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Managing and Developing the Water Resources Assets in Kaliningrad Oblast, Russia in Support of Economic Growth and Environmental Sustainability

With

Lithuanian, Polish and Swedish Examples

By Jakob Granit, Andreas Lindström, Vladimir Dmitrevsky, Björn Guterstam, Mats Hellström, Janusz Kindler, Lina Kramen, Tomasz Okruszko, Bernardas Paukstys, Nataliya Smorodinskaya, and Lennart Sorby

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Kaliningrad Oblast and the Transboundary Water Resources

List of Abbreviations

BOD	Biochemical Oxygen Demand
BSAP	Baltic Sea Action Plan
NIP	National Implementation Plan
CBSS	Council of Baltic Sea States
COD	Chemical Oxygen Demand
GDP	Gross Domestic Product
GRP	Gross Regional Product
HELCOM	Helsinki Commission
IWRM	Integrated Water Resources Management
MAC	Maximum Allowed Concentration
M&E	Monitoring and Evaluation
NDEP	Northern Dimension Environmental Partnership
NEFCO	Nordic Environment Finance Cooperation
NDF	Nordic Dimension Foundation
NWMB	National Water Management Board
RBD	River basin District
RF	Russian Federation
RUR	Russian Ruble
RusNIP	Capacity for Compliance with the Baltic Sea Action Plan
RWMB	Regional Water Management Board
SEZ	Special Economic Zone
Sida	Swedish International Development Cooperation Agency
WFD	Water Framework Directive
WHO	World Health Organization
WRDL	Water Resource Development Lever
WSS	Water Supply and Sanitation

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Photo: Jakob Granit, SIWI

1 Preface

This report is the outcome of a project financed by the Sida Baltic Sea Unit. The objective of the report is to demonstrate how water resources management and development in the Kaliningrad Oblast, Russia can support sustainable economic development and ecosystem services in the Oblast and in the broader Baltic Sea region through long term investment in the resource. The report is not a comprehensive assessment of previous or ongoing discrete water management and development projects. It is our hope that the report will stimulate institutions and actors in the Kaliningrad Oblast and beyond to further enhance this analysis stimulating investment in the water resources assets. The project is undertaken in response to a request by the Nordic Dimension Foundation (NDF), Russia to Swedish actors to pursue cooperation in the Kaliningrad Oblast. The project was defined during a visit to the Kaliningrad Oblast by SIWI in April 2009 in partnership with representatives from NDF, the Ministry for Housing and Public Utilities and Construction, Kaliningrad Oblast and Sida. We are grateful to the contributions from partners from the Northern Dimension Foundation, Russia, the Russian Academy of Sciences, the Swedish River Basin District Authority for the Northern Baltic Sea, the Global Water Partnership and its Country Water Partnerships in Poland and Lithuania, Färgfabriken and independent experts.

Water is a medium that links air and land through the hydrological cycle. Human interventions affect the water cycle and alter the chemical composition of water as well as changing natural flow patterns. Well managed water is essential to maintain public health, provide an attractive environment for recreation and support economic activities generating goods and services such as in agriculture, energy and industry. The water resources in Kaliningrad Oblast are degraded but can through strategic investment in their development generate many benefits to the economic development of the Oblast.

The water resources in the Baltic Sea region and in the Kaliningrad Oblast are in many cases transboundary and flow across national borders linking neighbours in management and development challenges. The Baltic Sea is among the most polluted water bodies in the world because of poor land and water management in the basin. The Baltic Sea basin, in which Kaliningrad Oblast is a key stakeholder, includes 14 countries and the need to cooperate to address the deteriorating Baltic Sea environment is therefore evident. The littoral states and the EU commission seek common policies through the Helsinki Marine Environmental Protection Commission (HELCOM) in which Russia has been a contracting partner for almost 40 years. The EU countries have developed a Baltic Sea Region Strategy (2009) in cooperation with Russia. All of the EU member countries have prepared river basin management plans for national and transboundary river basin. The report provides suggestions on steps to invest in water in line with the current Russian Water Act (2007) to contribute to sustainable economic growth in the Kaliningrad Oblast as well as to strengthen basin-wide regional cooperation with its neighbours in accordance with the HELCOM Baltic Sea Action Plan (BSAP). For comparative purposes it provides overviews of the water resources reform processes in Lithuania, Poland and Sweden in connection with the implementation of the EU Water Framework Directive. The transboundary rivers Pregola (Kaliningrad Oblast and Poland) and Neman (Belarus, Kaliningrad Oblast, Lithuania and Poland) put the enclave in both a downstream and upstream position. Steps towards joint planning and cooperative action in these two transboundary Baltic river basins should be considered.

The report was presented to the Vice Governor of the Kaliningrad Oblast and subsequently in a workshop on 18 May to both Federal and Oblast level senior officials including scientific experts. A rich discussion amongst the participants highlighted a strong interest to re-start an intra Oblast investment programme with transboundary dimensions together with the neighbors sharing river basins and coastal lagoons.

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Photo: Jakob Granit, SIWI

2 Conclusions

2.1 Key messages on water, growth and sustainability

1. **The water resources and the hydraulic infrastructure assets in the Kaliningrad Oblast are in a poor condition.** This situation poses a direct threat to both the human and natural environments in the region. Regular flooding, polluted water bodies and inadequate water supply and sanitation provide evidence that water resources management need to be improved to avoid financial burdens to the economy.

2. **The strategic water resources assets are to a large extend transboundary.** The main water resources in the Kaliningrad Oblast are the transboundary river basins Pregola (Kaliningrad Oblast and Poland) and Neman (Belarus, Kaliningrad Oblast, Lithuania and Poland) and the two linked brackish lagoons: the Vistula and the Curonian. The water resources in the Kaliningrad Oblast have a transborder character with Poland upstream and Lithuania downstream. There are some 610 rivers and streams in the Kaliningrad Oblast mainly belonging to these two large river basins that flow to the Baltic Sea. The location of the Kaliningrad Oblast enclave link it to the broader Baltic Sea community of 14 basin countries and nine littoral states. The Baltic Sea is in itself heavily polluted from eutrophication and hazardous substances stemming from agriculture and industry.

3. **The Russian Federation has a good water law but the authority to manage water is fragmented between many institutions and stakeholders in the Kaliningrad Oblast.** The Water Code of the Russian Federation (2007) offers a comprehensive and well structured regulatory framework for water resources management and development. Implementation of the measures prescribed in the law relating to monitoring of water bodies, integrated use and protection of water bodies appears weak. There is a complex and fragmented structure of stakeholders using or and managing the resource. Consequently there is scope to begin to manage water more effectively by involving the different levels of administration and other stakeholders on the ground by clarifying responsibilities between the different stakeholders.

4. **Examples of effective water management in several Baltic Sea Region states demonstrate major health, economic and ecosystem benefits.** Water resources management and development include in its broadest definition water resources information management and monitoring, governance aspects, and the generation of goods and services at the primary, secondary and tertiary level. Risk strategies such as managing floods and climate change impacts are usually included.

    - In the case of Sweden and the Mälardalen region, a few decades of conscious and dedicated planning and implementation of water laws and proper development policy levers have turned Lake Mälaren from a water resource posing risks to human health and reversing economic advances to become the foremost clean water supply source in the region, serving two million people in the greater Stockholm area. Water resources play a crucial part in the Mälardalen region which is one of the most dynamic economic regions in Sweden, supplying clean water to many sectors including: industry; agriculture; freshwater and coastal fishing; health; tourism; recreation, and innovation in urban planning through the development of ecologically more friendly urban settlements by the water fronts.
    - In the two neighbouring countries to the Kaliningrad Oblast, Lithuania and Poland, major progress in managing and developing water resources have been achieved, providing benefits to their citizens, environment and productive sectors. The accession to the EU and the implementation of the

EU Water Framework Directive has put water management issues to the forefront in these two economies. Even if much remains to be achieved, water resource development work generates improved economic benefits in health, tourism and improved management of floods and droughts, offsetting costs to the economy.

5. **Tourism, health, industry, manufacturing and assembly are identified as key economic sectors that would benefit from improved water management and development where new jobs and value can be created.** The economy in the Kaliningrad Oblast is under pressure to deliver more jobs and value. At the same time the market adaptability of the local population, deriving from its wide-ranging and long lasting involvement in small businesses and individual entrepreneurial activities is high. The dynamic neighbourhood of the Baltic states and the Scandinavian countries creates opportunities to build links to numerous infrastructural and communication networks in the Baltic Sea Region and Europe. By managing and developing the water resources new jobs and value would be created in inter alia the following sectors:
   a. Tourism. Improving the management of watersheds, rivers, estuaries and lagoons would increase the attractiveness of these assets for tourism and recreation. Indications from neighbouring countries show the opportunities provided by restoring ecosystems for tourism enterprises and revenue creation. The revenue produced in major recreational bathing resorts in Poland and Lithuania separately generates far more revenue than the whole Kaliningrad Oblast tourism sector. The location of the Kaliningrad Oblast on the shores of the Baltic is attractive for both domestic and foreign clients.
   b. Health. Failing water supply and sanitation systems bring societal costs due to health care costs and the losses of work and school days. Provision of Water Supply and Sanitation (WSS) services are key to ridding society of water-borne disease. Further investment in this area would raise the human development index in the Kaliningrad Oblast.
   c. Industry, manufacturing and assembly. Water supports several productive activities in the Kaliningrad Oblast that are dependent on reliable and secure water supplies. Floods and the linked degradation of water quality impose costs on industry.

6. **Improving water management would deliver more ecosystem services.** Key ecosystem goods and services at the local, Oblast and Baltic regional level that would be delivered through investment in water management and development include sustaining the production of food fit for consumption by reviving regular and organic agri-businesses, recreational opportunities and sustaining biodiversity to maintain productivity in agriculture and contribute to future biotechnological development.

7. **The economic gains from improved water resources in the Kaliningrad Oblast are coupled with longer term regional cooperative gains.** By improving the natural environments and ecosystems presently affected by polluted water there is an opportunity to improve the overall image of the Kaliningrad Oblast and increase its attractiveness for foreign direct investment in several sectors. Russia, as a member of the Helsinki Marine Environmental Protection Commission (HELCOM) and the Council of Baltic Sea States (CBSS), contributes greatly to the regional development agenda. Addressing environmental issues in the Kaliningrad Oblast would demonstrate commitment to these regional processes and would contribute to making the Baltic Sea region as a whole more attractive in line with the obligations in the HELCOM BSAP and the forthcoming Russian National Implementation Plan (NIP) under finalisation. The Russian NIP will contain inter alia an investment programme in sewerage treatment plants to reduce nutrient inflow to the Baltic Sea.

8. **The implementation of the EU Water Framework Directive (WFD) by the EU member countries offers options to explore experiences gained and work in partnership to prepare joint management and development plans for the transboundary Pregola and Neman river basins.** Much experience is currently being generated by ongoing efforts to implement the WFD in the EU member countries. There is an opportunity for Kaliningrad Oblast to gain experiences from these processes and work with its neighbours in preparing and implementing cooperative river basin management and development plans. The cumulative impacts of jointly managing waters in the coastal areas of all the Baltic Sea states provide regional benefits to the whole Baltic region. Cooperation between Kaliningrad Oblast and its immediate Baltic Sea neighbours will benefit the whole region and its 100 million Baltic citizens.

2.2 Steps to increasing investment in water resources management and development

A strategic water resources investment programme for economic growth and environmental sustainability needs to be well anchored with and owned by the key stakeholders i.e. the Kaliningrad Oblast Government, the Russian federal Government, key civil society organisations and citizens. Partnerships with external stakeholders, in particular neighbours who share transboundary water resources and the Baltic Sea itself, can be strategic and make a difference considering their stake in improving the Baltic Sea ecosystem as a whole.

The four step approach outlined below links to the steps outlined in the EU Water Framework Directive establishing a framework for Community action in the field of water policy that commits the EU member states to achieve a good qualitative and quantitative status of all water resources by 2015 (see appendix). The EU Water Framework Directive requires that all water resources, i.e. rivers, lakes, groundwater, transitional waters and coastal waters, should by 2015 achieve good ecological status, and heavily modified and artificial water resources good ecological potential. The Directive requires the production of a number of key planning documents over six-year planning cycles. Most important among these are the River Basin Management Plans that were produced in 2010. A four-step water development investment programme is outlined below:

1. **Classification and characterisation of the water resources assets.** For management purposes an up to date clasification of the water resources needs to be undertakent according to the Water Act if not already available. The classification needs

Photo: Jakob Granit, SIWI

to be both for surface and groundwater resources. Characterisation of the status of the water bodies by documenting anthropogenic pressures, pollution impacts including trends, sensitivity analysis of impacts of longer term climate change, and flood risk mapping supplements the classification process. Through the BSAP NIP process many point source pollution sites are being documented. Pollution can be of a diffuse character, from point sources or from transboundary sources. The Neva-Ladoga Basin Water Administration in the Kaliningrad Oblast, the Baltic Sea Basin Council, the Kaliningrad Centre for Hydrometorology and Environmental Monitoring and other technical federal and Oblast agencies have a key role to play in this step. The river basin authorities in Poland and Lithuania could contibute and provide data and information considering the transboundary nature of the water resources.

2. **Strategic water resources planning including monitoring and evaluation programmes.** Based on the classification and characterisation of the water resources assets and the benefits that can be generated from water use, strategic basin planning should follow for the two key basins. The basin planning process will support a policy dialogue and identify concrete goals and actions including mitigation plans for climate change. The plans identify the priority water resources management and development needs, what strategic steps have to be taken and the proper tools needed to achieve agreed objectives. Cost recovery from capital investment, management and operation of the water investments should be included to ensure long term sustainability. Monitoring and evaluation programmes to measure the success and failures of the basin plans should be included. This to ensure a flexible and adaptable approach to basin planning, implementation and follow up.

The planning process should involve all the key stakeholder groups identified in this report to seek clarity on the decision-making process and to ensure participation in the subsequent implementation phase. Current planning work related to meeting obligations to reduce input to the Baltic Sea of Nitrogen and Phosphorus under the framework of the BSAP NIP should be included. The BSAP NIP process is one part of water resources management focussing primarily on nutrient reduction. Working with neighbours sharing the transboundary water assets will be important.

3. **Economic benefit analysis.** A quantification of economic benefits from a water investment programme should be undertaken to guide the planning and investment processes. Benefits to assess include improvement in general health, job creation in productive sectors, and improved sustainability in the transboundary water resources ecosystems delivering several ecosystem services. Benefits from working with the EU partners in a transboundary basin concext could be considered.

4. **Investment financing.** In parallel to the strategic water resources planning phase it will be critical to increase the investment appetite from both public and private sector investors in water-related goods and services. Some of these primary goods and services are of a public character including most likely water shed restoration and flood protection infrastructure. Other activities can lend themselves to partnerships between public and private sector actors. Secondary and tertiary goods and services generated through good water management can be generated by both public and private sector actors. Organisation of investment conferences in public good water management and key productive sectors to raise both public (Federal, Oblast, and external development) financing and private sector can be effective. Investment resources beyond the Oblast's own public funding include Federal funding and funding from EU such as through the Northern Dimension Environmental Partnership (NDEP) and Nordic Environment Finance Cooperation (NEFCO).

3 The Status of the Water Resources in the Kaliningrad Oblast and Beyond

3.1 The water resources assets and challenges[1]

The main water resources of Kaliningrad Oblast are the transboundary river **basins Neman and Pregola** and the two linked brackish lagoons, the Curonian and the Vistula, on the shores of the Baltic Sea. There are some 610 rivers and streams in the Kaliningrad Oblast and most of them belong to the two large river basins that end up in the two semi-enclosed lagoons. Total annual river runoff amounts to 22.5 km^3 of which the river Neman accounts for 88% and the Pregola for 11%. Of the annual flow of surface water, about 13% originates within the Oblast while the remaining 87% comes from bordering riparian countries. The two main river basins are shared with the neighbouring EU countries Lithuania and Poland and the none-EU member Belarus.

The flow regime in the lower reaches of the Pregola and other rivers with outflow to the lagoons is affected considerably by storm surges caused by strong western and north-western winds, especially in autumn and winter. The outflow of the rivers can be constrained, completely blocked or even turned back ("backwater periods"). This phenomenon is most pronounced for the lower part of the Pregola. Surges can start up to 60-70 km upstream, causing flooding and the decrease of discharges practically to zero. The largely inadequate treatment of wastewater generated primarily from municipal utilities and, to a lesser degree, from industry, is the major source responsible for the deterioration of the water quality of the rivers Pregola, Neman, Pissa (a tributary of the Angrapa river) and Sheshupe, and consequently for the worsening of the quality of water in the lagoons.

The Pregola is heavily polluted; especially in its lower reaches. Wastewater is discharged through permitted and emergency outlets, including city communal sewerage, rainwater and industrial wastewater. In most cases the wastewater from municipal utilities is treated only mechanically. Large loads of suspended and organic substances are discharged into the Pregola every year. The bottom of the river is covered with a thick layer of sediments. Very poor conditions of the river within the city of Kaliningrad and in its pre-estuary part make it one of the most polluted areas in the Baltic Sea basin. The self-cleaning capacity of the river has been lost, especially in its lower parts.

Since the collapse of the Soviet Union in 1991, the discharges of pollutants have been significantly reduced and the water quality slightly improved. The pollutant reduction is a direct consequence of the general decline of the economy and the consequent significant reduction of production at the pulp factories once active in the city. Despite this, the pollution load remains considerable. Analysis of water shows that the self-rehabilitation capability, or self-purification, of the Pregola is weak and depends upon the construction of treatment facilities in the hot spots of Chernjahovsk, Gusev, Gvardeysk, Nesterov, Ozersk, and in the Kaliningrad city.

When the Neman river enters the territory of the Oblast its waters are already affected by agricultural and urban pollution. The concentrations of BOD, COD and suspended matters present levels which are 1.5 – 2.0 times higher than the maximum allowed concentration (MAC) established by the present federal law. The situation worsens once the river has flowed through the cities of Neman and Sovetsk. More than 80 pollution sources discharge into the river and some pollution indicators show concentrations up to three times higher than the MACs. Despite this, the content of dissolved oxygen in the water remains above the minimum limit. In recent years some improvement in water quality has been recorded because the pulp industries operating in Neman and Sovetsk have significantly reduced their production.

The Vistula and Curonian lagoons play an important role in the regional ecosystem. The lagoons are heavily polluted by wastewater from cities, industries and waste disposal sites. These are transboundary issues which involve Lithuania (Neman river and Curonian lagoon) and Poland (Vistula lagoon). The Curonian lagoon is mainly polluted by the Neman, which receives wastewater from the cities of Sovetsk, Neman and Krasnoznamensk. The condition of the water quality in the Curonian lagoon is poor, with high concentrations of phytoplankton, which in some summers may result in low oxygen concentrations and fish kills. Catches of bream, eel, pikeperch and some other species have reportedly decreased. The poor oxygen conditions in the lagoon are caused by a high load of nutrients discharged from domestic and industrial sewage. The majority of the nutrient loads come from the Neman river. According to HELCOM the nutrient flow into the Baltic Sea vary between 30,000 and 70,000 tonnes N/year and 1,500-3,500 tonnes P/year.

The pollution of the Vistula lagoon is caused by the city of Kaliningrad discharging its household and industrial waters into the estuary of the Pregola and through the channel directly into the lagoon. A further cause is pollution by wastewater from the towns of Baltiysk, Svetliy, Mamonovo and Ladushkin, which are situated right on the coastal area of the lagoon. The Vistula lagoon suffers from intensive eutrophication because of the organic compounds and pesticides flowing from farms and fields. Algal blooms are frequent and catches of fish (bream, eel and pikeperch) have decreased. Damaging genetic changes are evident, and undersized fish are becoming numerous. The Pregola River discharges nutrients, organic and inorganic substances originating from farms, urban sources, solid waste management sites and untreated or minimally treated industrial and domestic effluents.

The port and its shipping activities are further significant sources of pollution. Normally from April to October the dissolved oxygen concentration in the lagoon waters remains at its normal level of saturation (8 to 15 mg O^2/litre), while an oxygen deficit can be observed at the Pregola estuary. Here, the content of dissolved oxygen drops to 5-6 mg/l and the highest concentrations of phosphorus/phosphates (above 5.0-15 mg/l) and nitrogen/nitrates are measured. Phytoplankton blooms are frequent.

[1] Section 3.1 is based on and a summary of a report by COWI. December, 2007. Preparatory Work on Kaliningrad Waste Water Sector Action Programme. Analysis of Current Environmental and Wastewater Handling Situation.

Photo: Jakob Granit, SIWI

Surface water is the major resource of abstraction, which amounted to 158 million cubic metres in 2006, followed by groundwater (68 million cubic metres). This amount to about 240 m^3 of water per person. Kaliningrad City represents about 50% of the Oblast water consumption and is the main user of surface raw water. All the towns outside Kaliningrad City are utilising groundwater as the source for drinking water production. The wastewater collection systems in about 20 towns amount to about 2,000 km of network (2,500 km in all districts), of which most is combined system for wastewater and surface drainage. The often large infiltration and collection of drainage water leads to excessive costs of pumping and treatment. The collection networks from the damaged and deteriorated pipe network may also be leaking wastewater into the underground around the water supply pipes thus creating potential source of health risks through the water delivered to consumers, and also potential pollution of the ground water. The current situation of the water supply in the towns is characterised by a progressed state of physical deterioration of many of the water facilities.

3.2 The Baltic Sea Region dimension

The political and economic geography of the Baltic drainage basin is complex, with 14 riparian countries fully or partly in the basin: Belarus, Czech Republic, Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Norway, Poland, Russia, Slovakia, Sweden, and Ukraine. Nine of these states border the Baltic Sea directly and Russia is a non-EU littoral state. The strategic location of the Kaliningrad Oblast makes it a key partner in developing the Baltic Sea as a common resource. In the Baltic region water resources have been extensively utilised for economic development through agriculture, hydropower and industrial production, and freshwater and marine ecosystems are showing increasing signs of environmental stress. This is clearly demonstrated by the spreading of dead zones in the deep water of the Baltic Sea. An underlying cause is water quality degradation due to eutrophication caused by excess nutrient run-off from intensive agriculture and the burning of fossil fuels for transport and energy production.

Cooperation to address Baltic environment issues has a long history. At the policy level, the UN Conference on the Human Environment in Stockholm (1972) was the first global conference highlighting the linkages between human well-being, the environment and economic growth. The next major regional step in the region was the establishment of the Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea (HELCOM) to which Russia is a contracting party. In 2007 the HELCOM contracting parties agreed on a Baltic Sea Action Plan that sets clear objectives and non-legally binding commitments to realie the joint vision of a healthy marine environment.

With the EU enlargement process in 2004 cooperation through the EU frameworks in the region has increased, in partnership with Russia. This includes partnership through the Northern Dimension which is a policy framework for the promotion of dialogue and concrete cooperation to support economic integration, competitiveness and sustainable development in Northern Europe. During 2008 and 2009, the EU Commission developed

Photo: Jakob Granit, SIWI

a Baltic Sea Region Strategy in consultation with the member states and Russia. This is the first regional macro strategy the EU Commission has developed to address the environment, with a focus on making the Baltic Sea Region a prosperous, accessible, attractive, safe and secure place. A macro region recognises that there is a substantial home market that businesses can benefit from and in which innovation and clustering in the education sector can be shared.

Regional EU legislation has had a major impact on the EU member states and the first management cycle of the implementation of the EU Water Framework directive was finalised in early 2010. River basin management plans, environmental quality standards and programme of measures have been decided for all EU member states and are currently under implementation by the water authorities established in all EU countries. EU member states are implementing separate Directives including the Wastewater Treatment Directive and the EU Flood Directive. The implementation of the EU Marine Strategy Directive is in progress and the legislation and organisation is due to be finalised during 2010. In Sweden, for example, a new national marine and water authority will be established with responsibility for the EU Water Framework Directive, Marine Strategy Directive, the EU Baltic Sea Strategy and the HELCOM Baltic Sea Action Plan (BSAP) including several of the national environmental quality objectives. For further details see appendix 1-3 on the Swedish, Lithuanian and Polish experiences in implementing the EU Water Framework Directive and its relevance to Kaliningrad Oblast.

With the current integrated governance regime in the region demonstrated by HELCOM, and more recently by the EU and its member states in partnership with Russia, there is a good opportunity to integrate fresh and marine water issues into mainstream regional and national economic planning. All countries are responsible for managing the watersheds in their part of the Baltic basin to promote both national and regional development. Nations and regions bordering the Baltic Sea have reached different stages of maintaining and restoring the quality of national water resources and have also reached different levels of economic and human development. The achievement of healthy water resources and an attractive environment has enabled some regions to re-profile themselves and create new economic activities.

The Kaliningrad Oblast, situated directly on the shores of the Baltic, could become a champion in promoting sustainable economic activities and improving the freshwater and coastal zone ecosystems. According to the RusNIP report Kaliningrad oblast need to reduce input of nutrients in the order of 2,821 tonnes of nitrogen and 724 tonnes of phosphorous to fulfil the Russian BSAP preliminary obligations. Meeting these obligations through action and innovation can generate substantial job opportunities and new services for the Kaliningrad Oblast.

4 The Economic Context in Which to Place a Water Management and Development Programme

4.1 Economic outlook

The Kaliningrad Oblast's economic system is vulnerable with a population of less than 1 million inhabitants and low levels of nominal average wage (430 EUR in 2008). The Oblast has a small consumer market and a low investment potential for global actors. During the post-Soviet years the Kaliningrad Oblast has been facing an acute structural unemployment in industrial development with 70% of the workforce concentrated in trade and trade intermediation primarily in import-processing of goods to mainland Russia. The economy depends almost totally on imports of basic consumer goods, raw materials and semi-finished items for industrial production. The region has important harbour facilities but sees growing competition from other Baltic ports, including some in Leningrad Oblast and St. Petersburg.

Since the beginning of the 1990s, Kaliningrad Oblast has been functioning as an exclave economy separated from the rest of Russia with necessary transits through Lithuania–Latvia or Lithuania–Belarus. As a compensation for additional costs of transportation and border crossings, the region was granted a status of Special Economic Zone (SEZ). This gave the Oblast an exclusive privilege of tax-free trading with the rest of the world which made it the most open economy in Russia. After 2004, upon becoming an enclave within the EU territory, the region also found itself being the most exposed economy in Russia to the effects of globalisation.

The dynamics of the Kaliningrad Oblast's GRP is closely correlated with the growth rates of Russia's GDP, but generally it has a wider magnitude in either upward or downward direction. In other words, due to a statistical base effect, the local economy is usually rising much higher, or falling much deeper than does the Russian economy as a whole. Regression analysis shows that a change in Russia's GDP by 1 percentage point leads, on average, to a change in Kaliningrad's GRP by 1.9 percentage points (for 1995-2009, R2 = 0.87), as illustrated below.

Although the Oblast is administratively a part of the North Western Federal District (NWFD), it is economically a part of the Central Federal District. The vast majority of cargo flown from or to the Kaliningrad Oblast goes to or from Moscow and other regions of Central Russia, thus covering a distance of more than 1,000 km.

The same pattern of developing market ties dominates in the Kaliningrad Oblast's relations with foreign partners. Geographically, the Kaliningrad Oblast and the nine littoral countries in the Baltic Sea Region (BSR) are close neighbours connected by the Baltic Sea. The distance between Kaliningrad and the main capital cities in the BSR is at most 450-600 km, i.e. considerably less compared to the distance to Moscow. At the same time, in terms of economic relations, the Oblast and its Baltic Sea neighbours seem to be remote from each other – the volumes of their trade and investment flows have been largely insignificant so far, except for contacts with the closest neighbours Poland and Lithuania.[2]

In pre-crisis years, Kaliningrad's economy was booming at an annual rate of 15-20%, i.e. at least twice faster than Russian economy as a whole (table 1). At the same time investment activity in the region has been very volatile and not matched with growth rates of industrial production or the GRP as a whole.

The global recession hit Kaliningrad's economy in the first half of 2008, i.e. two quarters earlier than it struck Russia. In 2009, all main industrial sectors had contracted output (table 3).

In particular, the main assembling industries (cars, consumer electronics, furniture), which had been massively engaged in delivering import-processed manufacturing to Russia's mainland, were falling at an average rate close to 50%, with the consumer electronics itself, even harder – at a rate of almost 70% (see table 3). Several large assembly plants in this sector suspended their activities and got ready to move equipment to other regions or to sell out their assets.

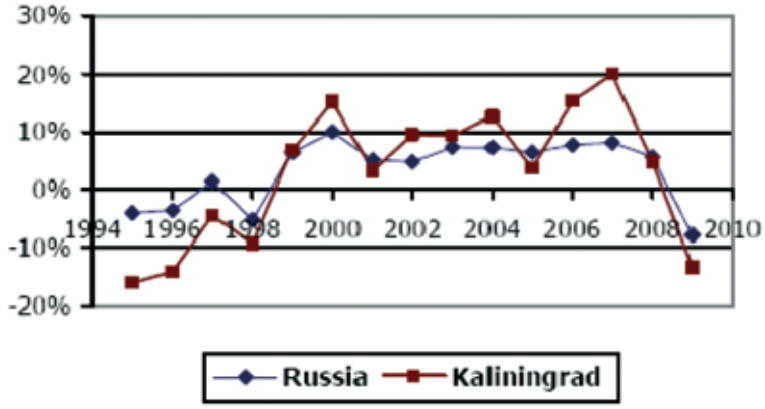


Figure 1. Russia's GDP and Kaliningrad's GRP, %-change, y-o-y.

Source: RosStat, 2010; PEI, Biannual economic review on Kaliningrad (2010)

[2] In 2008, the top three positions among the largest foreign investors to Kaliningrad Oblast were occupied by Cyprus (21%), USA (20%), and Poland (19%), which brought to the region additional trade credits and loans, as well as new portfolio investments, and to a much less extent, direct investment inflow. Imports to the Kaliningrad Oblast, which are largely determined by demand from import processing companies in the auto, consumer electronics, and food sectors, are mostly composed of goods from distant countries such as China, Korea, USA, and Brazil. (PEI's economic review on Kaliningrad, June 2009).

	2006	2007	2008	2009	2010	as of
GRP (total, RUR bn)	103.1	143.9	181.7	nd	nd	
%-change, y-o-y (constant prices) Industrial production (%-change, y-o-y)	15.3 66.6	19.9 34.8	9.7 2.5	- 9.1 -14.8	-13.9 35.5	1-6/2010
Fixed capital investment (total, RUR bn) %-change, y-o-y	32.6 -7.6	46.2 22.9	67.0 27.1	53.6 -30.2	nd	
FDI inflow (USD m, current prices)	21.2	161.3	160.3	51.2	nd	
Inflation (CPI, %-change, y-o-y, end of period)	7.9	11.2	15.2	16.3	nd	
Gross nominal wage (period average, EUR)	285	358	430	370	nd	1-6/2010
Real wages (%-change, y-o-y, constant prices)	33	20	5.0	-5.1	nd	
Unemployment (%, end of period, ILO-version)	6.6	3.4	8.7	10.7	4.0	1-6/2010
Exports (EUR m, current prices)	2025	3666	765	284	nd	1-9/2009
Imports (EUR m, current prices)	4,275	5,714	6,564	2,545	nd	1-9/2009
Sales to Russia (EUR m, current prices)	2,471	3,901	3,805	nd	nd	1-9/2009
Consolidated regional budget Revenues (RUR bn) Expenditures (RUR bn) Fiscal balance (% to revenues)	 20.74 20.91 - 0.8	 27.63 26.90 2.7	 37.18 36.34 2.3	 42.06 39.39 6.3	 24.5 30.3 -25.3	 plan/2010 plan/2010

Table 1. Kaliningrad Oblast: main economic indicators. Kaliningrad's Ministry of Economy (economy.gov39.ru), author's calculations. Source: Kaliningradstat, 2010; PEI's economic review on Kaliningrad (May 2010)

	2006	2007	2008	2009
Total industry	66,6	34,8	4,3	-10,5
Extraction industries	18,1	1,1	-0,7	-5,7
Manufacturing	31	90,7	11,1	-19,1
Production and distribution of electricity, gas and water	396,3	0,5	2,9	-7,2

Note: the finalised figure for total industrial decline in 2009 is -14.8%.

Table 2. Kaliningrad Oblast: industrial production by sectors, %-change, y-o-y. Source: Kaliningradstat, 2009, 2010; PEI's economic review on Kaliningrad (May 2010)

	2007	2008	2009
Total manufacturing	90,7	5,5	-19,1
Including: Foodstuffs, including beverages and tobacco	 -1,0	 3,4	 -11
Textiles and apparel	69,5	-39,8	-15,6
Wood processing and wood products	62,7	-9,7	-23,5
Pulp and paper, printing	-42,6	-18,2	-61,9
Electrical, optical and electronic equipment	n/a	n/a	-69,5
Transportation vehicles	160	2	-44,3

Table 3. Kaliningrad Oblast: manufacturing production by sectors, %-change, y-o-y. Source: RosStat, 2010; PEI's economic review on Kaliningrad (May 2010)

In the end of 2009, the economy showed some modest signs of recovery, thanks to a slightly improved demand for local goods in Russia's mainland and because banks in the whole Russia began to increase lending again. In the first half of 2010, industrial production, especially manufacturing, and nominal average wage have recorded visible growth (relative to the first half of 2009). Construction and retail trade continued to fall and consumer inflation, on the contrary, to rise.

Among Kaliningrad Oblast's key import-processing industries only food processes and car assembly have remained afloat albeit under heavily cut volumes of production and staff retrenchments (figure 2). On the whole, in 2009, 30% of the region's firms, including 700 small and middle sized businesses, went bankrupt or had been part of merges with major companies. At the same time the region's individual entrepreneurs have registered more than a thousand of new firms (Rugrad.EU, 17.03.2010). And since the level of demand in Russian markets has basically fallen, local manufacturing companies are actively diversifying their investments, amending their production and employment strategies, and seeking for export outlets beyond Russia. All this implies that the global recession is provoking noticeable ongoing shifts in the Kaliningrad Oblast's industrial structure.

For many years Kaliningrad's economy has been specialising in trade intermediation connected with servicing of oil transit flows, all kinds of imports, and import-processed flows of manufactured goods to Russia. Thereby, the share of trade has been one of the biggest in the structure of GRP (figure 3).

Under pressure of global recession, the local economic system appears to modify its industrial profile and pattern of growth, and begin moving from an import-led to an export-oriented model. In strategic terms the Kaliningrad Oblast could focus on cultivating

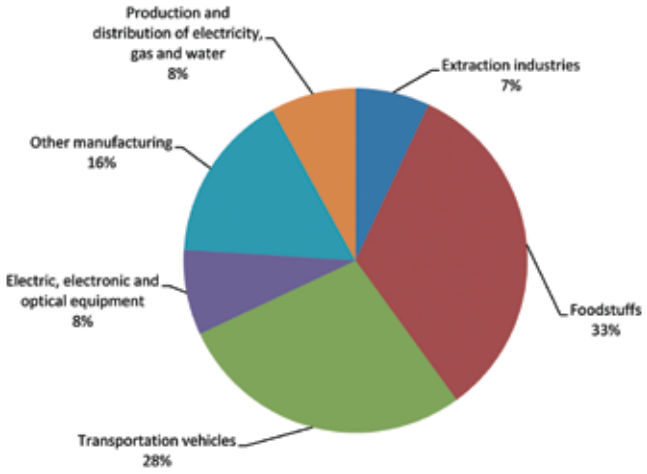
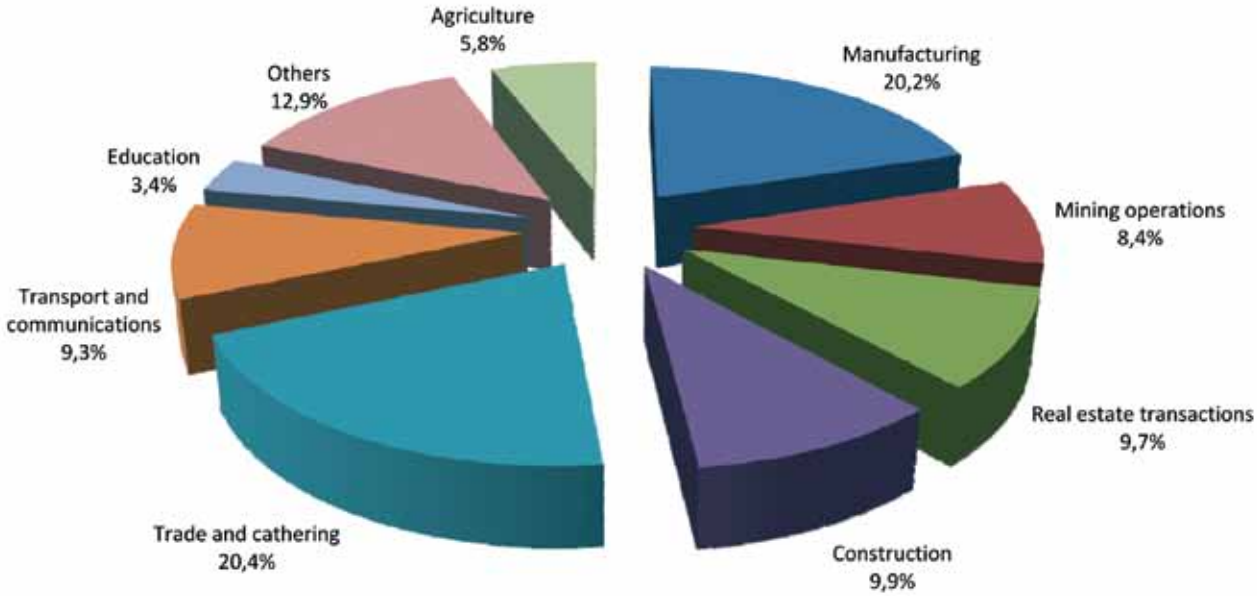


Figure 2. Kaliningrad Oblast: the structure of industrial output by sectors, 2009.

Source: Kaliningradstat, 2010; Private Equity International's economic review on Kaliningrad (May 2010)



Note: GRP accounts to 181.7 RUR billion
Figure 3. Kaliningrad Oblast: the structure of GRP by sectors, 2008. Source: RosStat, National Accounts, 2010 (www.gks.ru)

an efficient sector of small and middle sized enterprises (instead of concentrating on large ones), as well as on rapid development of the secondary and tertiary sectors and export services, including various types of tourism income. This option is dictated not only by the economic constraints the region faces but also by its potential competitive advantages. To support this transformation some immediate policy measures are desirable including optimising the use of local natural assets and the state of essential economic infrastructure.

4.2 Economy wide benefits from water management and development

As noted in section 4.1 there is an overall need to diversify and strengthen opportunities for investment and to generate revenue in the Kaliningrad Oblast. Among the many factors that can help to achieve this, developing the Kaliningrad Oblast's potentially strong water asset is one feasible avenue to explore. For example, the Kaliningrad Oblast has virtually no energy-generating capacities and suffers at times from acute energy shortages. The exploration of indigenous renewable energy sources could contribute significant to the energy mix. The strategic access to the Neman and Pergola provides incentives to explore the small scale hydropower potential. The Baltic region contains many examples of the importance of small-scale hydropower both at local and national level, supported by an adequate grid network.

The run-down and inadequate infrastructure and production facilities need to be improved for the economy as a whole. This should include the out-dated water infrastructure. This would ensure a solid foundation to provide health and production-related benefits connected to the currently neglected water assets. Investments to develop the Kaliningrad Oblast water sector will provide opportunities for job creation in the primary, secondary and tertiary sectors.

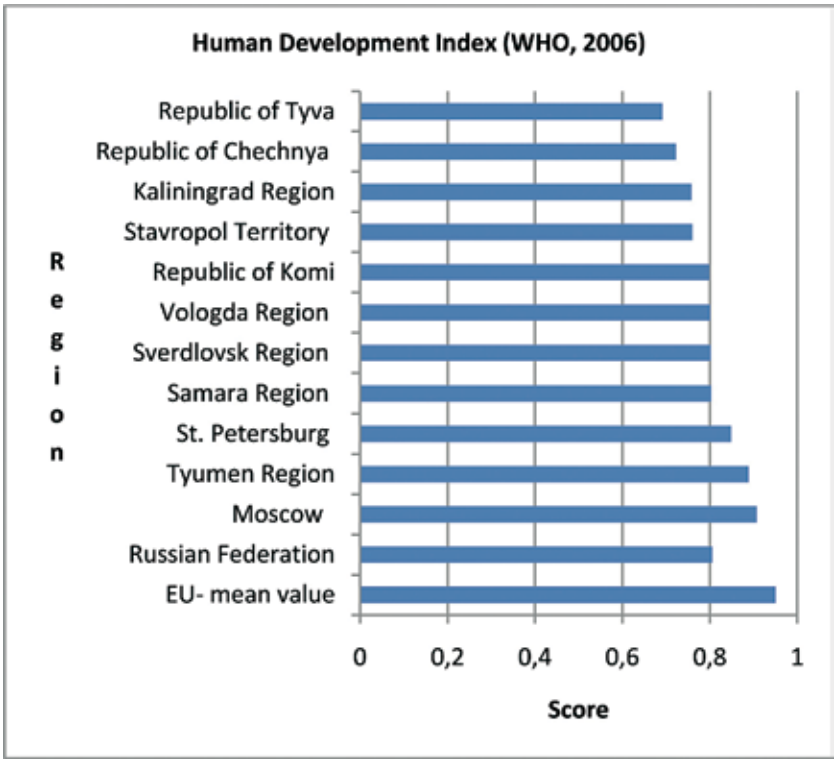


Figure 4. Comparative Human Development Index values of Russian regions.

Source: WHO, 2006

The following section points out possible areas where large economic, social and environmental gains can be made by applying appropriate water resource development levers (WRDL).

Health and human wellbeing

According to recent WHO and its Human Development Index the Kaliningrad Oblast is lagging behind development the rest of the Russian Federation and the EU countries. (Fig.4)

Diarrheal disease and some lung conditions can be associated with substandard water resources often connected to inadequate water supply and treatment systems. Diarrheal disease is globally a leading cause of death among children under five. Water-borne disease cause costly absences or disruptions to production. Decent water quality sustaining a healthy and able population is a matter of perceptions, real monetary gains and cost to society. The WHO has calculated the benefits related to the provision of an improved water supply and sanitation for various regions. The chart below (Fig. 5) shows aggregated results from EUR-B epidemiological sub-region[3] which includes nations close to and with similar conditions as the Russian Federation.

Productive use of water

Water is a key component in several productive activities in the Kaliningrad Oblast (see section 4.1). Water intensive industries are industries where water resources are of particular importance both in term of quality and quantity. Metal-, wood,- energy,- chemical – and food/beverage sectors are examples of industries where water usage is of great importance to production outcomes.

A sector that also stands to gain is the fishery sector, where expansion and development of freshwater and recreational fishing is an outcome of improved water quality through water management. The agricultural sector will benefit greatly from diversification and additional supplementary irrigation opportunities through improved access to safe water resources also providing opportunities for organic farming.

Tourism/Recreation

The natural conditions of Kaliningrad Oblast form a strong base to develop a water-related tourism/ recreational industry. The lagoons and coastal stretches as well as the rivers of Kaliningrad Oblast provide aquatic environments that can be used to attract domestic as well as foreign visitors. Currently this potential is unused because of the polluted environment. The strategic location of Kaliningrad Oblast provides an ideal gateway for European tourists on their way to visit Russia, and for Russian tourists planning a vacation on the shores of the Baltic. Developing the strong features of its aquatic environment will attract visitors to the Oblast. It will also provide a source of well-being and recreational opportunities to the population of the Oblast itself.

Examples, particularly from the Stockholm region (see box 1), have shown that it is possible to improve sub-standard water environments in order for them to become one of the key attractive features of the city, attracting numerous visitors each year and providing many jobs. Other provinces in countries neighbouring Kaliningrad Oblast or sharing the same coastline reveal strong development in water-related tourism. A comparison is shown below (Fig 7):

[3] Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Georgia, Kyrgyzstan, Poland, Romania, Slovakia, Taijikistan, the Former Yugoslav Republic of Macedonia, Turkey, Turkmenistan, Uzbekistan, Yugoslavia

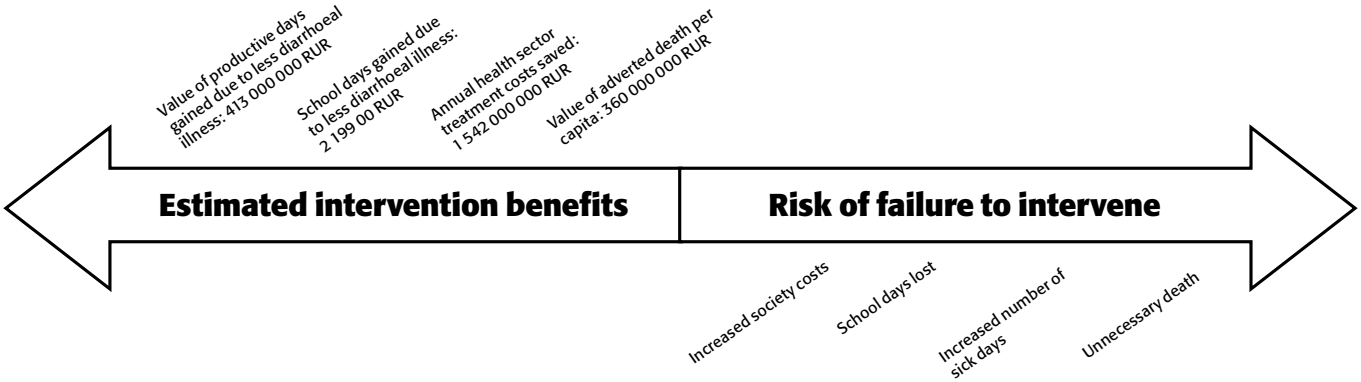


Figure 5. A regional estimate of aggregated economic values from improved WSS measures for EUR-B epidemiological sub-region which includes nations close to and with similar conditions as the Russian Federation. WHO, 2004

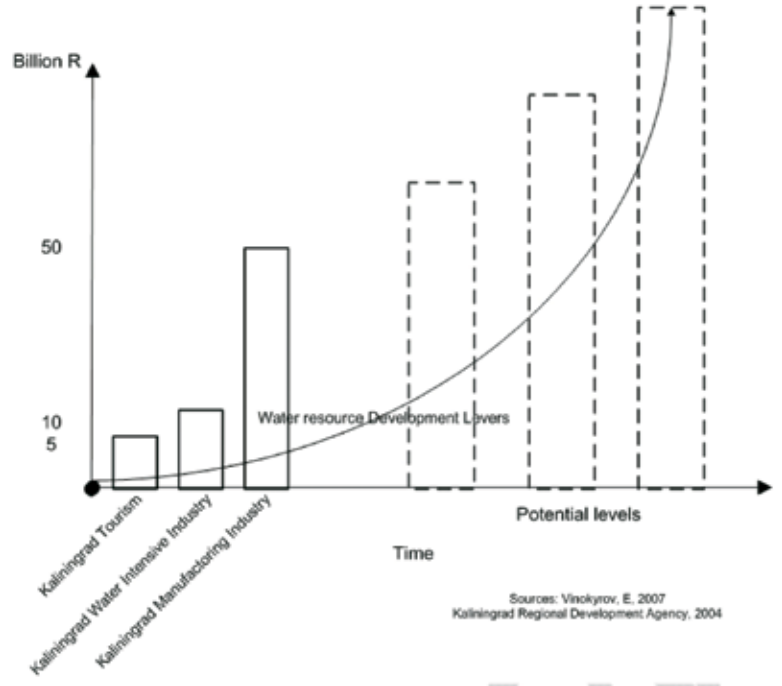


Figure 6. Current value of three key sectors where water has a major input and potential illustrative values from improved water management and development

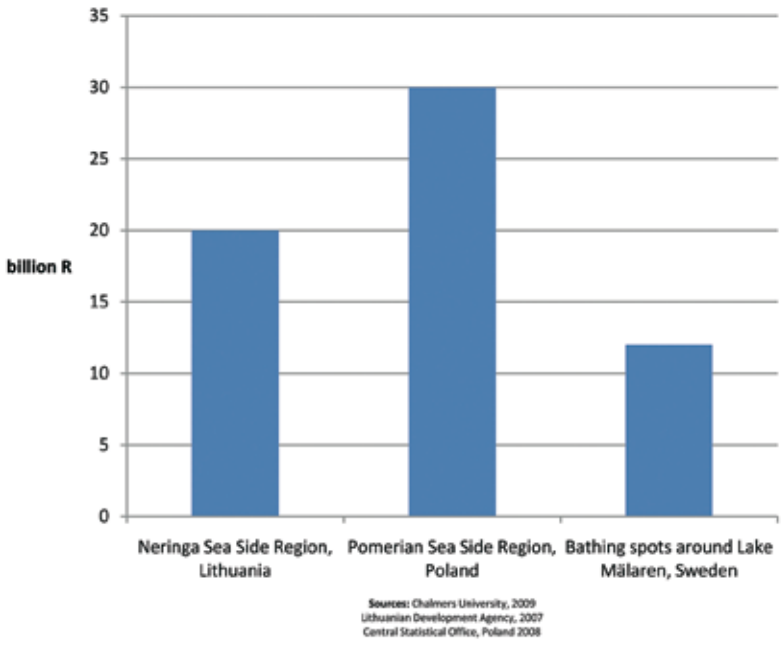


Figure 7. Approximate monetary values from water related tourism in the select locations in the Baltic Sea region

Box 1. Tangible benefits connected to water resource management development – the example of Mälardalen region, Sweden

The development of the Mälardalen region, constituting a number of counties in the eastern part of mid-Sweden, is intimately associated with its water resources. Lake Mälaren is the major water reservoir for two million people, creating a basis for goods and services generated in the region. It has however not always been so. Less than half a century ago the water of Lake Mälaren was heavily polluted by untreated wastewater. Not only was the water unfit for use in many productive activities, but it also posed a direct threat to the health of people living around or interacting with the water source. Decision-makers at the time realised the magnitude of the problem and together with other stakeholders, not least polluting industries, introduced ambitious goals to address and reverse the situation through selected water resource levers. Within a couple a decades the waters of Mälardalen and Lake Mälaren in particular were cleaned up. Today they add significant value to the regional economy.

Below are short descriptions of sectors in Mälardalen benefitting from the effects of sound regional integrated water management and the outcomes of improved water quality.

Hydropower: Despite the fact that the region does not provide the best natural conditions for hydropower this sector is still very much a feature of the area. Progressive environmental regulations and investments in well-functioning electrical power grids enable the slightly less than 100 small scale power plants to maximise potential and contribute substantially to national electricity production with minimal environmental implications. The region annually produces electricity valued roughly at 506,483 000 RUR.

Water-intensive industries: In order to guarantee sustainable growth and maximum outputs, water use must be controlled. This ensures that several production units can operate simultaneously without affecting other water-intensive sectors – like chemicals, metals and forestry – within a watershed while still maintaining full production. Mälardalen's economy has not relied on heavy industry for many years, and water-intensive industries are under-represented in the region, but they still produce substantial economic value. The annual value added from various regional water intensive industries is 190,000, 000, 000 RUR.

Agriculture: Agriculture in Sweden has its strongest foothold in the south and is not widely practised in the Mälardalen region. Regional agriculture is rainfed as well as relying on ground- and surface- water. The accessibility of alternative sources of water provides security, quality and additional options within regional agriculture. There are basically two counties producing agro-products in the region and collectively they generate produce valued at about 7,600,000,000 RUR.

Tourism: Tourism is a strong and continuously growing sector in Sweden. Mälardalen region is the most visited area in the country and it profiles itself to a large extent through its water resources and water-related environments. The tourism sector provides numerous job opportunities while adding value to other sectors as well. Tourists spend money in restaurants, on retail goods and by staying at hotels and in other accommodation while visiting tourist sites. A very modest example of how water helps to generate value through the tourist sector in the region is to assess the economic value linked to accommodation types related to activities and nature experiences which are closely tied to water. By examining overnights spent in camping resorts and lodges combined with a standard value for the average cost tied to these an annual value of 2 400 000 000 RUR is recorded. The actual value when factoring in all other possible consumption generated by tourism is considerably higher.

An overall economic value of Lake Mälaren related goods and services: Estimating the value of well-managed water resources encompasses both concrete and subjective considerations. A recent scientific study produced by Chalmers University concluded that the real value of Lake Mälaren when factoring in all possible contributing parameters amounted to 144 600 000 000 RUR annually.

4.3 Water resources development levers (WRDL)

In order to transform the water sector there are several WRDLs that can be applied. A prerequisite is that the water resources agenda must be given priority by decision makers as a key target for development. This will provide guarantees for continued support and commitment to the development agenda and effective coordination and involvement of all key actors. The concept of 'water resource development levers', introduced below, can help to shape policy options and actions based on existing laws and regulations.

Some examples of WRDL adapted to Kaliningrad Oblast

Water monitoring, evaluation (M&E) and pollution control

Investing in water resource information activities includes improving data collection and monitoring. The information base is critical to achieving agreed water quality objectives. To address eutrophication, restore ecosystems and safeguard water supplies water quality objectives must be set, controlled and followed up through a monitoring system. A well designed monitoring system will support a flexible and adaptable management process.

Regulatory frameworks

The Russian Federation has a strong, clear and well structured legal framework addressing water management at the in-country level which if implemented fully would provide effective regulation and action to address the water resources challenges. The most complex part of water resource management, defining concepts, determining rules of engagement, assigning mandates and responsibilities is therefore already in place in the comprehensive Russian Water Code that came into force in 2007. Article 28 establishes river basin districts that are the primary units for management of water use and protection. The responsible authority for the Kaliningrad Oblast is Neva-Ladoga Basin Water Administration. Article 29 establishes basin water councils to develop recommendations regarding the use and protection of water bodies within the district. In Kaliningrad Oblast it is the Baltic Sea Basin Council that has this role. Councils are comprised by federal executive bodies authorised by the Government of the Russian Federation, government authorities of the constituent territories of the Russian Federation, bodies of local self-government as well as of representatives of water users, public associations and different

communities. Article 30 prescribes the role of state monitoring of water that would be the primary responsibility of the Kaliningrad Centre for Hydrometeorology and Environmental Monitoring. The Water Code, however, does not seem to address fully the transboundary nature of the water resources in the Kaliningrad Oblast that will have to be managed and developed in partnership with the neighbouring countries. In this context the EU Water Framework Directive that is being implemented in Lithuania and Poland would be strategic to assess in depth.

Strategic water resource planning and financing

This concept entails producing concrete planning tools based on water challenges and related issues observed within a targeted programme. It identifies priority needs, what strategic steps have to be taken, and the proper tools needed for implementation. This also includes investment planning, i.e. securing and allocating the right funds and resources needed to implement projects and programmes. Both public and private sector investors need to be considered for different aspects of implementation of a water investment programme. Public financing will not be able to cover all financing needs and hence private sector investment needs to be encouraged in water management and development thereby creating new jobs and building value to society. External resources beyond Russia and the Kaliningrad Oblast can also be considered. This includes the Northern Dimension Environmental Partnership (NDEP) that promotes co-ordination between the European Commission, partner governments and international financial institutions to facilitate financing for environmental projects in water and wastewater treatment, management of municipal and agricultural waste, energy efficiency and nuclear safety projects. A similar offering is provided by the Nordic Environment Finance Cooperation (NEFCO) that provides grants for technical assistance to projects that support the implementation of the BSAP.

Pricing and tariffs

To ensure the sustainability and self-sustaining components of a water resource investment programme, long term financing needs to be guaranteed. Water management and development and Water Supply and Sanitation (WSS) schemes need financing to function effectively. Tariffs, transfers and taxes (the three Ts) make up the basic sources of revenue to the water sector. The correct mix of the three sources and the beneficiaries' capacity to pay need to be addressed up front and continuously.

Awareness

Broadly based commitment and understanding of why certain actions are taken are crucial to ensure positive outcomes of water management and development. All user groups should be fully aware of and as far as possible involved in these efforts. Collective action is the best way to achieve fast results and information campaigns, experience exchanges between groups, and various kinds of stakeholder involvement are key elements to build ownership and to ensure compliance with rules and regulations.

Transboundary cooperation

Water flows across local, national and regional borders. To ensure good water quality outcomes, cooperation is essential. Downstream impacts resulting from poor water management facilities upstream can best be mitigated if all affected parties engage in multi-stakeholder dialogue across borders. A strong governance framework based on the conjunctive use of land and water is provided by the BSAP and in the river basin management plans being developed by the riparian countries Lithuania and Poland. Kaliningrad Oblast can build on these steps to promote cooperative planning and investment.

Photo: Jakob Granit, SIWI

5 Stakeholder Analysis and Institutional Functions

For water management and development programme to be successful key stakeholders need to be engaged and drive the process generating the tangible benefits as outlined in this report. Two categories of stakeholders can be distinguished – 'water users' and 'water managers'. The water users operate at the local level while the managers operate at the Oblast or the Federal level. To help the economy to start moving towards an innovation-oriented trajectory the programme needs to have an innovative institutional design. The design could focus on promoting relevant cluster initiatives and building networking partnerships between all interested parties, including government bodies, companies, research groups, NGO's and individuals. All these numerous stakeholders can make their direct or indirect contribution to the programme by "investing" their own competences and add value to treat the water-related problem areas. This implies a possibility of building a networking system of stakeholders' individual commitments to act, which in its turn can catalyse a wide variety of win-win projects that benefit both the water system and the implementing actor. Each actor will use its best competence in the form of products, services and know-how for the benefit of its own and of the common programme.

Such a system of commitment has four advantages:

- it reduces bureaucratic procedures,
- it minimises the costs of the programmeme for all involved parties, including the size of budget allocations,
- it generates new business agreements, where individual competencies are used directly and indirectly to work with common water-related problems;
- it creates a platform which brings together for a coordinated action all the relevant parties (government bodies, businesses, NGO's and individuals), thus combining the resources and opportunities that the public, private and civil sectors can provide.

A coordinated social action on water management and development in the Kaliningrad Oblast would support public awareness on the related problems, and provide the needed transparency in water management. Ultimately it would make the programme an effective instrument to change the patterns of thinking among all local entities about their responsibility for the environment and sustainable business practices.

The description below is an attempt to describe the different stakeholders to aid in the design and implementation of a water management and development investment programme. With many stakeholders there is always a risk of fragmentation in terms of decision-making and overlapping mandates, and coordination between actors will be important for success.

5.1 Water users at the Kaliningrad Oblast level

Among the water users in the Kaliningrad Oblast the following economic sectors, enterprises and organisations can be distinguished:

- Housing and utilities
- Power industry
- Industry (mining operations, food production, timber processing and furniture production, building and construction, production of construction materials, machine-building, equipment production, pulp and paper)
- Transport

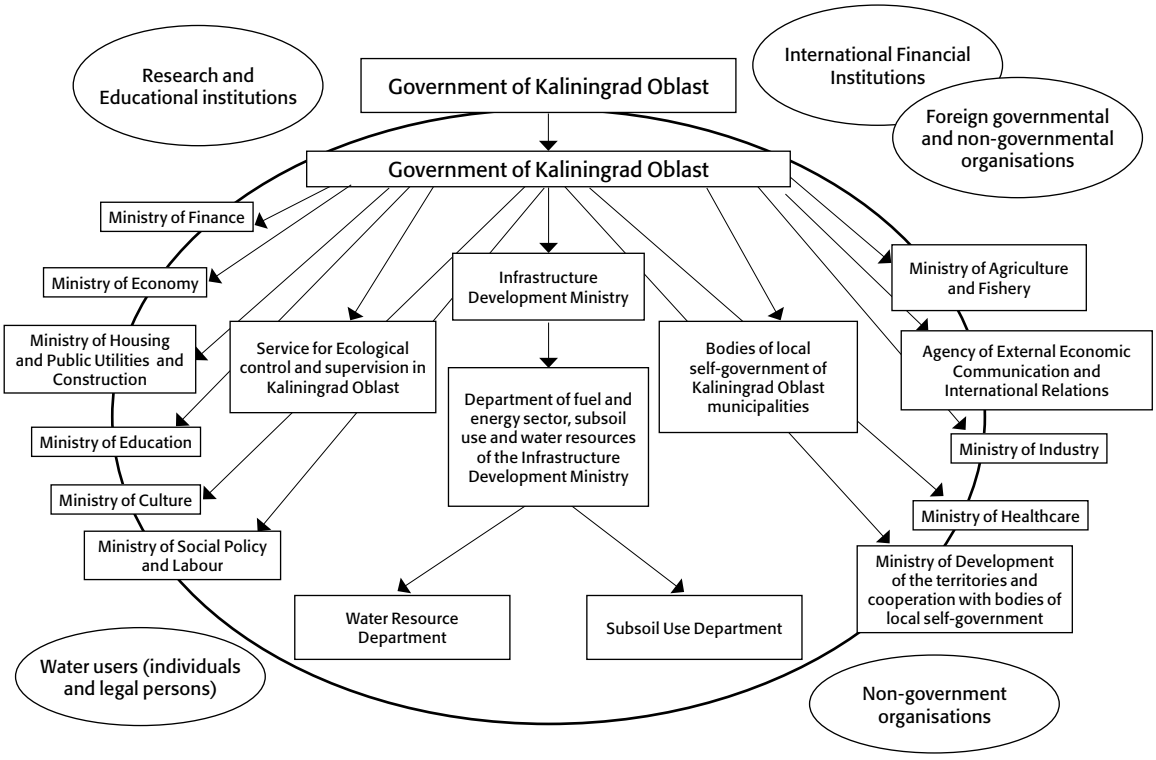


Figure 8. The general scheme of stakeholders involved in water resource management in Kaliningrad Oblast at the regional and local level.

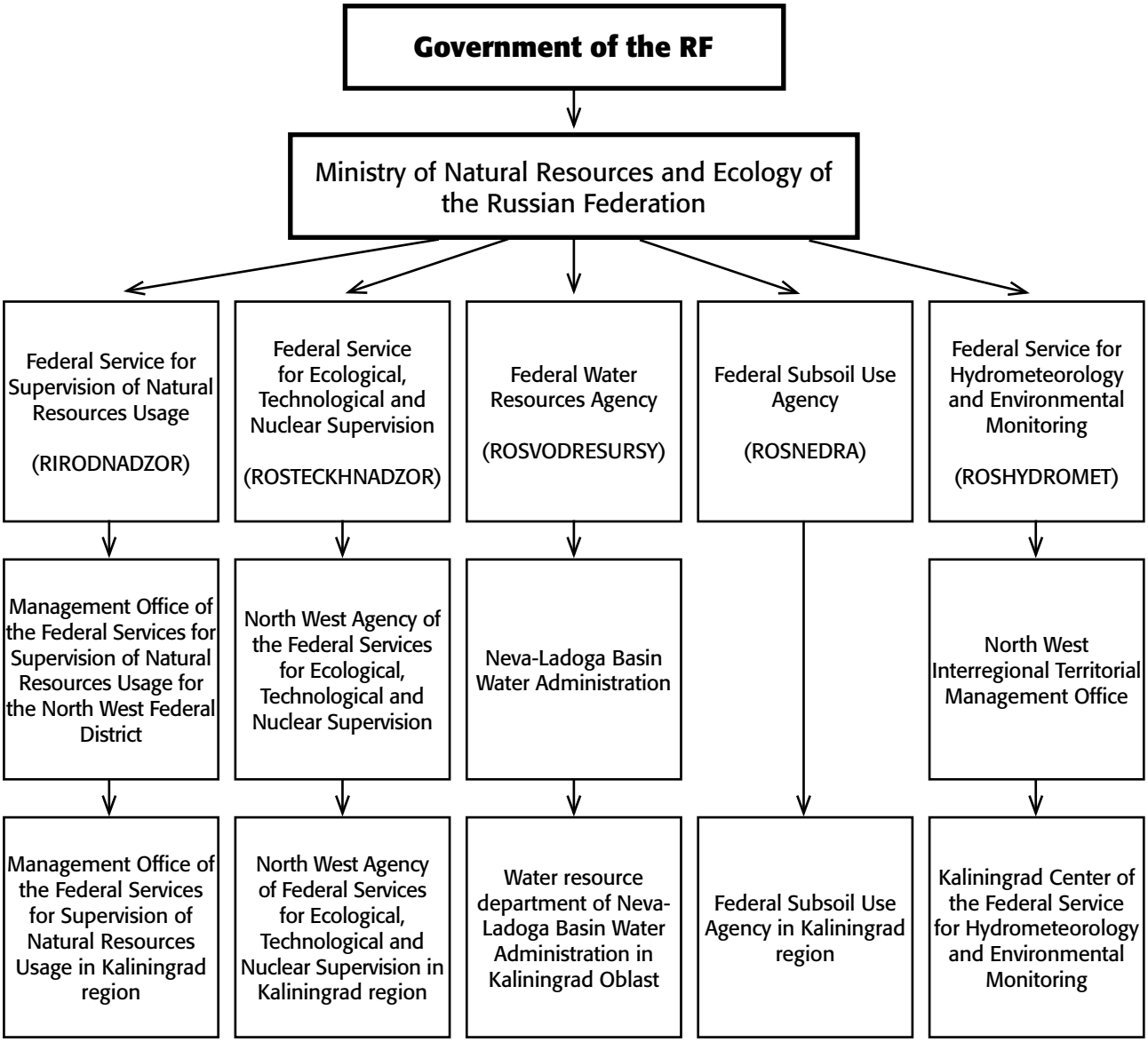


Figure 9. Shows the vertical subordination of the key stakeholders involved in water resource management system at the federal level.

- Agriculture (plant industry, cattle breeding and poultry, milk and meat production, fisheries)
- State services providing defence and security
- Non-governmental organisations (hunting and fishing societies, specialised sports organisations, tourism associations)
- Citizens

5.2 Water managers at the Kaliningrad Oblast level

The key stakeholders that represent the water managers and influence the overall water resource situation in the Kaliningrad Oblast region are represented by the structures based on the federal, Oblast and local (municipality) levels as well as on the basin district management level. The diagram below displays the general scheme of the key stakeholders, participating or striving to participate in the water resources management process at the regional and local levels in the Kaliningrad Oblast:

The blue arrows show the vertical line of the subordination of the executive resources directly engaged in the water resource management process, while the black arrows show the vertical line of subordination of other structures, related to the sectors allied with the water management sphere (indicated by the circles with blue surrounds). The actors, organisations and institutions that influence Kaliningrad Oblast water resource developments but fall outside the governmental water resource management structure are displayed in the separate circles with blue surrounds.

5.3 Water managers at the federal level

The different units involved in water resource management at the federal level cooperate closely with all other central government authorities. The President of the Russian Federation influences water resource developments by defining the general directions of water policy, ensuring the coordinated functioning and interaction of state units directly involved in water management issuing decrees on water related matters. The Ministry of Foreign Affairs contributes to water resource developments by implementing the foreign policy of the Russian Federation and coordinating international and foreign economic cooperation related to the

environment. The Ministry of Finance is inter alia responsible for determining the investment priorities of the Russian Federation and managing federal budget funds, and so plays a decisive role in financial issues related to water resource management. The Federal Ministry of Economic Development is responsible for promoting the economic development of the regions and for monitoring regional projects, programmes and investments in the water management sphere.

The Federal Government is involved in the water resource management process, providing the legal and regulatory framework for the water resource sector as well as providing guidance and formulating state policy. The Ministry of Natural Resources and Ecology coordinates and controls the activities of federal institutions directly involved in water resource management in Kaliningrad Oblast: the Federal Water Resources Agency, the Federal Service for Hydrometeorology and Environmental Monitoring (Roshydromet), the Federal Subsoil Use Agency (Rosnedra), the Federal Service for Supervision of Natural Resource Usage (Rosprirodnadzor) and the Federal Service for Ecological, Technological and Nuclear Supervision (Rostekhnadzor).

The affiliated branches of these institutions operating in the Kaliningrad Oblast (see appendix 6.4) are accountable first to their own ministries and management offices and not to the local administration.

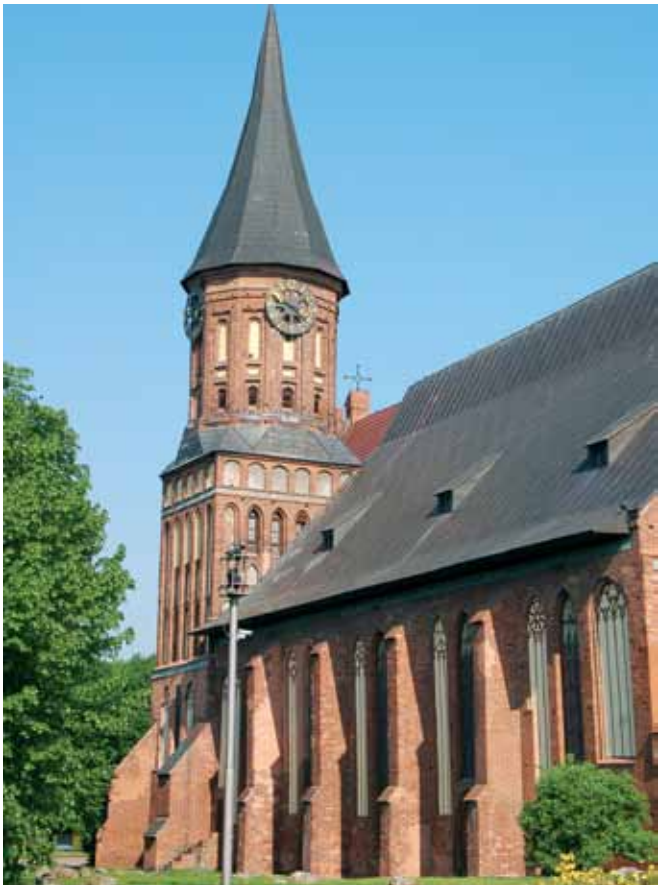


Photo: Jakob Granit, SIWI

Photo: Jakob Granit, SIWI

6 Appendices – Overview of the Implementation of the EU Water Framework Directive in Lithuania, Poland and Sweden

6.1 Lithuania

The water resources in Lithuania are according to the EU WFD managed and protected according to the natural hydrological boundaries of river basins instead of administrative boundaries. Water management is continued in administrative units (municipalities). But in order to achieve the objectives for water resources, measures aimed at improving water status will have to be coordinated by municipal institutions in the whole or part of their territory falling within the total area of the river basin.
For management purposes the Lithuanian river basins have been combined into four river basin districts (RBD): Nemunas, Venta, Lielupe and Daugava. All river basin districts are transboundary, connecting Lithuania with its neighbors: Latvia, Russia, Belarus and Poland (fig 10).

Nemunas RBD is the largest, covering 46,600 km^2 and occupying 74% of the territory of Lithuania. A small part of the Nemunas RBD belongs to Poland and 11,500 km^2 of the catchment is within the territory of Kaliningrad Oblast (Russia). Therefore both countries – Lithuania and Russia – are responsible for the status of the river basin district.

In 2010 river basin district management plans and programmes for implementing measures were finalised and will be approved by the Government of the Republic of Lithuania. The management plans will be implemented from 2010 through 2015 and updated every six years, i.e. in 2015, 2021, etc. Lithuanian experience in preparating the Nemunas RBD management plan is briefly described below.

Classification of water resources

The EU Water Framework Directive (WFD) requires that all water resources, i.e. rivers, lakes, groundwater, transitional waters and coastal waters, should by 2015 achieve good ecological status, and heavily modified and artificial water resources good ecological potential. For groundwater resources, in addition to the requirement of good status, any significant and sustained upward trend in the concentration of any pollutant should be reversed.

For classification and management purposes, surface water resources in the Nemunas RBD have been assigned to four categories: rivers, lakes, transitional waters (the Curonian lagoon) and coastal waters of the Baltic Sea. All waters differ in their individual characteristics, such as river size and slope, lake depth, salinity in transitional waters, soil composition in the coastal zone, etc. The variety of such natural characteristics also affects aquatic communities: the species composition of aquatic organisms largely depends on natural conditions. So all surface water categories have been further differentiated according to type, taking into account the variety of natural characteristics of surface waters and the resulting differences in aquatic communities. Five river types, three main types of lake, three types of transitional and two types of coastal waters have been identified in the Nemunas RBD.

Furthermore, surface waters in the Nemunas RBD have been divided into 866 water resources (including heavily modified and artificial water resources), 584 of which are designated as rivers and canals, 276 as lakes and ponds, four as transitional waters, and

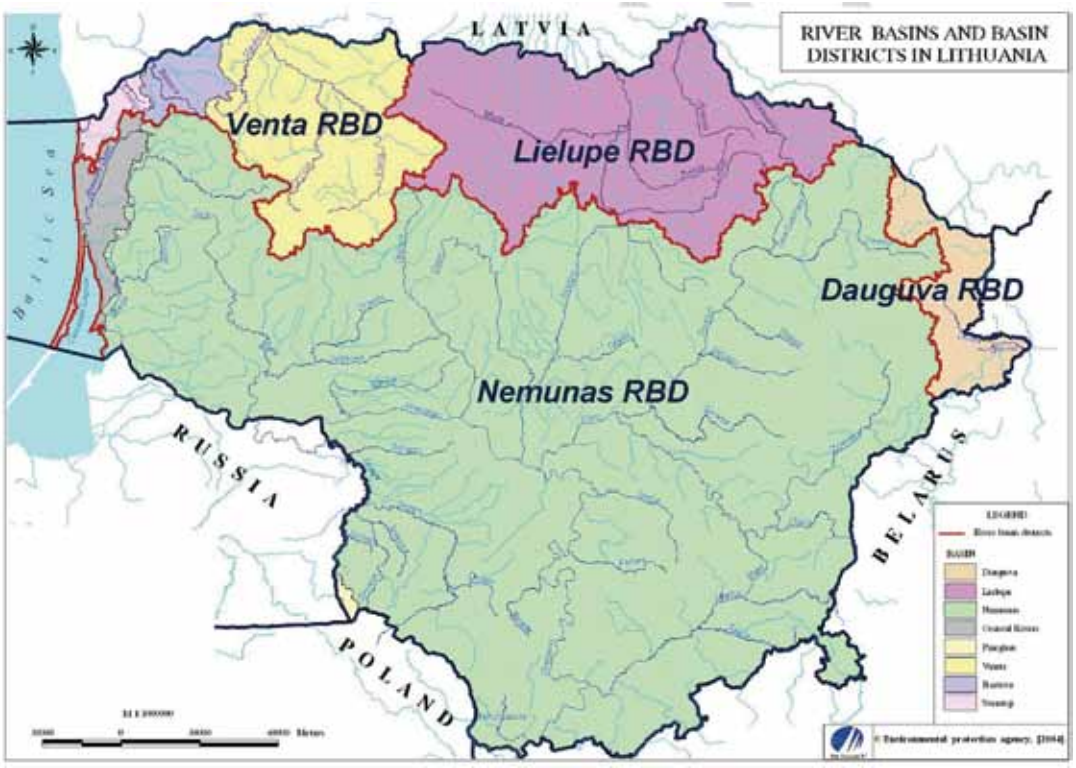


Figure. 10. Lithuanian river basin districts

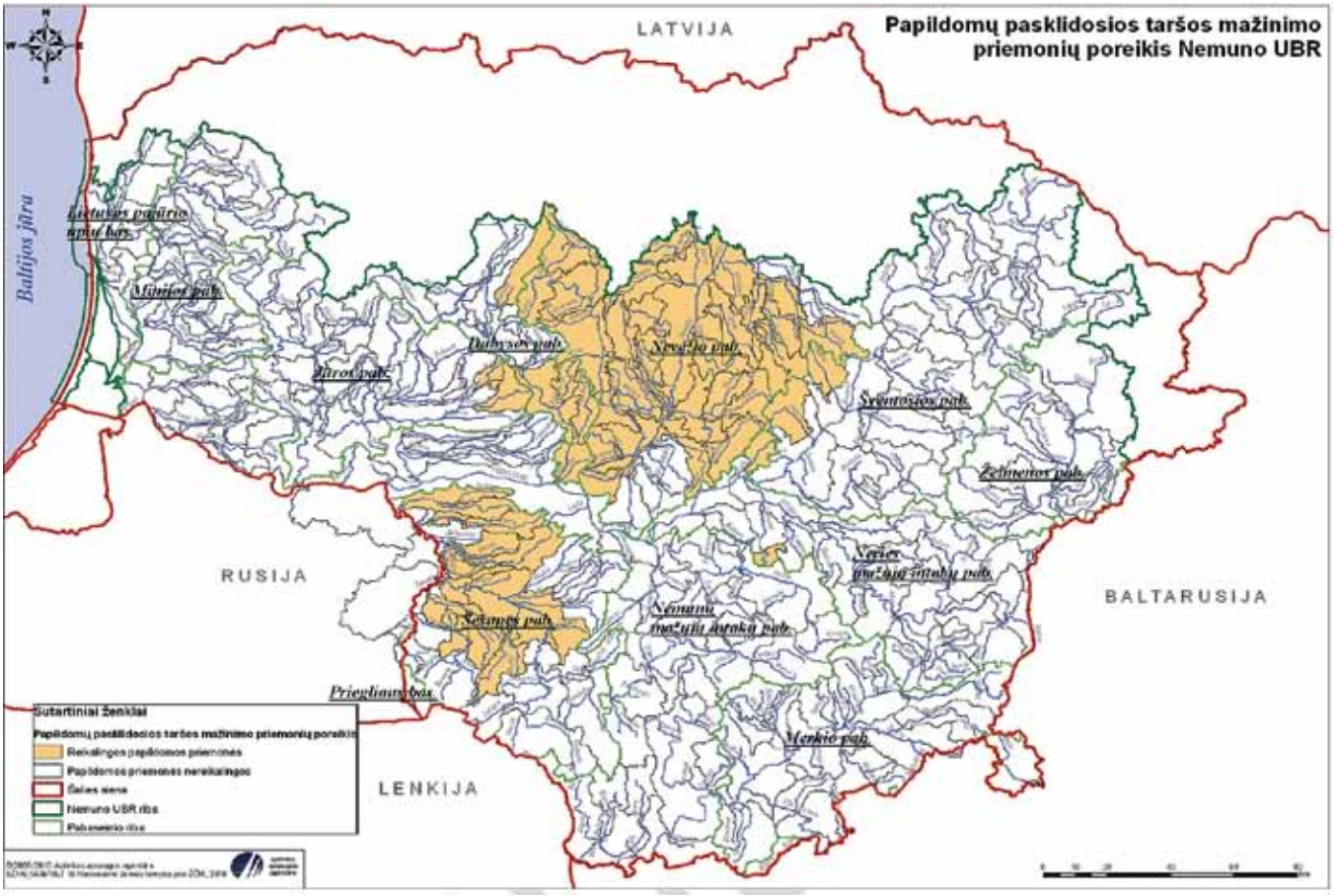


Figure 11. Areas where non-point pollution has a significant impact on surface waters (brown)

two as coastal waters. Beside these, the Nemunas RBD comprises 12 groundwater resources. The identification of the ground water basins were carried out taking into account the lithological, hydrodynamical and hydro-chemical differences of the aquifers, and use of groundwater resources. All surface and groundwater resources have been characterised according to the WFD requirements.

Pollution impact

For the purpose of identification of water resources suffering from the most significant pressures and impacts in the Nemunas RBD, all the most important sources of pollution were identified and their pollution loads quantified. The analysis of pollution sources and assessment of their impact revealed the following key factors which affect the status of water resources in the Nemunas RBD:

- diffuse pollution, the main driver of which is agricultural pollution loads;
- point pollution, which consists of loads from dischargers of wastewater treatment plants, storm water runoff, and industrial wastewater in towns and settlements;
- transboundary pollution, which consists of pollution loads coming from neighboring countries.

Non-point pollution

Non-point agricultural pollution is composed of loads of organic matter, and nitrogen and phosphorus compounds which enter the soil with manure and mineral fertilisers. Diffuse pollution in basins and sub-basins of the Nemunas RBD may account for 45-80% of the total loads of nitrate and nitrogen entering the water. Available information shows that about 2,136 km of water resources under the category of rivers and 24 lakes fail to conform to the good status requirements in the Nemunas RBD due to the pressure of agricultural activities. Consequently, agricultural activities were identified as one of the factors that exert a significant impact on the quality of water resources. The major part of diffuse pollution loads affecting the quality of lakes and ponds is attributed to current or historical agricultural pollution. Areas where non-point polllution has a significant impact on surface waters are shown in Fig. 11.

Point sources

Thera are more than 1,400 wastewater outlets in the Nemunas RBD discharging municipal, industrial wastewater and storm-water runoff. Wastewater from 1,340 outlets was discharged into rivers and lakes. Seventy outlets account for direct discharges into transitional and coastal waters. The data on point pollution loads show that the annual amount of BOD7 which enters the water resources of the Nemunas RBD from wastewater dischargers totals 2,600 tonnes, the total amount of nitrogen is 2,500 tonnes and that of phosphorus 284 tonnes. The largest amounts of wastewater come from large agglomerations with more than 2,000 person equivalents (p.e). Dischargers in such agglomerations emit about 69% of the total wastewater volume.

Transboundary pollution

Transboundary pollution in the Nemunas RBD affects the status of the Neris, Nemunas and Sesupe river basins. Wastewater from Sovetsk and Neman situated in Kaliningrad Oblast Region are

discharged into the Nemunas river. From Belarus, pollutants are transported into Lithuania by the Nemunas and the Neris rivers.

Hydromorphological changes

In addition to the pressures and impacts from pollution loads, morphological changes of water resources were analysed. The largest impact on the status of rivers is exerted by the straightening of their beds because specific habitats of water organisms are destroyed, resulting in a decrease of the type, variety and abundance of water organisms themselves. A total of 3,119 km of river stretches in the Nemunas RBD was straightened during the Soviet period of land reclamation.

Although hydropower plants are considered 'green energy' they also have an adverse envirionmental impact on rivers. There are 50 operating hydropower plants in the Nemunas RBD and 33 of them have a significant impact on water resources. Environmental damage is caused by water level fluctuations and the adverse impact of the turbines. The present turbines which cause considerable damage to fish and which fail to conform to the run-off should be replaced with environmentally friendly ones in 13 hydropower plants in the Nemunas RBD.

Other sources of impacts on the aquatic environment include pollution by communities without sewerage, the use of chemicals in agriculture, fish ponds, tourism, recreational activities and navigation.

Programme of measures

After assessment of the current status of water resources, natural and anthropogenic reasons for this status and the establishment of criteria for achieving good status (and after analysis of the pressures of economic activity and their impacts), the Programme of Measures for the RBD was drawn up.

The Programme analyses the effects of the basic measures and proposes supplementary measures which are necessary in order to achieve good status for water resources.

The basic measures include the implementation of all the measures, actions and programmes which are already envisaged in water legislation and financed or included in financing programmes (construction of wastewater treatment facilities in agglomerations with a p.e. of more than 2,000, installation of manure storage facilities on large farms, compliance with recommendations of good agricultural practice, solution of drinking water quality problems, etc.).

Supplementary measures are proposed for those water resources where the basic measures are not sufficient to achieve good status. Supplementary measures comprise the improvement of the operation of the existing wastewater treatment facilities, mandatory and voluntary measures aimed at reducing adverse effects of agricultural activities, research intended to specify pollution sources and/or the environmental effect of the measures being implemented, feasibility studies examining pollution causes, as well as legal, educational, remedial and other measures.

It has been estimated that even after the implementation of the basic measures, there will be 320 rivers with a total length of 5,053 km, 64 lakes, 26 ponds, two groundwater resources, three transitional water resources and two coastal water resources within the Nemunas RBD still at risk of failing to achieve good ecological or chemical status or good ecological potential by 2015.

With a view to improving the ecological status of these water resources, supplementary measures are envisaged in the programme of measures. The following groups of supplementary measures have been proposed for:

- Reducing point-source pollution – (re)construction of wastewater treatment facilities;
- Reducing diffuse (agricultural) pollution;
- Mitigating hydromorphological changes;
- Various studies, research and pilot projects; and
- Legal and administrative measures.

Having implemented the supplementary measures, good water status will be achieved only in 56 river water resources and one lake by 2015. However, these measures will help to maintain the current high or good status in 270 water resources falling within the category of rivers and 182 water resources falling within the category of lakes, as well as the current high or good ecological potential in 81 water resources attributed to the group of artificial and heavily modified water resources.

Supplementary measures have been prioritised by singling out mandatory measures which are necessary for the whole of Lithuania and will contribute to pollution prevention and the implementation of the polluter-pays principle. Other measures are optional, but compensation mechanisms should be considered to support their implementation. Preconditions for achieving the set objectives are well-formulated conditions for the granting of support, attractive compensation, and control over the implementation of measures.

The costs required for the implementation of all the necessary supplementary measures by the year 2015 have been estimated. The assessment of the paying capacity of the state and individual economic sectors revealed that only priority measures could be implemented in the first phase due to scarce financial resources and the acceptability of measures.

Upon the accomplishment of the tasks set for the first planning period, the level of achievement of water protection objectives will be measured. The monitoring and assessment of developments in the status of water resources to be carried out in the first phase of the implementation of the programme will help to better understand the objectives to be pursued and the tasks to be set in the second and third phases. Tasks for the second phase will be set depending on the actual outcomes of the first phase, while tasks for the third phase will be based on the results of the first two phases.

River basin management plans include not only the identification of environmental priorities but also the assessment of economic and social aspects. The management of water resources aims at balancing and coordinating water use for household, agricultural, industrial, recreational, and ecological purposes, which is a challenging task. A balance between economic activity and environmental priorities can be achieved and the needs of different stakeholders can be satisfied only through integrated or sustainable management of water resources. Coordination of international activities within the transboundary river basins is

an important precondition for comprehensive river basin management. Therefore regulation of the human impact on the Nemunas river in Kaliningrad Oblast and in Lithuania is an important step for transboundary cooperation.

6.2 Poland

Background information

Poland is mostly a lowland country which belongs to the transition zone between the oceanic climate of Western Europe and the continental climate of Eastern Europe. Rapid movements of huge air masses from both sides cause very high variability in temperature, air humidity and precipitation (400 to 600 mm in about 50% of the country's area), which are the principal factors determining the hydrological conditions of the country.

From the point of view of water availability, the situation of Poland is particularly difficult compared to most other European countries. As long as 50 years ago, Professor Julian Lambor (1961) noticed that moving from the Atlantic Ocean across Europe towards the East both precipitation and evaporation rates get smaller, but the reduction rates are different. Compared to Western Europe, precipitation (P) in Poland is much smaller but evapotranspiration (E) is not reduced to the same extent. How it affects run-off (R) may be illustrated by the R/P ratios for some of the large European rivers. Moving from West to East, R/P values for the Rhine, Elbe, Odra, Vistula and Nemen are 44%, 28%, 23%, 24% and 34% respectively. There is a distinct 'dip' concerning this ratio for the Polish basins of the Vistula and Odra.

The total annual run-off of the Vistula, Odra and the other small rivers directly flowing into the Baltic Sea varies from about 50 billion m^3 in dry years to more than 80 billion m^3 in wet years. The frequency of devastating floods and prolonged droughts is very high and the climate change impacts can make them even more harmful.

The water resources available per capita each year are also quite variable as shown in Fig.14.

The current total water use in Poland (inhabited by 38 million citizens) is in the order of 12 billion m^3/year. There is a clear domination of the industrial and other productive uses, but a large proportion of that use is cooling water in the coal-burning power plants (hydropower accounts for only 3% of total electricity production in Poland). After 1990 there was some reduction of that water use due to the overall reduction of industrial production in Poland, and Fig.14 indicates the upward trend returning after 2005. The municipal water use is currently in the order of 2 billion m^3/year. Irrigation water use in Poland is now very small (mostly orchards and vegetables), although fish ponds are still one of the important water users. Fig. 15 does not indicate the water needs of aquatic ecosystems, but in all water resources allocation studies they are always considered in the form of the minimum ecological flow.

Water quality management is one of the most important tasks of water resources management in Poland. Fig.16 indicates the volume of wastewater discharged in the entire country and there is a clear indication that the volume not treated to the level required by EU regulations has been considerably reduced in the years 1996-2006. Concerning the last five years this trend continues with gradual implementation of the EU directive 91/271/EWG concerned with the treatament of municipal wastewater.

Current issues

The main goals of water management in Poland are fully compatible with those of the EU Water Framework and Flood Directives, which have been transposed to the Polish Water Law. Both water quality and flood management are problems of special importance because of the frequent low- and high-water conditions. All types of investment (storage reservoirs, flood-protective dikes, etc.) and non-investment (legislation, economic incentives, regional plan-

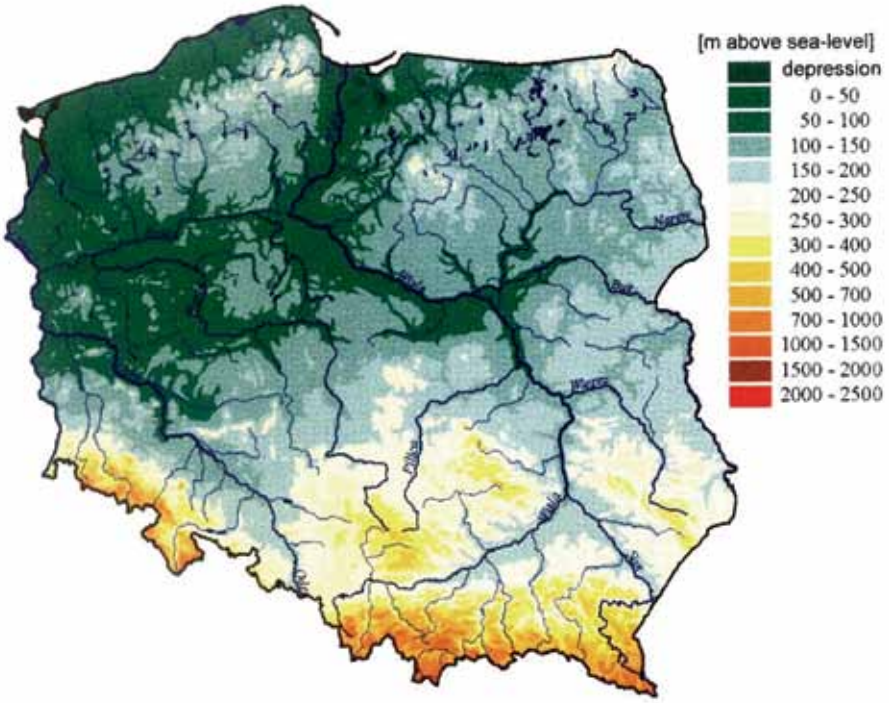


Figure 12. Topography of Poland

Figure.13. The total annual runoff from the territory of Poland in years 1901 – 2006 (billion m^3/year)

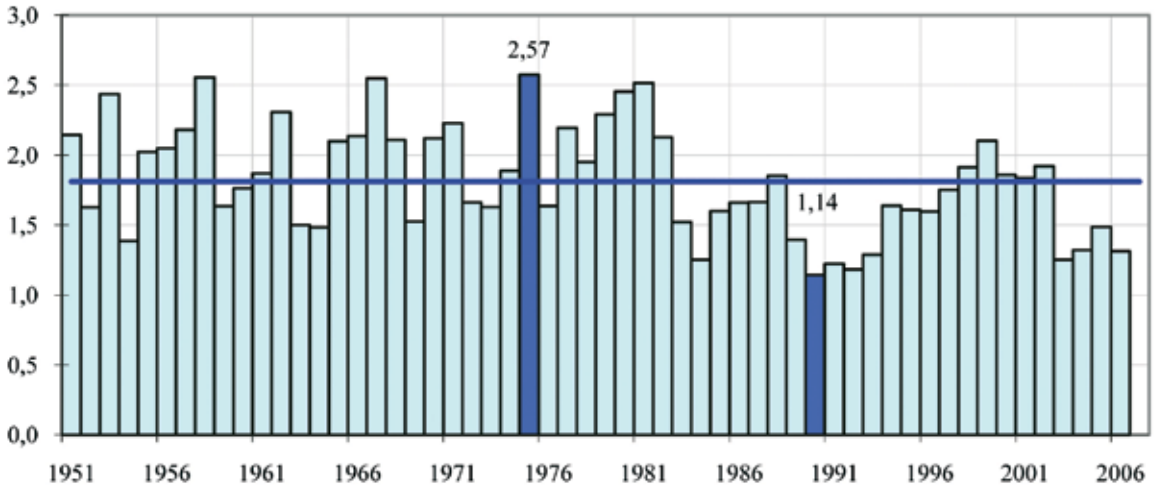
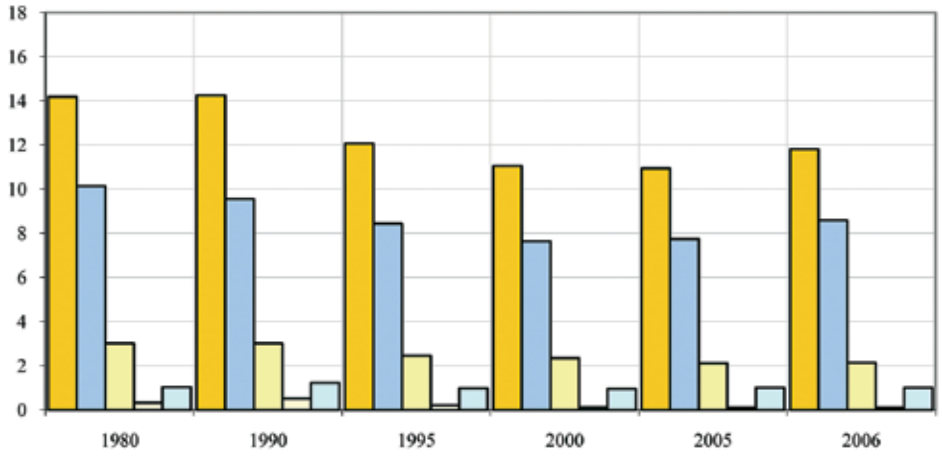
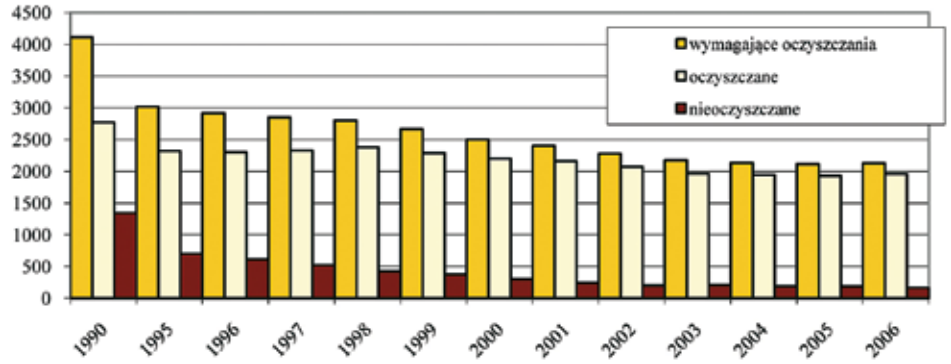


Figure 14. The annual water resources per capita (thousand m^3/capital/year)



Orange – national economy
Blue – technological water, including cooling waters
Yellow – water supply for population, mostly municipal
Light yellow – irrigation water in agriculture and forestry
Light blue – fish pond

Figure15. Water use in Poland (billion m^3/year)



Yellow – total requiring treatment
White – already treated
Red – non-treated

Figure16. Wastewater discharges in Poland (million m^3/year)

ning, etc.) measures are used for the sound management of water resources. Demand management is an important policy issue (rationalisation of water use). The river basin planning studies, including the recently completed River Basin Management plans defined in the Water Framework Directive (WFD), have been carried out on a continuous basis for a long time. The current division of the country into water management analysis and planing units is shown in Fig. 17. In recent years considerable effort was directed towards the improvement of hydro-meteorological forecasts. The monitoring and early warning systems needed for operational water management decisions have been upgraded to the highest European standards in the last ten years.

The current structure of water management administration in Poland is show in Fig.17. The National Water Management Board (NWMB) operates within the framework of the Ministry of Environment and the country is divided hydrographically into seven Regional Water Management Boards (RWMBs) – see Fig.18. At the lowest level there are Catchment Inspectorates.

The Chairman of NWMB as well as the Directors of the seven RWMBs cooperate closely with 16 Voievodas and 16 Regional Marshals. Administratively the country is divided into 16 voivodships, each governed by a Voievoda nominated by the Prime Minister and a Regional Marshal elected by the local self-government authorities.

According to the current national Water Law, the water resources of Poland are managed by the seven regional water management boards and for planning purposes the country is divided into 10 river basin districts. These districts have been established for the development of the river basin management plans following the requirements of the EU Water Framework Directive. Basic elements of the river basin management plans are shown in Fig. 20. The two principal, almost entirely Polish districts, are the Vistula

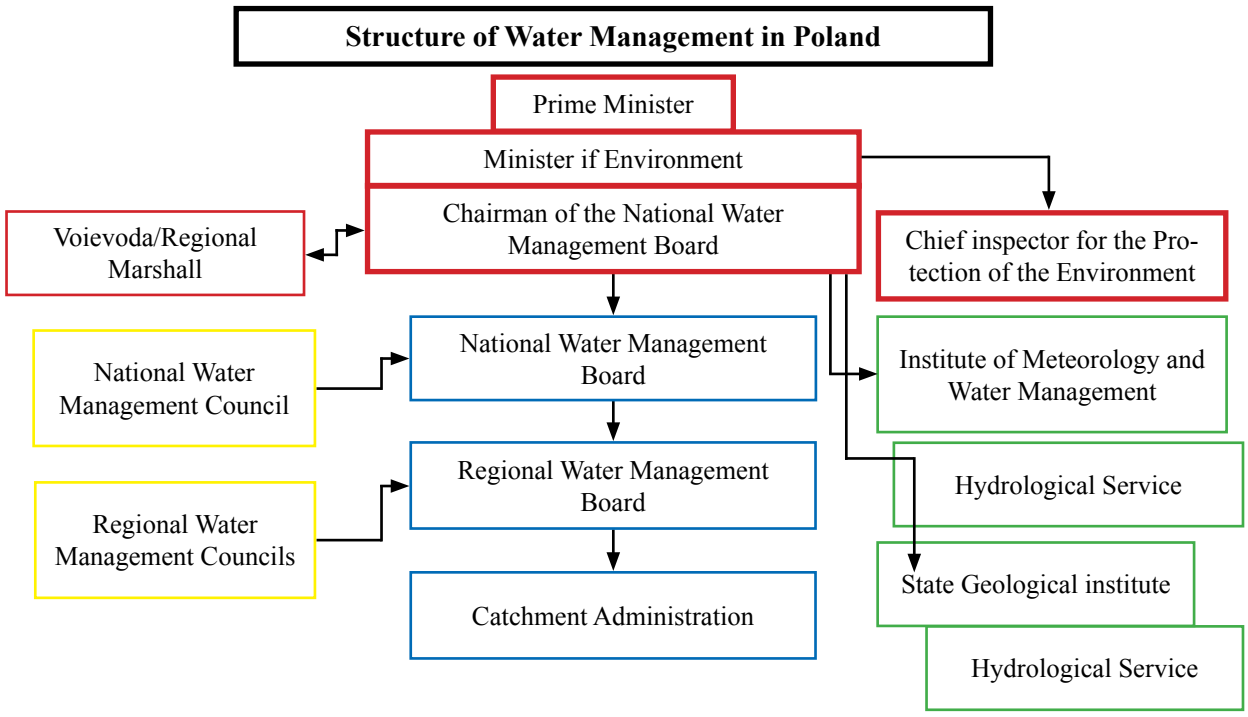


Figure. 17. The structure of the water management administration in Poland

Figure.18 Territorial responsibilities of the Regional Water Management Boards

Figure 19. There are 10 river basin districts managed by seven regional water management boards

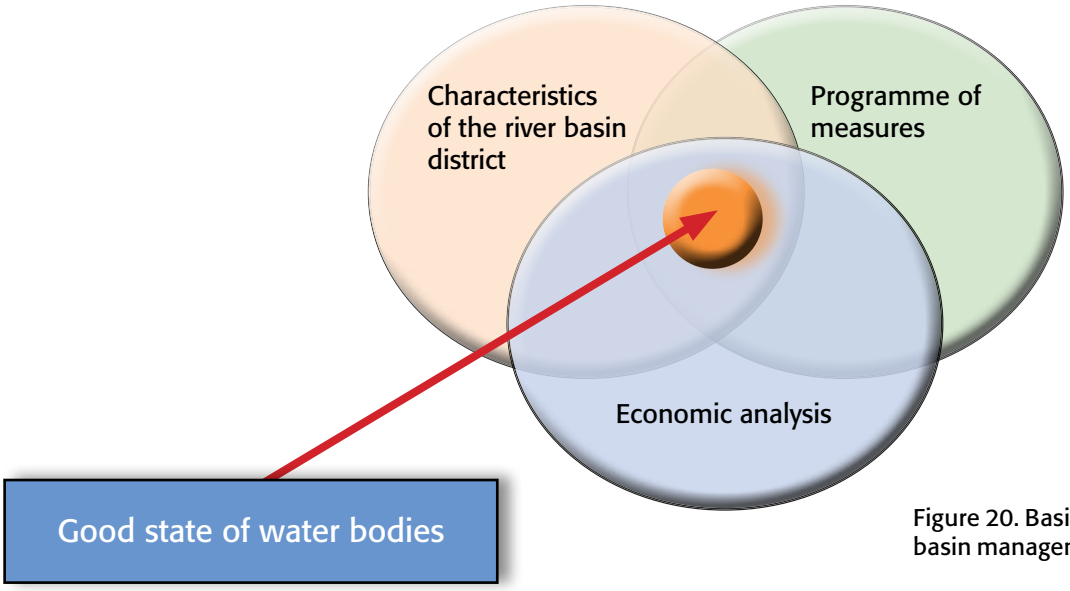


Figure 20. Basic elements of the river basin management plan

(Wisla) and Odra basins. The remaining eight districts are small parts of the international basins of the Dniestr, Danube, Jarft, Elbe, Neman, Pregola, Swieza and Uecker rivers located within the boundaries of the Republic of Poland.

Future steps

The Water Framework Directive 2000/60/EC establishing a framework for Community action in the field of water policy commits the EU member states to achieve a good qualitative and quantitative status of all water resources by 2015. It is a framework in the sense that it prescribes steps to reach the common goal rather than adopting the more traditional limit value approach.

The directive defines 'surface water status' as the general expression of the status of a body of surface water, determined by the poorer of its ecological status and its chemical status. Thus, to achieve 'good surface water status' both the ecological status and the chemical status of a surface water body need to be at least good'. Ecological status refers to the quality of the structure and functioning of aquatic ecosystems of the surface waters. Water is an important facet of all life and the Water Framework Directive sets standards which ensure safe access to this resource.

The Directive requires the production of a number of key documents over six-year planning cycles. Most important among these are the River Basin Management Plans to be produced in 2009, 2015 and 2021. Draft River Basin Management Plans are published for consultation at least one year beforehand.

In March 2010 the Polish Government submitted to the European Commission 10 river basin management plans covering the entire territory of the Republic of Poland. One of them is the plan for the international Pregola River Basin District in Poland. The remaining part of the basin is located in the territory of the Russian Federation, in Kaliningrad Oblast.

The River Basin Mangement Plan for the Pregola River Basin District in Poland contains the following 11 sections:

1. Water management planning
2. General description of the river basin district
3. Summary of important pressures and impacts of human activities on surface and groundwater
4. Climate change and water management in the first planning cycle
5. Identification of protected areas
6. Monitoring results
7. Environmental objectives
8. Summary of the economic analysis of water use
9. Summary of the proposed measures
10. Social consultations and implementation of their results
11. Authorities and contact points.

The area of the Pregola river basin in Poland is 7,407.34 km^2, about 50% of the total basin area of that river covering Poland and the neighboring Kaliningrad Oblast of the Russian Federation. The two other large tributaries of the Pregola are the rivers Lyna and Wegorapa, which both begin in the territory of Poland. The total

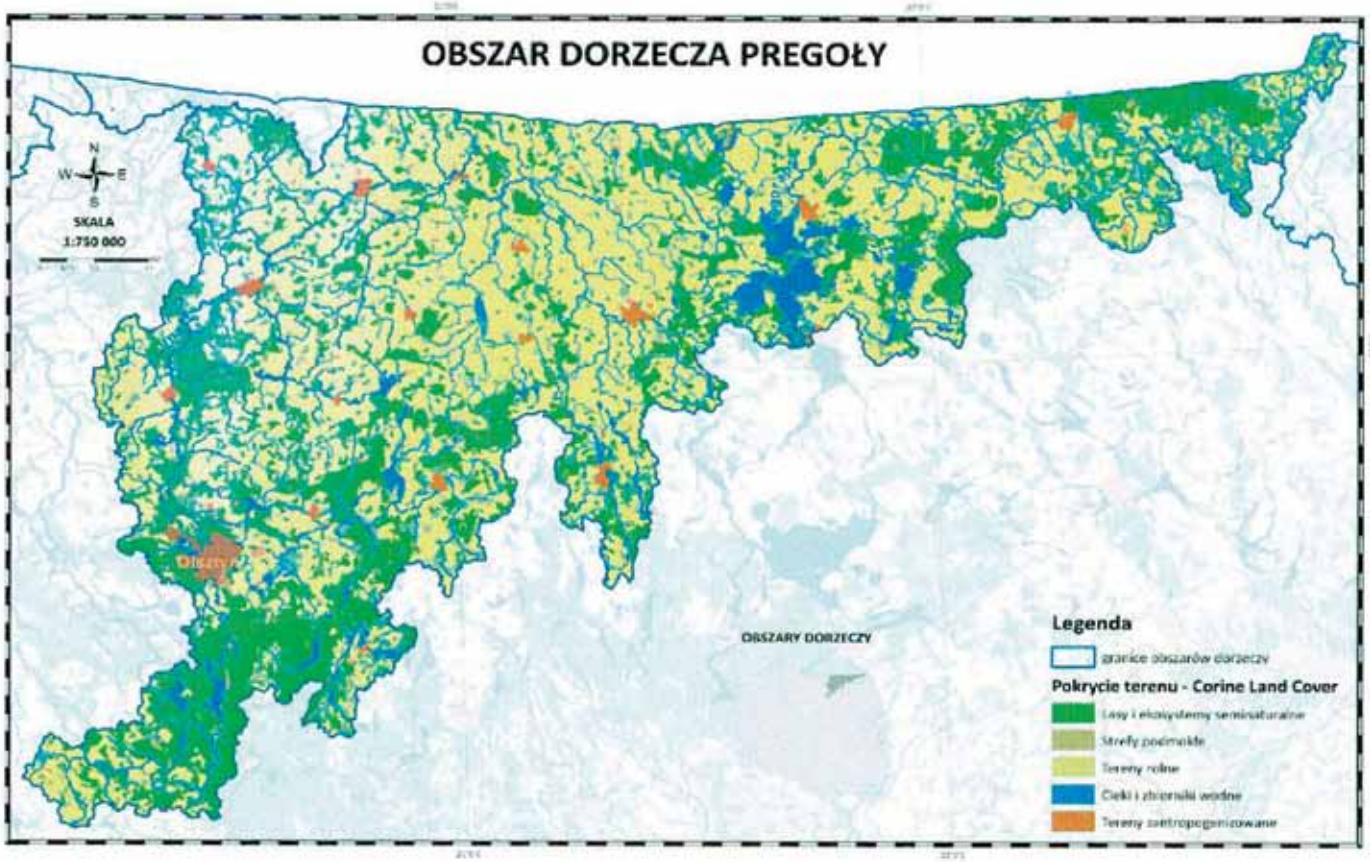


Figure.21 Pregola River Basin District in Poland

length of the Lyna is 263.7 km with about 190 km of that length located in Poland (the corresponding catchment area is 5,700 km^2). The Wegorapa is 140 km long with 41 km of that length located in Poland.

The large city of Olsztyn, capital of the Mazury-Warmia Voivodship, is located on the banks of the Lyna river. Otherwise the Polish part of the Pregola river basin is mostly agricultural in character with a large portion of the area forested. The basin has many lakes and on the whole is of great touristic value.

The WRD, Article 3, point 5 states : 'Where a river basin district extends beyond the territory of the Community, the Member State or Member States concerned shall endeavour to establish appropriate coordination with the relevant non-Member States, with the aim of achieving the objectives of this Directive throughout the river basin district. Member States shall ensure the application of the rules of this Directive within their territory'.

Article 11, point 3 continues: 'In the case of an international river basin district extending beyond the boundaries of the Community, Member States shall endeavour to produce a single river basin management plan, and where this is not possible, the plan shall at least cover the portion of the international river basin lying within the territory of the Member State concerned'.

Taking this into account, it is suggested that the development of a Joint River Basin Management Plan for the Pregola River Basin should be considered. Such a plan would be developed jointly by Polish specialists and their Russian counterparts from the Kaliningrad Oblast, following the methodology of the EU Water Framework. Probably the European Commission would be willing to support financially such an effort within the framework of the recently initiated LT-PL-RU programme, providing a good example of how to produce a single river basin management plan extending beyond the boundaries of the European Community.

The first step should be to undertake discussions between the authorities concerned from Poland and the Kaliningrad Oblast. Decisions about initiating discussions with the European Commission about the Pregola initiative, would have to be taken jointly by representatives of both countries at the appropriate level. The governments concerned might be in favour of delegating this task to the regions occupying the Pregola river basin: the Kaliningrad Oblast on the side of the Russian Federation and the Warmia-Mazury Voivodship (one of the EU regions) on the Polish side.

6.3 Sweden

Earlier experiences

Sweden is, in a water perspective, a country with high variation, from the mountains in the northwest to the flat Baltic islands in the southeast, with the main part of the population in urbanised areas, a few concentrated intensive agriculture areas (approx 25% of the land area) and extensive forests. Within Sweden's approximately 450,000 km^2 there are almost 100,000 lakes larger than 1 ha (and even more which are less than 1 ha). The length of the rivers is about 500,000 km, and there is also a very long coastline including numerous bays and archipelagos. It is of course a great

Photo: Jakob Granit, SIWI

resource for wildlife and natural ecosystems, attractive for human recreation, a good supply of water for drinking, industry and energy production, with great potential for fishing and an attractive place for living (both urban and rural). Good water quality and water resources are generally taken for granted in Sweden.

However, over the last 200 years, the water landscape has changed because of the changing uses made of water resources. This has resulted in changed water environments, more polluted water, fewer resources, and low fish stocks mainly because there is a lack of balanced management. Yet different decades have focused on the use of water, to expand the amount of arable land, increase forest production, support hydropower generation, and to expand urban areas. For the last 50 years great efforts have been made to reduce the negative effects on water quality and ecosystems through a balanced development both of society and of water use.

Household water supply and sewage systems were introduced on a large scale approximately 100 years ago to reduce waterborne diseases, but often the result was to move the problems to the lakes, rivers and seas. The growing insight that came with the new problems resulted in an extensive development of sewage treatment plants over the last 50 years, and today all cities and villages (> 90% of the population) has a sewage treatment plant which reduces pollutants by 70-95% (depending on size, location and parameter). Rural households (about a million permanent or irregularly occupied houses) have roughly the same regulations, although calculations assume that 50% of them have still to be upgraded.

The environmental measures taken for the industry have allowed the same level of development with reductions of pollutant emissions by more than 90%. The sector which shows low adaptation to new emission controls is agriculture, and although several measures for manure and general agricultural practice have been introduced, a lot still remains to be done.

A positive example of measures refers to the acidification of soil and water by emissions of sulphur and nitrogen. European reductions in airborne emissions of sulphur in particular have had a great effect in Sweden's lime free soils and waters, and have been combined with a Swedish liming programme for several thousand surface waters. We can now see that several waters are recovering in quality, but it will take another 10 to 20 years before most of them have recovered.

Half of all Sweden's drinking water comes from surface waters. The other half is from groundwater, in many cases augmented by surface water infiltration. Urban water supply is the responsibility of the municipalities (as is sewage treatment), and quality control is quite extensive. Water protection areas have been established for about 60% of the water resources, and further areas will follow. Rural households are responsible for their own water (and sewage) supply, and locally there are problems with resources and quality. Only a few areas in Sweden suffer water stress from water extraction, and that is mainly during dry summers.

Bathing water quality in general meets the standards set, but algal blooms in lakes and coastal waters periodically restrict recreational use. Many of the lakes with high pollution pressure may meet the standards, but are less attractive because of organic compounds and low visibility.

Current issues

The first management cycle of the implementation of the EU Water Framework directive has been finalised. Environmental Quality Standards (objectives) and a Programme of Measures have been decided, and the implementation of these in the Swedish administration is in progress.

In March 2010 the five Swedish water authorities, the Geological Survey, the Environmental Protection Agency and the Meteorological and Hydrological Institute submitted five river basin management plans to the European Commission covering the entire territory of Sweden, and of the transboundary parts shared with Finland and Norway.

The implementation of the Wastewater Treatment Directive (91/271/EG) has not been completed in Sweden, according to EG Court decision 2009, and further measures for N-treatment will be implemented.

Implementation of the EU Flood Directive has started, although the full legislation and organisation has not yet been completed.

Future steps

Although there have been rather ambitious objectives and measures over recent decades in Sweden, several measures still have to be taken to meet the EU objectives and directives as well as national objectives. The challenges ahead are mainly to fully implement the measures agreed on the numerous sites where they are needed. That also means that all authorities and municipalities have to take full and ambitious responsibility for action. Further adaptation of the legislation by the Government and the Parliament will probably be needed, and also financing for issues which are not covered by the polluter pays principle, e.g. restoration of water environments.

The five water authorities will support the authorities and municipalities by developed characterisation and detailed plans for measures, which will be the basis for revised River Basin Management Plans and a Programme of Measures until 2015.

The implementation of the EU Marine Strategy Directive is in progress and the legislation and organisation is due to be finalised during 2010. A new national marine and water authority will be established with responsibility for the EU Water Framework Directive, Marine Strategy Directive, the EU Baltic Sea strategy and the BSAP, and also several of the national environmental quality objectives.

6.4 Affiliated branches of federal institutions operating at the Kaliningrad Oblast level

The management office of the Federal Service for Supervision of Natural Resource Usage (ROSPRIRODNADZOR) in Kaliningrad Region exercises control and supervision of:

- geological studies, rational management and conservation of the subsoil;
- the use and protection of water resources (the federal state control and ecological monitoring of specially protected natural areas of federal importance)

The North West Agency of the Federal Service for Ecological, Technological and Nuclear Supervision in Kaliningrad region (ROSTEKHNADZOR) supervises environmental protection, and provides state expertise, standardisation and payment administration (including for pollutants discharged into water).

The water resource department of the Neva-Ladoga Basin Water Administration in Kaliningrad Oblast (ROSVODRESURSY) implements measures for the rational use, renewal and protection of water resources, to prevent adverse impacts on water and to mitigate their consequences. It has several functions:

- granting the right to use water resources owned by the federal government;
- operating reservoirs and water resources systems, protective and other types of hydraulic structures managed by the administration; to ensure the safety of these facilities
- to develop and approve programmes on the multi-purpose use and protection of water resources and water management balances; to draw up predictions on the state of water resources and their future use and protection ;
- developing and implementing measures for flood mitigation, arrangements for design and determination of water conservation zones and their coastal buffer zones, and measures to prevent water contamination;
- providing state services with information on the state and use of water resources owned by the Federal government;

Photo: Jakob Granit, SIWI

- maintaining the State Water Body Register and the State Water Cadastre and Russian register of hydraulic structures;
- monitoring the state of water resources and maintaining an inventory of surface and groundwater sources and their use.

The Baltic Sea Basin Council is a separate institutional structure that exists to be actively involved in the water resource management process in Kaliningrad Oblast. It consists of representatives of the Oblast government and local self-government, civil society, industrial and agricultural circles. The Basin Council participates in the development of the water resources assessment schemes (SKIOVO), i.e. the schemes for the integrated and efficient use and protection of water resources within the boundaries of the Baltic Sea basin district (Okrug).

The Kaliningrad Oblast Centre of the Federal Service for Hydrometeorology and Environmental Monitoring (ROSHYDROMET) has the following functions:

- state supervision over implementation of the various works related to the active control of meteorological and other geophysical processes in the Oblast;
- keeping an inventory of surface water and maintaining the State Water Cadastre with regard to surface water resources;
- keeping a uniform data pool on the state of the environment and pollution;
- establishing and ensuring the operation of the state monitoring network, including organisation and of the permanent and mobile monitoring stations, and determination of their location;
- keep consumers informed on the data on the state of the environment, its pollution, on the forms of making this information available and on the organisations providing this information for consumers;
- ensuring the operation of the hydrometeorological monitoring stations and the systems of reception, collection and distribution of hydrometeorological information;
- ensuring the issuing of emergency information on dangerous natural phenomena, and on actual and predictable critical changes in weather and environmental pollution that may present risks for health and life and for damage to the environment.

There are a number of other federal institutions that have a bearing on water resource management and development including:

- The Hydrogeological Expedition (Ministry of Natural Resources), Federal State Enterprise Centre for Laboratory Analysis and Technical Measurements (FGU "TsLATI", Rostekhnadzor)
- The Infrastructure Development Ministry of Kaliningrad Oblast which establishes the procedure for deciding on granting water rights for municipal use.
- The department of fuel and energy sector, subsoil use and water resources of the Infrastructure Development Ministry in Kaliningrad Oblast region
- The service for ecological control and supervision in Kaliningrad Oblast region

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