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WATER SECTOR REFORMS IN ESTONIA*

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This case study focuses on the major water sector reforms undertaken in Estonia from 1990 to 2010 and their consequences. This first phase of reforms, in the beginning of the 1990's, took place in the context of broad political and economic reforms to establish a market-based economy. The second phase of reforms, in the 2000's, were driven by the European Union accession process. The case examines the political context of the reforms; their structure and impact on public finances; the public acceptance of the reforms; and the interaction of new instruments with existing ones.

*The views expressed herein are those of the author and do not necessarily reflect the views of the OECD or its member countries.

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Executive Summary:

This case study focuses on the water sector reforms and their consequences in Estonia from 1990 to 2010. In general, reforms of the water sector can be divided into two phases. The first phase of reforms was related to the regaining of independence and establishment of a market economy in Estonia (1990-1999). The second phase was mainly driven by the European Union accession process (2000-2010). While both phases are clearly distinct, they are also quite closely interlinked as they have taken place in a very short time period.

In the beginning of the 1990s, the general context of all reforms taking place in Estonia was the establishment of a market-based economy. There was a general expectation that all systems, structures and organisations should be able to finance their duties and work based on their incomes or charges/fees for services provided. This expectation was confronted by growing inflation, low salaries and relatively high prices. During this first phase, the main focus of reforms in the water sector was to elaborate the national legislative system of water management. This included the establishment of ownership rights and privatisation.

The second phase of reforms was to shift direction towards the EU in the context of the accession process. The entire body of water legislation was to be harmonised with existing EU legislation. Changes had to be made to improve and render more strict the existing national legislation and consequently, more expensive to implement. It also became clear that new reforms would weaken the public finances because the need for additional investments to comply with EU requirements was relatively high and there were limited possibilities for the state to provide financial support.

During both phases, the government had a clear mandate to carry out the reforms. The following case study gives a short overview of water sector reforms over the last 20 years. It covers issues such as the political content of reforms; the impact of the reforms on public finances; the structure of the reforms; the public acceptance of the reforms; and the interaction of new instruments with existing ones.

Introduction

Estonia is located entirely in the catchment area of the Baltic Sea, which is highly sensitive to nutrients. Estonian land territory is about 45 000 km². Approximately half of the territory is covered with forests and 23% with wetlands and natural grasslands. The water balance in Estonian territory is positive, although there are only 10 rivers longer than 100 km and about 15 rivers with a catchment of more than 1 000 km². Approximately half of Europe's 5th biggest freshwater lake (Lake Peipsi) is located on Estonian territory. At different times there have been different pressures affecting the water environment and water sector. The main stressors on water resources have been pollution from the agricultural sector and chemical industries, high water consumption in energy production for cooling purposes, as well as pollution from municipal wastewater treatment plants.

Environmental issues have always been important in Estonia. In addition to more than 3 000 km of coastline, there are thousands of small rivers, streams or lakes in Estonia, and most of them are accessible and free for all to use. Since the 1950s, Estonian universities and scientists have worked on improving the effectiveness of wastewater treatment and elaborated technologies for wastewater treatment in small settlements. Since 1974, Estonia has been involved in the implementation of the Baltic Sea Marine Environment Convention, which obliges the country to implement strict requirements to stop the pollution of the sea from major pollution sources. At the end of the 1980s, the high level environmental awareness and concern for the nation's future environment was one of the triggers of political reforms in the country. This led to a fight against pollution from the chemical and oil-shale industry and the use of natural mineral resources to exhaustion.

There have been two major reforms of Estonian water management during past 20 years. The first one took place soon after regaining independence and the second one prior to and after becoming an EU member state. In both cases, reforms were politically driven and part of the broader political and economic reforms. Both reforms have directly, as well as indirectly, affected three key areas of water management – elaboration and enforcement of legislation, water infrastructure management, and the cost of water services.

In the beginning of the 1990s, Estonia went through major political reforms by regaining independence and shifting from a centrally planned economy to market economy. The main focus of these reforms in the water sector was on the regulation of public and private ownership, privatisation of infrastructure and on the introduction of the polluter pays principle in the water sector. In the late 1990s and in the beginning of the 2000s, the focus of the reforms was on upgrading and enforcing the existing legislation, upgrading and reorganising the existing infrastructure and ensuring the sustainability of water services.

1 Two phases of water sector reform in Estonia

This case study focuses on the water sector reforms and their consequences in Estonia from 1990 to 2010. In general, the water sector reforms can be divided into two phases. The first phase of reforms was related to the regaining of independence and the establishment of a market economy in Estonia (1990-1999). The second phase was mainly driven by EU accession process (2000-2010). While both phases are clearly distinct, they are also quite closely interlinked as they have taken place in a very short time period. Reforms during both phases mainly addressed the same water problems, but with a difference in their magnitude. For instance, the discharge of pollutants and water abstraction had changed drastically between the time period of the first phase of reforms and the second. Compared with 1990, the total phosphorus load to water bodies had decreased from 792 t/y to 256 t/y in 1999¹ and then to 140 t/y in 2007². Groundwater abstraction had decreased from 168 million m³/y to 65 million m³/y by 1991¹ and to 51 million m³/y by 2007².

¹ Committee on Environmental Policy EPR (2001), *Estonia, Environmental Performance Review*, Economic Commission for Europe, United Nations, New York and Geneva.

² Estonian Environment (2009), *Estonian Environmental Review* (in Estonian), Estonian Environment Information Centre, Tallinn.

During the first phase of reforms, attention was mainly directed at the establishment of the basic legal acts. In the second phase, attention focused on upgrading and enforcing existing legislation in order to meet the requirements of the EU water-related Directives. Water problems in Estonia are mostly related to the water infrastructure and the excessive pollution load from point and diffuse sources. Point source pollution originates mainly from the industrial sector or small wastewater treatment plants. Regardless the source, pollution is always considered significant due to the sensitivity of shallow coastal waters of the Baltic Sea or small rivers and lakes. Diffuse source pollution originates mostly from agricultural areas, forestry or fish farms. Water infrastructure includes water supply and wastewater systems, as well as other types of equipment for water collection, treatment and storage or provision for different purposes. In both cases, the reforms to deal with these problems have focused on legislation, infrastructure management and water services.

Although the water sector was rather well developed in the 1990s, there were not enough financial resources to comply with the existing drinking water and water pollution standards. It was also clear that the standardisation of water quality parameters, using only chemical parameters, did not guarantee the improvement of the ecological status of water bodies. Therefore, it was expected that reforms in water legislation should include the improvements in water quality assessment systems to allow for more target-oriented management of waters.

Another legal aspect of water management was related to the ownership of water. According to the constitution of the former Soviet Union, all natural resources, including water, belonged to the citizens of the Soviet Union. When shifting to market economy it was clear that this was to be changed so that also private persons and municipalities could regain their ownership rights for water bodies or water infrastructure.

In water infrastructure management, the ownership reform and the privatisation process was mostly targeted at public and private organisations rather than private persons. In 1990, all water infrastructures belonged to the state, and the services were provided by entirely state-owned organisations. Another problem with the infrastructure was its technical status and capacity. Due to a sharp decrease in water use caused by the closing or remediation of old industrial enterprises, the reconstruction of the pipelines to reduce leakage and the reduction of domestic water use due to the measuring and pricing of water use, there was no longer a need for large pumping stations, multiple or parallel treatment systems or systems, which used less than half of their designed capacity. It was clear that the infrastructure needed an appropriate owner and rules which promoted its sustainable use and management.

Among the government institutions and water users there were no clear understanding of water services and their costs. In the beginning of the 1990s, the provision of water or wastewater services for citizens or organisations was based on agreements or standard units. Different costs related to the services provided, potential damage to ecosystems or the sustainability of services was not considered. The use of drinking water or collection of wastewater was charged based on a unit consumption rate per person. The transition to the market economy brought about a shift in perspective about the costs associated with water supply and sanitation. From an economic perspective, the full costs associated with supplying water services are not only financial, or supply, costs. There are also economic costs - which include supply costs plus the opportunity costs, which reflect the scarcity value of the resource and the costs of depriving the next possible user. In addition, there are externalities (both positive and negative), associated with costs to public health and ecosystems.

The main results of the reform's first phase were the *Water Act* in 1994, the *Public Water Supply and Sewerage Act* in 1999 and the *Pollution Charge Act* in 1999.

At the end of the 1990s, the reform took a new direction, towards the EU. Again the focus was on legislation, infrastructure and water services. The entire water legislation had to be harmonised with the existing EU legislation. Most of the changes made were to improve existing legislation and make it stricter. Consequently, it became more expensive to implement. Water infrastructure had to comply with stricter standards to ensure safe drinking water, proper treatment of wastewater, and the achievement of good environmental status of the waters.

The main results of the second phase of reforms were amendments to the *Water Act* made from 2001 to 2010, amendments to the *Public Water Supply and Sewerage Act* in 2008 and 2010 and the new *Environmental Charges Act* in 2009.

2 *The political context of the reform*

Electoral mandate of the government

When moving from a centrally-planned economy to a market economy, the environmental questions were among the most important ones. In fact, it can be considered that the need to ensure a better protection of water resources, as well as the strong public opposition to increasing industrial pollution, were triggers of the overall political reform in the country. In 1987-1988, there were plans to widen the areas of phosphate mining on the Estonian Northern coast. This would have threatened the existing water resources and also increased the pressure from chemical industries producing paints, solvents, fertilisers, washing powders, etc. In 1988, it was evident to most of the citizens that a centrally-planned economy was a clear threat to the local environment and that there was a need to take actions to change this. Therefore, environmental problems became the key drivers of the overall political changes. They were used as justifications to fight against the centrally-planned economy and move to a market economy and independence.

During the second phase of reforms, the main question concerned the sustainability of the reforms made during the first phase. Again, for the second time, the reforms and changes were widely supported and the government had a clear mandate to carry them out. Reforms did not cover only water or environmental issues, but the entire political system. EU accession negotiations were finalised in 2003, and EU member state status was established in 2004. In the first phase, the political reform was driven by the clear objective to replace one system with another. In the second phase, the reform was driven from the need to stabilise the position of the state and was well prepared, planned, and agreed in detail.

After restoration of independence in the early 1990s, the newly elected Parliament had a strong electoral mandate to elaborate and adopt the new Republic's constitution, which obliged the government to work out the new legal system, including for the water management sector. There were several ideas regarding the elaboration of the new *Estonian Water Act*, but the main requirement was that the act should be based on the Western-European experience. In order to elaborate a new water act, a special working group composed of different specialists was established. After long discussions, the working group finally proposed to revise the Soviet *Water Code*, taking into account the new constitution, in particular with respect to the freedom of citizens and private ownership.

The main stakeholders, such as industries, agricultural producers or municipalities, were more interested in the privatization process than applying or implementing new environmental requirements.

Opposition

During the first phase of reforms, the main opposition to the reform of water management was related to privatisation and ownership issues. There were disputes about what should be the level or extent of the privatisation of existing water bodies and water infrastructures. For instance, as it was not clear if the state-owned water infrastructures should be handed over to a state-owned private limited company, to municipalities, to municipality-owned private limited companies or to fully privately-owned companies. Currently, water infrastructures for water supply and sanitation services are owned by municipalities in most cases. In the case of smaller municipalities, infrastructures are owned by municipalities, which also provide water supply and sanitation services. There also exists one exceptional case, in which a privately-owned limited company both owns the infrastructures and provides the service.

During the first phase there was also opposition and debate regarding how to use the money obtained by the state as a result of privatisation. In most cases, this money was channelled to the state budget, but there were arguments that the money should have been used to provide support for upgrading the existing infrastructure or improving the quality of water services provided to citizens.

This debate resulted in the creation of a national investment programme. The program listed the planned investments in all sectors in a 5-10 years perspective. As for the water infrastructures, the programme covered the investments for the renovation or construction of water supply or wastewater collection and treatment systems. In addition to the available state budget, the program included international grants, loans, and local co-financing needed to carry out the investment projects. Although the national investment program for the water sector considered the need to solve the most threatening environmental problems, it also reflected the political priorities of the ruling government.

During the second phase of reforms, it was realised that additional and new requirements by the EU would increase the expenses in all sectors, and the opposition urged the ruling government to negotiate with the EU to either diminish the requirements to be fulfilled, or to obtain transition periods or exemptions for certain requirements. As a result of the EU accession negotiations, Estonia was granted transition period to achieve the full compliance with the EU wastewater treatment requirements by end of 2010, and with the drinking water treatment requirements by the end of 2013. As the extent of obligations increased, the government delegated several of them to municipalities, but without transferring adequate financial resources. As such, every municipality has to ensure that all wastewater in their territory is collected and treated appropriately and that drinking water is treated according to the highest existing standards.

Scientific disputes

Scientific disputes during the reforms have mainly concerned the following issues:

- *The adequate and appropriate determination of river basin districts.* In Estonia, water management had been based on catchment areas since 1960. In 1998-2001 there were discussions among decision makers and scientists about the number of management units necessary for an appropriate and effective water management. In order to determine the adequacy of the river basin districts, it was proposed to consider the population density, pressures and impacts, administrative divisions/units, etc. Finally, taking into account the river basin district definition in the EU *Water Framework Directive (WFD)* (2000/60/EC), the decision makers and scientists decided to divide the Estonian territory into three river basin districts, which differed significantly from the classical catchment area division. This decision was important to allow for a balanced water management in Estonia, since approximately half of the Estonian territory is the catchment area of Europe's 5th biggest freshwater lake. The lake is highly eutrophied and suffers because of the excessive nutrient loads from its transboundary catchment. If there was only one river basin district in Estonia (which from the management point of view would be most convenient) the majority of environmental measures would be targeted at and related to the improvements in that lake's ecological status.
- *The establishment of adequate and appropriate classification systems for the assessment of the status of water bodies.* In 1998, it became clear that in addition to physiochemical parameters, biological and hydromorphological indicators also have to be taken into account when assessing the ecological status of water bodies. This resulted in the creation of a new classification system. Historically, several classification systems have been used for lakes, rivers and coastal waters. But these were mainly for scientific purposes. The new challenge was to find a compromise among scientists and to propose a system that was compatible with both scientific needs and supported decision makers in the water management process. Decision makers wanted to have a system that was cost-effective and easy to manage. Scientists needed a compatible system that could provide input for research activities. For water research, for instance, the appropriate lake classification system would include at least 24 different natural lake types with indefinite type specific biological, hydro-morphological or physiochemical indicators to monitor and compare. For decision makers, it would have been enough to divide all lakes into 4 types according to the lake size and select 4-5 indicators for the assessment according to the main pressure sources. Negotiating and calculating the costs for the future monitoring and assessment programs, a compromise was found in between 24 and 4 categories. Despite this, there is still no clear mechanism in place regarding how to differentiate between

monitoring water management and water research. The new classification system was adopted in 2010 by ministerial regulation³.

- *Emissions standards and environmental quality standards.* Scientific disputes concerning different methods of setting environmental standards was one of the main questions in the early 1990's. Under the Soviet *Water Code*, the permissible discharge was calculated taking into account the water quality standards based on chemical indicators. At the end of the 1980's, about 1 500 limit values for different pollutants existed in the Soviet Union. Based on these limit values, the permissible discharges of different pollutants were calculated, taking into account dilution and self-purification. Such a system provided the possibility to avoid costs by using the self-purification capacity of water bodies as a justification for reducing the capacity and treatment efficiency of wastewater treatment plants. In the case of large recipient water bodies, the dilution efficiency was considered very high and the wastewater treatment efficiency remained very low. As a result, the investment and exploitation costs of wastewater treatment systems remained very low as it was considered that no investments were needed. Another negative aspect which had to be changed was the large number of standards that made the monitoring and assessment of the status of water quality in water bodies extremely expensive and complicated. Very often, in cases of similar polluters using the same recipient water body, it was extremely difficult or even impossible to find out who was responsible for pollution.

Western Europe and the USA abandoned similar systems in the early 1970s and started using emission standards. The emission standard system was also taken up by the Baltic Sea Environmental Protection Commission (HELCOM). According to Article 3 of the Baltic Sea Environment Protection Convention, the Contracting Parties of the Convention shall individually or jointly take all appropriate legislative, administrative or other relevant measures to prevent and eliminate pollution in order to promote the ecological restoration of the Baltic Sea Area and the preservation of its ecological balance. In addition, Article 3 paragraph 3 stresses: "In order to prevent and eliminate pollution of the Baltic Sea Area the Contracting Parties shall promote the use of Best Environmental Practice and Best Available Technology. If the reduction of inputs, resulting from the use of Best Environmental Practice and Best Available Technology, does not lead to environmentally acceptable results, additional measures shall be applied."

The Estonian Government signed the Baltic Sea Environment Protection Convention in 1992 and the Convention was ratified by the Parliament in 1995. The scientific debate over environmental quality and emission standards took into account the recommendations of HELCOM based on the emission standards and the experience of other development strategies around the world. As a result of this, a new *Water Act* based on emission standards was elaborated. On the basis of the *Water Act*, a decree on the requirements related to discharges of pollutants into soil or water was adopted by the Government (<https://www.riigiteataja.ee/akt/13290813>).

- *Feasibility and technological innovation in infrastructure development.* For every project or investment both financial and technical feasibility studies are required. The success of an investment depends on how efficiently financial resources have been used and how effectively the technology has been put to work. In the course of the reforms, the parameters and preconditions to determine the efficiency and effectiveness of investments have changed. This has been debated several times and there have been different opinions among interest groups (e.g. donors, beneficiaries such as municipalities or water companies, water users, etc). One of the difficulties has been the comparability of results of planned or already finished investment projects. This has also hindered innovation and infrastructure development. To support innovation and infrastructure development, the aim has been to establish justified limit values for efficiency, to describe the reasonable, effective use of financial resources, and to describe the most reasonable actions to improve the status of environment. Although the list of parameters to determine the efficiency and effectiveness of investments was agreed in 2003, it was never used.

³ Riigiteataja, <https://www.riigiteataja.ee/akt/125112010015>

The main points of conflict

The main points of conflict during both phases of the reforms have been:

- *Designation and identification of ownership rights.* In the beginning of the privatization process, ownership of natural resources was widely discussed and debated. Unlike the other natural resources such as gravel, limestone or oil shale, groundwater was considered as a “mobile” resource. This meant that the pollution of groundwater in one place could easily affect the water users in other places as well. As it is scientifically and technically difficult to localise groundwater in one specific area or territory, it was decided that the groundwater would belong to state. This was seen as the only option to guarantee the appropriate protection and use of groundwater resources. Surface water bodies, however, were privatized to landowners together with the adjacent land.
- *Privatisation process.* Privatisation in the water sector included mostly infrastructures, such as water supply systems or wastewater collection systems. Land drainage or irrigation systems as well as impounding dams were privatised as part of land privatisation. In the early 1990s there were not enough investors interested in privatisation of water management infrastructures. Taking into account the experience of Nordic countries, the government took the position that water supply and wastewater collection and treatment systems should belong to local governments. Therefore, the conflicts were mainly between the central government and local governments. Conflicts concerned the ownership of infrastructures and the right to provide water services. Municipalities wanted to be owners of the infrastructures and also water service providers. Although this would have given local governments additional income, it was considered that in the long term, such a management model would not be sustainable because the financing of public infrastructures and services had not been legally determined.
- *Availability and use of existing national financial resources.* There were conflicting views between local governments and the central government concerning the use of environmental tax revenues. Since the 1990's, revenues have been shared between local and central government. The share has been changed several times, mainly by increasing the share allocated to the central government. According the law, there is no obligation for the local governments to use the revenues from environmental taxes for environmental improvements. The central government, however, has this obligation. Since it has been mainly the central government's responsibility to guarantee the national co-financing of investment projects supported by international donors, there has always been a willingness to increase the share of environmental tax revenues in the state budget. At the same time, local governments claim to have the best knowledge and information for the use of environmental tax revenues at local level.

The views of main stakeholders

In the beginning of the 1990s, stakeholder involvement was minimal, as there were almost no active stakeholder groups at that time. The participation of non-governmental stakeholders was also limited because at the time, large industries and agricultural companies were owned by the state and acted accordingly. The representatives of the Ministry of the Environment, the Ministry of Agriculture, and the Ministry of the Economic Affairs protected the interests of different stakeholders. Therefore, the elaboration of the *Water Act*, as well as other legal acts elaborated at the time differed as compared with later reforms with regard to the absence of stakeholder engagement.

Stakeholder organisations started to develop at the end of the 1990s. The involvement of stakeholders was more visible in the second phase of reforms.

The main groups affected and their primary points of contention with the reforms were as follows:

- *Industries* – the representatives of industrial enterprises were not interested in an inclusion of the HELCOM recommendations concerning industrial discharges into the *Water Act*, nor in taxes concerning different pollutants and harmful substances. They resisted the environmentally-related taxes because of the expense of implementing the environmental protection measures in addition to competitiveness concerns, as additional taxes would have raise the cost of Estonian goods.

- *Agriculture* – the representatives of farmers resisted the inclusion in the *Water Act* of requirements concerning pesticides and fertilisers based on HELCOM recommendations (for instance, measures aimed at the reduction of emissions and discharges from agriculture, HELCOM Recommendations, nr 24/3).
- *Households* – the representatives of water users resisted the inclusion of resource and pollution taxes in the *Environment Charge Act*.
- *Water service providers* – the representatives of water companies resisted the inclusion of restrictions (limit values) on municipal wastewater treatment in the *Water Act*. These restrictions were based on the HELCOM recommendations and the EU *Urban Waste Water Directive* (91/61/EC). They considered the requirements too strict and expensive for implementation.
- *Hydropower producers* – hydropower producers organised against the new and stricter water status requirements in the beginning of the 2000's. They were interested in continuing the hydropower production without any restrictions coming from the EU WFD.

Reform and public finances

In general, it was expected that reforms would have a positive impact on public finances, as it was assumed that the improvement of the entire environmental management system would allow more transparent and comprehensive collection of environmental charges, thereby increasing public revenues. Increased financial capacity of public budgets would have created a stronger position for central and local governments to initiate new investment projects and co-finance the existing ones. In both phases of reforms, however, the impact of reforms on the increase of revenues in public budgets was lower than expected.

In the first phase of reforms in the 1990s, the entire idea of the reform was to establish a market-based economy. It was expected that all systems, structures and organisations should be able to finance their duties and work based on their incomes or charges/fees for services provided. It was also expected that public finances would grow in order to carry out all the new tasks and duties. This was however confronted by growing inflation, low salaries, and relatively high prices. Public finances, at that time, were available only to allow the basic functions of an independent state.

During the accession to the EU, it became clear that the reforms would weaken the public finances, as the need for investments that were necessary to comply with the EU requirements was relatively high and there were limited possibilities for the state to support these investments. In order to prepare for this, the state investment plans considered all possible financial sources, such as direct support from the state budget, direct support from municipalities, foreign grants and development support, loans, and private funding by companies. These investment plans considered mainly the deadlines to comply with the requirements and the possibilities to co-finance the investments from the state budget.

To strengthen the state finances, the *Pollution Charge Act* was adopted by the Parliament in 1999. In 2005, the act was revised and today the *Environment Charge Act* is much more stringent than first one. Today, pollution taxes are higher and there are more taxable pollutants.

3 The enactment and modification of national water legislation

The rationale and instruments of the reforms

The principle components of the national water legislation were introduced in the first phase of elaboration of the *Water Act* and supporting water legislation. During the second phase, these components were modified taking into account the EU requirements. Specifically, this includes the *Water Act*, the *Public Water Supply and Sewerage Act* and the *Environment Charges Act*.

- *The Water Act and related water legislation*

The *Water Act*, adopted by the Parliament on 11 May 1994, reflected the level of knowledge and needs in the middle of 1990s. Water protection measures were based on HELCOM recommendations. The limit values for municipal discharges were set as emission standards, taking into account technical and economic possibilities. Attention was primarily paid to phosphorus and nitrogen compounds. All HELCOM recommendations for industrial plants have been worked out following the definition of best available techniques, without prescribing the use of any technique or specific technology, but taking into account the technical characteristics of the installation concerned. The limit values in recommendations are obligatory to all HELCOM Contracting Parties. Based on the HELCOM recommendations, the *Water Act* and the decree on limit values for discharges of pollutants into water and soil (Decree of the Government nr. 269, 31.07.2001) were elaborated.

The HELCOM recommendations and the EU *Urban Waste Water Directive*⁴ are similar in principle and the implementation of both is obligatory in Estonia.

The adoption of the EU *Water Framework Directive*⁵ (WFD) changed the water protection principles and obliged the EU member states to review the existing water protection legislation according to the principles of the Directive. The purpose of the Directive was to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater. The main difference compared with Estonia's first *Water Act* was a clearly presented requirement in Article 10.3 which stated that "Where a quality objective or quality standard, whether established pursuant to this Directive, in the Directives listed in Annex IX, or pursuant to any other Community legislation, requires stricter conditions than those which would result from the application of paragraph 2, more stringent emission controls shall be set accordingly". Following the WFD objectives, several new chapters and paragraphs were added to the *Water Act*. For instance, a paragraph concerning the combined approach for point and diffuse sources and a new chapter about environment objectives, water use and protection planning were added. Following the main objectives of the WFD, the decree on limit values for discharges of pollutants into water and soil was revised accordingly, adding the possibility to strengthen emission standards.

- *Environmental Charges Act*

In the 1990s, after regaining independence, the World Bank and donor countries started to support the Estonian Government, especially concerning the construction and reconstruction of wastewater treatment facilities. The financing of such environmental projects required a certain amount of own financial contribution. The only feasible way to collect money for these purposes was the establishment of a pollution and resource tax. The pollution and resource tax is based on the amount of water used and pollution discharged into water bodies. One part of the taxes was returned to local government budgets and the remaining part was allocated into a special fund administrated by the Ministry of the Environment and the Ministry of Finance, to cover own contributions in projects co-funded by international donors.

In the beginning of reforms, all polluters who were not able to meet the emissions standards were obliged to pay the pollution tax, based on the pollution load which exceeded the limit values. After some years, when the biggest polluters fulfilled the established requirements, the tax revenues decreased significantly. A special working group with representatives of the Ministry of the Environment drafted a revision to the *Environment Charge Act*, in such a way that all water users discharging pollutants into a water body should pay the tax based on the full amount of pollutants they discharged. In case a polluter discharged more than allowed according to the water permit, he was obliged to pay a special fee which was significantly higher than the normal fee.

Different pollution tax rates are set for different pollutants. Taking into account the growing GNP, the Parliament decided to increase the pollution tax every year. The tax increase from the years 1995 to 2005 was remarkably high; on average 20% per year. Starting from the year 2010, the planned increase is around 1% per year.

⁴ Council of the European Communities (1991), *Urban Waste Water Treatment, Directive (91/271/EEC)*.

⁵ European Parliament and Council of the European Union (2000), *Water Framework Directive, (2000/60/EC)*.

As a result of the improving enforcement capacity, the number of pollutants which were taxed increased continuously and additional polluters (fish farms, peat industry) were added to the list.

- *Public Water Supply and Sewerage Act*

The first *Public Water Supply and Sewerage Act* was adopted by the Parliament on 10 February 1999. This Act regulates the organisation of water supply and the collection and treatment of wastewater, rain water, drainage water and other soil and surface water through the public water supply and sewerage system, and defines the rights and obligations of the state, local governments, water users and clients. The Act also regulates the price of water services. The price of the service of supplying water and collecting wastewater is comprised of a basic fee, a charge for the water extracted, and a charge for leading off wastewater. In addition, the *Act* stipulated that the price of the service shall not be discriminatory with regard to different clients or groups of clients. Despite a clearly formulated price system, there were several conflicts between the users of water services and the water companies. In one particular case, the price was fixed in the privatisation contract and this allowed the owners to earn abnormally high profit. In some cases the water price was kept too low to cover all relevant maintenance costs and therefore the sustainability of water management was not guaranteed in the long run. To regulate and to take more balanced control over the price of the water services, a new amendment to the *Water Supply and Sewerage Act* was adopted by the Parliament in 2010. This amendment will also protect water users in the future if a privatisation of the municipal water companies takes place.

The influence and coverage of the reforms

- *The Water Act and related water legislation.*

The revision of the *Water Act* in the light of the EU *Water Framework Directive* increased the overall "strictness" over the control of discharges. In addition, the monitoring of surface and groundwater quality obtained a new meaning. Also, the inclusion of the principles of cost recovery of water services, including environmental and resource costs, economic analysis and the polluter pays principle, made the *Water Act* much more robust.

- *Environmental Charges Act*

The revision of the *Environmental Charges Act* made it more stringent. The increase of the unit price of the charge and the inclusion of additional substances and polluters will help to control and protect surface and groundwater quality. At the same time, it will increase the revenue flowing into the environment fund. A drawback of pollution taxes is that the cost price of goods produced in Estonia will increase compared with goods produced in states where comparable environmental taxes have not yet been implemented.

- *Public Water Supply and Sewerage Act*

The revision of the *Public Water Supply and Sewerage Act* made the price-setting mechanism more robust, protecting the users from arbitrariness on the side of the water companies. At the moment, the influence of the newly adopted changes to the existing privatization contracts is perhaps still unclear, but it is expected that it will help the water companies to elaborate more fair and transparent water prices. Another major influence is the mechanism that allows for the restructuring of infrastructures, water companies and service areas. Several municipalities have already used this mechanism to group themselves according to the river basins and jointly appoint one common water company to provide public water supply and sewerage services in the basin area. This has also allowed for the establishment of one unified water price for the whole service area. To date, 90 municipalities out of 226 have already implemented this mechanism and a total of 9 regional water companies have been formed.

Other instruments considered and proposed to comply with the environmental requirements

- Allowing the selection of the most appropriate requirements to comply with environmental requirements – either to achieve a target value in mg/l or to achieve a given reduction percentage.
- Allowing the application of the most appropriate standards for the specific pollution – either limit values per production unit, limit values for discharges, but also considering the best available technology (BAT) and best environmental practice (BEP).
- Introducing pollution charges substitution agreements to allow exemptions to the set requirements for a limited time, with the obligation to invest and achieve the desired status or values.

Mechanisms to trigger the modification of technological processes

The discharge requirements included in the *Water Act* for different pollution sources and substances were elaborated by the HELCOM. The requirements are based on the use of the BAT and BEP defined in Annex II of the Convention. The exact description of the BAT for the food industry and the special limit values for discharges are presented in the HELCOM Recommendation 17/10. Such an approach supposes that the expenses to reduce the discharges are similar for similar types and sizes of industries and does not depend on discharge conditions (small or big river, lake or sea). In the recommendation, there were no mechanisms for enterprises to trigger the modification of technological processes in cases where the discharge requirements are fulfilled.

Estonian legislation does not predefine any kind of technologies for pollution reduction. Only the final result (concentration or reduction percent) is determined by regulations.

The adoption of the *Environmental Charges Act* created an instrument to trigger a modification of technological processes to reduce the pollution load discharged into the environment. According to the *Environmental Charges Act*, the main pollutants (organic matter (BOD), phosphorus (P), nitrogen (N) and the basic harmful substances) were included in a list of substances for which discharge are subject to taxation. Taxation is based on the amount (tonnes per year) of substances discharged into environment. The implementation of a new or modified technological process or wastewater treatment process to reduce the pollution load to the environment will correspondingly reduce the environmental tax due. In the similar way, the resource tax supports the reduction of water abstraction and water use.

Instruments to equalise the marginal abatement costs

In the first phase of the reform, instruments to help to equalise the marginal abatement cost across different polluters were developed and introduced. In the beginning of the 1990s, polluters were not obliged to pay any charges if their level of pollution was in compliance with given norms or regulations. Additional charges were applied in case of non-compliance and it was possible for polluters to choose whether to comply with given regulations or pay the non-compliance charge instead. At the end of 1990s, the non-compliance charges were changed to fees and environmental charges were widely introduced. The fee was paid in addition to the abatement costs already incurred by the polluter and functioned as an incentive for compliance.

The enforcement cost of the instruments

Administrative costs were higher during the elaboration of the new water legislation. Public authorities, such as the responsible ministries, mainly covered these costs. Polluters and others typically had no cost increase related to enforcement of the instruments, as their role was to follow the legislation and ensure compliance with established legal requirements.

- *Privatisation and regulation of the use of water infrastructures*

Compared with the central government, the increase in administrative costs was relatively higher in municipalities and water companies. Municipalities had to work out new rules, regulations and agreements.

Water companies had to organise units to serve customers and prepare and sign water supply and sewerage service agreements with every customer. These administrative costs were partially paid by water customers, and in certain cases, a special fee was established.

- *Introduction of environmental taxes*

The introduction of new taxes and payments increased the administrative cost at both the state and the regional level. First, the state had to work out the general system to collect fees and to use the financial resources. Second, at the local and regional level, new systems had to be established in order to carry out inspections, measure pollution loads and make calculations to identify the fees or taxes to be paid.

To conclude, there were no instruments available to provide information to public authorities on the compliance costs of different polluters until the end of the 1990s. The adoption of the *Public Water Supply and Sewerage Act* gave the legal obligation to municipalities to approve and establish the price of water. As such, water companies wishing to change the price of water are required to present the data on their costs and revenues related to water supply and sewerage services. Since 2004, it has been obligatory to calculate and publish information on cost recovery of different polluters. The rate of cost recovery is calculated for the three main sectors – industries, households and agriculture.

4 *The structuring of the reform process*

In the beginning of the 1990s, the reforms were carried out in a “defensive” way. There were many unsolved issues and problems which had to be solved. Due to the high administrative burden, the process took a very long time. The aim was not to draw unnecessary attention that could cause the process to take even more time. Public interest was low and there were no attempts to improve the communication between the government and the general public.

In the beginning of the 2000s, the reforms were carried out more in an “offensive” way, as it was important to communicate to the public and explain what kind of advantages were related to the new changes. All of the government’s actions and plans were made publicly available. The potential role of different interest groups was considered and they were involved in the reform process. Various detailed aspects of the reform, for instance drinking water quality, or the harmful effect of untreated effluents, were raised as important and long-standing problems which had to be solved. They were brought to the attention of every citizen with the aim to get general and broad consent for reform.

Several reviews were available before the revision of the *Water Act*: “Environmental Performance Review” Estonia, 1996⁶, “Environmental Performance Review” Estonia, 2001, and the “National Environmental Action Plan”⁷ accepted by Government 26 May 1998. The need to revise the *Water Act* in the early 2000s was conditioned by political and security questions and the proposal for revision was made by the Government to the Parliament. In contrast, no preliminary reviews were undertaken prior to the establishment of the *Water Act* in the 1990s, because the need for the new *Water Act* to separate from the Soviet legal system was obvious and this was proposed by the Parliament.

The Ministry of Environment was responsible for the preparation of revision of the *Water Act*, which was considered by other ministries and the Parliament’s Environment Commission responsible for the environmental legislation. The basic review process started in 2001 and the responsibility was conferred on the Ministry of the Environment. The working group comprised specialists from different ministries. Some consultants dealing with water problems were also included. The amendments, after approval by other ministries, were sent to the Environmental Commission and then to the Parliament. Scientists and major stakeholders groups were involved in the revision and elaboration of the decrees and regulations (for instance, the decree on water quality standards, <https://www.riigiteataja.ee/akt/13356008>).

⁶ Committee on Environmental Policy EPR (1996), *Estonia, Environmental Performance Review*, Economic Commission for Europe, United Nations, New York and Geneva.

⁷ Estonian Ministry of Environment (1998), *National Environmental Action Plan*, Tallinn.

The review process of the *Water Supply and Sewerage Act* was initiated by the Ministry of the Environment. In 2007, the Ministry organised the relevant study to compare water service prices in different municipalities, with the idea to assess and compare different water companies and their ability to cover all costs according to cost recovery principles. Based on the results obtained, the Ministry of the Environment proposed the corresponding amendments to *Water Supply and Sewerage Act*. Through comprehensive discussions with the Economic Commission of the Parliament, the Estonian Water Companies Association and the Union of House Owners, the amendments were further elaborated and passed to final adoption by the Parliament. The *Amendments Act* entered into force on 1 November 2010.

The *Environmental Charges Act* was elaborated by a special working group composed by the Ministry of the Environment, taking into account advice given by specialists of the World Bank. In the early stages, scientists also participated in the work. After several years, the need to revise the *Environmental Charges Act* was driven by the significant decline of tax money due to the implementation of environmental protection measures. At the same time, due to the growing number of international donor projects, the amount needed for the own contribution steadily increased. Water use and leakage were reduced significantly starting from 1991. The discharge of pollutants was also significantly reduced due to the better treatment of wastewater. The special working group comprised of specialists of the Ministry of the Environment and the Ministry of Finance proposed several changes, which made the *Act* stricter. In the preparatory phase, the growing need for the revenues to cover the growing own contributions was taken into account. In 2008-2009, the Ministry of the Environment ordered a special investigation⁸ from the consultancy "SWEKO Projekt" to analyse the influence of the *Environmental Charges Act* on the implementation of water protection measures. The report is available on the homepage of the Ministry of the Environment (<http://www.envir.ee/1174372>). Some of the proposals were taken into account in the revision process of the *Act*. Some problems, for instance the taxation of polluted storm water discharges, remain unresolved.

In the 1990s, formalised policy assessment methods were not used because the need for the first phase reforms was so obvious. The only assessment that was carried out was made in context of the country's general reform and its objective was to analyse and identify the options for independent water management in a market economy.

In the 2000s, the reforms included comprehensive and in-depth analyses of all costs related to the planned changes. Investment programmes including all relevant costs to implement changes in the water sector were established for the period 2000-2013. For administrative costs, the administrative capacity was assessed and evaluated and the relevant costs for the additional burden calculated.

Cost-benefit analyses were not considered for the overall reforms as it was already agreed that these reforms must take place. Cost-benefit analyses were made in the later stage of reforms for certain aspects of the programme or for specific projects, in order to determine the most cost-effective ways to reach the objectives.

In the preparatory phase of the elaboration of the *Water Act*, the assessment of necessary expenses to implement water protection measures over the following 10 years was undertaken. The assessment mainly summarised the expenses concerning the reconstruction of water supply and sewerage systems, drinking and wastewater treatment plants, as well the expenses to guarantee the work of drainage systems.

At the beginning of the elaboration of the *Environmental Charges Act*, it was clear that the implementation of the requirements of the *Water Act* would require large-scale investments for which the relevant financial resources were not available at the time. The only feasible way to get money to cover own contributions for the internationally co-funded projects was the establishment of a new environmental tax. The obligation to pay the resource and pollution tax was put on industrial enterprises and water companies. The amount of the needed own contributions of investment projects was the base for calculations of the resource and pollution tax. Due to the lack of information and preliminary investigations there were no idea about the real environmental costs. At the same time, taking into account Estonia's economic situation in middle of the 1990s, the tax was planned to cover only the minimum

⁸ *Implementation of Environmental Charges in Water Management* (Keskkonnatasude rakendamise veemajanduses, töö nr 08230-0013), 2008, Tallinn (<http://www.envir.ee/1174372>).

requirements in the first stage. The steadily increasing amount of foreign support and support from EU structural funds required additional money and therefore, the continuous increase of the resource and pollution tax was planned.

The elaboration and implementation of the river basin management plans also included an assessment of the implementation cost. To guarantee at least good status of water bodies, all of the expenses starting from reconstruction of sewerages, wastewater treatment plants, clean-up of past pollution, protection of groundwater resources, management expenses, etc., were taken into account.⁹ Following the requirements of the WFD presented in the guidelines “Economics and the environment”¹⁰, a preliminary assessment of the environmental expenses was carried out by the consultancy “SWEKO PROJEKT”¹¹.

The most expensive water protection measures are the implementation of those parts of the *Water Act* and *Water Supply and Sewerage Act* which are obligatory according to the requirements of the EU *Drinking Water Directive* and the EU *Urban Waste Water Treatment Directive*. In accordance with EU regulations, there are special provisions in place to use the support money for reconstruction and construction of the water supply systems, sewerage and wastewater treatment plants. Every application for support also includes a cost-benefit analysis carried out according to EU regulations. The Estonian Environment Investment Centre acts as the implementing authority with an obligation to check the eligibility criteria and decide on the eligible costs of every support application.

The inclusion of the requirements of the EU *Water Framework Directive* into the *Water Act* changed the water management principles, stressing the importance of cost effectiveness of environmental measures and economic efficiency. The environmental effectiveness and economic efficiency should be taken into account especially in the broader context of the development of integrated river basin management plans (Common Implementation Strategy for the Water Framework Directive, Guidance document nr 1, Economics and the environment⁸).

The analyses of the changes of the *Environmental Charges Act* pointed out that in some cases (e.g. storm water pollution), the taxation of the pollution load has had the opposite effect intended and expected reduction of the pollutants discharged into water bodies has not taken place because the storm water pollution load is not easily measurable. The storm water load measurement expenses (taking into account the large number of storm water outlets and extremely large flow as well as concentration variations) are significantly higher than the collected tax money. In addition, the specialists in the Ministry of the Environment had not yet defined exactly what kind of mean concentration should be measured. The *Act* should be revised because the existing taxation system is not suitable for the storm water discharges.

Concerns expressed by different stakeholders

- *Water pricing for water supply and wastewater collection services*

People who were served by water companies were concerned about the price of water because investment obligations to ensure appropriate sanitation services pressured the water companies to raise water prices continuously. In the 1990s, it was made obligatory for water companies to get an approval for the price changes from the municipality, so the legal right to establish the price of water was conferred only on municipalities. An additional mechanism was introduced in 2010. In order to change a price for water services, water companies are now obliged to get an approval for a new price from the National Competition Board. The purpose of this mechanism is to avoid unreasonable profits to water companies as well as the sustainability of water services.

⁹ The information about expenses is available on the website of the Ministry of the Environment (<http://www.envir.ee/vmk>).

¹⁰ Common implementation strategy for the Water Framework Directive (2000/60/EC), Guidance document nr 1, Economics and the environment – The Implementation Challenge of the Water Framework Directive, Produced by Working Group 2.6 – WATECO, © European Communities, 2003.

¹¹ The preliminary assessment of the environmental expenses. The report is available on the website of the Ministry of the Environment in Estonian (www.envir.ee/orb.aw/class=file/action=preview/id=1098587/2009.07.02+L%F5pparuanne.pdf).

- *Planning of public water supply and sewerage systems*

At the end of the 1990s, the government was concerned about the adequate and sustainable development of water infrastructures. In some regions, there were clear plans, while in others no plans existed. People served or waiting to be served by water companies were unaware of plans indicating when they would get access to clean drinking water. In order to specify the municipal level investment needs and inform the public as well as industries about the service quality improvements, municipalities were obliged to establish public water supply and sewerage plans. These plans are used to justify the investment needs in municipalities. Plans consider the population density, existing infrastructures, socio-economic developments in the area and the status of water resources.

- *Economic feasibility and transparency*

So far, it has been mainly the government's concern that the existing water companies and service providers could continue their activities in a sustainable, feasible and transparent way. In order to ensure this objective, companies providing water services must comply with additional accounting rules. This requires breaking down the costs and incomes by types of water services or geographical service areas.

The outcomes of the reforms

The first phase of reforms in the 1990s turned out to be almost in line with what was expected. The new legislation put into place the criteria for the assessment of the status of water bodies, reconditioned the relationship between the state and water users, and specified the obligations of water users.

The results of the implementation of the *Water Supply and Sewerage Act*, which were revised in the middle of 2010, and came into force in January 2011, are not clear yet. The adopted amendments are expected to have a positive influence on income distribution especially for poorer water users. This amendment, initiated by the Union of House Owners, is general widely accepted by the public.

The change of the *Environmental Charges Act* concerning the annual increases of the tax rates has given the expected results. Despite the pollution load reduction, the income of the Environmental Investment Centre has increased.

The stable pollution load decrease over two decades shows that the pollution tax has a clear influence making polluters implement environmental protection measures. The results concerning the inclusion of fish farms on the list of polluters required to pay the pollution tax will be available in a few years time. It is expected that the majority of fish farms will not be able to pay the tax and will go bankrupt if the government will not change the tax rate or load measurement conditions.

New innovations triggered by the reforms

The elaboration and reforms of the *Water Act*, *Water Supply and Sewerage Act* and *Environmental Charges Act* have had a clear influence on industries, agriculture, water enterprises and public by changing old water use and protection traditions.

The reforms on water use and protection from pollution were triggered from the following changes of the *Water Act*: inclusion of the polluter pays principle (§3⁴ (1)); the obligation to use water efficiently and economically; the obligation to comply with the requirements established for water discharges (§21, (1)); and the need to protect of catchment areas against pollution arising from agricultural production (§26¹). The behaviour of all types of users (industrial, agricultural and households) and service providers (water companies) has changed. The economic use of water and a reduction of discharges into water bodies has become a life-style.

The biggest changes have taken place in agriculture. The paragraph 26¹ "Protection of catchment areas against pollution arising from agricultural production" obliged farmers to reduce the agricultural pollution from silage storages, to construct and reconstruct manure storages and to use fertilisers more efficiently, following the targets set by law. The implementation of the measures has reduced nutrient emissions from agriculture and consequently, the

reduction of nitrogen compounds in groundwater has taken place. The reduction of nitrogen compounds in groundwater is documented in the monitoring reports.¹²

The adoption of the *Water Supply and Sewerage Act* and the clearly defined obligation to measure water amounts which are sold to a client from a public water supply network (§15 (1)) significantly reduced overall water use. In the early 1990s, the mean water use in Tallinn was about 400 L per day per inhabitant, which reduced to 80-100 L per day per inhabitant by the end of the 1990s. Also, industrial water use was reduced significantly due to implementation of new water saving technologies and closing of old industrial enterprises.

The implementation of the *Environmental Charges Act* also had a strong impact on water abstraction and wastewater treatment. The water companies started to fix water leakages, reducing the amount of leakages from 40-50 % to 20 %. For instance, in Tallinn, the level of water leakages has been reduced from 30% to 17.6 %.

The acceptance of the reforms

The reform of the *Water Act* has been largely accepted by most of actors (stakeholder groups, industries, agricultural enterprises, and water users). In the near future, there is no need for significant modifications because the main requirements of the EU *Water Framework Directive* are included in the *Water Act*. However, there are some minor changes which should take place in near-term.

The reform of the *Water Supply and Sewerage Act* took place in 2010 and was well accepted by water users because the water and wastewater service price will be controlled by the Competition Board. Strict control by the Board and a new price enforcement mechanism should reduce excessive profit by water companies. There is no need, for time being, for any other significant modifications.

The reform of the *Environmental Charges Act* satisfies the authorities, but there is great opposition to any further increase in environmental charges or taxes. As a rule, the taxpayers (industries and water companies) are not satisfied with rising taxes. Because the pollution and resource tax constitute only small part of the water supply and wastewater collection taxes, the population has accepted the increase of these taxes. Some small corrections concerning the tax levels and the inclusion of new polluters into the list of tax payers will take place. Also some modifications concerning storm water taxation should take place in the future.

5 Public acceptance of the reforms

The elaboration of the *Water Act* and the *Water Supply and Sewerage Act* were of vital importance to the Government and there was no resistance from the public and industries side. In the stage of revision of the acts, there was some criticism concerning the acceptance of the EU strict timetable of the implementation of the *Drinking Water and Urban Wastewater Treatment Directives*. Also, the requirements to limit agricultural pollution were thoroughly discussed by the Ministry of the Agriculture, supported by the Agricultural Chamber, and the Ministry of the Environment. In both phases, reforms were widely accepted and supported by all interested parties. The shift to the market economy was of crucial importance and there was a little room to raise any doubts. The only resistance was from political minority groups who opposed the whole idea of moving to market economy.

The revision of the *Environmental Charges Act* caused more serious resistance from the stakeholders' side. The main target of the criticism was the steady increase of the pollution and resource taxes (in the first period, from 1995 to 2005, about 20% per year) and the inclusion of new polluters into the list of taxpayers. The main argument against the increase of tax rates was comparison with Finland and Sweden, where there is no such taxation system.

During the second phase of the reform in the 2000s, some minor changes were made, but the main proposal made by the Ministry of the Environment was accepted. One of the reasons why stakeholder groups were

¹² Estonian Ministry of the Environment (2002), *Estonian Environmental Monitoring 2001*, Tallinn.

not very critical to the changes was the possibility as well as the promise made by the government to provide financial support to cover the costs related to the reforms.

6 *Interaction of the policy instruments*

In the first stage of the elaboration of the *Water Act*, there were two different approaches to control the emissions from the same sources: the former Soviet approach to control the emissions via allowed limit concentrations, and the HELCOM approach, to control the pollution via emission standards.

The adoption of the EU *Water Framework Directive* connected in a logical way these two approaches in Article 5 “The combined approach for point and diffuse sources”. Article 5 stresses the need to follow the relevant emission limit values, or in case of diffused impacts, the controls including, as appropriate, best environmental practices, and when a quality objective or quality standard requires stricter conditions, then more stringent emission controls shall be set accordingly. The instrument proposed by the EU *Water Framework Directive* fits very well with the *Water Act*. Inclusion of the combined approach into the *Water Act* strengthened the control mechanism and the officials got an additional water protection mechanism.

The main instruments to reduce water use and the discharge of pollutants into the environment are the water permit system and taxation. Some difficulties have been encountered in the implementation of the taxation system; for instance, storm water taxation. The idea to tax storm water discharges in a similar way to discharges from the wastewater treatment plants does not work at the moment. There are several reasons for this. First of all, the measurement of the pollution load discharged by storm waters into the environment is extremely complicated and expensive. Second, the polluter should pay the tax from the pollution load discharged into the environment in cases where the average concentration of suspended solids is larger than 40 mg per litre. The problem is that the average concentration is not defined. Do we mean the average daily, weekly, monthly or yearly concentrations, or do we talk about the average concentration of one storm water event? Over the last five years, the Ministry was not able to clarify the problem and therefore the Environmental Inspectorate abandoned the effort to control storm water discharges. Even if the Ministry makes a decision about which average concentration should be used as calculation basis, the measurement of the storm water average concentrations would be still too expensive.

Conclusion

Water reforms in Estonia over the past years have been successful and they have supported the overall development of Estonia. In the first phase of reforms, major structural reforms took place, including adopting the principles of a market economy. In the second phase of reforms, the existing water management system was strengthened and harmonised with stringent EU environmental requirements. Changes in the water management concerned everyone. In the beginning of the 1990s, the central government was mainly involved and concerned with the reforms. Starting in the 2000s, stakeholders and private persons also became intensively involved, as people understood that the reforms would affect their future incomes and quality of life. As Estonia is an EU member state, future water reforms will be closely related to the EU's water policy.

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