarely occurred in a transparent and well-documented manner. Economic instruments, however, have not been prominently incorporated into European water legislation. This is about to change as a consequence of the recent adoption and publication of the Water Framework Directive (WFD)¹.

¹ Directive on establishing a framework for Community action in the field of water policy 2000/60/EC of 23 October 2000 (OJ, L327/1 of 22 December 2000).

The WFD gives prominence to the principle of cost-recovery for water services, in accordance with the polluter pays principle². The WFD provides that environmental and resource costs must be included in water service prices; the costs are to be assessed by an economic analysis conducted according to Annex III of the WFD, once this Annex has been complemented with guidance notes on approaches and methodologies. The main objective is to ensure that environmental and resource costs are no longer borne by society in general, but are instead allocated to water users, thus becoming an internal part of economic decision-making (a process known as 'internalisation').

In addition, Member States are required to ensure by 2010 that water pricing policies provide adequate incentives for the efficient use of water resources³. Incentives are meant to provide water users with correct and adequate signals on the scarcity of water resources, and on the sensitivity and vulnerability of water bodies or ecosystems that depend on water.

In effect, economic analyses, economic mechanisms for allocating environmental and resource costs to water users, and incentive pricing policies need to be developed in a way that will achieve environmental effectiveness and economic efficiency over time. The WFD leaves some leeway in the interpretation and implementation of these requirements, in order to account for social, environmental and economic effects, as well as for the geographic and climatic characteristics of regions or river basins.

A number of issues concerning the economic analysis in river basin districts need to be resolved before consistent and harmonised approaches can be applied throughout the European Union, including the assessment of environmental and resource costs, either by calculation, estimation, or other methods. Nevertheless, even in the absence of completely exact and reliable economic information, appropriate economic instruments and pricing policies should be employed to allocate environmental and resource costs to water users and to recover the costs for the benefit of environmental protection. In most cases, environmental and resource costs are known to be significant, even if they have not been assessed in monetary terms by standardised methods.

A number of Member States already have various economic instruments to internalise environmental and resource costs associated with water use, notably in relation to the discharge of (polluting) effluents into natural water bodies. These effluent charging systems vary widely among Member States. This concerns differences in the functions of effluent charges (e.g. financing, fiscal and incentive functions) and in the respective costs for polluters, and it could result in distortions of the competitiveness of industries in the Member States, in some instances leading to a dislocation of industries.

The different levels of effluent charges might be justified on environmental grounds, since they should reflect the sensitivity of receiving waters. On the other hand, it may be desirable to avoid or reduce distortions of competition that may result from an uneven internalisation of environmental and resource costs.

² "Member States shall take account of the principle of recovery of the costs of water services, including environmental and resource costs, [...] in accordance in particular with the polluter pays principle." Article 9, 1. WFD.

³ Article 9, 1. WFD.

Apart from its economic aspects, the WFD also provides that Member States establish effective, proportionate and dissuasive penalties for breaches of national water management legislation⁴. According to Article 10 WFD, national legislation and administration is to ensure that all [relevant] discharges into surface waters are controlled according to the combined approach: Member States are thus to ensure the establishment or implementation of emission controls based on best available techniques (BAT), or the relevant (uniform) emission limit values (ELV), or – in the case of diffuse impacts – controls including best environmental practices (BEP). Controls which are more stringent than those based on BAT, ELV, or BEP shall be set where this is required by a water quality objective or quality standard, whether established pursuant to the WFD or other EC legislation⁵.

The control of effluent discharges may therefore require effective, proportionate and dissuasive penalties to prevent:

- Breaches of national water management legislation designed to protect surface waters from pollution by effluents (e.g. violations of permit conditions, or unauthorised discharges); and
- breaches of national legislation establishing economic instruments to internalise environmental and resource costs, or incentive pricing policies (e.g. reporting of false data, non-payment of taxes or charges, misapplication of tariff and pricing policies).

The emphasis on an establishment of penalties in the WFD necessitates a review of the water management systems and approaches in the Member States.

Objectives and methodology of the study

In this context, the European Parliament asked "Ecologic" to carry out a study on "Effluent Charging Systems in the EU Member States", focusing on economic instruments for regulating direct discharges of effluents into natural waters. The main purpose of the study is to analyse the effluent charging and enforcement systems of the 15 EU Member States, including the institutional responsibilities and the conditions related to the issuing of permits to discharge effluents directly into natural waters. Furthermore, the study was to collect information on the measures taken to secure the evidence in cases of water pollution by dangerous substances. Finally, the European Parliament requested an evaluation of the different effluent charging systems in the European Member States for direct effluent discharges into natural waters.

The information for the study was collected mainly from water authorities in the Member States, usually from the ministries responsible for environmental affairs, with the help of a questionnaire (see section 8.5 - annex), and through a number of interviews. The questionnaire was designed to respond to the specifications of the study, and it was first sent for comment to two academic experts, and to national officials of three Member States. The

⁴ "Member States shall determine penalties applicable to breaches of the national provisions adopted pursuant to this Directive. The penalties thus provided shall be effective, proportionate and dissuasive." Article 22 WFD.

⁵ Article 10, 3. WFD.

questionnaire was discussed in detailed telephone interviews with these officials before being sent out to the Member States. It consisted of three sections, which in some cases needed to be completed by different persons.

- Section 1 contained questions on discharge permits, monitoring, and inspections;
- Section 2 included questions on the police law and the investigation of cases of water pollution by dangerous substances;
- Section 3 covered the economic aspects, focusing on the analysis of the effluent charging system and the calculation of an effluent charge.

In addition, the literature and the information available on the Internet were reviewed.

A model calculation of effluent charges was developed to estimate the effect of effluent charges on industry, using textile finishing as an example. Production cost figures would have been required to assess the importance of the results obtained, and to analyse their relative economic impact on the sector or individual companies. It was, however, impossible to obtain the necessary data on production and costs, even though the relevant industrial association in Germany, the Gesamtverband der deutschen Textilveredlungsindustrie (TVI Verband e.V. - Association of the German Textile Finishing Industry), and the European Textile Finisher's Organisation (CRIET) provided the information available to them, and many other sources, including databanks, were searched in addition.

A total of 16 questionnaires was completed and returned by 13 Member States; the United Kingdom and Belgium completed three questionnaires each. Two questionnaires (Spain and Portugal) were not returned in time (15 March) by the respective authorities.

An interim report was used as a basis for a number of additional interviews, usually by telephone, in order to ensure the accuracy of the information reported (follow-up to questionnaire returns) and to validate the results of the analysis and the comparison and synthesis of the results.

We would like to use this opportunity to thank all national officials that made the production of this study possible. This included completing the questionnaires and responding to further questions for fact checking (a list of the national officials is added in section 8.4 - annex). We also would like to thank all national and international experts that helped us developing the questionnaire, that pre-tested the questionnaire, and all those who delivered additional information and data, provided valuable advice and comments. We would also like to thank Matthias Seaman for taking his time to proofread the final report.

Scope and structure of the report

This study concentrates on charging mechanisms for the discharge of effluents into natural (surface) water bodies. Other economic mechanisms addressing the discharge of effluents, such as tradable pollution permits, are not considered. Also, taxes and charges concerning other aspects of water management, such as taxes or charges for the abstraction of water from the environment, are beyond the scope of this study. Even with this narrow focus there were problems with the definition of and distinction between various instruments:

- In some Member States, for instance in Ireland, administrative fees are used instead of effluent charges and are not considered to be an equivalent. In consequence, they were not included in Part III of this report.
- Other Member States, such as the United Kingdom, have administrative fees which can be considered equivalent to effluent charges, because of the level of the fees, even if they do not set dynamic incentives. These are included in Part III.
- In other Member States still, effluent charges and administrative fees are operated as two parallel systems. In the German Land Hessen, for instance, the administrative fees are sufficiently high to amplify the incentives created by the effluent charge. The conscious use of synergies to maximise incentive effects appears to be rare, however, and parallel systems of administrative fees are not included in Part III.

Difficulties were also encountered in relation to the definition of key regulatory concepts or instruments. The terms "authorisation", "permit", "licence" and others are often used interchangeably and sometimes inconsistently. Where appropriate, explanations and clarifications are given in the individual sections of this report. The same applies to "crime", "offence", "felony", "irregularity" and the like. These words refer to key concepts in the law and justice systems of the Member States and do not always carry the same meaning. These two examples highlight that this report can only provide preliminary answers to some questions and that some of the comparisons and results must be interpreted with caution.

Part I of this report provides an overview of regulations on water pollution in the Member States; chapter 1 focuses on permits, monitoring and control, and chapter 2 highlights the procedures for investigating water pollution incidents and the securing of evidence for judicial purposes. Part I thus sets the regulatory background for the application of economic instruments in water pollution control.

Part II then deals with effluent charging systems and consists of an introduction (chapter 3) and a general survey (section 3.1). Section 3.2 is then devoted to the calculation of effluent charges in those Member States that have them, and section 3.3 to the arrangements for collecting charges. Section 3.4 discusses the level and use of revenues raised, section 3.5 the functions and effects, and section 3.6 draws preliminary conclusions on the effluent charging systems. Sections 4.1, 4.2, and 4.3 of chapter 4 address the differences in the methods to charge for effluents to the different sectors households, agriculture and industry. Section 4.4 is dedicated to an exemplary calculation of effluent charges for three textile-finishing factories in order to estimate different charging levels, the incentives set, and to draw conclusions on possible distortions of competition by effluent charges. Section 4.5 gives a preliminary conclusion and analysis of the different sectors addressed by effluent charging systems and the example.

Part III provides an evaluation of the charging systems in the Member States (chapter 5) and describes policy options and recommendations (chapter 6).

PART I: REGULATIONS ON WATER POLLUTION CONTROL

1 Authorisation and control

The water management institutions in the Member States of the European Union and their respective competences are very diverse. The responsibilities for issuing permits, and for monitoring and control vary greatly, but there are also common features within this diversity. Chapter 1 analyses the differences and similarities in the authorisation and control of discharges, and the monitoring of the receiving surface waters among the Member States, based on the information delivered in the questionnaires.

Section 1.1 and Table 1 give an overview of the authorisation process and the setting of technological standards for industrial and municipal discharges. Sections 1.1.1 and 1.1.2 evaluate the information summarised in Table 1. Section 1.2 compares the responsibilities for the monitoring of effluents and surface waters as well as for on-site inspections. It follows the same structure as Section 1.1, starting with Table 2, which summarises the information from the questionnaires; Sections 1.2.1 and 1.2.2 then analyse this information.

1.1. Authorisation of discharges

Summarising the relevant information available from the questionnaires on the current situation in the Member States, the following table contains brief descriptions on the allocation of responsibilities, conditions of permits, and the setting of emission standards. Further explanations are then given below, in sections on the specific questions of the questionnaire corresponding to specific columns in the table. This pattern of presentation will be repeated throughout much of this report.

Table 1: Authorisation of discharges

Member State	Authority responsible for issuing permits	Conditions for permits	Standards (ELV)
A	District level: small and medium sewage treatment plants (<20,000 p.e.); direct discharges from small and medium-sized enterprises. Länder (State) level: large sewage treatment plants (>20,000 p.e.); direct discharges of industry (paper, leather, textiles, waste incineration, dry-cleaning, oil industry, iron, steel, etc.).	Daily pollutant loads based on ELV specified in the relevant ordinances. Permits also specify the frequency and methods of self-monitoring, maximum daily or monthly volumes of water use, etc.	ELV based on BAT are set in 53 ordinances for different sectors.
B B (WAL)	Ministère de la Région Wallonne (Ministry of the Walloon Region) - Division de l'Eau / Direction des Eaux de Surface (DGRNE - Direction générale des Ressources naturelles et de l'Environnement du Ministère de la Région Wallonne / Directorate General of Natural Resources and the Environment of the Ministry of the Walloon Region).	Sector-based conditions and ELV depending on quality of receiving waters.	No data.

Member State	Authority responsible for issuing permits	Conditions for permits	Standards (ELV)
B (BCR)	Differentiation into classes according to the environmental impact of the company: <ul style="list-style-type: none"> - For class 1A and 1B: Institut Bruxellois pour la Gestion de l'Environnement / Brussels Instituut voor Milieubeheer (IBGE/BIM – Brussels Institute for Management of the Environment); - For class 2 and 3 and temporary installations: respective municipalities (19). 	General ELV and discharging conditions (additional sector-based conditions may apply).	No specific legislation for BAT, BAT is taken into account by the authority granting environmental permits.
B (FLA)	AMINAL Administratie Milieu-, Natuur -, Land- en Waterbeheer (Flemish Administration for Environment, Nature, Land and Water Management). The Vlaamse Milieumaatschappij (VMM – Flemish Environment Agency) gives advice on environmental authorisation and permit prescriptions.	General ELV for specific substances and uniform emission standards for different classes of discharges (3 classifications and 51 sectors) are the basis of permits.	STP: ELV from the UWWT Directive apply. Industry: ELV in general based on BAT (BAT studies in Flanders and European BREF); ELV set for 51 industrial sectors. In case of dangerous substances ELV should take EQS into account (in accordance with Directive 76/464/EEC).
DK	Local councils: for small domestic sewage discharges (< 30 p.e.), including sewage from farms; and for discharges from county-owned institutions (e.g. STP). Regional councils: for all other discharges (from industry, farms, larger domestic dischargers, and others).	ELV for municipal sewage treatment plants based on the UWWT Directive. BAT for certain industrial discharges (installations > 22 t N/a or > 7.5 t P/a). Additionally, stricter ELV may be set for any discharge by the counties, based on County Plan guidelines on the quality of water bodies.	ELV set on basis of UWWT Directive and BAT. For discharges containing dangerous substances, a combined approach of emission standards (ELV) and environmental quality standards (EQS) (deterioration not allowed) applies.
D	Länder (State) responsibility: - Untere Wasserbehörden (local administrations): for small discharges; - Obere Wasserbehörden (regional administrations): for larger discharges. The origin of effluent does not affect the classification.	National minimum requirements (ELV) based on BAT. Additionally stricter ELV or even prohibition of discharge may apply.	Since 1996 ELV for all discharges are set on the basis of BAT.
SF	Water Courts (independent), Supreme Administrative Court.	Vary according to the characteristics of the water body, based in most cases on uniform emission standards.	ELV are based on UWWT Directive and BAT.

Member State	Authority responsible for issuing permits	Conditions for permits	Standards (ELV)
F	<p>Département level (different directorates, depending on the type of discharger):</p> <p>Industrial discharges:</p> <p>Départements (DRIRE – Directions Régionales de l'Industrie et de l'Environnement / Regional Directorates for Industry and the Environment).</p> <p>STP: Préfets de Département (au titre de la législation sur l'eau).</p> <p>Farmers: No direct discharges.</p>	<p>Industry: individual conditions set by DRIRE; branch-specific ELV exist.</p> <p>Municipalities: technical standards for collection and treatment of waste water are set in a ministerial decree (1994).</p>	<p>Branch-specific ELV for industry are defined by ministerial decree.</p> <p>Minimum standards for municipalities are regulated by ministerial decree.</p> <p>Additional incentives for industry and municipalities from water agencies through bonuses to introduce BAT.</p>
GR	<p>Industry:</p> <p>Permits for effluent disposal are issued by the Prefectural Health Authorities.</p> <p>Depending on plant size and activity, environmental standards are approved by:</p> <ul style="list-style-type: none"> - Ministry for the Environment, Physical Planning and Public Works / Air Pollution and Noise Control Directorate, - Regional Directorate for the Environment and Physical Planning, - Prefectural Directorate for Housing and Environment. <p>STP:</p> <p>Permits for effluent disposal are issued by the Ministry of Public Health – Prefectural Health Authorities.</p> <p>Environmental standards are approved by:</p> <ul style="list-style-type: none"> - Ministry for the Environment, Physical Planning and Public Works (Special Environmental Office); - Ministry of Public Health; - Ministry of Internal Affairs. 	<p>Industry:</p> <p>Minimum standards, emission limits (vary depending on receiver).</p> <p>STP:</p> <p>ELV and EQS (UWWT Directive).</p>	<p>ELV set on basis of BAT for industry (according to IPPC Directive) and municipal sewage treatment (UWWT Directive).</p>
I	<p>Provincial governments (regulations set by regional governments).</p>	<p>Industry: ELV</p> <p>STP: ELV and EQS (UWWT Directive).</p>	<p>ELV are set on the basis of BAT.</p>
IRL	<p>Local authorities for lower-risk activities, Environmental Protection Agency for activities carrying a high risk of environmental pollution (e.g. industry or intensive piggeries).</p> <p>STP do not require permits.</p>	<p>ELV, other appropriate conditions for environmental protection, monitoring requirements.</p>	<p>ELV are set providing a high level of environmental protection and complying with European Community legislation.</p>

Part I: Regulations on Water Pollution Control

Member State	Authority responsible for issuing permits	Conditions for permits	Standards (ELV)
LUX	Ministère de l'Environnement (Environment Ministry).	Individual conditions (ELV) for effluents based on concentration (mg/l) and fluxes (kg/d).	ELV set on BAT basis, but no national legislation for BAT-derived ELV. Based on BAT (or GAT) and EQS. Currently, the Ministry of Environment is working on a decree to harmonise minimum requirements (ELV) and corresponding EQS for pollutants.
NL	State waters: Rijkswaterstaat - RWS (Water Management Agency), the operational department of the Minister of Verkeer en Waterstaat (Ministry of Transport, Public Works and Water Management). Regional waters: Waterschappen (Water Boards), nominated by the provinces.	Individual conditions (ELV) based on BAT; stricter ELV may apply due to EQS of receiving waters.	Negotiated agreements play an important role in Dutch environmental policy. Precautionary principle, PPP and prevention principle are applied. BAT and ELV derived from studies of the Commissie Integraal Waterbeheer – CIW (Commission on Integrated Water Management) and BREF reports.
S	County administrative boards. Small discharges only need to be indicated to the municipalities.	Maximum discharge level for substances.	No general minimum standards, individual permits. Conditions imposed are based on: environmental impact assessments, the Environmental Code, General Rules of Care, the Efficiency Provisions and EQS; for large industrial installations also on BAT (EU influence).
UK UK (E&W)	Environment Agency, local authorities for certain IPPC discharges.	Conditions in permits limit the concentration and/or total amount of substances so that EQS are met.	Industry: Based on BATNEEC for Industrial Pollution Control (IPC discharges), BAT for IPPC eligible discharges. STP: limitations of BOD and COD (and nutrients where applicable), according UWWT Directive.
UK (NI)	Environment and Heritage Service (EHS) of the Northern Ireland Department of the Environment.	Permits limit maximum concentration (ELV) and regulate flow and volume conditions. For some STP: levels of treatment are prescribed. For IPC processes: permits may contain concentration/mass release limits or other constraints, or improvement conditions.	Based on BATNEEC for industrial pollution control (for IPC/Part A processes). EQS for STP and non-IPC processes.
UK (SCOT)	Scottish Environment Protection Agency (SEPA) (except discharges from boats/ships).	Based on EQS taking into account BAT.	Technological standards derived from EQS, and BAT for individual sectors. Based on BATNEEC for industrial pollution control (IPC discharges).

1.1.1. Q1: Responsibility for issuing discharge permits

The authorities responsible for issuing permits for direct discharges of effluents into natural waters vary strongly among the Member States of the European Union. The main differences are:

- The administrative level at which permits are granted (national, regional, local); and
- the responsibilities to issue permits for different types of discharges (STP, minor and major industrial discharges).

In most of the countries, discharge permits are issued by regional and local water authorities. In some Member States (Austria, the Brussels Region, Denmark, Germany, France, and Sweden), the authorities responsible for issuing permits depend on the types of substances discharged, on industrial plant size, and on the discharger (industry or municipality).

In **Austria**, the **Brussels Region**, **Denmark**, and **Germany**, the municipal governments issue permits for small discharges (generally sewage) and the regional administrations (in Brussels Region, the Institute for Management of the Environment) for the larger effluents, i.e. large sewage treatment plants or industry. In **France**, the responsibility depends on the type of discharger; the Regional Directorates for Industry and Environment (DRIRE) issue permits for industrial discharges, while the *Préfets de Département* are responsible for sewage treatment plants¹. In **Sweden**, the county administrative boards issue the permits for all discharges requiring authorisation; in the case of small and non-hazardous activities, only notification of the municipalities is required.

In **Greece** and **Italy**, local authorities issue the permits for industrial and municipal discharges of all sizes, while regional or central authorities set the rules and standards. In **Greece**, the discharge permits for effluents from industrial plants and from sewage treatment plants are issued by the prefectural health authorities, which represent the regional authorities of the Ministry of Public Health. In **Italy** the provinces issue the discharge permits, while the regions set the regulative framework².

In **Luxembourg**, the **Walloon Region**, the **Flemish Region**, and the **UK** all discharge permits are issued by one central authority. The respective Ministry of Environment or Environment Agency is solely responsible for the permits regarding discharges by industry and municipal sewage treatment plants. An exception applies in **England and Wales**, where the permits for certain IPPC discharges will be issued by the local authorities as directed by the Environment Agency.

A typical feature of **Finnish** legislation is the case-by-case consideration of pollution permits (OECD, 1999). Independent water courts set the requirements for sewage and waste water treatment, both for STP and for industrial plants, and the courts are responsible for issuing permits as well.

The division of tasks and responsibilities for water management and regulation in the **Netherlands** is unique, the type (size) of receiving water being the determining factor. While

¹ There are 22 Regions and 96 Départements in France.

² There are 20 Regions and 94 Provinces in Italy.

the Water Management Agency³ is responsible for the state waters (i.e. the main rivers), the management of regional waters is carried out by the water boards. The division of the competence to issue permits is the same. Hence, the Water Management Agency issues permit for discharges into state waters, while authorisation for discharges into regional waters is issued by the water boards.

In **Ireland**, permits for lower-risk activities are granted by local authorities, while the Environmental Protection Agency is responsible for activities carrying a high risk of environmental pollution (e.g. complex industrial activities, or intensive piggeries). Licences are not required for discharges of sewage by local authorities, e.g. from urban waste water treatment plants. These discharges are subject to prior regulation under the Environment Protection Agency Act of 1992 (urban waste water treatment) Regulations (1994), and to general supervision, including auditing, by the Environmental Protection Agency.

1.1.2. Q2 and Q3: Conditions for permits and setting of technological standards

In most European countries (**Austria, Greece, Italy⁴, Ireland⁵, Luxembourg, the Netherlands, Denmark, Germany, Finland**) the conditions for permits for industrial discharges based on general emission limit values (ELV) linked to “best available technologies” (BAT). The BAT-derived emission standards take into account the “state of the art” technologies available for production processes and pollution abatement in the various industrial sectors, following the approach of the IPPC Directive. The ELV are mostly minimum requirements, but the conditions set in the individual permits often consider the environmental quality of the receiving water (EQS) as well. Technological standards for industrial installations are hence set by a combined approach of emission and environmental quality standards, as emphasised in the European Water Framework Directive.

In **Austria** and **Germany**, BAT-derived ELV are set by ordinances (and their annexes) for different sectors, while the environmental quality of waters plays a complementary role in setting conditions for permits, which is different from the combined approach. In **Luxembourg** no national legislation for BAT-derived ELV exists, but the Ministry is currently working on a decree to harmonise ELV and EQS. While BAT provides the basis for emission standards for most industries in Luxembourg, some minor discharges need to apply the standard of “generally accepted techniques” (GAT) only.

In **Denmark**, the **Netherlands**, **Greece**, and the **United Kingdom** the conditions for discharges emphasise the importance of EQS in addition to the consideration of ELV. In Dutch environmental policy negotiated agreements play an important role.

In **France** the permit conditions for industrial discharges are based on sector-specific ELV (set by a ministerial decree), and the water agencies provide incentives to introduce BAT (see Table 1).

³ Rijkswaaterstaat.

⁴ Decreto Legislativo (Law of Water Protection) 152/99.

⁵ In Ireland it is stated: ELV are set at a level which provides a high level of environmental protection and which complies with European Community legislation, where relevant. According to the IPPC Directive, BAT-derived ELV are to be set; it is therefore assumed that this also applies to Ireland.

In the **United Kingdom** the conditions for discharge permits are based on a combined approach in which quality standards play an important role. The ELV are based on either BATNEEC or BAT, according to type and size of industrial sector. BATNEEC is a concept derived from the UK IPC legislation, while European harmonisation has introduced the BAT standard for IPPC installations (IPPC Directive).

In the **Walloon Region** more weight is placed on the environmental quality standards approach, and ELV are usually set according to EQS. It is not clear whether the BAT play an important role in the setting of emission standards. In the **Brussels Region**, BAT is taken into account by the authority granting the permits, although there is no specific legislation to this effect. There are general conditions and ELV for industrial discharges, but additional sector-based conditions may apply. In the **Flemish Region** the provisions of permits are based on a combination of general and uniform emission standards for 51 sectors, derived from BAT studies in the Flemish Region and European BAT reference documents (BREFs). The emission standards for dangerous substances also take EQS into account.

In **Sweden** and **Finland**, there are no general minimum standards for industrial discharges, and the conditions for permits are issued on a case-by-case basis. In **Sweden**, the requirements are determined by environmental impact assessments, environmental regulations and environmental quality objectives. As a result of European influence, BAT is now taken into account when setting discharge limits for large industrial installations in Sweden.

The requirements set by the Urban Waste Water Treatment (UWWT) Directive (91/271/EEC) apply to discharges from municipal sewage treatment plants in all European Member States, forming the basis for the conditions attached to permits. The provisions on pollution abatement in the UWWT Directive comprise minimum requirements for ELV - based on BAT - but also take into account the state or vulnerability of the receiving water.

1.2. Responsibilities for monitoring and inspection

Table 2: Responsibilities for monitoring and inspection

Member State	Responsibility for effluent monitoring	Responsibility for water quality monitoring	Responsibility for inspection
A	Self-monitoring (assessment of concentration and pollution loads) plus external control by Gewässeraufsicht (water inspectorates) or civil engineers.	Monitoring of water quantity and quality at state (Länder) and federal level, additional controls at state level by the water inspectorates.	Water surveillance authority (governor of province, or regional authority, depending on the size of installation): 3 levels of surveillance: - self-investigation; - qualified self-investigation by contracted experts; - surveillance authority.
B			
B (WAL)	No data.	Surface Water Department (part of DGRNE).	Division of Environment Police (part of DGRNE).
B (BCR)	Self-monitoring (via accredited labs), fixed in the permit; plus counter-analyses by IBGE/BIM	Inland surface water monitoring depends on the following classifications:	IBGE/BIM controls the effluents of the installations (with accredited laboratories), at least 5

Member State	Responsibility for effluent monitoring	Responsibility for water quality monitoring	Responsibility for inspection
B (FLA)	<p>(accredited lab).</p> <p>Legislation on effluent charges, specifies the companies authorised to conduct analyses.</p> <p>Self-monitoring (industry).</p>	<p>Navigable waters (including canals): monitored by Brussels Port.</p> <p>Non-navigable waters: usually monitored by the Administration de l'Équipement et de Déplacement (AED – Administration for Equipment and Transport), in some cases by IBGE/BIM or local authorities.</p> <p>Other non-specified watercourses: monitored by AED, IBGE/BIM (department 'Espace Vert'), local authorities, or owners, depending on the location.</p> <p>Groundwater: monitored by AED.</p> <p>Surface waters: VMM.</p> <p>Groundwater: AMINAL, Department of Water.</p> <p>Coastal waters: BMM - Belgian Scientific and Administrative Agency on Environmental Matters.</p>	<p>samples/year :</p> <ul style="list-style-type: none"> - when complaints are lodged; - as an action of a work program (during the year 2000, large and medium-sized polluters). <p>Groundwater is controlled by AED, IBGE/BIM and the 19 municipalities.</p> <p>Environmental Inspectorate Division of AMINAL (according to Flemish Decree on Environmental Permits and VLAREM I).</p>
DK	<p>Self-monitoring by the discharger (e.g. operator of STP).</p>	<p>Regional counties; Nation-wide Monitoring Programme (NOVA-2003).</p>	<p>Permit-issuing authority (local or regional council); frequency of supervision according to the Statute on Waste Water.</p> <p>Supervisory authority controls the requirements linked to permit.</p>
D	<p>Self-monitoring (according to state (Länder) ordinances).</p>	<p>Water authorities (different levels) of the states (Länder) according to LWG; international agreements apply to cross-border water bodies. Drinking water companies deliver data voluntarily.</p>	<p>Permit-issuing water authority (according to LWGs), frequency of supervision depends on the authority (exception: frequency for STP determined by UWWT Directive).</p>
SF	<p>Self-monitoring (in most cases by accredited laboratories).</p>	<p>Water Authority, regional environment centres under supervision of Suomen Ympäristökeskus (Finnish Environment Institute), data collected in data-bases.</p>	<p>Regional environment centres or municipal environmental protection authority.</p>
F	<p>Self-monitoring by the discharger. (Mayors are responsible for municipal discharges).</p>	<p>In general: The state (Ministère de l'Aménagement du Territoire et de l'Environnement – Ministry of Regional planning and Environment) and DIREN - Directions Régionales de l'Environnement – Regional Directorates for the Environment) are responsible for water quality (Agences de l'Eau (water agencies) are also integrated).</p> <p>Discrimination between navigable waters (public waters and waterways) and non-navigable waters.</p>	<p>Occasional inspections by:</p> <ul style="list-style-type: none"> - DRIRE: industrial discharges; - Mission Interservices de l'Eau: other discharges.

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Member State	Responsibility for effluent monitoring	Responsibility for water quality monitoring	Responsibility for inspection
GR	Self-monitoring plus monitoring by Prefectural Health Directorate (industry) or regional/prefectural authorities (STP).	Ministry for the Environment, Physical Planning and Public Works, which co-ordinates the regional and prefectural authorities.	Industry: - Prefectural Health Directorate; - Prefectural Directorate for the Environment. STP: - Prefectural authorities.
I	Self-monitoring.	- Agenzia Regionale per la Prevenzione Ambiente (ARPA – Environmental Protection Agency), supported by the Regions. - Agenzia Nazionale per la Protezione dell Ambiente (ANPA – National Agency for the Protection of Environment) co-ordinates collection of data and transmits them to the Ministries.	ARPA officers (local authorities); discharger has to provide all necessary information.
IRL	Self-monitoring as specified in licence plus inspections by Environmental Protection Agency and local authorities.	Local authorities in co-operation with Environmental Protection Agency.	Local authorities and Environmental Protection Agency.
LUX	Self-monitoring (as specified in permit) plus occasional inspection by the Administration of Environment.	Administration de l'Environnement (Administration of Environment).	Administration of Environment (approx. twice per year).
NL	Self-monitoring (frequency and parameters depend on discharge).	RWS (state waters) and water boards (regional waters); drinking water companies deliver monitoring data voluntarily.	Occasional unannounced inspection by the responsible water authority. The division of responsibilities according to the Wvo ¹ is currently under discussion. The responsibilities for inspection will probably be separated in the near future from the responsibilities to issue permits; a separate inspection agency is planned.
S	Self-monitoring (according to Environmental Code and specified in permit conditions). For some industries, the monitoring conditions are set by binding directives (Swedish EPA).	- Operators: operational monitoring of surface waters, groundwater, air and soil in the neighbourhood of installation: - Environmental authorities: national environmental monitoring system.	Depends on the type of activity or discharge: County Administration Board (CAB) for discharges requiring a permit (Type A and B). Local Environmental and Public Health Committee (EPHC) for discharges not requiring a permit (Type C and others).
UK UK (E&W)	IPC industries: self-monitoring. All others (IPPC industries, STP and farmers): Environment Agency monitoring programme.	Environment Agency monitoring programme: inland, coastal and groundwater. Monitoring of inland and groundwater also by water abstractors for quality assurance and control purposes. Coastal and estuarine waters monitored by Ministry of Agriculture, Fisheries & Food.	Environment Agency.

Member State	Responsibility for effluent monitoring	Responsibility for water quality monitoring	Responsibility for inspection
UK (NI)	Non-IPC industries: EHS; large non-IPC industries: self-monitoring (fixed in permit). STP: self-monitoring, check monitoring by EHS. IPC industries: self-monitoring, additional check monitoring by Industrial Pollution and Radiochemical Inspectorate (IPRI).	EHS, occasionally monitoring of the condition of the receiving water is required by industry (included in permit/authorisation).	EHS, the regulatory authority.
UK (SCOT)	Self-monitoring may be required by license, especially for IPC/IPPC processes/installations; SEPA has an audit monitoring programme (including inspection).	SEPA sampling programme for natural waters.	SEPA, typically unannounced inspections, frequency depends on quantity of discharge and type of installation (between 4 and 24 visits per year), according to guidance.

¹ Pollution of Surface Waters Act (Wet Verontreiniging Oppervlaktewateren).

1.2.1. Q4 and Q6: Responsibility for effluent monitoring and inspection

In most Member States considered in this report, the operators of industrial installations and sewage treatment plants are obligated to monitor their effluents themselves. The frequencies and parameters of this self-monitoring differ among the Member States, and may depend on the type and size of installation.

In **Ireland**, municipal STP - not requiring licences – are obligated to self-monitor their effluents and the Environmental Protection Agency is responsible for inspection.

An exception to this general rule is provided by the **United Kingdom**, where self-monitoring is required only at IPC industrial plants. All other installations are monitored by the Environment Agency (**England and Wales**), Environment and Heritage Service (**Northern Ireland**), or Scottish Environment Protection Agency (**Scotland**). Sewage treatment plants are self-monitoring in Northern Ireland, while in England and Wales the EA is also responsible for effluent monitoring.

In addition to the self-monitoring, inspections are carried out by the Member States' authorities to validate and control the quality of the data collected by the operators. The authorities responsible for inspection in most Member States are the authorities that issue the permits. Exceptions from this rule are **Finland**, the **Walloon Region**, **Italy** and **Luxembourg**. In Finland the inspections are conducted by the regional environment centres or the municipal environmental protection authorities, and in the Walloon Region by the Division of Environment Police. In Italy the local authorities (ARPA officers) check the effluents on-site, and in Luxembourg the Administration of the Environment inspects the installations, while the permits are issued by the Environment Ministry.

In **France**, **Sweden** and **Austria** the competent authority for inspections depends on the type of discharge. In **France** the DRIRE is in charge of industrial discharges while municipal discharges are controlled by the Mission Interservices de l'Eau. In **Sweden** the responsibility for inspection depends on the types of installations, categorised according to the discharge of dangerous substances, and the institution responsible for issuing the discharge permit; type A and B reflect the most environmentally hazardous activities, while Type C installations only

need to notify the EPHC of their activities: Type A and Type B are the responsibility of county administrative boards, whereas Type C and other installations are checked by local environmental and public health committees⁶. In **Austria** there is a dense system of surveillance under the governor of the state or the regional authority, depending on the size of the installation.

1.2.2. Q5: Responsibility for the monitoring of water quality

In most European Member States the quality of surface water is monitored by the water and/or environment authorities. The monitoring programmes usually involve various administrative levels (Austria, Belgium, Denmark, Germany, Finland, France, Greece, Italy, the Netherlands and Sweden). In **Germany** and the **Netherlands** the drinking water companies also contribute monitoring data on surface waters. In **Sweden** some industrial dischargers are obligated to gather and deliver monitoring data on surface waters, but only in the neighbourhood of the installation.

In **Ireland** primary statutory responsibility for monitoring water quality is assigned to local authorities. The Environmental Protection Agency prepares monitoring programmes, and coordinates, assists and reports the monitoring activities.

The **United Kingdom** is exceptional in that, monitoring tasks are carried out by the same central authorities (Environment Agency, Environment and Heritage Service and Scottish Environment Protection Agency) in charge of issuing permits and inspecting discharges from installations (see sections 1.1.1 and 1.2).

1.3. Preliminary conclusions on authorisation and control

This brief overview of the responsibilities and structures for authorising and controlling water pollution is summarised in the following conclusions and comments:

- The allocation of responsibilities for the authorisation and control of water pollution varies significantly among the Member States. In general terms, small (often non-industrial and low-risk) discharges tend to be controlled by local or regional authorities, and larger (industrial) discharges are subject to supervision by central authorities. The control of effluents from sewage treatment plants tends to be more decentralised than the control of industrial pollution. Only in the Netherlands is authorisation divided according to the size (and function) of the receiving water.
- The responsibilities for effluent monitoring and inspection, and for monitoring the quality of receiving waters (environmental quality monitoring) vary as well, but generally follow

⁶ Examples of categories A, B and C:
Textile industry (production of more than 200 tons per year): B,
Textile industry (production of less than 200 tons per year): C;
Pharmaceutical industry (production through biosynthetic processes based on a reactor volume of more than 10 m³): A,
Pharmaceutical industry (production through biosynthetic processes based on a reactor volume of less than 10 m³): B.

those for authorisation and control. The use of self-monitoring is widespread, normally in conjunction with quality controls or validation routines. Polluters and water users are in some cases obligated to share their monitoring data with the environmental authorities.

- In most Member States discharge permits or licences are based on (uniform or general) emission limit values (ELV) establishing minimum requirements which may not be exceeded if this would threaten the quality of the receiving water. ELV are often established specifically for certain industrial sectors or production technologies, and usually based upon the pollution reduction achieved by the best available technology (BAT), generally accepted techniques (GAT) or other levels of technology. The IPPC Directive has initiated a process of harmonisation in this area. In the case of effluents from sewage treatment plants, the Urban Waste Water Treatment Directive and its standards applies.
- Notably as a result of discussions in the IMPEL network, the chief environmental authorities in the Member States appear to be relatively well aware of the allocation of responsibilities and of the administrative practices in other Member States, compared to other aspects of water pollution control. Nevertheless, an additional exchange of experience and a process of policy-learning may help to improve the implementation of water pollution control policies.

2 Investigation and securing the evidence in cases of water pollution

The following chapter presents the information obtained on the methods to investigate incidents of water pollution by dangerous substances and to secure the evidence that may then be used in court or otherwise to impose penalties.

In this context, section 2.1, Table 3 gives an overview of the allocation of responsibilities and (potential) criminal liabilities in the Member States, as well as the legal status and the prosecution of such offences. Sections 2.1.1 to 2.1.3 examine these issues separately. Section 2.2, Table 4, outlines the measures, responsibilities, and effectiveness of procedures to prosecute incidents of water pollution by dangerous substances, and the corresponding regulations in the Member States are compared in sections 2.2.1 and 2.2.2.

2.1. Investigation and responsibilities

Table 3: Investigation and responsibilities

Member State	Investigating authorities	Legal status of water pollution	Liability	Penalties and sanctions
A	Police, Installation Inspectorate (= water surveillance authority), regional water authority (with support of the fire brigade).	<i>Crime, offence.</i>	Company, holder of permit, director/ head of technical department.	Fines, prison sentences, withdrawal of licence.
B B (WAL)	Police, Water Police, Water Authority.	<i>Offence.</i>	Company (since 02/07/1999), director of company (e.g. technical	Fines, prison sentences, withdrawal of licence.

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Member State	Investigating authorities	Legal status of water pollution	Liability	Penalties and sanctions
			director, or other person responsible).	
B (BCR)	Police of the 19 municipalities, public prosecutor (for crimes). Division Inspectorate (for offences): - IBGE/BIM for all types of water pollution; - AED for groundwater pollution only.	<i>Crime (under penal law), offence (under administrative procedures, specific to environmental legislation).</i>	Company (since 02/07/1999), director of company, other person responsible.	Fines, prison sentences, withdrawal of licence, closure of the polluting sections of the installation, others.
B (FLA)	Police, Water Police: AMINAL – AMI (civil protection).	<i>Offence.</i>	Company, director of company (since 02/07/1999), (e.g. technical director, or other person responsible.	Fines, modification of the permit, withdrawal of licence.
DK	Supervision Authority (shall assure compliance and can ask the police to investigate).	<i>Crime, offence.</i>	Normally the company, director of company (in cases of deliberate or negligent action).	Fines (in most cases), prison sentences (rare, often suspended sentence, up to 4 years), withdrawal of licence (only in serious cases), entry into the Environmental Responsibility Register.
D	Police, Water Police, Water Authority, Installation Inspectorate, public prosecutors. Responsibility depends upon the importance of the infraction.	<i>Crime, offence, irregularity.</i>	Private person such as director of company, or other person responsible for effluent discharge.	Fines, prison sentence (up to 5 years), withdrawal of licence.
SF	Police, water authority.	<i>Crime, offence.</i>	Company, director of company, or other person responsible.	Fines, prison sentences, withdrawal of licence, compensations etc.
F	'Préfet' of the 'Département' (civil security service).	<i>Offence.</i>	Company, person responsible.	Fines (FF 120,000 to 500,000, € 18,293.88 to 76,224.508), prison sentences (up to 2 years). Polluter is responsible for reparation of the damage
GR	Inland/ground waters: - Ministry for the Environment, and prefectural authorities. Coastal Waters: - Ministry of Merchant Marine.	<i>Civil, administrative and penal offence.</i>	Company, director of company.	Fines, prison sentences, withdrawal of licence.
I	Police.	<i>Crime.</i>	Violator.	Fines (LIT 10 to 200 mill., € 5,164.57 to 10,3291.38), prison sentences (up to 3 years), withdrawal of licence.
IRL	Police, Environmental Protection Agency (supported by local authorities).	<i>Offence (summary conviction, conviction on indictment).</i>	Company, person or other corporate body.	In case of summary conviction: Fines (max. IR £ 1,000, € 1,269.74), prison sentence (up to 6

Member State	Investigating authorities	Legal status of water pollution	Liability	Penalties and sanctions
				months). In case of conviction on indictment: (max. IR £ 25,000, € 31,743.45), prison sentence (up to 5 years). Polluter is responsible for reparation of the damage
LUX	Police, water authority, Administration des Douanes et Accises (Administration of Customs and Duties).	<i>Offence.</i>	Company director (e.g. technical director), or other person responsible or employee having criminal liability.	Fines (€ 250 to 125,000), prison sentences (up to 6 months), withdrawal of licence, closure of enterprise.
NL	Police, Water Authority (RWS / water board port authority), others (e.g. company).	<i>Crime (intentional pollution), offence (unintentional pollution), irregularity (less serious unintentional pollution).</i>	Usually the company, or the person having criminal liability.	Fines, prison, withdrawal of licence, costs incurred by mitigation.
S	Police, Installation Inspectorate, public prosecutors.	<i>Crime (Penal Law), offence.</i>	Company director, other person responsible.	Fines, prison sentences, withdrawal of licence, prohibition to continue an unlicensed activity.
UK				
UK (E&W)	Installation Inspectorate (Environment Agency, Coastguard Agency for shipping accidents).	<i>Crime.</i>	Company, person responsible for pollution caused.	Fines, prison sentences, costs incurred by mitigation.
UK (NI)	EHS (Northern Ireland Department of the Environment) in co-operation with agents (e.g. Fishery Boards).	<i>Crime.</i>	Company (holder of authorisation), individuals.	Fines (max. £ 20,000, € 31,744.7), prison (up to 3 months).
UK (SCOT)	SEPA.	<i>Crime.</i>	Company, person responsible for the discharge caused/ permitted.	Fines; withdrawal of licence, imprisonment in very serious incidents.

2.1.1. Q8 and Q9: Investigating authorities and legal status of offence

In most countries (**Austria, Belgium, Denmark, Finland, Germany, Luxembourg, the Netherlands, and Sweden**) the police or the water police, and the relevant water authority are responsible to act in cases of water pollution by dangerous substances. The responsibility will differ according to the severity of an offence. In these countries, the administrative (environmental or water) authority usually takes the first step to assess the reason for a pollution incident. In case it is suspected to be a criminal offence, the administrative authority has to notify the police, which then take over the investigation. The administrative authority will normally assist the police in carrying out the investigation.

In the **United Kingdom (England and Wales, Northern Ireland, and Scotland)** it appears that the water authorities, and not the police, are solely responsible for investigating water pollution incidents. In the United Kingdom and in Ireland it is generally a (criminal) offence to introduce any polluting substances into natural waters. Exceptions from this general rule

can be provided by authorisation to discharge the substances. In **Italy** the police alone is obligated to follow up water pollution incidents.

In most Member States (**Austria**, the **Brussels Region**, **Denmark**, **Germany**, **Finland**, the **Netherlands**, and **Sweden**), polluting a water with dangerous substances is either a crime (under penal or criminal law) or an administrative offence (under e.g. environmental legislation), depending on the severity of the incident. In the other five cases (the **Walloon Region**, the **Flemish Region**, **France**, **Greece** and **Luxembourg**) water pollution by dangerous substances is generally an administrative offence, whereas in **Italy** and the **United Kingdom** (**England and Wales**, **Northern Ireland**, and **Scotland**) it generally constitutes a crime. The information summarised in this paragraph needs to be interpreted with caution. There appear to be varying definitions of the legal terms "crime", "offence" etc. In recognition of this fact, the text in the relevant column has been set in italics.

2.1.2. Q10: Liability

In **Germany**, **Italy**, **Luxembourg** and **Sweden**, “the criminal liability can only rest with a private person. In general the managing director would be liable for a criminal offence by a limited company, but if the responsibility and the powers are clearly delegated to a person with an independent position and with complete and necessary resources, this person could be the one who would be prosecuted.” (answer from Sweden to question 10 of the questionnaire) “Companies as such are not prosecuted, as legal entities do not have criminal liability [...]” (answer from Luxembourg to question 10 of the questionnaire)

In the other Member States - **Austria**, **Belgium** (the **Walloon Region**, the **Brussels Region**, and the **Flemish Region**), **Denmark**, **Finland**, **France**, **Greece**, **Ireland**, the **Netherlands** and the **United Kingdom** (**England and Wales**, **Northern Ireland**, and **Scotland**), - either the company can be prosecuted, or the private person who is liable. In these countries, companies may have penal responsibility.

In case of a water pollution incident in the **Netherlands**, the company is prosecuted. If the legal procedure ends with a prison sentence for the polluter, the person within the company being liable for the incident will be sentenced (director, owner, or employee). The prosecution of an individual person is also possible in the Netherlands, if the person is the holder of the permit and the conditions of the licence are not met.

2.1.3. Q11: Penalties and sanctions

Cases of water pollution by hazardous substances may entail a variety of consequences for the company or person liable. In **Austria**, **Germany** the **Walloon Region**, the **Brussels Region**, **Denmark**, **Finland**, **Greece**, **Italy**, **Luxembourg**, the **Netherlands**, **Sweden**, and **Scotland** fines or prison sentences can be imposed; if the pollution is not stopped, the licence for an activity of the company can be withdrawn.

In **France**, **Ireland**, **England and Wales**, and **Northern Ireland** fines can be imposed on the company or on a private person in instances of water pollution with hazardous substances. The director of the company or other persons liable can be punished with a prison sentence.

In contrast to the countries mentioned above, the possibility to withdraw the license, when a pollution incident occurs was not reported for France, Ireland, England and Wales and Northern Ireland. Although only reported by **Denmark, France, Ireland,** and the **Netherlands**, it is assumed that in most other Member States the polluting company can also be made responsible to repair the damage caused (e.g. restocking of fish) and may be obligated to pay compensation.

2.2. Securing the evidence

Table 4: Securing the evidence and effectiveness of investigation

Member State	Responsible authority	Securing of evidence	Effectiveness of investigation
A	Police, Installation Inspectorate (Gewässeraufsichtsbehörde / Water Surveillance Authority), regional water authority.	All as required: - Photographic evidence, - hearing of accused, - hearing of witnesses - inspection of records - water sampling, etc.. According to the "Austrian General Administrative Procedure Act", § 46.	Grey area: Unknown, but the impact of unregistered incidents is considered to be of minor importance. Effectiveness: System with long tradition, considered as effective to fight water pollution. Permit holders generally accept the responsibility to fulfil their duties.
B B (WAL) B (BCR) B (FLA)	Police, water police, Installation Inspectorate, Water Authority. Police, Division Inspectorates: IBGE/BIM for all water bodies, AED for groundwater, the municipalities (19) for municipal waters. Water Police: AMINAL-AMI.	All as required (see above). All as required (see above) plus sealing of installation and by public reports. All as required (see above).	Grey area: No comment. Effectiveness: No comment. Grey area: Difficult to estimate. Effectiveness: Until 1999: not very effective. As public prosecutor decides by penal law whether to prosecute or not, water pollution incidents were rarely prosecuted. Since 1999: introduction of new administrative procedure in environmental matters: the environmental administration can impose severe fines; greater effectiveness expected. Grey area: No comment. Effectiveness: No comment.
DK	Police, assisted by supervising authority providing the evidence.	All as required (see above). Legal basis: Act on Administration of Justice.	Grey area: Unknown, but considered a minor problem. Effectiveness: Because of poor or lacking evidence, some cases never get to court. But in cases in which a formal complaint is lodged, prosecution usually follows.
D	Police, water authority, public prosecutors. No differentiation by installation size or type, or by type of receiving waters.	All as required (see above). General regulations on the prosecution of criminal or administrative offences apply.	Grey area: Unknown. Effectiveness: Public control of water pollution is incomplete, but it is considered very effective in those areas where it is applied. Enforcement of regulations on water pollution control is generally

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Member State	Responsible authority	Securing of evidence	Effectiveness of investigation
			effective.
SF	Police, Environmental protection authorities (regional environment centres – for IPPC installations and in any water pollution incident, municipal environmental protection authorities).	All as required (see above), plus self-monitoring reports. Criminal/administrative investigation based on informal procedure.	Grey area: No recent incidents, leaching from point sources possible. Effectiveness: Only accidents resulted in water pollution by dangerous substances in recent years.
F	National authorities: Conseil Supérieur de la Pêche (Superior Fishery Council), Gendarmerie and other public authorities.	Water sampling.	Grey area: < 5 %. Effectiveness: Good for incidents causing fish kills (because they are investigated by the Superior Fishery Council). In cases of accidents and discharges in large water bodies registration is more complicated and a better monitoring system would be required.
GR	Central or prefectural authorities.	All as required (see above).	Grey area: No comment. Effectiveness: In case of a confirmed incident, all necessary measures are taken.
I	Police, NOE – the ecology operative group of "Carabinieri".	All as required (see above).	Grey area: Unknown, in the south of Italy control is weaker. Effectiveness: Still very weak. Effectiveness may increase with the new Act 471/99 the.
IRL	Police, Environmental Protection Agency (supported by local authorities).	No data.	No data.
LUX	Police, water authority (Administration of Environment), Administration of Customs and Duties.	All as required (see above).	Grey area: 5 %. Most incidents are easily detected by the public, only few small oil spills possibly pass unnoticed. Effectiveness: Incidents by really dangerous substances are rare. Prosecution is effective and has a preventive effect (offender fears public exposure).
NL	Water authorities as licensing authorities (Water Agency or water boards), port authorities.	All as required (see above), additional modern techniques (e.g. infrared filming or remote sensing, oil or waste comparison by gas chromatography).	Grey area: 20 %. Effectiveness: Very effective, but labour-intensive.
S	Police responsible, but close co-operation with supervising authorities is required for successful investigation.	All as required (see above) plus additional measures needed to secure evidence. According to Swedish criminal law.	Grey area: 5 %. Effectiveness: Considered rather effective in case of accidents, more troublesome in cases of diffuse leakage ("steady dripping") of dangerous substances, which is more difficult to discover.

Member State	Responsible authority	Securing of evidence	Effectiveness of investigation
UK			
UK (E&W)	EA and Coastguard Agency.	All as required (see above). In accordance with Police and Criminal Evidence Act, and (Environment and Coastguard) ¹ Agency's enforcement policies.	Grey area: 5%. Effectiveness: Essential for deterrent purposes, bad publicity is feared by every Board.
UK (NI)	EHS (Northern Ireland Department of the Environment), Fisheries Bodies in fish kill events.	All as required (see above) except hearing of witnesses.	Grey area: Unknown for diffuse discharges, considered relatively small for industrial/point discharges. Effectiveness: Effective deterrent, but there are public concerns that fines are too low to constitute an effective deterrent.
UK (SCOT)	SEPA.	All as required (see above).	Grey area: Unknown. Effectiveness: Pollution incidents are regarded as very serious and SEPA will always take enforcement action when EQS are exceeded or environmental damage is caused.

¹ The agency was not specified; authors interpretation is that it is likely to be the EA and the Coastguard Agency.

2.2.1. Q12 and Q13: Responsible authority and measures to secure evidence

In most Member States (**Austria**, the **Walloon Region**, the **Brussels Region**, **Denmark**, **Germany**, **Finland**, **France**, **Ireland**, **Luxembourg**, the **Netherlands** and **Sweden**), when pollution incidents are reported, the police, in close co-operation with the water authorities, is responsible for investigation and for securing the evidence. In the **Flemish Region**, the AMI or civil protection division of AMINAL, and in **Italy** the ecology group of the “Carabinieri” are responsible for following up the events.

In **Greece** and the **United Kingdom** (**England and Wales**, **Northern Ireland**, and **Scotland**) the authorities responsible for issuing permits are also responsible to take action in water pollution incidents. Hence, the prefectural health authorities in co-operation with the Ministry are responsible for investigation in Greece. In the United Kingdom it is the Environment Agency and Coastguard Agency in England and Wales, the Environment and Heritage Service (Department of the Environment) in co-operation with its agents in Northern Ireland, and SEPA with its agents in Scotland.

The following measures are undertaken in nearly all countries to prosecute the company or the person liable, and to secure the evidence:

- photographic evidence;
- hearing of the accused and of witnesses;
- inspection of company records;
- water sampling on site and in the neighbouring environment;
- any additional measures needed.

The exceptions are:

Northern Ireland, where all measures listed above are common, except hearing of witnesses, and **France**, where the most important measure to secure evidence is the sampling of water; no information was available on whether other measures are also undertaken. No information was available for **Ireland**.

2.2.2. Q14 and Q15: Effectiveness of investigation

The survey revealed that Member States have some difficulties in assessing or estimating the total number of water pollution incidents, as they are not entered into a central record. The proportions of unreported incidents (“grey areas”) in Table 4 (last column) are estimates. Only **France, Luxembourg, Sweden** and **Scotland** estimated the proportion (ranging from 5 to 20 % of all incidents in the respective countries). In **France**, incidents causing fish kills are usually noticed and prosecuted (by the Superior Fishery Council), while other accidents and discharges into large water bodies are often not recorded, because the monitoring system is insufficient. The other countries either did not provide any information, indicated it was unknown, or commented that the number of unrecorded incidents was quite low. The data are too weak a basis for comparisons or evaluations.

With regard to the effectiveness of prosecution in water pollution incidents, the following differences exist among the Member States surveyed:

- There are a number of countries that consider prosecution procedures and their deterrent effects on the behaviour of companies and other possible polluters as quite effective (**Austria, Germany, Luxembourg, the Netherlands, Scotland** and **Sweden**). Effective prosecution improves the willingness of permit holders in general to fulfil licence conditions.
- In **Denmark** insufficient evidence constitutes a problem, because it often prevents prosecution in court. When a pollution incident is taken to court, however, the polluter is usually convicted.
- In **Northern Ireland** and in **England and Wales** prosecution seems to be quite effective and have an important deterrent effect, although there is public concern that the fines in Northern Ireland may be too low.
- In **Italy**, incidents of water pollution by dangerous substances are often not reported or not prosecuted effectively.. The same applied until recently in the **Brussels Region**. Modifications in the system have been initiated in order to improve the effectiveness of prosecution in these countries

2.3. Preliminary conclusions on investigation and securing the evidence

As stated in the introduction to this report, there appear to be varying definitions of the legal terms "crime", "offence" etc. In view of Article 23 "Penalties" of the Water Framework Directive (WFD), definitions of the terms need to be agreed upon. The draft Framework Decision on the protection of the environment through criminal law (Justice and Home

Affairs), to which the European Parliament gave its Opinion on 7 July 2000⁷, may broaden the basis for reflections beyond the requirements of the WFD. The same applies to the Commission Proposal for a Directive of the European Parliament and of the Council on the Protection of the Environment through Criminal Law (COM(2001)139 final, 2001/0076(COD) of 13 March 2001).

In general, the following aspects of investigation and securing of evidence are noteworthy in the different approaches in the Member States:

- The total number of water pollution incidents, the number of breaches of the law, and the proportion of unreported incidents are generally unknown in the Member States. The few estimates of unreported events that have been provided fall into a relatively narrow range (5 to 20 % of all incidents), but the sample and the estimation techniques do not allow drawing meaningful conclusions.
- In general, the investigation of (unlawful) water pollution incidents is divided between environmental and police authorities, with a strong role for environmental authorities. There is only one Member State (Italy) in which the police is solely responsible. The task of securing evidence (with a view to obtaining convictions in court) normally lies with the police authorities; the exceptions here are Greece and the United Kingdom. The details of the arrangements vary considerably, and the consequences of the different allocations of enforcement responsibilities remain unclear.
- In most Member States, prosecution of unlawful water pollution can be brought against both, individuals (natural persons) and companies (legal persons). In this respect, the draft Framework Decision on the protection of the environment through criminal law or the proposed EC Directive on the same matter may provide an incentive to strengthen the enforcement in those Member States where legal persons have no criminal liability (**Germany, Italy, Luxembourg and Sweden**).

In most Member States, unlawful water pollution is punishable by fines or prison sentences, and environmental licences can be withdrawn in specific cases. There is insufficient empirical evidence to assess the relative importance of actual convictions. In those countries in which prosecution is admissible, it is seen as an useful and effective instrument to control water pollution and enforce environmental regulations. In view of Article 23 WFD, an exchange of information with a view to harmonising the legal approaches would be useful.

⁷ PE 292.934, p. 12.

PART II: EFFLUENT CHARGING SYSTEMS

3 Comparison of effluent charging systems

This part of the report is dedicated to the description and comparison of the effluent charging systems in the Member States of the European Union. The information is mainly derived from the questionnaires (16 questionnaires were completed and returned by 13 Member States) and other material delivered by the national officials of the Member States, including legislative acts and explanatory reports. Two questionnaires (Spain and Portugal) were not returned before the deadline (15 March).

Additional sources of information on effluent charging systems were reviewed, in particular the “Database on environmental taxes in the European Union, plus Norway and Switzerland” (Forum for the Future, 2000), the “Database on environmentally related taxes” (OECD, 1998), the OECD report “Industrial Water Pricing in OECD Countries” (OECD, 1999), and “The price of water – Trends in OECD Countries” (OECD, 1999a).

Part II of this report follows the structure of Part I: Each of the sections begins with a table summarising the answers on specific aspects of the charging system in the 16 questionnaires returned (for the questions in the questionnaire see 8.5, Part IV). This information is then discussed in the succeeding sections. Information in the tables derived from sources other than the questionnaires is indicated by footnotes.

3.1. Overview of effluent charging systems

Table 5 gives an overview of the existing effluent charging systems, indicates countries without such systems, and points out current and past initiatives to establish them. It also summarises some general remarks made by the national authorities with regard to their charging systems, plus additional information from other sources.

In the following chapters, all fees for direct discharges into natural waters are referred to as **effluent charges**, or simply charges, regardless of whether they constitute taxes, levies, or administrative fees. The corresponding regulatory systems are called effluent charging systems (ECS).

Table 5: Overview of effluent charging system (ECS)

Member State	ECS	Collecting authority	Effluents	Actors paying	Exceptions
A	No ECS ² .				
B	In all three regions: effluent and sewerage charging systems feeding into the same budget ¹ . Earmarked to finance water quality management and public sewerage infrastructure ¹ .	See below for the three Regions.	Effluent charge: direct and indirect industrial discharges (plus regional charges, see below), except effluents from STP ¹ . (Sewerage charge: households and SME) ¹ .	Effluent charge: industrial dischargers, and others ¹ . (Sewerage charge: households and SME) ¹ .	Direct discharges from STP.

Member State	ECS	Collecting authority	Effluents	Actors paying	Exceptions
B (WAL)	<p>Industrial plants pay effluent charges (formally a tax) based on measured volume and sampling data, and on sectoral conversion factors when sampling is impossible.</p> <p>ECS Introduced in 1990¹.</p> <p>Calculation is made separately for each type of water.</p>	<p>Calculation: Ministère de la Région wallonne – Division de l'Eau DGRNE – Direction Taxe & Redevance (Ministry of the Walloon Region – Water Division – Department Taxes & Charges).</p> <p>Charge collector and recipient: Ministère de la Région wallonne – Secrétariat général – Division de la Trésorerie (Treasury Division of the General Secretariat).</p>	<p>Direct and indirect industrial discharges, effluents or leakage from landfills, direct discharges from agriculture, minor effluent releases, cooling water.</p>	<p>Any waste water discharger (except operators of municipal STP, not for rainwater).</p>	<p>Industrial plants with less than 7 employees, except if their discharge permit specifies that they discharge industrial waste water, or the authority can prove they are doing so.</p> <p>(Households that operate an individual STP do not pay the domestic sewerage charge of 0.4 Euro/m³.)</p>
B (BCR)	<p>Effluent tax system ('taxe sur le déversement des eaux usées') for all types of effluents (from households and industry) introduced in 1996.</p> <p>It feeds into a common budget, earmarked to finance public sewerage services and water pollution control.</p>	<p>Calculation: Institute Bruxellois pour la Gestion de l'Environnement (IBGE - Brussels Institute for Management of the Environment).</p> <p>Collection: water utility.</p> <p>Recipient: Government of Brussels Capital Region.</p>	<p>Direct* and indirect industrial discharges, effluents and leakage from landfills, agricultural discharges, minor effluent releases.</p> <p>* Most factories in BCL discharge into sewers because they lack any other choice.</p>	<p>Direct and indirect industrial dischargers (not STP).</p>	<p>- Industries not mentioned in Annex II of BCR law 29/3/96.</p> <p>- Industrial plants with less than 7 employees</p> <p>- Foreign and international institutions in BCR</p>
B (FLA)	<p>Financing tax system (introduced in 1991¹) with regulatory effects; changes planned to better discriminate between direct and indirect discharges (earmarking).</p>	<p>Vlaamse Milieumaatschappij (VMM - Flemish Environment Agency).</p>	<p>Direct and indirect industrial discharges, effluents and leakage from landfills, agricultural discharges, and cooling water.</p>	<p>Industrial and agricultural direct effluent dischargers.</p>	<p>Public STP and households with private waste water treatment.</p>
DK	<p>Effluent tax introduced in 1997¹.</p> <p>Direct dischargers pay on the basis of volume of solids discharged into all types of natural waters.</p> <p>Instrumental-incentive charges¹.</p>	<p>Regional offices of Skatteministeriet (Danish Ministry of Taxation) collect charges from industry and STP operators.</p> <p>Local councils collect effluent charges from small direct dischargers.</p>	<p>All direct discharges into all types of natural waters except rainwater discharged directly.</p>	<p>All direct dischargers: operators of STP, industrial dischargers and units not connected to sewer system¹.</p>	<p>Discharges of rainwater, storm-water discharges and discharges of groundwater- or surface water.</p> <p>Mussel plants, fish farms, if the source of water supply and the receiver are identical.</p>
D	<p>Federal effluent charge (Abwasserabgabe) introduced in 1976* (charge collected since 1981).</p> <p>Incentive charge¹.</p> <p>* Federal Effluent</p>	<p>Umweltministerien der Länder (State Environment Ministries), they may also delegate the collection of charges to the municipalities.</p>	<p>All direct discharges into natural waters (including groundwater): industrial and STP discharges, rainwater, agricultural discharges, minor effluent releases,</p>	<p>Any effluent discharger.</p>	<p>(§ 10 AbwAG) Water that has not been changed in character by use. Water used for mining and discharged into artificial waters. Discharge of</p>

Member State	ECS	Collecting authority	Effluents	Actors paying	Exceptions
	Charges Act - last amended in 1998.		and domestic sewage.		rainwater under certain conditions.
E (no questionnaire) ¹	Water effluent charge (waste water effluent charge – national scheme 'canon de vertido') for discharges to surface waters ¹ . Financing ¹ .	Levied by the Drainage Basin Authorities (DBA).	Direct discharges to surface waters, including industrial discharges and discharges from STP ¹ .		
F	Distributive charging scheme (redevance pour pollution) introduced in 1964 ⁵ . The revenue is returned to the polluter in the form of subsidies for pollution abatement. <i>Calculation will soon be changed due to a new water act (in preparation).</i>	Municipality, or in case of delegation the concessionaire collects the "redevance" (included in the water bill) from the households. Agences de l'Eau (Water Agencies) receive the "redevance".	All discharges to surface waters and sewers are subject to the charge ¹ .	Households (water bills), industry and agriculture. Non-domestic dischargers (large industries) are charged for direct discharges, and households and SME are charged indirectly – water utilities pay the charge for SME and pass them on to the client ¹ .	Effluent charges from STP. Municipalities < 400 inhabitants ⁵ .
SF	No ECS ² .				
GR	No ECS.				
I	No ECS.				
IRL	No ECS ³ .				
LUX	No ECS ² .				
NL	Water pollution charges (pollution levy* / tax**) apply to all direct and indirect dischargers (industry, agriculture, households). * into state waters; ** into local waters. Financing quality management of local and state waters (incl. STP).	Bureau Verontreinigingsheffing Rijkswateren (Office for Pollution Taxes State Waters). Waterschappen (Water Boards) collect taxes for discharges into local waters.	Industrial and STP discharges*, agricultural discharges, effluents and leakage from landfills, minor effluent releases and domestic sewage. * STP operators only pay 10 % of the tariff for industry.	Dischargers to surface waters and sewerage systems are liable to the charge.	No exceptions. Note: Information from the database ¹ indicates that discharges from STP are exempt, but questionnaire states that charges are merely reduced.
P (no questionnaire)	No ECS ⁴ .				
S	No ECS. Current initiative to introduce a tax on N an P.				
UK UK (E&W)	ECS for discharges into surface waters and groundwater, introduced in 1992 ¹ . Earmarked for activities associated with granting and	Environment Agency.	Industrial and STP discharges, agricultural discharges, effluents and leakage from landfills, minor effluent releases and	Permit holders (IPC/IPPC/ Waste and discharge authorisations).	Sewage effluent below minimum discharge volume (see Scheme of Charges).

Member State	ECS	Collecting authority	Effluents	Actors paying	Exceptions
	monitoring discharge licenses (See EACS, IPC). <i>Statement of intent concerning a possible introduction of water pollution charges published in 1997¹.</i>		domestic sewage, contaminated surface water runoff from commercial locations.		
UK (NI)	No ECS. Administrative fee. <i>Proposed ECS:</i> <i>Similar to system in E&W, planned for 2002 under Water Order (NI) 1999.</i>	Regulatory authority (EHS).	IPC processes (direct and indirect discharges). <i>Proposed ECS:</i> <i>Industrial plant discharges, effluents and leakage from landfills, minor effluent releases and domestic sewage, site drainage.</i>	IPC fees paid by operators. <i>Proposed ECS:</i> <i>All dischargers into natural waters.</i>	No exceptions. <i>Proposed ECS:</i> <i>STP and private sewage disposal exempted.</i>
UK (SCOT)	Charges designed to cover SEPA's costs for regulation of water pollution control.	Scottish Environment Protection Agency (SEPA).	Direct effluents from industry and STP, rainwater, agricultural discharges, landfill effluents, minor domestic sewage, fish farms.	All dischargers.	Surface waters and small domestic sewage discharges are only charged if licensed by SEPA.

¹ Information is from a "Database on environmental taxes in the European Union, plus Norway and Switzerland" (Forum for the Future, 2000). For an extract from the database see section 8.3 (annex).

² Despite several proposals in recent decades, no ECS has been established yet.

³ There is a licence fee for discharge permits (collected by local authorities) to recover the administrative and monitoring costs incurred by direct discharges into natural waters. The revenue collected remains with the local authority to maintain STP and other water infrastructure. STP are not subject to licence fees.

⁴ Introduction expected in the near future (Forum for the Future, 2000).

⁵ Buckland and Zabel, 1998.

3.1.1. Q16: Effluent charging systems in Europe: status and trends

Systems to collect charges for direct discharges of effluents exist in seven Member States: Belgium (all three regions), Denmark, France, Germany, the Netherlands, Spain, and the United Kingdom. The UK has so-called "effluent charging systems" in England and Wales, as well as in Scotland; a similar system is due to be introduced in Northern Ireland in the near future. The UK system is designed to recover the costs incurred by the administration and control of discharge permits and does not provide incentives for pollution abatement. In England and Wales, the Government has published consultation papers addressing the introduction of an effluent charging system, additionally to the existing system of "administrative fees" (Forum for the Future, 2000). The additional system should set incentives for pollution abatement and the application of clean technology, and promote the polluter pays principle in England and Wales.

The other eight Member States of the European Union (Austria, Finland, Greece, Italy, Ireland, Luxembourg, Portugal, and Sweden) do not collect fees for direct discharges of

effluents into natural waters, but recent initiatives in most of these countries show that this economic instrument is growing in importance. In Portugal there appear to be actual plans to introduce a charging system (Buckland and Zabel, 1998), and there are or have been a number of initiatives to establish effluent or pollution charges in Austria, Finland, Luxembourg, and Sweden.

Despite numerous proposals over the decades, effluent charges have not appeared in the tool kit of environmental policy in **Finland**. The estimated annual revenue of approximately €600 mill. of a charging system proposed in 1991 raised concerns among the different government departments and other actors in Finland regarding the financial burden and possible distortions of competition in Europe. The debates have also been dominated by various other aspects, such as decisions on the earmarking of the revenue, political factors, and disagreements on the design of the charging system (Parkkinen, 2000). Instead of introducing a system, the former water protection fee was repealed as part of a comprehensive reform of environmental legislation in 2000 (Parkkinen, 2000). This former fee charged some large polluters on a case by case basis, and the collected revenues were earmarked for water protection activities. The charges were too low, however, to provide incentives to reduce pollution levels (Parkkinen, 2000; OECD, 1999).

In the mid-nineties, the government of **Luxembourg** elaborated a project on waste water charging very similar to that of the Walloon Region, but the project was abandoned due to criticism by the municipalities, which feared the resulting increase in water prices¹. No effluent charging system exists in **Sweden**, but the authorities may impose fees for their administrative activities (including licence reviews, supervision and inspection), and for clean-up activities. The government recently proposed a new tax on the use and discharge of water, and is currently studying a system of fees for the environmental release of nutrients (OECD, 1999).

The environmental administrations in some Member States now appear to be hoping or waiting for a Community initiative promoting the establishment of effluent charging systems in the Member States. Such an initiative could be taken in consequence of the requirement in the Water Framework Directive that account should be taken of the principle of cost recovery, including environmental and resource costs. It should be noted, however, that there is a great variety of licensing, monitoring and enforcement systems in the Member States, and significant differences in the existing effluent charging systems (documented in this report). Against this background, any Community measure would need to be drafted carefully and avoid prescribing detailed design characteristics for the charging systems.

3.1.2. Q17: Authority responsible for collecting effluent charges

National, regional, or local authorities can be responsible for collecting the effluent charges. In general, these are the same authorities that grant the discharge permits, but sometimes different divisions (taxation) within these authorities. In some of the countries the division of

¹ Hansen, P. 2000, Luxembourg, personal communication, 8 September 2000.

competence between the authorities depends on the type of discharger, on the size of the treatment plant, or on the type of receiving water.

While in centralised countries such as the United Kingdom, the central environmental authorities - the Environment Agency for England and Wales and its Scottish equivalent, the Scottish Environmental Protection Agency (SEPA) – collect the charges, regional and local offices are responsible for this task in Denmark and Germany. The authorities that collect effluent charges differ in the three regions of Belgium: in the Walloon Region it is the regional Ministry (Ministère de la Région wallonne), in the Flemish Region the Flemish Environment Agency, and in the Brussels Region the water utilities.

In France, pollution fees are collected from the households by the municipalities (or concessionaire in case of delegation) via the water bill, while the Water Agencies collect the pollution levy from industry. In Spain it is the Drainage Basin Authorities that are responsible for the collection of effluent charges.

A unique division of responsibilities exists in the Netherlands. It is determined by the ‘type’ of receiving water body. The Office for Pollution Taxes State Waters collects effluent charges for discharges into state waters², whereas polluters discharging into local waters pay their charges to the Water Boards.

3.1.3. Q18, 19 and 20: Effluents, actors obligated to pay, and exceptions

The types of effluent subject to ECS and the actors obligated to pay differ between the effluent charging systems. In **Denmark**, **Germany** and **Spain** effluent charges are only levied on “direct discharges” of effluents into natural waters (as defined in the Glossary). “Direct discharges” include:

- Industrial effluents;
- agricultural discharges;
- discharges from sewage treatment plants;
- discharges and leakage from landfills;
- direct rainwater discharges; and
- minor effluents such as domestic sewage from decentralised treatment facilities.

The actors that pay the charges are usually the permit holders, i.e. the dischargers of the effluents (companies, farmers, operators, etc.). All of these systems provide for exemptions of certain effluent types: In **Denmark**, for example, discharges from mussel plants, fish farms and overflows from combined sewage collecting systems and stormwater discharges are exempted from paying the charge (tax). In **Germany**, no effluent charge is levied on rainwater from industrial plants not exceeding the size of three hectares. The rainwater from railways is also exempt. There was no information available for **Spain** on this issue.

² State waters include the main surface water bodies managed by the government, such as the rivers Rhine and Meuse, and Lake Ijssel (OECD, 1999: p. 151).

The effluent charging system in **Belgium** (all three regions), in **France**, and in the **Netherlands** applies the same economic instrument in charging for direct discharges (into surface waters) and indirect discharges (into the public sewer system, including households). Indirect industrial and household discharges into the public sewerage system are thus included in the ECS, so that direct and indirect industrial dischargers contribute to the budget of the ECS as do households and SME. Municipalities with less than 400 inhabitants are exempted from paying the effluent charge³. In all three regions of **Belgium** and in **France** the effluents from sewage treatment plants into natural waters are exempt from the charge, and in the **Netherlands** the operators of STP only pay 10 % of the industrial rate.

As the ECS in **England and Wales** and in **Scotland** are linked to the permits, effluent charges apply only to those direct discharges subject to licensing (IPC and IPPC installations, STP, and others). The charges are paid by the permit holders (i.e. companies, STP operators, etc.).

3.2. Calculation method and charging basis

This section explains and compares the calculation methods and bases to assess the amounts of effluent charges that are to be paid in the different charging schemes of the Member States.

Table 6: Calculation system for effluent charges

Member State	Pollution parameters	Calculation methods	Charging basis
B B (WAL)	Volume, SS, COD, N _{tot} , P _{tot} , heavy metals, cooling water.	T = b*CP. b = BEF 360 per p.u. (pollution unit) CP is calculated as the total number of pollution units discharged within a year: - either based on actual measurements of pollution parameters, or - estimated on the basis of coefficients (by sector).	Based on actual parameter measurements, measured water consumption, or (very rarely) based on values specified in the discharge permit. If charge is calculated on the basis of measurements and sample results, the dischargers have to collect and analyse samples at a frequency determined by agreement between the plant and the Ministry of the Walloon Region.
B (BCR)	Volume, SS, BOD, COD, N _{tot} , P _{tot} , heavy metals.	The following equation applies to all direct and indirect industrial dischargers: T = a*Vr + b*CP. T is the resulting tax (effluent charge), Vr the volume, a the volumetric factor for the use of the public sewage system (a is zero for direct dischargers). CP is the pollution charge calculated with measured parameters, or estimated (for smaller companies). The factor b is a monetary unit to be paid for each CP.	Based on actual parameter measurements (if analysed) – pollution load and measured water consumption (domestic and industrial).

³ In the river basin of Seine-Normandie only 2,400 out of 8,800 municipalities pay an effluent charge but 90 percent of the population of the river basin lives in these 2,400 municipalities (Buckland and Zabel, 1998).

Member State	Pollution parameters	Calculation methods	Charging basis
		<p>There are two methods to calculate the effluent charge ('taxe'), depending on the number of pollution units:</p> <p>1. Below a threshold of:</p> <p>a) 20 mill. p.u. for indirect discharges, and</p> <p>b) 50 mill. p.u. for direct discharges</p> <p>the CP is calculated from the estimated water consumption (based on a fixed pollution load) (households and SME).</p> <p>2. Above this threshold (industry) the charge CP is calculated according to the water parameters analysed¹.</p>	
B (FLA)	Volume, SS, BOD, COD, N _{tot} , P _{tot} , heavy metals, cooling water.	Based on measurements (discharge volume, discharge contents), or on conversion coefficients.	Based on actual parameter measurements and measured water consumption, for cooling water based on values specified in the discharge permit.
DK	BOD, N _{tot} , P _{tot} .	<p>Based on discharge volume and contents:</p> <p>DKR 20 (€2.67) per kg N_{tot}, DKR 110 (€ 14.67) per kg P_{tot}, DKR 11 (€ 1.47) per kg BOD₅.</p> <p>These rates apply to any effluent discharged into any type of natural water.</p>	<p>Major dischargers pay on basis of measured values of discharged solids (concentration x consumption measured).</p> <p>Minor dischargers (e.g. households) pay on basis of standard rates (water consumption).</p>
D	Volume, COD, P, N, AOX, heavy metals, fish toxicity.	<p>Based on the 'toxicity' (Schädlichkeit) of effluent expressed as pollution units (p.u.) – 1.5 p.u. reflects approx. the 'toxicity' of the untreated waste water of one inhabitant per year.</p> <p>Rate per p.u.: 1981: DM 12 (€6.14), until 1985 annual increase of DM 6 (€ 3.07) 1986: DM 40 (€20.45), 1991: DM 50 (€25.56), 1993: DM 60 (€30.68), and since 1997: DM 70 (€35.79).</p>	Based on values specified in the discharge permit.
E (no questionnaire)	No data.	<p>Tariff is €3,01 per p.u.¹</p> <p>Pollution load (in p.u.) depends on origin of discharge (urban or industrial), differentiated by groups¹.</p>	Based on pollution content of the effluent (p.u.).
F	SS, BOD, COD, N _{tot} , P _{tot} , inhibiting substances, organic matter, soluble salts, fish toxicity, oxidised N, reduced, N, AOX, heavy metals	<p>Industry: based on quantity and quality of effluent; equation given in Buckland and Zabel, 1998.</p> <p>Effluent charge level differs between regions (6 water agencies)¹.</p> <p>Discharges to municipal sewerage system: (indirect industrial discharges) based on volume of discharge.</p> <p>Households: standard pollution loads * persons + flat rate.</p>	Based on actual (physico-chemical) parameters measured (industry), measured water consumption (domestic waste water).

Member State	Pollution parameters	Calculation methods	Charging basis
		Discharges into natural waters: "pollution levy" (volume of pollutants).	
NL	COD, N-Kj, PO ₄ -P, heavy metals, sulphate*, chloride*. * only by some local water boards.	Charges are based on pollution units (p.u.), varying between water boards (1997:HFL 65 to 135, € 29.50 to 61.26) ² . The average rate (1999) for discharges into regional water is approximately HFL 86 (€ 39.03). For discharges into state waters the rate (1999) is HFL 70 (€ 31.76). Small dischargers (<5 inhabitant equivalents) are charged a fixed sum: 1 to 3 population equivalents. Medium dischargers (5 - 1000 inhabitant equivalents) are assessed using a coefficient table, based on quantity of water used. Large dischargers (>1000 inhabitant equivalent): based on pollution actually measured.	Based on actual parameter measurements and measured water consumption.
UK UK (E&W)	Depend on composition of effluent according to charging schemes.	Annual charge (T) based on permitted discharge volume, discharge contents, receiving waters and a financial factor. $T = A \times B \times C \times D$ A: volume factor (0.3 - 14) B: contents factor (0.3 - 14) C: receiving water factor (0.5-1.5) D: financial factor (set charge, £ 477, € 772 in 1999)*. These factors vary according to very broad categories, and have no incentive function. For details, see Buckland and Zabel (1998). *£ 1 = € 1.6181 (European Central Bank).	Based on values specified in the discharge permit.
UK (NI)	<i>Proposed ECS:</i> <i>Volume, pH, temperature, solid matter, BOD, COD, N, P, TOX, heavy metals, AOX, etc.</i> <i>IPC charge is independent of specific parameters.</i>	<i>Proposed ECS:</i> <i>Calculation in "chargeable units", multiplied by an annual "financial factor" to calculate the annual charge.</i>	<i>Proposed ECS</i> <i>Based on values specified in the discharge permit.</i>
UK (SCOT)	Volume, SS, TOX, heavy metals, AOX, CN, PAHs, biocides, pesticides, bacteria/viruses, etc., other toxicity tests.	Based on discharge volume, receiving waters, discharge composition, additional charges for IPC sites.	Based on values specified in the discharge permit.

¹ Forum for the Future, 2000.

² OECD, 1999:154f.

3.2.1. Q21: Pollution parameters

In most of the Member States (**Belgium, Denmark, Germany, France, Spain,** and the **Netherlands**) effluent charges are calculated according to the amounts of certain pollution parameters (pollution units) discharged within a certain period. The parameters found in most of the schemes include COD and BOD₅, nutrients (nitrogen and phosphorous), heavy metals, suspended solids, and discharge volume. Other parameters apply in addition in some of the Member States, e.g. AOX (Germany, France, United Kingdom), suspended solids – SS (Belgium, France, United Kingdom), toxicity (Germany, France, United Kingdom), sulphates and chloride (France, the Netherlands).

In **Germany**, new pollutants, notably nitrogen and phosphorous, were included in the basket forming the basis of the effluent charge in 1998. The primary aim was to create incentives to reduce the pollution by nutrients of the North and Baltic Seas. For this purpose, the unit rate was increased and the requirements to build tertiary treatment plants were strengthened. In **Denmark**, the inclusion of heavy metals into the charging system is also quite recent.

The system of the **United Kingdom (England and Wales, and Scotland)** only takes into account the types of pollutants in the effluent, regardless of their quantities.

3.2.2. Q22: Calculation methods

In the charging systems of **Germany, France,** and the **Netherlands** (and presumably in **Spain** as well), the following basic equation is used to calculate the effluent charges:

$$EC = f(a_i, p.u._i); 1 \leq i \leq n$$

EC: Effluent charge for one year.

a: charge rate.

p.u.: pollution units discharged in one year.

n: number of pollutants entering the calculation; all ECS consider more than one pollution parameter.

Each of these countries uses a different equation to compute the pollution units of an effluent. The equations are based on the actual quantities (e.g. in kg) of various pollution parameters in the effluent, on the loads indicated in the discharge permit, and for small discharges they are often estimated.

In **Germany** the charge of DM 70 (€35.79) per p.u. is uniform in the entire country, while the rate in **France** differs among the six regional water agencies and also according to the size of the urban area (Buckland and Zabel, 1998). In the **Netherlands**, there is a flat rate of HFL 70 (€ 31.76) for state waters; for discharges into regional waters, the rates differ between water boards and are higher than for state waters (HFL 86 (€39.03) on average in 1999). There was no information available on the equation used in **Spain**, but the calculation of pollution units depends on the origin (urban or industrial) of the discharge (Forum for the Future 2000).

In **Belgium** (all three regions), the equation used to calculate effluent charges differs only slightly. In addition to the equation used in the countries mentioned above, an additional term (Vr^*a) is included in the equation for indirect discharges (see line B (BCR) in Table 6). This part of the effluent charge is designed to reflect the costs for the sewerage system, since its capacity needs to account for the indirect emitters.

In **Denmark**, the effluent charge is calculated by the following equation:

$$EC = 20 \text{ DKR} * x \text{ kg } N_{\text{tot}} + 110 \text{ DKR} * y \text{ kg } P_{\text{tot}} + 11 \text{ DKR} * z \text{ kg } BOD_5$$

x, y, z: total amount of N_{tot} , P_{tot} , and BOD_5 discharged per year.

The calculation in the **United Kingdom** does not consider the quantity of pollution (units) discharged. It only takes into account the qualitative composition of the effluent, the volume (very broad classification)⁴, the type of receiving water, and a financial factor. The major difference to the systems in the other Member States is that the quantity of pollution discharged into the receiving water does not influence the amount paid.

3.2.3. Q23: Charging basis

There are two basic principles for the assessment of effluent charges. In **Germany** and the **United Kingdom** the charges are based on the values set in the permits (authorisations), in the other countries (**Belgium, Denmark, Spain, France**, and the **Netherlands**) the charges are calculated on the basis of actual measurements, as determined by self-monitoring and compliance monitoring. **Germany** allows for rate reductions where discharges are below permit values (see below). In **Belgium, Denmark**, and the **Netherlands** charges for small discharges are based on standard rates (estimates). In the **Flemish Region**, the charges for cooling water are based on values set in the permits.

⁴ E.g. effluent volume of 1,000 – 10,000 m³/d is one category (hence the same factor), cf. Buckland and Zabel (1998).

3.3. Frequency of collection, and rate reductions

Table 7: Frequency of collection of effluent charges, and rate reductions

Member State	Frequency of collection	Offset against expenditures	Rate reductions
B			
B (WAL)	Industrial effluent charges are collected yearly based on the discharges of the preceding year.	No data.	When surface water is abstracted and discharged into the same surface water body, the initial pollution is deductible (proof by samples).
B (BCR)	Per annum. Based on annual measurements during the month of most important activity, or on monthly measurements from January to December.	No data.	Companies with a functioning water treatment plant and CP determined by analysis benefit from a lower tax rate.
B (FLA)	Per annum on the basis of the discharges of the preceding year.	No data.	No.
DK	Every three months for major dischargers, per annum for minor dischargers.	No.	For fishing, cellulose, vitamin and pigment industries.
D	Per annum.	Yes, e.g.: 1. for construction or expansion of treatment plants that may result in reduction of harmfulness by at least 20 %; or 2. for construction or expansion of treatment plants in former East Germany.	1. If effluents meet the BAT-derived ELV, the charge is reduced by 50 %; 2. Charges are reduced when the monitored values are lower than stated in the permit; 3. Parameters which do not exceed specific threshold values or dilution factors are not included in calculation.
E	No data.	No data.	No data.
F	In general per annum. The municipalities may set a different frequency in some cases.	The water agencies may allocate a premium to municipalities or companies with good waste water/sewerage treatment.	In some municipalities, there are reduced rates for large industrial indirect dischargers (the threshold is generally > 6,000 m ³ /a).
NL	Per annum, further assessment can be imposed.	No.	No.
UK			
UK (E&W)	Per annum, or two 6-month instalments.	No.	Refund available if discharges decrease during the year.
UK (NI)	<i>Proposed ECS:</i> <i>Per annum.</i>	<i>Proposed ECS:</i> <i>Only against self-monitoring, but not against capital expenditure.</i>	<i>Proposed ECS:</i> <i>Reductions will be made where the discharge license limits the number of days or occasions on which effluent may be discharged.</i>
UK (SCOT)	Per annum.	No.	No.

3.3.1. Q24: Frequency of collection

Effluent charges are generally collected in the Member States on a yearly basis. In one Member State (**Belgium**), pre-payments are made in advance for the year. Refunds or additional payments are calculated retroactively from actual measurements.

Only in **Denmark** are the charges for major discharges collected quarterly, while revenues collected for minor discharges are transferred to the regional office of the Ministry of Taxation once a year. In **England and Wales**, there is an option to pay the charge in two 6-month instalments.

3.3.2. Q25: Offset against expenditures

There is no general rule in the Member States with regard to the offset of expenditures against the charges, i.e. to obtain a temporary reduction or exemption from the charge, usually for investment into water pollution abatement and control measures.

While the charges in the **Danish** system and the fees paid in **England and Wales** as well as **Scotland** cannot be offset against expenditures for sewage treatment plants or other investments in pollution abatement, the **German** charging system foresees this possibility.

In **Germany**, expenditures for enlargement or new construction of treatment plants can be offset if the load of at least one pollution parameter is thereby reduced by at least 20 %, provided that the overall amount of pollution decreases as well.

In **France** municipalities and companies may be awarded a premium for good environmental performance of their installations.

According to the questionnaire, it had been possible to offset investments for the improvement of state waters in the **Netherlands**, but this regulation was repealed in 1996.

3.3.3. Q26: Rate reductions

In **Belgium's Walloon Region**, when surface water is abstracted and discharged into the same surface water body, the initial pollution is deductible (proof by samples). In the **Brussels Region** companies with a properly functioning water treatment plant and CP determined by analysis benefit from a lower tax rate; there is no information available on the level of the rebate.

Although it is not explicitly pointed out in the answers to the questionnaire, the agricultural sector in Belgium is privileged with respect to the actual charges. This is due to the low conversion factors applied (for the Brussels Region, compare pollution units per activity in Annex II of the Ordinance of 29 March 1996)⁵. Charging rates in **Denmark** are reduced by 70 % to 97 % for entire sectors, namely the fishing, cellulose, vitamin, and pigment industries.

⁵ Ordonnance 29 mars 1996.

Reductions in the case of a difference between the permitted values and the actual discharges are granted in **Germany** in cases where the charges are based on the values stated in the permits. Also in **Germany**, pollution parameters are exempted from the calculation of the charge if they are beneath given threshold values. If the amount and the toxicity (Schädlichkeit) of an effluent is improved so it meets the minimum requirements of §7a Federal Water Act (Wasserhaushaltsgesetz – WHG), the payable rate is reduced by 50 %. The minimum requirements for effluents are binding in the case of new installations, and the charge thus provides an incentive to improve the old ones.

In some municipalities in **France**, reduced rates are exclusively available to large industrial indirect emitters (the threshold is generally $> 6,000 \text{ m}^3/\text{a}$ of discharge).

In the **Netherlands**, and in **Belgium's Flemish Region** no reductions are awarded to any specific user group or for meeting certain requirements. The Dutch system strictly applies the polluter pays principle without subsidising any group of dischargers.

3.4. Revenue from effluent charges

Whereas the previous sections were devoted to the design of the various effluent charging systems in the Member States, this section is dedicated to the assessment of the revenues, and their use. The evaluation is mainly based on the information provided by the Member States, and on other sources where indicated.

Table 8: Revenue from effluent charges

Member State	Revenue per year	Recipient of the revenue	Use of the revenue
B			
B (WAL)	€97 mill. (total) - 1999 ¹ . €11 mill. from direct industrial discharges alone. €57.7 mill. from households discharging directly or indirectly. (Remaining € 28.3 mill. are probably from farmers and indirect industrial emitters)	All revenues are transferred to the fund for protection of water controlled by the government of the Walloon Region.	The revenue is used to finance investments in sewerage infrastructure, and the extension of STP and water protection policy.
B (BCR)	€18.9 mill. (total) – 1998 ¹ . €2.9 mill. to be paid by the Flemish Region. €2.3 mill. (industrial dischargers). €15.3 mill. (households).	'Treatment fund of effluent and natural water': managed by the Administration des Finances et du Budget du Ministère de la Région de BC (AERMRBC – Administration of Finance and Budget).	Financing of water treatment plants, improvement and extension of the sewage and rainwater system to avoid floods, control of pollution, development of special solutions in areas not connected to the sewer system, monitoring and control of environmental quality of water.
B (FLA)	€243 mill. (total) – 1999 ¹ . €39 mill. approx. (direct industrial discharges).	Flemish Environment Agency (VMM), Flemish Government has control over the revenue.	Financing of investments in the municipal waste water treatment infrastructure, and funding of VMM.
DK	€37 mill. (total) - 1999 ¹ .	The State, Danish Ministry of Taxation.	Contributed to the general budget.
D	€365 mill. (total) – 1999. (Administrative costs are about	State parliaments and state governments.	The revenue is earmarked to recover the costs of regulatory activities,

Member State	Revenue per year	Recipient of the revenue	Use of the revenue
	10 % of the total: € 36 mill.).		and for measures to maintain and improve water quality (especially financing of STP).
E (no questionnaire)	€ 1.6 mill. (total) – 1992 ² . (The total should have been € 41 mill., but collection was difficult, especially from municipalities, therefore only € 1.6 mill. was collected) ³ .	Drainage Basin Authorities.	Revenue used to protect and improve the aquatic environment (and partly to finance STP).
F	€ 1,500 mill. (total) – 1996 ⁴ .	The six agences de l'eau (water agencies). (The sewerage charge is collected and expended by the municipalities.)	Revenue from pollution fees used for "water policy": - water pollution control measures and - water management (policy) of the 6 water agencies. (Revenues from sewerage charges are used to finance water supply and sewerage installations.)
NL	€ 900 mill. (total) – 1999 ⁵ .	Effluent charges for discharges into state waters: State (Rijks-waterstaat). Effluent charges for discharges to local or regional waters: water boards.	Quality management of local and state waters (also financing STP).
UK			
UK (E&W)	€ 132.1 mill. (total)* – 1999/2000.	Environment Agency.	Cost recovery to finance regulation of permits by Environment Agency.
UK (NI)	Not applicable.	<i>Proposed ECS:</i> <i>Central government.</i>	<i>Proposed ECS:</i> <i>Funding staff/equipment, payment of monitoring costs (IPC).</i>
UK (SCOT)	€ 14.8 mill. (total)* – 1999/2000. *based on monthly mean 01/2000 (European Central Bank): £ 1 = € 1.6181	SEPA.	Regulation of discharges into waters.

¹ This figure includes charges (taxes or levies) for direct and indirect industrial and household discharges; effluents from STP into natural waters are exempt.

² OECD, 1998.

³ Forum for the Future, 2000.

⁴ Forum for the Future, 2000. This figure includes pollution fees for direct and indirect industrial dischargers, as well as "redevance" on household water bills.

⁵ This figure includes charges (taxes or levies) for direct and indirect industrial and household discharges; effluents from STP are assessed at a reduced rate (only 10 % of industrial rate).

The highest total revenues from effluent charges are collected in **France** and in the **Netherlands**. The revenue in these countries (as well as in **Belgium**) includes effluent charges from households, and from indirect and direct industrial emitters. The charging systems of these countries provide funds for investment in sewerage services and water pollution control (financial function), even though the administrative arrangements differ. The total revenue is also quite high in **Germany**, especially given the possibilities for offsetting the charge against investment, which reduces revenue. In most cases, a breakdown

of the revenue for the different sectors could not be provided. The revenue in **Spain** was low in 1992⁶, because municipalities refused to pay the amount actually calculated.

3.4.1. Q27: Revenue per year

Table 9: Revenue per inhabitant

Member State	Revenue per year	Inhabitants	Revenue per inhabitant
		in mill.	in €
B			
B (WAL)	€97 mill. (total) - 1999 ¹ . €11 mill. from direct industrial discharges alone. €57.7 mill. from households discharging directly or indirectly. (Remaining €28.3 mill. are probably from farmers and indirect industrial emitters)	3.39	(total) 28.61 (for direct industrial discharges) 3.24
B (BCR)	€18.9 mill. (total) – 1998 ¹ . €2.9 mill. to be paid by the Flemish Region. €2.3 mill. (industrial dischargers).	0.95	(total) 19.89 (industrial dischargers) 2.42
B (FLA)	€243 mill. (total) – 1999 ¹ €39 mill. approx. (direct industrial discharges).	5.90	(total) 41.19 (direct industrial discharges) 6.61
DK	€37 mill. (total) - 1999 ¹	5.34	6.93
D	€365 mill. (total) - 1999	82.80	4.41
E	€1.6 mill. (total)	40.00	0.04
F	€1,500 mill. (total)	59.33	25.28
NL	€900 mill. (total) ¹ – 1999	15.89	56.64
UK			
UK (E&W)	€132.1 mill. (total) – 1999/2000	51.30	2.58
UK (NI)	Not applicable ² .		
UK (SCOT)	€14.8 mill. (total) – 1999/2000	5.1	2.90

¹ Included is the entire revenue (direct and indirect) industrial effluents as well as households.

² Annual revenue from administrative fees for all IPC processes is currently approximately £200,000.

The revenue per inhabitant is high in the **Netherlands, France and Belgium** (all regions). This is evidently linked to the financial functions of the charging systems in these Member States. The effluent charges paid by industrial emitters are much lower when expressed as the annual charge per inhabitant. In France and the Netherlands, unfortunately, the part paid by industrial direct emitters cannot be separated from the overall revenue. The calculations

⁶ No further information could be found.

in Belgium show that the effluent charges for industry are lower by a factor of ten. Here, the financial function – including the raising of earmarked revenue – is not the primary objective, as the cost of industrial water pollution control is normally borne by the industrial dischargers themselves. Since the level of effluent charges per inhabitant (for industry) is at a similar level in all Member States, the figures in Table 9 do not indicate that significant distortions of competition arise from the effluent charging systems.

3.4.2. Q28: Recipient of the revenue

The authorities responsible for issuing discharge permits and for water management receive the revenue of the effluent charging systems in most of the countries, and they also control its utilisation.

In **Belgium** the governments of the three regions control the use of funds collected through the effluent charging systems. The authorities that receive the funds may differ, as it is the Flemish Environment Agency for example that receives the revenues collected in the Flemish Region. In **Germany**, the Länder (State Environmental Ministries) are the competent authorities for water management and legislation and are responsible for the distribution of the revenues. In Spain as well as in France the river basin agencies (or water agencies) receive and control the use of revenue collected through the charging system. In the **Netherlands** effluent charges paid for discharges into state waters are administered by the State Water Authority, and fees for discharges into local and regional waters are managed by the water boards. Both the environment agencies of **England and Wales** (EA) and of **Scotland** (SEPA) have the competence for water management and provide the administration, monitoring and supervision.

The principle that authorities competent for water management and regulatory aspects receive the charges does not apply in **Denmark**, where the revenue goes to the general budget. Here, the recipient is the Danish Ministry of Taxation.

3.4.3. Q29: Use of the revenue

In most cases, the revenues raised through the effluent charging systems are earmarked for specific activities, and do not constitute a general income of the government. The range of activities funded by these revenues vary, covering, for example, the issuing and control of discharge permits, the funding of sewage treatment plant construction, as well as other measures for the improvement of the quality of surface waters. The system in **Denmark** is exceptional in that the revenue goes into the general budget and therefore represents a tax.

In **Germany**, the revenue from effluent charges is earmarked for a range of water management activities, such as subsidies for the investments in water pollution control (treatment plants) and cost coverage for other quality improvement measures.

In **Belgium**, the **Netherlands**, and in **France** the money from all effluents (direct and indirect industrial discharges, and households) is collected into one ‘basket’. The revenue is therefore relatively high and used for a variety of tasks, such as the building and upgrading of public sewerage systems, water management in general, monitoring, and measures to improve water

quantity and quality. The earmarking of the revenue is hence relatively general. Flemish authorities plan to differentiate the charging systems for direct and indirect discharges in order to earmark the revenues to more specific tasks. While the indirect dischargers shall cover the costs they incur to municipal operators, ‘for discharges into surface water, the intention is to make the dischargers pay for the environmental damages they’re causing’ (AMINAL, 2000).

The revenue collected in **Spain** is used for water protection and improvement measures including the partial financing of sewage treatment plants. In the **United Kingdom**, effluent charges are earmarked solely to cover the administrative costs of issuing and controlling permits for the direct discharge of effluents (hence it is actually an administrative fee).

3.5. Q 30 and Q31: Functions and effects of effluent charges

Following the assessment of the amount and use of revenues in the previous section, this section focuses on the main functions and effects of effluent charging systems, completing the comparison between the effluent charging systems in Europe.

Table 10: Function and effectiveness of effluent charging systems

Member State	Function of effluent charge	Effects of effluent charges
B	Mainly financing. Earmarking to finance water quality management and STPs ¹ .	
B (WAL)	Mainly financing (and incentive): Financing: Investments in sewerage infrastructure and extension of STP and water protection policy. Incentive: To reduce the effluent charges for industrial discharges.	Side effects of the effluent charge are reductions in effluent charges through construction and upgrading of industrial sewage treatment plants, investments in clean(er) technology, reduction in water consumption, adoption of BAT. Dislocations of enterprises due to effluent charges are rare and cannot be proven.
B (BCR)	Mainly financing (and incentive). The fund gathers sewerage charges from households and industry as well as effluent charges (all called ‘taxe sur le déversement des eaux usées’). Financing: It is used to finance STP and public sewerage infrastructure and water pollution control. Incentive: Pollution abatement to reduce effluent charges.	The taxation system came into force in 4/96, and its direct effects have not been studied yet. Some industrial consumers have reduced their water consumption and developed recycling projects.
B (FLA)	Mainly financing (and incentive). Financing: Investments in waste water infrastructure and extension of STP and water protection policy. (Incentive): Pollution abatement to reduce effluent charges for industrial discharges.	Side effects of the effluent charge are reductions in effluent charges through construction and operation of industrial sewage treatment plants, investments in clean(er) technology, reduction in water consumption, adoption of BAT. Dislocations of enterprises due to effluent charges are rare and cannot be proven.
DK	Mainly incentive (and fiscal). Incentive: To reduce the amount of polluting substances in the treated sewage discharged ¹ .	According to an unpublished study, the charging system promotes a reduction of the discharge of N and P, but not of BOD ₅ .

Member State	Function of effluent charge	Effects of effluent charges
	Fiscal: The revenue is contributed to the general budget.	
D	Mainly incentive (and financing). Incentive: To avoid harmful discharges by preventive measures. (Financing): Earmarked to finance measures to maintain and improve water quality (especially financing of STP) ² .	Promoted the removal of dangerous substances from discharges, and supported the introduction and adoption of BAT.
E¹ (no questionnaire)	Financing. Revenue is used to protect and improve the aquatic environment (partly also to finance STP) ¹ . Tariffs are set in accordance with financing needs of the DBAs based on investment plans ¹ .	The collection of the charge is difficult, in particular from municipalities (70 per cent not collected).
F	Mainly financing (and incentive). Financing: Revenue is used for water pollution control by water agencies (including sewage collection and treatment). Incentive: To reduce water pollution by adoption of BAT and building of STP ³ .	Allows the financing of "water policy" in the river basins of the 6 water agencies.
NL	Mainly financing. Quality management of local and state waters (also the costs for treatment plants are paid out of this revenue, which includes pollution levy payments from indirect dischargers).	Regulation of pollution.
UK UK (E&W) UK (NI) UK (SCOT)	Mainly to finance the administration. Financing: Cost recovery of regulatory activity by Environment Agency. Charges are higher where dangerous substances are involved, but do not depend on the amount of dangerous substances, therefore no incentives for pollution abatement. <i>Proposed ECS:</i> <i>Financing as main function plus incentive to reduce pollution through efforts to reduce effluents charges.</i> Mainly to finance the administration. Financing: Supports SEPA's operations. Charges are higher where dangerous substances are involved, but do not depend on the amount of dangerous substances, therefore no incentives for pollution abatement.	Technical innovation to minimise substances in the discharge that entail high monitoring costs reflected in the effluent charge. <i>Proposed ECS:</i> <i>Not applicable, as Water Order scheme is not in place yet</i> Promotes the removal of dangerous substances from discharges, especially in smaller industrial sectors and municipal STP discharges.

¹ Information from the "Database on environmental taxes in the European Union, plus Norway and Switzerland" (Forum for the Future, 2000). For an extraction of the database see section 8.3 (annex).

² Information from the "OECD Database on environmentally related taxes" (OECD, 1998).

³ EEA, 1996.

The effluent charging systems in the seven countries concerned have been designed with different objectives in mind. The design of the effluent charges in **Germany** and in **Denmark** mainly aims to provide strong incentives for pollution abatement. To this end, the German system provides for reductions when certain parameters lie below given limits and

allows to offset charges against investments in pollution abatement. As a result, it promoted the removal of dangerous substances from industrial discharges and supported the adoption of BAT over the last two decades. The revenue is used to maintain and improve water quality and also fulfils a financing function.

By setting high charges for nitrogen and phosphorus, the Danish charging system promotes the reduction of nutrient inputs into natural waters. As the charge level for BOD₅ is comparatively low, the effluent charge does not effectively promote its reduction. The Danish charge is in effect a tax, feeding into the general budget of the Danish State, hence fulfilling a fiscal function.

The charging systems of **Belgium** (all three Regions), the **Netherlands** and **France** have been established to raise capital to finance water quality management, covering water pollution control by the authorities and investments into sewage treatment plants. The design of these systems is hence to provide a financing function. All actors contributing to the pollution of water (direct as well as indirect emitters) are covered by the charging system and therefore pay their share. As a side effect the charges in Belgium set incentives to reduce discharge loads in order to save effluent charges. The French system sets incentives for pollution abatement not by the charges themselves, but by paying premiums for good environmental performance. The main intention of the **Spanish** effluent charging system is also a financing function, used for the same purposes as in B, NL and F, but as it is difficult to collect the charges, the system cannot be considered very effective at present (the limited information available is from 1993).

The charging systems in the **United Kingdom** serve the one and only function to recover the costs for the administration and control of discharge licenses that are required for IPC and IPPC installations. The systems set no incentives for pollution abatement, because the level of charges depends only on the type of substances in the effluents, but not on amount of pollution discharged. As the monitoring costs are reflected in the charges, the charging system promotes innovations to remove substances that entail high monitoring costs, i.e. mostly hazardous substances.

Dislocation of industrial plants as a result of effluent charges has not been reported from any of the Member States.

3.6. Preliminary conclusions on the comparison of effluent charging systems

Charges for effluent discharges into natural waters exist in seven Member States. Charging systems are at various stages of discussion or preparation in five other Member States. In spite of the economic elements of the Water Framework Directive and the general attention being paid to economic instruments in environmental policy, however, it still appears to be politically difficult to establish new charging systems. A Community initiative would be welcomed by the environmental administrations in some Member States, as long as it leaves sufficient room to design a system suited to the national or regional requirements. Concerning the existing systems, the following summary observations can be made:

- In general, the administrative responsibility for collecting effluent charges rests with the same authorities – or level of authority in tiered systems – that issue the permits, but in some cases different departments or sections of the authority are in charge.
- Some Member States collect charges only for direct discharges, leaving operators of sewage treatment plants to pass the cost of the effluent charges to indirect emitters. Other Member States also levy charges on indirect emitters, including households and then exempt the operators of sewage treatment plants from paying the effluent charge or – in the case of the Netherlands – apply generous reductions. Either way, indirect emitters are brought into the charging systems and have to pay their share.
- In all Member States with effluent charging systems, with one exception, effluent charges are calculated on the basis of the quantities of specific pollutants in the effluent. Most systems take into account BOD, COD, N, P, suspended solids and certain heavy metals, as well as discharge volumes. Additional parameters are used in most systems. Only the United Kingdom charges on the basis of the types of pollutants regardless of the quantities discharged. The precise methods of assessing the effluent charges vary significantly among the Member States.
- To get an idea of the different levels and the relative importance of effluent charges in the European countries, a model calculation was conducted for this study. The calculation provides the basis for a comparison between EU Member States (see section 4.4).
- The logical basis for calculating effluent charges is usually the actual (measured) quantity of pollutants in the effluent. The emission data the effluent charges are based on are derived from self-monitoring by the dischargers and compliance monitoring by environmental authorities. For administrative reasons, the values set in discharge permits (i.e. the maximum amount of pollution allowed in any one case) are used to calculate the effluent charge in Germany. Rebates are given when the actual quantities are less than those. Due to the nature of the system, the UK bases its charges on the components stated in the permits.
- The financial arrangements in the charging systems also differ considerably in terms of collection frequency, reductions available to some sectors or in return for investment, good environmental performance, or levels of pollution in raw-water intake. At present, only Germany operates a system where, investment in water pollution control may be offset against the effluent charge under certain circumstances (rather than paying first and reclaiming a "false" subsidy for investment later).
- Revenue is significant, especially in the Member States where effluent charging systems are designed to provide revenue for investment in water pollution control (NL, F, B). In these countries, however, the charging levels for industries are not extraordinarily high, because the major part is contributed by households.
- The recipients of the revenue tend to be the authorities responsible for water resource protection and management, which are also competent for authorising and monitoring discharges. In essence, the effluent charging systems are closely intertwined with other

functions of water pollution control. The exception here is Denmark, where revenue is considered a part of the tax system and contributes to the general budget.

Revenues tend to be earmarked. In some cases the revenues are directly controlled by the (local or regional) water authorities. In other cases the revenue is handed back to them after going through public accounts. The purposes to which the earmarked funds are allocated range from administrative costs to (subsidies for) investment in water pollution control.

The charging schemes in the various Member States are designed to fulfil different functions:

- Mainly incentive: setting strong incentives for pollution abatement (Germany, Denmark⁷); whereas the German system additionally raises capital for pollution control, the revenue raised in Denmark is fed into the general budget.
- Mainly financial (Belgium, France, the Netherlands, and Spain⁸); the French system sets pays premiums to adoption BAT, and hence sets incentives for pollution abatement.
- Cost recovery for administration and control of discharge permits as the one and only aim (England and Wales, Scotland).

In most Member States investment in effluent treatment and clean technologies (adoption of BAT) was reported as either an intentional (Germany, Denmark, France) effect or a side effect (Belgium) of the effluent charge (except in the United Kingdom). In the United Kingdom, however, the charging system promotes innovations to remove substances entailing high monitoring costs, i.e. mostly hazardous substances.

Dislocation of industrial plants as a result of effluent charges has not been reported from any of the Member States.

4 Sectors addressed by effluent charges

The Water Framework Directive requires in Article 9 that "Member States shall ensure by 2010 an adequate contribution of the different water uses, disaggregated into at least industry, households and agriculture, to the recovery of the costs of water services [...]". This three-way disaggregation has been retained in the present study, and this chapter documents the various ways in which the sectors are addressed by the effluent charging systems in the Member States that have them. The industrial sector is very large and diverse and would require a much more detailed analysis than is possible to conduct in this study. To arrive at meaningful comparisons of the charging levels and effects of the various effluent charging systems, model calculations were carried out, using textile finishing as an example.

4.1. Q35 and 36: Charging system for sewage treatment plants, and distribution of costs

⁷ The Danish system is mainly incentive, but being a tax it contributes to the general budget and therefore also fulfils a fiscal function.

⁸ As no questionnaire was returned, information is very limited on the charging system in Spain.

Table 11: Effluent charges for domestic sewage

Member State	Charging system	Distribution of costs
B B (WAL)	No effluent charge for municipal sewage treatment plant operators. Households are subject to the charge, which is based on estimates.	Not applicable.
B (BCR) B (FLA)	No effluent charge for municipal sewage treatment plant operators. Households are subject to the charge, which is based on estimates. No effluent charge for municipal sewage treatment plant operators. Households are subject to the charge, which is based on estimates.	Not applicable. Not applicable.
DK	No differences.	Through sewerage charges based on water consumption.
D	No differences.	In general, through sewerage charges based on water consumption.
F	The pollution fee is usually paid by households as part of their water bill (water supply, sewerage charge and pollution fee all in one bill). The operators of STP do not pay pollution fees. Pollution fees are collected by the municipalities (or by a concessionaire who passes it on to the respective water agency).	Not applicable.
NL	Communal biological installations: only 10 % of the industrial tariff.	(By tax assessment; the pollution fee has the character of a direct tax, a so-called 'earmarked levy').
UK UK (E&W) UK (NI) UK (SCOT)	STP are subject only to regulation under the Water Resources Act. STP below minimum discharge volume do not pay effluent charges. There are no plans to introduce direct charges to STP except for privately operated STP (would be charged under proposed scheme). STP are subject to charges if they require a license.	Charges are levied on sewerage users, and billed directly to households and industrial dischargers by sewerage operators. Not applicable. Indirectly through sewerage charges.

In **Denmark** and **Germany** the charges for effluents from sewage treatment plants are assessed in the same way as direct discharges from industry. No reductions or exemptions apply. The costs are covered through the sewerage charges paid by the households to the operators of STP.

In the United Kingdom (**England and Wales**, and **Scotland**) the effluent charge is directly linked to the permits and thus applies only to installations (STP) that are subject to a discharge authorisation. As in Denmark and Germany, the costs for effluent charges (or administrative fees) are also recovered through the sewerage charges.

In **Belgium**, **France** and the **Netherlands**, STP operators are either entirely exempt from effluent charges (in Belgium and France), or pay strongly reduced rates (in the Netherlands, 10 % of the industrial rate). There are thus no costs to be distributed among the indirect dischargers. Since indirect dischargers and households are subject to effluent charges in

these countries, charging sewage treatment plant operators would mean that the same effluent (pollution load) is assessed twice.

4.2. Q37: Agriculture

Table 12: Direct discharges from agriculture

Member State	Direct charges from agriculture
B	
B (WAL)	Direct discharges from farms are forbidden. If discharges occur, they are subject to the industrial waste water charging system.
B (BCR)	There are few farms in BCR. None employs more than 7 people, therefore they only pay sewerage charges (14 BEF/m ³).
B (FLA)	Farms pay an effluent charge for direct discharges of waste water according to conversion factors, but they can also choose an assessment based on measurement and sampling results. The charges are very modest.
DK	No differences, farms pay effluent charges for direct discharges under the same scheme as industry.
D	No differences, farms pay effluent charges for direct discharges under the same scheme as industry.
E	No data.
F	No data.
NL	No differences, farms pay effluent charges for direct discharges under the same scheme as industry.
UK	
UK (E&W)	Farms are subject to the scheme of charges when they discharge into controlled waters, some intensive farms for pigs and poultry will become subject to IPPC in 2007.
UK (NI)	Farms are normally not allowed to discharge directly.
UK (SCOT)	As a result of several regulations, significant discharges from farmers are very unusual and are mostly related to pollution accidents.

In all Member States, farms pay effluent charges for direct discharges under the same scheme as the industry. While the farmers in **Belgium** pay lower charges than industrial dischargers (through lower conversion coefficients), farms in the other Member States (**Denmark**, **Germany**, the **Netherlands** and the **United Kingdom**) are subject to the same coefficients and calculations as industrial plants.

In the **Flemish Region** of **Belgium**, all farms are generally charged on the basis of very modest conversion coefficients, but they may also opt for a charge based on measurements and sampling results. In the **Brussels Region** there are no farms with more than seven employees, and farmers do not pay effluent charges, but are subject to sewerage charges.

In the **Walloon Region** and in **Northern Ireland**, farmers are usually not allowed to discharge directly into surface waters.

4.3. Industry

Table 13: Effluent charges for industry

Member State	Industrial sectors	Criteria and thresholds
B		
B (WAL)	All industrial sectors are subject to effluent charges.	Plants with less than 7 employees are considered to discharge sewage only when their discharge permit specifies that they discharge industrial waste water or the authority can prove they are doing so.
B (BCR)	All industrial sectors (see Table 5 , and Annex II of 'ordonnance du 29 mars 1996').	Only industrial plants with more than 7 employees are subject to effluent charges. Calculation of CP real by means of parameters for all plants where: CP gross > 5 mill. p.u. CP gross < 5 mill. p.u., choice of either estimate or calculation based on measurement.
B (FLA)	All industrial sectors are subject to effluent charges.	No differentiation. Calculation of effluent charge either based on measurements or on conversion coefficients.
DK	All. Reductions are allowed for fishing, cellulose, vitamin and pigment industries.	No differentiation.
D	All discharging industrial plants.	No differentiation.
E	No data.	No data.
F	No data.	No data.
NL	All industrial plants.	Water use in relation to the pollution load; measured pollution load when water use is not relevant.
UK		
UK (E&W)	All discharging industrial plants requiring a permit.	Discrimination by sector and plant size as approximations of pollution risk. Most industries that potentially pollute above sector thresholds are regulated under IPC, less polluting discharges are regulated under Water Resources Act 1999 1, waste management site leachates are regulated under EPA 1990 Pt 2.
UK (NI)	Proposed: All sectors; for current system see IPC Part A (e.g. power generation, chemicals and metal industries).	Proposed: Discrimination by permitted maximum daily discharge volume.
UK (SCOT)	All direct discharges on SEPA's sampling plan.	See charging schemes (e.g. volume factor for cage fish farms relates to the maximum allowed biomass, in contrast to max. daily discharge volume in other industries).

4.3.1. Q32: Industrial sectors

In **Belgium**, **Germany**, the **Netherlands**, and the **United Kingdom** all industrial sectors are subject to effluent charges. In Belgium, the number of pollution units per activity differ from industry to industry. This becomes significant when the charge is calculated on the basis of conversion coefficients. In the **Flemish Region**, the industrial discharger may choose between charges based on actual measurements or on coefficients, while in the **Brussels Region** the charging basis is defined according to certain threshold levels (see section 4.3.2). As discussed in section 3.3.3 the system in **Denmark** allows strongly reduced rates for certain industrial sectors.

In the United Kingdom effluent charges are paid only for the installations that require a permit.

4.3.2. Q33: Criteria and thresholds

In most of the Member States (**Denmark, Germany, the Netherlands, and Belgium**), industrial plants of all sizes having any quantity of discharge are subject to the effluent charging systems described above.

The charging systems, however, differ in the **United Kingdom** and in the **Brussels Region**, depending on the composition of the effluent, the pollution load, or the size of the plant. In Belgium, effluent quantities greater than 5 mill. CP (pollution units) are calculated on the basis of real measurements, whereas smaller ones can be calculated either upon the basis of coefficients, or of real measurements. In the United Kingdom, the legislative basis for regulation (including the issuing of permits) discriminates between industrial sectors and plant sizes as a first approximation of the pollution risk. Industrial plants with higher risk are regulated under the Integrated Pollution Control (IPC), and those with lower risk under the Water Resources Act (1999 1). Waste management site leachates are regulated under EPA 1990 Pt. 2.

Some schemes have exemptions for certain thresholds. In the Brussels and Walloon regions of Belgium, companies employing less than 7 persons are exempt from effluent charges, while in England and Wales the threshold is linked to the volume discharged.

4.4. Q34: Calculation of effluent charges for three textile-finishing factories

In view of considerable differences among the effluent charging systems that exist in various Member States the economic impact of the charges cannot be compared directly. Therefore, effluent charges have been computed for this study by those countries having an effluent charging system, except for France and Spain, in order to determine:

- The differences between the charges in the Member States in relation to the different technological levels of effluent treatment (to assess the effect of incentives for pollution abatement);
- the level of effluent charges that would have to be paid for an identical factory in different Member States of the European Union (to assess possible distortions of competition).

The example is based on three cotton fabric finishing factories with different technological levels of production and/or effluent treatment (A, B, and C). The textile-sector was chosen, because its effluents contain a great variety of pollutants (including physico-chemical and organic substances, and heavy metals), and because textile factories exist in all European Member States.

The computation is based on the assumption that the three cotton fabric finishing factories A, B and C discharge their effluents directly into natural waters. The following processes take place in the factories⁹:

- Desizing;
- alkaline off-boiling;
- bleaching;
- dying; and
- finishing.

It is assumed that all the three textile-finishing factories finish approximately 12-14 tonnes of textile per day, differing mainly in their pollution abatement standards: factory A applies best available techniques (clean technology and pollution abatement), factory B preliminary effluent treatment only, and factory C has no effluent treatment at all. The following Table 14 shows the effluent parameters (discharge volumes and parameter concentrations) for the three factories A, B and C, on which the calculations of effluent charges are based.

Table 14: Effluent parameters of the three textile-finishing factories

	Factory A	Factory B	Factory C
Effluent treatment	BAT	preliminary treatment	no treatment
Q (effluent flow)	2000 m ³ /d	2200 m ³ /d	2500 m ³ /d
Effluent flow rate (m ³ of effluent / t of product)	140 m ³ /t	180 m ³ /t	210 m ³ /t
Temperature	26°C	32°C	50°C
pH	7,2	7,5	10,5
COD (chemical oxygen demand)	90 mg/l	280 mg/l	2400 mg/l
BOD ₅ (biological oxygen demand)	9 mg/l	40 mg/l	700 mg/l
TOC (total organic carbon)	30 mg/l	90 mg/l	780 mg/l
SS (suspended solids)	20 mg/l	40 mg/l	80 mg/l
HC (hydrocarbons)	< 0,5 mg/l	0,7 mg/l	7 mg/l
NH ₄ -N (nitrogen in ammonium compounds)	< 0,5 mg/l	1,5 mg/l	12 mg/l
AOX (halogenated hydrocarbons)	0,1 mg/l	0,15 mg/l	1,3 mg/l
Active chlorine	not detectable	not detectable	0,3 mg/l
Zn (zinc)	0,02 mg/l	0,5 mg/l	0,7 mg/l
Cu (copper)	< 0,05 mg/l	0,2 mg/l	0,8 mg/l
Cr (chromium)	< 0,05 mg/l	< 0,05 mg/l	< 0,05 mg/l

⁹ Entschlichten - alkalisch abkochen – bleichen – färben - ausrüsten.

As noted in section 3.2, the effluent charging systems in the Member States differ with respect to the pollution parameters on which the charges are based, the calculation methods, the level of charges, etc. The annual effluent charge in the various Member States and regions for the direct discharge of effluents into natural waters by factories A, B and C in 2000 (in €per year) is given in Table 15.

The calculations were carried out by the authorities of the Member States. This approach was chosen to avoid possible misinterpretation of the calculation rules and to ensure that the application of the model conformed with administrative practice. Unfortunately, France delivered no calculation. The six Agences de l'Eau responsible for calculating effluent charges were asked to calculate the examples, but none of them delivered the data. Spain did not complete the questionnaire and the information on the effluent charging system is only preliminary; therefore, no calculation was made for the examples in Spain.

Table 15: Annual effluent charges for the three textile-finishing factories

	Factory A	Factory B	Factory C	Factory C->B	Factory C->A	Factory B->A
Effluent treatment standard	BAT	preliminary treatment	no treatment	no treatment -> preliminary treatment	no treatment -> BAT	preliminary treatment -> BAT
Effluent charge	in €/ year	in €/ year	in €/ year	difference in €/ year	difference in €/ year	difference in €/ year
B						
B (WAL)	9,840	33,428	278,525	245,097	268,685	23,588
B (BCR) ¹						
<i>estimated</i>	<i>1,457,358</i>	<i>1,603,094</i>	<i>1,821,697</i>	218,603	364,339	145.736
<i>measured</i>	18,632	6,589,234	7,487,766	898,532	7.469.134	6.570.602
B (FLA)	15,126	91,063	585,928	494,865	570,802	75,937
DK	19,860	87,420	1,513,066	1,425,646	1,493,206	67,560
D	14,459	103,820	1,002,657	898,837	988,198	89,361
E	No data	No data	No data	No data	No data	No data
F	No data	No data	No data	No data	No data	No data
NL ²	40,527	153,774	1,383 316	1,229,542	1,342,789	113,247
UK						
E&W (for river)	20,916	20,916	20,916	0	0	0
<i>NI</i>	<i>No ECS</i>	<i>No ECS</i>	<i>No ECS</i>	<i>No ECS</i>	<i>No ECS</i>	<i>No ECS</i>
SCOT (depending on receiving water)	28,500 – 42,800	28,500 – 42,800	28,500 – 42,800	0	0	0

¹ BCR also delivered calculations of the effluent charge for the **three factories if they discharge indirectly**:

A: € 1,189,600 (estimated) B: € 1,308,560 (estimated) C: € 1,487,000 (estimated)
 € 70,590 (measured) € 5,186,668 (measured) € 5,893,941 (measured)

Estimated means: estimated on the basis of the coefficients applicable to the sector; in all industries, the effluent is first assessed to determine whether the factory needs to analyse the water discharged, or whether the effluent charges can be estimated. For the calculation method see Table 6.

² If discharged into a state water body (HFL 67.5, € 30.63 per p.u.). For discharges into regional waters, the water boards set charges per pollution unit; these are usually higher than charges for discharges into state waters.

4.4.1. Differences in charge levels among the Member States

Looking at each scenario A, B and C separately, it is apparent that the charges are similar in nearly all Member States (except UK and BCR for scenarios B and C).

The greatest difference in scenario A is between the Walloon Region, where a factory of type A would have to pay an annual effluent charge of €9,840, and the Netherlands, where the same factory would pay more than four times the amount (€ 40,527). In the Region of Brussels and in Denmark, the effluent charges for factory A would be about half of the Dutch charge, and the effluent charges in Germany and the Flemish Region are even lower (approximately € 15,000). The effluent charges in England and Wales – assuming that factory A discharges into a river – are similar to the charge in Brussels and Denmark; in

Scotland the effluent charge ranges from €28,500 to €42,800, depending on the receiving water.

In scenarios B and C, the effluent charges for Brussels are extraordinarily high (€6,589,234 and €7,487,766). Presumably, no industries with such effluent levels exist in the Region of Brussels - or if they exist they would discharge their effluents into sewers rather than directly into natural waters - since it would have been impossible to implement such a charging system otherwise.

Excepting the UK and Brussels, the biggest difference in scenario B is between the Walloon Region and the Netherlands (as in scenario A). The annual effluent charges for factory B range from €33,428 (WAL) to €153,774 (NL). The charge in Germany would be €103,820 and for the Flemish Region and Denmark approximately €90,000.

Except for the Brussels Region, the highest effluent charges for factory C would have to be paid in Denmark (€1,513,066) and the lowest in the Walloon Region (€278,525). In the Netherlands (€1,383,316) and in Germany (€1,002,657) the annual effluent charges would also be very high. In practice, such a factory would exceed the legal pollution limits in most Member States, and would therefore not be permitted to operate. The calculations for scenario C thus do not represent actual differences between the Member States, and they do not reflect any real distortion of competition.

4.4.2. *Incentive function and environmental impact*

In order to estimate and evaluate the incentive function of a charging system, it is necessary to look at the level of charges for distinct technological standards (factory A, B and C). The savings in charges obtained by applying clean technology and pollution abatement measures (columns 5, 6 and 7 of Table 15) should ideally be compared to the costs of these measures.

In this study it was not possible to gather the data for the costs of pollution abatement and clean technology, and only preliminary conclusions can be drawn with regard to the incentive function that effluent charges may have in different Member States.

In most countries (Belgium, Denmark, Germany, and the Netherlands), the charges for factories A, B and C differ strongly, depending on production technology and pollution abatement standards (see Table 15).

- In absolute terms, the charges for untreated discharges are extremely high, ranging from approximately €300,000 to €1.5 mill. per year (except BCR: €7.5 mill.).
- In relative terms,
 - the charges for effluents receiving preliminary treatment are 6 to 17 times lower, providing an incentive to install pre-treatment of the effluents before they are discharged into natural waters.
 - This incentive is even stronger in the case of factory C without pre-treatment: The charges for scenario B factories are 35 to 76 times higher than the charges for scenario A factories (except BCR, here the effluent charges for factory C are 400 times higher than for factory A).

- There is also a significant “cost saving potential“ with respect to effluent charges in Belgium, Denmark, Germany and the Netherlands when a factory B (preliminary treatment) decides to apply BAT. The resulting charge reductions are not as great as they are for upgrading factory C to factory B, but the charges for factory A are still 4 to 8 times lower than they are for factory B (except BCR, where the factor is 35).

The United Kingdom is exceptional, compared to the other Member States. The effluent charges do not differ between the different technological standards in the three scenarios, and hence provide no incentive for pollution abatement. The charging levels in the United Kingdom differ by receiving water body, size of industrial plant (volume discharged), and compounds the effluent. The charges do not depend on the amounts or concentrations of substances. Therefore, the charging system sets no incentive to reduce the input of hazardous substances into natural waters, unless certain substances can be eliminated completely and the effluent is classified into a different category.

The German system entails a relatively high reduction in charges from factory B to factory A, due to a 50 % reduction given for each parameter attaining the minimum standards of §7a WHG (best available techniques - BAT)¹⁰. Along with the possibility to offset charges against expenditures, this provides a strong incentive to upgrade existing plants. As a result, a large number of ‘old factories’ have been upgraded by applying BAT¹¹ in Germany.

The effluent charges for factories B and C are extraordinarily high in the Brussels Region. Above a certain threshold, (see section 3.2, Table 6) industry discharging directly must assess the effluent charge based on actual measurements of pollution parameters. Although both calculations (estimated effluent, and measured effluent) were delivered, the calculations based on measurement would apply in practice.

4.4.3. Comparison of effluent charges (and distortion of competition)

Differences in effluent charge rates between Member States may distort competition, depending on their importance with regard to the production costs of the industry. An assessment of the influence that effluent charges may have on the local establishment and maintenance of industrial plants requires a comparison between these charges and the overall cost structure and the turnover of the textile industry. To this end an additional questionnaire on the textile industry was sent to all national textile industry associations of the EU Member States and to the European Textile Finisher’s Association (CRIET), and a literature search was conducted as well. The results were unsatisfactory for the following reasons:

- None of the questionnaires was returned. Some data were obtained through further inquiries among specialists and representatives of the European and German Textile Associations (CRIET and TVI), and from specific publications and Internet searches.
- In general, no data on the cost structure in this sector of industry are available, probably because these figures are kept secret by the companies.

¹⁰ This reduction was 75 % until 1998.

¹¹ Berendes, K. 2000, personal communication, 30 October 2000.

Some data on the costs of effluent treatment, effluent disposal, and water supply in the textile finishing sector were obtained. In Table 16 they are compared to the effluent charge applicable to effluents from factory A of the example. The factory A model was chosen, because it applies the best available technology, which is the target standard in most European Member States, and because it is assumed that the effluent cost data gathered reflect the costs for effluents of factories applying BAT.

Table 16: Specific costs and effluent charges for waste water of the textile finishing industry

Member State	Effluent charge Factory A	Effluent costs ³	Percentage of the effluent charge in the total effluent costs ⁴	Water costs ³	Water consumption ⁵
Data of the year	2000	1999		1999	1997
	€ per m ³	€ per m ³	%	€ per m ³	m ³ /t Production
A		0.35		0.12	110
B					120
B (WAL)	0.02 ¹				
B (BCR)					
estimated	2.00 ²				
measured	0.03 ²				
B (FLA)	0.03 ¹				
DK	0.03 ²				
D	0.03 ¹	1.18	2.5	0.20	100
E					140
F		0.39		0.06	150
I		0.95		0.10	230
NL	0.06 ²	0.71	8.5	0.36	110
P					170
UK		0.93		0.20	No data
UK (E&W) (for river)	0.03 ²		3.2		
UK (SCOT) (depending on receiving water)	0.04-0.06 ²		4.3 - 6.5		

¹ Based on 225 days of discharge per year (source: returned questionnaires).

² Based on 365 days of discharge per year (source: returned questionnaires).

³ CRIET, 2001, personal communication, 16 January 2001.

⁴ Calculated: effluent charges / effluent costs.

⁵ TVI Verband e.V., 1997.

The effluent charges per cubic meter (column 2 of Table 16) were calculated using the annual effluent charges for factory A (column 2 of Table 15), divided by the total annual water

consumption¹². The data on average water and effluent costs in the textile finishing industry were delivered by a representative from CRIET (by email). The data from CRIET are not related to the calculation example for this study and therefore need to be interpreted with caution.

The effluent costs for direct discharges in Europe vary between 0.35 and 1.18 €/m³, with France and Austria having the lowest, and Germany the highest effluent treatment and disposal costs. Water supply to industry is most expensive in the Netherlands, followed by Germany and the UK, and least expensive in France. The water consumption (in m³ per t) differs in the textile finishing industries of the European Member States. Water consumption is lowest in Germany and in the Netherlands (100 – 110 m³ per t), leading to comparatively lower annual water bills than the comparison of prices per m³ would suggest.

In column 4 the effluent charges for factory A is expressed as a percentage of the average effluent costs in those countries for which data are available (the Netherlands, Germany, England and Wales, and Scotland). Effluent charges are a small proportion of the total effluent costs (< 10 %) and did not vary much between those countries where data was available (see Table 16), ranging from 2.5 % to 8.5 %.

Data on the overall cost structures for the textile finishing industry were sought to estimate whether the costs for effluent charges affect the competitiveness of the industry in the Member States. But the cost structure for the textile finishing sector was only available for Belgium and is compiled in the following Table 17.

Table 17: Breakdown of the total production cost in the Belgian textile finishing industry (1999)

Cost factors	Percentage of total production costs
Wages, salaries and social charges	36.60 %
Energy	7.30 %
Environment (water and effluent costs)	2.50 %
Dyes and chemicals	26.30 %
Maintenance	5.20 %
General costs	9.10 %
Financial and related charges	3.70 %
Depreciations	9.30 %

Source: Febeltex, 2001, personal communication, March 2001.

As the cost structure in the textile finishing industry was not available in other Member States, other data on the relative importance of costs for water and effluent in the textile finishing sector were sought, with the following results shown in Table 18.

¹² 2000 m³ /d * 365 d or 225 d, depending on the calculation of the annual effluent charge.

Table 18: Water and effluent costs as a percentage of turnover in the textile finishing industry

Member State	Water and effluent costs as % of turnover
A	1
B/LUX	2.4 ¹
D	2.7
DK	
E	
SF	
F	5.3
G	
I	2.4
IRL	
NL	4
P	
S	
UK	4.5

Source: TVI Verband e.V., 1997.

¹ 2.5 % of total production costs (Febeltex, 2001, personal communication, March 2001).

Belgium was the only Member State for which both relations (water and effluent costs as a percentage of costs, and as a percentage of turnover) were available and it turned out that the relations are very similar. This indicates that the quality of the turnover data is similar to that of the cost data.

The total costs of water supply, and of effluent treatment and disposal are in the range of 1 to 5.3 percent of the total turnover (and presumably also of the production costs) in the textile finishing sector. Given the low share of effluent charges in these total water-related costs (see Table 16), the economic impact of effluent charges on the textile finishing sector is probably insignificant, at least where BAT is applied. In consequence, the impact of effluent charges on the competitive position of individual factories would be insignificant as well.

4.5. Preliminary conclusions on the different sectors addressed and the example

The various sectors (households, agriculture, and industry) are addressed rather differently in the various Member States with effluent charging systems.

- As was noted in the previous chapter, some Member States collect charges only for direct discharges, leaving operators of sewage treatment plants to pass the cost of the effluent charges to indirect emitters. This would affect households as well as small and medium sized enterprises and other indirect emitters, depending on the way in which the costs are passed on. This is usually done on the basis of freshwater consumption for households, where water meters are used. The pricing mechanisms for commercial and industrial effluents are rather more complicated and tend to vary widely even within Member States.

- Other Member States also levy charges on indirect emitters, including households, and then exempt the operators of sewage treatment plants from paying the effluent charge or – in the case of the Netherlands – apply generous reductions. The charges payable by households in such cases can be based on estimates, lump sums or other standardised approaches.
- In some Member States (or regions) agriculture is not allowed to discharge effluent into natural water bodies, and where discharges are allowed or occur the same rules tend to apply to agriculture as to industry. The exceptions are Belgium (Brussels, and the Flemish Region) which have moderate schemes for farmers, and the United Kingdom (Northern Ireland, and Scotland) for which no information was obtained.
- The various sectors or branches of industry tend to be subject to the same set of rules, even when the pollutants considered, the threshold levels and other criteria may differ in practice. The existing systems thus generally avoid distortions across industrial sectors. In Belgium however, the use of conversion coefficients may deviate from this rule. Significant reductions exist for certain sectors in Denmark as well (see chapter 3).

The calculation of annual effluent charges for a model textile finishing factory in various Member States provided interesting information, which nevertheless needs to be interpreted with caution. Most of the textile factories in Germany (about 94 percent) and in other Member States discharge their effluents into public sewer systems and are thus indirect emitters (TVI Verband e.V., 1997) paying sewerage charges, including surcharges for strongly polluted commercial or industrial effluent, rather than effluent charges for direct emissions into natural water bodies. Nevertheless, the following observations can be made:

- For each type of factory (type A: applying BAT technology; type B: preliminary treatment; type C: no treatment) the charges calculated are fairly similar across the Member States. This applies specifically to the type A factory, which should be or become the norm in the Community.
- Among the factories of type A (BAT), the highest annual charge (in the Netherlands) of €40,527 is about four times higher than the lowest (in the Walloon Region of Belgium) of €9,840. Depending on the receiving water, the charge can be slightly higher still in Scotland.
- For most Member States where calculations were possible, the annual effluent charges for model factories of type B (preliminary treatment) is four to eight times higher than for "clean" factories of type A. An exception can be found in the Brussels Region of Belgium, where the charge for type B effluents is 35 times higher than for effluent from type A. In the United Kingdom, the other exception, all of the different factories (A, B, and C) would have the same annual effluent charge.
- Among the factories of type B (preliminary treatment), the annual charges range from €153,774 in the Netherlands to €33,428 in the Walloon Region, with a factor of five between these extremes. Depending on the receiving water, the charge can be slightly

lower in Scotland and lower still in England and Wales. For this class of factories, as in type C (no treatment), the Brussels Region would charge exorbitant prices.

- The annual effluent charges for type C factories are 6 to 17 times higher than for type B factories, with the strongest incentives to invest in treatment being set in Denmark and the Brussels Region (no difference among the classes in the United Kingdom).
- The class C factories is largely hypothetical, as a textile finishing factory would not normally be allowed to operate without effluent treatment in most countries. The range of annual effluent charge bills is wide, reaching from €20,916 in England and Wales to a theoretical €7,487,766 in the Brussels Region when the effluents are measured rather than estimated.
- The effluent charging systems generally create significant incentives, judging merely by the tariff structures. A unique feature of the German system is the high difference between the charges for effluents of types A and B. This is due to a 50 % reduction in the annual bill if each parameter in the effluent conforms to the minimum standards established by national legislation. This incentive is enhanced by the possibility to offset investments in upgrading to BAT against the effluent charge. Here, a large number of existing installations have been upgraded.
- The actual importance of the incentives is generally impossible to estimate, however, because there are no reliable data on the cost of preliminary treatment of effluents or the application of BAT. Economic considerations alone would indicate that producers will only invest in pollution abatement if the costs are lower than the effluent charge saved.
- The information available indicates, however, that the effluent charges make up a small proportion of the total costs of effluent treatment (of 2.5 to 8.5 %), including the effluent charge. This would indicate that effluent charges are not effective by economic criteria alone, and that other factors must be considered when assessing their effectiveness.
- The total cost of the water supply (for production purposes) and effluent treatment (including the effluent charges) fall in a range of 1 to 5.3 percent of total turnover in the textile finishing sector. Given the low share of the effluent charges in water-related costs, the economic impact of the effluent charges on the sector is not significant, at least where BAT is applied. In consequence, the impact of effluent charges on the competitive position of individual factories would be insignificant as well.
- With the qualifications made above, these findings apply to the textile finishing industry but cannot be extrapolated to other sectors or industries. Every sector need to be assessed separately, especially in relation to the relative pollution abatement achieved with different production and effluent treatment technologies.

PART III: POLICY OPTIONS AND RECOMMENDATIONS

5 Summary evaluation of effluent charging systems

In keeping with the structure of the study, this evaluation begins with a summary evaluation of Part I on the regulatory background for the application of economic instruments in water pollution control. This is followed by the evaluation of Part II on the different designs and functions of effluent charging systems in the European Member States. The concluding chapter 6 will specify policy options and recommendations.

5.1. Summary evaluation of regulation and water pollution control (Part I)

Allocations of the responsibilities for the authorisation and control of water pollution vary significantly among the Member States. In general terms, small (often non-industrial and low-risk) discharges tend to be administered and controlled by local or regional authorities, and larger (industrial) discharges are usually supervised by central authorities. The control of effluents from sewage treatment plants tends to be more decentralised than industrial pollution control. The Netherlands is the only country where authorisation is distributed according to the size (and legal status) of the receiving water. The responsibilities for effluent monitoring and inspection, and for monitoring the quality of receiving waters (environmental quality monitoring) vary as well, but generally follow those for authorisation and control. The use of self-monitoring is widespread, normally in conjunction with quality controls or validation routines by the authorities. Polluters and water users are sometimes obligated to share with the environmental authorities the monitoring data they generate. In general, the administrative responsibility for collecting effluent charges rests with the same authorities – or level of authority in tiered systems – that issue the permits, but in some cases the responsibility lies with a different department or section of that authority.

It was impossible to obtain information on the total number of water pollution incidents, the number of unlawful cases, and the proportion of unreported incidents in the Member States. The few estimates of unreported events that have been provided fall into a relatively narrow range (5 to 20 % of all incidents), but the sample and the estimation techniques do not allow drawing meaningful conclusions. In general, incidents of (unlawful) water pollution are investigated by environmental and police authorities, with a strong role for the environmental authorities. The task of securing evidence (in view of obtaining convictions in court) normally lies with the police authorities; the exceptions here are Greece and the United Kingdom. The details of the arrangements vary considerably, and the consequences of the different allocations of enforcement responsibilities remain unclear.

In most Member States, unlawful water pollution is punishable by fines or prison sentences, and licences can be withdrawn in serious cases. There is insufficient empirical evidence to assess the relative importance of actual convictions. In those countries in which prosecution is admissible, it is seen as a useful and effective instrument for the control of water pollution and the enforcement of environmental regulations. In light of Article 23 WFD, an exchange of information with a view to harmonising the legal approaches to protect the environment by

criminal law would be useful. There appear to be varying definitions of the legal terms "crime", "offence" etc. in the Member States of the European Union. The draft Framework Decision on the protection of the environment through criminal law (Justice and Home Affairs), to which the European Parliament gave its Opinion on 7 July 2000¹, may broaden the basis for reflections beyond the requirements of the WFD. The same applies to the Commission Proposal for a Directive of the European Parliament and of the Council on the Protection of the Environment through Criminal Law (COM(2001)139 final, 2001/0076(COD) of 13 March 2001).

In most Member States, prosecution for unlawful water pollution can be brought against both, individuals (natural persons) and companies (legal persons). In this respect, the draft Framework Decision and the proposed EC Directive on the protection of the environment through criminal law may provide an incentive to strengthen the enforcement in Member States where legal persons have no criminal liability (Germany², Italy, Luxembourg and Sweden).

5.2. Summary evaluation of effluent charging systems (Part II)

Charges for effluent discharges into natural waters exist in seven Member States of the European Union (Belgium³, Denmark, Germany, Spain, France, the Netherlands, and the United Kingdom⁴). Charging systems are at various stages of discussion or preparation in a further five Member States. It still appears to be difficult to establish new charging systems, however, in spite of the economic elements of the Water Framework Directive and the general attention being paid to economic instruments in environmental policy.

Some Member States (Denmark, Germany, Spain, and the United Kingdom) collect charges only for direct discharges, leaving operators of sewage treatment plants to pass the cost of the effluent charges on to households as well as to small and medium-sized enterprises and other indirect emitters. This is usually done on the basis of freshwater consumption for households, where water meters are used. The mechanisms used to pass on the charges for commercial and industrial effluents are rather more complicated and tend to vary widely even within Member States.

The other Member States (Belgium, the Netherlands, and France) also levy charges on indirect emitters, including households, and then exempt the operators of sewage treatment plants from paying the effluent charge or – in the Netherlands – they apply generous reductions. The charges payable by households in such cases can be based on estimates, lump sums or other standardised approaches. Either way, the indirect emitters including households, industrial indirect emitters, small and medium-sized enterprises, farmers and others, are brought into the charging systems and have to pay their share.

¹ PE 292.934, p. 12.

² Under the German Criminal Code only organs of the legal persons can be held liable.

³ In all three Regions: the Walloon, the Brussels and the Flemish Region.

⁴ In England and Wales as well as in Scotland. In Northern Ireland no charging systems exists to date.

The various sectors (households, agriculture, and industry) are addressed rather differently in the various Member States that operate effluent charging systems:

In some Member States (or their regions) agriculture is not allowed to discharge its effluents directly into natural water bodies, and where discharges are allowed or occur the same rules tend to apply to agriculture as to industry. The exceptions are Belgium, which has moderate schemes for farmers, and the United Kingdom.

The various industrial sectors or branches are generally treated equally, although differences exist in practice with regard to the pollutants considered, the pollution limits or other criteria. As a whole, the existing charging systems avoid distortions across industrial sectors. In some Member States, the effluent charges for small and less polluting discharges are based on coefficients or lump sums (estimates). Significant reductions for some industrial sectors exist in Denmark.

With some exceptions, effluent charges are calculated on the basis of the (measured) quantities of specific pollutants in the effluent. Most systems take into account BOD, COD, N, P, suspended solids and certain heavy metals, as well as discharge volumes, and most systems also use additional parameters. The emission data on which the effluent charges are based on are generally derived from self-monitoring by the dischargers and compliance monitoring by environmental authorities. The precise methods of assessing the effluent charges vary significantly among the Member States. For administrative reasons, the values stated in the discharge permits form the base of effluent charges in Germany, while rebates are given when the actual discharge is lower.

The charging system of the United Kingdom is very different from the others, as the charges are calculated on the basis of the types of pollutants regardless of the quantities discharged.

The charging systems differ considerably with respect to their calculation methods and the financial arrangements for the reductions available to some sectors, or in return for investments into effluent treatment, good environmental performance, or levels of pollution in the intake of raw water. At present, only Germany operates a system where investment in water pollution control may under certain circumstances be offset against the effluent charge.

The revenue from effluent charging systems is significant, especially in those Member States where effluent charging systems are designed to provide revenue for investment in water pollution control (Belgium, France, and the Netherlands). The recipients of the revenue tend to be the authorities responsible for water resource protection and management, which are also competent for authorising and monitoring the discharges, or intermediate "financial" institutions for water policy, such as the French Agences de l'Eau. In some cases the revenues are directly controlled by the (local or regional) water authorities. In other cases the revenue is returned to them after going through public accounts.

The charging systems in the various Member States are designed to fulfil different functions:

- Mainly incentive (Germany, Denmark⁵);

⁵ The Danish system is mainly incentive, but being a tax it contributes to the general budget and therefore also fulfils a fiscal function.

- mainly financial (Belgium, France, the Netherlands, and Spain⁶);
- cost recovery for administration and control of discharge permits (England and Wales, Scotland).

In essence, the effluent charging systems are closely intertwined with other functions of water pollution control. In Germany the revenue from effluent charges must be used to improve water quality, and thus benefits directly or indirectly those liable to pay. Apart from its incentive function, the charge therefore has a financial function to improve water quality; its fiscal function is comparatively minor. Similar overlaps of the functions exist in other Member States as well.

Revenues tend to be earmarked for various activities. In some countries the revenues are reserved for water quality measures and pollution control, or for the recovery of administrative costs (United Kingdom), and in Denmark the 'effluent charges' constitute a contribution to the general budget.

The following Table 19 provides an overview of the different functions of effluent charging systems and lists the Member States without any such system (last column). As mentioned above, the charging systems usually fulfil more than one function, and the table classifies the countries according to the function regarded as the principal one.

Table 19: Effluent charging systems in the EU Member States

Incentive ECS	Financing ECS	Recovery of administrative fees	No ECS
Denmark	Belgium (all three regions)	England and Wales	Austria
Germany	Netherlands	Scotland	Finland
	France		Greece
	Spain ¹		Italy
			Ireland
			Luxembourg
			Portugal ¹
			Sweden
			Northern Ireland

¹ Source: "Database on environmental taxes in the European Union, plus Norway and Switzerland" (Forum for the Future, 2000).

A model calculation of annual effluent charges for three types of textile finishing factories has served to evaluate the importance and possible effects of effluent charges for this sector in the various Member States. The three model factories were postulated to finish the same amount and kind of fabric, but using three different technological standards and differing with respect to the amount pollution units they discharge via their effluents into natural waters. Factory A applies BAT (clean technology and effluent treatment), factory B only preliminary effluent treatment, while factory C applies no effluent treatment at all.

⁶ As no questionnaire was returned, information is very limited on the charging system in Spain.

The calculation showed that the charge levels are fairly similar across all Member States in which effluent charging systems exist. This applies specifically to the type A factory, applying BAT technology, which should be or become the norm in the Community. The highest annual charge for the type A factory is found in the Netherlands and is about four times higher than the lowest, which is in the Walloon Region of Belgium.

The annual effluent charges for model factories of type B, applying only preliminary effluent treatment, are four to eight times higher than for "clean" factories of type A. Among the model factories of type B (preliminary treatment), the annual charges vary by factor of five between the lowest charge in the Walloon Region and the highest in the Netherlands.

The annual effluent charges for type C factories, which apply no effluent treatment, are 6 to 17 times higher than for type B factories, with the strongest incentive to invest in treatment provided in Denmark. The class C of factories is largely hypothetical, however, as a textile finishing factory would not be allowed to operate without effluent treatment in most countries.

The effluent charging systems create significant incentives for pollution abatement in all Member States, merely judged by tariff structures. The United Kingdom represents an exception – where the three types of factories receive the same annual bill for their effluent. A unique feature of the German system is the high difference between the charges for effluents of types A and B. This is because the payable rate for a certain parameter is reduced by 50% when it meets the minimum standards set in §7a WHG. This incentive is enhanced by the possibility to offset investments upgrading to BAT against the effluent charge, and as a result a large number of existing installations have been upgraded in recent decades. Generally, however, the actual efficacy of the incentives is impossible to judge, because there are no reliable data on the cost of preliminary treatment or BAT treatment of effluents. Economic considerations alone would indicate that investment in pollution abatement will take place only if the associated costs are lower than the effluent charge.

The information available indicates, however, that the effluent charges only make up a small proportion (of 2.5 to 8.5 %) of the total costs of effluent treatment in the textile finishing sector. The total costs of water supply and effluent treatment and disposal are in the range of 1 to 5.3% of the total turnover in the textile finishing sector. Given the low share of the effluent charges in water-related costs, the economic impact of the effluent charges is insignificant, at least where BAT is applied. In consequence, the impact of effluent charges on the competitive position of individual factories would be insignificant.

With the qualifications made above, these findings apply to the textile finishing industry, and they cannot be applied to other sectors or industries. Each relevant sector would need to be assessed separately, especially in relation to the pollution abatement achieved with various production and effluent treatment technologies.

To provide the right incentive, the charge must be high enough to encourage pollution control measures. In Germany and the Netherlands, the charges are relatively high, deterring water pollution and creating large investments into pollution abatement measures. In contrast, the charging level in France is considered to be too low to provide such an incentive (Rees and

Zabel, 1998)⁷. The charging system in Denmark has motivated reductions of N and P, but not of BOD₅, because the rates for N and P are high, and the rate for BOD₅ is relatively low⁸.

Information on the effectiveness of the charges is incomplete, as some charging systems could not be evaluated in depth in the context of this study. In general terms, the following effects of charging systems have been reported:

- Investment in effluent treatment, to avoid or reduce water pollution and effluent charges,
- investment in cleaner production technology (adoption of BAT);
- pre-treatment or adoption of procedures (by industry, small and medium-sized enterprises, and in municipal sewage treatment plants) to avoid discharges of dangerous substances, or of substances that are expensive to monitor;
- reduction of water consumption in production processes and establishment of recycling schemes (to reduce the volume and improve the quality of the effluent);
- reduction in pollution loads, notably nitrogen (N) and phosphorus (P); and
- general improvements in the administration, monitoring and control of effluent discharges and in recipient water quality.

There appears to be no evidence of industries relocating in response to effluent charging systems. This is reported consistently by Member States that have effluent charging systems.

In general, effluent charges based on pollution loads and concentrations are considered to improve water pollution control, whereas simple regulatory or administrative fees (United Kingdom) do not. On the whole, given the positive effects of effluent charges on the implementation of environmental law, the low amount of revenue may be regarded as a good price to pay for a significant improvement in environmental protection.

The introduction of economic instruments in environmental protection policies is usually justified and later evaluated by economic arguments and criteria. The arguments normally focus on incentives and disincentives. Low charges themselves cannot be expected to provide strong incentives for pollution abatement. In spite of this, the questionnaires and interviews conducted for this report show that the existing effluent charging systems are seen as a good tool of environmental policy, and this assessment matches the generally positive evaluations found in the literature. This raises the question which other factors may be responsible for this positive appraisal of effluent charging systems in Europe.

Effluent charges provide the environmental authorities of the Member States with a source of finance which they either control directly, or to which they have relatively strong claims in competition with other authorities and ministries. This helps to build the administrative capacities needed for water resource management (analyses and monitoring, funds for staffs, outside services and expertise). In addition, financial resources become available for a range

⁷ However, the French charging system provides for other incentives (premiums) to promote the application of clean technologies and pollution abatement.

⁸ 20 DKR (€2.67) / kg tot. N; 110 DKR (€14.67) / kg tot. P; 11 DKR (€1.47) / kg BOD₅.

of water management activities, such as research and development, or the modelling of aquifers.

The effluent charging systems create a need for up to date information and documentation on water pollution and on the state of natural water bodies, and provide an opportunity to strengthen the information bases for administrative purposes. In addition, the communication between the water management administration and the various water polluters is improved by introducing a new, financial element. Information and interaction between polluters and the administration becomes more frequent and formalised, and effluent quantities are measured rather than estimated or assessed on the basis of permits and licences. At the same time, effluent charges introduce elements of control and enforcement usually associated with revenue raising (taxation), and this also strengthens the administrations' position in conflicts with water polluters.

The effluent charges motivate water users to review their water needs for production processes, to study integrated prevention of pollution, and recycling and re-use of water, to consider the potential for water savings and substitution, and finally to look into possibilities to reduce pollution at its source by pre-treating the effluent. It underscores the determination of legislators to provide the administrations with the resources they need to carry out their functions more effectively than before.

6 Options and recommendations

Effluent charging systems can evidently be effective instruments of water pollution control, depending on their objectives and design. In view of the insufficient implementation and enforcement of environmental legislation in the Community and many Member States, the European Parliament may consider an initiative to promote economic instruments designed to strengthen administrative capacities in water resources management. Such an initiative would follow from the Water Framework Directive, and Article 9 in particular. Following a European Parliament hearing on the issue, the European Commission may be invited to submit a communication and propose a policy process to provide a common framework for internalisation of environmental and resource costs (Article 9 WFD). This need not lead to binding legislation if other effective measures can be identified. Such an initiative appears to be justified, in view of the (albeit weak) relevance of effluent charging systems for competition in the internal market, but more importantly it would ensure a high and harmonious level of environmental protection throughout the European Union. A Community initiative would be welcomed by the environmental administrations in some Member States, as long as it left sufficient room for designing a system to suit the respective national or regional requirements.

In preparation of such an initiative, the "Lille Network" of water officials and economists established at the International Conference Lille II in September 2000 could be invited to organise a more detailed review of effluent charging systems in the Member States. This should focus not only on the design characteristics of effluent charging systems (taking this report as its basis), but also analyse the obstacles to introducing charging systems in various Member States, as well as specific characteristics of charging systems (e.g. earmarking). One priority should be the assessment of possible distortions resulting from the unequal treatment

of direct and indirect emitters. The evidence from some Member States suggests that some factories can and do avoid or reduce effluent charges by discharging effluents into sewers rather than into natural waters. This would be detrimental to the environment wherever it involves dangerous substances that cannot be degraded effectively in sewage treatment plants. Another area of interest could be an analysis of the incentives set by charging levels, tariff structures, reductions, possibilities to off-set investments, etc., perhaps with reference to the cost assessments for clean production technologies collected by the European IPPC Bureau in Sevilla. The aim here should be to avoid any distortions within industrial sectors and to identify effective stimuli for technological innovation and the diffusion of cleaner technologies.

Similarly, the European Parliament could promote a Community approach to the determination of penalties for breaches of the national provisions on water pollution control. These may equally have little relevance to competition in the internal market. Not being "primarily fiscal in nature", penalties would be considered part of the environmental measures adopted in the Council by a qualified majority on the basis of Article 175 (1) EC-Treaty. An initiative designed to strengthen the enforcement of environmental legislation would be justified either on the basis of the Water Framework Directive (Article 22) – if it relates specifically to water – or as part of the general implementation and enforcement of environmental law.

To date, however, there appears to be no comprehensive overview of the exercise of police powers in water pollution control in the Member States, and the information collected for this study can only be regarded as an important preliminary step. Finally, an iterative process of feedback between the authorities of the Member States is required to ensure that information of similar quality is provided by each of them. Notably as a result of discussions in the IMPEL network, the highest environmental authorities in the Member States appear to be relatively well aware of the allocation of responsibilities and of the administrative practices in other Member States, compared to other aspects of water pollution control. Nevertheless, an additional exchange of experience and a process of policy learning would improve the implementation of water pollution control policies. More applied research, may be needed, however, involving the relevant authorities in the Member States.

The Water Framework Directive now requires that environmental and resource costs be taken into account, and instruments are needed to assess them and to internalise the costs into the economic calculations and decisions of water users and water polluters. There are a number of methods and techniques to assess environmental and resource costs, but there is a lack of agreement on best practices and there are no standards to follow. In effect, knowledge on environmental and resource costs is unsatisfactory. By contrast, the relatively large experience with effluent charging systems in a number of Member States is invaluable in designing effective approaches to internalisation. These can and should be adopted and implemented even before the levels of environmental and resource costs can be determined with accuracy. An early implementation of effluent charges (and of water abstraction charges on the water supply side) would generate positive effects in terms of building administrative capacity, improving the information of water polluters, as well as for the innovation and diffusion of technology for water pollution control. After it becomes possible to determine

environmental and resource costs better, the effluent charging rates can be increased to provide an effective internalisation, and the process of adapting the effluent charging systems will benefit from the knowledge gained in the meantime. This would greatly reduce the danger of unintended and avoidable economic and social side effects.

PART IV: BIBLIOGRAPHY AND ANNEXES

7 Bibliography

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7.2. National legislation

Austria

- Allgemeine Abwasseremissionsverordnung BGBl No. 1996/186 (1996).
- Allgemeine Abwasseremissionsverordnung Petrochemie BGBl II 1997/344 (1997).
- Austrian Water Act.

Belgium

Walloon Region

- Arrêté du Gouvernement wallon relatif à la protection des eaux de surface contre la pollution causée par certaines substances dangereuses (29 June 2000).
- Décret du 30 avril 1990 instituant une taxe sur le déversement des eaux usées industrielles et domestiques, modifié par le décret du 25 juillet 1991, le décret du 23 décembre et le décret du mars 1996 – Coordination Officieuse au 27/01/1998.

Brussels Capital Region

- Ordonnance du 29 Mars 1996 Instituant une Taxe sur le Déversement des Eaux Usées.
- Royal decision 7/11/1996.
- Royal decision 23/12/1999.
- BCR law 5/6/97.
- BCR decree 22/4/99.
- Federal law 26/3/71.
- Royal decree 3/8/76.
- Royal decree 4/11/87.
- BCR law 29/3/96.
- BCR decree 7/11/96.
- BCR decree 18/6/92.
- Federal law 28/12/67.
- BCR law 25/3/99.
- Royal decree 18/9/87.
- BCR Decree 23/12/99.

Flemish Region

- Flemish Decree on Environmental Permits (1985).
- VLAREM I (Flemish Regulations on Environmental Licences) (1995).
- Arrêté de l'Exécutif flamand portant fixation de certaines modalités pour la mise en exécution du chapitre III *bis* "Dispositions particulières pour la Région flamande en matière de redevances sur la pollution des eaux" inséré dans la loi du 26 mars 1971, sur la protection des eaux de surface contre la pollution par le décret du 21 décembre 1990 contenant des dispositions budgétaires techniques ainsi que des dispositions accompagnant le budget 1991.
- Arrêté de l'Exécutif flamand portant exécution du chapitre III *bis* de la loi du 26 mars 1971 sur la protection des eaux de surface contre la pollution (16 February 1993).
- Arrêté de l'Exécutif flamand portant des règles complémentaires en matière de redevances en vue de la protection des eaux de surface contre la pollution (14 February 1990).
- Arrêté de l'Exécutif flamand fixant les minima des charges polluantes, les modalités pour le calcul des charges polluantes suivant la méthode simplifiée ainsi que le modèle de la déclaration visés aux articles 32*decies* et 32*undecies*, 4° et 5°, de la loi du 26 mars 1971, sur la protection des eaux de surface contre la pollution (16 May 1990).

Denmark

- Bekendtgørelse nr. 501 af 21. juni 1999 om spildevandstilladelser (The statutory order No. 501 of 21 June 1999 on waste water).
- Miljøbeskyttelsesloven (The Environmental Protection Act).
- Bekendtgørelse nr. 921 af 8. oktober 1996 om kvalitetskrav for vandområder (Statutory Order No. 921 of 8 October 1996 on Quality Standards for Water Bodies).
- Straffeloven (The Penal Code).
- Retsplejeloven (The Act on Administration of Justice).
- Lov om afgift af spildevand (The Act on Taxes on Waste Water).
- Lov om betalingsregler for spildevandsanlæg m.v. (The Act Concerning Payment Rules for Waste Water Systems etc.).

France

- Loi n° 64-1245 du 16 décembre 1964 relative au régime et à la répartition des eaux et à la lutte contre leur pollution (1964).
- Code de l'Environnement.
- Arrêté du 22 décembre 1994 fixant les prescriptions techniques relatives aux ouvrages de collecte et de traitement des eaux usées mentionnées aux articles L. 372-1-1 et L. 372-3 du Code des communes (1994).

- Arrêté du 22 décembre 1994 relatif à la surveillance des ouvrages de collecte et de traitement des eaux usées mentionnées aux articles L. 372-1-1 et L. 372-3 du Code des communes (1994).
- Arrêté du 2 février 1998 relatif aux prélèvements et à la consommation d'eau ainsi qu'aux émissions de toute nature des installations classées pour la protection de l'environnement soumises à autorisation (1998).

Germany

- Wasserhaushaltsgesetz – WHG last amended on 12 Nov 1996 (Federal Water Act).
- Abwasserabgabengesetz - AbwAG 3 last amended on Nov 1994 (German Federal Effluent Charges Act).
- Abwasserverordnung – AbwV as of 21 March 1997 (German Federal Effluent Ordinance).
- Abwasserverwaltungsvorschriften (Waste Water Administrative Regulations).
- Eigenüberwachungsverordnung Sachsen-Anhalt (Ordinance of Self-monitoring).
- Landeswassergesetz Rheinland-Pfalz (Auszug) (State Water Act of Rhineland-Palatinate – extract).
- Strafgesetzbuch (Auszug) (Penal Code – extract).

Greece

- Common Ministerial Decision 5673/400.
- Presidential Decree 1180/8.
- Law 2242.
- Law 1650.

Italy

- Decreto Legislativo 152/99 (Law for Water Protection) (1999).
- Legge 36/94 (Law for Water Management) (1994).

Ireland

- Local Government (Water Pollution) Act (1977).
- Local Government (Water Pollution) (Amendment) Act (1990).
- Environment Protection Agency Act (1992).
- Local Government (Water Pollution) Regulations (1978) (s.i. No. 108 of 1978).
- Local government (Water Pollution) regulations (1992) (s.i. No. 271 of 1992).
- Local Government (Water Pollution) Act (1977).
- (Water Quality Standards for Phosphorus) regulations (1998) (s.i. No. 258 of 1998).

- Water Quality (Dangerous Substances) Regulations, 2001 (s.i. No. 12 of 2001).
- Environmental Protection Agency (Licensing) Regulations, 1994 (s.i. No. 85 of 1994).
- Environment Protection Agency Act, 1992 (Urban Waste Water Treatment).
- Regulations, 1994 (s.i. No. 419 of 1994).

Luxembourg

- Loi du 29 juillet 1993 concernant la protection et la gestion de l'eau (Law of 29 July 1993 Concerning Protection and Management of Water).
- Loi du 10 juin 1999 relative aux établissements classés (Law of 10 June 1999 Concerning Classified Enterprises).
- Statement at the third ministerial conference on environment and health, London, 16-18 June 1999.

Netherlands

- Wet Verontreiniging Oppervlaktewateren (Pollution of Surface Waters Act) (13 November 1969).
- The evaluation of Substances and Preparations in the Context of Pollution of Surface Waters Act.

Sweden

- Miljöbalken (Environmental Code) (11 June 1998).
- Förordningen om miljöfarlig verksamhet och hälsoskydd (Ordinance on environmentally hazardous activities and Public Health) (25 June 1998).
- Förordningen om avgifter för prövning och tillsyn enligt miljöbalken (Ordinance on examination and license fees according Environmental Code) (25 June 1998).

United Kingdom

England and Wales

- Water Resources Act (1991).
- Environment Act (1995).
- Environmental Protection Act (1990).
- Pollution Prevention and Control Act (1999).
- Statutory Instrument 2000 No. 1973 - Pollution Prevention and Control Regulations (2000).
- UWWT Regulations (The Urban Waste Water Treatment) (1994).
- UK Pollution Inventory List.
- Environment Agency Charging Scheme for Discharges to Controlled Waters.

- Police And Criminal Evidence Act.

Northern Ireland

- Water Act (NI) (1972).
- Industrial Pollution Control (NI) Order (1997).

Scotland

- Control of Pollution Act (1974).
- Environmental Protection Act (1990).
- Environment Act (1995).
- Pollution Prevention and Control Act (1999).
- Scheme of annual charges in respect of discharges to controlled waters and land (1999).
- The Integrated Pollution Control Fees and Charges (Scotland) Scheme (1999).
- Environmental Protection (Prescribed Processes and substances) Regulations (SI471) (1991).
- Standard Levels of Service for Discharge and Associated Environmental Monitoring, for Consent/Authorisations under CoPA74 and EPA90.

7.3. EC legislation

- Council Directive 76/464/EEC of 5 May 1976 on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community.
- List I and II of Council Directive 76/464/EEC.
- Council Directive 80/68/EEC of 19 December 1979 on the protection of groundwater against pollution caused by certain dangerous substances.
- Council Directive 91/271/EEC of 21 May 1991 concerning urban waste water treatment.
- Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control.
- Council Directive 2000/60/EC of 23 October 2000 establishing a framework for Community action in the field of water policy.
- Commission Proposal for a Directive on the protection of the environment through criminal law (COM(2001)139 final, 2001/0076(COD) of 13 March 2001.

8 Annexes

8.1. Q7: Dangerous substances

Table 20: Dangerous substances

Member State	Dangerous substances
A	Major groups of substances regarded as dangerous substances are based on Directive 76/464 EEC.
B	
B (WAL)	55 substances from list I and II of Directive 76/464 EEC.
B (BCR)	Royal Law 26/3/71, Royal Decree 4/11/87, Royal Decree 19/6/89.
B (FLA)	List 2C from Directive 76/464/ EEC, from this list 25 substances are considered to be relevant, meaning water quality objectives are fixed.
DK	Major groups of substances regarded as dangerous substances are based on list I and II of Directive 76/464 EEC.
D	List I of Directive 76/464.
SF	Major groups of substances regarded as dangerous substances are based on <ul style="list-style-type: none"> - Annex III of Directive 96/61 EC - List I and II of Directive 76/464 EEC - Other substances dangerous to the aquatic environment.
F	132 substances as listed in Directive 76/464 EEC and substances classified N (dangerous substances)
GR	List I and II of Directive 76/464 EEC.
I	Decreto Legislativo 152/99.
LUX	Luxembourg does not have any organic chemical industry, which considerably narrows down the potential of dangerous substances. In general heavy metals are considered as the most typical dangerous substances from the point of view of major direct discharges into the rivers.
NL	Historically, the substances of list 1 of Directive 76/464 EEC were considered as dangerous substances but in the policy on water pollution control all substances with similar properties as those of the substances of list 1 were also considered as dangerous substances. The recommendations for specific sectors issued by CIW in particular addressed these dangerous substances, thus providing a harmonised approach. Special attention has been given to pesticides and biocides. However, every discharged substance which could possibly negatively influence the functioning of the receiving water is regarded as dangerous.
S	In general substances are regarded as dangerous if they bioaccumulate and/or are persistent. These include metals (e.g. mercury and cadmium) and various persistent organic pollutants (e.g. brominated flame retardants). In addition, substances which have been shown to have direct or indirect health effects without being taken up by organisms can be considered as dangerous, e.g. particles and NO _x .
UK	
UK (E&W)	UK Pollution Inventory List.
UK (NI)	List I and II of Directive 76/464, also substances which have national (e.g. UK) EQS. "Schedule 5" to the Prescribed Processes and Substances Regulations (NI), which apply to IPC authorisations, list the substances prescribed for release into water.

Member State	Dangerous substances
UK (SCOT)	OSPAR 1998 List of Candidate Substances. Dangerous Substance Directive (List I and II) - Communication from the Commission to the Council OJ C 176, 14.7. 1982. Groundwater Directive (List I&II). IPPC Annex III.

8.2. EURO Exchange Rates

Table 21: EURO – Exchange Rates (2000)

Member State	National Currency	Exchange Rate 1 EURO (€)
Austria	ATS	13.7603
Belgium	BRF	40.3399
Denmark	DKR	7.4648
Finland	FMK	5.94573
France	FF	6.55957
Germany	DM	1.95583
Greece	DRA	331.83
Ireland	IR £	0.78756
Italy	LIT	1936.27
Luxembourg	LFR	40.3399
Netherlands	HFL	2.20371
Portugal	ESC	200.482
Spain	PTA	166.386
Sweden	SKR	8.6479
United Kingdom	UK £	0.6242

8.3. Overview: Database on environmental taxes in the Member States of the European Union

The following Table 22 is an extraction from the “Database on environmental taxes in the European Union, plus Norway and Switzerland” (Forum for the Future, 2000); no alteration or corrections were made to the original information contained in the database. The information was used for fact-checking and to gather additional information.

Table 22: Extraction from database on environmental taxes

Member State	Motivation	Environmental themes	Sources	Tax rate	Total revenue	Use of revenue	Macro-/Socio-economic Environmental Outcome
B B (WAL)	Water effluent charge (discharge to surface waters)/ Sewage treatment (regional - waste water charge): - direct dischargers - indirect dischargers. Cost-covering charges.	Inland waters; coastal/marine waters; nature/biodiversity.	Discharges from households and businesses to surface waters and to the sewerage (Flanders). Discharges to surface waters and to sewers are subject to a waste water charge in Wallonia ¹ . The waste water charge is formally a tax in Wallonia.	Charge scheme rates: waste water treatment charge for: - households: BRF 16; € 0.4 per m ³ - industrial users: BRF 360; € 8.9 per unit of pollution ¹ .	Revenue was BRF 1.5 bil.; € 37.2 mill. in 1993 in Wallonia. Revenue from the waste water tax: BRF 2.8 bil.; € 70 mill. in 1997 in Wallonia.	Revenue is earmarked financing water quality management and collective treatment infrastructure.	Charge scheme was introduced in Flanders in 1991; - there exists some differences between the charge scheme in Flanders and Wallonia: in the former the charges covering around 50 percent of both construction and operational costs of communal treatment plants and in the latter 70 percent of the construction costs. All other expenses are financed by government funds. 27.3 percent of the population in Wallonia are connected to communal treatment plants (primary and secondary treatment) (1993); rates for the waste water charge shall be tripled up to 2000.

¹ Agriculture is identified as a category subject to the charge.

¹ Tax rate has not changed since introduction of the tax in April 1990.

Member State	Motivation	Environmental themes	Sources	Tax rate	Total revenue	Use of revenue	Macro-/Socio-economic Environmental Outcome
B (BCR)				Charge scheme: - the levy is set proportional to the water use for households and SME: BFR 14; €0.35 per m ³ and for other enterprises the levy is calculated on the basis of the pollution content.			
B (FLA)			Discharges from households and businesses to surface waters and to the sewerage.	Charge depends on water consumption, pollution load, and pumping capacity in Flanders: (1) households and small companies – charge relates to assumed or metered water consumption (2) large companies - charge is based either on sector-specific (conversion) coefficients or based on actual measurements charge is determined by the number of pollution units ¹ multiplied by the tariff. Tariff was BFR 600; € 14.9 in 1991-1995 and BFR 900; € 22.3 in 1996-1999 (BRF 980; € 24.3 in 2000) - since 1994 the tariff is linked to the retail price index. ² ¹ The calculation of the pollution unit follows three different approaches (see RIZA 1995 for further information). ² Discharges from communal treatment plants are excluded from the waste water charge (surface waters) in Flanders and Wallonia.	Revenue in 1993: BRF 7 bil.; € 174 mill. in Flanders - revenue from the waste water levy BRF 10 bil.; € 250 mill. in 1997.	Charges are imposed and collected by the Flemish Environmental Company (Vlaamse Milieumaatschappij) operating under the Flemish Community Ministry – the revenues are transferred to an environmental fund (MINA-fund). The MINA-fund (Milier-Natuur-fonds) was established in 1989 and receives general funding and revenues of environmental charges.	29 percent of the population in Flanders are connected to communal treatment plants (primary and secondary treatment) (1993). The waste water charge scheme in Flanders is based on the Polluters Pays Principle.
DK	Industrial and communal waste	Inland waters; coastal/marine	Aim of the tax is to provide an incentive to	Charge system for discharge to surface waters, rates for	Revenue in 1998: DKR 273 mil; € 36.6	Tax is collected by municipal authorities	Tax came into effect in January 1997.

Member State	Motivation	Environmental themes	Sources	Tax rate	Total revenue	Use of revenue	Macro-/Socio-economic Environmental Outcome
	water discharges to surface waters (sewage tax). Instrumental-incentive charges.	waters; nature/biodiversity.	reduce the amount of polluting substances in the discharged treated sewage. Tax on waste water is based on the content of nitrogen (N), phosphorous (P), and organic material (BI5).	1997: - DKR 10; € 1.34 per kg N; - DKR 55; € 7.37 per kg P; - DKR 5.5; € 0.7 per kg BI5; - charge system for discharge to surface waters: rates for 1998: - DKR 20; € 2.68 per kg N; - DKR 110; € 14.7 per kg P; - DKR 11; € 1.47 per kg BI5. The determination of the actual rates paid by dischargers are complicated and different methods are applied. The rates are varying between DKR 0.5; € 0.067 per m ³ and DKR 1.9; € 0.25 per m ³ ; in other cases the rate is DKR 3.8; € 0.5 per m ³ .	mil Revenue in 1999: DKR 314 mil; € 42.1 mil	which settle the payments with the Customs and Tax authorities.	Tax is levied on household, trade and industry ¹ : - the operator of a sewage treatment plant, industrial dischargers and units not connected to a sewer system are liable to the tax; - tax exemptions and modifications apply (see DEPA 2000). ¹ Companies producing cellulose or sugar can receive a refund of 97 % of part of the tax exceeding 200,000 DKR; 26,792 EUR.
D	Water effluent charge (state level) ('Abwasserabgabe') for discharges of waste water from industries and municipalities to surface waters. Incentive taxes.	Inland waters; coastal/marine waters; nature/biodiversity.	Direct discharges into surface waters (rivers, lakes, the sea and groundwater) by industrial and municipal sources.	Charge is calculated by multiplying the number of pollution units by the tariff: DM 60; € 30.5 per pollution unit (1993) DM 70; € 35.5 per pollution unit (since 1997) ¹ . Different calculation methods apply to industry and communal discharges ² ¹ Tax reduction is possible under the following regulation: - dischargers can get a 75 percent tax relief if they achieve the technology-based standards (best available technology - BAT) which is formulated in the law (NRA 1995; Smith 1995:27).	In 1992: DM 350 mil. € 177.7 mil. In 1998: DM 720 mil.; € 367 mil. (Administrative costs are around 10 % of total revenue (DM 76 mil; € 39 mil) in 1998).	Revenue is allocated to water quality management.	Waste water charge can be reduced through investment in pollution control equipment. The operation of communal treatment plants is financed by the revenues of the user charges plus waste water charges (100 %) and the construction is financed by the revenues of these charges (50 %) and by government funds (50 %).

Member State	Motivation	Environmental themes	Sources	Tax rate	Total revenue	Use of revenue	Macro-/Socio-economic Environmental Outcome
				² Pollution load is determined by values specified in the license of the dischargers ('ordnungsrechtliche Grenzwerte') – charge can be reduced (50 % reduction) if discharges fulfil the so-called Mindestanforderung (minimum requirement) for a particular pollutant in a particular economic sector.			
E	Water effluent charge (waste water charge - national scheme - 'canon de vertido') for discharges to surface waters. Cost-covering charges.	Inland waters; coastal/marine waters; nature/ biodiversity.	Direct discharges to surface waters.	Charge scheme for discharges of communities and industries to surface waters. Charge is based on the value of the polluting unit (the tariff) and the pollution content of the waste (pollution unit) ¹ . Tariff is PTA 500,000; € 3,005 per pollution unit and is determined by the government via the Drainage Basin Authorities (DBA). Households are not subject to this charge. ¹ The pollution load (expressed in pollution units) depends on the origin of discharge (urban or industrial discharges); both categories are further subdivided: the urban discharge into (a) not industrialised; (b) fairly industrialised and (c) highly industrialised; and the industrial discharge is also subdivided into three different classes of industry.	PTA 6.9 bil; € 41 mill. in 1992 (the actual collected revenue was smaller (about 50 %) - the collection of the charge was difficult, in particular from municipalities (70 % not collected).	Revenue is used to protect and improve the aquatic environment (also to finance communal treatment plants partly).	Charge is levied by the Drainage Basin Authorities (DBA). DBAs are involved in national water policies, such as the preparation of investment plans for water treatment infrastructure. Tariffs should be set in accordance with the financing needs of the DBAs based on their investment plans. Construction of communal treatment plants is financed by government funds (almost exclusively).
E additional information	Many Spanish environmental taxes may be considered as parafiscal taxes because the revenues generated are related to specific purposes such as the waste water treatment taxes which are established in the regions. There are further direct tax provision available such as the provision of loans for the reduction of polluting emissions into water etc.						

Member State	Motivation	Environmental themes	Sources	Tax rate	Total revenue	Use of revenue	Macro-/Socio-economic Environmental Outcome
SF	Water protection charge (water effluent charge). Cost-covering charges.	Inland waters; coastal/marine waters; nature/biodiversity.		Imposed on heavy polluters.	FMK 3 mil; € 0.5 mill. per year (1995-1999).	Revenue is earmarked for water protection activities.	
F	Waste water charge (water effluent charge - redevances). All discharges to surface waters and the sewers are subject to the charge. Cost-covering charges.	Inland waters; coastal/marine waters; nature/biodiversity.	All domestic and non-domestic discharges to surface waters and the sewerage ¹ . ¹ Non-domestic discharges (large industries) are charged for the waste water charge directly and discharges from households and small firms are charged indirectly – the water distributors pay the charge for the latter and pass on the costs to them.	Trade effluent charges/pollution fee is based on pollutants and differ between regions (River Basin Agencies).	Total amount FF 10 bil; € 1.5 bil in 1996.	Revenue is earmarked for funding water pollution control activities, further goals of the change scheme are the encouragement of polluters to reduce polluters and generating knowledge on the development of polluting discharges (RIZA 1995, p. 79).	The French system of water charges was introduced in 1964 (the so called Water Act); the charges are imposed and the revenues are collected by the six river basin agencies (Agences de l'eau)*. The exact rate of the charge is set by the water agencies (there are six different river basins agencies in France, which can set the rates individually but they are applying all the same calculation rules). The agency plays a key role in the coordination of water resource management (improvement in water resources and water quality). Around 80 percent of the population are connected to sewers. * The six water agencies have allocated FF 15 bil; € 2.3 bil for investment in improving water supply delivery in the period 1992-1996 (Buller, 1996); further FF 90 bil; € 13.6 bil are budgeted to water agencies for capital investment schemes in this period.

Member State	Motivation	Environmental themes	Sources	Tax rate	Total revenue	Use of revenue	Macro-/Socio-economic Environmental Outcome
IRL	Water effluent charge (national) for discharges to surface waters. Cost-covering charges.	Inland waters; coastal/marine waters; nature/biodiversity.	Direct discharges to surface water.	Charge system is levied on industrial and communal discharges.		General budget.	Construction of communal treatment plants is financed by Government funds (100 %); operation of communal treatment plants is financed by user charges and local taxes (100 %).
LUX	Direct discharges to surface waters have not been subject to a charge but the introduction of such a scheme is debated (RIZA 1995).						
NL	Water pollution charges (water effluent charge – pollution levy). Discharges to surface waters and sewerage are liable to the charge. Regional boards are responsible for non-state surface waters and sewerage. Cost-covering charges.	Inland waters; coastal/marine waters; nature/biodiversity.	Direct and indirect discharges.	Charge system for discharges to surface waters of non-state water. Charge rate is determined by the quantity and nature of the waste water and is calculated by the multiplication of the pollution load by the unit tariff: HFL 59 to 138; € 26.8 to 63 in 1995 (average tariff was HFL 82; € 37.2 in 1995) ¹ . Households and small firms (pollution load below five pollution equivalents) are charged by a fixed amount: average charge for household was HFL 204; € 92.6 (discharging to non-state waters or sewerage) and HFL 127.5; € 57.9 (discharging to state waters -see below) in 1992 ² . ¹ The waste water charges are not related to water consumption. ² Companies of intermediate sizes are normally charged based on scheme considering the number of employees, the type of activity, and consumption of water and raw materials; enterprises with emissions above 1000 p.e. are charged according to actual measurements of the quantity and concentration of emissions;	HFL 1.8 bil; € 808 mill. in 1996 (est.).	Revenue is earmarked for investment, operation and maintenance of treatment plants.	Charges are imposed and collected by the Water Boards. Primary (secondary) treatment capacity increased from 72 (63) to 97 (96) % in the period 1980 to 1992. Waste water from manufacturing industry reduced from 19 mill. i.e. to 4 mill. i.e. during 1975 and 1991. Discharges from communal treatment plants are not subject to this charge. Rates of the non-State tax are different considering different administrative areas and are higher than those of the State tax. Construction and operation of communal treatment plants is completely financed by the revenues from the waste water charges.

Member State	Motivation	Environmental themes	Sources	Tax rate	Total revenue	Use of revenue	Macro-/Socio-economic Environmental Outcome
				intermediate sized enterprises can also opt to this system.			
P	Discharges of waste water to surface waters are not subject to a waste water charge (RIZA 1995). The introduction of a charging scheme for effluent discharges is expected in the near future.						
UK UK (E&W)	Water charge (national) for discharges to surface and ground water. Cost-covering charge.	Inland waters; coastal/marine waters; nature/biodiversity.	Direct discharge to surface and ground water - a once only 'application charge'.	Charge scheme for discharges to surface waters in England and Wales consists of an application charge (1) and an annual charge (2): (1) standard one-off rate stands at £ 505, € 809 ¹ - has to be paid once; (2) base of the charge: volume and content of the discharge and type of receiving water: tariff was £ 389; € 623 per chargeable unit in 1994/95 (see for further information RIZA 1995). ¹ A reduced charge applies, £ 72; € 108, where the discharge is less than 5 m ³ of sewage effluent per day, or trade effluent from cooling is under 10 m ³ per day, or surface water not containing trade effluent.	£ 39.8 mil; € 64 mill. in 1992/93.	Revenue is used for the national scheme to finance licensing policy.	Introduced in 1992: National Rivers Authority (NRA) Applications and Dischargers Scheme. Charge applies for a new or revised consent to discharge. There are no charges for direct discharges in Scotland and Northern Ireland (RIZA 1995). Trade effluent tariffs are levied by the state water companies and the rates charged vary between the companies.
UK additional information	<p>The British model of water supply and treatment is unique within Europe. The water service companies are monopolist not competing with each other.</p> <p>The setting of future water prices by the water service companies has to be carried out within price limits which are established by OFWAT for a five year period.</p> <p>Water companies can increase the water bills during the five year period between 1995 and 2000 by 1.4 %t above the rate of inflation. Since privatisation the average household bill for water increased by 67.5 % (nominal) and by 30.2 % (real) (period 1989/90 - 1994/95) and the average household bill for sewerage by 64.9 % (nominal) and by 28.1 % (real) (period 1989/90 - 1994/95).</p> <p>A statement of intent has been published in the Budget July 1997 concerning the following measures:</p> <ul style="list-style-type: none"> - possible introduction of water pollution charges - aiming to reduce water pollution. <p>Water charges: The charges apply to England and Wales because there is no uniform organisation in the UK. Water supply and water treatment are carried out by 10 water service companies in</p>						

Part IV: Bibliography and Annexes

Member State	Motivation	Environmental themes	Sources	Tax rate	Total revenue	Use of revenue	Macro-/Socio-economic Environmental Outcome
	<p>England and Wales; additionally there are 16 smaller companies providing water but not waste water treatment. The Connection Act 1998 came into force on the 1 March 2000. It prohibits agreements which prevent, restrict, or distort competition and conduct which amounts to an abuse of monopoly power. The setting of future water prices by the water service companies has to be carried out within price limits which are established by OFWAT for a five year period. Water companies will reduce water bills by an average of 12.3 % in 2000/01.</p>						

Source: Forum for the Future, 2000.

8.4. List of the officials who completed questionnaires

Member State	Name	Institution/Department	Adress	Completion of questionnaire		
				Part 1	Part 2	Part 3
A	Schwaiger, Karl	Federal Ministry of Agriculture, Forestry, Environment and Water Management; Unit IV7-International Water Affairs		X	X	X
B	de Kerckhove, Bruno	Ministère de la Région wallonne		X		
	Perleau, Guy				X	
	Amand, Michel					
B (BCR)	Verbist, Anneleen	Institut Bruxellois pour la Gestion de l'Environnement Division, Inspection and Logistics, Water Department				X
B (FLA)	Heyman, Jan	Flemish Environmental Agency		X		X
	Fleurinck, Lutgarde					
DK	Plesner, Vibeke	Environmental Protection Agency, Supervision and Law Division		X	X	X
	Danielsen, Rikke Hvid	Environmental Protection Agency, Waste Water and Water Supply Division			X	
D	Berendes, Konrad	Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, Referat WH I2		X	X	X
	Ewens, Hans-Peter					
SF	Mika Seppälä	Ministry of the Environment, Environmental Protection Department		X	X	
	Parkkinen, Timo	Ministry of the Environment				X
F	Delaunay, Alexis	Ministère de l'Aménagement du Territoire et de l'Environnement		X	X	
	Bader, Jean-Luc					X
GR	Lazarou, Anastasia	Ministry of Environment, Water Section Ministry of Environment, Industrial Section		X		
					X	
I	Pineschi, Giorgio	Ministry of Environment				
	Rizzitiello, Daniela					
	Drusiani, Renato	Federgasacqua General Director				

Member State	Name	Institution/Department	Adress	Completion of questionnaire		
				Part 1	Part 2	Part 3
	Bortone, Giuseppe	ENEA-Ente per le nuove Tecnologie, l'energia e l'ambiente		X	X	X
IRL	Sadlier, John	Department of the Environment and Local Government, Water Quality Section		X	X	X
LUX	Hansen, Paul Ries, Jean-Marie	Administration de l'Environnement		X	X	
NL	Landman, Jolle Otten, Louis	RIZA, Ministry of Transports, Public Works and Water Management Directorate General for Public Works and Water Management		X	X	X
S	Bergwall, Ewa Nyström, Erik Sörngård, Peter Marklund, Håkan Hedlund, Britta Dunér, Karin Widell, Anders	Swedish Environmental Protection Agency		(Q 1-2) (Q 3) (Q 4-6) (Q 5)	(Q 8,9,13,15) (Q 7) (Q 10-12) (Q 14)	
UK UK (E&W)	Chubb, Chris J.	Environment Agency, Environment Protection directorate		X	X	X
UK (NI)	Henry, Clifford Nelson, G. Bell, D.	Department of the Environment for Northern Ireland, Environment and Heritage Service		X X X	X X X	X
UK (SCOT)	Marsden, Martin	Scottish Environment Protection Agency		X	X	X

8.5. Questionnaire: Waste Water Charging Systems in the Member States (sample)

Questionnaire Waste Water Charging Systems in the EU Member States

Questionnaire background

The Water Framework Directive introduces the principle of cost-recovery for water services, including environmental and resource costs, in accordance with the polluter pays principle. The Member States are required to provide adequate incentives for the efficient use of water resources by 2010. Currently, effluent charging systems vary widely among the Member States. Not only the functions of effluent charges are different (e.g. financing, fiscal and incentive functions), but also the respective costs for polluters. This could lead to the dislocation of industries and also provoke distortions in the competitive position of industries in the Member States.

In this context, the European Parliament asked Ecologic to carry out a study on „**Waste Water Charges in the EU Member States**“, focusing on economic instruments for regulating direct discharges of effluents into natural waters. The main purpose of the study is to analyse the effluent charging and enforcement systems of the 15 EU Member States.

The purpose of the following questionnaire is to gather information for this study. It contains three parts that may need to be completed by different persons. Therefore, please distribute the different parts of the questionnaire to the relevant units in your ministry (or other relevant bodies in your state).

- Part 1 contains questions regarding discharge permits, monitoring and inspection;
- Part 2 includes questions concerned with the police law and investigation dealing with cases of water pollution by dangerous substances;
- Part 3 covers the economic aspects, focusing on the analysis of the effluent charging system and the calculation of an effluent charge.

Enclosed you will find both a floppy-disc containing an electronic version of the questionnaire (file names: ‘EP974 coversheet’, ‘EP974 questionnaire’, ‘EP974 glossary’ and ‘EP974 graphic glossary’) and a print-out of the questionnaire. Should you not be able to complete the electronic version, please fill out the paper version by hand and send or fax it to the address indicated below.

**Please return the electronically completed questionnaire
by e-mail until the 31 August 2000 to:
hansen@ecologic.de**

Information about the representatives completing the questionnaire

For which **Member State** (or region*) are you completing the questionnaire?

Please indicate who completed (the different parts of) the questionnaire (see **Table 1**) and give full details of (each of) the representative(s) in **Table 2**.

Table 1: Content of the questionnaire

Part	Content	Questions	Pages
Part 1:	Permits, monitoring and inspection	1-6	122-123
Part 2:	Investigation and safeguarding the evidence in case of water pollution by dangerous substances	7-15	124-126
Part 3:	Effluent charging system	16-38	127-133

Table 2: Representatives that completed the questionnaire

	Part 1	Part 2	Part 3	others
Name:				
Institution and department:				
Address:				
Phone:				
Fax:				
E-mail:				

* A region may be a river-basin, catchment area or administrative unit such as a Land, an Autonomous Community or a Water Board Area.

Part 1: Permits, monitoring and inspection

<p>1. Please give an overview of the distribution of responsibilities for issuing permits for the direct discharge of effluents to natural waters in your Member State (or region)?</p>	<p>Please specify and differentiate between the different direct dischargers (e.g. industry, municipal sewage treatment plant operators, farmers) and plant sizes, if appropriate.</p> <p>Please send us at least one (anonymised) permit, preferably of a textile factory (see question 34).</p>
<p>2. Which conditions are linked to the discharge permit? (e.g. minimum standards, emission limit values – ELV)</p> <p>Please send us copies of the relevant legislation.</p>	<p>Please specify and differentiate between different direct dischargers (e.g. industry, municipal sewage treatment plant operators, farmers) and plant sizes, if appropriate.</p>
<p>3. How are technological standards (ELV) being set and harmonised in your Member State? E.g. on the basis of BAT (best available technology) or GAT (generally agreed technology).</p>	<p>Please differentiate between substances (dangerous and not dangerous), industrial sectors, municipal sewage plant operators, farmers etc.</p> <p>Please send us copies of the relevant legislation.</p>
<p>4. Please give an overview of the distribution of responsibilities for the monitoring of effluents at the installations in your Member State (or region)?</p> <p>In this context, monitoring means analysing the effluents on a regular basis (generally self-monitoring). See also glossary.</p>	<p>Please specify and differentiate between different user groups (e.g. industry, municipal sewage treatment plant operators, farmers) and plant sizes, if appropriate.</p> <p>Please give a brief description of monitoring procedures and send us the relevant legislation.</p>

<p>5. Please give an overview of the distribution of responsibilities for the monitoring of natural waters in your Member State (or region)?</p>	<p>Please specify and differentiate between different sizes and types of natural waters (inland, coastal and groundwater), if appropriate.</p> <p>Please also give a brief description of monitoring procedures and send us the relevant legislation.</p>
<p>6. Who is responsible for the inspection of effluents at the installations in your Member State (or region)?</p> <p>In this context, inspection means the examination of effluents by an official authority. See also glossary.</p>	<p>Please specify and differentiate between different direct emitters (e.g. industry, municipal sewage treatment plant operators, farmers) and plant sizes, if appropriate.</p> <p>Please also give a brief description of inspection procedures and frequencies and send us the relevant legislation.</p>

Part 2: Investigation and safeguarding the evidence in case of water pollution by dangerous substances

7. Which major groups of substances are regarded as dangerous substances in your Member State (or region)?	Please specify and send us a list:
8. Who is responsible to take action in the case of water pollution by dangerous substances in your Member State (or region)?	<input type="checkbox"/> Police <input type="checkbox"/> Water Police <input type="checkbox"/> Installation Inspectorate <input type="checkbox"/> Water Authority <input type="checkbox"/> others, please specify: Please explain:
9. What kind of legal offence is constituted by the pollution of water by dangerous substances in your Member State (or region)?	<input type="checkbox"/> a crime (under penal or criminal law), <input type="checkbox"/> an offence (under other legislation such as environmental legislation - less serious), <input type="checkbox"/> an irregularity, <input type="checkbox"/> others, please specify Please explain and send us the relevant legislation:
10. Who is prosecuted in case of an incident of water pollution by dangerous substances in your Member State (or region)?	<input type="checkbox"/> the company <input type="checkbox"/> a private person, if so please specify: <input type="checkbox"/> director of company <input type="checkbox"/> technical director of company <input type="checkbox"/> person responsible for water pollution control <input type="checkbox"/> others, please specify: <input type="checkbox"/> others, please specify:

<p>11. What legal action is taken in case of water pollution by dangerous substances in your Member State (or region)?</p> <p>Please send us the relevant legislation.</p>	<p><input type="checkbox"/> financial penalties, please specify: _____</p> <p><input type="checkbox"/> prison sentences, please specify: _____</p> <p><input type="checkbox"/> withdrawal of licence, please specify: _____</p> <p><input type="checkbox"/> others, please specify: _____</p> <p>Remarks:</p>
<p>12. Who is responsible in your Member State (or region) for investigating and safeguarding the evidence in case of water pollution by dangerous substances?</p>	<p><input type="checkbox"/> Police</p> <p><input type="checkbox"/> Water Police</p> <p><input type="checkbox"/> Installation Inspectorate</p> <p><input type="checkbox"/> Water Authority</p> <p><input type="checkbox"/> others, please specify: _____</p> <p>Please differentiate between different installation sizes (e.g. installations covered / not covered by Annex I of IPPC Directive) and natural waters (e.g. inland, coastal, or groundwaters), if appropriate. Any further remarks are also welcome.</p>
<p>13. What measures are taken for safeguarding the evidence in case of an incident of water pollution by dangerous substances in your Member State (or region) and on what legal basis?</p>	<p>Please explain the measures being taken to safeguard the evidence and indicate the legal basis:</p> <p><input type="checkbox"/> photographic evidence</p> <p><input type="checkbox"/> hearing of those accused</p> <p><input type="checkbox"/> hearing of witnesses</p> <p><input type="checkbox"/> inspection of records</p> <p><input type="checkbox"/> water sampling, please specify: _____</p> <p><input type="checkbox"/> others, please explain: _____</p> <p>Are there any additional samples, measures, or further remarks concerning the safeguarding of evidence in your Member State (or region)?</p>

<p>14. How large do you estimate the 'grey area' of unregistered water pollution incidents by dangerous substances in your Member State (or region)?</p>	<p>Please explain and give an estimation, if possible: About _____% of the offences are registered.</p> <p>Explanation/Comments:</p>
<p>15. What is your perception of the effectiveness of pursuing incidents of water pollution by dangerous substances in your Member State (or region)?</p>	<p>Please explain:</p>

Part 3: Effluent charging system: general part

<p>16. Please give an overview of the effluent charging system for direct discharges into natural waters in your Member State (or region). See also glossary.</p> <p>Please send us copies of the relevant legislation.</p>	<p>Please give a short description of the main characteristics and principles of the effluent charging system in your Member State.</p> <p>If there are any changes of the effluent charging system planned for the future, please explain both systems and point out the major changes. Information on the perception of the changes by different interest groups are also welcome.</p>
<p>17. Which authority is responsible for collecting effluent charges in your Member State (or region)?</p>	<p>Please specify and differentiate between different direct dischargers (e.g. industry, municipal sewage treatment plant operators, farmers) and plant sizes, if appropriate.</p> <p>Please indicate the relevant legislation:</p>
<p>18. For which direct discharges is an effluent charge collected in your Member State (or region)?</p>	<p><input type="checkbox"/> direct industrial discharges</p> <p><input type="checkbox"/> discharges from municipal sewage treatment plants to natural waters</p> <p><input type="checkbox"/> rainwater (from public squares and streets) discharging directly to natural waters without treatment</p> <p><input type="checkbox"/> effluents and leakage from landfills to natural waters</p> <p><input type="checkbox"/> direct discharges from farmers</p> <p><input type="checkbox"/> minor releases of effluent or domestic sewage to natural waters</p> <p><input type="checkbox"/> others, please specify:</p>
<p>19. Who is paying an effluent charge in your Member State (or region)?</p>	<p>Please explain and specify who (e.g. industry, farmers, municipal sewage treatment plants operators, cities) is paying for which effluent (e.g. direct rainwater discharge, industrial, agricultural or other direct discharges).</p>
<p>20. Are there any exceptions? (sectors excepted, certain circumstances, sizes, others)?</p> <p>Any additional documents are welcome.</p>	<p>Please explain:</p>

<p>21. When calculating an effluent charge, which of the listed pollution parameters (pollutants) are taken into account in your Member State (or region)?</p> <p>Tick as many as appropriate.</p>	<p><input type="checkbox"/> Q: waste water volume</p> <p><input type="checkbox"/> pH</p> <p><input type="checkbox"/> TEMP: temperature change parameter</p> <p><input type="checkbox"/> solid matter</p> <p style="padding-left: 40px;"><input type="checkbox"/> SS: suspended solids</p> <p style="padding-left: 40px;"><input type="checkbox"/> settleable matter</p> <p style="padding-left: 40px;"><input type="checkbox"/> filterable matter</p> <p><input type="checkbox"/> conductivity</p> <p><input type="checkbox"/> colour</p> <p><input type="checkbox"/> BOD: biochemical oxygen demand, indicate days (BOD₅, or other): _____</p> <p><input type="checkbox"/> COD: chemical oxygen demand</p> <p><input type="checkbox"/> TC: total carbon</p> <p><input type="checkbox"/> TOC: total organic carbon</p> <p><input type="checkbox"/> N: nitrogen</p> <p style="padding-left: 40px;"><input type="checkbox"/> N_{tot}: total nitrogen</p> <p style="padding-left: 40px;"><input type="checkbox"/> N-Kj: Kjeldahl, reduced nitrogen</p> <p style="padding-left: 40px;"><input type="checkbox"/> NO₃-N: nitrogen in the form of nitrate</p> <p style="padding-left: 40px;"><input type="checkbox"/> NH₄-N: nitrogen in the form of ammonium</p> <p><input type="checkbox"/> P: phosphorous</p> <p style="padding-left: 40px;"><input type="checkbox"/> P_{tot}: total phosphorous</p> <p style="padding-left: 40px;"><input type="checkbox"/> PO₄-P: phosphorous in the form of phosphate</p> <p><input type="checkbox"/> TOX: toxicity indicator</p> <p style="padding-left: 40px;"><input type="checkbox"/> fish toxicity</p> <p style="padding-left: 40px;"><input type="checkbox"/> inhibition of bacteria luminescence</p> <p><input type="checkbox"/> MET: heavy metals</p> <table style="width: 100%; border: none;"> <tr> <td style="padding-left: 40px;"><input type="checkbox"/> Ni: nickel</td> <td style="padding-left: 40px;"><input type="checkbox"/> As: arsenic</td> </tr> <tr> <td style="padding-left: 40px;"><input type="checkbox"/> Hg: mercury</td> <td style="padding-left: 40px;"><input type="checkbox"/> Cd: cadmium</td> </tr> <tr> <td style="padding-left: 40px;"><input type="checkbox"/> Pb: lead</td> <td style="padding-left: 40px;"><input type="checkbox"/> Zn: zinc</td> </tr> <tr> <td style="padding-left: 40px;"><input type="checkbox"/> Cr: chromium</td> <td style="padding-left: 40px;"><input type="checkbox"/> Va: vanadium</td> </tr> <tr> <td style="padding-left: 40px;"><input type="checkbox"/> Sn: tin</td> <td style="padding-left: 40px;"><input type="checkbox"/> Co: cobalt</td> </tr> <tr> <td style="padding-left: 40px;"><input type="checkbox"/> Cu: copper</td> <td style="padding-left: 40px;"><input type="checkbox"/> Fe: iron</td> </tr> <tr> <td style="padding-left: 40px;"><input type="checkbox"/> Ag: silver</td> <td style="padding-left: 40px;"><input type="checkbox"/> Mn: manganese</td> </tr> <tr> <td style="padding-left: 40px;"><input type="checkbox"/> Se: selenium</td> <td></td> </tr> </table> <p><input type="checkbox"/> AOX: adsorbable organic halogen</p> <p><input type="checkbox"/> Cl: active chlorine</p> <p><input type="checkbox"/> Br: bromine</p> <p><input type="checkbox"/> F: fluorine</p> <p><input type="checkbox"/> CN: cyanide</p> <p><input type="checkbox"/> HC: hydrocarbons</p> <p><input type="checkbox"/> POPs: persistent organic pollutants</p> <p><input type="checkbox"/> biocides</p> <p><input type="checkbox"/> pesticides</p> <p><input type="checkbox"/> PAHs (naphtalene, anthracene, pentachlorophenol, etc.)</p> <p><input type="checkbox"/> phtalates (DINP, DEHP, DBP, DPP, DNPO, BBP, etc.)</p> <p><input type="checkbox"/> EDCs: endocrine disrupting chemicals</p> <p><input type="checkbox"/> others, please specify:</p>	<input type="checkbox"/> Ni: nickel	<input type="checkbox"/> As: arsenic	<input type="checkbox"/> Hg: mercury	<input type="checkbox"/> Cd: cadmium	<input type="checkbox"/> Pb: lead	<input type="checkbox"/> Zn: zinc	<input type="checkbox"/> Cr: chromium	<input type="checkbox"/> Va: vanadium	<input type="checkbox"/> Sn: tin	<input type="checkbox"/> Co: cobalt	<input type="checkbox"/> Cu: copper	<input type="checkbox"/> Fe: iron	<input type="checkbox"/> Ag: silver	<input type="checkbox"/> Mn: manganese	<input type="checkbox"/> Se: selenium	
<input type="checkbox"/> Ni: nickel	<input type="checkbox"/> As: arsenic																
<input type="checkbox"/> Hg: mercury	<input type="checkbox"/> Cd: cadmium																
<input type="checkbox"/> Pb: lead	<input type="checkbox"/> Zn: zinc																
<input type="checkbox"/> Cr: chromium	<input type="checkbox"/> Va: vanadium																
<input type="checkbox"/> Sn: tin	<input type="checkbox"/> Co: cobalt																
<input type="checkbox"/> Cu: copper	<input type="checkbox"/> Fe: iron																
<input type="checkbox"/> Ag: silver	<input type="checkbox"/> Mn: manganese																
<input type="checkbox"/> Se: selenium																	

<p>22. How is the effluent charge being calculated and what is the rate? (effluent charge rates / pollution units / factors / threshold values, ...)</p> <p>Please add information and tables of calculations, if possible. Also, any examples are welcome.</p>	<p>Please explain and differentiate between different natural waters and pollutants, etc., if appropriate:</p>
<p>23. On what basis is the effluent charge levied in your Member State (or region)?</p>	<p><input type="checkbox"/> based on actual measurements of parameters <input type="checkbox"/> based on values specified in the discharge permit <input type="checkbox"/> based on measured water consumption <input type="checkbox"/> others, please specify:</p>
<p>24. What is the frequency of collection and the time period for which effluent charges are set?</p>	<p>Please explain:</p>
<p>25. Can effluent charges be offset against expenditure for the construction or expansion of treatment plants or other measures in your Member State (or region)?</p>	<p>Please explain (Who? Conditions? For what? To what extent?):</p>
<p>26. Are there any conditions under which reductions of the effluent charge are given to the dischargers in your Member State (or region)?</p>	<p><input type="checkbox"/> No <input type="checkbox"/> Yes. If so, please specify under what conditions and to what extent:</p>

<p>27. What is the effluent charge revenue (€ per year in your Member State (or region))?</p> <p>Please specify the exchange rate, if appropriate.</p>	<p>total effluent charge collected in one year in your Member States (or region): _____ €in 19____;</p> <p>total effluent charge collected from industrial direct dischargers in your Member States (or region): _____ €in 19____;</p> <p>total effluent charge collected from municipal sewage treatment plant operators in your Member States (or region): _____ €in 19____;</p> <p>total effluent charge collected from agricultural direct dischargers in your Member States (or region): _____ €in 19____;</p> <p>total effluent charge collected from directly discharging households in your Member States (or region): _____ €in 19____;</p> <p>total effluent charge collected from other direct dischargers in your Member States (or region): _____ €in 19____;</p> <p>Please indicate the source of information.</p>
<p>28. Who receives the revenue of the effluent charge in your Member State (or region)? Who has the control over the revenue generated?</p>	<p>Please specify and explain:</p>
<p>29. What is the revenue used for in your Member State (or region)?</p>	<p>Please explain:</p>
<p>30. What is the main function of the effluent charging system in your Member State (or region)?</p>	<p>An effluent charge can have different functions:</p> <ul style="list-style-type: none"> - incentive (reducing pollution to reduce effluent charges), - financing (financing for water pollution control measures or monitoring, subsidies for pollution control measures for industry, households, municipal sewage treatment plant operators, or others), - fiscal (revenue for use in the general budget). <p>Which of these or other functions, is the main function in your Member State? Please explain:</p>
<p>31. What effects does the effluent charging system have in your Member State (or region)?</p>	<p>Please explain (e.g. technological innovations/adaptation of clean technologies, dislocation of industry, other effects) and give your opinion:</p>

Part 3.1: Industrial direct dischargers

32. In which industrial sectors are effluent charges collected?	Please specify:			
33. (How) do the respective effluent charging systems differ (by sectors, by plant size, or other)?	If industrial direct dischargers are differentiated by size, what are the criteria or thresholds for categorising firms (e.g. water use/year, pollution load/year, production unit/year)? Please specify:			
34. Suppose three cotton processing textile factories A, B and C that are discharging their effluents directly to natural waters. Factory C also includes printing. Please calculate and note the effluent charge per year (in €) that factories A, B and C would currently (2000) have to pay in your Member State (or region). Please add the calculation on a separate sheet. Any information on the influence of the effluent charge on the textile industry (e.g. percentage of operating costs) and the sector's position towards it are also welcome.	Example for calculation of effluent charge: The average effluent parameters of the three textile factories are as follows:			
		Factory A	Factory B	Factory C
	Effluent treatment	best available technology	preliminary treatment	no treatment
	Q (effluent flow)	2000 m ³ /d	2200 m ³ /d	2500 m ³ /d
	specific effluent flow rate (m ³ of effluent / t products)	140 m ³ /t	180 m ³ /t	210 m ³ /t
	Temperature	26°C	32°C	50°C
	pH	7,2	7,5	10,5
	COD (chemical oxygen demand)	90 mg/l	280 mg/l	2400 mg/l
	BOD ₅ (biological oxygen demand)	9 mg/l	40 mg/l	700 mg/l
	TOC (Total organic carbon)	30 mg/l	90 mg/l	780 mg/l
	SS (suspended solid)	20 mg/l	40 mg/l	80 mg/l
	HC (hydrocarbons)	< 0,5 mg/l	0,7 mg/l	7 mg/l
	NH ₄ -N (nitrogen in ammonium compounds)	< 0,5 mg/l	1,5 mg/l	12 mg/l
	AOX (halogenated hydrocarbons)	0,1 mg/l	0,15 mg/l	1,3 mg/l
	active chlorine	not detectable	not detectable	0,3 mg/l
	Zn (zinc)	0,02 mg/l	0,5 mg/l	0,7 mg/l
Cu (copper)	< 0,05 mg/l	0,2 mg/l	0,8 mg/l	
Cr (chromium)	< 0,05 mg/l	< 0,05 mg/l	< 0,05 mg/l	
Charge €per year				

Part 3.2: Municipal sewage treatment plants

<p>35. Does the effluent charging system for municipal sewage treatment plant operators differ from the one for industrial direct dischargers?</p>	<p>Please explain the differences/system:</p>
<p>36. How are the costs for effluent charges – paid by the municipal sewage treatment plant operator - distributed to the different indirect dischargers (e.g. households, cities, industry, farmers)?</p>	<p>Please explain:</p>

Part 3.3: Direct agricultural dischargers and others

<p>37. Do farmers pay effluent charges for their direct discharges? Does the charging system for farmers differ from the one for direct industrial dischargers (parameters, rates, reductions, exceptions, thresholds, ...)?</p>	<p>Please explain:</p>
<p>38. Are there any other direct dischargers that are not yet covered in the questionnaire? E.g. operators of landfills, or others?</p>	<p>Please specify and explain the appropriate effluent charging system:</p>

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