Chapter 4

WATER MANAGEMENT

4.1 State of and pressures on water resources

Current situation and trends

Quantity and availability

Estonia is rich in ground and surface water resources. Mean annual precipitation amounts to 650-670 mm. Evaporation accounts for 470 to 480 mm and the remaining part forms the run-off of rivers and groundwater recharge. Between 1991 and 1994, total abstraction of water fell by 35% (fig. 4.1), following a drop in economic activity. Of the 1.7 billion m^3 of water consumed in 1994, 79% was used for cooling, 4% for processing in industry, 9% for fisheries, 1% for agriculture; domestic uses accounted for 5%. Water abstraction per capita as well as the intensity of use are still relatively high compared to other European countries (fig. 4.2).

Surface water: rivers and lakes

Mean run-off is 8.2 l/s/km^2 or 11.7 billion m^3 per year. In Estonia, there are *some 1,500 lakes, the largest being Lake Peipsi*, and 7,400 rivers, brooks and main drains, of which only 10 are longer than 100 km. Estonia's rivers are divided into four watersheds: the Narva-Peipsi basin, the Gulf of Finland basin, the Gulf of Riga basin and the islands watersheds. Only 15 rivers have a catchment area exceeding 1,000 km^2. Of the total flow, 23% runs to the Gulf of Finland, 43.6% into the Gulf of Riga, 33% to Lake Peipsi and to the Narva river, and 0.4% to Latvia and the Russian Federation. *There are few abundant rivers in Estonia*. Only 13 rivers have an annual mean run-off over 10 m^3/s. The Emajõgi and the Pärnu rivers follow the Narva in terms of abundance. North and north-east Estonia are relatively poorly endowed with water resources, yet most of the country's industry is concentrated there.

Groundwater

Estonia is well endowed with groundwater resources. Its groundwater abstraction was 343 millions m^3 in 1994, 26 % down on 1991 (464 millions m^3) because of the recession. Groundwater is one of the most important natural resources in Estonia as it *provides two thirds of the drinking-water supply*. It is the drinking-water source for most of Estonia's towns and settlements, except Tallinn and Narva where groundwater resources are limited and surface water is therefore mainly used.

Fresh and marine water

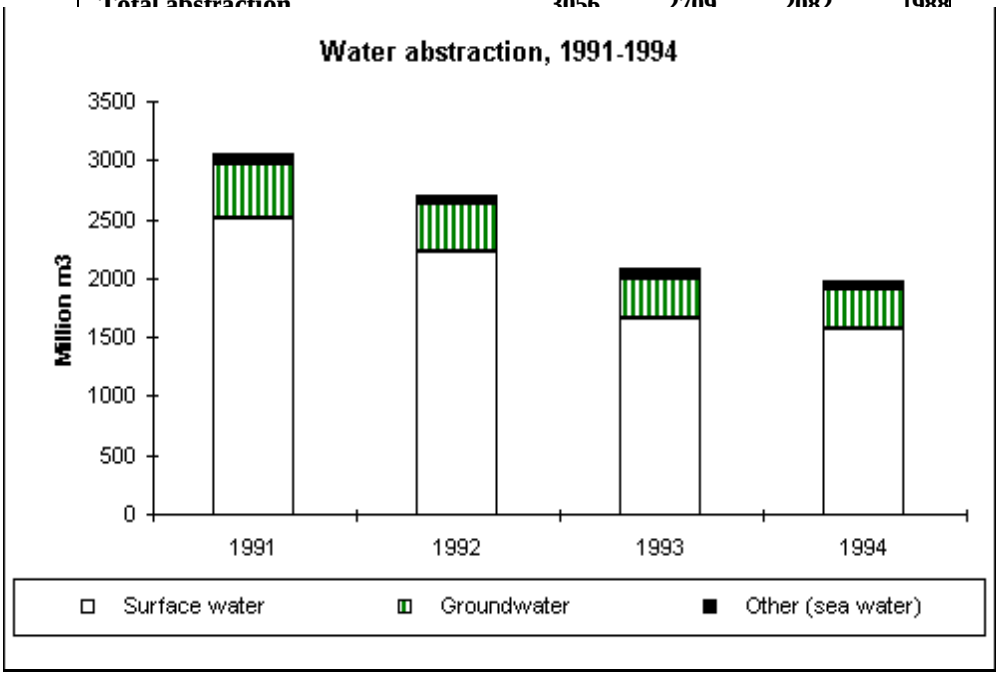
Quality

Since Estonia lies entirely within the Baltic Sea catchment area, all pollutants and their transformation products reaching its water bodies will inevitably end up in this semi-closed sea. To monitor the quality of marine and freshwaters, the Ministry of the Environment has reorganized Estonia's environmental monitoring programme (chapter 2).

Surface water quality is monitored by laboratories according to the Water Monitoring Programme adopted by the Ministry of the Environment. Although a monitoring system and laboratory network existed in Soviet times, the system was not complete and the required analyses did not help to accurately describe the environmental situation. Therefore, *it is difficult to assess the long-term trends in water quality*. The average monitored values of Estonia's main rivers during the past three years do however show a slight improvement in quality (fig. 4.3). The pollution load carried by the main rivers in 1994 was significantly lower than in the previous years due to the economic recession (table 4.1). A map of the river water quality is established yearly on the basis of the monitoring results. Clean and slightly polluted sections represent 70% and 16% respectively; polluted sections, 13%; and very polluted sections, 1%. But Estonia does not have a classification system for river quality nor quality objectives for rivers.

Figure 4.1:Trends in water abstraction, 1991-1994
(million m^3)

	1991	1992	1993	1994
Surface water	2507	2221	1654	1568
Groundwater	464	409	352	343
- from water layers	162	142	113	110
- mine drainage water	302	268	239	233
Other (sea water)	85	79	76	77
Total abstraction	**3056**	**2709**	**2082**	**1988**

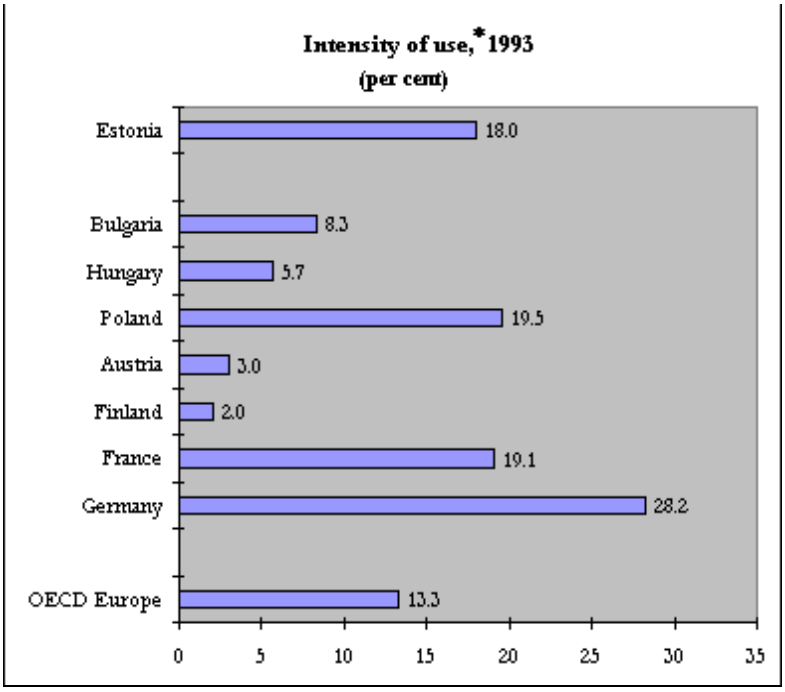


Source: Estonian Ministry of the Environment

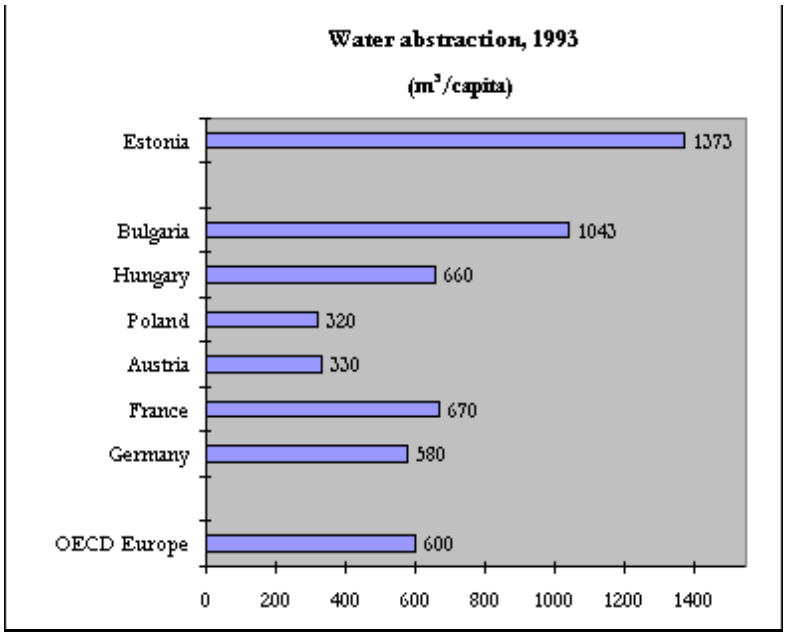
Groundwater quality is mainly monitored by the Geological Survey Centre. The quality of drinking-water from *deeper groundwater layers meets the existing drinking-water regulations*. Nevertheless, in many regions, *upper groundwater layers are polluted* with nitrogen compounds and, in some places, also with oil products. Since the early 1990s, due to a significant decrease in mineral fertilizer consumption, concentrations of nitrates have decreased sharply in some regions. The former Soviet army military bases, and especially their fuel tanks, are one of several serious sources of groundwater pollution (chapter 5). Boiler houses are another serious danger and have caused groundwater pollution in Paldiski, Kärdla, and Aruküla.

A survey of Estonia's marine water quality (physico-chemical and biological monitoring) was carried out by the Estonian Meteorological and Hydrological Institute, the Estonian Marine Research Institute and Tallinn Technical University in 1993, and financed by the Nordic Council of Ministers. Annual reports were prepared in 1993 and 1994, as required under the Convention on the Protection of the Marine Environment of the Baltic Sea Area, and financed from the State budget. Though Estonia is a small, sparsely populated country, it brings a *noticeable polluting flow into the sensitive ecosystem of the Baltic Sea*, and contributes to the high trophic level of the Gulf of Finland and the Gulf of Riga (table 4.1). In 1992, 54,400 tons of organic matter (expressed in terms of biochemical oxygen demand in 7 days (BOD_7)), 48,600 tons of N and 1,400 tons of P reached the Baltic Sea via rivers. According to the Estonian Environmental Information Centre, these amounts were reduced in 1994 to 35,650 tons of organic matter, 27,590 tons of N and 1,200 tons of P. Due to the anthropogenic pollution and the inflow of nutrients via rivers, the concentrations are typically higher in the coastal waters of the oil-shale region, and in Tallinn Bay and Pärnu Bay. The presence of heterotrophic bacteria and phytoplankton is the result of eutrophication of the sea waters.

Figure 4.2: Use of water resources, 1993



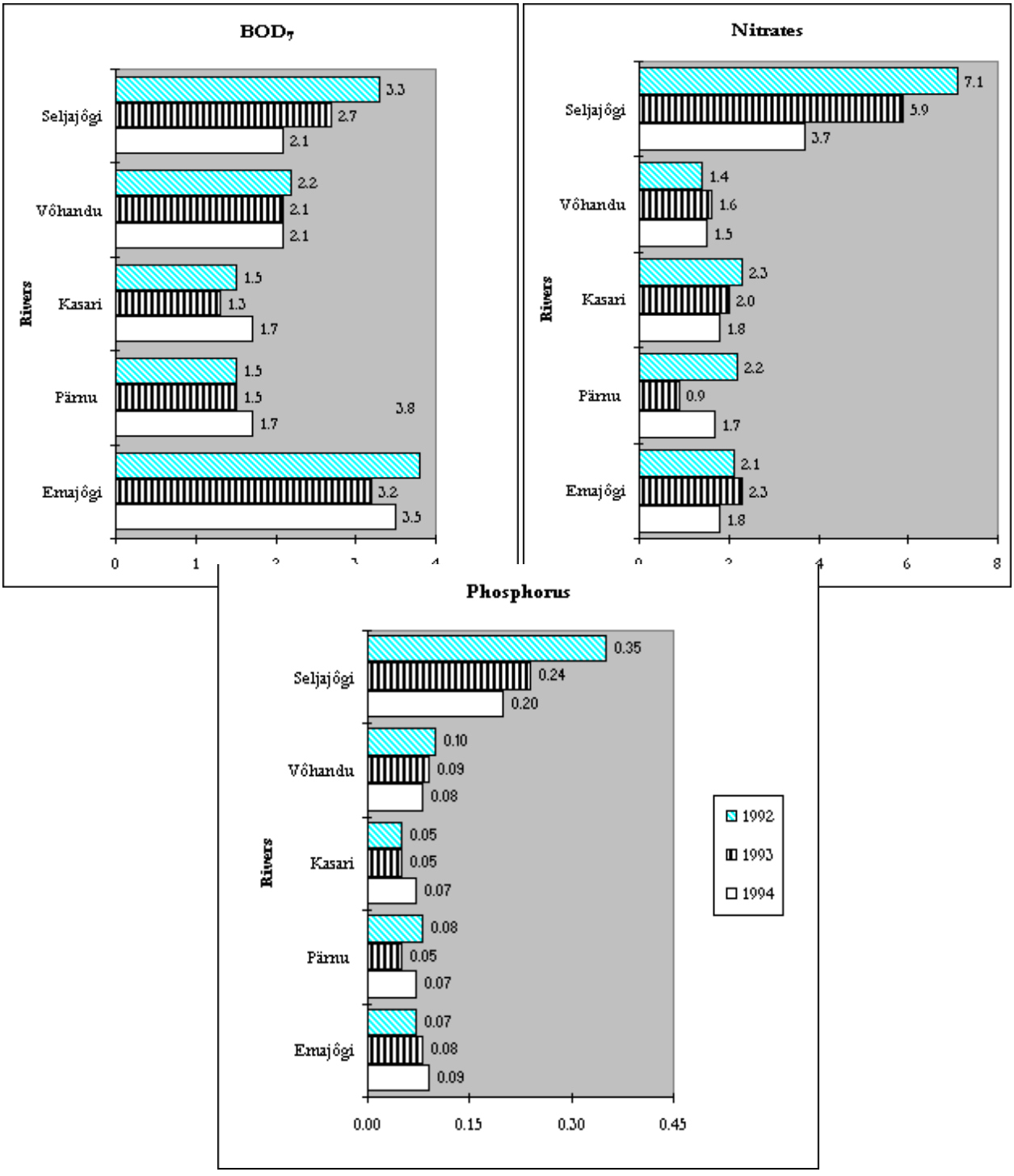
* - abstractions as a percentage of gross annual availability.



Sources: Estonian Ministry of the Environment, OECD

Figure 4.3: Water quality in Estonian rivers, 1992-1994

Mean concentration of pollutants
(mg/1)



Source: Estonian Ministry of the Environment

The main impact of this pollution is the *eutrophication of the inland and coastal water bodies*, which limits bathing, fishing and recreational activities. The drastic fall in economic activity since 1989 and the new waste-water treatment plants have considerably decreased the pollution load into the Baltic Sea. The comparison between 1988 and 1993 shows that in 1993 the *organic pollution load* (expressed as total BOD) was seven or eight times smaller than in 1988, and nitrogen and phosphorus load two times smaller. The main problems are the Tallinn, Pärnu and Narva areas for eutrophi-cation, and Tallinn and Narva for heavy metals.

Pressures on water resources

During recent years changes have taken place in water use and consumption resulting in an overall reduction in water consumption (fig 4.4).

Regarding domestic use, the situation in water-supply and sewerage is bleak, although the percentage of the population that is served by public waste-water treatment appears high (85% - annex I). Drinking-water quality is a problem in some towns and counties, including Tallinn, where the situation worsened in 1993, and in Hiiumaa and in Sömeru, where hepatitis-A broke out (545 people infected). Leakage in the water-supply network and inefficient waste-water treatment plants may explain this situation. The total capacity of the existing 1,150 biological waste-water treatment plants is 160 million m^3 per year. More than 30 treatment facilities have a hydraulic load of over 1,000 m^3/day, including 9 exceeding 10,000 m^3/day. *Many waste-water treatment plants need to be rebuilt or modernized*. In addition, there is a general breakdown in the maintenance and operation of municipal sewerage facilities and in the domestic and industrial waste-water treatment plants. Because of complications in the privatization process, it is sometimes not clear who actually owns the waterworks and sewage systems.

Water use in industry has fallen significantly over the last years (a 56%-decrease between 1991 and 1994). This has been caused by the structural reforms and by the recession. The activity of some branches has decreased considerably (e.g. food industry), some big plants have stopped their activity altogether (e.g. pulp and paper production, with the exception of the Kehra sulphate mill, which has recently been restarted without new environmental investments). The drainage water pumped out of oil-shale mines and pits, which contains sulphates, nitrates and suspended solids, is discharged into surface water bodies (chapter 8). Solid and liquid wastes from industry and power plants (ash fields) are discharged into dumping sites, where leaching pollutes water bodies and groundwater (chapter 8). The resumption of industrial activities will mean an increase in water consumption and waste-water discharges, unless new, closed-loop and low-waste technology is introduced.

Non-point pollution (phosphorus and nitrogen pollution) *from agriculture reaches surface water* (rivers and lakes) *as well as groundwater*, and finally the Baltic Sea, causing eutrophication problems. Since the large State farms, which used fertilizers and pesticides intensively, have disappeared, the related polluting pressure has diminished significantly (fig. 4.5), as has the amount of water used for agricultural activities (7.6% less water in 1994 than in 1991). However, if private agricultural activity recovers, it is likely that this pollution will resume.

The *quality of recreational waters on Estonia's beaches is endangered* in some places by the urban and industrial polluting waste waters which are discharged to the sea without adequate treatment. As a result, the Health Service closed a number of beaches in 1993. In 1994 and 1995 several of them were re-opened, in particular the Pärnu beach after a waste-water treatment unit was started up in Pärnu.

4.2 Responses

Water management policy objectives and goals

The *main goals of water management are to save and protect ground and surface water resources, to provide all users with an appropriate water-supply, and treat waste water efficiently.* The aim in the near future is at least to preserve the achievements in rural regions, to fulfil the international obligations in particular under the Baltic Sea Programme, to abate the adverse effects of pollution sources and to improve the quality of drinking-water and of waste-water treatment.

The targets defined by the Baltic Marine Environment Commission (HELCOM), the 1988 Declaration of Prime Ministers of the Baltic Sea and other international agreements**,** and taken over by Estonia are:

- To reduce the discharges of dangerous substances (heavy metals, nutrients, toxic compounds) into water bodies by at least 50% by 1996 compared to 1987;

- To ensure a biological (or equally effective) waste water treatment efficient enough to comply with the HELCOM recommendations (BOD_5 < 15 mg/1; P total < 1.5 mg/1) by the end of 1988 in settlements with a population of over 10,000;

- To cut agricultural pollution at least by half by 1996 compared to 1987;

- To limit the use by industry of high-quality groundwater in favour of its use for the drinking-water supply;

- To implement progressively and systematically best available technologies in industry to diminish the pollution pressure.

To achieve the above-mentioned targets, the Government of Estonia *has drawn up and started to implement a legal framework* (acts, regulations, norms and standards) derived from international agreements, and introduced economic incentives.

Table 4.1: Pollution load from the main rivers, 1995

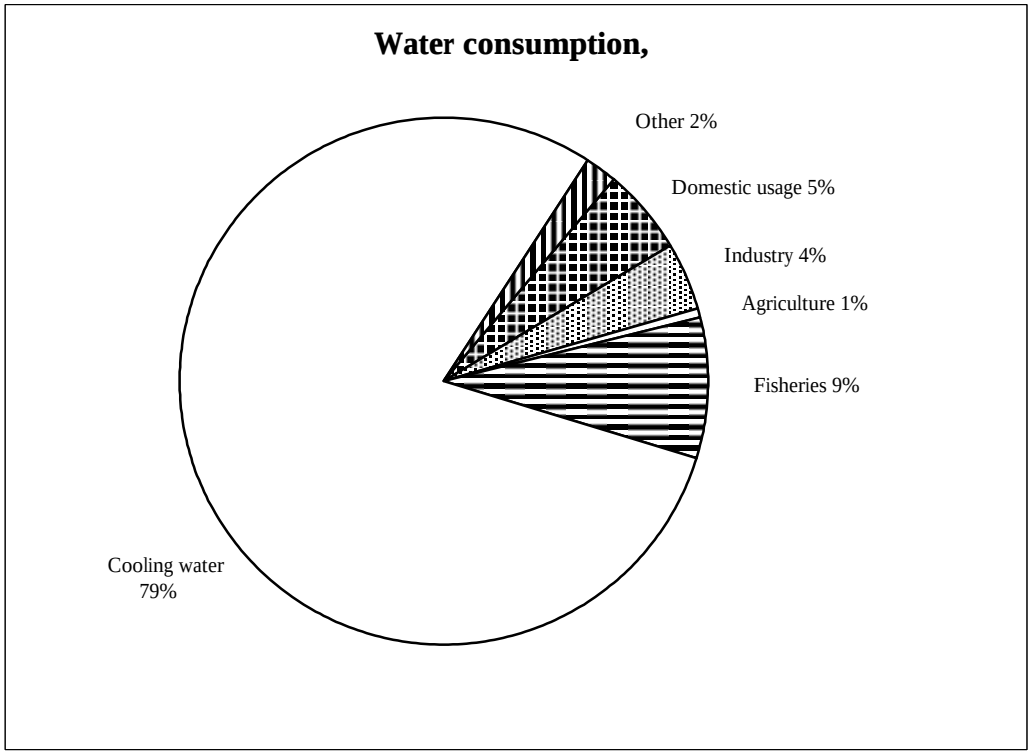
River	Flow rate (m^3/s)	Pollution loads (tons)		
		BOD_7	N total	P total
Lake Peipsi and Narva River basin				
Narva	385.0	253	572	34
Võhandu	8.1	38	36	7
Lake Peipsi				
Emajõgi	56.0	1222	301	67
Gulf of Finland basin				
Jägala	7.4	25	13	3
Keila	6.0	47	26	3
Kunda	4.4	18	6	1
Purtse	6.6	279	205	1
Seljajõgi	2.5	158	43	11
Vääna	2.1	13	4	1
Valgejõgi	3.5	122	11	3
Puhajõgi	1.8	442	122	21
Gulf of Riga basin				
Kasari	24.7	50	31	5
Pärnu	48.4	240	97	23

Source: Ministry of the Environment

Figure 4.4: Water consumption patterns, 1991-1994

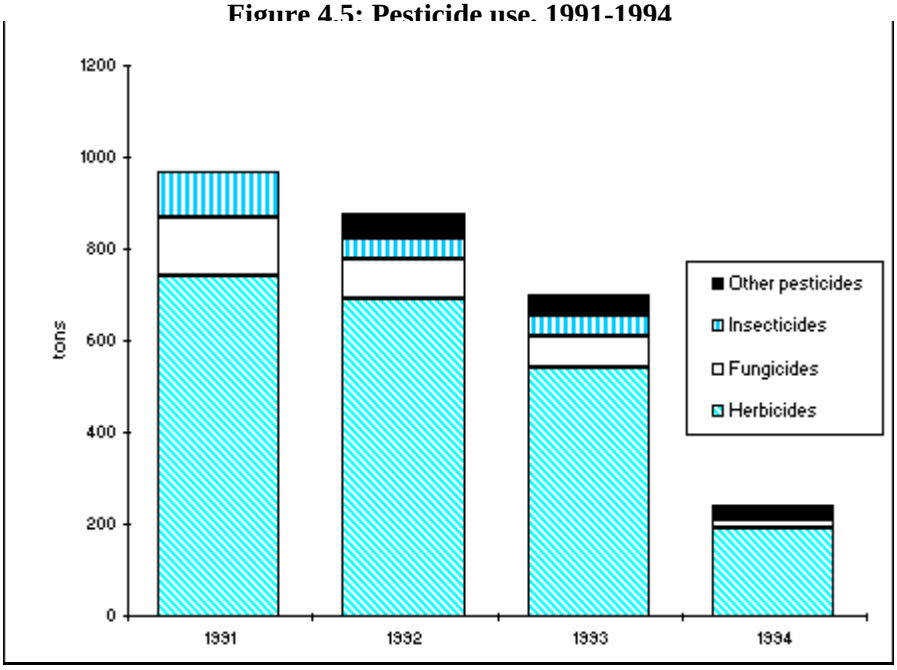
Water users	1991	1992	1993	1994	% change 1991-1994
	(million m3)				
Cooling water	2227	1985	1441	1372	-38.4
Domestic usage	107	104	99	92	-14.0
Industry	158	125	75	69	-56.3
Agriculture	41	30	13	10	-75.6
Fisheries	206	151	156	149	-27.7
Other	24	45	30	33	40.4
Total water consumption	2763	2440	1814	1725	-37.6

Source: Estonian Ministry of the Environment



Source: Estonian Ministry of the Environment

Figure 4.5: Pesticide use, 1991-1994



Source: Estonian Ministry of the Environment

The respective functions of central and municipal organizations involved in water management have been clarified to improve their performance. The Government is now *taking action to complete, extend and improve municipal water-supply and sewerage systems* as well as industrial waste-water treatment facilities. It is also working to improve the efficiency and management of municipal water-supply and sewerage services.

The Government is *drafting the water use and protection norms for industry and agriculture*, based on best available technology and cost-effectiveness. It is also defining the priorities for fundamental and applied research work in water management. It has taken measures to develop the monitoring system for the water environment that corresponds to international requirements, and to provide the users with the necessary information.

A *Water Protection Programme for the period 1995-2000 was adopted by the Minister of the Environment*. This programme includes the goals and targets imposed by the Convention on the Protection of the Marine Environment of the Baltic Sea Area, the water management investments from 1995 to 1998, and provisions for financing water management. The investment part is updated every year.

To ensure that bodies of water are clean and that inhabitants have safe drinking-water in the near future, it is estimated that the *central authorities and municipalities will have to invest close to EK 2 billion*. The bulk of this sum is needed to further modernize Tallinn's water management (roughly EK 700 million). To carry out these measures, foreign loans and aid are indispensable, because neither national nor municipal budgets can fully cover such large expenses in the short term.

The institutional, legal and regulatory framework

Institutional aspects

The Estonian *Ministry of the Environment* is responsible for developing water legislation, setting water standards, developing measures to improve ground and surface water resource management and water use management. The *Regional Environmental Departments* at the county level are in charge of the implementation of the water resource management policy in close cooperation with the *local governments* (municipalities and settlements), which are responsible for water-supply and sewerage. Checking the quality of drinking-water is the responsibility of the Health *Service under the Ministry of Social Affairs*. The distribution of water management functions in Estonia is given in table 4.2.

Legal requirements

The Water Act (1994), complemented by provisions of the 1990 Nature Protection Act and the 1993 Act on Compensation for Pollution Damage, provides the

basic framework for water legislation. Requirements concerning the discharge of waste water were introduced by the Regulation concerning requirements on waste-water discharge to the water bodies and ground (1994), amended by the Regulation on restriction of requirements on waste-water discharge to water bodies and ground (1994). It was complemented in 1995 by a regulation establishing pollution damage compensation rates, which set up the related economic instruments and taxation system.

The *Water Act* specifies the ownership of ground and surface water and the ecological balance to be achieved in water bodies, and regulates the management, conservation and use of water resources, and the relations among water users. Groundwater belongs to the State, while water bodies can be the property of private individuals, municipalities or the State. In 1995, the *Act on the Protection of Marine and Freshwater Coasts, Shores and Banks* was approved.

The authority of local governments, which covers a substantial part of water management, is currently regulated by no more than a few sentences in the statute books, especially the *Act on Local Governments adopted in 1990.*

The situation concerning the siting of water facilities and the sanitary conditions for their operation is expected to improve with the recent adoption of the *Act on Planning and Construction* and the upcoming approval of the *Act on Health Protection*. These acts lay down provisions for the construction, operation and maintenance of water-supply and sewerage systems.

The regulatory system

The current policy for water management in Estonia is a balanced system based on command and control (emission standards, permits for water use and discharge, State inspection) and on economic instruments (water-use and pollution charges, threshold levels, differential charge rates, fines/subsidies, grants and soft loans).

In 1994 a regulation was adopted for the establishment of water permits generally issued for five years. All *ground and surface water use (abstraction and discharge) requires* a permit delivered by the Regional Environmental Department (and signed by the Governor). This permit specifies the water rights of the user: every town, settlement and enterprise using more than 30 m^3/day of surface water or more than 5 m^3/day of groundwater must have a water-use permit. The permit determines the volume of raw water that can be used and also the amount of pollutants that can be discharged. For large quantities, the specific requirements listed in the Convention on the Protection of the Marine Environment of the Baltic Sea Area are followed. The permit also defines the rate of the two fees (abstraction and pollution charges) that the user has to pay. Over the permissible limits the polluter has to pay five times more. When issuing the pollution permits, the real conditions of the enterprise or municipal waste-water treatment plant are taken into account. For old industrial plants, higher pollution volumes can temporarily be tolerated. At the same time, for new industrial plants, rehabilitated ones and new municipal waste-water treatment facilities stricter rules in line with European Union and HELCOM standards are applied. However, *at present, Regional Environmental Departments are not able to efficiently implement and enforce this permitting system.* They lack staff and expertise. In addition, the Environmental and Nature Protection Inspectorate, which is in charge of monitoring and checking compliance with the permitting system at the central level, lacks the capacity and the necessary coordination with the regional offices and the permit holders.

Environmental impact assessment and land-use regulations (zoning) play an important role in addressing and managing both ground and surface water problems (pollution, erosion, drainage, etc.).

Economic instruments and expenditure

The water permits establish two environmental charges: an abstraction charge and a pollution charge. The charge rates, as laid down in the 1994 ministerial regulation, which are the same for the whole territory, are set somewhat arbitrarily by environmental experts without reference either to the economic situation or to public debate. The *charge on water consumption* (use of natural resources), which currently goes to the State budget, will go to the Environmental Fund in 1996. Fifty per cent of the *pollution charge* is directed to the national Estonian Environmental Fund and the other fifty is channelled to the Regional Environmental Departments in the counties. In 1994 the income of the Environmental Fund from waste water amounted to EK 7.2 million (23% of the Fund's total income). The rates of these charges are still too low to have a visible incentive effect on the consumers and polluters. These rates should be substantially higher to fully cover investment, maintenance and operating costs. However, the payments help fund the investments in municipal

Table 4.2: Water management: distribution of functions at the central and local administrative levels

A. Functions of the Estonian Ministry of the Environment:

1. Formulation of general water management policy
2. Planning of measures for water use and protection, general directions and objects of State importance
3. Technical control of the water-supply and sewerage systems and development of regulatory measures
4. Organizing and developing programmes
5. Water cadastre
6. Statistics
7. Drafting of legislation and control on implementation
8. International agreements, State level cooperation projects
9. Coordinating of applied research
10. Organizing training
11. Monitoring and checking compliance with the water permit
12. Issuing water permits (if so determined by law)

B. State functions at the local level:

At the county level:

1. Implementation of water protection and use policy
2. Planning of use and protection of water resources and implementation of State control according to legislation
3. Data system on water resources' quantity and quality, water use and waste-water discharge
4. Water resources' use planning
5. Issuing discharge permits
6. Development of the water management development programmes for counties
7. Organizing water monitoring programmes at the county level
8. Organizing water monitoring at the municipal (local) level
9. Cooperation with local governments, consulting them about water management problems
10. Regulation of water relations between local governments
11. International cooperation at the county level

At the municipal level:

1. Implementation of State policy at the local level
2. Water-use permits
3. Administration of water bodies belonging to municipalities
4. Combating accidents
5. Water-supply and sewerage
6. Public awareness and discussion of water-related projects
7. International cooperation at the local level

sewerage and industrial waste-water treatment plants.

Since 1992, EK 71.6 million have been invested in water protection from the State budget and EK 59.6 million from local budgets. In 1994, EK 14.5 million from the Environmental Fund was spent on waste-water management. Foreign investments amounted to EK 45.0 million from 1992 to 1994, including EK 40 million in 1994 (table 4.3).

The main current water projects

Estonia's main priority today is urban sewerage and industrial waste-water treatment. Most of the 13 Estonian "hot spots" identified by HELCOM (chapter 9) entail water investments (mostly combined industrial and municipal waste-water treatment), which are too large to be entirely financed by Estonian funding in the short term.

Several important programmes are being implemented with the support of multilateral (World Bank, European Bank for Reconstruction and Development (EBRD)), subregional (Nordic Investment Bank (NIB), Nordic Environment Finance Corporation (NEFCO)) and bilateral institutions and arrangements:

- The Tallinn project for the reduction of waste-water discharge, the most important project relating to water, and the first EBRD investment in environmental infrastructure (along with PHARE and Finnish funds), where the waste-water and the water-supply systems are to be comprehensively modernized (EK 700 million). The first step is already achieved and the second has recently been accepted by Parliament. It will make it possible to meet the objectives under the 1992 Convention on the Protection of the Marine Environment of the Baltic Sea Area;

- The two projects on the renowned health and recreation resorts Haapsalu and Matsalu Bays, listed in the Ramsar Convention, where the World Bank is considering the improvement of water-treatment plants. The present mechanical waste-water treatment at Haapsalu will be upgraded with a biological process, partly financed by foreign loans (chapter 9);

- The Small Municipalities Environmental Project, which is an EBRD initiative also supported by several countries and NEFCO, will restructure water-supply and sewerage services and upgrade the water and waste-water facilities in 11 municipalities with different sizes, locations and problems: Tartu, Narva, Pärnu, Rakvere, Tamsalu, Sillamae, Keila, Rapla, Kuressaare, Elva and Kallaste (around 320,000 inhabitants in all).

4.3 Environmental performance

Water resource management

The *mixed approach* of command and control combined with economic instruments, recently adopted by Estonia to improve its management of water, is being progressively implemented. The *legal and regulatory framework* for water resource management exists, but important laws still remain to be passed for municipal water-supply and sewerage services and for land uses which have major consequences for water resource management.

Ground and surface water bodies are regularly *monitored and assessed*. Nevertheless, because of inadequate monitoring, the database on river and groundwater quality is not yet completed or fully reliable. A comprehensive monitoring and information system is under development. It still needs to be completed, in particular for coastal and marine waters. The Ministry of the Environment is finalizing a comprehensive national environmental monitoring strategy, including fresh waters and marine waters. Existing monitoring networks and methods are being analysed to see if there is scope for improvement. Physico-chemical and biological monitoring of water quality and water discharge will be covered through the four main sub-programmes of the Estonian Environmental Monitoring Programme (EMP) throughout the country.

Overall *water quality* has improved during recent years mainly because of the recession, and in coastal and Tallinn areas also as a result of investments in some waste-water treatment plants following the HELCOM recommendations. Now that the economic trend is improving, the challenge for Estonia is to keep improving its water environment, using its diversified tools more and more efficiently: technical, command and control, and economic instruments.

With its large water resources and its fairly flat land, Estonia also *needs to pay attention to drainage*. New investments may be needed for the rehabilitation, operation and maintenance of the existing drainage systems.

Municipal water-supply and sewerage

Very positive steps have already been accomplished in this sector, which is quite essential for each and every inhabitant of Estonia:

- Transfer of the assets, operation and maintenance of the facilities to the local level;

- Implementation of a number of projects, mainly to improve drinking-water and sewerage treatment facilities, with the support of a variety of external funding agencies.

Nevertheless, some *important gaps remain to be filled urgently* in order to achieve sustainable and efficient development and to prevent problems that may appear in the more complex context of a new market economy:

- There is neither a legal framework nor a specific entity officially in charge of the overall policy and strategy for municipal water-supply and sewerage, drainage aspects and the industrial use of water. So far emissions are not always properly monitored and self-monitoring by enterprises should be improved. Moreover, the consequences of introducing a permitting system have not been comprehensively analysed;

- For municipal water-supply and sewerage, the role and respective responsibilities of the partners at the local level need to be clearly defined (legal, regulatory, institutional and financial) to care for small municipalities, villages and rural settlements, which are numerous;

- With the decentralization of water management, water investments as well as the operation and maintenance of water-supply and sewerage facilities are now to be ensured at the local level. Consequently, a sound funding system is required at the municipal level, where earmarked financing and co-financing can flow in a sustainable manner in order to meet the needs;

- As in most other parts of the Estonian economy, the private sector could play a stronger role in water-supply and sewerage activities, by participating in funding, operating and maintaining the public facilities.

Table 4.3: Expenditure on water protection, 1992-1994

	1992	1993	1994
State expenditure (on investments)	0.4	19.5	51.7
including			
(a) water-supply	0.0	1.5	7.9
(b) waste water (sewage and treatment)	0.4	18.0	43.8
Regional and municipal expenditure (on maintenance, operation, and investments)		59.6	..
of which			
(a) water-supply	0.0	31.4	..
(b) waste water (sewage and treatment)	0.0	28.2	..
Environmental Fund	3.5	8.6	14.5
including			
(a) national level	1.2	3.3	6.8
(b) regional level	2.3	5.3	7.7
International assistance (grants)	1.7	3.3	40.0
Enterprises' expenditure	93.5	165.0	..

Source: Estonian Ministry of the Environment
Footnote: .. – data are not available.

Water uses in industry and the energy sector

Water uses in industry and the energy sector are very important in Estonia: their water consumption is by far the largest. They are also major sources of pollution which may be dangerous because it involves toxic components, heavy metals, radioactivity, etc. Even though the industrial pollution load discharged in water bodies has significantly decreased during the transition period, it is necessary to cope with it firmly to keep it under control when the Estonian economy recovers, using both command and control tools on the one hand, and economic instruments (taxes and incentives) on the other. Former mandatory limits on the emission of industrial waste water and on the quality have been abolished. Generally, industrial waste water is discharged without pre-treatment into municipal waste-water facilities, which is in contradiction with the HELCOM recommendations. The privatization in industry creates opportunities for resolving this problem and the Ministry of the Environment together with the Estonian Privatization Agency should consider various options.

Coastal and marine water quality

In conformity with the HELCOM regulations, Estonia has to monitor and abate its pollution loads into the Baltic Sea, whether carried there by rivers or discharged straight from the coast by settlements and industry, in particular the organic load, phosphorus and toxic compounds. There are many different projects for municipalities, but the *situation concerning industrial water discharges directly into the sea is not clear*. The pollution load from all coastal urban areas should be taken into consideration in monitoring activities. Control measures need to be taken for BOD, nutrients and heavy metals abatement. Cooperation on the protection of marine waters with countries around the Gulf of Finland and the Gulf of Riga needs to be strengthened.