

The Transboundary Waters Programme of the Swedish Environmental Protection Agency 1997-2002

– Results and Conclusions

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Introduction

The following report describes the experiences from the *Programme on Transboundary Waters* of the Swedish Environmental Protection Agency, Swedish EPA, during 1997 to 2002. The experiences gained from the Swedish EPA programme are to a great extent applicable also in other basins. The report includes general conclusions and recommendations to promote the co-operation in transboundary water basins, with a focus on institutional and legal issues. Primary target groups for the report are other donors as well as riparian countries.

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Summary

This report describes the experiences from the *Programme on Transboundary Waters* of the Swedish Environmental Protection Agency, Swedish EPA, during 1997-2002. It also includes general conclusions and recommendations applicable to the management of lake or river basins in general.

The Swedish EPA Programme includes three transboundary basins; lake Peipsi-river Narva, river Daugava and river Neman. All three basins involve one future member of the European Union as well as Russia. The EC Water Framework Directive as well as the Russian legislation have a basin approach, which is expected to facilitate the joint management of the basin.

The Swedish EPA activities in *lake Peipsi* basin have focused on: joint monitoring of nutrients, information exchange as well as assessment of the nutrient loads and levels. After the establishment of the Russian-Estonian Transboundary Water Commission the Swedish EPA has supported the development of shared visions with focus on groundwater and nutrients.

Swedish EPA activities in the *Daugava* basin have lately focused on the development and negotiation of an intergovernmental co-operation agreement for the basin. In addition a joint assessment report on the state of the environment was elaborated. Activities in the *Neman* basin were initiated only in 2001, when a report was compiled with information relevant to the joint management of the basin. A workshop has been arranged to discuss the trilateral co-operation in the basin and the parties have agreed to use the draft co-operation agreement for Daugava as a basis for a similar agreement covering the Neman basin.

Conclusions from the Swedish EPA activities

The expected results were in general achieved, although projects were often delayed. This can to a great extent be explained by the difficulty in coordinating projects involving several countries. The frequent reorganisations of the Russian administration also complicated implementation. Conclusions from the programme include:

- *Access to data has often been a problem.*
- *A reliable local partner is a prerequisite for successful implementation, assisting with expected and unexpected issues.*
- *It can be wise to at first initiate co-operation on technical issues, such as monitoring, as this can be a step towards developing the confidence and political commitment.*
- *Elaborating joint reports is time-consuming but is an important step in developing the transboundary co-operation. Assessing the nutrient loads proved difficult and the interpretation of data complicated. Discussions among scientists are, however, necessary to make the development of common visions possible.*
- *Assuring political high level support is essential.*
- *With time confidence increases. Many individuals that initially were sceptical have become much more positive towards the co-operation. Involving partners with previous experience from transboundary co-operation promoted a frank and open discussion.*

General conclusions on transboundary water management

Although each basin is unique, the development of transboundary co-operation may be described as different phases:

1. Assessing the national institutional and legal framework, and resources and needs.
2. Developing relevant legal and institutional framework
3. Elaborating a basin management plan
4. Implementing the management plan
5. Compliance monitoring and evaluation.

Assessing resources and needs is of great importance, as it is the point of departure for formulating objectives. Joint visions and common approaches must be developed. Another major challenge is to provide open access to basic information and data to support decision-making and foster frank discussions on key issues. Other challenges include the willingness to deal with emerging problems, developing the political commitment and public support, as well as promoting efficient water use and use of incentives for cost efficiency.

Donors are recommended to analyse the political, institutional and legal situation in the basin before initiating projects. The role of the donor should also be considered: the riparian countries must have the ultimate responsibility for the co-operation to ensure sustainable project results. The donor is an external partner, hopefully a catalyst in the process of establishment and development of the co-operation. Before initiating projects donors should ensure political commitment, a clear mandate for project participants as well as access to data.

Although joint management of a transboundary basin is complex, it is also *an opportunity for regional co-operation*, resulting in lower risks for conflict between user groups and a more sustainable use of the resources.

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1. The Central and Eastern European Programme

The Central and Eastern European Programme of the Swedish EPA is an important part in the Swedish development assistance to Central and Eastern Europe. Swedish development assistance is coordinated by Sida¹, who also provide support to environmental investments, such as wastewater treatment plants.

The overall objective of the Central and Eastern European Programme² of the Swedish Environmental Protection Agency, Swedish EPA, is *to support the environmental authorities in the adjacent area, i.e. Estonia, Latvia, Lithuania, North-western Russia, Ukraine and Belarus*. This support is aimed at developing and making the environmental work of these authorities more effective and to strengthen their ability to comply with the international commitments. During the period 1993 – 2002 some 200 projects were initiated within the fields of administration, legislation and co-operation on issues such as water management, nature conservation, waste management and environmental information. The annual turnover of the programme is about SEK 20 million (equals 2,4 million US\$).

At present, priority is placed on the development of projects within three main issue areas:

- Approximation by candidate countries to the regulatory framework of the EU
- Transboundary watercourses and lakes, and the Baltic Sea
- Environmental work in Northwest Russia

In the future Swedish development support will to a greater extent focus on Russia, Ukraine and Belarus as well as other Newly Independent States, NIS³. Support to Estonia, Lithuania, Latvia and other acceding countries will step by step be phased out as these countries become members of the European Union. Projects promoting the co-operation in transboundary basins involving also the Baltic States, will however most likely receive additional future support.

¹ Swedish International Development Cooperation Agency, www.sida.se

² Additional information in English on the Central and Eastern European Programme is found on the website of the Swedish EPA: www.naturvardsverket.se

³ The Newly Independent States, NIS, (i.e. former USSR excluding the Baltic States) include in total twelve countries: Azerbaijan, Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

2. The Programme on Transboundary Waters

2.1 Background

With over half of the world's population living in transboundary river basins successful management of these shared basins is a great challenge for politicians, administrators and others. There is a growing understanding of the importance of co-operation between different actors and across borders in shared water basins.

One major basis for developing co-operation in European transboundary waters is the *EC Framework Directive (2000/60) on Water*. This framework directive governs water management in member states and also impacts the future members of the Union in their efforts to harmonise with various EC directives. The overall purpose of the directive is a sustainable use of water resources and to ensure that good water quality is achieved in all waters by the year 2015. The directive states that the basin is to be the management unit, and further stipulates that agreements should be negotiated for internationally shared water basins.

In addition the *Council of the Baltic Sea States* has stressed that all countries in the Baltic Sea region should ratify and implement the *UN-ECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes*, and develop action programmes for the transboundary waters, based on the principles of the Convention. The management of transboundary waters in the Baltic Sea Region is also mandated by the *Convention on the Protection of the Marine Environment of the Baltic Sea Area (1974, 1992)*. The environmental problems of the Baltic Sea cannot be solved without consideration of all activities within the entire catchment area. Thus improved co-operation in the river basins of the Baltic Sea is needed to minimize the pollution load entering this sea.

During 1997 the Swedish EPA initiated a *Programme on Transboundary Waters* to promote the co-operation between countries sharing a joint water basin. Prior to 1997 the Swedish EPA funded several projects in the Lake Peipsi area with focus on the capacity of regional authorities in Russia and Estonia to conduct harmonised environmental monitoring. The ultimate goal of the programme is to arrive at a better environment in the basin and, in a longer term perspective, also in our common Baltic Sea.

2.2 Aims and objectives and assumptions

The **overall aim** of the Programme on Transboundary Waters is to support the co-operation between countries bordering lakes or rivers east of the Baltic Sea so that these waters can be used in a sustainable way.

The **specific objectives** of the programme are to promote:

- The development of bilateral and trilateral agreements for each basin.
- The establishment of river basin management plans.
- The establishment of joint water commissions.
- The coordination of environmental monitoring and management of environmental information.
- A common, integrated approach to water management.

The aims and objectives described above are all quite general, and thus all projects have more concrete and specific project objectives, which are measurable and are to be reached within the timeframe of each project.

In this report the expression 'river basin' is used, the same conclusions are however applicable to 'lake basins'. The discussion and conclusions in this report are based on some general assumptions concerning river or lake basin management:

1. The basin is the logical level for management

A river basin comprises both water and land. The interactions between parts of the river basins (upstream-downstream, land-water, groundwater-surface water, population-biotope etc) are so strong that the system as a whole is the only logical level for management. There is today a strong consensus that the administrative entity should be the river or lake basin.

2. The interests of various stakeholders must be taken into account

Water is a social, environmental and economic resource. The importance of safe drinking water supply, the role of water for farmers and fishermen, various economic activities, as well as its significance for different ecosystems must be recognised. The prevailing opinion today is that the management of water resources must take an *integrated approach*, and that all sectors of society that influence, or are influenced by, water resource management have to be considered in the management of the basin.

3. Each basin is unique

The hydrological, environmental, social and economic circumstances vary considerably in different regions, and every river or lake basin will therefore need its own specific policies, plans and activities. The management of transboundary water basins is particularly complicated since there is not one government to manage international waters and bordering states may have different languages, cultures as well as different legislation and institutional structure.

2.3 Funding and co-operating partners

The major part of the funding to the *Programme on Transboundary Waters* of the Swedish EPA comes from Sida following a grant agreement signed in 1999. The programme has also received funds from a Swedish governmental fund, the Baltic Billion I. During the period 1997 – 2002 the programme has received about 8 million SEK (approximately 900 000 US \$) in funds.

Primary programme partners are the national and regional environmental authorities of the countries concerned. However, also other actors, such as universities, NGOs and private sector organisations within the drainage basin, are at times encouraged to actively participate in the work. As in all Swedish developmental support the co-operating partners are expected to contribute with co-funding within all projects. The different states' ability to co-fund joint projects must be taken into consideration.

Cooperating partners in the region include:

- Intergovernmental Estonian-Russian Joint Commission on Transboundary Waters and its working groups
- Ministry of Environment of Estonia
- Ministry of Natural Resources of the Russian Federation
- Federal Service for Hydro-Meteorology and Environmental Monitoring of Russia (Roshydromet)
- Center for Transboundary Cooperation – CTC, Pskov (Russia) and Tartu (Estonia)
- Ministry of Natural Resources and Environmental Protection of the Republic of Belarus
- Ministry of the Environment of the Republic of Lithuania
- Ministry of Environment of Latvia
- Centre for Environmental Policy (Lithuania)
- Central Research Institute of Integrated Use of Water Resources (Belarus)

The co-operation on a common water resource is complex. Experience from Central Europe and elsewhere has shown that co-operation takes time to establish and develop and that successful co-operation must build on *confidence, commitment and a mutual understanding* of the situation. The Swedish EPA can, as an external programme partner, act as a catalyst in the process to establish and develop co-operation. From a donor's perspective one should keep in mind that this implies support to a political process, driven by the riparian states, with difficulties in foreseeing the rate of development of the co-operation. It is also important to enhance collaboration with other actors, such as the Helsinki Commission, the EU and the World Bank, to facilitate future investments.

2.4 Three transboundary waters east of the Baltic Sea

The Programme on Transboundary Waters includes three transboundary basins (Figure 1):

- Lake Peipsi – river Narva (shared between Estonia and Russia);
- The river Daugava (shared between Russia, Belarus and Latvia);
- The river Neman (shared between Russia, Belarus and Lithuania).

In total these areas constitute about 15% of the drainage basin of the Baltic Sea. These rivers also contribute approximately with the corresponding proportion of the total load of waterborne nitrogen to the Baltic Sea. River Narva is the least and River Neman the most polluted of the three.

The Swedish EPA has also initiated bilateral projects, which are complementary to the projects involving the transboundary co-operation on water resources. The Daugava

project (a river basin management plan, Latvia), Kola River Environmental Programme (Russia), Environmental information in Northwest of Russia, are some examples of projects which have synergies with the activities of the transboundary waters programme.



Figure 1: The Baltic Sea drainage basin and the three transboundary waters included in the Programme on Transboundary Waters of the Swedish EPA: Peipsi-Narva, Daugava and Neman.

All three basins of the programme have one thing in common; they involve one EU accession country as well as Russia, and will therefore constitute the future border between EU and Russia. Two of the basins include Belarussian territory. Russia and Belarus belong to the Commonwealth of Independent States as well as the Union of the Russian Federation and the Republic of Belarus. Thus the countries are not only single actors, they also represent different political unions with different aims and objectives.

It is of utmost importance to understand the political context and framework for co-operation as well as driving forces to develop the co-operation in the basins.

Russian legislation has a basin approach outlined in the Russian Water Code and Law on Environmental Protection and at present Russia has 17 basin authorities and a long experience from river basin management. Full cost recovery is, however, not a part of the Russian water legislation. The Belarussian administration does not have a basin approach, but has declared its approval towards the principles of this approach.

The present and future members of the European Union will be governed by the EC Water Framework Directive. A directive is legally binding and thus has to be implemented in each member state's national legislation. The objective of the water framework directive is that *all waters reach a "good status" by 2015 and that water use be sustainable throughout Europe*. The directive represents an ambitious approach to water management. Key elements of the legislation include:

- The protection of all waters – rivers, lakes, coastal waters and groundwater.
- The setting of ambitious objectives to ensure that all waters meet "good status" by 2015.
- The requirements for cross border co-operation between countries and all involved parties.
- Ensuring the active participation of all stakeholders, including NGOs and local communities, in water management activities.
- Requiring water pricing policies and ensuring that the polluter pays.
- Balancing the interests of the environment with those who depend on it.

The directive requires the definition of river basin districts, and that all actions in the river basin districts shall be coordinated in a river basin management plan, elaborated by a river basin management authority. To conclude, the water framework directive is a tool and an important driving force towards sustainable river basin management

In the following sections the situation in each of the three river basins included in the Swedish EPA Programme on Transboundary Waters is described separately, including the following aspects:

- a general description of the river basin,
- the economy
- the environment
- the transboundary environmental co-operation
- the Swedish EPA activities – a description
- general conclusions from the Swedish EPA activities
- comments on future activities

The list of references includes some of the publications from the various Swedish EPA projects.

3. Lake Peipsi/river Narva basin

3.1 General description of the basin

Lake Peipsi, known in Russian as Chudskoe-Pskovskoe, constitutes a large part of the border between Russia and Estonia. The lake is Europe's largest international lake, connected to the Gulf of Finland and the Baltic Sea via the Narva River. The drainage area covers mainly Estonian and Russian, but to a certain extent also Latvian territory. The lake's natural amenities are unique, being shallow, eutrophic (i.e. rich in nutrients) and biologically very productive. Wetland areas around Lake Peipsi have been recognized as being of international importance. The major rivers are Velikaya (Russia) and Emajõgi (Estonia). The lake is compared to European conditions clean and pristine, and the region has a potential for developing tourism and recreation.

A major part of the watershed, including southern Estonia and the Pskov Oblast of Russia, is traditional agricultural territory, with considerable areas of arable land and pig and cattle breeding. Fisheries have been major sources of income throughout the centuries. The fish stock in Lake Peipsi is one of the richest in Europe with some 33 species of fish which permanently inhabit the lake or its tributaries. Forests cover some 35% of the basin. Forestry and the processing of timber is rapidly developing on the Estonian side, resulting in increased discharges of nutrients into the lake. Natural resources of the region also include large oil shale and phosphorite deposits in the northern part of the watershed.

The population of the coast of the Lake Peipsi is rather diverse in its origin and culture. A number of villages on both sides of the border have mixed Russian-Estonian populations who have lived side by side for centuries. Fishing, agriculture, handicrafts and trading have been traditional means of providing daily bread.

3.2 Economy

Most important in the region's economy are manufacturing industries, while the significance of agriculture and services, apart from trade is relatively low. The main industrial centers include the Russian cities of Pskov, Gdov and Opochka, where the dominant industries are machinery and processing of agricultural products. North-eastern Estonia is an industrial region with oil-shale mining and chemical processing enterprises. The lakeside region at present experiences low economic development, high unemployment rates, an unfavourable demographic situation and depopulation.

3.3 Environment

Major environmental issues are eutrophication, unregulated fish catch and problems connected with wastewater originating from oil-shale mining/processing and wastewater from larger settlements. The nutrient load represents a major threat for the water quality of the lake. Agriculture contributes with a considerable share of the input of nutrients. The economic recession that followed the collapse of the Soviet Union (with a decreased use of fertilisers and pesticides) combined with increased wastewater treatment capacities of big settlements will most likely improve the ecological status of the lake.



Figure 2: The lake Peipsi and the River Narva drainage basins. The drainage basin covers some 47 800 km², including a lake area of 3 555 km². The lake is shallow with an average depth of 7 m (maximum depth is 15 m). The map was provided by the Center for Transboundary Cooperation, CTC, Tartu, Estonia.

3.4 Transboundary environmental co-operation

After the break-up of the Soviet Union in 1991, Estonia and Russia re-established their border on Lake Peipsi and its basin, but the border agreement has not yet been signed. At that time environmental co-operation between Estonia and Russia was interrupted, as there were neither infrastructure nor agreements as a basis for the co-operation. In 1997 Estonia and Russia signed an intergovernmental agreement on co-operation on protection and rational use of transboundary waters. A year later, in 1998, the Russian-Estonian

Transboundary Water Commission (Figure 3) was established, henceforth referred to as the Commission. The main task of the Commission is to co-ordinate the activities concerning the implementation of the intergovernmental agreement. In addition Estonia and Russia have signed agreements on fisheries of the lake, as well as on environmental protection.

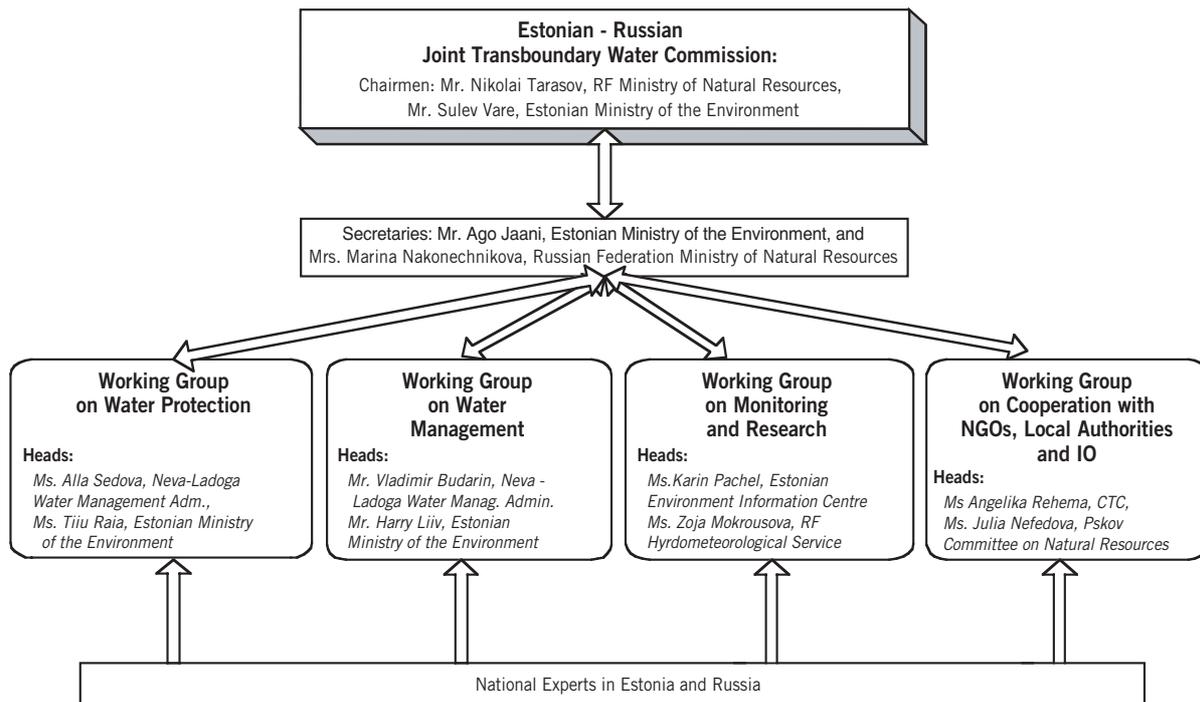


Figure 3: Structure of the Joint Estonian - Russian Commission on Protection and Sustainable Use of Transboundary Waters, 2002.

At present Estonia is rapidly approaching its entrance into the European Union, and Estonian laws and administrative system are being adapted to the requirements of the EU. The Estonian Water Act is being revised to harmonise with the EC Water Framework Directive and river basin management strategies for all water basins in Estonia are to be elaborated by 2004.

At the second meeting of the Commission in 1999, it was decided to start preparing a lake management plan, based on the principles of the Water Framework Directive. An important task for the Commission is to jointly develop water quality standards for the lake and agree on a definition of “good status” of the waters in the lake basin.

3.5 Swedish EPA activities in the region – a description

The Swedish EPA has supported the co-operation between Russia and Estonia in the area since 1995. During the first years the regional environmental authorities have obtained support to strengthen their capacity to exchange information and to conduct co-ordinated environmental monitoring of the lake and its resources. The Swedish EPA supported activities carried out can be summarized as follows:

- **Support to regional environmental authorities with the aim of achieving *quality assured analyses of nutrients* (training, proposal of joint monitoring program, delivery of equipment etc)**
- ***Developing information networks* (training in use of electronic communication, delivery of minor equipment, support for the development of a website etc)**
- ***Joint assessment of nutrient loads and levels* (collection of data from various sources, additional study on nutrient loads from a Russian sub-catchment areas, joint evaluation)**
- ***Monitoring campaign on metals and PCB* (primarily Estonian subcatchment areas)**
- ***Support to the bilateral Commission to promote the accessibility of information by developing a Commission website. Also support to develop *shared visions with focus on groundwater and nutrients* (recommendations and assessment of main problems and possible actions)***

Summary of Swedish EPA activities in the Peipsi-narva basin

Project no	Project title	Year	Swedish EPA funds
CEE 709	Environmental monitoring of lake Peipsi/Chudskoe –phase 1	97-98	2 391 866
TBW 804	Environmental monitoring of lake Peipsi/Chudskoe – phase 2	98-00	1 610 479
CEE 008	Support to Peipsi-Narva Commission	00-02	1 758 673

3.6 General experiences from the Swedish EPA activities

Results were in general achieved in spite of delays

In general the expected project results were achieved, but delays in project implementation were frequent. In a longer perspective the results are expected to contribute to a joint management of the lake basin, although opinions between Russian and Estonian experts at times diverged. The co-operation with Estonian partners has worked smoothly, but the co-operation with the Russian partners has proved more complicated. To a great extent this can be explained by the many re-organisations of the Russian administration, causing an unclear division of responsibilities and competition between the actors. Many times the work had to start from scratch when new Russian experts were appointed as project participants. To ensure sustainable results, political commitment is necessary, unfortunately the transboundary co-operation in the region was not always of high priority as both Russia and Estonia had other urgent priorities.

A local partner is a must to develop the co-operation

Initially the NGO Center for Transboundary Cooperation, CTC (previously LPP, Lake Peipsi Project) played an extremely important role. It would not have been possible to initiate the first projects without a local partner assisting with various expected and unexpected issues such as visas, translations as well as building networks and discussing and anchoring various project ideas among the project partners. When the bilateral Commission was established in 1998, Swedish EPA shifted its focus towards this new organisation. But in practice CTC still played an important role to organise and facilitate various project activities. This has led to a situation where CTC has taken on a lot of responsibility for the development of the transboundary co-operation in the region, almost having a role as a governmental institution.

Moving from technical projects towards management

Once the Commission became operational the Swedish EPA support shifted from more technical projects towards management issues, with the aim of strengthening the work of the Commission. The approach from Swedish EPA was to make relevant information more accessible and to contribute to the development of a shared vision concerning eutrophication and groundwater between the Commission partners.

Interpretation of data may be complicated

The Swedish EPA activities have to a great extent focused on interpretation of environmental data and calculations of the nutrient loads. The experiences so far are that scientific interpretations concerning the nutrient loads and estimated future scenarios are complicated. The lake Peipsi is in practice more or less divided into three basins, responding in different ways to changes in nutrient loads. The discussion among scientists is necessary to make the development of common visions possible. The disagreement among experts may in the longer term contribute to the co-operation.

Access to data has been a major problem

The Swedish EPA attempted to formally agree with the project partners on the use of data before initiating the activities. Several co-ordinating meetings were held with representatives of federal, regional and local level of Russian authorities, where responsible persons for the delivery of specific data were appointed. In spite of this the work with the nutrient load report was seriously delayed. Limited access to Russian data was a major obstacle during project implementation. In a situation with frequent reorganisations, unclear divisions of responsibilities in combination with lack of funding, data becomes an asset which can be sold to other actors.

3.7 Comments on future activities

A number of new, large, environmental co-operation projects have recently been initiated in the area. One example is the on-going EU funded research project MANTRA-East, 'Integrated Strategies for the Management of Transboundary Waters on the Eastern European Fringe – the Pilot Study of Lake Peipsi and its Drainage basin'. Other major projects focusing on a joint management of the basin include a GEF project "Water

Management Programme of lake Peipsi Drainage Basin” as well an EU funded TACIS project supporting Russia to develop joint management. In addition the EU LIFE is funding an Estonian project with focus on management of surface and groundwaters. All mentioned projects are well coordinated thanks to the NGO Center for Transboundary Cooperation, CTC.

Before initiating any new projects the on-going activities should be thoroughly analysed, to avoid duplication from other projects.

It is important to promote the development of *shared visions* as well as *common approaches* among commissioners and commission experts necessary for the joint management of the basin. The Russian and Estonian governments have not yet defined what “good status” of the water quality is. To be able to implement the Water Framework Directive this definition is a prerequisite.

Other activities that may promote the access to environmental information as a whole would greatly benefit the transboundary co-operation in the region. To be able to spread relevant information to various stakeholders a commission also needs appropriate secretarial capacity.

Management of fish and groundwater resources are other possible areas of support identified by the Swedish EPA.

4. River Daugava

4.1 General description of the basin

The river Daugava, or Zapadnaya (Western) Dvina, enters the Baltic Sea in the Gulf of Riga. The basin is shared primarily between Russia (32%), Belarus (38%) and Latvia (28%). A minor part of the basin is Estonian and Lithuanian territory.

The population, slightly more than two million persons, is unevenly distributed over the basin. In the Russian (upper part) of the basin only 250 000 people live while the Latvian part is more densely populated. Major cities are Riga (Latvia) with 800 000 inhabitants, and Vitebsk (Belarus) with 400 000 inhabitants.

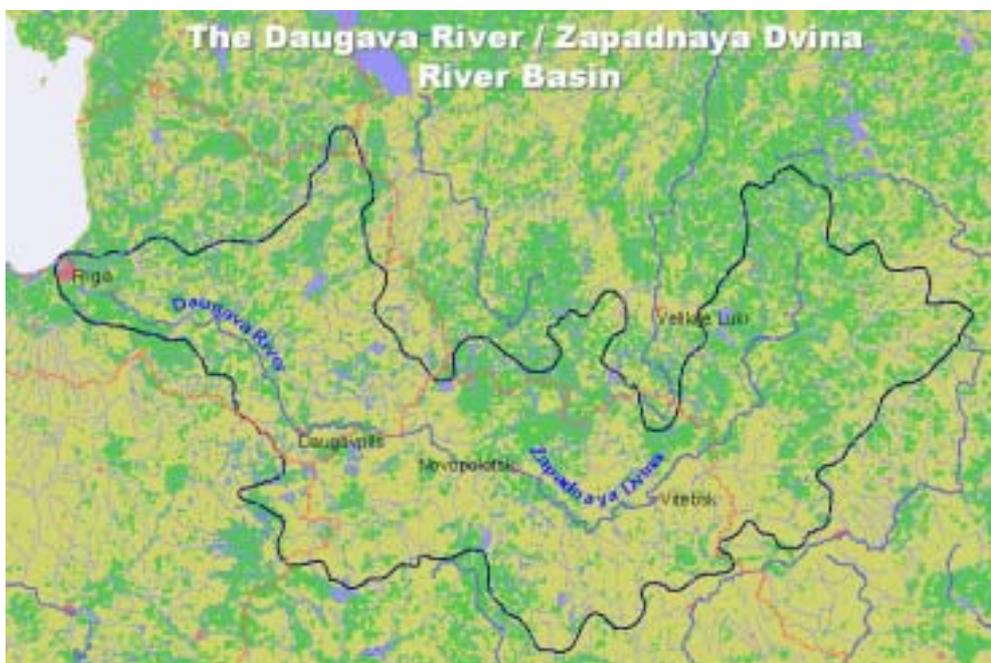


Figure 4: Map of the Daugava basin.

The river is 1 005 km long and the basin covers an area of 87 900 km². Map produced by Sindre Langaas, KTH – Royal Institute of Technology, Stockholm, Sweden.

The upper reaches of the basin are characterised by forests on sandy and boggy flatlands. These areas are practically virgin due to the low density of population. Forests cover 35% of Belarussian part of the basin and 45% of the Latvian part. Today Daugava is navigable only at certain stretches due to the construction of hydroelectric plants and railways. The port of Riga is, however, one of the biggest ports of the Baltic Sea. About 5% of the basin is protected area by law (reserves, national parks etc) but these areas are likewise under pressure.

4.2 Economy

The economic development of the basin is rather well correlated with the distribution of the population. In the upper Russian part of the basin industries are scarce and there are no big cities. Agriculture is rather extensive with cultivations of flax and potato.

In Belarus and Latvia the river is used as a source for industrial and drinking water supplies, communal needs, cooling water for thermoelectric plants, generation of hydroelectric power, recipient for waste water (both treated and untreated), recreation and sport fishing. In Latvia three hydroelectric plants produce 75% of the national electricity production. In Belarus major cities and industrial centres are Vitebsk, Novopolotsk and Polotsk. The city of Novopolotsk is a major source of pollution due to oil processing and refinery plants and its chemical industry. Agriculture is quite well developed both on Belarussian and Latvian territories.

The Latvian part of the basin is most densely populated with some 1,4 million persons out of which 84% live in big cities. Riga and Daugavpils are the biggest ones. The Latvian part also is diverse with respect to its economic activities, which include extractive industry (meat packaging factories, fish factories, sugar refinery etc) and hydroelectric power plants.

4.3 Environment

The river is not particularly polluted compared to Central European conditions. Major environmental issues include wastewater from settlements, load from agriculture and industry (especially from oil refinery and galvanic enterprises), changes in hydrological regime due to hydropower stations in Latvia. The environmental pressure has decreased over the past 10 years ago due to decreased industrial production and less agrochemicals being applied.

4.4 Transboundary co-operation in the basin

The formal transboundary co-operation in the Daugava basin was initiated in 1997, at a seminar which was co-funded by the Swedish EPA. A draft intergovernmental co-operation agreement has been elaborated and negotiated and is expected to be signed during 2003. According to this agreement a joint commission will be established for the basin.

Latvia has started the preparation of a *River Basin Management Plan*, for the Latvian part of the Daugava basin, in accordance with the Water Framework Directive (see also 4.5). Taking into account that Russia and Belarus occupy upstreams part of the basin, increased trans-boundary co-operation in the basin is a prerequisite to be able to fulfil the intentions of the directive, and to be able to elaborate a management plan covering the whole basin.

4.5 Swedish EPA activities in the region – a description

The Swedish EPA together with the Ministry of Natural Resources and Environmental Protection of Belarus took the initiative to organise a first trilateral seminar to discuss the transboundary co-operation in the basin. The seminar was held in Novopolotsk, Belarus, in November 1997. During the seminar the parties agreed on the following:

- A *memorandum* was signed concluding the need to further improve the environmental situation in the basin and to seek national funding for the trilateral co-operation.
- An *intergovernmental co-operation agreement* for the basin should be negotiated and signed.
- A trilateral working group was established with the task to conduct a *joint assessment* of the state of the environment in the basin and to formulate proposals for common environmental objectives and future joint activities.

Following the first trilateral seminar the Swedish EPA has supported the elaboration of an assessment report on the state of the environment in the basin and also a directory of stakeholders involved in the environmental work in the basin. In addition a small GIS network was appointed, which was trained and which developed a GIS database for the Daugava basin and provided GIS maps for the joint assessment report.

Since 1999 the Swedish EPA support has focused on the *elaboration and negotiation of an intergovernmental co-operation agreement* for the basin. In September 1999 a seminar was arranged for representatives of the ministries responsible for foreign affairs and environment of Latvia, Russia and Belarus. The group jointly prepared a draft intergovernmental co-operation agreement for the Daugava basin, with assistance from experts in international water law. The group worked very well and participants were inspired by the constructive dialogue during the seminar.

Preparing the signing of an intergovernmental agreement necessitates a rather complex coordination with various governmental agencies and ministries within each country. The Swedish EPA chose to continue its support to promote this process. A follow up seminar was arranged in May 2001 where the draft agreement was slightly revised and the process to follow until signing of agreement was defined in detailed. Champions in each country were also appointed as responsible for the process and internal harmonisation of the agreement text with relevant actors within their country. Since then the Swedish EPA has supported the following activities:

- A coordinating meeting back-to back with the international conference 'Integrated Management on Transboundary Waters', held in Poland in May 2002. The Russian representative made a presentation 'Developing transboundary co-operation in the Daugava/Zapadnaya river basin'.
- A workshop on nutrient load calculation for Russian and Belarussian as well as Lithuanian participants.
- A final negotiation on the draft agreement text in Minsk, Belarus, in October 2002.

It is expected that the intergovernmental agreement will be signed during 2003.

In addition the Swedish EPA is funding a bilateral Swedish-Latvian project, Daugava Project, intended to elaborate a river basin management plan for the Latvian part of the Daugava basin. The aim has been to closely coordinate this project with the transboundary activities in the Daugava basin, so that the plan can become an incentive to further develop the joint management.

Summary of Swedish EPA activities in the Daugava basin

Project no	Project title	Year	Swedish EPA funds
TBW703	Assessment report river Daugava/Z. Dvina	97-00	268 101
TBW801	Stakeholders directory	98-00	204 090
TBW802	GIS database and training	98	272 500
TBW901	Agreement seminar	99-00	317 689
CEE 117	Follow-up seminar agreement and other activities	2001-02	908 420

Other projects in the basin include the TACIS project: Water basin management for the Western Dvina, Vitebsk oblast, Belarus.

4.6 General experiences from the Swedish EPA activities

Some experiences so far are:

It is a time-consuming task to elaborate a joint report.

The joint assessment report was seriously delayed. It proved extremely difficult to make a *joint* report, initially the Russian cooperating partners wished to write three separate parts only covering the Russian part of the basin. With time coordination improved and the working group was quite proud of the final result. This is one example of the step-by-step development of the transboundary co-operation.

With time confidence increases

Many individuals among the cooperating partners were initially quite sceptical towards developing the transboundary co-operation. Slowly the attitude has changed and become much more positive and nowadays discussions on important issues are quite frank and fruitful.

The donor promoting the process

The support during 2000 and onwards has been focused on the development of the co-operation agreement. Swedish EPA has been able to support minor activities to promote the negotiation of the agreement. As a donor it is important to keep in mind that it is the riparian countries who have to elaborate *their* agreement. It should not be a consultancy product.

Political high level support is essential

The importance of political high-level support for the transboundary co-operation cannot be overemphasized. The support has increased during recent years, facilitating the implementation of projects.

4.7 Comments on future activities

In accordance with the draft agreement a joint commission is to be established for the Daugava basin within a period of six months after signing of agreement. The Swedish EPA intends to further support and prepare the establishment of a commission. Several other project proposals have been discussed such as training in water management (Russia and Belarus) as well as other activities related to joint monitoring and evaluation of environmental data.

5. River Neman

5.1 General description of the basin

The river Neman (Nemunas in Lithuanian), with its 937 km, runs through three countries: Belarus, Lithuania and Russia (Kaliningrad region). Neman flows into the Kursh lagoon and eventually the Baltic Sea. The river mouth is characterised by a number of artificial polders and channels. Approximately 45% of the basin belongs to Belarus and the same figure for Lithuania. Russia's share (Kaliningrad) is 4% of the total basin. A minor part of the basin belongs to Latvia and Poland.

The water resources of Neman river are used for a variety of purposes such as fishery, hydropower generation, water supply for communal needs, industry and agriculture as well as recreation, tourism and water transport.

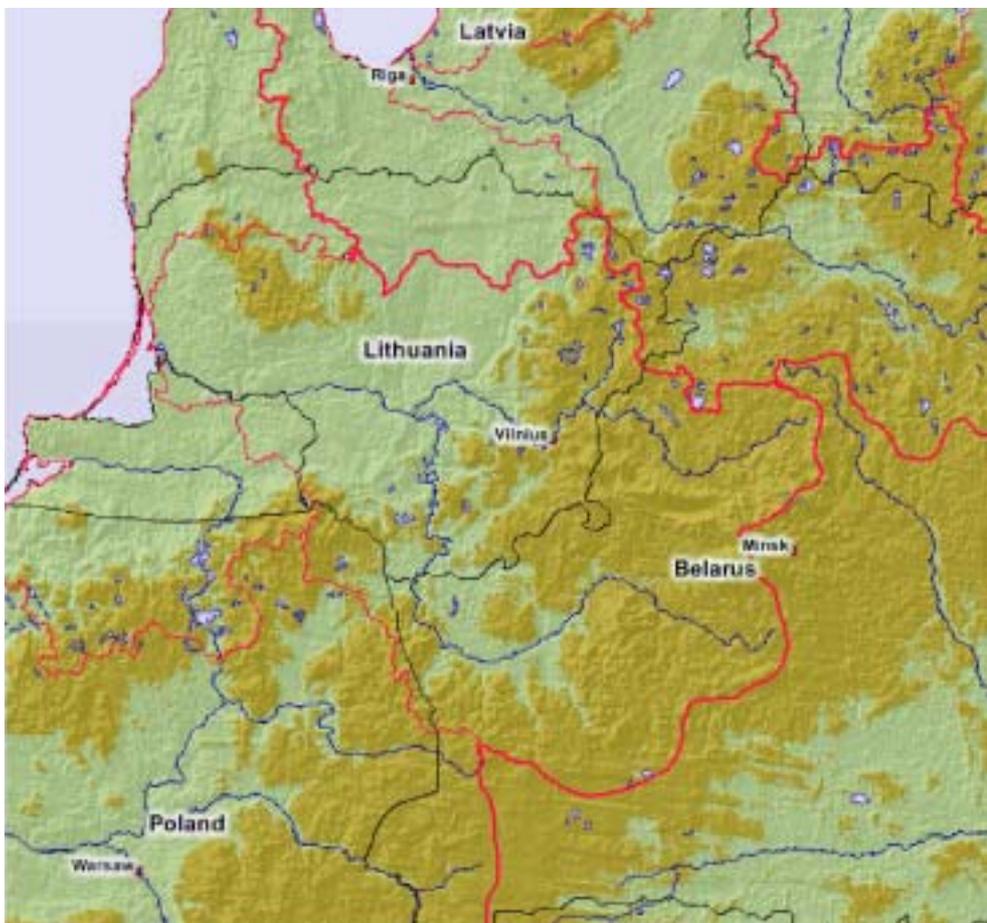


Figure 5: Map of the River Neman. Source: <http://maps.grida.no/baltic>

5.2 Economy

The river basin has a population of 5.4 million inhabitants out of which the major part lives in Lithuania. In Belarus the main industrial centre is Grodno with its 300 000

inhabitants. Industrial activities in the Belarussian part include metal processing, chemical industries, pulp and paper production, manufacturing of building materials, as well as food-processing plants. In Lithuania the main city of the basin is Kaunas with 400 000 inhabitants. Main industries are hydropower generation, machinery, chemical, wood-processing and paper production, furniture production, textile and food-processing. In Russia main industrial centres include Sovetsk and Neman, with large pulp and paper production facilities. Old wastewater treatment facilities also contribute to pollution.

5.3 Environment

Main environmental issues include water quality (eutrophication and pollutants), changes in the hydrological regime and flooding control. The environmental problems in each country are slightly different. In Belarus the main problems are oil products as well as nitrogen and BOD (biological oxygen demand). In Lithuania the quality of the Neman is classed as moderately polluted or polluted. High concentrations of organic pollutants, nitrates and phosphates occur in different parts of the river. Kaunas hydropower station causes changes of the water level affecting the ecosystem. A potential threat to the region is Ignalina nuclear power station, located on the Lithuanian shore of lake Drisvyaty. The environmental issues in the Russian part include high concentrations of BOD, lignosulphates and nitrogen.

5.4 Transboundary co-operation in the basin

Historically this region was united only during Soviet times, before 1945 and after 1991 all countries were separated by borders. The present political situation is rather complex. The region is divided into two parts, the NIS countries (Russia and Belarus) and the EU accession country Lithuania, located between the other two states. In addition Kaliningrad is an enclave separated from the rest of Russia. There is no agreement covering the whole basin, but several bilateral co-operation initiatives. See also under 5.5 below.

5.5 Swedish EPA activities in the region – a description

The Swedish EPA support to the co-operation in the basin of Neman was initiated only in 2001 when a preparatory project was launched to support the *development of trilateral co-operation on the watershed of river Neman – phase 1*. The project included an inventory and evaluation of existing bilateral agreements and co-operative projects in the basin of Neman. A report was produced describing:

- the state of environment of the basin,
- monitoring activities
- environmental stresses
- water management systems in each country
- current state of co-operation
- recommendations.

In addition a workshop was organised in Kaliningrad in June 2002, with experts from the three countries. Results from the evaluation were discussed and recommendations for future trilateral co-operation elaborated. Since then an additional meeting was held in Belarus in November 2002, where the draft co-operation agreement for the basin of Daugava was discussed in detail. The conclusion was that *the Daugava agreement could be a model for an intergovernmental agreement for the basin of Neman*. The parties however, made some revisions of the agreement text and proposed an additional meeting to make final adjustments to the text.

Summary of Swedish EPA activities in the neman basin

Project no	Project title	Year	Funds Swedish EPA
CEE 115	Support to develop trilateral co-operation	01-02	547 710

5.6 General experiences from the Swedish EPA activities

Consultants were involved to collect background material which saved time

The Swedish EPA support to this basin has had a slightly different approach compared to the two other transboundary basins of programme. The experiences from the Daugava basin, with the serious delay of the assessment report, made Swedish EPA involve consultants to compile background material for the report, which saved a lot of time. All conclusions were however formulated jointly by a project group.

The project was delayed

Russian partners had difficulties in obtaining permission from their ministry to travel and participate at project meetings, which led to several meetings having to be postponed at a late stage, increasing the project costs.

Partners with experience from transboundary co-operation promoted the frank and open discussion

Since both Russian and Belarussian partners had participated in the discussions on the Daugava co-operation, it was easy to extend the discussions to the Neman basin. The dialogue during recent project meetings has been very open and constructive, addressing various important issues such as environmental impact assessments and duty to share information across the borders.

5.7 Comments on future activities

Swedish EPA plans are to further promote the signing of the agreement and the future establishment of a commission for the basin in accordance to what is stipulated in the draft agreement. In addition other proposals have been discussed including training in water management for Russian and Belarussian environmental administrators and activities related to joint monitoring and evaluation of environmental data.

6. Conclusions and recommendations

6.1 Introduction

The conclusions and recommendations are based on the experiences gained from the Swedish EPA funded projects as well as various recommendations developed by experts on transboundary water management (see references).

In many regions of the world conflicts between water uses and between upstream and downstream uses are increasing. Also vulnerability to extreme events has increased. To preserve our precious water resources for present and future generations *sustainable river basin management* is a prerequisite. We must find ways to manage our basins and taking into account social, economic as well as environmental dimensions. The management of transboundary basins is particularly complicated since there is not one government to manage the basin and riparian states may have different languages, cultures as well as different legislation and institutional structures.

Although conflicts on water uses may be frequent, water is also an *opportunity for regional co-operation*. A joint integrated management does increase the complexity of coordination efforts and analytical work. The outcome, however, is likely to result in lower level of conflict between different user groups, lower long-term costs, making a more sustainable use of the resources possible.

There is no blueprint for river basin management that can be applied in all basins. The conclusions and recommendations in this report are however generalised and described as different phases in the development of transboundary water management, with focus on institutional and legal aspects.

6.2 The process of developing joint management of a transboundary basin

Let's assume that the ultimate goal is a complete management and control system for achieving sustainable water management at the river basin scale. The process of developing an integrated joint management could then be described as five phases:

1. Assessing the national institutional and legal framework and resources and needs
2. Developing relevant legal and institutional framework
3. Elaborating a basin management plan
4. Implementing the management plan
5. Compliance monitoring and evaluation

In practice this is rather a cyclic process, where the phases will need to be run through several times. The outcome from compliance monitoring and evaluation, as one example, may lead to revisions of the management plan etc. Experiences will be gained through a trial and error process.

6.3 Assessing the national institutional and legal framework and resources and needs

Institutions and legal provisions are needed as a basis before one can set up management systems for river basins. There should be a *clear allocation of duties and responsibilities* at all levels. In addition a basis is needed for issuing emission licences, setting quality standards, checking compliance and enforcement. Institutions and legal regimes should furthermore reflect local conditions, and be flexible and responsive to *current and future needs*. Strategic tasks with many interfaces between sectors should primarily be the responsibility of national/regional/local governments and not of a specific functional institution. River basin authorities, with autonomous decision-making powers, may be a good option for operational tasks with a narrow scope. *River basin commissions* should be established for transboundary river basins, in order to provide the necessary *intergovernmental coordination* and offer a platform for negotiation.

Assessing resources and needs is also of paramount importance. Knowledge about the strategic *assets* of the basin, and about the *uses*, the *needs* and the *pressures* exerted on it, constitutes the *point of departure* for formulating objectives and developing plans. Much effort must be made to develop *joint visions* and *common approaches* of the situation to enable a joint management.

To achieve effective river basin management *sound data, information and knowledge are needed*. This includes both data on surface and groundwater (quality and quantity), as well as social and economic data. Collection and processing of relevant data, easy accessibility and broad dissemination are prominent tasks of river basin management. Data often need to be aggregated into meaningful information, for example in the form of indicators.

It is here worth mentioning that surface and groundwater may be characterized by an almost infinite number of biological, chemical, geological, hydrological, morphological and ecological parameters. Funds for monitoring and assessment are however limited and it is therefore necessary to restrict the number of parameters used. The topics that should be covered depend on the issues in the specific basin and on the capacity available. Which information is actually necessary to manage the basin? Experience has proven that it is most of the time sufficient to work with a limited number of parameters in practical water management, although many individuals will always refer to a lot of info “missing”.

6.4 Developing relevant legal and institutional framework

A possible first step towards developing the confidence and a political commitment, necessary for transboundary water management, is co-operation on technical matters. Thereafter, states should try to draw up an international agreement or other arrangement for co-operation in the river basin, and establish a joint or coordinated body for organising and supervising the co-operation.

6.4.1 Legal instruments

Legal instruments are essential, but the process of their development is as important as their substantive content. Building confidence and nurturing cooperative actions will lead to the security that a legal agreement will provide. River basin agreements should reflect the relevant principles of international law, such as the principles of equitable and reasonable use, the obligation not to cause significant harm, and the duty to notify and

exchange information. *Framework agreements* are often based on the principles of the UN Convention on the Law on Non-navigational Uses of International Watercourses (1997). This convention defines the broad commitment for co-operation. The framework agreement model has great relevance for transboundary waters, where early commitment to co-operation is essential, but details of cooperative arrangements need time and dialogue. 'Subsidiary' agreements can be developed later, as information becomes available and confidence grows, to address specific needs such as quality standards, cost allocation etc.

Riparian states should be encouraged to sign and ratify relevant international and regional conventions. Apart from the mentioned UN Convention there are a number of conventions relevant for transboundary water management, such as:

- UN-ECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes and its Protocol on water and health
- UN-ECE Convention on Environmental Impact Assessment in a Transboundary Context
- UN-ECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters
- UN-ECE Convention on the transboundary effects of industrial accidents

In addition some global conventions are relevant such as the Convention on wetlands (Ramsar, Iran 1971) and the Convention on biological diversity (Rio de Janeiro, 1992).

The concepts, principles, and rules contained in different international legal instruments still require elaboration and in many basins still await implementation.

The present and future members of the European Union will be governed by the EC Water Framework Directive. The principles of basin management described in this report correlate well with the EC Water Framework Directive.

6.4.2 Institutional framework

Experience with transboundary river management illustrates the importance of *working at three complementary levels – international, national and subnational* – to achieve successful and sustainable management programs. At the international level a commission provides a basis for joint approaches and actions among the cooperating parties. At the national level, different ministries integrate the actions of the commission into national policies, strategies and programs. At the subnational level, the participation of local governments, private sector, NGOs, civil society institutions and various stakeholders is needed to translate these policies and programs into actions and provide feedback.

In transboundary river basins commissions are almost indispensable. Commissions can perform many useful tasks such as coordination of research and monitoring, coordination of river basin management between the participating basin states, planning, compliance monitoring and conflict resolution. Conventions and other related agreement provide the framework for the operation of commissions. The commission must be able to meet changing conditions and to address emerging issues relevant for the basin in question. Commissions are therefore not static in their nature.

International river basin authorities with decision-making and enforcement power may be a good option for specific operational tasks, such as the restoration of water quality,

shipping and the joint operation and management of infrastructure. Policy and strategy levels should be separated from the executive and implementation level. And joint water commission should be given the policy-formulation role while river basin authority execute, operate and manage specific projects.

There is no single model or approach to co-operation which is appropriate for all situations. The range of institutional examples and experiences should be reviewed in the process of establishing the framework of any new organisation. The management structure should provide for effective planning and management, allow managers and technical staff to operate efficiently and be affordable for the cooperating parties. Transboundary water management organizations do not need to be large bodies. They can rely on available national technical support from their cooperating parties in joint committee structures to avoid becoming competitors for scarce human and financial resources. The structures that succeed are often based on joint fact-finding and sharing of information that create a climate of trust among parties. Institutional sustainability of commissions ultimately rests on a high level political commitment in each country. It is often wise with a step-by-step process to develop institutions and management structures.

The financial capacity of commissions to undertake activities must be guaranteed by the cooperating parties if they are to fulfil their mission. High level political commitment, trust among parties, and stakeholders and civil society support are necessary elements in order to assure continued financing. The scope of commission programs and size of their staff and structure should be consistent with available financial resources.

6.5 Elaborating a basin management plan

A river basin management plan should be developed, covering the entire basin, and with focus on the specific conditions and problems of the basin in question. The plan should furthermore be in proportion to the resources available for its implementation. It should be elaborated by the governments involved, preferably through a joint or coordinated body.

When developing the plan an *integrated approach* is needed, in which viewpoints and interests of various actors are balanced from the start. This implies having a cross sector approach, which in many cases is not a part of the administrative culture. The principle of sustainability means developing balanced objectives, and avoiding dominance of a single use and respecting the ecosystem - the basic resource for economic and social development.

Knowledge about *the ecosystem and its functions* is of great importance. It is a good rule of thumb to adhere closely to the original, natural conditions of the ecosystem. Extreme deviations from the natural state often lead to unexpected and unwanted effects, not only on the ecosystem, but also with adverse impact on economic interests. Fisheries may be impaired by the construction of dams, regulating the river flow may lead to flooding problems etc. Another example is the vital role of wetlands, which in many regions have been destroyed by diking etc. Wetlands act as nature's own purification plants, decreasing the loads of nutrients reaching the water. In addition wetlands also help even out flooding.

Also keep in mind the link between the river basin and the coastal zone. The coastal zone is an area of intense human activity and often has an outstanding biodiversity.

Unlike river basins, coastal zone management has long combined two facets; marine resources management and land-use planning. In addition the use of land greatly influences the quality of water, hydrological regimes and vulnerability to extreme events. Water management and spatial planning must therefore be coordinated. River basin management is also greatly influenced by other policy areas such as nature protection, air and soil pollution control, and chemicals management.

The river basin management plan should preferably cover a period of 5-10 years. The contents of a plan may vary, as well as the level of detail, but it usually includes the following elements:

- description of the river basin (assessment of resources and needs),
- an outlook on probable economic, demographic and ecological developments,
- formulation of objectives taking account of the balancing of human uses and ecosystems,
- and a set of measures needed to attain each of those objectives.

For EU members or EU accession countries the structure of the management plan is to follow what is stated in the Water Framework Directive.

6.6 Implementing the management plan

During the implementation phase national, regional, local and river basin authorities as well as other actors will have their respective responsibilities. Attaining the objectives of the plan will be the result of co-operation.

The operational management of the river basin plays a key role. Part of the task at this stage may include routine registering by authorities of water relevant activities (such as discharges of wastewater), checking compliance mechanisms, issuing licences, and carrying out measurements. The application of regulatory and economic incentives are essential. To prevent pollution a mix of regulation and compliance instruments can be used. Charges are an effective means of financing river basin management (cost recovery) and reducing water use as well as pollution.

Physical tasks such as the construction of wastewater treatment plants, installation of new technology, constructing irrigation works, restoring the natural environments may also be parts of the implementation of the management plan.

Some critical issues during implementation of the management plan are:

- To promote efficient water use
- The use of incentives for cost efficiency
- Sharing benefits rather than water
- Moving from supply-side to demand management
- Rational economic instruments, to achieve cost recovery in water pricing.
- The use of relevant management tools such as environmental impact assessment, evaluation of water quantity and quality issues, actions for maintaining ecosystems and conserving biological diversity.

6.7 Compliance monitoring and evaluation

To follow up the results achieved during implementation of the river basin management plan evaluations are needed. Based on the evaluation, the plan may be revised.

Compliance monitoring – reporting, reviewing and evaluating – is very important in order to promote successful implementation of the plan.

6.8 Challenges

A major challenge in transboundary water management is *to provide open access to basic information and data sets* by the public, in order to support informed decisionmaking and foster frank discussion of key issues regarding transboundary water management. To ensure effective participation of the public rights of access to information, active participation in decision-making processes, and access to justice need to be legally established.

Knowledge is power, without knowledge riparian states will be nervous about threats to sovereignty, especially when another riparian state is deemed to have that knowledge and is therefore powerful. In this situation any attempts at rational negotiations are seriously hindered.

Other challenges include the willingness to deal with emerging problems, developing political commitment and public support, as well as promoting efficient water use and use of incentives for cost efficiency.

6.9 The possible role of donors

Before initiating any projects to support the transboundary co-operation in a river basin a *thorough analysis of the situation in the basin* is recommended. It is of utmost importance to understand the *political context* in the basin: which are the driving forces to develop the transboundary co-operation in the basin? Also analyse the *legal situation*: are there any agreements? And the *institutional set-up*.

In case of political difficulties projects with a more technical focus might be most efficient to initiate. It might be fruitful to discuss harmonised monitoring, evaluation of data etc with a donor as one external part. Technical co-operation involving collection and dissemination of information promotes the acceptance of this information by all basin states and stimulates mutual understanding and trust.

External support is often best directed to complement the technical work that the management institution requires to develop policy and provide guidance on issues of common interest. It should be designed with a view toward phasing out donor support for institutions once their management, administrative and human resource capacities are adequately developed. The preparation of *Strategic Action Programs* has proven to be a useful tool for developing experience and expertise within new commissions and reaching a *shared vision* by the cooperating parties concerning priorities for management activities.

The process of developing transboundary water management is very complex, involving a wide range of actors and including an extensive variety of activities. The experiences from the Swedish EPA program on transboundary waters, include the importance of carefully *considering the role of the donor*. The riparian countries must have a long-

term commitment to develop their co-operation. The donor must not take over the responsibility but provide assistance for initiatives that promote the co-operation. It is often difficult to foresee the rate and direction of the development of the co-operation, so a certain flexibility from the donor is recommended.

Building capacity is generally of fundamental importance. Consider any possible capacity imbalances among the cooperating partners in the basin. Such imbalances can greatly constrain negotiations and cooperative action, therefore efforts to correct these imbalances need to be taken. If one of the actors has access to greater resources (funding, competence, access to information, etc) then co-operation may become one-sided, and the larger partner may be able to dictate the conditions for the co-operation

Before initiating any projects donors are recommended to ensure:

- Political commitment to ensure that project results will be sustainable in a longer perspective
- A clear mandate for project participants
- Access to data
- A constructive approach towards interagency co-operation among project partners

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The Transboundary Waters Programme of the Swedish Environmental Protection Agency 1997-2002

– Results and Conclusions

The following report describes the experiences from the *Programme on Transboundary Waters* of the Swedish Environmental Protection Agency, Swedish EPA, during 1997 to 2002. The experiences gained from the Swedish EPA programme are to a great extent applicable also in other basins. The report also includes general conclusions and recommendations to promote the co-operation in transboundary water basins, with a focus on institutional and legal issues. Primary target groups for the report are other donors as well as riparian countries.

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