Global Environment Facility

GEF

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December 13, 2001

Dear Council Member:

I am writing to notify you that we have today posted in the GEF's website at www.gefweb.org, a medium-sized project proposal from UNDP entitled ***Regional (Estonia, Russian Federation): Development and Implementation of the Lake Peipsi/Chudskoe Basin Management Plan.*** **The GEF will contribute $1,000,000 towards a total cost of $4,775,000.**

The project is aimed at improving the water quality of the Lake Peipsi/Chudskoe Basin, which forms the border between Estonia and the Russian Federation. The MSP grant to the NGO will allow it to work with the Estonian-Russian Transboundary Water Commission and a number of donors in: (i) producing a Basin Management Plan focusing on nutrient reduction, (ii) involving other NGOs and stakeholders in plan development, (iii) strengthening the institutional arrangements and legal framework for implementation of the plan in both countries of the basin, (iv) conducting a number of demonstration projects for water quality improvement, and (v) initiating implementation of the water quality improvement measures in collaboration with donors.

The project proposal is being posted for your information. We would welcome any comments you may wish to provide by **January 8, 2002**, in accordance with the procedures approved by the Council.

If you do not have access to the Web, you may request the local field office of the World Bank or UNDP to download the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please confirm for us your current mailing address.

Sincerely,

M. Hamed T. El-Ashry

cc: Alternates, Implementing Agencies, STAP

United Nations Development Programme

GLOBAL ENVIRONMENT FACILITY

Date: 10 August 2001

To: Mr. Kenneth King
Assistant CEO

Attention: Program Coordination

From: Nick Brown
Officer-in-Charge

Subject: **Submission of Medium Size Project Brief for Estonia and Russia: Development and Implementation of the Lake Peipsi/Chudskoe Basin Management Plan**

Enclosed is a project brief for Development and Implementation of the Lake Peipsi/Chudskoe Basin Management Plan submitted to UNDP by the Estonian Ministry of Environment. Please note that the project has been endorsed by the GEF national operational focal points in Estonia and Russia.

In accordance with the operational guidance for the preparation and approval of medium-sized projects, we are submitting this to the GEF Secretariat for action by the Chief Executive Office (CEO). We understand that the Secretariat will recommend to the CEO that the project be submitted to the Council for approval, that it be returned for revision or that it not be developed further.

We are simultaneously circulating copies to UNEP/GEF, World Bank/GEF, STAP and the Biodiversity Convention Secretariat for comments to the GEF Secretariat. We expect to receive these comments within 15 working days. Therefore, we look forward to receiving the CEO's decision on or before 17 September 2001, but understand that the project will not be formally approved, even if the CEO has endorsed it, until the Council has reviewed it within the following 15-day period, namely by 1 October 2001.

Thank you and best regards.

Cc: Ahmed Djoghlaf, UNEP
Lars Vidaeus, World Bank
Madhav Gadgil, STAP
Rohit Khanna, UNEP/GEF
Mark Griffith, UNEP/STAP
Hamdallah Zedan, CBD

MEDIUM-SIZED PROJECT BRIEF
LAKE PEIPSI/CHUDSKOE CASE

1. Project name: Development and Implementation of the Lake Peipsi/Chudskoe Basin Management Program	2. Proposed GEF Implementing Agency: UNDP
3. Country or countries in which the project is being implemented: Estonia and Russia. Estonia will be a lead country for the project and responsible for the project coordination	4. Country eligibility: Estonia and Russia ratified the UN FCC CBD and are eligible to borrow funds from the World Bank as well as to receive technical assistance from UNDP through their countries' programs.
5. GEF focal area(s): International Waters	6. Operational program/Short-term measure: OP 9 Integrated Land and Water Multiple Focal Area Operational Program

7. Project linkage to national priorities, action plans, and programs:

The Estonian and Russian governments have signed a bilateral intergovernmental agreement on the use and protection of their transboundary waters in 1997. According to the agreement, the Estonian-Russian Transboundary Water Commission (further the Joint Commission) was established. The proposed project is a part of priority actions under the Joint Commission plan.

Protection of surface and groundwaters are in the top of priorities according to the National Environmental Action Plans (NEAP) both in Russia and Estonia. The Convention on the Protection of the Marine Environment of the Baltic Sea Area and the Convention on Protection and Use of Transboundary Waterbodies and International Lakes are signed and ratified. Estonia signed and ratified the Convention on Access to Information and Public Participation in Decision-making and Access to Justice in the Environmental Matters ("Arhus Convention").

Lake Peipsi Basin is accepted as a demonstration area – an area where principles of sustainable development are implemented in practice - under the Baltic Sea Agenda 21 Program.

This project will build on the results achieved by earlier activities implemented in the Lake Peipsi Basin international projects during 1995 – 1999:

- The Swedish – Estonian – Russian environmental monitoring project (1995 – 1999) supported by the Swedish Environmental Protection Agency and aimed at strengthening capacity of state and regional authorities for quality – assured environmental monitoring and information exchange;
- The Finnish – Estonian – Russian Narva River environmental project (1997 – 1999) supported by the Finnish Environment Institute and the Finnish Ministry of the Environment and aimed at the assessment of water quality in the mouth of Narva River;
- The Swedish – Estonian – Russian Lake Peipsi and Narva River Basin Management Research Program that started in 1997; with the support from the EU ELOISE program and the Stockholm University and was continued in 1998 – 1999; with the support from the Swedish Institute and management of the Center for Transboundary Cooperation – CTC and the Swedish Water Research and Management Program (VASTRA). The project will continue in year 2001;
- The Estonian – Russian – Latvian environmental educational project "World of Water Through the Eyes of Children";
- The Estonian – Russian Community Development and Cross-Border Cooperation Project implemented by the Center for Transboundary Cooperation – CTC in cooperation with the local authorities in the region, Funen County of Denmark and Danish Border Research Institute with the support from the John D. and Catherine T. MacArthur foundation, United Nations Development Program and the Danish Ministry of Foreign Affairs.

8. GEF national operational focal point review (dates):

Submitted: 29.10.98 Endorsed 05.05.2000 Estonia, 10.10.2000 Russia

Project Objectives and Activities	
9. Project rationale and objectives	**Indicators**
1. Development of a **Lake Peipsi/Chudskoe Basin Management Program** (further Management Program) as a strategy document that would contain: - Results of joint assessments of principle environmental and socio-economic problems in the lake basin; - Common environmental status objectives for the lake basin; - A joint plan for resource protection and regional development.	Agreed Management Program with demonstrated high-level commitment by both governments and other involved stakeholders to implement the plan. Agreement between countries and key stakeholders on environmental status goals for the lake and its basin.
2. Development of a **Nutrient Load Reduction and Prevention Action Plan** (further Action Plan) as a detailed plan for environmental protection measures, including environmental infrastructure investments within the framework of the Management Program.	Improved understanding of the principal environmental threats to and impacts on the lake, and their socio-economic linkages.
3. Development of a robust **institutional and legal framework** for sustainable use of natural resources in the Lake Peipsi basin. The framework should merge needs for protection of the international waters and global environment, as well as requirements of the European Union Water Framework Directive, the Russian Water Code and the Russian Act on Environmental Protection for the lake management. This will ensure that the project would build on a strong commitment on cooperative work of the two governments to prepare and implement the Management Program. Elaboration of enforceable legal framework will establish "rules of game" and will provide financial and non-financial incentives for all "actors" in the region that are involved in regional development and environmental protection.	Agreed and implementable legal and regulatory framework for protection and sustainable development of the lake. A strong basin-wide network of multi-stakeholder institutions mutually committed to cooperation and coordination of lake management activities.
4. The project should develop an **institutional "ecosystem"** of organizations called for example **"Lake Peipsi region multi-stakeholder community"** , that should incorporate agencies and stakeholder groups in the region on different levels of governance across the border with aim to: - **Raise capacity** of the national and sub-national governments, NGOs and stakeholder groups (farmers, fishermen, small and medium businesses, especially those in service and tourism industry); - **Develop a communication and information exchange system** among different levels of governance and economy sectors across the border; promoting involvement of stakeholder groups in the water basin into making decisions on the issues of the sustainable development and environmental protection in the Lake Peipsi basin.	Mechanisms to ensure stakeholder involvement in lake decision-making processes. Strengthened capacity of key institutions involved in lake utilization and management (government, NGO, private sector). Development and implementation of selected pilot projects to demonstrate and disseminate best environmental practices in lake management.
5. Promotion the effective implementation of the Management Program through encouraging use of the best environmental practices in local level through (1) implementation **water-related infrastructure demonstration project** that should bring application of specific know-how and best available practices; and (2) **developing public awareness and environmental education project** on the eutrophication related issues and other transboundary problems of the lake in local communities.	Basin-wide increases in public awareness of lake environmental issues, threats and protection strategies.

10. Expected outcomes	Indicators
1. The Management Program as a strategic document and the Action Plan containing a roadmap for implementation of specific measures on local and regional development and environmental protection in the lake basin.	The Management Program as an official legal document in Estonia and Russia for implementation of development and environmental protection measures in the Lake Peipsi Basin. The Joint Commission as a basis for the strategic planning and coordination of different economic, environmental and social projects and activities that take place in the region use the Management Program developed.
2. Reliable and adequate environmental database that enables to make decisions on measures aimed to decrease nutrient load and eutrophication in the Lake Peipsi basin for the Joint Commission.	The Joint Commission acts as a facilitator for implementation of the Transboundary Water Agreement and in developing strategies for the long-term sustainable development in the region. Agreed nutrient load reduction strategy and targets aimed towards ecosystem restoration and incorporating adaptive management approach for changing conditions identified through monitoring program.
3. A coordinated system of water quality monitoring for the evaluation of environmental state in the lake basin with a focus on the situation of nutrient load and eutrophication.	The Joint Commission receives a reliable and adequate environmental data that serve as a basis for the development of the Management Program. This includes data on nutrient load and eutrophication in the lake basin, status of the lake ecosystem, estimates of the riverine loads to the lake, estimate of the pollution sources, retention and buffering capacity in the drainage basin and the lake, and empirical data on the lake water quality. Harmonized monitoring program and information management system for the lake basin developed.
4. Sufficient capacity of the national and sub-national governments, NGOs and stakeholder groups to participate in preparation and implementation of the Management Program through development a "Lake Peipsi region multi-stakeholder community" – regional communication and information exchange system (i.e. regular community meetings, regional website and e-mail net, regular publications for different stakeholder groups).	Governments, NGOs and other stakeholders fully engaged in preparation and implementation of the Management Program. Web site operational and widely utilized in lake basin; regular publications on lake issues broadly disseminated frequent meetings of community and other stakeholder groups on lake management issues.
5. Sufficient level of institutional capacity of the Joint Commission and other agencies in region involved in water management and a legal framework for sustainable use of natural resources in the Lake Peipsi basin.	Increased networking, cooperation and communication of the Joint Commission with other relevant commissions and international organizations.
6. The "Lake Peipsi Council" – the network of local authorities and stakeholder groups as institutional mechanism of involvement of these actors in management of resources in the transboundary water basin.	"Lake Peipsi Council" functioning as a mechanism for stakeholder involvement in lake management and decision-making processes.
7. Two small environmental infrastructure and regional sustainable development demonstration (pilot) projects that are addressed to eutrophication problem in the lake and its basin will be implemented.	Two demonstration projects successfully implemented and monitored which produce measurable reductions in lake nutrient loads; lessons from these pilots broadly disseminated.

11. Planned activities to achieve outcomes	Indicators
Activity 1. Identification of key stakeholder groups, their interests and needs. The project kick-off meetings. In the frame of this activity the project kick off conference is organized; the project Advisory Committee and Steering Committee are approved; the project management, monitoring, assessment and reporting system are established and approved; information dissemination activities are set up; and first meetings with local authorities and stakeholders are carried out.	An Advisory Committee and a Steering Committee are established and functioning as a "quality control" of the project. The project management system and implementation units are completed and work with the Management Program and the Action Plan is started. Needs assessment and literature review of ecological and sociological studies are completed. Key stakeholder groups and their interests and needs are identified and they are engaged in the preparation of Management Program and Action Plan Public information system through mass media and project newsletter is worked out and tested.
Activity 2. Assessments of environmental state in the Lake Peipsi basin with respect to draft the Management Program and the Action Plan. Water monitoring system coordination. Collection of background data, development of methodology and a concept for the Management Program and the Action Plan will be conducted. Assessment of nutrient fluxes to the lake, quantification of nutrient loads and sources in the drainage basin, evaluation of environmental situation in the basin, the human impact and resource use patterns in the lake basin. The expert group will develop and design a coordinated and harmonized water-monitoring program between Estonia and Russia. Joint water sampling expeditions and inter-calibration of methods for water quality analysis will be conducted. Database of the point source pollution will be developed. Based on the study, the assessment will produce reliable environmental data and scenarios of nutrient load and eutrophication in the Lake Peipsi basin.	Assessment reports on monitoring results and nutrient fluxes in the lake. A reliable and adequate environmental GIS database as a basis for the development of the Management Program and the Action Plan. Effective water monitoring system approved by the Joint Commission.
Activity 3. Development of the Management Program and the Action Plan There are two broad foci of the Management Program: those aspects under the responsibility of Estonians and those under the responsibility of the Russians. Estonian based organization are responsible for (1) an inventory and overview of the aspects of anthropological activities, particularly pollution sources, and their impacts on the condition of waters (aquatic and groundwater); (2) an analysis of water use in the Lake Peipsi watershed; (3) an inventory of the various classes of water bodies, including surface and groundwater, and the degree of compliance of these water bodies to the requirements of the Management	The Management Program adopted by the Commission as a long-term strategy for sustainable development in the lake basin. The Management Program as the official document is produced and published in Estonian, Russian with summary in English and distributed to relevant organizations and stakeholder groups. The Action Plan as detail document to reduce nutrient load and eutrophication in the lake basin for short term (2, 5 years) and long-term (10 – 20 years) perspectives.

Program; (4) the Action Plan for achieving and then maintaining good or natural status for water bodies; (5) indicators showing progress towards achieving objectives; (6) an inventory of areas where the use of water resources must be controlled restricted or even prevented. Outputs of the Management Program will include: 1) GIS and databases including pollution hot spots and the results of inventories conducted; 2) A status report on the condition of the water bodies based on the inventories conducted and stating significant anthropological aspects and their impacts; 3) An action plan of measures to redress negative aspects as revealed in point 2 and including a budget and economic assessments (financial, economic and cost-benefit analyses); 4) A report on activities completed including objectives met, milestones, problems encountered and foreseen, budgetary elements, etc., to be disseminated to stakeholders; 5) A plan for involvement of the public in developments and how the institutional capacity of the region is being strengthened regarding water resource management issues. Also regarding the generation, publication and dissemination of material for the public. Russian-based organization will be the same as for those outlined above under Estonian responsibilities. However, as the above is based largely on the EU Water Framework Directive and the Russians have their own legislative requirements there is scope for slight variations in approach. Once the outputs from the activities are complete and documented from the two sides they must be compiled into one format for effective analysis, understanding and dissemination to stakeholders. This will include the joining of databases, the compilation and writing of a technical report, and the checking that the various measure were/are comparable and fulfilled objectives stated.	
Activity 4. Strengthening institutional capacity of the Joint Commission as well as local authorities, NGOs and stakeholders. Establishment of the "Lake Peipsi/Chudskoe Council (further Council)". Development of the Joint Commission website; strengthening of the operational and technical capacity of the regional and local environmental agencies, municipalities, NGOs and stakeholder groups through development the Council – the network of local authorities and stakeholder groups in region. Study tours to other international lake regions will be organized with aim to exchange information.	Sufficient capacity of decision-makers, key institutions and stakeholder groups involved in the lake use and management. The Council – a network of sufficiently informed local authorities and stakeholders with aim to participate actively in lake management and decision-making processes. Strong network of NGOs around the lake working to decrease and prevent nutrient load.
Activity 5. Development of the program "Lake Peipsi region multi-stakeholder community" – public information and community	Project website with aim to distribute adequate information about water quality and training materials is established.

involvement. During the development of Management Program and Action Plan consultation with public will be organized. Capacity building activities addressed on water eutrophication and biodiversity problems through trainings and consultations will be organized for NGOs working in the region in the lake basin. Brochures about the project, Lake Peipsi fact sheets, video and CD-ROM will be developed to distribute results of the project and to promote awareness in the region.	Increased public awareness on eutrophication related issues in the region. Published training materials, brochures, and educational materials on CDs and video focused on the causes, impacts and solutions to Lake Peipsi eutrophication.
Activity 6. Implementation of demonstration projects In the frame of environmental infrastructure demonstration project the water quality and canalization investigation pilot project is carried out. The aim of pilot projects is to demonstrate innovative nutrient management technology on local municipal level. In the frame of local sustainable development project promotion of public awareness tourist route according to the principles of ecological tourism is completed in the region.	Digital development plan of water supply and sewerage based on using of best available technology with reasonable price. Tourist routes with different complexity supported with explanatory signs, maps and tourist bulletins as well as with possibility to get guided tours.
12. Estimated budget GEF: 1 000 000 USD Cofinancing: 941 760 USD TOTAL 10 741 760 USD	**Cofunding includes** 40 000 Russia transboundary water convention implementation budget (estimated) 140 000 Estonia transboundary water convention implementation budget (estimated) 5 700 000 Estonian environmental infrastructure projects in Lake Peipsi Basin in 2001 – 2003 (estimated) 1 820 000 EU TACIS Baltic Line 2000 1 911 760 MANTRA East 100 000 Danish MFA Participatory Water Management 30 000 Swedish EPA Peipsi Commission Support

Information on Institution Submitting Project Brief

13. Information on project applicant

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14. Information on proposed executing agency

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15. Date of initial submission of project concept

29 October 1998

Information by Implementing Agency

16. Project Identification number

2296 RER/01/Gxx

17. Implementing Agency Contact Person

Nick Remple, GEF-RBEC Regional Coordinator, nick.remple@undp.org

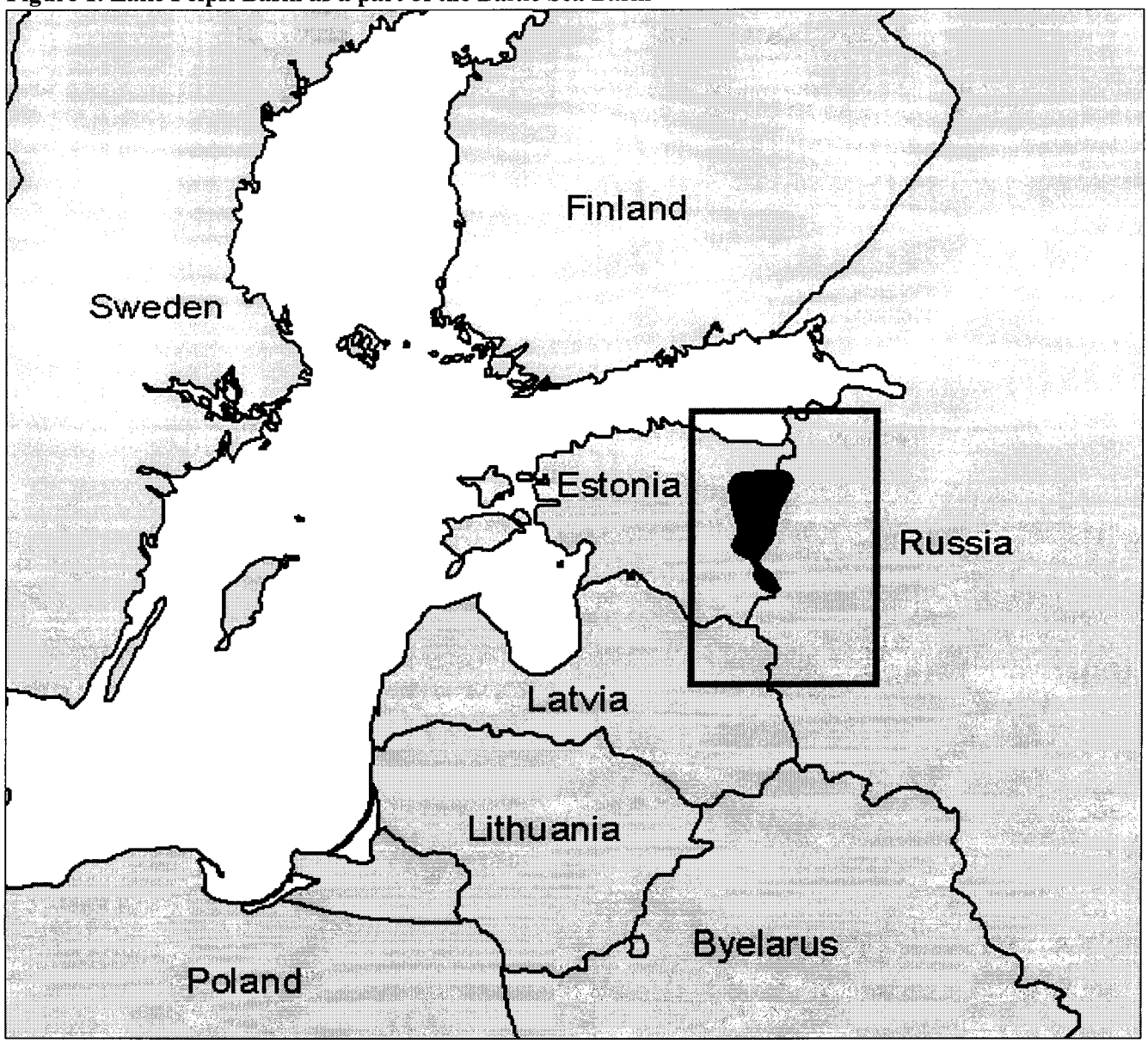
18. Project Linkage to Implementing Agency programs

This project complements UNDP's large portfolio of transboundary waters projects in the CEE region (Black Sea, Danube River, Caspian, Dneper River, and 2 Danube MSPs) and presents substantial opportunities for knowledge sharing among projects addressing often similar transboundary waters issues. In this regard, the project will be encouraged to participate in the UNDP-GEF IW:LEARN project, which fosters virtual exchange of best practices in IW management across the GEF IW portfolio. The project also supports UNDP's Country and Regional Cooperation Frameworks for reform and strengthening of environmental institutions in the CEE region.

20. Project Description
20.1. Background

Eutrophication due to significant nutrient loads in Lake (L.) Peipsi (figure 1) represents a major threat for the water quality of the lake directly connected to the Baltic Sea by the Narva River. L. Peipsi (Russ. *Chudskoe or Chudsko-Pskovskoe ozero*) is the fourth largest lake in Europe after Ladoga, Onega and Vänern, and is the largest transboundary lake in Europe. This water body is divided into three parts with distinctive limnological features: L. Peipsi *s.s.* (2613 km^2, average depth 8,3 m), L. Pihkva/Pskovskoe (709 km^2, 3,8 m) and L. Lämmi/Teploe (236 km^2, 2,5 m). The northern part of the lake can be classified as eutrophic, whilst the southern part, L. Pihkva/Pskovskoe is hypertrophic. The narrow strait-like Lämmijärv, connecting L. Peipsi *s.s.* and L. Pihkva is at present in an intermediate stage between the two other parts of the whole lake. During the last half of this century, ecological conditions of L. Peipsi have been constantly worsening. In the 1960's the lake was classified as mesotrophic. The eutrophication in 1970-80's has caused the higher vegetation (mainly reeds) to spread and grow thicker. For example, up to end of the 1960s, macrophytes occupied only 2.5% of the total area of L. Peipsi, while in the late 1980s, macrovegetation occupied 7.5 and 7.9% of the surface area of L. Lämmijärv and L. Pihkva, respectively. During the 1990s, the phytoplankton in L. Pihkva/Pskovskoe has increased (Kangur, *pers.comm.*). The reason for this phenomenon is not known, but it is undoubtedly that eutrophication remains to be the major environmental problem of the L. Peipsi.

Figure 1. Lake Peipsi Basin as a part of the Baltic Sea Basin



The pollution load dynamics has changed since the break up of the former Soviet Union. The economical recession followed the collapse of Soviet Union as well as increased wastewater treatment capacities of big settlements will most likely contribute to improved ecological conditions in the lake. Whether these improvements are reflected in better water quality is less clear. Nevertheless, the nutrient concentration in the lake does not change significantly during the period 1995-1998, and the L. Peipsi is still regarded as a eutrophic lake.

Riverine transport is the most important pathway for input of nutrients to the L. Peipsi. According to model calculations the lake received 16,000 – 20,500 tones of nitrogen (N) and 800-910 tones of phosphorus (P) annually during the time period 1995-1998 (L.Olsson, 1998; P.Stålnacke, 2000); average pH is 8.14 and Secchi disk transparency 1,63 m. Diatoms and blue-green algae prevail in phytoplankton biomass. The blue-greens *Gloeotrichia echinulata* and *Aphanizomenon flos-aquae* dominate in summer causing the water blooms. The concentration of chlorine is the lowest in the northern part of L. Peipsi*s.s.* (mean 14.7 mg /m^3) and the highest in the southern part of L. Pihkva (mean 47.9 mg/m^3, median 16.3 mg/m^3). The long-term average primary production is 0.8 g C m^{-2} d^{-1}. Zooplankton is remarkably rich in species, the average biomass in the vegetative period being 2-3 g/m^3 and production 22 gC/m^2. The role of rotifers in production is 53% followed by that of *cladocerans* (30%), *copepods* (16%) and *Dreissena polymorpha* larvae (1%). The value of the biomass of phytoplankton ratio to the biomass of zooplankton which is the indicator of eutrophication (in oligotrophic lakes >4:1, in mesotrophic lakes 1:1, and in eutrophic lakes < 1:2) is in L. Peipsi *s.s* 1:1 as average. In L. Pihkva/Pskovskoe this ratio is as 1 : 9, which indicates higher level of eutrophication. Another indicator of the eutrophication is the concentration of dissolved oxygen in water. During last 5 years a very low concentration, as 1-2 mgO/l of the dissolved oxygen has been measured at the end of winter (March, April) near the bottom of the lake. The concentrations of dissolved oxygen are low in the water during intensive water blooms as well.

The main commercial fishes of L. Peipsi are lake smelt, perch, ruff, roach, bream, pike, vendace and pikeperch. The stock of vendace has sharply decreased in the last years, while the amount of pikeperch has increased. Considering annual fish catches (9,000- 12,000 tons or 25-40 kg/ha), L. Peipsi exceeds all large lakes in North Europe (Nõges,T. *et.al.*, 1996.)

This water eutrophication, which is expected to increase in correlation with the economic recovery of the region, is heavily dependent on agriculture. Only 7% of the nitrogen load from Estonian rivers originates from wastewater (point pollution sources), half of the load comes from agriculture and 22% originates from forests and other diffuse sources. Of the phosphorus load, 36% comes from point pollution sources and 38% from agriculture via the rivers from catchment area. According to Vollenwieder diagram the phosphorus load to the L. Peipsi (256 kg/km^2, or 36.4 mg/m^3) is close to the critical and therefore the reduction of the phosphorus load is the most important task. In Russia, the source apportionment for the Velikaya River basin showed that more than 70% of the nitrogen (N) load and 65% of the phosphorus (P) load originates from agriculture. Point sources accounts only for 6% and 15% for N and P load, respectively. Thus, potential increase of the agricultural production in future without improvement in agricultural practices can considerably affect potential of the lake for supporting important Baltic Sea area habitats for wildlife, especially birds.

The solution of the problems is hampered by the lack of cross-border coordination and cooperation, further exacerbated following the collapse of the former Soviet Union and the reintroduction of the border regime between Estonia and the Russian Federation. Besides, financial constraints, problems of communication and language as well as differences in monitoring methodologies represent major obstacles to an efficient transboundary environmental management of the lake. There are currently multiples environmental and economic development project ideas are developing by the local and regional authorities, however, these efforts are not coordinated between each other. Finally, differences in environmental planning and management capacities are being felt between Russia and Estonia, the latter being more advanced in terms of harmonization with European legislation and policy due to the prospect of its future accession to the EU. Such discrepancies also contribute to impeding the definition and implementation of joint policy actions in the Estonian-Russian cross-border region.

The project will complement and sustain the results achieved with the following main projects completed by the CTC: *the Local Sustainable Development Project* (supported by the UNDP), *the Community Development and Cross Border Cooperation Project* (supported by the Danish Ministry of Foreign Affairs), *the Lake Peipsi Environmental Monitoring Project* (supported by the Swedish Environmental Protection Agency), *"Integrated Strategies for the Management of Transboundary Waters on the European fringe – the pilot study of Lake Peipsi and its drainage basin"* (MANTRA – East Project) (supported by the European Union), and *the Narva Watershed Research Network Program* (supported by the Swedish Institute). These initiatives have contributed to re-establishing working relations and reliable communication channels between local and European authorities, experts, educational institutions and NGOs, while supporting research works, the identification of priority actions and the design project proposals for further international funding.

20.2. Current Situation

With a total surface area of 3,550 km^2 shared by Estonia (44%) and the Russian Federation (56%), L. Peipsi is the largest international lake in Europe. Its watershed lies in the Leningrad and Pskov Oblasts of the Russian Federation (59%) as well as in Estonia (34%) and Latvia (7%). The Lake is connected to the Gulf of Finland and the Baltic Sea by the Narva River (77 km) that is, after the Neva River, the second largest river flowing into the Gulf (figure 2).

The Lake Peipsi and Narva River Basin (56,225 km^2) is renowned for its rich ecosystem and its wetlands of international significance. The Russian coast of the Lake, including the Remdovsky Nature Reserve, was declared a RAMSAR site in September 1994. In addition to some thirty-three endemic fish species observed in the lake and the lower reaches of its tributaries, the area forms an important habitat for birds migrating across Europe and supports a remarkable diversity of flora and fauna.

Although the economic recession that has followed the break up of the former Soviet Union has resulted in a decrease in agricultural and industrial pollution loads the concentration of nutrients, mainly nitrogen and phosphates, in the lake remains worrying. Besides of the reduction of the nutrient loads and internal biological processes in L. Peipsi there are some more anthropogenic impacts to the ecological and environment conditions in the catchment area of L. Peipsi.

Industry (including the energy production)

The main branches of industry in this region are energy production, building and civil engineering, chemical industry, textile manufacture, foodstuff production and timber processing. The environmental impact of the energy production, which has in NorthEast of Estonia and in Leningrad Oblast the tight connection with mining of oil-shale, is without doubt the greatest of the industrial impacts in this region. The residual water from the ash removal systems of oil-shale-fired power plants (Narva Power Plants, former known as Estonian and Baltic Power Plants) has very high alkalinity (pH 12 and over), with a large concentration of heavy metals. Despite of the closed water circulation in the ash removal systems there have been leakage from the sedimentation basins in the heavy rain periods and in the snow melting periods.

The energy industry's second largest impact on environment quality and on biological diversity is caused by sulfur and ash emission, originated from power plants. Estonia makes a significant contribution to acid rains in the Baltic Sea Region. The alkaline ash has strongly damaged the natural succession of the bog communities in this region.

The cooling water of the power stations has temperature, as 17-18° C in the outlet river even in winter-period, and it causes thermal pollution in Narva Water Reservoir.

Chemical industry produces many liquid hazardous substances, which in outlets can cause harmful damages in water bodies and its ecosystems. There are not enough investigations, but the first results of them indicate the higher concentrations of PCB's, phenols and phenol compounds, hydrocarbons and heavy metals.

Recent improvements in municipal sewage treatment have not been sufficient to reverse the situation and eutrophication is still recognized as a major threat for the water quality of the lake.

Mining of oil-shale

Oli-shale mining has considerable impact on the landscape and to the groundwater flow. In the Eesti Deposit, oil-shale lays in the depth up to 100 meters. The open cast mining method is used if the depth of the oil-shale bed is up to 40 meters and the underground mining is used for deeper oil-shale beds. Any kind of mining significantly changes the relief of the land surface and groundwater regimes, the water chemistry and hence the whole living environment. These complicated environment protection problem need the careful analyze and complicated technologies. Very big amounts of water (about 190-210 million cubic meters) are annually pumped out of the mines and quarries caused problems for both ground and surface waters.

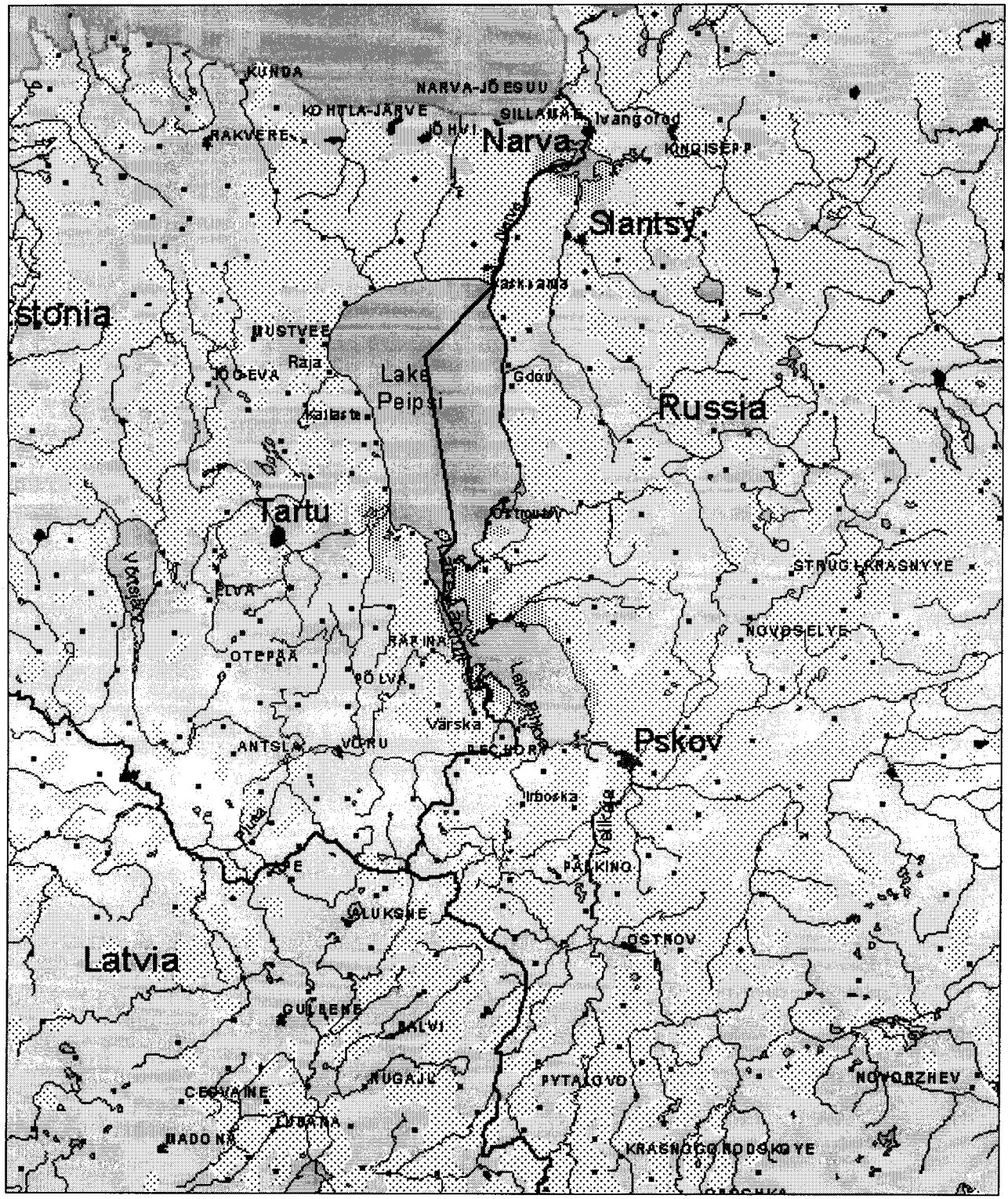
Cross-border cooperation towards the protection of the Lake Peipsi and Narva River Basin has befallen a strong political support from both Estonian and Russian authorities. In August 1997, an Intergovernmental Agreement on the Protection and Sustainable Use of Transboundary Waters was signed. A Joint Commission on Transboundary Waters (further Commission) was established to define joint policy actions and coordinate their implementation. The objects of this agreement are transboundary waters of the Narva River water basin, including L. Peipsi. The Joint Commission coordinates activities on implementation of the agreement. The Joint Commission organizes:

- Exchange of monitoring data between the parties in accordance with the agreed monitoring program;
- Defines priority directions and programs of scientific studies on protection and sustainable use of transboundary waters;
- Agrees on common indicators of quality for transboundary waters and methods of water testing and conducting analyses;
- Facilitates cooperation between agencies of executive power, local governments, scientific and public interest organizations, as well as other institutions in the field of and protection of transboundary waters;
- Ensures publicity of discussions of questions related to the use and protection of the transboundary waters.

In the case of extraordinary situation on transboundary waters, the parties will inform one another immediately through the competent agencies and the Joint Commission.

At its second meeting in November 1999, the Joint Commission recognized as a top of priorities the preparation of the Lake Peipsi Basin Management Program in accordance with the proposed draft EU Water Framework Directive. This priority was confirmed at the UN ECE Workshop on Management and Sustainable Development in International Lake Basins, organized by the Estonian Ministry of Environment and the Center for Transboundary Cooperation with the support of Finnish Ministry of Environment and Swedish Environmental Protection Agency, December 1999, Tartu, Estonia.

Figure 2. Lake Peipsi Basin



21. Expected Project Outcome

1. The Management Program as a strategy document and the Action Plan contain a roadmap for implementation of specific measures on local and regional development and environmental protection in the lake basin.

2. Reliable and adequate environmental database that enables to make decisions on measures aimed to decrease nutrient load and eutrophication in the Lake Peipsi basin for the Joint Commission.

3. A coordinated system of water quality monitoring for the evaluation of environmental state in the lake basin with a focus on the situation of nutrient load and eutrophication.

4. Sufficient capacity of the national and sub-national governments, NGOs and stakeholder groups to participate in preparation and implementation of the Management Program through development a "Lake Peipsi region multi-stakeholder community" – regional communication and information exchange system (i.e. regular community meetings, regional website and e-mail net, regular publications for different stakeholder groups).

5. Sufficient level of institutional capacity of the Joint Commission and other agencies in region involved in water management and a legal framework for sustainable use of natural resources in the Lake Peipsi basin.

6. The "Lake Peipsi Council" – the network of local authorities and stakeholder groups as institutional mechanism of involvement of these actors in management of resources in the transboundary water basin.

7. Two small environmental infrastructure and regional sustainable development demonstration (pilot) projects that are addressed to eutrophication problem in the lake and its basin will be implemented.

22. Table 1. Activities and Financial Inputs Needed to Enable Changes

Components	Months	Total Cost	GEF Input
Activity 1. Identification of key stakeholder groups, their interests and needs. The project kick-off meetings.	1 – 6	155000	85 000
Activity 2. Assessments of environmental state in the Lake Peipsi basin with respect to draft the Management Program and the Action Plan. Coordination of the water monitoring system	5 – 25	591000	152 000
Activity 3. Development of the Management Program and the Action Plan	7 - 32	606 600	371 600
Activity 4. Strengthening institutional capacity of the Joint Commission as well as local authorities, NGOs and stakeholders. Establishment of the Council.	7 – 36	416 000	170 000
Activity 5. Development of the program "Lake Peipsi region multi-stakeholder community" – public information and community involvement.	4 – 36	155 700	148 200
Activity 6. **Implementation of demonstration projects**	5 – 24	73 200	73 200

23. Coordination of the Project Activities with others in the Lake Peipsi Basin

The project implementation will be coordinated with the a number of international projects where the largest, the EU TACIS Baltic Line 2000 program, will support the project implementation on the Russian side with the amount of 1 820 000 EURO. "Integrated Strategies for the Management of Transboundary Waters on the Eastern Fringe – the Pilot Study of Lake Peipsi and its Drainage Basin (MANTRA-East)" supports the project with results of scientific researches and investigations of the quality of lake water. This project has approved budget from the EU of 1 911 760 EURO.

24. Project Management

The project will be executed through two project implementation units to be established at Estonian and Russian offices of the **Peipsi Center for Transboundary Cooperation (CTC)**. The CTC has its administrative offices in Tartu (Estonia) and Pskov (Russia) with local coordinators working in 5 small local communities in the region. The offices are well equipped with computer equipment, Internet and library, with multilingual and multicultural staff, including foreign students working summers as interns. There are 22 people on the CTC administrative staff and about 20 people at universities working on short-term contracts. A Tartu Volunteer and NGO Resource Center works at the CTC office. The CTC has very close connections with the local communities in the region. The CTC runs training programs for local communities in business, environment, computer, e-mail use; organizes environmental actions and children art contests (see more at www.lake-peipus.net), etc.

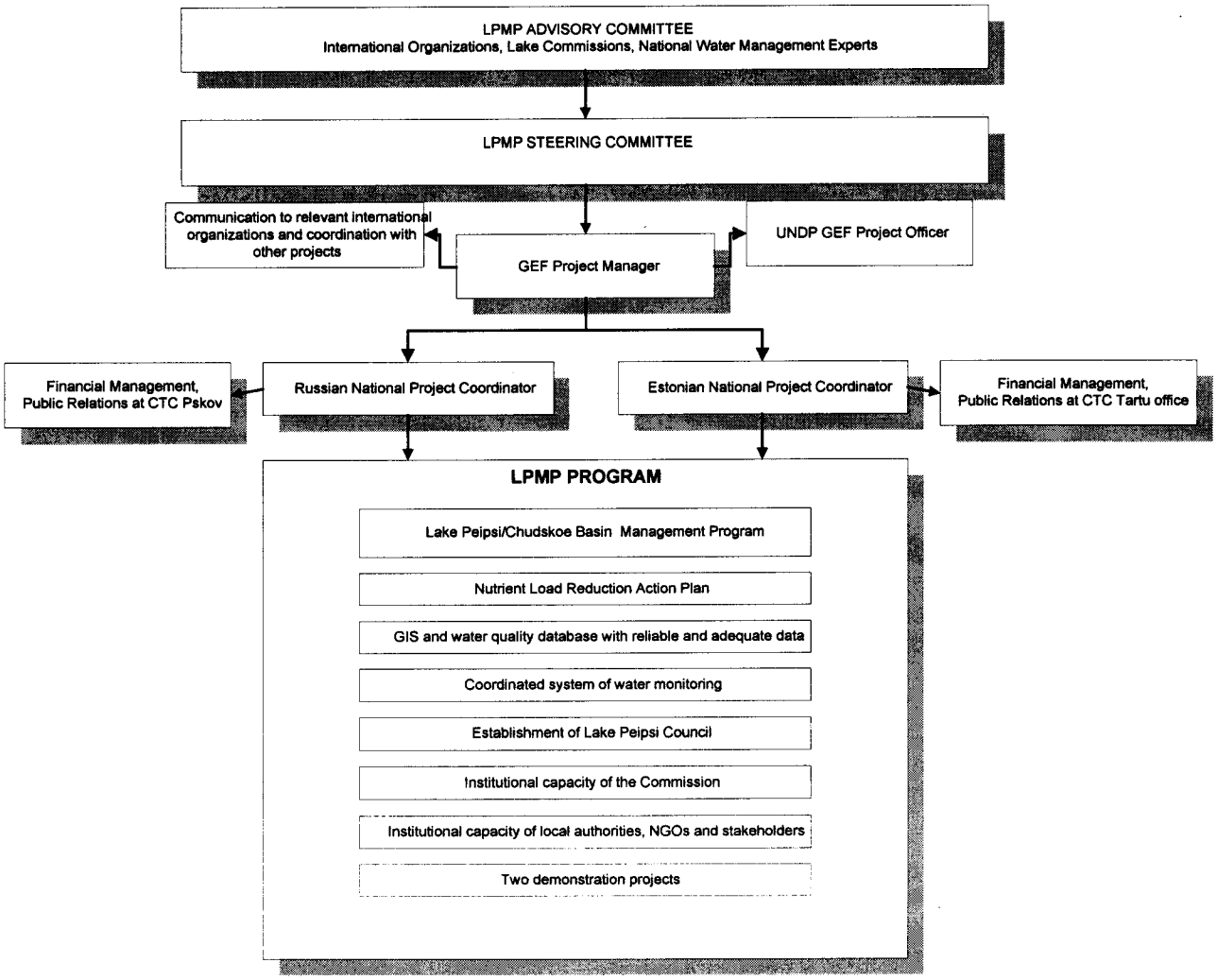
The CTC project managers conduct regular consultations on their projects with both Estonian and Russian governments representatives - not only the Ministry of Environment but also the Ministry of Foreign Affairs, the Ministry of Social Affairs and the Ministry of Education.

The CTC develop its projects and implement them in cooperation with the Tartu University, the Estonian Agricultural University and the Tallinn Technical University in Estonia, the Pskov University and St. Petersburg based universities in Russia, the Lingköping University (Sweden) and with many environmental consultation and design companies in Estonia, Russia and all over the Europe.

The CTC has worked with grants of the UNDP since 1995. The CTC provides financial and administrative management for international projects in the region for Danish, Swedish, Norwegian, UN Economic Commission for Europe and the European Commission.

The current project management structure is described on the figure 3.

Figure 3. GEF Project Management Structure



The Project Manager is responsible for the project management and coordination of the project activities with the TACIS and other international projects in the region. Dr. Roll has considerable experience in coordinating multilateral transboundary environmental projects in the Estonian – Russian border region (Lake Peipsi Basin), which were implemented with the support of the EU PHARE Program and EU member states such as Denmark, Sweden and Finland. **Two national project coordinators** work in a close connection with the state and local authorities, consultation and design companies, as well as other key actors in the respective countries. For each of the project components, there are Estonian and Russian project implementation units.

The Steering Committee (see Annex 1) of project consists of the representatives of the Ministry of Environment, the Ministry of Foreign Affairs and the local representatives of environmental specialists. Both the project manager Dr. Gulnara Roll and the project manager of the EU TACIS project (name is not known as results of tender of the project are not known yet.) are included to the Steering Committee. The Steering Committee supports project managers in planning, preparation, and implementation of the project. They will monitor and evaluate the project's course, particularly as regards its management and methodological aspects. They meet once per year or as often as necessary.

The Advisory Committee of the project is as quality assurance for the project in its methodological level, management and implementation levels. The Advisory Committee (Table 2) consists members of international organizations involved in transboundary water management (UN/ECE, the World Bank, and HELCOM), representatives of international river basin authorities and national experts - all together 16 members. The Advisory Committee represents the interests of end-users of the project. Members of the Advisory Committee will provide their feedback to the project team on the overall direction of the project implementation and advises the project participants on translating the scientific results of the project into practical actions on management.

The Advisory Committee members receive regular updates on the implementation of project and will be invited to participate in the project meetings during the project period. A mid-term conference of the Advisory Committee will be held, in which the members analyze the results obtained and advise on the future direction of the project. Active involvement of the members of different transboundary water commissions in the Advisory Committee ensures the project with information about skills of successful management stories in other transboundary lake and river basins in Europe. The final meeting will held, in which the project participants discuss with the Advisory Committee members the project results and their implementation in the transboundary water management practices as well as in the project follow-up activities.

Table 2. Advisory Committee of the Project

1. INTERNATIONAL ORGANIZATIONS
UN Economic Commission for Europe
Mr Rainer Enderlein, Environment and Human Settlements Division; Secretariat of the Convention on Transboundary Watercourses and International Lakes
UNDP GEF
Mr Andrew Hudson, Program Coordinator, Global Environmental Facility
The World Bank
Dr Stephen F. Lintner, Adviser of Freshwater, Coastal and Marine Resources
Helsinki Commission – HELCOM
Baltic Sea Basin GEF project manager
European Commission
Dr Helmut Blöch, Head of the Water Section
International Financial Cooperation
Mr Jerome Esmay, Principal Engineer of water and waste Management Section
2. TRANSBOUNDARY WATER COMMISSIONS
Lake Constance Commission
Mr Gerd Schroeder, Commissioner, GERMANY; Dr Juerg Bloesch, President, Swiss Federal Institute for Environmental Science And Technology, Commission expert, SWITZERLAND
Lake Peipsi Commission
Mr Sulev Vare, Chancellor of Ministry of Environment, ESTONIA;
Mr Nikolai Mihheev, First Deputy Ministry of Ministry of Natural Resources, RUSSIA;
3. NATIONAL EXPERTS

Mr Carel H. V. de Villeneuve, Deputy Head of the International Policy Division, Directorate for the Environment and Public Work, THE NETHERLANDS
Dr Per Stålnake, Coordinator of MANTRA-East Project
Project Manager of EU TACIS Baltic Line 2000 Lake Peipsi Management

25. Communication within the Program Network and Reporting

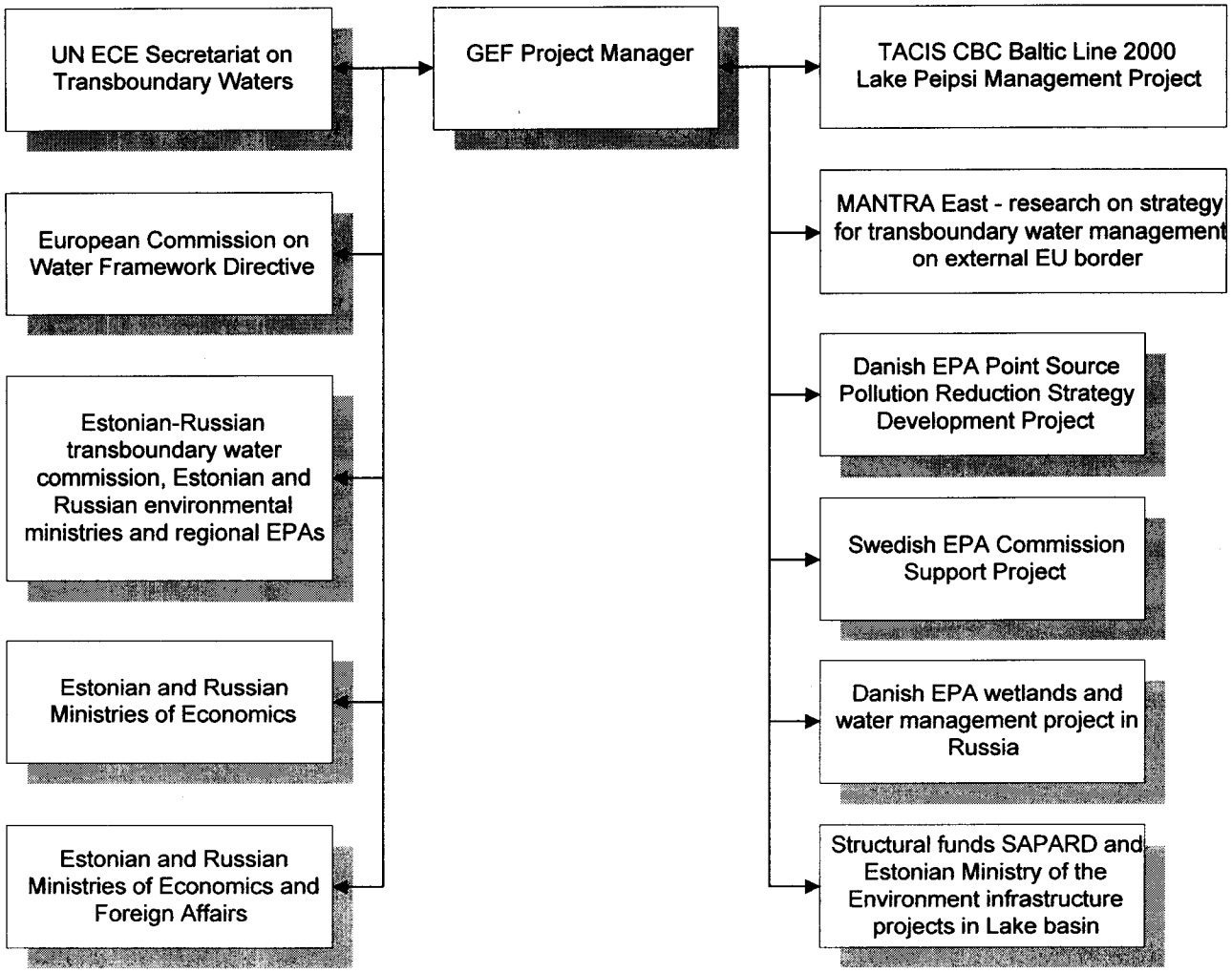
Communication within the program network and reporting is maintained through:

- Regular information exchange over e-mail through establishment of the project e-mail list;
- The project website at address http://www.tartu.lake-peipus.net;
- A bi-annual project newsletter in Estonian, Russian and English, published in electronic and hard copy. The newsletter will be circulated among the project participants and sent to relevant international organizations and experts in the region;
- Regular project workshops and working meetings;
- Presentations of the project progress and results at international conferences and seminars.

The Management Program and the Action Plan will be published in Estonian and Russian with summary in English. Also summary of the both documents will be published for wider audience and public.

Above listed measures help to promote exchange of information and networking with similar international projects, experts and organizations in Europe as well as to organize dissemination of the project findings and results internationally (Figure 4).

Figure 4. Communication with other international projects, international organizations and government agencies



26. Public Involvement Plan

Key stakeholders of the project are:

- The Governments of Estonia and the Government of Russia;
- Local governments in the Lake Peipsi area (especially development/economic and environmental departments of local governments, educational commissions at local councils, etc.);
- Regional and local NGOs and community groups, land owners, farmers, fishermen, small businesses, the Peipsi Fishermen's Union, the Peipsi Ecotourism Association, Regional Peipsi area development foundations (the foundations exist in every county located in the Lake Peipsi basin on Estonian side);
- Staff and children in kindergarten, elementary and secondary educational institutions.

The project has been designed to meet the needs of the Estonian and Russian Governments, local governments in the Lake Peipsi area, regional and local NGO participants and stakeholders. Ongoing consultation with stakeholders is incorporated directly into the project activities: capacity building of the Joint Commission, national and sub-national governments, NGOs and other stakeholder groups; establishment of the Lake Peipsi Council – network of local authorities and stakeholder groups in the region; the "Lake Peipsi region multi-stakeholder community" through developing a regional communication and information exchange system; and the development of Management Program and Action Plan in deep cooperation with local and international scientists.

To promote exchange of information through stakeholders, organize dissemination of the project findings the project e-mail list, website, bi-annual project newsletters published in electronic and hard copy, regular project workshops and working meetings are maintained.

27. Monitoring and Evaluation Plan

The project will be monitored and evaluated in accordance with relevant UNDP and GEF procedures:
(i) The executing agency has developed periodic benchmarks and monitoring procedures to ensure that the project advances according to the timeline laid out in the project document.
(ii) The UNDP-GEF IW Advisor has monitored the project through its development phase and will be regularly informed and updated by the executing agency so that he can continue to do so in the implementation phase;
(iii) An Annual Project Report will be prepared for the project;
(iv) A Tripartite Review will be conducted with UNDP, the executing agency and the participating governments;
(v) The project will participate in the GEF Project Implementation Review - an independent external evaluation will follow completion of the project.
vi) The close proximity of the CTC to the target locations and the availability of country offices in Estonia and Russia provide the CTC with ability to monitor project development in both countries on the permanent basis.

28. Sustainability Analysis and Risk Assessment

Project sustainability is going to be achieved by political support from high-level and local authorities both from Estonia and Russia as well as by increased capacity of the project management team to implementation of the Lake Management Program. Also the project should be sustainable because of the real need in such a project – the Joint Commission by itself and its working groups are very interested in the proposed activities and they support the idea of such a project very much during the last meeting in summer 1999. Hence, the strong willingness from their side will be a guarantee of the sustainable project.

29. External Factors/Risks

The risk of failure of the project is considered to be very small - the project will inevitably have positive results. Some external factors could influence the project. These factors could be political (some problems with interrelations between Estonia and Russia), technical and organizational (visas for different meetings and seminars, permissions for use of information). Nevertheless, these possible problems are not likely to be a serious obstacle to the project itself.

30. Table 3. Incremental Cost Assessment (USD)

	Baseline	Alternative	Increment
Activity 1. Identification of key stakeholder groups, their interests and needs. The project kick-off meetings.			
Global Environmental Benefits	Multiple uncoordinated environmental and economic development projects in lake basin and Baltic Sea Region. No sufficient political support to the projects from the two governments and relevant international organizations	Conference of the Joint Commission will formally approve the course of actions planned. The program will be coordinated with activities under UNDP, UN ECE, Baltic 21 and other international networks.	Coordination of the project with other international global and regional projects and initiatives is achieved as an additional know how resource for project. The project plan receives an official political approval of the Joint Commission.
Domestic benefits	Multiple small-uncoordinated environmental and economic development projects in lake basin among local authorities.	Awareness of the project among local authorities, their political support to the project. Coordination of local initiatives.	Support from the local authorities to the Management Program, coordination of local activities around the lake having a synergy effect.
Costs	0	155 000	GEF 85000 MANTRA East 70 000
	Baseline	**Alternative**	**Increment**
Activity 2. Assessments of environmental state in the Lake Peipsi basin with respect to draft the Management Program and the Action Plan. Coordination of the water monitoring system			
Global Environmental Benefits	No systematic overview of environmental, social and economic development problems for Lake Peipsi Basin. No comprehensive assessment of natural, social and political impediments to implementation of sustainable development principles in the Basin. Methods of water quality monitoring are not coordinated which makes it impossible to compare results of monitoring on two sides and assess correctly water quality. No recommendations formulated for legal framework of cooperation and public participation.	Project international working groups will conduct assessments of the situation and external conditions and frameworks for implementation of the project. Comparability of results of water monitoring will be achieved through joint monitoring expeditions and intercalibration exercises. The working groups will develop a joint methodology and a concept for the Lake Management Program, specific practical recommendations for actions	Report produced that contains reliable and adequate data and information on the nutrient load into the lake basin, the environmental situation in the basin, the human impact, recommendations for nutrient load reduction and prevention as well as recommendations for a set of measures to strengthen the formal framework for the cooperation. A joint assessment of the environmental state in the region is achieved that helps to develop a joint plan of actions A GIS database of pollution sources and water monitoring information is produced.
Domestic benefits	No reliable information on the local level on water quality in lake No systematic information exists in the region on the dynamics of the water quality, state of natural resources in the region. No clear picture on how should the local institutions be developed to promote	Joint monitoring and intercalibration allow to put together a joint database with reliable information on water quality The working groups will develop a concept for implementation of the Management Program on the local level as well as specific practical recommendations for actions and development	A concept for implementation of the Management Program on the local level allow to develop a specific plan of actions for water protection and management for the local environmental agencies and ensure their involvement in the Management Program implementation Through joint monitoring received reliable data on water quality and made accessible to

	their effective involvement in environmental management in the lake basin.	of the local environmental institutions	public
Costs	Russian 20 000 Estonian 104 000	152 000	GEF 152 000 MANTRA East 310 000 DANCEE 5 000
	Baseline	**Alternative**	**Increment**
Activity 3. Development of the Management Program and the Action Plan			
Global Environmental Benefits	Increasing eutrophication in the lake basin due to a lack of coordination of economic and environmental activities.	Decrease of nutrient load and other pollution in the lake basin through coordination of activities, effective institutional and legal arrangements, education and community actions	Decrease of nutrient load and higher environmental quality in the lake basin and Baltic Sea basin through developing effective institutional and legal arrangements, education and community actions
Domestic benefits	Uncoordinated local and international projects and activities in the lake basin that do not allow to consolidate actions and outcomes of different projects and to formulate a set of proposals for actions aimed at promoting pollution reduction in the lake basin. No adaptable management approach used in the region.	The draft Management Program is discussed with NGOs and presented to wider public through mass media. The Joint Commission adopts the Management Program as a document. The Management Program document is accepted in a general form allowing details of the plans to be updated and revised by the Joint Commission and its working groups every 2 - 3 years.	The Management Program adopted as a basis for actions by the Joint Commission for the Estonian and Russian governments. The Action Plan establishes goal for nutrient load and eutrophication reduction in the lake basin for short term (2, 5 years) and long-term (10 – 20 years) perspectives. Goals are to be revisited and revised regularly by the Joint Commission.
Costs	RUSSIAN 10 000 ESTONIAN 25 000	606 600	GEF 371 600 MANTRA East 170 000 DANCEE 30 000
	Baseline	**Alternative**	**Increment**
Activity 4. Strengthening institutional capacity of the Joint Commission as well as local authorities, NGOs and stakeholders. Establishment of the "Lake Peipsi Council".			
Global Environmental Benefits	No forum for cooperation and exchange of experiences between lake and river basin organizations in the Baltic Sea Area, UN ECE region or globally. Weak institutions and public participation decreases effectiveness of environmental measures in all of the Baltic Sea area.	Developed institutions on the region is a part of an institutional framework for protection of the Baltic Sea Basin and UN ECE region	Decrease of water eutrophication in the lake and Baltic Sea through strengthening institutions and public participation on regional level; exchange of experiences between different lake basins on water protection in Baltic Sea region and globally.
Domestic Benefits	No communication and cooperation between different levels of governance that can be the major impediment to effective implementation of any environmental protection	Institutional capacity building on different levels. Strengthening of the operational and technical capacity of the regional and local environmental	Strengthened capacity of the Joint Commission to implementation of the Action Plan and strategic planning; institutionalization of cooperation between different levels of

	measures in the basin. No information on ongoing and planned environmental action on Lake Peipsi in communities and internationally.	agencies, municipalities, NGOs and other stakeholders, such as fishermen, farmers, etc. Among planned activities: training and information activities; study tours to other international lake regions, developing website.	government, business and NGOs. The "Lake Peipsi Council" is established as a result of the stakeholder meetings. The Council represents local stakeholders; environmentally competent farmers and authorities; environmental training and information centers established on Estonian and Russian sides. Training and information materials for authorities, farmers and other stakeholder groups are published.
Costs	RUSSIAN 10 000 ESTONIAN 29 000	416 000	GEF 170 000 MANTRA EAST 164 000 SEPA 3 000 DANCEE 40 000
	Baseline	**Alternative**	**Increment**
Activity 5. Development of the program "Lake Peipsi region multi-stakeholder community" – public information and community involvement.			
Global environmental benefits	Absence of the participatory watershed management and low environmental awareness undermine effectiveness of water management programs in the lake region.	Capacity building activities: training and consultations program for NGOs in the region. Public awareness programs implemented.	Increased public awareness on eutrophication related issues in communities, local authorities and stronger network of NGOs around the lake. NGOs are involved in the Management Program preparation and implementation.
Domestic benefits	Participatory watershed management does not exist. Local authorities and NGOs are not involved in preparation and implementation of the Management Program.	Environmental education activities on the eutrophication-related problem: trainings, workshops, publications, Internet and regular active work with media.	Public information on eutrophication related issues whereas sources are available in hard copy and Internet in local languages.
Costs	0	223 200	GEF 148 200 MANTRA EAST 50 000 DANCEE 25 000
	Baseline	**Alternative**	**Increment**
Activity 6. Implementation of demonstration projects.			
Global Environmental Benefits			Implementation of best available technology with reasonable costs.
Domestic Benefits	In the region there is no public tourist route. No tourist visits to the region. Small parishes are not able to improve their water supply and sewerage system.	Development of tourist route based on the principles of ecological tourism in the region. Drafting the development plan of water supply and sewerage for local community.	Increased public awareness on the Lake Peipsi region. Increased social life and decreased unemployment. Local community has water supply and sewerage development plan that enable them (1) complete their budget and finde investments to improve the system; (2) improve the system.
Costs	0	73 200	GEF 73 200

31. Budget

Table 4. Applied GEF Budget Distribution between Activities of the Project and Years
See enclosed file "Peipsi UNDP GEF Budget June 2001.xls" Sheet 1

Table 5. Parallel Input Budget
See enclosed file "Peipsi UNDP GEF Budget June 2001.xls" Sheet 2

32. The Project Implementation Plan

Table 6s. Implementation plan - see in an attached excel file "Peipsi GEF Calendar December 2000.xls"
See enclosed file "Peipsi UNDP GEF Schedule June 2001.xls"

Table 4: Applied GEF Budget Distribution between Activities of the Project and Y

Description	Year 1	
	EST	RUS
010.PROJECT PERSONNEL		
013. Admin.Support Personnel		
013.01 Financial manager 0,8 position	8800	
013.02 Accountant in Estonia 0,5 position	4000	
013.03 Accountant in Russia; 0,3 position		1500
013.04 Secretary in Estonia 0,5 position	3000	
013.05 Secretary in Russia; 0,3 position		1000
013.99 Line Total	**15800**	**2500**
015. Duty Travel		
015.01 Duty Travel - CTC in Estonia	7500	
015.02 Duty Travel - CTC in Russia		3400
015.99 Line Total	**7500**	**3400**
017. National Professionals		
017.01 Project Manager	15000	
017.02 Estonian National Project Coordinator	12000	
017.03 Russian National Project Coordinator; 0,6 position		7000
017.99 Line Total	**27000**	**7000**
019.PROJECT PERSONNEL TOTAL	**50300**	**12900**
020.SUBCONTRACTS		
021.Subcontract A		
021.01. Lake Peipsi Basin Management Program	55,000	21,000
022. Subcontract B		
022.01. Nutrient Load Reduction Action Plan	16,800	7,200
023.Subcontract C		
023.01. Water quality database with reliable and adequate data	21000	9000
024. Subcontract D		
024.01. Coordinated system of water monitoring	3,500	1,500
025. Subcontract E		
025.01 Two small demonstration projects	18,000	
029. SUBCONTRACTS TOTAL	**114,300**	**38,700**
030. TRAINING		
032. Group training		
032.01. Public information and communication involvement	21000	9000
032.02. Institutional capacity of the Commission	4000	1500
032.03. Capacity building of local authorities and stakeholders	11200	4800
032.04. Study tours to international lakes regions	5000	1500
032.05 Advisory Committee workshops	3500	1500
032.06 Steering Committee workshops	1750	750
032.07 Establishment of the Lake Peipsi Council	1750	750
039 TRAINING TOTAL	**48200**	**19800**
040. EQUIPMENT		
045.01 Equipment-Estonia	12,000	
045.02 Equipment-Russia		5,000
049. EQUIPMENT TOTAL	**12,000**	**5,000**
050.MISCELLANEOUS		
053. Sundries		
053.01.Communications - Estonia	8,000	
053.02 Communications - Russia		5,000
053.03 Reporting: printing/distribution/translation	8000	

053.04 Auditing	1,200	
053.05 Tendering	2,000	
059. MISCELLANEOUS TOTAL	**19,200**	**5,000**
90 TOTAL	244,000	81,400
94 NGO Execution Fee (CTC) 5.3%	12932	4314

ears

Year 2		Year 3		TOTAL		
EST	RUS	EST	RUS	EST	RUS	TOTAL
9800		10800		29400		
4500		5000		13500		
	1750		2000		5250	
3300		3600		9900		
	1200		1400		3600	
17600	**2850**	**19400**	**3400**	**52800**	**8850**	
7700		8000		23200		
	3400		3400		10200	
7700	**3400**	**8000**	**3400**	**23200**	**10200**	
16000		17000		48000		
13000		14000		39000		
	8000		9000		24000	
29000	**8000**	**31000**	**9000**	**87000**	**24000**	
54300	**14350**	**58400**	**15800**	**163000**	**43050**	**206050**
54,000	21,000	54,000	21,000	163,000	63,000	
16,800	7,200	14000	6,000	47,600	20,400	
17,500	7,500	17,500	7,500	56,000	24,000	
2,800	1,200	2,800	1,200	9,100	3,900	
18,000				36,000		
109,100	**36,900**	**88,300**	**35,700**	**311,700**	**111,300**	**423,000**
22000	9000	22000	9000	65000	27000	
3500	1500	3510	1500	11010	4500	
11200	4800	9800	4200	32200	13800	
5000	1500	5000	1500	15000	4500	
3500	1500	3500	1500	10500	4500	
1750	750	1750	750	5250	2250	
1750	750	1750	750	5250	2250	
48700	**19800**	**47310**	**19200**	**144210**	**58800**	**203010**
8,000		8,000		28,000		
	3,000		3,000		11,000	
8,000	**3,000**	**8,000**	**3,000**	**28,000**	**11,000**	**39,000**
9,000		10,000		27,000		
	6,000		7,008		18,008	
9000		10000		27000		

1,200		1,200		3,600		
1,000		0		3,000		
20,200	**6,000**	**21,200**	**7,008**	**60,600**	**18,008**	**78,608**
240,300	80,050	223,210	80,708	707,510	242,158	949,668
12736	4243	11830	4278	37498	12834	50332

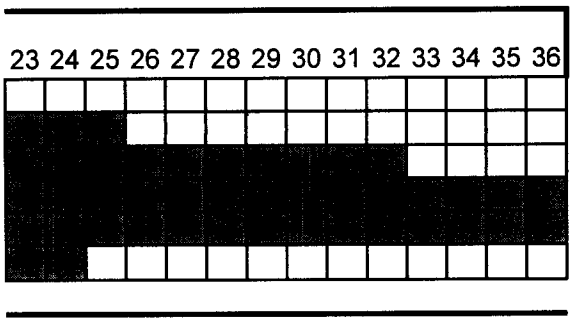
Table 5: Parallel Input Budget (USD)

Description	GEF TOTAL			MANTRA-East	SEPA	DANCEE	RU	EE
	EST	RUS	TOTAL					
019.PROJECT PERSONNEL TOTAL	**163000**	**43050**	**206050**	**60000**				
020.SUBCONTRACTS								
021.Subcontract A								
021.01. Lake Peipsi Basin Management Program	163,000	63,000	226,000	40000			10000	
022. Subcontract B								
022.01. Nutrient Load Reduction Action Plan	47,600	20,400	68,000	130000		30000		25000
023.Subcontract C								
023.01. Water quality database with reliable and adequate data	56,000	24,000	80,000	170,000		5000	20000	56000
024. Subcontract D								
024.01. Coordinated system of water monitoring	9,100	3,900	13,000	140000				38000
025. Subcontract E								
025.01 Two small demonstration projects	36,000		36,000					
029. SUBCONTRACTS TOTAL	**311,700**	**111,300**	**423,000**			**35000**	**30000**	**119000**
030. TRAINING								
032. Group training								
032.01. Public information and communication involvement	65000	27000	92000	50000		25000		
032.02. Institutional capacity of the Commission	11010	45000	56010			25000	10000	29000
032.03. Capacity building of local authorities and stakeholders	32200	13800	46000	70000	3000	10000		
032.04. Study tours to international lakes regions	15000	4500	19500	30000		5000		
032.05 Advisory Committee workshops	10500	4500	15000	10000				
032.06 Steering Committee workshops	5250	2250	7500					
032.07 Establishment of the Lake Peipsi Council	5250	2250	7500	64000				
039 TRAINING TOTAL	**144210**	**99300**	**243510**		**3000**	**65000**	**10000**	**29000**
049. EQUIPMENT TOTAL	**28,000**	**11,000**	**39,000**					
059. MISCELLANEOUS TOTAL	**60,600**	**18,008**	**78,608**					
90 TOTAL	707,510	282,658	990,168					
94 NGO Execution Fee (CTC) 5.3%	37498	14981	52479					
099 GRAND TOTAL	**745,008**	**297,639**	**1,042,647**	**764000**	**3000**	**100000**	**40000**	**148000**

Table 6: Project Work Plan for Implementation of Activities

Activities*	Nr of month	Months	Months 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
1	1 to 6	6	
2	5 to 25	21	
3	10 to 32	23	
4	7 to 36	30	
5	4 to 36	33	
6	5 to 24	20	
Total	36		

Activity 1. Identification of key stakeholder groups and their interests and needs. The project kick-off meetings
Activity 2. Assessments of environmental state in the Lake Peipsi basin with respect to draft the Management Program and the Action Plan. Coordination of the water monitoring system
Activity 3. Development of the Lake Peipsi Management Program and the Nutrient Load Reduction and Prevention Plan
Activity 4. Strengthening institutional capacity of the Joint Commission as well as local authorities, NGOs and sta Establishment of the "Lake Peipsi Council".
Activity 5. Development of the program "Lake Peipsi region multi-stakeholder community" – public information and community involvement.
Activity 6. Implementation of demonstration projects



takeholders.

ANNEX 1

STEERING COMMITTEE OF THE PROJECT

Development and Implementation of the Lake Peipsi Management Program

The Steering Committee of the project consists of representatives of the Estonian and Russian ministries of Environment, ministries of foreign affairs, the Estonian-Russian Transboundary Water Commission, and regional authorities from Lake Peipsi basin. The Steering Committee will also include the Project Manager and the UNDP Project Officer. The Committee meets at the beginning of the project and at the end of each year (total four times). The Steering Committee will adopt decisions on results of open tender procedures of selecting companies to implement tasks, as well as will support project managers in planning, preparation, and implementation of the project. The Committee will monitor and evaluate the project's course, particularly as regards its management aspects.

Steering committee in estonia

1.	*MR. HARRY LIIV*	*DEPUTY SECRETARY GENERAL, ESTONIAN MINISTRY OF THE ENVIRONMENT*
2	*MR. MARKO TUURMANN*	*HEAD OF WATER SECTION, ESTONIAN MINISTRY OF THE ENVIRONMENT*
3.	*MR. TÕNU MILLER*	*POLITICAL DEPARTMENT ESTONIAN MINISTRY OF FOREIGN AFFAIRS*
4	*MR. JALMAR MANDEL*	*HEAD OF THE ENVIRONMENTAL DEPARTMENT OF TARTUMAA, ESTONIAN MINISTRY OF THE ENVIRONMENT*
5.	*MR JAANUS KALA*	*HEAD OF THE ENVIRONMENTAL DEPARTMENT OF PÕLVAMAA; ESTONIAN MINISTRY OF THE ENVIRONMENT*
6	*MS. TIIU SIZOVA*	*HEAD OF THE ENVIRONMENTAL DEPARTMENT OF IDA-VIRUMAA; ESTONIAN MINISTRY OF THE ENVIRONMENT*
7.	*MS. GULNARA ROLL*	*PROJECT MANAGER, PEIPSI CENTER FOR TRANSBOUNDARY COOPERATION*

Steering committee in Russia

(There is a preliminary agreement of 16 May 2001 with representatives of the Russian Ministry of Natural Resources that the Ministry would appoint members of the Russian part of the Steering Committee during summer 2001)

8		*REPRESENTATIVE OF THE WATER DEPARTMENT, RUSSIAN MINISTRY OF NATURAL RESOURCES*
9.		*REPRESENTATIVE, RUSSIAN FEDERATION HYDROMETEOROLOGICAL SERVICE*
10.		*REPRESENTATIVE, RUSSIAN MINISTRY OF FOREIGN AFFAIRS*
11.	*MR. VLADIMIR BUDARIN*	*CHAIRMAN, NEVA-LADOGA WATERSHED MANAGEMENT DEPARTMENT*
12.		*REPRESENTATIVE, PSKOV OBLAST REGIONAL ADMINISTRATION*
13.		*REPRESENTATIVE, LENINGRAD OBLAST REGIONAL ADMINISTRATION*
14.	*MS. TATYANA GLUSHKO*	*UNDP MOSCOW PROJECT OFFICER*

В Нью-Йорк передан 09.10.0

ПЕРВЫЙ
ЗАМЕСТИТЕЛЬ МИНИСТРА
ПРИРОДНЫХ РЕСУРСОВ
РОССИЙСКОЙ ФЕДЕРАЦИИ

123812,ГСП-5, г. Москва,
Большая Грузинская ул., д/6
Тел (095) 207 67 00
Факс (095) 975-16-13

09.10.2000 № ___
На № ___

A letter of support to the Program of the Lake Chudskoe/ Peipsi Basin Management

To Mr. Hudson, Andrew

Principal Technical Advisor, International Waters
United Nations Development Program
Global Environment Facility
New York

Fax 1 212 906 69 98

From Mr.N.Mikheev
First Deputy Minister of Natural Resources
of the Russian Federation

Our fax (095) 975 16 13

Date: 09 of October 2000

Dear Mr. Hudson !

Ministry of Natural Resources of the Russian Federation supports the project "Development and Implementation of the Lake Chudskoe/Peipsi Basin Management Program" submitted to the Global Environment Facility through UNDP.

Implementation of the Program of the management of the Lake Chudskoe/Peipsi basin will promote the improvement of the environment and water management situation in the basin of the river Narva and in the region of the Baltic sea.

The development of this project is provided in the working plan of the Joint Russian-Estonian [illegible]

Yours sincerely,

N.Mikheev

First Deputy Minister
of Natural Resources
of the Russian Federation

Center for Transboundary Cooperation

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Tel 372-7-421001
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www.lake-peipus.net
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10.10.2000

To Dr. Chris Brigg
Dr. Andrew Hudson
Fax 212 906 5102
United Nations Development Programme
Global Environment Facility

Dear Mr. Chris Brigg,
Dear Mr. Andrew Hudson,

Please find enclosed a letter of endorsement signed by Mr. Nikolai Mihheev, First Deputy Minister, Ministry of Natural Resources of the Russian Federation to the project "DEVELOPMENT AND IMPLEMENTATION OF THE LAKE PEIPSI BASIN MANAGEMENT PROGRAM" submitted to the Global Environmental Facility through UNDP by the Estonian Ministry of the Environment.

I apologise for the quality of the fax – I will bring a copy of the letter to Budapest GEF meeting

Yours sincerely,

Gulnara Roll

MEDIUM-SIZED PROJECT BRIEF
LAKE PEIPSI/CHUDSKOE CASE

1. Project name: Development and Implementation of the Lake Peipsi/Chudskoe Basin Management Program[1]	**2. Proposed GEF Implementing Agency:** UNDP
3. Country or countries in which the project is being implemented: Estonia and Russia. Estonia will be a lead country for the project and responsible for the project coordination	**4. Country eligibility:** Estonia and Russia ratified the UN FCCBD and are eligible to borrow funds from the World Bank as well as to receive technical assistance from UNDP through their countries' programs.
5. GEF focal area(s): International Waters	**6. Operational program/Short-term measure:** P9. Integrated Land and Water Multiple Focal Area Operational Program

7. Project linkage to national priorities, action plans, and programs:

The Estonian and Russian governments have signed a bilateral intergovernmental agreement on the use and protection of their transboundary waters in 1997. According to the agreement, the Estonian-Russian Transboundary Water Commission (further the Joint Commission) was established. The proposed project is a part of priority actions under the Joint Commission plan.

Protection of surface and groundwaters are in the top of priorities according to the National Environmental Action Plans (NEAP) both in Russia and Estonia. The Convention on the Protection of the Marine Environment of the Baltic Sea Area and the Convention on Protection and Use of Transboundary Waterbodies and International Lakes are signed and ratified. Estonia signed and ratified the Convention on Access to Information and Public Participation in Decision-making and Access to Justice in the Environmental Matters ("Aarhus Convention").

The Estonian government has set a deadline on January 1, 2003, when the country is to be fully prepared to enter the Union. Estonian laws and the administrative system have to be adapted to the requirements of the EU. As a part of this work the Estonian Water Act was revised to harmonize with the EU Water Framework Directive that defines river basins as the basic unit for all water planning and management actions. River Basin Management Plans for all water basins in Estonia are to be elaborated by 2004 according to the Estonian water legislation.

A half of Lake Peipsi located in the Russian Federation is managed according to *the Russian Federation Water Code*, a federal law of the Russian Federation adopted in 1995. The Russian Water Code is based on a river basin approach. Water basin management boards were created under the Ministry of Natural Resources to prepare and organize implementation of river basin management plans. According to the Water Code, regions of the Russian Federation sharing a river basin have to sign a basin agreement that defines a procedure for cooperation on implementation of a river basin management plan; river basin councils are to be established that should represent interests of local stakeholders to advise water basin management boards on implementation of the basin plans.

Lake Peipsi Basin is accepted as a demonstration area – an area where principles of sustainable development and integrated water management are implemented in practice - under the Baltic Sea Agenda 21 Program, Global Water Partnership, and the UN ECE to the World Water Report. This project will build on the results achieved by earlier activities implemented in the Lake Peipsi Basin international projects during 1995 – 2000 (see a detailed description of previous projects in the text and **Annex 3**).

8. GEF national operational focal point review (dates):

Submitted: 29.10.98 Endorsed 05.05.2000 Estonia, 10.10.2000 Russia

[1] GEF Peipsi Basin Management **Program** is a GEF project that contributes to prep aration of the Lake Peipsi Basin Management **Plan** required under the EU Water Framework Directive, Estonian Water Act and Russian Water Code.

Project Objectives and Activities

9. Project rationale and objectives	Indicators
1. Development of the **Lake Peipsi/Chudskoe Basin Management Program** (further Management Program) in accord to the Estonian Water Act, European Water Framework Directive, and Russian Water Code[2]. THIS WILL INCLUDE (see Annex 4 for an explanation of the steps proposed):	Implementation of a joint Lake Peipsi/Chudskoe Basin Management Program with demonstrated high-level commitment by both governments and other involved stakeholders to implement the plan.
a) **Developing appropriate institutional arrangements for coordination of activities of the Estonian and Russian national river basin authorities** with the GEF project team and other project groups (TACIS, other) in the region involved in preparation of the Lake Peipsi/Chudskoe Basin Management Plan;	
b) **Assessment of environmental state in the Lake Peipsi Basin and identification of key water management issues** in the basin;	
c) Preparation of **a coordinated program for surface water monitoring** between the two countries on Lake Peipsi using UN ECE guidelines for monitoring and assessment of transboundary lakes;	Joint program of measures to reduce nutrient load pollution is prepared and accepted by Estonian and Russian river basin authorities as an official program of measures to reduce eutrophication within the Lake Peipsi Basin Management Plan.
d) **Designing a program of measures[3] to reduce nutrient load pollution,** INCLUDING (1) a detailed program of environmental protection measures to reduce the nutrient load (Nutrient Load Reduction Plan); and (2) a regional development program aimed at diversification of economic activities in the region and promoting ecological tourism and ecological farming (the activities will include, for example, a marketing program for ecological farming for vegetables grown in Lake Peipsi area);	
e) **Support to the Lake Peipsi River Basin authorities in preparation of the Lake Peipsi Basin Management Plan as a strategy document** as required by the EU, Estonian and Russian water legislations;	Agreement between countries and key stakeholder groups on key water management issues in the basin.
f) Development of a sound **legal framework** for long-term effective implementation of the Lake Peipsi/Chudskoe Basin Management Plan. The framework should merge needs for protection of the international waters and global environment, as well as requirements of the European Union Water Framework Directive, the Russian Water Code, and the Russian Act on Environmental Protection for the lake basin management. To add to the existing legal basis for management of transboundary waters, a special protocol on preparation and implementation of the Lake Peipsi/Chudskoe Basin Management Plan to the agreement on transboundary waters maybe signed between the two governments however a specific proposal for the legal instrument (protocol or something else) is to be developed during the project in consultation with the respective authorities. Elaboration of the enforceable legal framework will establish "rules of game" and will provide financial and non-financial incentives for all "actors" in the region that are involved in regional development and environmental protection. This will also ensure that the project would build on a strong commitment for cooperative work of the two governments to prepare and implement a joint Management Program.	Improved understanding of the principal environmental threats to and impacts on the lake, and their socio-economic linkages by officials and stakeholders. Agreed and implementable legal and regulatory framework for protection and

[2] The project will use as a practical guidance document "Practical Resource Document for Implementation of the Water Framework Directive" presented in Annex 4 to the Brief to prepare the Management Plan. Estonian Water Act is available at the Estonian Ministry of the Environment address www.envir.ee, Russian water legislation description is available in the report on Russian water management prepared under the SEPA project - see at www.envir.ee/jc. The EU Water Framework is available at the European Commission DG Environment website http://www.europa.eu.int/comm/environment/index_en.htm.

[3] The Program of measures will include addressing different polluting substances in surface and ground waters. The Peipsi GEF will concentrate on actions in surface waters and on themajor environmental issue in the Lake Peipsi Basin and the Baltic Sea Basin – the nutrients. EU LIFE project will concentrate in turn on ground water assessments and heavy metals and dangerous substances.

g) Developing a **public involvement plan as a part of the Lake Peipsi Basin Management Plan** - a mechanism of involvement of public into implementation of the Management Plan (citizens panels, etc.) as required by Practical Resource document for implementation of the EU WFD (Annex 4). 2. Establishing an **institutional "ecosystem"** of organizations, the **"Lake Peipsi/Chudskoe region multi-stakeholder community"**, that should incorporate agencies and stakeholder groups in the region on different levels of governance across the border to promote discussion of water management issues in both "top-down" and "down-up" directions and to ensure involvement of public in preparation and implementation of the Management Plan. This will be achieved through **a) Strengthening institutional capacity of the Commission and the national authorities** to implementation of the Management Plan through technical assistance, travel to other transboundary water lakes, etc. **b) Strengthening capacity of local authorities** to their involvement in preparation and implementation of the Management Plan; **c) Activities aimed at raising capacity of stakeholder groups** (farmers, fishermen, small and medium businesses, especially those in service and tourism industry) to implementation of the Management Plan and nutrient load reduction plan through assistance in marketing of organic farming and promoting diversification of economic activities in the region; **d) Support to NGOs in the region** – training, small projects grant program, annual Peipsi NGO forums, and developing a dialogues between authorities and NGOs on a role of NGOs in implementation of Management Plan. **e) Involving communities** in preparation and implementation of the Lake Peipsi Management Plan through developing a public information and environmental education program on eutrophication related issues through mass media, campaigns, and schools. 3. **Supporting activities to implementation of the Management Program through** a) Developing an information exchange and communication system (on the basis of the Water Commission website www.envir.ee/jc and using Internet GIS and email lists) to facilitate communication **and information exchange system** among different levels of governance and economy sectors and across the border; b) Encouraging use of best environmental practices in local level through implementation of 2 water-related demonstration projects that should bring application of specific know-how and best available practices: (1) a development plan for construction of a sewage system for a rural community under 10 000 people – based on the development plan, further government and EU structural funds will be used to construct the innovative cost-effective municipal sewage system; (2) an ecotourism route for a rural community with developing local capacity on municipal level to maintain the route, attract tourist and protect the environment.	protection and sustainable development of the lake. A strong basin-wide network of multi-stakeholder institutions mutually committed to cooperation and coordination of lake management activities. Mechanisms developed to ensure stakeholder involvement in lake decision-making processes. Strengthened capacity of key institutions involved in lake utilization and management (government, NGO, private sector). Basin-wide increases in public awareness of lake environmental issues, threats and protection strategies. Development and implementation of selected pilot projects to demonstrate and disseminate best environmental practices in lake management.

10. Expected outcomes	Indicators
1. **Lake Peipsi Basin Management Plan as a strategy document will be developed by the Estonian and Russian authorities with the assistance of the project** as required by the EU, Estonian and Russian water legislations; 2. **Coordinated program for surface water monitoring** between the two countries on Lake Peipsi prepared and partially implemented under the UN ECE guidelines for monitoring and assessment of transboundary lakes; 3. **Program of measures to reduce nutrient load pollution** - a Nutrient Load Reduction and Prevention Action Plan; 4. **Lake Peipsi regional development (ecotourism and ecological farming) program** will be developed in cooperation with regional and local authorities and stakeholders; will include an ecological farming marketing strategy and ecofarming training and teaching materials, a set of ecotourism routes, publications, training programs available on local level. 5. **Robust institutional arrangements and legal framework for coordination in the region of implementation of the Lake Peipsi Basin Management Plan by Estonian and Russian national river basin authorities** for implementation of the Basin Management Plan; 6. **Sufficient institutional capacity of the Commission to coordinate** implementation of the Management Plan on intergovernmental level and resolve potential differences in opinions. 7. **Public involvement plan prepared as a part of the Basin Management Plan;** 8. **Sufficient capacity of local authorities** to implement local environmental protection measures (cleaning coastal areas, maintaining public beaches, implementing actions aimed at reduction of pollution load in the basin, etc.); 9. **Involvement of stakeholder groups** (farmers, fishermen, small and medium businesses, tourism business) in implementation of the Management Plan and nutrient load reduction plan: 10. **Increased at least twice a number of grassroot NGOs in the region dealing with water protection and nutrient load reduction in the region**. At least five NGO cooperative projects implemented that join grassroot NGOs from Estonia and Russia. 11. **Interactive project website** in Estonian, Russian and English at the Peipsi CTC website linked with the Water Commission website www.envir.ee/jc using Internet GIS and a semi-moderated listserv in three languages to facilitate communication **and information exchange system** among stakeholders. The interactive Internet based web based GIS that will encourage sharing the environmental data about Lake Peipsi region. The web GIS	The Management Program as an official legal document in Estonia and Russia for implementation of development and environmental protection measures in the Lake Peipsi Basin. The coordinated monitoring program gives reliable and calibrated data for the Management Plan and a program of nuitrient reduction plan. The Joint Commission as a basis for the strategic planning and coordination of different economic, environmental, and social activities that take place in the region use the Management Program developed. The Joint Commission acts as a facilitator for implementation of the Transboundary Water Agreement and in developing strategies for the long-term sustainable development in the region. Agreed nutrient load reduction strategy and targets aimed towards ecosystem restoration and incorporating adaptive management approach for changing conditions identified through monitoring program. River basin authorities and the Joint Commission receive a reliable and adequate environmental data those serve as a basis for the development of the Management Program. This includes data on nutrient load and eutrophication in the lake basin, status of the lake ecosystem, estimates of the riverine loads to the lake, estimate of the pollution sources, retention and buffering capacity in the drainage basin and the lake, and empirical data on the lake water quality. Harmonized monitoring program and information management system for the lake basin developed. Governments, NGOs, and other stakeholders fully engaged in preparation and implementation of the Management Program. Web site operational and widely utilized in lake basin; regular publications on lake issues broadly disseminated frequent meetings of community and other stakeholder groups on lake management issues. Increased networking, cooperation, and communication of the Joint Commission with other relevant

will contain lot of useful data from both Estonia and Russia; and enable end users to visualize environmental data on the map. 12. **Public information on project and eutrophical problems in mass media** (regular press-releases, articles, TV and radio interviews, printed materials). **13. Publications:** • Brochures about the project and the Lake Peipsi Basin Management Plan; • Guidance documents to local authorities, stakeholders on Management Plan implementation; • Environmental education curricular for schools on eutrophication related issues for teachers and schoolchildren. • Presentations, articles at international meetings. **14. 2 water-related infrastructure demonstration projects:** A development plan for an innovative and cost effective sewage treatment for a small rural community; An ecotourism route in Räpina area in Estonia (these two demonstration projects in Estonia will compliment two demonstration projects to implemented parallel on Russian side within the TACIS BALTIC 2000 Program. –	Commission with other relevant commissions and international organizations. "Lake Peipsi/Chudskoe Forum" functioning as a mechanism for stakeholder involvement in lake management and decision-making processes. Ecotourism program is an environmental protection and local development program that motivates stakeholders to get involved in implementation of the Management Plan. Two demonstration projects successfully implemented and monitored which produce measurable reductions in lake nutrient loads; lessons from these pilots broadly disseminated.

11. Planned activities to achieve outcomes	Indicators
Activity 1. **Inception period. Identification of key stakeholder groups, their interests and needs. The project kick-off meetings.** In the frame of this activity the project kick off conference is organized; the project Advisory Committee and Steering Committee are approved through a series of consultations; the project management, monitoring, assessment and reporting system are established and approved; information dissemination system and project website are set up; and first meetings with local authorities and stakeholders are carried out. Training for project management team in project management, reporting requirements, and work with public and mass media are conducted to ensure high quality management of the project activities.	An Advisory Committee and a Steering Committee are established and functioning as a "quality control" of the project. The project management system and implementation units are completed and work with the Management Program and the Action Plan is started. Sociological studies are completed to establish a baseline on public perceptions of environment and stakeholder involvement. Key stakeholder groups and their interests and needs are identified and they are engaged in the preparation of Management Program and Action Plan Public information system through mass media and project newsletter is worked out and tested.
Activity 2 **Assessments of environmental state in the Lake Peipsi Basin with respect to draft the Management Program and the Action Plan.** **Identification of key water management issues:** • Situation in water use in Lake Peipsi basin. Inventory of the water supply conditions in towns, small villages and private farms in basin. Inventory of the pipelines technical status and existing documentation in local municipalities in Lake Peipsi lakeshore areas because they have a direct impact to eutrophication processes in the lake. • Drinking water quality in the wells of private farms. Inventory of the existing data about water quality in private wells and groundwater aquifers under the pressure of agricultural activities. • Water quality and agriculture. Inventory of the existing land-use database in Lake Peipsi basin. Inventory of the main sources of pollution, *e.g.* use of manure and mineral fertilisers, manure field storages, use of pesticides etc. Evaluation of the pressures to the water quality in the lake. • Land improvement and water quality. Inventory of land improvement activities in Lake Peipsi basin. Drained arable land, forests, peat production areas. Evaluation of the impacts to the surface and ground waters regarding drained areas. • Ground water resources and quality in Lake Peipsi basin . Focuse the attention to the Nitrates Vulnerable Area in sub-basin of the rivers Pedja-Põltsamaa (tributaries of the Emajõgi River) • Impacts on aquatic ecosystems. Inventory of the existing data-bases about mires, bogs and floodplains as important habitats for birds and animals. Identification of the human threats to the wetlands and their role to water quality in rivers and lakes. • Water quality and tourism. Identification of the main tourist routes and sight –seeing objects in Lake Peipsi basin. Evaluation of the possibilities for development of ecotourism. Analysis of the impacts	Assessment reports with reliable data on the state of water use, drinking water quality, land use and biodiversity in the lake basin are prepared. Modeling of nutrients in streams and the lake conducted gives information on the nutrient load in streams and the lake and possible scenarios. Report with assessment of potentials for tourism development with possible scenarios and recommendations prepared.

to water quality and ecological conditions from tourism activities. Inventory of the public beaches, their water quality in summer period. Evaluation of the annual average number of tourists and their water-related activities.	
Activity 3. Development and partial implementation of a coordinated program for surface water monitoring between the two countries on Lake Peipsi in accord to the Estonian-Russian transboundary water commission plan and using the UN ECE guidelines for monitoring and assessment of transboundary lakes;	Effective coordinated water monitoring system approved by the Joint Commission.
Activity 4. Development of the Management Program and the program of measures to reduce the nutrient load **Development of the Management Program and Action Plan** Development of the Water Management Program and Plan is the mandatory task of the Ministry of Environment in Estonia and of the Ministry of Natural Resources of Russia. These activities in Lake Peipsi basin will be co-ordinated by Tartu Environment Protection Board (Estonia) and Neva-Ladoga Water Basin Management Board. Other governmental and non-governmental organisations can support those activities , if they have more information or more experiences. Peipsi Center for Transbounary Cooperation is able to support the development of Management Program in following objectives: • **Development of the Nutrient Load Reduction Plan – a plan of water protection measures against agricultural pollution.** In this program the biological wastewater treatment methods **(**biolagoons, filters in drainage systems, use of floodplains as traps for nutrients) are widely used and recommended for farmers. **The Nutrient Load Reduction Plan will include development of a special program of measures for nitrates vulnerable areas,** *e.g.* restrictions in fertilizer use and limitations in the number of domestic animals (dairy cows, pigs, poultry etc.) per hectare of arable land; 'good practice' in agriculture and BAT in fertilizers distribution respectively. The use of above mentioned special measures for water protection. • **Restoration of water supply and sewage systems in 3 communities in L.Peipsi lakeshore area** that means design of the new water supply and sewage systems and waste water purification plants for medium sized and small villages during three years period (one community per year), using the experiences from pilot project. • **Development of a regional program for ecotourism and ecological farming in Lake Peipsi basin.** Using the inventory materials develop the main routes for ecotourism and prepare those routes meet the first visitors (signs in the nature, broshures and booklets with information, training of the guides etc. Ecofarming concept development, training materials, regional marketing program.	The Management Program adopted by the Commission as a long-term strategy for sustainable development in the lake basin. The Management Program as the official document is produced and published in Estonian, Russian with summary in English and distributed to relevant organizations and stakeholder groups. The Action Plan as detail document to reduce nutrient load and eutrophication in the lake basin for short term (2, 5 years) and long-term (10 – 20 years) perspectives.
Activity 5. **Strengthening institutional capacity of the Joint Commission and lake Peipsi river basin authorities (national and regional environmental agencies).** The project will develop an institutional capacity of the Commission secretariat and regional authorities that are responsible to coordinate implementation of the Management Plan on intergovernmental level and resolve potential differences in opinions. The project will assist in developing of the Joint Commission website and information	Sufficient capacity of decision-makers, key institutions, and stakeholder groups involved in the lake use and management. The Council – a network of sufficiently informed local authorities and stakeholders with aim to participate actively in lake management and decision-making

exchange system between Estonian and Russian sides of the Commission. The project will promote strengthening of the operational and technical capacity of the regional environmental agencies, national authorities, and the Water Commission through study tours to other international lake regions, thematic meetings, consultations, and publications.	processes. Strong network of NGOs around the lake working to decrease and prevent nutrient load.
Activity 6. **Strengthening capacity of local authorities** to implement local environmental protection measures (cleaning coastal areas, maintaining public beaches, implementing actions aimed at reduction of pollution load in the basin, etc.) **and promoting involvement of stakeholder groups** (farmers, fishermen, small and medium businesses, tourism business) **in implementation** of the Management Plan, including the program of environmental measures for nutrient pollution reduction and a **program for ecotourism and ecological farming.**	A network of local authorities around the lake exists; Las are involved in preparation and implementation of Management Plan; develop subbasin management plans and plans for water sewage infrastructure as a part of Lake Peipsi Basin Management Plan.
Activity 7. **Public and NGO involvement plan as a part of the Lake Peipsi Basin Management Plan; capacity building of NGOs in the region dealing with water protection and nutrient load reduction in the region**. During the development of Management Program and Action Plan consultations with public will be organized. Capacity building activities to promote NGO involvement in water eutrophication problems solution through trainings and consultations will be organized for NGOs working in the region in the lake basin.	At least five NGO cooperative projects implemented that join grassroot NGOs from Estonia and Russia.
Activity 8. **Public information and education program** **Public information on project and eutrophical problems in mass media** (regular press-releases, articles, TV and radio interviews, printed materials). **School curricular** for high schools on eutrophication issues. Training and teaching materials for schoolteachers. **Interactive project website** in Estonian, Russian and English at the Peipsi CTC website linked with the Water Commission website www.envir.ee/jc using Internet GIS and a semi-moderated listserv in three languages to facilitate communication **and information exchange system** among stakeholders. The interactive Internet based web based GIS that will encourage sharing the environmental data about Lake Peipsi region. The web GIS will contain lot of useful data from both Estonia and Russia; and enable end users to visualize environmental data on the map. **Publications:** Brochures about the project, Lake Peipsi fact sheets, video, and CD-ROM will be developed to distribute results of the project and to promote awareness in the region.	Project website with aim to distribute adequate information about water quality and training materials is established. Increased public awareness on eutrophication related issues in the region. Published training materials, brochures, and educational materials on CDs and video focused on the causes, impacts and solutions to Lake Peipsi eutrophication.
Activity 9. **Implementation of demonstration projects** 1. A development plan for an environmental infrastructure	A development plan produced of water supply and sewerage based on

demonstration project aimed to improve water quality for a community of under 10 000 people. The aim of pilot projects is to demonstrate innovative nutrient management technology on rural municipality level since most of municipalities in the region. As a follow up to the project, construction of the sewage infrastructure will be further supported by the government and EU structural funds. 2. Pilot project on developing a regional ecotourism route to be managed by a local municipality and local stakeholders on the Lake Peipsi lakeshore area in Räpina Community, Estonia which includes Meelva bog, abandoned Räpina polder area, and cultural and natural heritage objects.	using of best available technology with reasonable price. Tourist routes with different complexity supported with explanatory signs, maps and tourist bulletins as well as with possibility to get guided tours. Local agricultural school teachers and students trained to maintain the site, protect the environment and to give tours and lectures.
12. Estimated budget **Total Lake Basin Management Program 4 775 000 USD**, including **Requested from GEF 1 000 000 USD** Other funds to support preparation of the Lake Peipsi/Chudskoe Basin Management Program **3 775 000 USD,** including 1. Estonian government estimated 821 000 USD, including 1.1. Environmental infrastructure funds State budget&EU structural funds ***800 000*** 1.2. State water program Peipsi subbasin *11 000* 1.3. Water Convention budget *10* ***000*** 2. Russian government estimated 114 000 USD, including 2.1. Environmental infrastructure funds state budget and Danish EPA infrastructure funds ***104 000*** 2.2. Federal water convention budget *10* ***000*** 3. EU TACIS Baltic Line 2000 in Russia 1 820 000 USD, 4. EU 5th RTD program MANTRA East 440 000 USD, 5. EU LIFE in Estonia 300 000 USD, 6. MATRA Dutch government 50 000 USD, 7. US Baltic NGO fund 30 000 USD, 8. Danish EPA infrastructure projects in Pskov 200 000 USD **Project period 2002 – 2004 (36 months)**	

Information on Institution Submitting Project Brief
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14. Information on proposed executing agency
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e-mail: Gulnara.Roll@ctc.ee

15. Date of initial submission of project concept
29 October 1998

16. Information by Implementing Agency
Nick Remple, GEF-RBEC Regional Coordinator, nick.remple@undp.org

17. Project Identification number
2296 RER/01/Gxx

18. Implementing Agency Contact Person
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19. Project Linkage to Implementing Agency programs
This project complements UNDP's large portfolio of transboundary waters projects in the CEE region (Black Sea, Danube River, Caspian, Dneper River, and 2 Danube MSPs) and presents substantial opportunities for knowledge sharing among projects addressing often similar transboundary waters issues. In this regard, the project will be encouraged to participate in the UNDP-GEF IW:LEARN project, which fosters virtual exchange of best practices in IW management across the GEF IW portfolio. The project also supports UNDP's Country and Regional Cooperation Frameworks for reform and strengthening of environmental institutions in the CEE region.

20. Project Description

20.1. Background

Eutrophication due to significant nutrient loads in Lake (L.) Peipsi (figure 1) represents a major threat for the water quality of the lake directly connected to the Baltic Sea by the Narva River. L. Peipsi (Russ. *Chudskoe or Chudsko-Pskovskoe ozero*) is the fourth largest lake in Europe after Ladoga, Onega and Vänern, and is the largest transboundary lake in Europe. This water body is divided into three parts with distinctive limnological features: L. Peipsi *s.s.* (2613 km^2, average depth 8,3 m), L. Pihkva/Pskovskoe (709 km^2, 3,8 m) and L. Lämmi/Teploe (236 km^2, 2,5 m). The northern part of the lake can be classified as eutrophic, whilst the southern part, L. Pihkva/Pskovskoe is hypertrophic. The narrow strait-like Lämmijärv, connecting L. Peipsi *s.s.* and L. Pihkva is at present in an intermediate stage between the two other parts of the whole lake. During the last half of this century, ecological conditions of L. Peipsi have been constantly worsening. In the 1960's the lake was classified as mesotrophic. The eutrophication in 1970-80's has caused the higher vegetation (mainly reeds) to spread and grow thicker. For example, up to end of the 1960s, macrophytes occupied only 2.5% of the total area of L. Peipsi, while in the late 1980s, macrovegetation occupied 7.5 and 7.9% of the surface area of L. Lämmijärv and L. Pihkva, respectively. During the 1990s, the phytoplankton in L. Pihkva/Pskovskoe has increased (Kangur, *pers.comm.*). The reason for this phenomenon is not known, but it is undoubtedly that eutrophication remains to be the major environmental problem of the L. Peipsi.

The pollution load dynamics has changed since the break up of the former Soviet Union. The economical recession followed the collapse of Soviet Union as well as increased wastewater treatment capacities of big settlements will most likely contribute to improved ecological conditions in the lake. Whether these improvements are reflected in better water quality is less clear. Nevertheless, the nutrient concentration in the lake does not change significantly during the period 1995-1998, and the L. Peipsi is still regarded as a eutrophic lake.

Riverine transport is the most important pathway for input of nutrients to the L. Peipsi. According to model calculations the lake received 16,000 – 20,500 tones of nitrogen (N) and 800-910 tones of phosphorus (P) annually during the time period 1995-1998 (L.Olsson, 1998; P.Stålnacke, 2000); average pH is 8.14 and Secchi disk transparency 1,63 m. Diatoms and blue-green algae prevail in phytoplankton biomass. The blue-greens *Gloeotrichia echinulata* and *Aphanizomenon flos-aquae* dominate in summer causing the water blooms. The concentration of chlorine is the lowest in the northern part of L. Peipsi *s.s.* (mean 14.7 mg /m^3) and the highest in the southern part of L. Pihkva (mean 47.9 mg/m^3, median 16.3 mg/m^3). The long-term average primary production is 0.8 g C m^{-2} d^{-1}. Zooplankton is remarkably rich in species, the average biomass in the vegetative period being 2-3 g/m^3 and production 22 gC/m^2. The role of rotifers in production is 53% followed by that of *cladocerans* (30%), *copepods* (16%) and *Dreissena polymorpha* larvae (1%). The value of the biomass of phytoplankton ratio to the biomass of zooplankton which is the indicator of eutrophication (in oligotrophic lakes >4:1, in mesotrophic lakes 1:1, and in eutrophic lakes < 1:2) is in L. Peipsi *s.s* 1:1 as average. In L. Pihkva/Pskovskoe this ratio is as 1 : 9, which indicates higher level of eutrophication. Another indicator of the eutrophication is the concentration of dissolved oxygen in water. During last 5 years a very low concentration, as 1-2 mgO/l of the dissolved oxygen has been measured at the end of winter (March, April) near the bottom of the lake. The concentrations of dissolved oxygen are low in the water during intensive water blooms as well.

The main commercial fishes of L. Peipsi are lake smelt, perch, ruff, roach, bream, pike, vendace and pikeperch. The stock of vendace has sharply decreased in the last years, while the amount of pikeperch has increased. Considering annual fish catches (9,000- 12,000 tons or 25-40 kg/ha), L. Peipsi exceeds all large lakes in North Europe (Nõges,T. *et.al.*, 1996.)

This water eutrophication, which is expected to increase in correlation with the economic recovery of the region, is heavily dependent on agriculture. Only 7% of the nitrogen load from Estonian rivers originates from wastewater (point pollution sources), half of the load comes from agriculture and 22% originates from forests and other diffuse sources. Of the phosphorus load, 36% comes from point pollution sources and 38% from agriculture via the rivers from catchment area. According to Vollenwieder diagram the phosphorus load to the L. Peipsi (256 kg/km^2, or 36.4 mg/m^3) is close to the critical and therefore the reduction of the phosphorus load is the most important task. In Russia, the source apportionment for the Velikaya River basin

showed that more than 70% of the nitrogen (N) load and 65% of the phosphorus (P) load originates from agriculture. Point sources accounts only for 6% and 15% for N and P load, respectively. Thus, potential increase of the agricultural production in future without improvement in agricultural practices can considerably affect potential of the lake for supporting important Baltic Sea area habitats for wildlife, especially birds.

The solution of the problems is hampered by the lack of cross-border coordination and cooperation, further exacerbated following the collapse of the former Soviet Union and the reintroduction of the border regime between Estonia and the Russian Federation. Besides, financial constraints, problems of communication and language as well as differences in monitoring methodologies represent major obstacles to an efficient transboundary environmental management of the lake. There are currently multiples environmental and economic development project ideas are developing by the local and regional authorities, however, these efforts are not coordinated between each other. Finally, differences in environmental planning and management capacities are being felt between Russia and Estonia, the latter being more advanced in terms of harmonization with European legislation and policy due to the prospect of its future accession to the EU. Such discrepancies also contribute to impeding the definition and implementation of joint policy actions in the Estonian-Russian cross-border region.

The Lake Peipsi Basin Management Program and complimentary to it activities will be implemented in accord to the GEF project plan and requirements of the EU Water Framework Directive – see a summary of the Directive in Table 3 and in more detailes in Annex 4.

Table 1. Water Framework Directive summary.

Includes:	Protection of inland surface waters, transitional waters, coastal waters and groundwater.
By:	a) preventing (further) deterioration of such waters; b) protecting and enhancing aquatic ecosystems and wetlands and terrestrial systems dependent on them; c) promotion of sustainable water use; d) implementation of specific measures aimed at progressive reduction of discharges, emissions and losses of priority substances, particularly hazardous; e) mitigation of the effects of accidents and of floods and droughts.
Contributing to:	a) supply of waters of good status regarding quality in sufficient quantities for both surface and groundwater; b) the progressive reduction of pollution of groundwater and prevent its further pollution; c) progressive reduction of hazardous substances; d) protection of territorial and coastal/marine waters; e) achieve objectives of international agreements.
Action Program:	a) Integrated protection and management within all sectors; b) Decisions taken as close as possible to location of water(s) affected; c) Utilization of economic instruments including economic analysis of water services, long-term forecasts of supply and demand aiming for recovery of cost of water services; d) Actions based on the precautionary principal and the principal of preventative action.

20.2. Complementary efforts undertaken by the cooperating countries With the support of a diversity of international parties

The project will complement and sustain the results achieved with **the main projects completed** in the region (see **Annex 3** for a detailed list of **COMPLETED** international projects in the Lake Peipsi Basin). To summarize completed international projects that were implemented in the region, allowed to

- Conduct preliminary assessments (that need more detalization and verification!) of environmental quality and formulation of priority environmental issues in the basin;
- Formulated recommendations for the steps to address priority environmental issues within the Management Plan;
- Tested ideas and recommendations through pilot projects on small geographical areas;
- Implemented local (in future should be regional!) institutional capacity building activities for NGOs and partially for local authorities;
- Implemented a number of environmental infrastructure projects in **MAJOR** municipalities in the water basin – IN FUTURE ALSO SMALLER MUNICIPALITIES should construct local sewage treatment and drinking water facilities;

The completed projects prepared a solid ground for launching a region wide basin management program. At the Third meeting of the Transboundary Water Commission in September 2000, the Commission adopted a decision "To set as priorities to prepare the "Lake Peipsi and Narva River Basin Management Plan." The Peipsi GEF project and the following other projects that support preparation and implementation of the Lake Peipsi/Chudskoe Basin Management Plan have been included into the Peipsi Water Commission working plan.

In 2001 – 2005, major projects that support preparation and implementation of the Lake Peipsi/Chudskoe Basin Management Plan are the following

- A international research project **"Integrated Strategies for the Management of Transboundary Waters on the European fringe – the pilot study of Lake Peipsi and its drainage basin (MANTRA-East)"** (website www.mantraeast.org) was supported by the 5th Framework Programme for Research and Technical Development of the EU in February 2001. 10 research institutes from Estonia, Russia, Norway, Sweden, and the Netherlands participate in the project. The three-year project will develop methodological approaches for development of the lake basin management plan. The aim of the project is to analyse and develop strategic planning methodologies and scientific tools for the integrated water management in transboundary watersheds located on the existing and future borders of the European Union. The three key objectives are: (i) to evaluate the applicability of the draft EU WFD on the new future border regions, with regard to assessing the state of eutrophication (e.g. ecological status) in lakes and river basins, and development of strategic lake and river basin tools for source apportionment, retention, and time-trends in nutrient loads, (ii) to evaluate criteria for assessing the state of eutrophication in the European Water Framework Directive, and develop strategic nutrient tools for the assessment of sources and retention, all applicable at lake and river basins at the future EU-border regions, (ii) to develop institutional mechanisms and policy instruments for decision making under condition of transition and uncertainty, and (iii) to develop methods to improve communication and utilisation of scientific information in a transboundary policy.

  MANTRA East will support implementation of the following GEF project activities
  - ***Environmental assessment*** as within MANTRA EAST water quality data and other environmental data are being collected and a GIS system is to be developed for the Lake Peipsi Basin.
  - ***Preparation of the Lake Peipsi Basin Management Plan and Nutrient Load Reduction plan*** as well as ***Monitoring component*** of the GEF project – MANTRA East participants address issues of uncertainties in environmental data collection and analysis, etc.;
  - ***Public participation and public information*** activities as MANTRA East is to produce recommendations for public participations in transboundary context and an Internet based information and communication prototype.

- **EU LIFE program supported Viru – Peipsi CAMP project that will assist implementation of the EU WFD in the Viru River Basin and Lake Peipsi basin**. The project will make an assessment of

status of surface and ground waters; will promote reinforcement of an administrative capacity of Estonian agencies involved in preparation and development of basin management plans. The project will be implemented only in Estonia by Estonian Ministry of the Environment and French consulting companies BRGM and IGN-FI. **While the GEF will concentrate on surface water quality issues, water eutrophication; and amon g activities – on capacity building and public involvement; the LIFE project will focus on ground waters quality, pollution by metals and toxic substances and the economic incentives.**

- **EU TACIS CBC Baltic Line 2000 program will support a project "Environmental Management of Lake Chudskoe" that will be implemented only in Russia.** The 2.5-year project is expected to start in 2002 (the tender was planned to be open in fall 2001). The main beneficiary will be the Neva-Ladoga Basin Water Management, an inter-regional agency in St Petersburg under the Russian Ministry of Natural Resources. The project will be implemented in close collaboration with the Pskov Regional Administration and Pskov Committee of Natural Resources. The overall objective of the Project is to improve the environmental management capacities of the Russian regional and local environmental authorities to promote an increased transboundary co-operation towards the sustainable conservation of habitats and eco-systems in the Russian-Estonian cross-border region of the Lake Chudskoe/Peipsi. The project includes a sampling program supporting the implementation of an environmental assessment of the pollution loads dynam ics, pollution sources, water quality, in-lake processes and biodiversity-related disturbances; a comparative analysis of the EU Water Framework Directive and the Russian Water Basin Management approach, outlined in the Russian Water Code and the Law on Environmental Protection; Environmental Management Plan and a Nutrient Load Reduction and Prevention Strategy for the Lake Chudskoe; training, study tours, communication and information management activities to strengthen the institutional capacity of the Joint Commission and to increase the operational and technical capacity of the regional and local environmental agencies, municipalities, NGOs and other stakeholders; environmental education programs on the eutrophication-related problems of the Lake to raise public awareness; design and implementation of two demonstration pilot-projects in Pskov Oblast, Russia, aimed at reducing the nutrient load in the Lake. **Coordination of TACIS CBC and Peipsi GEF projects have been ensured through establishing shared steering committees and coordinating activities on the level of preparation of terms of references for the two projects.**

- **Environmental infrastructure projects. In Estonia**, funds are available for **environmental infrastructure projects** from the state budget as well as from the EU structural ISPA funds. **Environmental infrastructure projects in Russia will** be implemented with the support of local authorities and large contributions from the Danish Environmental Protection Agency and EU TACIS Program. There is a need in international support to construction of sewage treatment facilities for small municipalities as well as an assistance in preparation of project proposals and technical documentation for these municipalities – possibly special project preparation funds that can be used by municipalities to hire consultants to prepare project documentation. For 2002-2005, planned feasibility studies and construction of sewage treatment plant in Gdov, and drinking water station in Pechory

- **Promoting involvement of local authorities and stakeholders.** A project application was submitted by the Peipsi CTC to Dutch government (MATRA program) in August 2001 with the aim to obtain additional funds to support bringing know-how of Dutch experts from RIZA (water management and research institute) and Free University of Amsterdam to develop arrangements to involve local authorities in implementation of the Management Plan and promote cooperation and networking among the local authorities around the lake as well as capacity bu ilding of the local authorities.

- **NGO support. T**artu and Jõgeva County NGO Support Center receives annually 30 000 USD to conduct consultations, training and provide other assistance to NGOs on Estonian side of the region. Russian Pskov NGO "Chudskoi Project" implements a local public information and education project with the support of Russian state, private funds (Berezovsky foundation) and Soros foundation – 10 000 USD a year.

Thus, different international projects in the Lake Peipsi Basin compliment each other and will be coordinated through planning activities using joint a Estonian-Russian Steering Committee. The Peipsi GEF project will play an integrative role for different projects and activities that are and will be implemented in the region and

will ensure cross - border and cross - sectoral coordination of the environmental protection and development activities and implementation in future of the basin management plan.

20.3. Expected Project Outcome

1. Lake Peipsi Basin Management Plan as a strategy document as required by the EU, Estonian and Russian water legislations;

2. Program of measures to reduce nutrient load pollution - a Nutrient Load Reduction and Prevention Action Plan;

3. Coordinated program for surface water monitoring between the two countries on Lake Peipsi prepared and partially implemented under the UN ECE guidelines for monitoring and assessment of transboundary lakes;

4. Robust institutional arrangements and legal framework for coordination in the region of implementation of the Lake Peipsi Basin Management Plan by Estonian and Russian national river basin authorities for implementation of the Basin Management Plan;

5. Public involvement plan prepared as a part of the Basin Management Plan;

6. Sufficient institutional capacity of the Commission to coordinate implementation of the Management Plan on intergovernmental level and resolve potential differences in opinions.

7. Sufficient capacity of local authorities to implement local environmental protection measures (cleaning coastal areas, maintaining public beaches, implementing actions aimed at reduction of pollution load in the basin, etc.);

8. Increased capacity and actual involvement of stakeholder groups (farmers, fishermen, small and medium businesses, tourism business) in activities on implementation of the Management Plan and nutrient load reduction plan. – at least two projects with lead of local businesses within implementation of the Management Plan.

9. Increased at least twice a number of grassroot NGOs in the region dealing with water protection and nutrient load reduction in the region. At least five NGO cooperative projects implemented that join grassroot NGOs from Estonia and Russia.

10. Interactive project website in Estonian, Russian and English at the Peipsi CTC website linked with the Water Commission website www.envir.ee/jc using Internet GIS and a semi-moderated listserv in three languages to facilitate communication **and information exchange system** among stakeholders. The interactive Internet based web based GIS that will encourage sharing the environmental data about Lake Peipsi region. The web GIS will contain lot of useful data from both Estonia and Russia; and enable end users to visualize environmental data on the map.

11. Public information on project and eutrophical problems in mass media (regular press-releases, articles, TV and radio interviews, printed materials).

12. Publications:

- Brochures about the project and the Lake Peipsi Basin Management Plan;
- Guidance documents to local authorities, stakeholders on Management Plan implementation;
- Environmental education curricular for schools on eutrophication related issues for teachers and schoolchildren.
- Presentations, articles at international meetings.

13. Lake Peipsi Ecotourism Plan – a regional scheme, a network of organizations, publications, trainings.

15. 2 water-related infrastructure demonstration projects:

- A development plan for an innovative and cost effective sewage treatment for a small rural community;

An ecotourism route in Räpina area in Estonia (these two demonstration projects in Estonia will compliment two demonstration projects to implemented parallel on Russian side within the TACIS BALTIC 2000 Program.

21. Table 2. Activities and Financial Inputs Needed to Enable Changes

Components	Months	Total	Estonian government	Russian government	Danish EPA infrast.	GEF	MANTRA East	TACIS CBC	EU LIFE	MATRA	NGO
Activity 1. Inception period.	3 mo. (1 – 3)	79 000	2000	1000	0	60 000	6 000	0	5000	4000	1000
Activity 2. Assessments of env. state	9 mo (4 – 12)	683 000	7000	6000	0	120 000	50 000	350 000	150000	0	0
Activity 3. Coordinated program for water monitoring	18 mo (4 – 21)	237 000	5 000	2 000	0	160 000	20 000	50 000	0	0	0
Activity 4. Manage ment Program and the program of measures to reduce nutrients	20 mo (7 – 36)	1 183 000	5 000	2 000	0	180 000	70 000	800 000	120 000	6000	0
Activity 5. Capacity of the Joint Commission	24 mo (4 – 28)	127 000	5 000	2 000	0	80 000	10 000	0	25000	10000	0
Activity 6. Capacity of local authorities and stakeholders	24 mo (4 – 28)	344 000	0	0	0	140 000	80 000	100 000	0	20000	4000
Activity 7. NGO capacity building, public involvement plan in Management Plan	24 mo (4 – 28)	241 000	1000	0	0	120 000	70 000	20 000	0	10000	20000
Activity 8. Public information and education	32 mo (4 – 36)	271 000	1000	1000	0	100 000	84 000	80 000	0	0	5000
Activity 9. Demonstration projects	18 mo (4 – 21)	1 610 000	800 000	300000	200000	40 000	50 000	420 000	0	0	0
TOTAL		4 775 000	821 000	314 000	200000	1 000 000	440 000	1 820 000	300 000	50 000	30 000

Table 3. Project Implementation Plan in months – total period 36 months

Project Components	MO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1. Inception period	3mo	X	X	X																																	
2. Assessments of state	9mo				X	X	X	X	X	X	X	X	X																								
3. Monitoring program	18mo				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X															
4. Management Program	20mo							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5. Capacity Joint Commission	24mo				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X							
6. Capacity local authorities	24mo				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X							
7. Capacity NGOs	24mo				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X							
8. Public Info and education	32mo				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9. Demonst. projects	18mo																			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Table 4. Project budget

Components	Total	GEF	Other funds
Activity 1. Inception period.	79 000	60 000	19 000
Personnel	27 000	18 000	9 000
Subcontracts	4 000	4 000	0
Training	8 000	8 000	0
Equipment	15 000	15 000	0
Travel	10 000	10 000	0
Miscellaneous	5 000	5 000	0
Activity 2. Assessments of environmental state	683 000	120 000	563 000
Personnel	360 000	20 000	340 000
Subcontracts	113 000	60 000	53 000
Training	110 000	10 000	100 000
Equipment	5 000	5 000	0
Travel	70 000	20 000	50 000
Miscellaneous	25 000	5 000	20 000
Activity 3. Coordinated program for water monitoring	237 000	160 000	77 000
Personnel	107 000	50 000	57 000
Subcontracts	25 000	25 000	0
Training	30 000	30 000	0
Equipment	11 000	11 000	0
Travel	60 000	40 000	20 000
Miscellaneous	4 000	4 000	0
Activity 4. Management Program and the program of measures to reduce nutrients	1 183 000	180 000	1 003 000
Personnel	320 000	20 000	300 000
Subcontracts	570 000	70 000	500 000
Training	230 000	30 000	200 000
Equipment	16 000	16 000	0
Travel	40 000	40 000	0
Miscellaneous	4 000	4 000	0
Activity 5. Capacity of the Joint Commission	127 000	80 000	47 000
Personnel	18 000	11 000	7 000
Subcontracts	0	0	0
Training	33 000	20 000	13 000
Equipment	10 000	5 000	5 000
Travel	60 000	40 000	20 000
Miscellaneous	6 000	4 000	2 000
Activity 6. Capacity of local authorities and stakeholders	344 000	140 000	204 000
Personnel	59 000	52 000	7 000
Subcontracts	20 000	20 000	0
Training	33 000	20 000	13 000
Equipment	8 000	3 000	5 000

Travel	60 000	40 000	20 000
Miscellaneous	7 000	5 000	2 000
Activity 7. NGO capacity building, public involvement plan in Management Plan	241 000	120 000	121 000
Personnel	80 000	30 000	50 000
Subcontracts	29 000	20 000	9 000
Training	35 000	22 000	13 000
Equipment	8 000	3 000	5 000
Travel	80 000	40 000	40 000
Miscellaneous	9 000	5 000	4 000
Activity 8. Public information and education	271 000	100 000	171 000
Personnel	90 000	20 000	70 000
Subcontracts	19 000	10 000	9 000
Training	65 000	22 000	43 000
Equipment	8 000	3 000	5 000
Travel	80 000	40 000	40 000
Miscellaneous	9 000	5 000	4 000
Activity 9. Demonstration projects	1 610 000	40 000	1 570 000
Personnel	205 000	5 000	200 000
Subcontracts	530 000	30 000	500 000
Training	770 000	0	770 000
Equipment	100 000	0	100 000
Travel	0	0	0
Miscellaneous	5 000	5 000	0
TOTAL	4 775 000	1 000 000	3 775 000

22. Current Situation

With a total surface area of 3,550 km^2 shared by Estonia (44%) and the Russian Federation (56%), L. Peipsi is the largest international lake in Europe. Its watershed lies in the Leningrad and Pskov Oblasts of the Russian Federation (59%) as well as in Estonia (34%) and Latvia (7%). The Lake is connected to the Gulf of Finland and the Baltic Sea by the Narva River (77 km) that is, after the Neva River, the second largest river flowing into the Gulf (figure 2).

The Lake Peipsi and Narva River Basin (56,225 km^2) is renowned for its rich ecosystem and its wetlands of international significance. The Russian coast of the Lake, including the Remdovsky Nature Reserve, was declared a RAMSAR site in September 1994. In addition to some thirty-three endemic fish species observed in the lake and the lower reaches of its tributaries, the area forms an important habitat for birds migrating across Europe and supports a remarkable diversity of flora and fauna.

Although the economic recession that has followed the break up of the former Soviet Union has resulted in a decrease in agricultural and industrial pollution loads the concentration of nutrients, mainly nitrogen and phosphates, in the lake remains worrying. Besides of the reduction of the nutrient loads and internal biological processes in L. Peipsi there are some more anthropogenic impacts to the ecological and environment conditions in the catchment area of L. Peipsi.

Industry (including the energy production)

The main branches of industry in this region are energy production, building and civil engineering, chemical industry, textile manufacture, foodstuff production and timber processing. The environmental impact of the energy production, which has in NorthEast of Estonia and in Leningrad Oblast the tight connection with mining of oil-shale, is without doubt the greatest of the industrial impacts in this region. The residual water from the ash removal systems of oil-shale-fired power plants (Narva Power Plants, former known as Estonian and Baltic Power Plants) has very high alkalinity (pH 12 and over), with a large concentration of heavy metals. Despite of the closed water circulation in the ash removal systems there have been leakage from the sedimentation basins in the heavy rain periods and in the snow melting periods.

The energy industry's second largest impact on environment quality and on biological diversity is caused by sulfur and ash emission, originated from power plants. Estonia makes a significant contribution to acid rains in the Baltic Sea Region. The alkaline ash has strongly damaged the natural succession of the bog communities in this region.

The cooling water of the power stations has temperature, as 17-18° C in the outlet river even in winter-period, and it causes thermal pollution in Narva Water Reservoir.

Chemical industry produces many liquid hazardous substances, which in outlets can cause harmful damages in water bodies and its ecosystems. There are not enough investigations, but the first results of them indicate the higher concentrations of PCB's, phenols and phenol compounds, hydrocarbons and heavy metals.

Recent improvements in municipal sewage treatment have not been sufficient to reverse the situation and eutrophication is still recognized as a major threat for the water quality of the lake.

Mining of oil-shale

Oli-shale mining has considerable impact on the landscape and to the groundwater flow. In the Eesti Deposit, oil-shale lays in the depth up to 100 meters. The open cast mining method is used if the depth of the oil-shale bed is up to 40 meters and the underground mining is used for deeper oil-shale beds. Any kind of mining significantly changes the relief of the land surface and groundwater regimes, the water chemistry and hence the whole living environment. These complicated environment protection problem need the careful analyze and complicated technologies. Very big amounts of water (about 190-210 million cubic meters) are annually pumped out of the mines and quarries caused problems for both ground and surface waters.

Cross-border cooperation towards the protection of the Lake Peipsi and Narva River Basin has befallen a strong political support from both Estonian and Russian authorities. In August 1997, an Intergovernmental Agreement on the Protection and Sustainable Use of Transboundary Waters was signed. A Joint Commission on Transboundary Waters (further Commission) was established to define joint policy

actions and coordinate their implementation. The objects of this agreement are transboundary waters of the Narva River water basin, including L. Peipsi. The Joint Commission coordinates activities on implementation of the agreement. The Joint Commission organizes:

- Exchange of monitoring data between the parties in accordance with the agreed monitoring program;
- Defines priority directions and programs of scientific studies on protection and sustainable use of transboundary waters;
- Agrees on common indicators of quality for transboundary waters and methods of water testing and conducting analyses;
- Facilitates cooperation between agencies of executive power, local governments, scientific and public interest organizations, as well as other institutions in the field of and protection of transboundary waters;
- Ensures publicity of discussions of questions related to the use and protection of the transboundary waters.

In the case of extraordinary situation on transboundary waters, the parties will inform one another immediately through the competent agencies and the Joint Commission.

At its second meeting in November 1999, the Joint Commission recognized as a top of priorities the preparation of the Lake Peipsi Basin Management Program in accordance with the proposed draft EU Water Framework Directive. This priority was confirmed at the UN ECE Workshop on Management and Sustainable Development in International Lake Basins, organized by the Estonian Ministry of Environment and the Center for Transboundary Cooperation with the support of Finnish Ministry of Environment and Swedish Environmental Protection Agency, December 1999, Tartu, Estonia.

Figure 2. Lake Peipsi Basin

23. Project Management

The project will be executed through two project implementation units to be established at Estonian and Russian offices of the **Peipsi Center for Transboundary Cooperation (Peipsi CTC)**. The Peipsi CTC has its administrative offices in Tartu (Estonia) and Pskov (Russia) with local coordinators working in 5 small local communities in the region. The offices are well equipped with computer equipment, Internet, and library, with multilingual and multicultural staff, including foreign students working summers as interns. There are 22 people on the Peipsi CTC administrative staff and about 20 people at universities working on short-term contracts. A Tartu Volunteer and NGO Resource Center works at the Peipsi CTC office. The Peipsi CTC has very close connections with the local communities in the region. The Peipsi CTC runs training programs for local communities in business, environment, computer, e-mail use; organizes environmental actions and children art contests (see more at www.ctc.ee), etc.

The Peipsi CTC has been working in both countries since 1994. Its location and the existence of country offices in both of the countries involved in the project will add to the Peipsi CTC's ability to communicate regularly with beneficiaries and contractors. Knowledge of the region and skills to work in region help to find successful contacts with all stakeholders.

24. Consultations with Beneficiaries and the Implementing Agency

The Peipsi CTC has already established a cooperative work relationship with the major project beneficiaries and stakeholders within earlier projects implemented in the lake basin. The main beneficiary institutions are the Estonian – Russian Transboundary Water Commission (the Commission), the governments of Estonia and Russia as well as civil society groups.

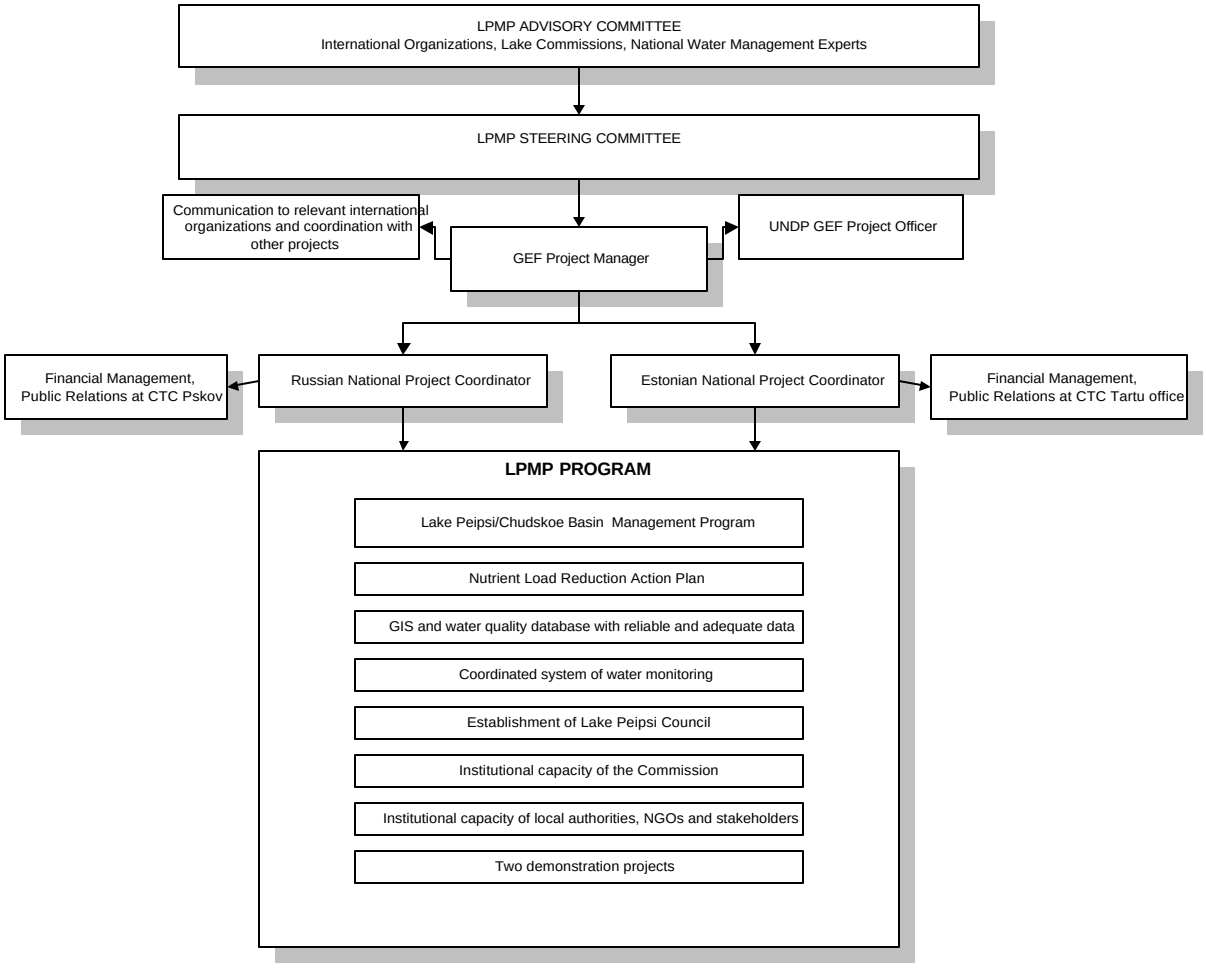
This GEF project is in the working plan of the Transboundary Water Commission and correspondingly of the two governments and progress of implementation of the project will be reviewed on annual basis at meetings of the Estonian-Russian intergovernmental transboundary water commission chaired by the First Deputy Minister of the Russian Ministry of Natural Resources Mr. Mihheev as well as at biannual meetings of the Commission four working groups that include representatives of the Ministry of the federal and regional levels as well as representatives of the Russian Hydrometeorological Service. Therefore, this REGULAR review procedure by the Commission and its working groups ensures a *full coordination with ongoing changes in assignment of responsibilities for environmental management to the various levels of government within Russia.*

The Peipsi CTC cooperates with regional NGO Support Centers in Tartu and Pskov (that are regional hubs for national NGO support center networks in Estonia and Russia) who conduct regular consultations with NGOs and local stakeholders. Through these two regional NGO support centers, consultations with local stakeholders and NGOs will be organized.

The Peipsi CTC will conduct regular consultations over email and telephone, meetings (at least twice a year) with representatives of the implementing agency – the UNDP offices in Moscow and Bratislava.

The current project management structure is described on the figure 3.

Figure 3. GEF Project Management Structure



The Project Manager is responsible for the project management and coordination of the project activities with the TACIS and other international projects in the region. Dr. Roll has considerable experience in coordinating multilateral transboundary environmental projects in the Estonian – Russian border region (Lake Peipsi Basin), which were implemented with the support of the EU PHARE Program and EU member states such as Denmark, Sweden, and Finland. **Two national project coordinators** work in a close connection with the state and local authorities, consultation and design companies, as well as other key actors in the respective countries. For each of the project components, there are Estonian and Russian project implementation units.

The Steering Committee (see Annex 1A) of project consists of the representatives of the Ministry of Environment and Ministry of Natural Resources, regional representatives of environmental specialists. Both the MANTRA East project manager Dr. Per Stalnacke and the project manager of the EU TACIS project (name is not known as results of tender of the project are not known yet.) are included to the Steering Committee. The Steering Committee supports project managers in planning, preparation, and implementation of the project. They will monitor and evaluate the project's course, particularly as regards its management and methodological aspects. They meet once per year or as often as necessary.

The Advisory Committee (Annex 1B) of the project is as quality assurance for the project in its methodological level, management and implementation levels. The Advisory Committee consists of representatives of Russian and Estonian Ministries of Foreign Affairs, members of international

organizations involved in transboundary water management (UN/ECE, the World Bank, and HELCOM), representatives of international river basin authorities and national experts - all together 16 members. Both co-chairmen of the Estonian-Russian Commission on Transboundary Waters are included in the Advisory Board. The Advisory Committee represents the interests of end-users of the project. Members of the Advisory Committee will provide their feedback to the project team on the overall direction of the project implementation and advises the project participants on translating the scientific results of the project into practical actions on management.

The Advisory Committee members receive regular updates on the implementation of project and will be invited to participate in the project meetings during the project period. A mid-term conference of the Advisory Committee will be held, in which the members analyze the results obtained and advise on the future direction of the project. Active involvement of the members of different transboundary water commissions in the Advisory Committee ensures the project with information about skills of successful management stories in other transboundary lake and river basins in Europe. The final meeting will held, in which the project participants discuss with the Advisory Committee members the project results and their implementation in the transboundary water management practices as well as in the project follow-up activities.

25. Communication within the Program Network and Reporting

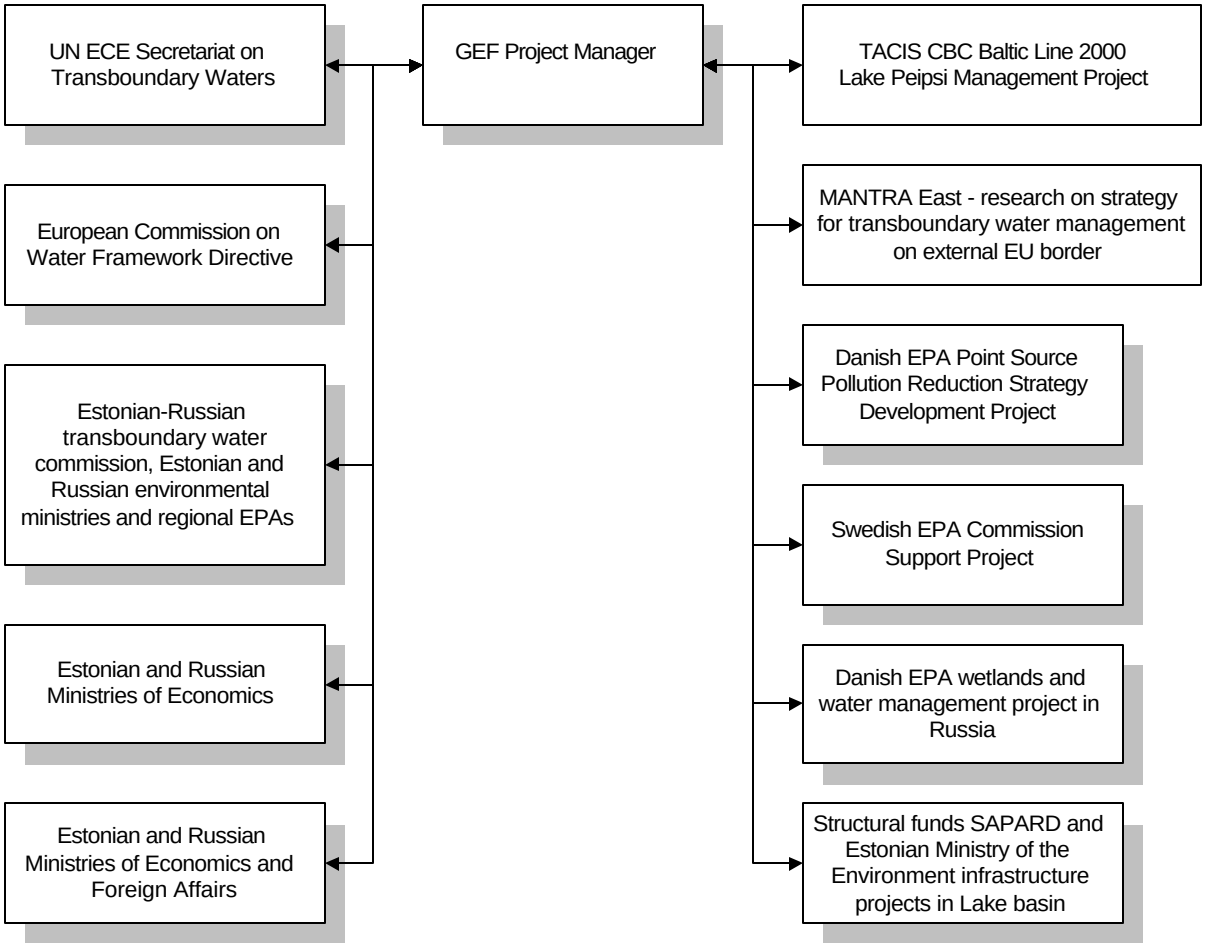
Communication within the program network and reporting is maintained through:

- Regular information exchange over e-mail through establishment of the project e-mail list**;**
- The project website at address http://www.ctc.ee;
- A bi-annual project newsletter in Estonian, Russian and English, published in electronic and hard copy. The newsletter will be circulated among the project participants and sent to relevant international organizations and experts in the region;
- Regular project workshops and working meetings;
- Presentations of the project progress and results at international conferences and seminars.

The Management Program and the Action Plan will be published in Estonian and Russian with summary in English. Also summary of the both documents will be published for wider audience and public.

Above listed measures help to promote exchange of information and networking with similar international projects, experts and organizations in Europe as well as to organize dissemination of the project findings and results internationally (Figure 4).

Figure 4. Communication with other international projects, international organizations and government agencies



26. Cooperation with authorities and public and stakeholder involvement plan

26.1. National level

Peipsi CTC is an NGO in Estonia and its Pskov office is registered as a Russian NGO "Chudskoe Project". Therefore, Peipsi CTC in Estonia and "Lake Chudskoe Project" in Russia will work with their national authorities to implement national water legislation.

The Transboundary Water Commission coordinates activities between Estonia and Russia through its four expert working groups and project implementation units responsible for administration of specific international projects (that may be different for different projects).

International projects that support preparation and implementation of the Lake Peipsi/Chudskoe Basin Management Plan are included into the Commission working plan on proposals from the Commission working groups. Projects' activities and funding are coordinated with the corresponding national river basin authorities.

26.2. Commitments for participation from regional governments.

The Estonian government has set a deadline on January 1, 2003, when the country is to be fully prepared to enter the Union. Estonian laws and the administrative system have to be adapted to the requirements of the EU. As a part of this work the Estonian Water Act is being revised to harmonize with the EU Water Framework Directive that has a river basin management approach as a main principle of water management in the EU. River Basin Management Plans for all water basins in Estonia are to be elaborated by 2004. Tartu County Environmental Department of the Estonian Ministry of the Environment **(regional agency of the ministry)** was appointed by the Ministry of the Environment to be **a river basin management authority for the Lake Peipsi Basin**. Tartu County Environmental Department is responsible to coordinate activities on preparation and implementation of the Management Plan among regional environmental agencies and regional authorities on the Estonian side. The GEF project will use this existing structure for the cooperation with the regional authorities that is outlined in the decision of the Ministry of the Environment on that appointed the Tartu Environmental Department to coordinate preparation of the Management Plan.

A half of Lake Peipsi located in the Russian Federation and is managed according to *the Russian Federation Water Code*, a federal law of the Russian Federation adopted in 1995. The Russian Water Code is based on a river basin approach. **Regional water basin management boards were created under the Ministry of Natural Resources** to prepare and organize implementation of river basin management plans. According to the Water Code, regions of the Russian Federation sharing a river basin have to sign a basin agreement that defines a procedure for cooperation on implementation of a river basin management plan; river basin councils are to be established that should represent interests of local stakeholders (water companies, local authorities) to advise water basin management boards on implementation of the basin plans. **Neva – Ladoga Water Basin Management Board is a river basin authority in Russia for the Lake Peipsi basin** and it will coordinate work of regional environmental agencies and regional (oblast) administrations of Pskov and Leningrad Oblasts on implementation of the Russian Water Code and Estonian-Russian agreement on transboundray waters.

Thus, GEF project will closely cooperate first of all with two regional agencies that are responsible in Estonia and Russia for preparation of the Lake Peipsi Basin Management Plan. The GEF project activities are included into the plans for preparation of the Management plan of the Tartu Environmental Department and Neva – Ladoga Water Basin Board. Through these two regional environmental authorities, coordination with other regional authorities will be organized. Besides, representatives of all other regional authorities will be represented in the project Steering Committee.

26.3. Involvement of local authorities

Local governments have a crucial role to play in the process of development and implementation of the Management Program in the Lake Peipsi basin. They are responsible on both sides for implementation of environmental measures, including planning and infrastructure projects. Therefore, there will be an active involvement of local authorities in the project. As a result of earlier implemented projects in the region on cross-border cooperation (see Annex 3), there is a network of local authorities in the region and the local authorities are committed to implement the measures. However, often they do not have sufficient capacity for planning and implementation of measures they are responsible for.

The project will support regional and local authorities in carrying out their task on preparation and starting implementation of the Lake Peipsi Basin Management Plan through

- Organization of consultations and discussions in communities around the lake (a survey with at least 80 representatives of local authorities and 30 consultations in local communities will be conducted) over policies for the use and protection of natural resources in the lake basin among the authorities, interest groups and NGOs in the region.
- Assisting local authorities in preparation of local environmental projects and submitting project application for funding to the EU;
- Institutionalizing participation of local authorities in decision-making on Lake Peipsi Managememtn Plan. We intend to develop Lake Peipsi Council that would include local authorities and major

stakeholders and would have an advisory capacity to the Transboundary Water Commission and national governments. In the situation of social transition in Estonia and Russia, there is no yet enough experience of involving different interest groups and wider public in policy making on regional level. One pilot project is being successfully developed on Estonian side of the Lake Peipsi basin – River Amme basin where River Amme basin *water and land council* is being developed – a forum of local authorities, farmers, fishermen, teachers, who help the local and state authorities to make decisions and develop policies on the use and protection of local resources in the area. **This experience showed to be successful and we intend to develop Lake Peipsi Council using the experience of creating River Amme water and land council.** To create the Peipsi Council, the project team will also use a methodological support from the Global Water Partnership Toolbox, www.gwp.org, and experience of involving local authorities in transboundary water management in other lake regions, such as Lake Ohrid and Constance – as Peipsi CTC works with organizations on theses two lakes within other than GEF projects.

According to the Estonian Water Act and Russian Water Code, River Basin Management Plans for all water basins in Estonia and Russia are to be elaborated; in Estonia - by a deadline of year 2004. Estonian Water Act and Russian Water Code require developing cooperation between national and local authorities as well as gives authority and power to local and regional governments in making decisions over use and protection of the resources in water basins. This is quite a new development in the legislation that has to be implemented. New practices of water governance have to be developed. Lake Peipsi Council should become a forum for discussions and negotiations among local authorities and other interest groups in the region and would provide an advice to the respective state and regional authorities as well as the Estonian – Russian transboundary water commission. The project will result in developing institutional arrangements for involving local interest groups in the policy making on the use and protection of natural resources in the Lake Peipsi Basin, a body that would include different interests of water users in the region; the body that would have an advisory capacity to the Peipsi Transboundary Water Commission, as well as to state and regional environmental authorities. The project will promote transparency in decision-making, decentralization, and cooperation among the local municipalities and representatives of local stakeholder groups.

The process of developing capacity of and networking among local authorities in the Lake Peipsi area, will include assistance in preparation of project applications and project implementation plans to small municipalities that would allow to receive funds from the EU structural funds and PHARE/TACIS programs

26.3. Public Involvement Plan

It is important to recognise that different components of 'the public' will have their own views, needs, priorities and expectations. In order to be successful, **information, consultation, and participation processes need to be tailored for particular target groups**. These will include: the 'general public', NGOs, sectoral stakeholder groups within a river basin or sub-basin (e.g. farmers' associations), and local residents/water customers. Special interest groups will be expected to participate at a more **strategic level**, e.g. through representation in the Peipsi Council – the river basin advisory committee, whereas local communities will more lparticipatie at the **field/action programme level** (link with cross-cutting principle of **'scale'**).

Stakeholder involvement will include developing cooperation with key stakeholders of the project, which along with the governments of Estonia and Russia are

- Local governments in the Lake Peipsi area (especially development/economic and environmental departments of local governments, educational commissions at local councils, etc.);
- Regional and local NGOs and community groups, land owners, farmers, fishermen, small businesses, the Peipsi Fishermen's Union, the Peipsi Ecotourism Association, Regional Peipsi area development foundations (the foundations exist in every county located in the Lake Peipsi basin on Estonian side);

- Staff and students in schools and universities.

The project has been designed to meet the needs of the Estonian and Russian Governments, local governments in the Lake Peipsi area, regional and local NGO participants and stakeholders. Ongoing consultation with stakeholders is incorporated directly into the project activities: capacity building of the Joint Commission, national and sub-national governments, NGOs and other stakeholder groups; establishment of the Lake Peipsi Council – network of local authorities and stakeholder groups in the region; the "Lake Peipsi region multi-stakeholder community" through developing a regional communication and information exchange system; and the development of Management Program and Action Plan in deep cooperation with local and international scientists. To promote exchange of information through stakeholders, organize dissemination of the project findings the project e-mail list, website, bi-annual project newsletters published in electronic and hard copy, regular project workshops and working meetings are maintained.

27. Monitoring and Evaluation Plan

The project will be monitored and evaluated in accordance with relevant UNDP and GEF procedures:
(i) The executing agency has developed periodic benchmarks and monitoring procedures to ensure that the project advances according to the timeline laid out in the project document.
(ii) The UNDP-GEF IW Advisor has monitored the project through its development phase and will be regularly informed and updated by the executing agency so that he can continue to do so in the implementation phase;
(iii) An Annual Project Report will be prepared for the project;
(iv) A Tripartite Review will be conducted with UNDP, the executing agency and the participating governments;
(v) The project will participate in the GEF Project Implementation Review - an independent external evaluation will follow completion of the project.
vi) The close proximity of the CTC to the target locations and the availability of country offices in Estonia and Russia provide the CTC with ability to monitor project development in both countries on the permanent basis.

28. Sustainability Analysis

Project sustainability is going to be achieved by

- Political support from high-level and local authorities both from Estonia and Russia,
- Institutionalization of the Management Program through adoption by the Commission the Management Plan as an official legal document for water management in the lake basin,
- Increased capacity of the project management team and experts to implementation of the Lake Management Program.

The project executing agency, NGO Peipsi CTC, is closely involved in the work of the Transboundary Water Commission and its activities related to the water management in the Lake Peipsi Basin are part of the Estonian and Russian governmental plans for water management in the basin as well as included into the plan of implementation of the Estonian-Russian transboundary water agreement. The working plans are reviewed and endorsed by the intergovernmental commission annually. This arrangement guarantees that *the results of the work (Management Program, Action Plan etc.) of the executing agency, an NGO, will be translated into legal/policy/institutional reforms at government level in the two countries.*

The project is sustainable in a long run as there is a political commitment: the Joint Commission by itself and its working groups are very interested in the proposed activities and they supported the idea of such a project very much during the annual meetings (see protocols of meetings at www.envir.ee/jc). Hence, the strong willingness from their side will be a guarantee of the sustainable project.

29. Risk Assessment: External Factors/Risks

Potential risks to implementation of the projects and measures to prevent/overcome the impediments to the project implementation are presented in the Table 5.

Risks and impediments to the project implementation	Level of risk of a negative impact to the project implementation: Low, not very high, high	How project will address the risk and ensure sustainability of measures implemented within the project?
A potential risk of aggravation of intergovernmental relations between Estonia and Russia that may result in a lack of trust and a willingness to cooperation between the project partners	Not very high – studies and statements of the Estonian and Russian officials[4] predict improvement of relations as Estonia will be getting closer to enter the EU	The cooperation is institutionalised: - The project is in working plan of the intergovernmental transboundary commission; - Steering and advisory committees include state/federal government officials
A potential risk that the NGO executed project will remain an NGO project – will not be taken over by the governments	Very low - The project is in the governmental water management programs and the Water Commission working plan.	The Peipsi GEF project management structure ensures close cooperation with the governments in preparation of the Management Plan. When the project ends, the process of implementation of the Lake Peipsi Basin Management Plan will be taken over by the respective river basin authorities WHO ARE RESPONSIBLE for preparation and implementation of the Lake Peipsi Basin Management Plan in Estonia and Russia.
Low commitment of policymakers, especially the national governments, including Transboundary Estonian Russian Water Commission	Low – existence and active work by the Water Commission shows a high commitment to the project by the two governments	Regular consultations with national governments during the project course, developing public awareness and support to the project and making the project goals more visible publicly so that they would be accepted as a political priority by the two governments.
Low interest among local authorities and stakeholders to environmental protection issues that may result in a low support to the project	Low – Sociological studies conducted by the Peipsi CTC showed that employment and economic development as well environmental protection are priority issues for stakeholders	The project includes consultations with local authorities and stakeholders that will result in formulating their priorities in the Management Program – the project will develop on the priorities formulated by the local authorities and stakeholders; also both demonstration projects support local development priorities
A potential impediment to further implementation of a joint water management plan under the EU Water Directive is that although also the Russian Water Code addresses issues of economic instruments of water protection such as	Low - This problem does not affect planned work on preparation of the coordinated program of environmental measures (the nutrient load reduction plan). Estonian and Russian governments are responsible for	MANTRA East and then mostly TACIS CBC project will support an analysis of harmonization of the EU and Russian water legislations, including economic incentives use strategies and will develop recommendations to address the issue of differences of economic incentives. On the Russian side, the GEF in cooperation with the regional authorities and the ministry will

[4] See for example at http://www.ctc.ee/lib/pdf/eu_role_eng.PDF

payments for water use and licensing water use; "full cost recovery" pricing system, the driving force of the EU Directive, is not a part of the Russian water legislation.	implementation of environmental protection measures and implementation of the Lake Peipsi Basin Management Plan and it is up to the governments what economic incentives' mechanisms they use to implement the measures. It is conceivable that consumers in Estonia pay fully water protection measures while in Russia the same measures are implemented partly using the public funds and international assistance.	assist respective local authorities in preparation of project proposals for environmental infrastructure projects and their submission to and negotiations with international donor organizations.
Differences between two countries administrative structures and procedures	Low – to ensure a long-term sustainability of the project results, project activities have to be implemented in accord to the national laws, regulations and procedures. Cooperation should be organized to ensure that a joint Basin Management Program will be developed	1. MANTRA East and TACIS projects support studies to assess differences in administrative procedures between the EU/Estonia and Russia 2. Implementation of project activities will be conducted by project implementation units in Estonia and Russia in accord to the national laws and procedures of the countries; regular communication between project teams in Estonia and Russia will be ensures through clear and detailed common project management and reporting procedures; project meetings, website and Intranet 3. The project management teams in Estonia and Russia will be informed about the other side administrative and legal structures and will be trained in intercultural communication.
Differences in water monitoring programs, water sampling and analysis methods	Rather high – there is a need in reliable and comparable data in order to develop the Management Program	This is one of central problems that the Peipsi GEF project addresses: the project will support joint water sampling and intercalibration exercises that will be conducted by Estonian and Russian labs and experts of the Transboundary Water Commission. UNECE Guidelines for monitoring of international lakes will be used as well as UN ECE experts will be involved in this project component. This will ensure prevention of the potential risk.
The language barrier	Quite low	The project management staff in Estonia is trilingual and in Russia – at least bi-lingual. Peipsi CTC has highly qualified translators and interpreters to ensure all documents are translated quickly and with high quality and that the language barrier would be a problem between Estonian, Russian and international experts

		involved in the project.
The workshop and training seminars are badly designed and planned	Quite low - if the expected project results are not achieved then the project may damage the commitment and in some cases even the credibility of participating organizations, the funders, developed information network and other activities	Careful planning of the project, and regular evaluation of results during the rpoject course, training and capacity building of the project team and experts
Low environmental awareness of the population and stakeholders in the region that can negatively affect implementation of environmental protection measures in the basin	Low	The project will support preparation of a curricular for primary and high schools on eutrophication issues and will support organization of training for teachers in the region. Media and Internet will be used to promote environmental awareness, training for environmental officials.

30. Table 6. Incremental Cost Assessment (USD)

	Baseline	Alternative	Increment
Activity 1. Inception period. Identification of key stakeholder groups, their needs.			
Global Environmental Benefits	Multiple uncoordinated environmental and economic development projects in lake basin and Baltic Sea Region. No sufficient political support to the projects from the two governments and relevant international organizations	Conference of the Joint Commission will formally approve the course of actions planned. The program will be coordinated with activities under UNDP, UN ECE, Baltic 21 and other international networks.	Coordination of the project with other international global and regional projects and initiatives is achieved as an additional know how resource for project. The project plan receives an official political approval of the Joint Commission.
Domestic benefits	Multiple small-uncoordinated environmental and economic development projects in lake basin among local authorities.	Awareness of the project among local authorities, their political support to the project. Coordination of local initiatives.	Support from the local authorities to the Management Program, coordination of local activities around the lake having a synergy effect.
Costs	Total 3000, including Estonia 2 000 Russia 1 000	79 000	GEF 60 000 MANTRA East 6 000 EU LIFE 5 000 MATRA 4 000 Baltic NGO Fund 1 000
	Baseline	**Alternative**	**Increment**
Activity 2 and 3. Assessments of environmental state in the Lake Peipsi basin with respect to draft the Management Program and the Action Plan. Coordinated program of monitoring			
Global Environmental Benefits	No systematic overview of environmental, social and economic development problems for Lake Peipsi Basin. No comprehensive assessment of natural, social and political impediments to implementation of sustainable development principles in the Basin. Methods of water quality monitoring are not coordinated which makes it impossible to compare results of monitoring on two sides and assess correctly water quality. No recommendations formulated for legal framework of cooperation and public participation.	Project international working groups will conduct assessments of the situation and external conditions and frameworks for implementation of the project. Comparability of results of water monitoring will be achieved through joint monitoring expeditions and intercalibration exercises. The working groups will develop a joint methodology and a concept for the Lake Management Program, specific practical recommendations for actions	Report produced that contains reliable and adequate data and information on the nutrient load into the lake basin, the environmental situation in the basin, the human impact, recommendations for nutrient load reduction and prevention as well as recommendations for a set of measures to strengthen the formal framework for the cooperation. A joint assessment of the environmental state in the region is achieved that helps to develop a joint plan of actions A GIS database of pollution sources and water monitoring information is produced.
Domestic benefits	No reliable information on the local level on water quality in lake No systematic information exists in the region on the dynamics of the water quality, state of natural resources in the region. No clear picture on how should the local institutions	Joint monitoring and intercalibration allow to put together a joint database with reliable information on water quality The working groups will develop a concept for implementation of the Management Program on the local level as well as specific practical recommendations	A concept for implementation of the Management Program on the local level allow to develop a specific plan of actions for water protection and management for the local environmental agencies and ensure their involvement in the Management Program implementation Through joint monitoring received reliable data on water

	be developed to promote their effective involvement in environmental management in the lake basin.	for actions and development of the local environmental institutions	quality and made accessible to public
Costs	Estonia 12 000 Russia 8 000	920 000	GEF 280 000 MANTRA East 70 000 TACIS 400 000 LIFE 150000
	Baseline	**Alternative**	**Increment**
Activity 4. Development of the Management Program and the Action Plan			
Global Environmental Benefits	Increasing eutrophication in the lake basin due to a lack of coordination of economic and environmental activities.	Decrease of nutrient load and other pollution in the lake basin through coordination of activities, effective institutional and legal arrangements, education and community actions	Decrease of nutrient load and higher environmental quality in the lake basin and Baltic Sea basin through developing effective institutional and legal arrangements, education and community actions
Domestic benefits	Uncoordinated local and international projects and activities in the lake basin that do not allow to consolidate actions and outcomes of different projects and to formulate a set of proposals for actions aimed at promoting pollution reduction in the lake basin. No adaptable management approach used in the region.	The draft Management Program is discussed with NGOs and presented to wider public through mass media. The Joint Commission adopts the Management Program as a document. The Management Program document is accepted in a general form allowing details of the plans to be updated and revised by the Joint Commission and its working groups every 2 - 3 years.	The Management Program adopted as a basis for actions by the Joint Commission for the Estonian and Russian governments. The Action Plan establishes goal for nutrient load and eutrophication reduction in the lake basin for short term (2, 5 years) and long-term (10 – 20 years) perspectives. Goals are to be revisited and revised regularly by the Joint Commission.
Costs	RUSSIAN 5 000 ESTONIAN 2 000	1 183 000	GEF 180 000 MANTRA East 70 000 TACIS 800 000 LIFE 120 000 MATRA 6 000
	Baseline	**Alternative**	**Increment**
Activities 5 and 6. Capacity building of the Joint Commission as well as local authorities.			
Global Environmental Benefits	No forum for cooperation and exchange of experiences between lake and river basin organizations in the Baltic Sea Area, UN ECE region or globally. Weak institutions and public participation decreases effectiveness of environmental measures in all of the Baltic Sea area.	Developed institutions on the region is a part of an institutional framework for protection of the Baltic Sea Basin and UN ECE region	Decrease of water eutrophication in the lake and Baltic Sea through strengthening institutions and public participation on regional level; exchange of experiences between different lake basins on water protection in Baltic Sea region and globally.
Domestic Benefits	No communication and cooperation between different levels of governance that can be the major impediment to effective implementation of any environmental protection measures in the basin. No information on ongoing and planned environmental action on Lake	Institutional capacity building on different levels. Strengthening of the operational and technical capacity of the regional and local environmental agencies, municipalities, NGOs and other stakeholders, such as fishermen, farmers, etc.	Strengthened capacity of the Joint Commission to implementation of the Action Plan and strategic planning; institutionalization of cooperation between different levels of government, business and NGOs. The "Lake Peipsi Council" is established as a result of the stakeholder meetings.

	Peipsi in communities and internationally.	Among planned activities: training and information activities; study tours to other international lake regions, developing website.	The Council represents local stakeholders; environmentally competent farmers and authorities; environmental training and information centers established on Estonian and Russian sides. Training and information materials for authorities, farmers and other stakeholder groups are published.
Costs	ESTONIAN 5 000 RUSSIAN 2 000	471 000	GEF 220 000 MANTRA EAST 90 000 TACIS 100 000 LIFE 25 000 MATRA 30 000 NGO fund 4 000
	Baseline	**Alternative**	**Increment**
Activities 7 - 8. NGO capacity building plan, public information and education.			
Global environmental benefits	Absence of the participatory watershed management and low environmental awareness undermine effectiveness of water management programs in the lake region.	Capacity building activities: training and consultations program for NGOs in the region. Public awareness programs implemented.	Increased public awareness on eutrophication related issues in communities, local authorities, and stronger network of NGOs around the lake. NGOs are involved in the Management Program preparation and implementation.
Domestic benefits	Participatory watershed management does not exist. Local authorities and NGOs are not involved in preparation and implementation of the Management Program.	Environmental education activities on the eutrophication-related problem: trainings, workshops, publications, Internet and regular active work with media.	Public information on eutrophication related issues whereas sources are available in hard copy and Internet in local languages.
Costs	ESTONIA 2 000 RUSSIA 1 000	512 000	GEF 220 000 MANTRA EAST 154 000 TACIS 100 000 MATRA 10 000 NGO FUND 25 000
	Baseline	**Alternative**	**Increment**
Activity 9. Implementation of demonstration projects.			
Global Environmental Benefits			Implementation of best available technology with reasonable costs.
Domestic Benefits	In the region there is no public tourist route. No tourist visits to the region. Small parishes are not able to improve their water supply and sewerage system.	Development of tourist route based on the principles of ecological tourism in the region. Drafting the development plan of water supply and sewerage for local community.	Increased public awareness on the Lake Peipsi region. Increased social life and decreased unemployment. Local community has water supply and sewerage development plan that enable them (1) complete their budget and finde investments to improve the system; (2) improve the system.
Costs	ESTONIA 800 000 RUSSIA 104 000	1 610 000	GEF 40 000 MANTRA EAST 50 000 TACIS 420 000 Danish EPA 200 000

ANNEX 1A

Steering Committee of the project

Development and Implementation of the Lake Peipsi Management Program

The Steering Committee of the project consists of representatives of the Estonian and Russian ministries of Environment, the Estonian-Russian Transboundary Water Commission, regional authorities, and NGOs from Lake Peipsi basin. The Steering Committee will also include the Project Manager and the UNDP Project Officer. The Committee meets at the beginning of the project and at the end of each year (total four times). The Steering Committee will adopt decisions on results of open tender procedures of selecting companies to implement tasks, as well as will support project managers in planning, preparation, and implementation of the project. The Committee will monitor and evaluate the project's course, particularly as regards its management aspects.

Steering committee in Estonia

1.	Mr. Harry Liiv	Deputy Secretary General, Estonian Ministry of the Environment
2.	Mr. Marko Tuurmann	Head of Water Section, Estonian Ministry of the Environment
3.	Mr. Jalmar Mandel	Head of the Environmental Department of Tartumaa, Estonian Ministry of the Environment
4.	Mr. Jaanus Kala	Head of the Environmental Department of Põlvamaa; Estonian Ministry of the Environment
5.	Ms. Tiiu Sizova	Head of the Environmental Department of Ida-Virumaa; Estonian Ministry of the Environment
7.	Ms. Angelika Rehema	Head of Tartumaa and Jõgevamaa NGO Advisory Service

Steering committee in Russia
(There is a preliminary agreement of 16 May 2001 with representatives of the Russian Ministry of Natural Resources that the Ministry would appoint members of the Russian part of the Steering Committee during summer 2001)

8	To be confirmed	Representative of the Water Department, Russian Ministry of Natural Resources
9.	To be confirmed	Representative, Russian Federation Hydrometeorological Service
11.	Mr. Vladimir Budarin	Chairman, Neva-Ladoga Watershed Management Department
12.	Ms. Julia Nefedova	Chairwoman, Pskov regional committee for natural resources
13.	To be confirmed	Representative, Pskov oblast regional administration
14.	Mr. Alexei Ksenofontov	Representative, Leningrad oblast regional administration
15.	Lev Shlosberg	Pskov regional NGO Advisory Service
16.	Ms. Tatyana Glushko	UNDP Moscow project officer

Annex 1B

Advisory Committee of the project

Development and Implementation of the Lake Peipsi Management Program

1. INTERNATIONAL ORGANIZATIONS
UN Economic Commission for Europe Convention on Transboundary Waters
Mr Carel H. V. de Villeneuve, Secretariat of the Convention on Transboundary Watercourses and International Lakes
UNDP GEF
Mr Andrew Hudson, Program Coordinator, Global Environmental Facility
The World Bank
Dr Stephen F. Lintner, Adviser of Freshwater, Coastal and Marine Resources
Helsinki Commission – HELCOM
Baltic Sea Basin GEF project manager
European Commission
Dr Helmut Blöch, Head of the Water Section
International Financial Cooperation
Mr Jerome Esmay, Principal Engineer of Water and Waste Management Section
2. ESTONIAN AND RUSSIAN FOREIGN MINISTRY
Estonian Foreign Ministry representative – to be confirmed in Fall 2001 (as agreed with the GEF political focal point Mr. Tõnu Miller)
Russian Foreign Ministry representative – the name will be confirmed in Fall 2001 as agreed between the Moscow UNDP office and the Russian Foreign Ministry
3. TRANSBOUNDARY WATER COMMISSIONS
Lake Constance Commission
Mr Gerd Schroeder, Commissioner, GERMANY; Dr Juerg Bloesch, President, Swiss Federal Institute for Environmental Science And Technology, Commission expert, SWITZERLAND
Lake Peipsi Commission
Mr Sulev Vare, Chancellor of Ministry of Environment, ESTONIA
Mr Nikolai Mihheev, First Deputy Ministry of Ministry of Natural Resources, RUSSIA
3. MANTRA East, EU LIFE and TACIS Project Managers
Dr Per Stålnacke, Coordinator of MANTRA-East Project
Project Manager of EU TACIS Baltic Line 2000 Lake Peipsi Management
Project Manager of the EU LIFE project
Project Manager MATRA project
Project Manager RIZA – ecosystem conservation project

Annex 2. Demonstration projects

(Note: GEF funds 2 demonstration projects in Estonia and EU TACIS Baltic Line 2000 funds 2 demonstration projects in Russia)

1. **Small grant for promotion of education and public awareness**

To support public information and education as well as to promote public awareness this small grant project is developed. The main goal of the project is to develop tourist route based on principles of ecological tourism in the Lake Peipsi Basin. Ecological tourism is defined as responsible traveling and travel management, which supports the conservation of the destination areas local culture and natural heritage, and economic welfare of the local inhabitants.

Räpina parish as logistically suitable district with a number of natural and cultural sites of interest is selected to implement the project. Räpina, with its 3500 inhabitants, lies close by Lake Peipsi in South-Estonia. Tartu-Värska-Petseri-Pihkva highway is passing the town and is used by tourists and for transite. Räpina is known for running water, untouched nature, rich green spaces, and beautiful home gardens. Räpina offers experiences for people who are interested of nature, hunting, fishing, ethnography; undertakers can find partners from our forest industry or from anywhere else. Children, education, sports, nature, and business are valued here. It is a town as for young as for older people. There is high school for landscape architectures and landscape holders in Räpina. Therefore it is possible to use them both for development of project and as guides for tourist groups in summer period.

According to the first evaluation of tourist routes the planned distance is approximately 20 – 30 kilometers. These distances are suitable for walking or bicycle trips. Different routes have to be designed, as tourists have to have possibility to choose their routes according to complexity.

The main points of interest on routes are:

Meelva bog (1827 hectares) is the greatest of the mires of the south-eastern part of the Peipsi depression. The bog is rich in small lakes and mineral "islands";

The typical south-Estonian farmhouse from the beginning of 20th century, called Tammsaare farm, on the mineral "island" in Meelva bog. The farmhouse has rich collection of household equipment and handicrafts from that period. The farmhouse with its collections gives a good overview of Estonian cultural heritage;

The Räpina polder area (1620 hectares) is interesting site for nature tourists. The northern part of this area has not been in agricultural use during last 10 – 15 years. Ecological succession process has changed this part of the polder area to the natural again. In spring and fall that area is rich in waterfowl and other migratory birds, frogs and other amphibic or aqatic animals. There is possible to build the birds watching towers on the polder dam in the lakeshore area of Lake Lämmi.

Expected outputs: Well developed routes for ecological tourism with explanatory signs and different complexity; published tourist bulletins with photos, maps and explanations; educated local guides for tourist routes.

2. **Small grant for infrastructure development**

To recommend innovative nutrient management technologies with reasonable price for municipalities one environmental infrastructure demonstration project will be implemented. The main goal of the project is to draft **the development plan of water supply and sewerage for local community**. This local community is not selected jet – will be selected on competitive process by the steering committee.

The main aim of the development plan is to elaborate a strategy of development of water infrastructure in local community and its surrounding areas. Involvement of surrounding communities is determined by existing infrastructure and based on economic valuation. Water supply and sewerage development plan is a part of local development plan and Master Plan.

The main activities to draft the development plan are as following:

1. Creation of initial database of water supply and sewerage system

- Collection of initial data (local legal acts, existing development plans, planning, investigations, permits of water use);
- Analysis of initial situation (water intakes, treatment plants, pumping stations, water conduits, wells, supplies of water use service, water demanders, water price and willingness to pay of demanders)
- Creation of digital database on map (treatment plants, wells, utility lines)

2. Draft of alternative technologies of water supply and sewerage system

- Draft of alternative technologies of water supply, sewerage and treatment
- Selection of the best alternative, taking into account local economical, social and environmental situation
- Public involvement, discussions and selection of alternative for development
- Development of selected alternative, draft of building management plan and recommendations for investments

Expected outputs: digital database of existing legal acts, development plans and planning, investigations and water use permits; digital development plan of water supply and sewerage based on using of best available technology with reasonable price. The government and the EU structural funds will further fund the infrastructure project.

Annex 3.

COMPLETED INTERNATIONAL ENVIRONMENTAL PROJECTS IN THE LAKE PEIPSI/CHUDSKOE BASIN

Until now, international projects were implemented that included the following activities

1. Assessments of environmental quality and formulation of priority environmental issues in the basin;
2. Developing recommendations for the steps to address priority environmental issues within the Management Plan;
3. Testing recommendations through pilot projects on small geographical areas;
4. Institutional capacity building, and public awareness projects;
5. Environmental infrastructure projects in major municipalities in the water basin.

The following projects have been implemented that supported the process of planning and preparation of the Lake Peipsi Basin Management Plan preparation.

Environmental Monitoring Project on Lake Peipsi

Was implemented in 1996 – 2000 with the support of the Swedish Environmental Protection Agency (SEPA). The project included sampling of water quality in Lake Peipsi, intercalibration of water quality sampling and analysis procedures between Estonian and Russian laboratories, capacity building - developing a computer communication system that connected all experts on both sides involved in the project, assessment of nutrient loads in the water basin for the period of 1995 – 1998.

The project prepared a report with an assessment of the nutrient load situation in the Lake Peipsi basin and recommendations for improvement of the water monitoring system on the lake.

The project also prepared a report on PCB, metals, and bentic fauna in rivers draining oil-shale mining areas in Lake Peipsi Basin with recommendations for water monitoring in rivers of metals and PCBs.

Support to the Estonian-Russian transboundary water commission

The project was implemented in 2000 – 01 with support of SEPA.
The project prepared a report with recommendations for a coordinated Estonian-Russian water quality monitoring program on Lake Peipsi. Based on the report, Transboundary Water Commission monitoring working group adopted a decision to prepare a joint action plan on development and implementation of the comprehensive program for water quality monitoring in the Lake Peipsi basin. Within the same SEPA project reports "Water Management in Russia: Lake Peipsi Basin Case" and "Ground water management in the Northern Peipsi – Narva River Basin" were prepared that outlined specific recommendations on harmonization of water management legislation between Russia and Estonia and proposals for developing coordinated monitoring activities of ground waters in the water basin.

The project included development of the Estonian – Russian transboundary water commission website at the address www.envir.ee/jc and the Commission brochure in 3 languages. The Commission brochure and the above mentioned reports prepared within international projects are available in PDF format at the Commission website.

Development of Strategy for Wastewater Treatment in the Lake Peipsi Basin

Was supported in 2000 - 2001 by DANCEE. Preparation of the strategy will be used in future to formulate a coordinated program of measures for pollution reduction from point sources within the Lake Peipsi Basin Management Plan.

Environmental infrastructure projects in Pskov Oblast

Danish Environmental Protection Agency (DANCEE) supported feasibility studies and construction work of a number of environmental infrastructure projects in Pskov Oblast, including a dewatering facility for

utilization of sludge; a biological sewage treatment facility at Pskov municipal wastewater treatment plant, a treatment facility for a pig factory "Pskovskaya".

Biodiversity Conservation Projects in the coastal areas

DANCEE also supported a biodiversity conservation project in Pskov Oblast "Management of Sebezh National Park." On the Estonian side, Danish WWF supported an "Emajõgi River Project" that included biodiveristy conservation and public awareness measures.

Environmental Education and Public Awareness and Participation Projects

Estonian, Russian and Latvian regional environmental agencies, local authorities and NGOs organize an annual children contest of creative literature and art works "World of Water Through the Eyes of Children" where more than 5000 children participate, however the project experienced during all 7 years of its existence lack of financing; environmental education projects should receive a more serious attention and financial support.

Danish-Estonian-Russian cross-border cooperation project was funded by the Danish Ministry of Foreign Affairs in 1998 – 2000, included conferences and consultations for local authorities from both sides of the lake interested to develop joint cooperative projects on local development and environmental protection. The project resulted in implementation of a coastal zone-planning project on Estonian side of the Lake Peipsi Basin that was supported by the EU CREDO program and preparation of project proposals to DANCEE for two Russian municipal infrastructure projects - Pechory drinking water station and Gdov municipal wastewater treatment plant.

The described international projects in 1996 – 2001, implemented under the working plan of the Transboundary Water Commission prepared a solid ground for the development of the Lake Peipsi Management Plan.

Annex 4 to PEIPSI GEF Brief

Elements for Good Practice in Integrated River Basin Management

– a Practical Resource for implementing the EU Water Framework Directive

Key issues, lessons learned and 'good practice' examples from the WWF/EC 'Water Seminar Series' 2000/2001

About this document

This *Practical Resource* document is the result of three **open, transparent and participatory seminars** – comprising the 'Water Seminar Series' – which brought together hundreds of 'water stakeholders' to discuss approaches and tools for **implementation** of the European Union Water Framework Directive (WFD). This challenging new legislation entered into force at the end of 2000 and sets out the basis for **sustainable use of water resources** across Europe. It will affect **everyone involved directly or indirectly with water resource management and use** in both Member States and EU-Candidate countries alike.

The seminars focused on **three key issues** for WFD implementation:

- *Water and agriculture*
- *The role of wetlands in river basin management*
- *Good practice in river basin planning*

This document presents the **principal outputs** of the *Water Seminar Series*, with a focus on **integrated river basin management**, the central requirement of the WFD. It is not intended to be a comprehensive guide to all aspects of WFD implementation, but rather to provide **clear, concise and practical information** on the issues listed above. This information has been developed with a range of potential users in mind, but especially:

- Those involved with **water planning and management at regional and local levels**, including land-use planners, water supply and treatment companies, and regional/local authorities

- 'Stakeholder' groups and individuals with an interest in how a given river basin is managed, for example: **Community associations, farmers' groups, and environmental organisations**

This *Practical Resource* document is divided into five chapters. The three introductory chapters provide **background information** about the *Water Seminar Series*, the **requirements of the WFD,** and the recently-agreed WFD **Common Implementation Strategy**. Chapters 4 & 5 present the main seminar outputs, respectively:

- Horizontal issues or **'cross-cutting principles'** that need to be considered at every stage of WFD implementation, in order to ensure effective integrated river basin management.
- **Lessons learned** and **examples of 'good practice'** for specific WFD requirements

It is hoped these will help stimulate and guide practical action towards early and effective WFD implementation. Additional sources of information are provided throughout the text.

The outputs from the *Water Seminar Series* **reflect the contributions of more than 300 'water stakeholders' from all parts of Europe**, who participated in the three meetings. A **Synthesis Note** and full **Proceedings** for each Seminar, are available from the following website:

http://www.panda.org/europe/freshwater/themes/seminars/seminar.html

A draft of this *Practical Resource* document was discussed at a **'validation workshop'** held near Brussels in August 2001. The final document incorporates extensive comments on a revised draft that was circulated to participants after the workshop. For a full list of contributors, see Appendix IV.

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Foreword

The *Directive of the European Parliament and of the Council 2000/60/EC Establishing a Framework for Community Action in the Field of Water Policy*, generally referred to as the *EU Water Framework Directive* (*WFD*), entered into force on 22 December 2000, and represents a hugely important step towards more sustainable use of water resources in Europe.

Primarily through the development and implementation of River Basin Management Plans, the WFD requires Member States to take whatever measures may be necessary to achieve the environmental objective of 'good status' for **all** EU waters by 2015.

The Directive's provisions are complex and far-reaching, and it has been widely recognised that implementation will be greatly assisted by the preparation of guidelines on a range of technical issues. This challenge has been taken up in the framework of the *Common Implementation Strategy* for the WFD developed jointly by the Member States and the European Commission and agreed in May 2001.

As a contribution to the WFD implementation process in general, and to the Common Implementation Strategy in particular, this document draws together the outcomes of *Implementing the EU Water Framework Directive: A seminar series on water*, organised by WWF with support from the European Commission (DG Environment and TAIEX[1]). This 'Water Seminar Series' consisted of three major technical meetings (held in Brussels in 2000 and 2001), attended by about 120 invited participants chosen to be representative of a broad range of water-related sectors from all parts of Europe. The seminars dealt with key issues for WFD implementation, namely:

- *Water and agriculture*
- *The role of wetlands in river basin management*
- *Good practice in river basin planning*

The distillation contained in this *Practical Resource* document, of key issues, 'lessons learned' and 'good practice' examples, as derived from the 'Water Seminar Series', should prove to be of value for all those involved with implementing the WFD. Indeed, there can be no doubt or complacency about the efforts required – at all levels – to ensure that its challenging objectives are met. Environmental protection Directives, especially those dealing with water, have been among the most poorly implemented bodies of EU legislation to date. However, nothing short of complete and timely implementation of the WFD will be sufficient to safeguard water resources – and the ecosystems that sustain them – for future generations of Europeans.

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[1] Technical Assistance Information Exchange Office

Chapter 1. Background to the 'Water Seminar Series'

In October 1999, the WWF European Freshwater Programme (see Box 1.1) submitted a project proposal entitled *Implementing the EU Water Framework Directive: A seminar series on water* to the European Commission[2]. This initiative was successful and enabled the go-ahead for a series of three technical meetings held between February 2000 and May 2001, each dealing with a specific key issue for implementation of the WFD:

- ***Water and agriculture*** – Building on existing practices and knowledge of how to assess and reconcile water and agriculture interests at the river basin level
- ***The role of wetlands in integrated river basin management*** – Tools and approaches for integrating the benefits offered by naturally functioning wetlands into overall management of water at a river basin level
- ***Good practice in river basin planning*** – Focusing on sharing experience of existing approaches and tools for river basin management planning, as relevant to WFD implementation

The three objectives of the 'Water Seminar Series' were:

- To provide information and opportunities for debate on the WFD, addressing the need for greater transparency and public awareness during the final stages of its development and during its implementation
- To facilitate the sharing of experiences and expertise and the identification of 'good practice' for implementing key elements of the WFD, by involving a broad range of 'water stakeholders' from different economic sectors and regions of Europe
- To contribute to the development of the present document, providing practical information to assist river basin managers and others in meeting the objectives of the Directive

With an emphasis on openness, transparency and a participatory approach, the seminars proved to be effective fora for exchanges of views, experience and expertise. A particularly significant event was the adoption of the final WFD text, following completion of the conciliation process between the European Parliament and Council, in September 2000. This meant that the third seminar, on *Good practice in river basin planning* (May 2001), took place in the context of actual entry into force of the WFD (on 22 December 2000), and so was able to focus even more concretely on implementation.

More than 300 individual 'water stakeholders' participated in the 'Water Seminar Series' overall, with representation from the governmental, non-governmental and business sectors of both EU Member States and EU-Candidate countries. Among the bodies represented were environment, water, agriculture and forestry ministries/government agencies, the water supply industry, water management and research institutes, farmers' associations, environmental non-governmental organisations (NGOs) and EU institutions, including the European Commission.

The European Commission (DG Environment) not only co-financed the 'Water Seminar Series' project, but was also closely involved with the technical preparation and follow-up of each seminar, as part of its own efforts to facilitate WFD implementation.

[2] the *Funding opportunities* for *'ad hoc' proposals* mechanism operated by DG Environment

A *Synthesis Note* (in English, French, German and Spanish) and full *Proceedings* have been produced for each seminar.[3] The three *Synthesis Notes* provided the basis for this *Practical Resource* document, a draft of which was also discussed at a small 'validation workshop' held in August 2001.

The main purpose of the present document is to draw together the key issues, 'lessons learned' and 'good practice' examples of integrated river basin management that emerged from the 'Water Seminar Series'. Of course, these correspond to the main themes addressed by the three seminars (i.e. agriculture and wetlands; the role of wetlands in river basin management; and good practice in river basin planning) and do not cover every aspect of the WFD in detail. In fact, certain elements of the Directive (e.g. scientific characterisation of water bodies, water pricing issues) were not specifically included in the seminar series agenda.

This publication is intended for all those involved with implementing the WFD, especially river basin planners and managers. However, it is hoped that the summary of the WFD's provisions, the introduction to the Common Implementation Strategy for the WFD, and the highlighting of practical steps for its application, will prove useful to other stakeholders at a range of levels.

Box 1.1

WWF's European Freshwater Programme and WFD Implementation

WWF established a European Freshwater Programme (EFP) in 1998. The EFP has developed a series of activities "*to conserve and restore the functions and integrity of freshwater ecosystems for the benefit of all life*", and includes the promotion of Integrated River Basin Management (IRBM) as one of its priorities. The WWF EFP consists of a coordination unit and a team of 33 freshwater officers in 18 countries.

The EFP team worked with other non-governmental organisations (NGOs) and stakeholders to influence development of the WFD text during the long period of negotiations leading to its adoption by the European Parliament and Council of Environment Ministers in September 2000. In parallel, and especially during 2001, WWF has also been working to facilitate the WFD implementation process.

As far back as October 1998, WWF and the European Environment Bureau (EEB) co-organised a workshop on *Water Framework Directive Implications and Challenges for the Environment*. Approximately 50 people, representing national and European NGOs, met to discuss progress on the WFD text, identifying several major areas of concern.

Further to the outcomes of this workshop, WWF's continuing work emphasised the need for:

- Increasing public/stakeholder awareness about the existence, purpose and scope of the draft WFD
- Developing further collaborative action by the European Commission, Member States and NGOs, including the preparation of non-statutory guidance on WFD implementation
- Building capacity for integrated water management and river basin planning in most European countries

While recognising important regional differences, WWF sees the WFD as the best available tool to ensure more sustainable use of water and wetlands across Europe, thus forming a vital contribution to the achievement of conservation targets and goals in the region. This is why many of the EFP's activities are directed towards supporting full and effective implementation of the WFD[4].

[3] These are available in pdf format through the following WWF EFP website: http://www.panda.org/europe/freshwater/seminars/seminars.html

[4] A paper entitled *WWF's activities across Europe to assist the implementation of the WFD and IRBM* is available through the EFP web site http://www.panda.org/europe/freshwater

Chapter 2. The EU Water Framework Directive (WFD)

A sustainable future for water in Europe?

The EU Water Framework Directive (WFD) is a **bold and forward-looking** instrument that will have **far-reaching consequences** for the future management of water and aquatic ecosystems throughout Europe. If implemented in a complete and timely manner, the WFD has the potential to be the **EU's first 'sustainable development' Directive**. Thus, it obliges European countries to establish integrated river basin management, which depends crucially on reconciling all natural processes and human activities that influence the water cycle in a given river basin.

The central feature of the WFD, around which all its other elements are arranged, is the use of **river basins as the basic unit for all water planning and management actions**. This recognises that water respects physical and hydrological boundaries, but not political and administrative limits.

Mainly through the development and implementation of **River Basin Management Plans**, the WFDs overall environmental objective is the achievement of **'good status'** for all of Europe's surface- and ground-waters within a 15-year period. As a consequence, WFD implementation will involve a vast range of **stakeholders**, ranging from individual consumers, major water-using sectors such as agriculture and industry, and secondary uses like water-based recreation, to water supply/treatment companies, scientists, nature conservationists and the authorities involved in planning land and water use at local, regional, national and international levels.

The specific **benefits derived from implementing** the WFD are expected to include:

- Improved ecological quality of European freshwater and coastal water ecosystems
- Biodiversity gains (through better management of aquatic and wetland habitats/species)
- Improved sustainability of water use (through more efficient water resource use and management)
- Reduction of water pollution
- Mitigation of the effects of floods and drought
- Improved efficiency and effectiveness of water policy, with better targeting and reduced costs

What does the WFD say?

The WFD therefore represents a fundamental reform of EU water legislation in both environmental and administrative terms, making **integrated river basin planning and management** compulsory for Member States, as well as for EU-Candidate countries **from the date of their accession** to the EU. Set against the overarching theme of sustainable water resource use, the WFD's principal **environmental objectives** (set out in Article 4) are:

- To prevent deterioration in status of **all** Community waters (i.e. both surface- and ground-waters, including coastal waters, throughout the EU)

- To ensure achievement and maintenance of **'good status'**[5] for all Community waters by 2015

As its name implies, the WFD establishes a 'Framework', providing for a common approach, and common objectives, principles, definitions and basic measures. However, the specific actions required to achieve 'good status' are the responsibility of the competent authorities in the Member States (whether at national, regional, local, or at the river basin level).

Box 2.1

Results Count!

The WFD requires **active management measures** to deliver clear environmental objectives. Although establishing effective measures necessitates a degree of administration and planning, priority must be given to **implementing action on the ground** at river basin (or sub-basin) level. Thus, while meeting the WFD's *process obligations* is important, the overriding obligation is **to achieve results**. Over time, this distinction should be reviewed regularly by Member States, River Basin District (RBD) authorities and stakeholders, to ensure that WFD implementation remains results-focused and does not stagnate due to over-emphasis on administrative processes. The final deadlines for transposition into national law and achievement of 'good status' mean that the timetable is tight and **the need for action is urgent**.

The WFD, which must be transposed into national law (by the end of 2003 at the latest), sets out a series of **tasks**, each with a **strict final deadline** (see Box 2.2), for achieving the ultimate objective of 'good status'. However, these tasks are **NOT arranged in a sequence of consecutive steps**, where each task must be completed before the next can begin. On the contrary, the challenging timeframe means that **several tasks will have to be worked on simultaneously**. Furthermore, while the deadlines set out in the WFD text can be considered as the '**minimum requirements**' **for legal and administrative compliance** , meeting them will not guarantee better water management at the river basin level or the ultimate achievement of 'good status'. Really effective implementation will require a timetable based on **'good practice'** (see Chapters 4 & 5) rather than 'administrative compliance'. This means working on each WFD task at the **earliest practicable time** , taking into account the circumstances applying to each river basin.

Box 2.2

WFD tasks with 'minimum compliance' deadlines

– WFD transposed into national legislation – **end 2003**

– River Basin Districts identified – **end 2003**

– Analyses of pressures/impacts and economic use completed – **end 2004**

– Monitoring programmes operational – **end 2006**

– Public consultation on River Basin Management Plan (RBMP) components under way – **end 2006**

– RBMPs published – **end 2009**

– Pricing policies in place – **end 2010**

– Programme of measures operational – **end 2012**

[5] The different 'status' categories used in the Directive (high, good, moderate etc.) are simply measures of the degree of deviation of a given water body from its original, natural condition, i.e. without human impacts. A Working Group on 'reference conditions for inland surface waters' has been set up under the WFD Common Implementation

– Environmental objectives achieved – **end 2015**

As stressed in the text, this is **not a 'good practice' timetable** for WFD implementation but an indication of the **final deadlines for legal compliance**. In order to achieve effective river basin management, following the **'good practice'**advice identified by the 'Water Seminar Series', work on different tasks should be initiated as early as possible and be carried out in parallel.

For example, by applying the principle of **using existing information wherever possible** , it should be feasible, in many cases, to identify key pressures and impacts rapidly, thereby enabling a 'head start' on developing appropriate measures for the RBMP. This may be imperfect at first, but actual application will provide information that can be used to improve the plans. Furthermore, as well as helping to meet statutory deadlines, such an approach may also help to manage the financial costsof implementation.

The official text of the Water Framework Directive

The text of the WFD[6] (reference number 2000/60/EC) was published in the Official Journal of the European Communities (OJ N° L 327) on 22 December 2000, following completion in September 2000 of the conciliation process to resolve differences of view between the European Parliament and the Council of Ministers.

WFD 'Key Tasks' for integrated river basin planning and management

From the point of view of those responsible for river basin planning and management, the 'Key Tasks' for implementing the WFD (each of which is developed in detail in Chapter 5) are as follows:

- **Setting up of River Basin Districts as the fundamental unit for applying and coordinating the Directive's provisions**. WFD Article 3 requires that, by 2003 at the latest:

  – All river basins and coastal waters must be assigned to a River Basin District (RBD) and the competent authority for each RDB identified

  – In the case of river basins shared by two or more Member States, International RBDs must be established

  – If a river basin extends beyond Community territory, the relevant Member State(s) must seek to establish appropriate coordination with the non-Member State(s) concerned

Strategy (see Chapter 3) to develop technical guidance on classification of inland water status and identification of reference conditions.

[6] The WFD text – in English, French, German and Spanish – may be downloaded in html format, in any of the 11 Community languages, through the European Union's 'Eur–Lex' legislation database: http://europa.eu.int/eur-lex/en/lif/dat/2000/en_300L0060.html or in pdf format from the following WWF website: http://www.panda.org/europe/freshwater/initiatives/wfd.html

- **Identifying and agreeing key water management issues:** This is derived mainly from the provisions of Articles 4, 5, 6 and 14:

  – Article 4 sets out the WFD's environmental objectives for surface- and ground-water bodies, including 'heavily modified waters'. This provides the context for identifying key water management issues.

  – Article 5 requires that surface- and ground-waters within each RBD must be characterised in accordance with the procedure set out in Annex II of the WFD and by 2004 at the latest. The steps required for each RBD include a review of the environmental impacts arising from human activities. Article 5 also obliges Member States to carry out an economic analysis of water use in each RBD.

  – Article 6 requires that a register of protected areas within each RBD, be established (including 'Natura 2000' sites under the Birds and Habitats Directives, as well as protection zones for drinking water supplies). This is a complementary step to the characterisation of RBDs, helping to identify those parts of the RBD that are especially sensitive to human activities and in need of special management approaches.

  – Article 14 deals with public participation issues and is summarised below and discussed in detail in Chapter 4.

- **Designing Programmes of Measures and developing River Basin Management Plans for their implementation:** Article 11 requires Members States to establish by 2009 a Programme of Measures for each RBD, composed of both *basic* and *supplementary* measures for achieving and/or maintaining 'good status'.

  – 'Basic' measures are compulsory and represent the minimum steps required to achieve 'good status'. They include the measures required by 11 existing EU water-related Directives (*inter alia* the Bathing Waters Directive, Drinking Water Directive, Urban Waste Water Directive, Nitrates Directive, Birds Directive and Habitats Directive)[7].

  – 'Supplementary' measures are those needed in addition to basic measures if 'good status' is to be achieved; for example, wetland restoration and rehabilitation.

  – The economic analysis carried out as part of the Key Task *Identifying and agreeing key water management issues* (see above) should be used to establish the most cost-effective combination of management measures to achieve 'good status' in the RBD, and to apply the principle of cost recovery for water services in the development of water pricing policies (as required by Article 9).

  – Every Member State must ensure that a River Basin Management Plan (RBMP) is produced for each RBD wholly within its territory (Article 13). This effectively provides the delivery mechanism for the Programme of Measures to achieve 'good status'. In the case of transboundary river basins, the Member States concerned must work jointly, with the aim of producing a single International RBMP. If a single

[7] Unfortunately, EU water quality legislation to date has been poorly implemented, as demonstrated, for example, by the decision of the European Commissioners in July 2001 to take infringement actions against ten Member States for shortcomings under one or more of the following Directives: Urban Waste Water; Drinking Water; Bathing Waters; Dangerous Substances in Water; and Sewage Sludge.

plan is not produced, each Member State is responsible for preparing a RBMP for at least the portion of the RBD that lies in its territory. Annex VII sets out the elements that must be covered by each RBMP (see in of this document for a summary).

– The first RBMPs must be published at the latest by 2009 and be submitted to the European Commission within three months of their publication. The Programmes of Measures included in these RBMPs must be fully operational by 2012, at which time a progress report on implementation must be submitted to the European Commission. The RBMPs have to be reviewed in 2015 and every six years thereafter.

- **Establishing and maintaining appropriate monitoring networks**: Article 8 requires Member States to put in place monitoring programmes "in order to establish a coherent and comprehensive overview of water status within each River Basin District". Such monitoring must cover both surface- and ground-water, and has to be operational by 2006. Three types of monitoring are required: 'surveillance', 'operational' and 'investigative', as detailed in WFD Annex V. Additional monitoring is needed for the protected areas (for habitats/species or drinking water abstraction) identified under Annex VI (see Appendix I of this publication for a summary).

Amongst the Directive's other key elements, which, though not covered in detail by the 'Water Seminar Series', must form an integral part of implementation are:

- **Identification and protection of water bodies used for drinking water abstraction**, with the aim of reducing the level of purification treatment required prior to supply for human consumption, and ensuring that the requirements of the Drinking Water Directive (80/778/EEC as amended by Directive 98/83/EC) are met – see WFD Article 7

- **Introduction of water pricing policies that provide adequate incentives for efficient use of water** taking into account the principle of 'cost recovery' for water services[8], including environmental and resource costs (to be completed by 2010 – see Article 9)

- **Control of all pollutant emissions and discharges into surface waters** using a 'combined approach', based not only on the overall quantity of a given pollutant, but also on its concentration in the receiving aquatic environment (this to be secured by 2012 – see Article 10)

- **Specific controls for certain higher risk pollutants** on a priority basis, with progressive reduction, phasing out, and/or cessation of emissions, for the substances identified as priorities (first phase-outs or cessations expected within 20 years of adoption of relevant proposals by EU decision-making bodies – see Article 16)

The provisions of many of the WFD's 26 Articles are developed in much more detail in its 11 Annexes. While some of the Annexes are highly complex, a general understanding is

[8] The actual cost of supplying and treating water may or may not be a significant component of the price of water to the consumer. This currently varies widely within and between Member States, taking into account factors such as the extent of privatisation, formal price regulation, projected investment requirements for reaching statutory requirements, and type of water use (e.g. agricultural, industrial, or domestic).

essential for those involved in practical application of the Directive. To assist with this, and to make the present publication as complete as possible, a summary of the WFD Annexes can be found in Appendix I.[9]

Article 14 provisions on 'participation'

Article 14 confers a general obligation on Member States **"to encourage the active involvement of all interested parties in the implementation of this Directive..."**. In addition, there are specific obligations to publish and make available for comment during a period of at least six months:

- A timetable, work programme and statement of planned consultation measures, at least three years ahead of the RBMP (i.e. by December 2006 at the latest)
- An interim overview of the significant water management issues identified for the river basin, at least two years ahead of the RBMP (i.e. by December 2007 at the latest)
- Draft copies of the RBMP, at least one year before implementation begins (i.e. by December 2008 at the latest)

Article 4 provisions for 'heavily modified waters' and derogations/extensions

In addition to setting out the environmental objectives for surface- and ground-water bodies in general, Article 4 specifically enables designation of '**artificial**' and '**heavily modified water bodies**', for which different objectives are defined, namely the achievement of **'good ecological potential**' and **'good surface water chemical status'**.

Furthermore, provided that certain strict conditions are met, Article 4 permits certain derogations and time extensions for the Key Tasks outlined above (see Box 2.3).

Although these additional Article 4 provisions were not considered directly by the 'Water Seminar Series', and are consequently not covered in any detail by this publication, they may have significant implications for river basin managers and so are referred to here for possible follow-up.

Box 2.3

Achieving the objectives of the WFD: Extensions and Derogations

Article 4 provides for a limited range of exceptions for meeting the WFD's overall environmental objectives, with regard to both the need for achieving 'good status' and the time frame to be applied. Through the WFD CIS, the Commission and Member States are working to develop guidance for a common understanding and application of all Article 4 provisions.

Less stringent environmental objectives may be set for specific bodies of water that are "so affected by human activity....or their natural condition is such" that achievement of good status would not be feasible or would be disproportionately expensive. Several strict conditions must be respected for such

[9] Further information on WFD provisions, including several WWF position papers on key issues, can be obtained by visiting the relevant section of the WWF European Freshwater Programme's website: http://www.panda.org/europe/freshwater/initiatives/wfd.html

an exemption to be permissible. This is also the case for **temporary deterioration** in status, which is not considered a breach of the Directive providing that certain conditions are met in full.

Deadline extensions. "Provided that no deterioration occurs" (Article 4.4), the **deadlines for reaching good status may be extended** either where the scale of improvements needed is so great that the time limit of 15 years would be exceeded; or where completing the necessary improvements within 15 years "would be disproportionately expensive"; or where natural conditions preclude "timely improvement". All extensions must be set out and justified in RBMPs and are limited to a maximum of two updates (i.e. a period of 12 years) after the first RBMP is published.

Chapter 3. Ensuring effective and coherent implementation: The Common Implementation Strategy for the Water Framework Directive

In order to assist WFD implementation, the EU Member States and the European Commission have developed the Water Framework Directive 'Common Implementation Strategy' (WFD CIS), which was agreed in May 2001[10].

The CIS is based on the following elements (see section 2.3 of the official text[11]):

- The necessity to **share information** between Member States and the European Commission
- The need to **inform and involve the public and to raise public awareness** about the key elements of the WFD and issues linked to its implementation
- The need to ensure **coherence** between the implementation of the WFD and **other sectoral and structural policies**
- The need to ensure **coherence** between the implementation of the WFD, **other water Directives, and process and product oriented Directives**
- The need to **integrate activities** on different 'cross-cutting' issues for the effective development of river basin management plans
- The necessity for **capacity building** in Member States for effective implementation of the WFD
- The need to involve **stakeholders and civil society** in implementation of the WFD
- The need to promote a **common attitude** towards EU-candidate countries of Central and Eastern Europe with regard to their involvement (especially for shared international river basin districts)
- The need to establish **working groups** and develop **informal guidance** on key aspects of the WFD

[10] During the third water seminar, *Good practice in river basin planning*, the European Commission drew participants' attention to this "new approach to implementation of environmental legislation at European level". An informal meeting of EU Water Directors (plus the Norwegian Water Director), held in Paris in October 2000, decided to develop the WFD CIS. Following a period of intensive joint work by the Member States and the European Commission, the CIS was agreed at a further Water Directors' meeting, held in Sweden in May 2001. At that time, the Strategy was also discussed with EU-Candidate countries, who have been invited to join its further development and application.

[11] The full text of the WFD CIS is available from the homepage of DG Environment:
http://www.europa.eu.int/comm/environment/index_en.htm
or as a pdf file through the home page of the WWF European Freshwater Programme:
http://www.panda.org/europe/freshwater

The WFD CIS is built around four 'Key Activities' (see WFD CIS section 2.4):

- **Sharing of information**
- **Management of information and data**
- **Development of guidance on technical issues**
- **Application, testing and validation of guidance**

Within the 'Key Activity' on development of technical guidance for specific WFD implementation issues, 10 Working Groups, under the leadership of one or more Member States, have been established (see Box 3.1). Of particular relevance to the topics highlighted by the 'Water Seminar Series' are the Working Groups on 'Analysis of pressures and impacts', and 'Best practice in river basin planning'. Technical guidance is expected to emerge from the CIS process from 2002 onwards.

Box 3.1

List of WFD Common Implementation Strategy Working Groups

Analysis of pressures and impacts
Lead: UK, Germany

Reference conditions inland surface waters
Lead: Sweden

Typology, classification of transitional, coastal waters
Lead: UK, Spain, European Environment Agency (EEA)

Heavily modified water bodies
Lead: Germany, UK

Geographical Information Systems
Lead: EC-Joint Research Centre (JRC)

Intercalibration
Lead: JRC

Monitoring
Lead: Italy, EEA

Economic analysis
Lead: France, European Commission

Tools on assessment, classification of Groundwater
Lead: Austria

Best practice in river basin planning
Lead: Spain

In particular, the Working Group on 'Best practice in river basin planning' will focus on preparation of technical guidelines for river basin planning, covering four aspects:

- Designation of RBDs (guidance provisionally planned for end 2002)
- Overall planning process (for end 2002)
- Public participation (for end 2002)
- Comprehensive 'handbook' for preparing RBMPs, drawing on outputs from all the other WFD CIS Working Groups (for 2006)

It is hoped that many of the key issues identified during the 'Water Seminar Series' and presented in this *Practical Resource* will be taken forward by the Working Group on 'Best practice in river basin management' as it begins preparation of guidance.

The WFD CIS has been welcomed by environmental NGOs and other stakeholders, who have been invited to join its further development and application, as a courageous and

holistic approach, which will help to ensure timely and effective WFD implementation. Being a joint initiative of the EC and the Member States[12], it is seen as contrasting with the approach to implementation of other EU environmental protection legislation, where the focus has tended to be on disciplinary measures for failure to meet deadlines and objectives.

[12] The WFD CIS is not the only activity that Member States are developing to assist with WFD implementation. For example, some countries are preparing national documentation, as is the case in Germany, where a draft 'Guide to the implementation of the EC Water Framework Directive' has been produced under the auspices of the Working Group of the Federal States on Water Problems (see http://www.lawa.de). In the UK, two government consultation papers on implementation of the WFD have been issued; one covering England and Wales, and the other dealing with Scotland. These can be found at: http://www.defra.gov.uk/environment/consult/waterframe/index.htm and http://www.scotland.gov.uk/consultations/environment/ffsw-00.asp

Chapter 4. Cross-cutting principles for effective integrated river basin management

The 'Water Seminar Series' highlighted **five general principles** that can be described as **'cross cutting'** because **they apply globally to all aspects of the process for implementing the WFD**:

- **Integration**
- **Scale**
- **Timing**
- **Participation**
- **Capacity**

Each of these is introduced below. As a matter of **'good practice'**, river basin planners and managers need to build these cross-cutting principles into **all components** of their work, to ensure that the **coordination and coherence required for effective results** is actually achieved. Examples of how the five principles can be applied in practice are provided in Chapter 5.

Integration

At present, Europe's water resources are being used unsustainably, due in large part to fragmentation of roles, responsibilities and interests. **Better overall coordination at the river basin level** is a pre-requisite for implementing the WFD effectively. This, in turn, needs more **integration at the operational level**, especially:

- Among **bodies involved directly with water management** (e.g. those responsible for water storage and supply, and treatment of waste water)
- Between water managers and **other sectors**, such as land-use planning, agriculture, industry and tourism/recreation
- Linkage of surface- and ground-water management (at present often dealt with separately)
- Linkage of 'inland' and coastal waters, for example by applying the approach and principles of Integrated Coastal Zone Management (ICZM) [13]

In the case of **international river basins**, integration calls for:

- Establishing cooperation (where not already in place) between countries and seeking complementarity between WFD implementation and any existing bilateral or multilateral agreements that affect water management;

At EU level, the 'Water Seminar Series' stressed the need for:

- **Administrative and political action** to increase coherence between EU legislative, policy and financial instruments (i.e. to remove or minimise obstacles to more sustainable water management and to maximise opportunities for positive synergy). This point is further developed in Box 4.1.

[13] See the following European Commission website: http://www.europa.eu.int/comm/environment/iczm

Scale

The importance of scale has already been partially highlighted under the heading of integration (some integration needs to happen at **river basin scale**, e.g. between flood management, water supply and environmental protection measures; some at **national scale**, e.g. between water resource legislation and environmental protection legislation; and some at **European scale**, e.g. between WFD, Common Agricultural Policy (CAP) and Structural Funds). However, **adapting planning and management activities to the appropriate scale** is a principle that applies to all aspects of WFD implementation. The 'Water Seminar Series' particularly recognised:

- The great variation in the size of river basins within and between countries, meaning that **approaches suitable for one location are not automatically transferable elsewhere**
- The need to **coordinate 'top–down' and 'bottom–up' approaches** (i.e. to ensure that many physically separate actions at local scale are sufficiently coordinated to reach, in combination, the objective of 'good status' at river basin scale)

Timing

The deadlines for achieving the objectives of the WFD are extremely challenging. It is therefore better to **begin implementation 'early and imperfectly'** than to wait for 'perfect conditions' (e.g. when all possible data have been collected and analysed). Consequently, the deadlines in the WFD text must not be seen as a step-by-step timetable for implementation. Results-oriented 'good practice' will require many elements to be running simultaneously. Furthermore:

- Timing of preparatory work by Member States should recognise that achievement of WFD deadlines and 'good practice' approaches will require immediate action. Primary or secondary legislative changes may be necessary, the appropriate organisational arrangements may not be in place, and the required skills and resources may not be available or adequately developed.
- Time can be saved by **using existing structures, processes and tools** wherever possible. However, this should be subject to the outcomes of a review, checking the suitability and capacity of these structures for delivering WFD requirements. In many cases, a certain degree of adaptation will be needed
- Monitoring and planning are tools to facilitate management actions in the WFD context. However, management action should not be delayed until all possible planning and monitoring has been completed. For example, if monitoring is not operational until the final deadline of 2006, there will be a severe 'bottleneck' in preparing an effective Programme of Measures by the corresponding final deadline of 2009.
- It is especially important that strategies for public participation and stakeholder involvement are developed and implemented from the beginning, though recognising that different groups will need to be engaged at different stages of the process (see below).

- Timing of related initiatives (e.g. land-use planning policy, capital investment in infrastructure) may impact significantly on the timetable for achieving WFD objectives if the links are not considered at an early stage.

Participation

This cross-cutting principle – which is the only one specifically covered by the provisions of a WFD Article (Article 14, see Chapter 2) – had a particularly high profile during the third Water Seminar Series, emerging frequently as a key issue during debate. This is despite the fact that only a limited part of the seminar agenda was intentionally devoted to participation, and reflects stakeholders' concerns over implementation of Article 14).

Given social, political and legislative[14] trends at EU, Member State and regional levels, **it is highly unlikely that any RBMP can be implemented successfully if it does not meet with broad public acceptance** and, in particular, if it is not supported by **key stakeholder groups**[15] within a river basin, including local residents and sectoral land/water users.

WFD Article 14, though entitled *Public information and consultation* refers to **'information', 'consultation' AND 'participation'**. It is essential to recognise that **these three terms are fundamentally different** and should never be used interchangeably.

While provision of information – if carried out in an **open and timely** fashion – is an important **preparatory step**, actual participation implies a **dynamic, interactive process**. This relies on **building trust and confidence** that public/stakeholder views will be accommodated and **have a real influence on** development of RBMPs.

Similarly, 'consultation' may be conducted in a manner that provides **little or no opportunity for those consulted to have real involvement/influence in planning or decision-making processes**. Some of the **key benefits** to WFD implementation that can be derived from genuine participatory approaches are summarised in Box 4.2.

The WFD final deadlines require **public consultation** on the RBMP process to have been initiated by 2006. However, this is not a 'good practice' deadline and **early provision of transparent and accessible information**, together with **genuine opportunities for participation** in planning and decision-making mechanisms, increase the chances of ultimate success in achieving 'good water status'.

Therefore, **participation of stakeholders and the wider public should be prioritised from the start**, with carefully planned actions to demonstrate **early results for building and maintaining interest and commitment** (see also 'lessons learned' under 'Key Task 3' in Chapter 5).

In conclusion, public and stakeholder participation should be:

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[14] Notably the 1998 'Århus' *Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters*

[15] For the purposes of this publication, a distinction is made between 'public' and 'stakeholder' participation, to stress the differing mechanisms and approaches that are likely to be needed for (a) the general population living within an RBD, and (b) those individuals and organisations with a specific interest in water resource management.

- Included in river basin planning and management from the beginning
- Adapted to the appropriate scale (i.e. the approach at RBD level will need to be different from that used to engage communities at the local level) and target group(s)
- Managed carefully, so that the capacity to meet commitments made is not exceeded
- Supported by adequate human and financial resources
- In the case of international RBDs, it will be important to ensure public and stakeholder participation from all countries

Further participation 'conclusions' from the 'Water Seminar Series' are presented in Box 4.3.

Capacity

Given the complex and challenging nature of the WFD, it is vitally important that capacity for actual implementation is maximised among all relevant actors. General elements of a capacity building programme might include **raising public awareness** (e.g. to help secure broad support for the river basin management objectives), informal **transfer of 'know how'** (e.g. through exchange of experience between river basin managers), and **formal training** (e.g. in specialised monitoring techniques). However, the precise needs will vary from country to country and from river basin to rive basin, *inter alia* according to differing socio-economic conditions, or the precise water management issues identified. The 'Water Seminar Series highlighted:

- The need to build capacity (starting with awareness raising) among economic sectors and NGOs, as well as among officials, planners and administrators
- The special needs among the EU-Candidate countries of Central and Eastern Europe
- The need to enhance sharing of information and experience between countries, regions and river basins, with the internet providing valuable new opportunities
- The need to allocate adequate human and financial resources for capacity building activities in each RBD as part of overall WFD implementation

Box 4.1

Integration of policy and financial instruments at EU level

At the EU level, integration implies the need for **coherence between the major policy and financial instruments** that are the **driving forces behind current land- and water-use practices** within the territory of the Member States and, increasingly, in EU Candidate countries. This was a common thread throughout the 'Water Seminar Series'. For example, presentations showed the clear need to **review and reform** elements of the Common Agricultural Policy if the environmental objectives of the WFD are to be met.

In the meantime, **much better use could be made of existing elements**, some of which – e.g. measures under the Rural Development Regulation – are optional and not adequately taken up by Member States. Gaps in coherence between EU policies and financial instruments were also highlighted by a paper on policy aspects of the 'Wise Use of Floodplains EC LIFE project'[16], presented at the second Seminar. This showed that the **obstacles to sustainable water management posed by the CAP,**

[16] For further information see www.floodplains.org

Structural Funds and Cohesion Fund (and their counterpart mechanisms for EU-Candidate countries, i.e. SAPARD and ISPA) significantly outweigh the opportunities provided.

Box 4.2

Benefits of public and stakeholder participation for achieving WFD objectives

– There is a better chance that the **key water management issues** at the river basin level are correctly identified and agreed upon

– The **knowledge, experience, aspirations and concerns of local communities** are built into the RBMP and Programme of Measures from the beginning

– The Programme of Measures is more likely to be 'politically' and culturally **realistic and acceptable**

– Any potential **conflicts can be minimised or avoided altogether**

– **Implementation costs are likely to be lower** when existing stakeholder knowledge and know-how is applied to avoid potentially costly errors and/or duplication of information[17]

– There is a better chance that both **regulatory and voluntary approaches will be enforceable** if they have been developed in partnership with stakeholders (this point is closely linked with lower costs and improved conflict resolution/avoidance)

Box 4.3

More participation 'conclusions' from the 'Water Seminar Series'[18]

– **A number of fundamental questions are not answered explicitly by the WFD text, for** example: 'what is the purpose of public participation?', and 'how should public participation be achieved in practice?' If implementation of Article 14 is not to be seen as superficial (i.e. consultation without any real engagement with stakeholders), it is essential that these questions are asked at the earliest stages of RBMP preparation and that technical guidance on participation be prepared in the framework of the WFD CIS. At the time of writing, a *Drafting Group on Public Participation* had been set up by the *Working Group on Good Practice in River Basin Planning*.

– It is important to recognise that different components of 'the public' will have their own views, needs, priorities and expectations. In order to be successful, **information, consultation and participation processes need to be tailored for particular target groups**. These may include: the 'general public', NGOs, sectoral stakeholder groups within a river basin or sub-basin (e.g. farmers' associations), and local residents/water customers. Special interest groups might be expected to participate at a more **strategic level**, e.g. through representation in river basin advisory committees, whereas local communities are more likely to seek and value participation at the **field/action programme level** (link with cross-cutting principle of **'scale'**).

– Intelligent targeting of interest groups can also help to **reduce the danger of 'consultation fatigue'** where stakeholders feel overwhelmed by information and perceived bureaucracy. On the contrary, there

[17] In a 1994 World Bank study, 42 participatory projects were compared with projects that did not have a specific participation component. While the initial costs of the participatory approach were found to be greater (e.g. more project design and supervision time needed), these were offset by benefits such as: increased uptake of services, decreased operartional costs, increased rate of return, and increased incomes for stakeholders. For details, see: http://www2.essex.ac.uk/ces/CommParticipation/ComPartPrinciplesnmethods.htm

[18] For further details and specific examples, see especially the papers by M. Cals, J. Cuff, R. Hauser, and C. Woolhouse in the *Proceedings* of Seminar 3.

should be tangible and demonstrable benefits for participants, beginning as early as possible, and running throughout the process to ensure continued engagement.

– Working with interest groups also raises issues of **legitimate representation**. In the interests of openness and democracy it is important that 'umbrella groups' clearly set out and justify the extent to which they are representative of a particular constituency.

– Participation does not just happen. On the contrary, it must be actively encouraged and **river basin authorities must be prepared to devote time to careful planning and to invest meaningful financial and human resources**. Such investment has the potential to be extremely cost-effective in terms of the benefits derived for WFD implementation.

– **Expectations must be managed carefully**. It is essential not to promise (or appear to promise) more than can be delivered. Otherwise, public interest and support will at best evaporate, or, at worst, be transformed into active hostility. In this respect, it is particularly important to distinguish between consultation and involvement at the planning phase, and consultation and involvement at the decision-making and implementation stages. It is also important to maintain a regular flow of 'deliverables'.

– **Expectations on all sides must be as clear as possible at the beginning.**

For additional discussion of public participation in the context of the WFD, see the paper *WWF's preliminary comments on Public Participation in the context of the Water Framework Directive and Integrated River Basin Management* downloadable in pdf format from the WWF European Freshwater Programme website: http://www.panda.org/europe/freshwater

Special considerations for EU-Candidate countries

The five 'cross-cutting principles' for WFD implementation apply both to Member States and to EU-Candidate countries. However, they raise special considerations for the latter group. To ensure these considerations are taken into account, EU-Candidate countries need to be involved from the beginning in all preparatory activities and pilot testing for implementation of the WFD, notably those underway as part of the WFD CIS. Such involvement should not be limited to government experts but should also include stakeholders from these countries.

- **Integration**: The intensive work currently underway to meet the necessary policy and legislative requirements for becoming a Member State (the *acquis communautaire*) offers opportunities for integrated approaches between different sectors, for example between environment and agriculture. Specific issues related to transboundary integration/cooperation between Member States, EU–Candidate countries, and 'third countries' (e.g. Belarus, Russia, Ukraine, certain independent States of the former Yugoslavia) are highlighted in Chapter 5.

- **Scale**: There are several extremely large river basins in Central and Eastern Europe, and some relatively intact river systems and wetlands when compared to the situation in Western Europe. This places a particular responsibility and resource burden on countries in the region, since special planning approaches (perhaps based on sub-basins) are needed to deal with large, transboundary river basins. Maintenance of existing large areas of semi-natural freshwater ecosystems also requires significant efforts, which have to be set against the context of rapid economic and institutional/legislative change and the need to

tackle environmental 'hot spots' (e.g. severely polluted industrial sites) inherited from the past.

- **Timing**: Since the provisions of the WFD (including deadlines for compliance) will apply to EU-Candidate countries from the date of their accession, it is equally essential that implementation should begin as early as possible.

- **Participation**: In many of the EU-Candidate countries, there is not a strong tradition of public or stakeholder participation and even greater human and financial efforts may be needed to implement this element of the WFD effectively.

- **Capacity**: The countries of Central and Eastern Europe have strong technical and scientific traditions and a great deal of expertise to share. However, owing to the harsh economic conditions of recent years, a lack of investment means that the current capacity for mobilising this expertise is limited, as are access to 'state-of the-art' equipment and professional development opportunities. WFD implementation will therefore require special capacity building efforts, including financial support and training in governmental, NGO and commercial/economic sectors.

5. Four 'Key Tasks' for implementing the WFD: lessons learned and 'good practice' examples for the 'Water Seminar Series'

This Chapter develops in more detail four of the 'Key Tasks' required for meeting the objectives of the WFD:

Key Task 1: 'Set up River Basin Districts and appropriate organisational arrangements'
Key Task 2: 'Identify and agree key water management issues'
Key Task 3: 'Design Programmes of Measures and develop River Basin Management Plans'
Key Task 4: 'Establish and maintain appropriate monitoring networks'

This Chapter summarises the principal conclusions and lessons learned from the seminar presentations and discussions. It also takes into account any additional 'follow-up' inputs received from seminar participants. Under each 'Key Task', the **principal requirements of the WFD** are recalled using bullet points (for more detail, see Chapter 2). This is then followed by the main **seminar lessons learned**, with general text accompanied by boxed illustrations of specific **approaches** and **tools**, and **practical examples** from different regions of Europe.

Each 'Key Task' must be carried out with constant and close attention to the **five cross-cutting principles** (*Integration*, *Scale*, *Timing*, *Participation*, *Capacity*) discussed in Chapter 4.

It must be stressed that only those 'Key Tasks' dealt with directly by the 'Water Seminar Series' are included here. Other prominent aspects of the WFD, such as the precise definition of environmental objectives, detailed characterisation of water bodies, or water pricing policies, did not form part of the seminar series agenda and are therefore excluded.

WFD Key Task 1 'Set up River Basin Districts and appropriate organisational arrangements'

WFD principal requirements

- Identify river basins
- Assign to River Basin Districts (or International RBD where relevant)
- Ensure appropriate administrative arrangements and identify competent authority
- Ensure coordination of WFD requirements for the whole RBD

[WFD Article 3 'Coordination of administrative arrangements within River Basin Districts'. See also provisions of WFD Annex I, *Information required for the list of competent authorities*]

Towards implementation – selected questions for river basin managers[19]

- What is the process for getting agreement on RBD boundaries?
- Have groundwater and coastal waters been taken into account when defining RBD boundaries?
- Are there artificial connections between river basins that have to be taken into account when setting up RBDs?
- Who are the main stakeholders to be involved in setting up the RBD boundaries and authority? What process will be used to identify, inform and engage these stakeholders?
- Are there stakeholders outside the RBD boundary who nevertheless need to be involved (e.g. in the case of groundwater and coastal waters)?
- Are existing structures being used to best effect in setting up political, administrative and technical arrangements for the RBD? Are responsibilities clearly defined? What could be improved organisationally to meet WFD requirements?
- How can the necessary human and financial resources be mobilised to make RBD arrangements on paper effective in practice?
- Is the administrative structure at sub-basin level clear and transparent enough for the stakeholders who should be involved?

Seminar 'lessons learned'

1. Identify river basins

- Groundwater and coastal waters must be assigned to the relevant river basin. This should be done at an early stage because of the additional technical complexities involved (in comparison with allocation of surface waters), such as delimitation of groundwater bodies.

2. Assign river basins to River Basin Districts

- There is a need for coordination between countries to ensure that s**hared rivers** are allocated to the **same international RBD**s (e.g. France, Belgium and The Netherlands should allocate the transboundary river Escaut/Scheldt/Schelde to the same international RBD).

- If the RBD is to be divided into sub-basins for operational purposes, the boundaries of the sub-basins and/or the connections between them, must be clearly defined and taken into account in developing the RBMP.

3. Ensure appropriate administrative arrangements are established and identify competent authority

- There is a wide range of administrative approaches to river basin planning within Europe[20]. The WFD does not specify precisely the approach to be used, so governments are free to select the most appropriate mechanism for a given RBD.

[19] Not all of these questions were addressed in detail by the 'Water Seminar Series', though they were flagged as key issues at the validation workshop held near Brussels in August 2001.
[20] See paper by E. Mostert in Seminar 3 *Proceedings*

However, whichever arrangements are adopted, it must be certain that the institutional structure is capable of (a) delivering an effective[21] River Basin Management Plan **at RBD level**, and (b) ensuring its implementation **at RBD level**. This will clearly require continuous and effective coordination between sub-basins and the RBD authority.

- As a result, transboundary cooperation will often be required at one or more of the following levels:
  - Between regional governments within Member States
  - Between Member States
  - Between Member States and EU-Candidate countries
  - Between EU-Candidate countries
  - Between Member States and/or EU-Candidate countries and 'third' countries (see below for further discussion).

- The RBD authority should have a clear mandate, strong leadership and some key management principles for its operations. Without a clear, committed and result-oriented direction from the very beginning, there is a risk of inertia developing around internal systems and bureaucracy. The WFD represents a new paradigm in European water management and the RBD authorities must be ready to meet this challenge.

- **Existing structures, particularly those that have proved their effectiveness, should be used wherever possible to avoid duplication of effort and unnecessary expenditure.** However, it is important to recognise that existing structures may also need significant adaptation before they are capable of fulfilling WFD requirements.

- The RBD authority should have a clear and accessible entry/liaison point for public and stakeholder participation.

- Across Europe, there are many bilateral and multilateral intergovernmental and interregional cooperation mechanisms for water resource management. Box 5.1.1 provides examples of different approaches. Mechanisms should be developed to coordinate implementation of relevant agreements with the WFD.

Box 5.1.1

Examples of approaches to transboundary cooperation in River Basin Management Planning

In the case of two of Europe's largest river systems, the Danube and the Rhine, inter-governmental river basin Commissions have been established to coordinate policy and action within a common framework. The International Commission for the Protection of the Danube River, includes an Expert Group on River Basin Management. This Expert Group will be responsible for taking forward elements of the technical work required under the WFD, for example identification of the Danube RBD, coordinating analysis of the RBD characteristics, identifying pressures and impacts, and developing mapping and reporting procedures. However, given the scale of the challenges, it will be some time before the effectiveness of the ICPDR (and the International Danube River Protection Convention which it coordinates) can be assessed.

The International Commission for the Rivers Rhine and Meuse is longer established and has a series of impressive success stories to its credit. Recently, political consensus was achieved on a programme for the long-term management of the Rhine (the so-called 'Rhine 2020' programme). A shorter-term 'Action

[21] i.e. A plan which, if implemented in full, will meet the WFD's environmental objectives

Plan' (running to 2005) has also been adopted under the programme. This process is being driven by the need for cost-effective flood management (including significant flood risk reduction) but, through taking an approach that works with nature – for example, restoration of floodplain wetlands – incorporates major biodiversity gains. The forecast financial investment from 1998 to 2020 is 12.3 billion Euros. For further information see the Seminar 2 *Proceedings* papers by T. Buijse and E. Wenger.

In other cases, specific agreements have been reached on a bilateral or trilateral basis. This is the case, for example, in the Prespa Basin, where a transboundary protected area has been established jointly by the governments of Albania, Greece and The Former Yugoslav Republic of Macedonia following an initiative of Greek NGOs (see paper by M. Malakou in *Proceedings* of Seminar 2). This will lead to development of a common vision and strategy in conjunction with stakeholders, and preparation of a Strategic Action Plan, trilateral management committee and trilateral monitoring scheme.

4. Identification of relevant stakeholders:

As with all Key Tasks of WFD implementation**, public and stakeholder participation should be considered from the beginning**. Many solutions to water resource problems will be strategic in nature, requiring a 'whole river basin' (rather than local, or sub-basin) approach. The most important players at this strategic level of dialogue will be those that can really contribute to delivering solutions (e.g. water companies, wastewater treatment companies, environmental regulators), those that have technical expertise and are 'representative' of a particular consitituency (e.g. NGOs, research community) and those that pay for action (consumers). Thus, it is important to:

- Assess current and potential **role, 'representativeness' and responsibilities** of stakeholders in the water cycle, and in the RBMP decision-making process.

- Ensure that an appropriate structure and adequate resources are in place for developing stakeholder participation.

See also Chapter 4 for a discussion of participation as a cross-cutting principle.

5. Special considerations for EU-Candidate countries

The EU enlargement process, including support from relevant EU financial instruments such as Phare, will facilitate ever closer cooperation between Member States and EU-Candidate countries. Transboundary cooperation with other, so-called 'third' countries may be difficult owing to differing policy and legislative frameworks, financial problems, and strict controls of movements across the future external border of the EU (due to the creation of a common EU immigration and visa regime for all EU external borders).

The Lake Peipsi, shared by Estonia and the Russian Federation, illustrates some of these issues (see paper in Seminar 3 *Proceedings* by G. Roll). EU financial instruments are not always well adapted for implementing environmental projects in EU-Candidate countries, where small municipalities lack the capacity to draft sound project proposals, or to find counterpart funding. The Lake Peipsi case study also concluded that, in 'future EU external border regions' the EU's 'Tacis' funding mechanism for work with countries of the former Soviet Union, should be better targeted to assist WFD implementation.

Challenges of coordinating funding for management of transboundary waters on the EU external borders (Tacis funding in Russia and other countries of the former Soviet Union; Phare, SAPARD and ISPA in the EU-Candidate countries), need to be overcome. A 'soft

law' instrument, the UN ECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki, 1992) is also relevant, but does not substitute the formal agreements sought between countries under the WFD.

WFD Key Task 2: 'Identify and agree key water management issues'

WFD principal requirements

- Analyse characteristics of each RBD (see p. nn of this document for a summary of WFD Annex II provisions on RBD characterisation)
- Review impacts of human activities on surface waters and groundwater in each RBD
- Make economic analysis of water use within each RBD
- Make register of protected areas in RBD
- Identify waters used for drinking water abstraction within each RBD
- Establish environmental objectives
- Identify key water management issues

[WFD Article 4 'Environmental Objectives'; Article 5 'Characteristics of the River Basin District, Review of the environmental impact of human activity and Economic Analysis of water use'; Article 6 'Register of Protected Areas'; Article 7 'Waters used for the abstraction of drinking water'. See also WFD Annex II (untitled, but deals *inter alia* with characterisation of water bodies, reference conditions, identification of pressures, assessment of impact), Annex III *Economic Analysis*, Annex IV *Protected Areas*, Annex V (untitled, but deals with status and monitoring for both surface- and ground-waters). The provisions of these Annexes are summarised in Appendix 1 of this *Practical Resource* document.

By no means all these complex issues were covered in detail by the 'Water Seminar Series'. The lessons learned and examples below are therefore not comprehensive, but focus on those points specifically raised by seminar presentations and discussions.

Towards implementation – selected questions for river basin managers

- What are the existing sources of relevant information at different scales (e.g. RBD, sub-basin, town, village, farm)?
- Can key water management issues already be identified on the basis of this information?
- What steps are needed to improve coordination of the current data gathering, storage and analysis capacity?
- What steps are needed to identify possible additional issues?
- What are the 'root causes' underlying these water management issues? How will these root causes evolve up to 2015? What will be the likely impact on the current key water management issues?
- What information is available on the main economic uses of water in the river basin? Is demand for these use being met and managed sustainably?
- Which stakeholders have a particular role or interest in key water management issues for the RBD? Which have relevant expertise and information? Is there a communications/outreach strategy in place for engaging these stakeholders?
- How will the key issues be agreed or 'validated' with stakeholders?

- Have wetlands[22] (applying a broad definition of the term) been fully integrated into the process of water body identification and characterisation?
- Is the role of wetlands in the RBD and in key water management issues understood?

Seminar 'lessons learned'

1. Identify key characteristics of river basin:

- Wetlands can contribute significantly to meeting the objectives of the WFD since they have a strong influence on water quality and quantity and play important role in river basin functioning (see Box 5.2.3). The identification process for all surface water and groundwater bodies within each RBD therefore needs to include wetlands and consequently there is a need for systematic wetland inventories. However, there are significant gaps in the current status of knowledge about Europe's wetlands, and will be important to take measures to fill these gaps as part of WFD implementation.

- The analysis of key water management issues must take account of variability in supply and demand over time (e.g. droughts). This is particularly important for southern and eastern Europe.

- Adequate links with past and ongoing research initiatives should be established and/or strengthened to ensure that no important sources of information and technical data are overlooked.

2. Review the impacts of human activities on all water bodies in the RBD:

- Wetlands should be included as part of the waters for which impacts are assessed. Full account should be taken of the functions and values of wetlands within the RBD (see Appendix II.6) and the impacts of human activities on wetlands (see Box 5.2.5). Given the scarcity of information on wetlands in many countries, this may require significant data compilation work.

- Given that agriculture is the dominant land use in terms of surface area in the EU as a whole[23], it has a significant influence on water quality and quantity (see Box 5.2.1). Indeed, the extent, type and intensity of agricultural land use may crucially affect whether the environmental objectives of the WFD can be met within the stipulated time frame. Gathering and assessing information on the impacts of agriculture should therefore be a top priority.[24]

[22] According to the definition of 'wetland' established by the 'Ramsar' Convention on Wetlands and accepted by more than 130 governments throughout the world, including all EU Member States, 'wetlands' include: freshwater systems such as rivers, streams, lakes, ponds, marshes, and peatlands, as well as brackish or saline systems such as coastal lagoons, estuaries, shallow coastal waters and salt marshes.

[23] See the following section of the European Environment Agency web site for information on agriculture and the environment: http://themes.eea.eu.int/activities/agriculture

[24] Agriculture and water was singled-out as the theme of one of the three 'Water Seminars' for the reasons given above. However, as shown in Box 5.2.7, agriculture is by no means the only economic sector which has major adverse impacts on water and wetlands.

- The **root causes** or 'driving forces' behind the impacts/pressures identified (e.g. water policy versus CAP, water policy versus Regional Policy) should be analysed. Opportunities for influencing root causes in ways, which will assist WFD implementation, and ensure that the Programme of Measures can deliver WFD objectives within the required time frame, should be sought. This may involve identification of thresholds or targets for socio-economic factors that need to be pursued through appropriate sectoral policies and instruments but also in the overall context of river basin planning. Undertake a dynamic analysis (perhaps using models) taking into account trends/evolution in root causes and the likely effects of these on the impacts identified (see Appendix II.3).

- It is important to ensure that both surface **and** groundwater bodies **and their interactions** are taken into account when reviewing the impact of human activities within an RBD.

- In the context of the EU Accession process and transition to market economies, the challenge is to keep the last remaining, large, semi-natural river and wetland complexes in Central and Eastern Europe. (e.g. the Danube Delta shared by Romania and Ukraine, or Biebrza in Poland), agricultural policy under the former socialist centrally planned economies also led to wholesale regulation and drainage. At this time of very rapid change, it is also crucial to seek opportunities for restoration and rehabilitation. Some of the special considerations for the region are summarised in Appendix II.1.

3. Carry out economic analysis of water uses:

- Include wetlands (e.g. economic value of services provided by wetlands, socio-economic benefits, see Box 5.2.5). Wetlands are an integral component of the water cycle and the natural functioning of aquatic ecosystems provides economically important goods and services relating to water quality (e.g. nutrient retention) and quantity (e.g. groundwater recharge; attenuation of flood peaks). The economic analysis of water use in each RBD should therefore incorporate the economic value of services provided by wetlands and/or a way of estimating their socio-economic benefits.

- Ensure that economic impact and pressure analyses are integrated as far as possible, so that the economic and environmental consequences of specific pressures can be dealt with together when identifying key water management issues.

4. Establish the environmental objectives for all water bodies

- While some of the existing groundwater and surface water status characterisation parameters can serve as a 'proxy' for *good wetland status*, it would be much more preferable to define 'good status' for wetlands, with corresponding guidelines, standards and indicators. This issue needs further development in the framework of the WFD CIS.

5. Identify the key water management issues

Based on the results of the steps outlined above, the key water management issues **and the scale (geographical/hydrological) at which they need to be tackled** should be identified.

Editorial note: small diagram to be inserted here showing key water management issues between 'current status' and 'good status'.

6. Ensure involvement of stakeholders

- Stakeholders have a crucial role to play in this process by providing information, expertise, validation etc. However, it must be recognised that stakeholders have a much greater role than simply being sources of information.

Box 5.2.1

Impacts of Agriculture Practices on Aquatic Ecosystsems

Agriculture[25] is a major water user in the EU, accounting on average for about 30% of total water abstraction across the 15 Member States. However, the figures for individual Member States vary widely from north to south, rising to 80% in the case of Greece and Spain due to the extent of irrigation. There is also considerable variation within countries, according to local differences in land use, climate and rock/soil types. Agriculture also has significant impacts on the **quality** of both ground and surface waters due, for example, to runoff of fertilisers and pesticides which may find their way into streams and rivers, or into underground aquifers.

Editorial note: all indented points below to be bulleted

Principal adverse impacts of agriculture practices on water systems:

Impacts on water quantity

Surface water and groundwater depletion, due to over-abstraction for irrigated agriculture, may lead to loss or degradation of wetland ecosystems and threaten drinking water supplies as well as the longer-term sustainability of agriculture.
Reduced groundwater recharge and **increased downstream flood risk** are just two of the impacts from extensive drainage and water course regulation to increase availability of agricultural land.
Significantly altered evaporation patterns due, for example to drainage of surface water or change in vegetation cover and possibly influencing rainfall.

Impacts on water quality

Eutrophication of surface waters and groundwater due to diffuse runoff from phosphate-rich fertilisers. Increased nutrient levels encourage algal growth, resulting in oxygen depletion and lower light penetration in the water column. This has adverse impacts on the functioning of aquatic ecosystems and may endanger human health if a toxic algal 'bloom' occurs.
Nitrate pollution of surface and groundwater, again resulting from diffuse fertiliser runoff, promotes eutrophication, particularly in estuaries, and may exceed the thresholds for human consumption set by the Drinking Water Directive (80/778/EEC, revised as 98/83/EEC) which forms an integral part of the WFD.
Salinisation (excess accumulation of salts in the soil profile) and **sodisation** (a process that causes swelling of clay particles and reduced infiltration capacity) due to transport of salts by irrigation water in naturally arid or semi-arid regions. This results either in land becoming too

[25] 'Agriculture' is not a single stakeholder, but covers a diversity of very different stakeholders, for example, ranging from farmers, to supermarkets, to manufacturers of plant protection products.

saline to support crops, or in the need for consumption of even greater quantities of water to 'flush' salts from the soil.

Toxic pollution of surface and groundwater due to runoff of pesticide residues. The maximum permitted concentration – in other words, the minimum environmental standard to be met by Member States – is set by the Plant Protection Products Directive (91/414/EEC, as extended by Directive 97/57/EEC) and by the Drinking Water Directive, implementation of which forms an integral component of the WFD.

Point-source pollution of surface water and/or groundwater bodies, including accidental spillages of agricultural chemicals and slurry.

Increased runoff There is increasing evidence that changes in land use (e.g. conversion to winter-sown cereals) can increase runoff and exacerbate flooding. This is due *inter alia* to the removal of permanent vegetation cover and the compaction of soil by machinery.

Increased sediment loads resulting from soil erosion (in turn due to poor cultivation practices and/or over-grazing), and runoff into water courses and lakes. Greater turbidity may damage fish stocks, while shallow aquatic ecosystems suffer from accelerated infilling and vegetation development.

Increased microbe loads resulting from the bacteria and viruses present in organic material such as manure.

Impacts on aquatic ecosystems

Direct loss of habitats and species due to simplification of landscape and hydrology (e.g. by regulation of water courses and drainage of wetlands).

Indirect effects due to the impacts of fertilisers, pesticides and herbicides (e.g. loss of aquatic vegetation or fish resulting from eutrophication).

These impacts have been greatest in areas where agricultural land use has been most intensive, particularly within existing EU Member States, but also in parts of most EU Candidate countries. Some areas of Central, Eastern, Mediterranean and northermost Europe remain relatively unaffected. It will be important to ensure that future agricultural development in these regions remains compatible with delivering WFD environmental objectives

It is also important to remember that **future patterns of agriculture and water use** are liable to both **influence and be strongly influenced by climate change**. Plans to further irrigate semi-arid areas in the south of the EU through the development of costly and high-impact water infrastructure may not only increase salinisation and sodisation, leading to desertification (see Seminar 1 *Proceedings* paper by E. Sequeira), but also be impracticable if the capacity of the donor river basin or water body has not been adequately established.

The positive role of agriculture

As has been demonstrated, agriculture is a major influence on the management of water resources across Europe. However, it would be wrong to suggest that these influences are all negative. The seminar series showed several examples of farmers working together with water managers to achieve an appropriate balance between agricultural land use and the need to use water resources sustainable.
See Boxes 5.2.4, 5.3.2, 5.3.3, and Appendix II.5 for further information.

Box 5.2.2

Identifying Significance of Agricultural Impacts
The Broads, UK

Modelling was used to relate past and current data on land use and nutrient levels in one of the principal sub-basins of The Broads. Eutrophication due to phosphorous enrichment is a key concern in this internationally important complex of river valley wetlands in eastern England. Analysis suggested that the spreading onto fields of slurry from intensive poultry farming was the most important source of

phosphorous enrichment in the upper catchment. Further downstream, sewage effluent from human settlements was a more prevalent cause. Here, the model indicated, an increasing rural population, without access to the more sophisticated sewage treatment plants serving nearby urban areas, was responsible for a growing share of phosphorous loading.

This example shows how the results derived from data collection and modelling can help: (a) to identify the relative significance of various human impacts in different parts of a river basin; and (b) to develop appropriate management measures. In the case of The Broads, this might include, for example, the targeting of expenditure on costly phosphorous stripping at sewage treatment plants, or more stringent controls/guidelines on the disposal of agricultural waste, etc.

Source: Seminar 1 *Proceedings*, paper by G. Phillips and P. Johnes.

Box 5.2.3

The Role of wetlands in achieving 'good water status'

Wetlands are central components of the hydrological cycle, performing economically and environmentally valuable functions to regulate water quality and quantity and therefore contribute to reaching and maintaining 'good status'. However, available information indicates that 50% or more of Europe's original wetland resource has been lost (see the paper presented in Seminar 2 by Mike Moser). The sustainable management of wetlands (including restoration and rehabilitation where necessary) should therefore be a key element of river basin management plans. Among the specific functions and values of wetlands are:

– Groundwater recharge/discharge (wetlands are important areas for water to flow into or out from aquifers
– Attenuation of flood peaks (wetlands delay runoff and store water which, following wetland drainage then flows into streams and rivers much more quickly, increasing the risk of downstream flooding)
– Retention of nutrients (wetlands have a capacity, within limits, to act as natural 'filters' by storing nutrients in trapped sediment – see below – or in growth of aquatic vegetation. This helps to reduce eutrophication of water bodies)
– Sediment trapping (may help reduce nutrient enrichment of lakes and rivers, as well as limit human-induced increases in the suspended sediment load of naturally clear water bodies)
– Shoreline stabilisation ('absorption and dissipation of wind or wave energy: can reduce erosion)
– High bioproductivity (due to regular inputs of nutrient-rich sediments)
– High biodiversity values (e.g. habitat for rare and/or highly specialised species)
– Provision of drinking water
– Provision of water for agriculture
– Provision of food supplies (especially fish)
– Provision of building materials (e.g. reeds)
– Provision of multiple recreational opportunities (e.g. swimming, boating, fishing, nature watching)

Box 5.2.4

Key factors causing wetland loss and degradation

Agriculture	– Drainage – Dyke construction – Fertiliser and pesticide use – Water abstraction for irrigation – Landscape simplification
Forestry	– Conversion of meadows – Replacement of natural and semi-natural

	– Riparian forests with intensive plantations
Transport	– Navigation channels – Road and railway construction – Drainage and dyking – Landscape fragmentation
Energy	– Hydro-electric power dams – Electricty lines – Power stations – Mining (see extractive industries below)
Tourism & recreation	– Floodplain development – Leisure navigation – Local problems of density of people damaging habitats
Urban & industrial development	– Construction of dams and dykes to protect infrastructure – Drainage of land for new development – Waste disposal/pollution – Ground and surface-water abstraction
Extractive industries	– Gravel extraction – Toxic mining waste
Climate change	– Erosion due to sea level rise – Changing rainfall patterns

Source: Seminar 2 *Proceedings*, paper by J. Madgwick and T. Jones)

Box 5.2.5

Economic analysis of nutrient retention by floodplain meadows – a wetland rehabilitation project in the Slovak Republic

The Morava River is one of the main tributaries of the Danube, extending for some 328 km. Its lower reaches pass through Austrian (right bank) and Slovak (left bank) territory, with the former 'iron curtain' having provided some incidental protection from intensive land use. Nevertheless, of the original 160 km^2 of floodplain on the Slovak side, only about 25% remains, with much of this being under arable agriculture.

Indeed, GIS analysis of historical maps showed that the area of arable land in the functional floodplain had doubled between 1920 and 1999, leading to a corresponding 50% reduction in semi-natural meadows. It was already known that this had led to serious declines in flora and fauna, but it was also suspected that the nutrient abatement value of the floodplain meadows (through cutting and removal of hay 'fertilised' by Morava floodwater) had been impaired.

Research presented by J. Seffer in Seminar 2 demonstrated that traditional meadow management[26] in the lower Morava floodplains had an indicative nitrogen retention value of 434 tonnes per year, due to the removal of nitrogen incorporated into plant growth. This is equivalent to the yearly nitrogen

[26] i.e. cutting and removal of a hay crop in summer, followed by late summer/autumn grazing, without the use of chemical fertilisers

production of 216,000 people. The monetary value of the natural nutrient removal by the floodplains is therefore equal to the operating cost of a wastewater treatment plant for a city of 216,000 citizens – approximately 700,000 Euros per year. Moreover, the initial cost of building such a treatment plant would be around 7 million Euros. These conclusions provided a powerful economic argument in favour of meadow restoration, with proposals being developed for restoration of 140 ha of former arable land. Cumulative cost-benefit analyses show an operating profit within three to six years, depending on whether an optimistic or pessimistic scenario is modelled. The overall economic investment required is far below that for conventional water treatment.

In addition, ongoing restoration of the Morava meadows is providing multiple benefits for biodiversity conservation (enhancing the status of habitats and species which have declined across Europe because of conversion of hay meadows to intensive pasture or arable land), flood storage (re-establishment of more natural flood regime) and tourism/recreation (using the attractiveness of the wetland landscape to attract visitors for hiking, cycling etc. Farmers producing hay from the Morava meadows find a ready market across the border in Austria, where the demand for organic products is not currently satisfied by domestic production.

Source: Seminar 2 *Proceedings*, paper by J.Seffer)

WFD Key Task 3 'Design Programmes of Measures and develop River Basin Management Plans'

WFD principal requirements

- Establish the Programme of Measures needed for each RBD to meet the WFD's environmental objectives. Include compulsory 'basic' measures (as set out in Article 11) and optional 'supplementary' measures (such as those listed in part B of Annex VI *Lists of Measures to be included within the Programmes of Measures*).
- Review and update programme of measures by the end of 2015 at the latest and every six years thereafter.
- Produce a River Basin Management Plan (RBMP) for each River Basin District (RBD) including the information detailed in Annex VII *River Basin Management Plans* (with the option to supplement RBMPs using more detailed programmes or plans for sub-basins or sectors).
- Publish RBMPs by end of 2009 at the latest, review by end of 2015 and update every six years thereafter.

[WFD Article 13 'River Basin Management Plans'. WFD Article 11 'Programme of measures'. See also WFD Annexes VI *List of Measures to be included in the Programme of Measures* and VII *River Basin Management Plans* – summarised on p. nn and nn, respectively.]

Towards implementation – selected questions for river basin managers

- Which actions can be implemented immediately, on the basis of existing knowledge and know-how?
- Have all relevant existing processes, programmes, plans and structures been identified? How can these best be used to deliver WFD requirements? For example, what opportunities are there for adapting existing flood protection measures to help meet the objective of 'good status'?
- Have interactions with stakeholders and the wider public been appropriately planned – and human and financial resources allocated – to ensure their effective participation in the development of the Programme of Measures and RBMP?
- Has a range of alternative measures been systematically proposed and assessed for each water management issue, taking into account technical feasibility, cost-effectiveness and the possible impact of the proposed measures on sectors other than water management?
- Are roles and responsibilities for implementing and enforcing (when necessary) agreed measures clearly defined and communicated?
- Have issues that need to be addressed beyond the RBD boundaries (e.g. agricultural policy, climate change) been identified and communicated to the most appropriate bodies?
- Do the RBMP and programme of measures take into account uncertainties over long-term factors such as climate change?
- What capacity building measures are required to ensure that planners and managers within the RBD remain up-to-date with evolving 'good practice' approaches and tools?

Seminar 'lessons learned'

1. Establish Programmes of Measures:

- It is better to start early and imperfectly, building on what already exists, and seeking to follow a 'good practice' approach to ensure compliance with WFD final deadlines, and this the achievement of 'good status'.

- There is a need for some early demonstrations ('easy wins') of the positive effects of good planning and particularly to maintain the faith of stakeholders in the process.

- While a range of possible measures should be investigated and analysed systematically, it is important to identify what can realistically be addressed at RBD level process and what should be tackled elsewhere, e.g. through changes to sectoral policies.

- Groundwater, coastal waters and wetlands must be covered systematically by the Programmes of Measure and the RBMP.

- If Programmes of Measures are developed for sub-basins for practical reasons of scale, coherence and coordination of measures at RBD level must be ensured.

- Measures that need a medium to long-term approach should be identified and clearly separated from those, which could be successful in the shorter term. This will help prioritisation of resources and allocation of responsibilities.

- In view of the economically and ecologically valuable services provided by wetlands and the contribution that these can make to meeting WFD objectives, wetland conservation and rehabilitation/restoration (seeBox 5.3.2) should be systematically considered when designing the Programme of Measures.

- As for other Key Tasks, the unique knowledge and perspectives of stakeholders should be built into designing the Programme of Measures from the earliest possible stages. This will also help to test the likely socio-economic impacts and acceptability of proposed measures.

- Build both socio-economic and environmental parameters (e.g. the likely impact of planned measures on the status of water bodies) into the assessment of options for the identification of the most cost-effective set of measures (e.g. using multi-criteria analysis).

- The Programme of Measures should be coordinated with other water and land-use planning processes and funding mechanisms. This may have significant financial benefits in addition to improving effectiveness of WFD implementation.

2. Prepare and publish RBMPs

- The River Basin Management Plans required by the WFD are strategic in nature but action-oriented and focused on attaining environmental objective of 'good status'. It

is essential that the difference between 'planning' and actual 'management' is emphasised throughout the process; plans are of little value if they merely sit on a shelf gathering dust once they have been published.

- In many parts of Europe, river basin planning is not a new approach. As with other 'Key Steps' the emphasis should be firmly on bringing together existing structures to deliver the requirements of the WFD. Examples of some ongoing initiatives are given in Appendix II.4

- RBMPs can and should provide the basis for increased coherence of sectoral policy (e.g. cross compliance[27] in agriculture) and structural policies (e.g. prioritising allocation of funds to infrastructure projects that will help meet WFD objectives).

- While RBMPs might demonstrate the need for changes in sectoral policies, it is important to recognise that such policy changes might have to be undertaken at national or EU levels and so be beyond the direct control or influence of actors within the RBD.

- Existing financial instruments (from agri-environmental funding, to ISPA, Phare and Leader+) should be used wherever possible for implementing RBMPs – this is particularly true for the EU-Candidate countries of Central and Eastern Europe, where the WFD can be used as a rationale for cost-effective use of scarce resources.

- It is crucial to ensure that RBMPs are used as a means for promoting opportunities for sustainable water management offered as part of sectoral policies (e.g. cross compliance in agriculture) and structural policies (e.g. allocation of funds to initiatives that contribute to meeting WFD objectives).

Box 5.3.1

Editorial note: all indents will be converted to bullets. Layout will solve problems of this being too 'heavy'.

Measures for Integrating Agriculture Practices and Sustainable Water Management

The Seminar on 'Water and Agriculture' recognised that there are many possible measures that can be taken at national, sub-national or river basin level to minimise the adverse impact of agriculture on groundwater and surface water. However, it was also recognised that the most important step – further reform of the Common Agricultural Policy (CAP) to favour sustainable rural development rather than provision of production-based payments and subsidies – must be taken at EU level; whilst some agricultural commodities are external to the CAP and/or greatly influenced by markets. The Structural and Cohesion Funds and equivalent pre-Accession measures also support intensive farming methods (e.g. via funding of major water infrastructure for irrigation).

Legislative, institutional and administrative instruments

Designations under EU legislation, e.g. Environmentally Sensitive Areas, Nitrate Vulnerable Zones, Natura 2000 sites.

[27] See Box 5.3.1 for further information on cross compliance.

Implementation of the new EU Strategic Environmental Assessment Directive (2001/42/EC) which sets a minimum assessment framework for preparation of plans in a range of sectors, including water management.

National and local protected area designations for:
– protection of drinking water supplies;
– conservation of landscapes, habitats and/or species.

Mandatory codes of good agricultural practice such as required under the Nitrates Directive for reducing the quantity of fertilisers leached from farmland.

Whole **farm nutrient management plans** (either on their own) or as part of farm 'water auditing', contribute not only to achieving environmental objectives but also to reducing farm costs by cutting the quantities of chemical inputs, notably fertilisers, used.

The use of **cross compliance** introduced under the '**Agenda 2000' reform of the CAP** enables Member States to attach environmental conditions to payments under the CAP. This can be used to ensure that certain environmental standards are met, contributing to the achievement of good status.

Agenda 2000 also introduced the **Rural Development Regulation** (RDR), which states, "a prominent role should be given to agri-environmental instruments to support the sustainable development of rural areas and to respond to society's increasing demand for environmental services". For the period 2000–2006, the RDR will account for about 10% of annual CAP spending. Member States have discretion in selecting which of the **Rural Development Measures** set out by the RDR they wish to apply. Thus, while several are especially relevant for WFD implementation, their actual use may depend largely on political will and level of awareness among decision makers. The RDR also lays great stress on the socio-economic importance of diversifying income opportunities among farmers, as a means of supporting greater stability for rural communities. Member States should be encouraged to apply the full range of options available to maximise synergy between environmental and socio-economic aspects of the RDR.

Use of **Leader+** and **Interreg** initiatives under the Structural Funds. Leader+ aims to encourage innovative actions for sustainable rural development, including those related to natural and cultural heritage, through investment of 2.2 billion Euros over six years. Interreg supports cross-border, transnational and interregional cooperation for sustainable development, with a budget approaching 5 billion Euros for the period 2000–2006.

Voluntary agreements

Voluntary codes of good agricultural practice can help to reduce soil erosion and runoff of fertilisers and biocides, and help avoid drainage or infilling of landscape features that play an important role in regulating water quantity and quality (e.g. small marshes, streams and ponds). BUT to be successful, these codes of practice must be designed with farmers' involvement to ensure that they are readily understood and voluntarily supported by farm owners/managers and farmers' associations (see Box 5.3.3 for example from Lower Saxony, Germany).

Voluntary agreements are more successful if they incorporate clear socio-economic benefits, for all those involved, beyond compliance with environmental legislation (see Boxes 5.3.3 and 5.3.5).

Furthermore, regulators, consumers, retailers and NGOs are all important driving forces for the initiation and successful application of codes of practice. This means that education/training and awareness raising – as they relate to such codes – should be given high priority. For example, in the UK, the Scottish Wild Rivers project[28] and the Westcountry Rivers Trust[29] have achieved a tremendous amount by demonstrating to farmers that minimising fertiliser and pesticide use can save them money as well as help maintain aquatic ecosystems.

[28] See http://www.wwf-uk.org/rivers/page1.htm
[29] See http://www.wrt.org.uk

Economic or fiscal instruments

Water pricing that reflects the true cost of providing water for agricultural use would enhance the adoption of more efficient, less polluting practices, thereby reducing water wastage and pollution, as well as overall pressure on water resources.

Payments to encourage low impact farming methods in sites designated at EU level, e.g. Natura 2000 sites (see below).

Financial measures to encourage low impact farming methods in the wider countryside – for example the German and UK Governments have recently stressed the importance of transferring more CAP funding towards sustainabale rural development.

The paper presented by A. Garrido in Seminar 1 discussed options for applying economic instruments for management of water resources in the irrigated agriculture sector of Mediterranean EU Member States. Four different categories of economic instruments were analysed:

– Pricing policies (very few examples in the region)
– Water trading (i.e. allowing irrigators to buy or sell water rights)
– Water rights adjustments (i.e. amending the volume of water that each farmer is permitted)
–Financial incentives to adopt more efficient technology/infrastructure (proven to be the most widely supported option by most analysts)

It was concluded that a balanced mix of different instruments is not only desirable, but necessary to help each individual instrument achieve its potential.

Box 5.3.2

Wetland Restoration, Rehabilitation and Creation

Wetland **restoration** is the re-establishment of wetland areas that have been lost due to (for example) infilling or drainage. In order for wetland restoration projects to be truly valuable for river basin management, it is essential that the focus is on ecological restoration (i.e. restoring the natural functioning of the wetland) rather than on restoration of surface area alone. **Rehabilitation** refers to the process of improving the functioning of a wetland that has become impaired as a result of human impacts (e.g. reducing nutrient levels to tackle problems of eutrophication).

In some cases, for example to provide 'green' treatment of waste water, artificial wetlands are constructed or **created** in areas which have always been dry (at least in historical times). For examples of wetland restoration projects, see the websites of WWF's EFP:

http://www.panda.org/europe/freshwater/initiatives.html

and the European Centre for River Restoration

http://www.ecrr.org/

The Integrated Rhine Programme (IRP) of the German Federal Land of Baden-Württemberg contributes to the 1998 'Flood Action Plan' agreed by the International Rhine Commission. River regulation projects in the 19th and 20th centuries led to the loss of 90% of the functional Rhine floodplains between Basel (Swiss/German/French border) and Karlsruhe. This caused higher and more rapid flood peaks in the main Rhine channel, and a significantly increased flood risk for some 95 towns and municipalities in Baden-Württemberg. It is calculated that the cost of a major flood event in the region could exceed 12 billion DEM. At the same time, the loss of floodplains resulted in severe loss of aquatic and wetland biodiversity. The IRP aims to restore sustainable flood protection through the creation of flood storage areas (designed to be as ecologically beneficial as possible) and restoration of floodplain wetlands (with

an emphasis on reconnecting the links between the river and the wetlands, as well as between areas of high ecological value). Thus, the restoration project will have multiple benefits, helping to reduce the risk to life and property (including the likely financial cost of future flood events), and making significant contributions to the conservation of floodplain habitats and species.

Source: Seminar 2 Proceedings, paper by E. Rosport.

Editorial note: indents will be converted to bullets in final layout.

Box 5.3.3

Voluntary Agreements for Water Protection
Weser-Ems, Lower Saxony, Germany

The case study presented in Seminar 1 by Klaus Lanz (International Water Affairs, Germany), Heinrich Seul (CREAM Consultants, Germany) and Gerd Peek (organic farmer from Weser-Ems) focused on a rural region of north-west Germany, which forms part of one of the most intensive meat-producing areas in the world. The large-scale import of nutrients into the agricultural system led to severe nitrate pollution of groundwater used to supply drinking water. Since buying land was not a feasible option for achieving more sustainable land use, one drinking water company entered into voluntary agreements with farmers, based around:

– Improved farm nutrient management practices
– A gradual conversion to organic production
– Parallel work to identify and develop profitable markets for the new organic produce

Monitoring of groundwater beneath a trial area of organic arable fields showed that nitrate levels fell from 125 mg/l in 1993 to 18 mg/l in 1997. The trial area is now part of a 100 ha certified organic farm. Initially, only the part of the farm closest to the water source was converted to organic production. Due to the commercial success of the operation, the approach was extended to the whole farm. Gerd Peek, the farmer concerned, emphasised how important the possibility of a phased transition from intensive to organic methods had been in securing his commitment to the voluntary agreement. He also commended the value of professional business support provided to him through the project, enabling him to base decisions on firm economic forecasts.

WFD Key Task 4 'Establish and maintain appropriate monitoring networks'

WFD principal requirements[30]

- Establish monitoring programmes/networks needed for a coherent and comprehensive overview of water status within each RBD
- Cover both surface waters and groundwater bodies, as well as coastal waters
- Include 'surveillance', 'operational' and 'investigative' components
- Additional monitoring for protected areas

[WFD Article 8 'Monitoring of surface water status, groundwater status and protected areas. See also WFD Annex V (dealing with water body status, monitoring etc.) – summarised on p. nn]

Under the WFD final deadlines for 'minimum compliance', monitoring programmes must be operational by 2006. However this does not equate to a 'good practice' approach which, as discussed under other 'Key Tasks' should follow the principle of starting as early as possible.

Towards implementation – selected questions for river basin managers

- Is existing monitoring adequate for meeting the purpose of WFD Article 8 *Monitoring of surface water status, groundwater status and protected areas*? How representative is the existing monitoring network of the RBD as a whole?
- Is there adequate monitoring at sub-basin level?
- Are wetlands and groundwater being adequately monitored and integrated into an overall monitoring framework?
- Are the impacts of agriculture, especially diffuse pollution, being adequately monitored and integrated into the overall monitoring framework?
- What mechanisms exist for co-ordinating different sources of relevant monitoring data? How can they best be used? What changes are needed?
- Are monitoring parameters/standards/criteria compatible/comparable across boundaries (whether between sub-basins within one country, or across international boundaries)?
- Have you considered using monitoring data to identify the underlying **pressures** ('root causes') as well as quality and quantity **impacts** they cause?
- Does the monitoring system serve as an **early warning mechanism** for detecting negative changes in water quality or quantity? (i.e. is a problem identified in time to implement a solution before environmental or socio-economic damage occurs?)
- Have adequate resources for monitoring been allocated?
- What are the capacity-building requirements to ensure that monitoring in the RBD evolves in line with changing technology and 'good practice'?

[30] As for other 'Key Tasks', the Water Seminar Series did not address all of the WFD provisions on monitoring. The material below therefore focuses mainly on monitoring as it relates to water and agriculture and the role of wetlands in river basin management.

Seminar 'lessons learned'

Establish monitoring needed for a coherent and comprehensive overview of water status including wetlands within each RBD

Effective monitoring is an essential component of 'good practice' in river basin planning and management, and a central element of measuring progress in WFD implementation:

- Work on establishing monitoring networks (including evaluation of existing monitoring) must be carried out at an early stage of WFD implementation.

- Monitoring data for wetlands are extremely variable across Europe, with little or no coordinated data available in some countries. Steps should be taken to correct this deficit if necessary.

- Steps should be taken to establish the level and type of monitoring needed for maintaining an overview of changes in pressures and impacts, which may reflect shifts of root causes.

- Existing data – held by different governmental and non-governmental bodies (e.g. water supply companies, environmental agencies, conservation NGOs, local municipalities) – should be sought out and used as much as possible. It is important to ensure that data set 'links', are in place to provide the integration and/or aggregation of information needed for effective river basin planning and management.

Editorial note: Diagram to be added showing monitoring as part of the 'planning – action – monitoring – reviewing' circle/cycle

6. Conclusion

The 'Water Seminar Series' confirmed the wide-ranging interest and commitment shown at all levels by the European water 'community' for effective implementation of the Water Framework Directive. This is recognised as a significant challenge in view of the complexities involved in establishing integrated river basin management and achieving the environmental objectives of the Directive.

What has been learnt from the process of case study presentations, discussions and other interactions can be summarised as follows:

- Integration, scale, timing, participation and capacity are fundamental cross-cutting principles for effective integrated river basin planning. They need to be considered systematically at every stage leading to the adoption and implementation of river basin management plans.

- The existence and enormous importance of these cross-cutting principles are not theoretical; they have been demonstrated through real life situations and 'validated' by consensus between the wide range of experts and stakeholders mobilised for the 'Water Seminars Series'.

- A particular challenge remains; namely, reconciling WFD (minimum) compliance deadlines, with the 'good practice' approaches that need to be followed for ensuring the development of effective and integrated river basin management plans capable of delivering the environmental objectives of the WFD. A first attempt has been made in this document to highlight some key areas where special attention to this issue is needed.

- The findings set out in this publication need to be taken further, building on the 'Water Seminar Series' process and 'lessons learned'. This will be especially important in the context of the Common Implementation Strategy (CIS) developed by the Member States and the European Commission and the guidance documents to be developed by the various CIS working groups. National implementation strategies and guidance developed by stakeholders or NGOs will also make an important contribution.

Implementing the WFD will always remain a challenging and complex task. However, the many initiatives launched so far, at a range of different levels, promise much for the future of water management across Europe.

Appendix I – Provisions of the WFD Annexes

The WFD has **11 Annexes setting out in much greater detail the steps required under each of the Directive's Articles**. The Annexes are complex and highly technical in places, with **numerous cross-references** between Annexes, to corresponding WFD Articles, and to other relevant Community legislation. Thus, while implementation of the WFD depends crucially on full understanding and interpretation of the Annexes, they may be difficult for non-expert stakeholders to use. It is hoped that the following summary will prove valuable.

Annex I *Information required for the list of competent authorities*, sets out the information required from Member States for the list of competent authorities for each RBD, stressing that, where possible, data on RBD boundaries and principal rivers should be provided using Geographical Information System (GIS) software.

Annex II (together with Annex V – see below) forms the technical and scientific basis of the WFD. It is untitled, but deals with water body characterisation and related issues.

For surface water bodies, Annex II requires:

- Characterisation of all surface water bodies through allocation of each individual water body to one of the following categories: (a) rivers, (b) lakes, (c) transitional waters, (d) coastal waters, (e) artificial surface water bodies, (f) heavily modified surface water bodies.
- Differentiation of water body types within each of the categories above, using either of two typologies. These are set out in Annex II.
- Establishment of "type-specific reference conditions for surface water body types", using hydrological, physical, chemical and biological parameters to describe the expected condition of the relevant water body type under 'high ecological status' (as defined in Annex V). This basically means describing in scientific terms what the water body would be like under 'natural' conditions, with no human impacts.
- Identification of significant human pressures on surface water bodies within each RBD, including *inter alia*: (a) urban, industrial and agricultural point source and diffuse pollution – particularly substances listed in Annex VIII; (b) water abstraction for urban, industrial, agricultural and other uses; (c) water flow regulation, including transfers and diversions; (d) morphological alteration of water bodies. Land use patterns must also be described.
- Assessment of the susceptibility of surface water bodies to the pressures identified; i.e. the likelihood that, due to human impacts, the water body will fail to qualify as having 'good status' by 2015.

For groundwater bodies, Annex II requires:

- Initial characterisation of all groundwater bodies "to assess their uses and the degree to which they are at risk of failing to meet the [environmental] objectives for each groundwater body" (Annex II sets out elements to be included in this 'initial' characterisation).
- Further characterisation of those groundwater bodies identified as being 'at risk' to help identify appropriate actions to include in the programme of measures.

- Review of the impact of human activity, but only for groundwaters that either cross boundaries between Member States, or have been identified as being at risk. This should include, where relevant, the location of water abstraction and discharge points (together with information on quantity and quality of water abstracted), and information on land use in the groundwater recharge catchment (including pollution inputs and flow alterations such as water diversion, damming and drainage).

[Note: The establishment of common principles and practical guidance for implementing elements of this Annex fall under the remits of WFD CIS Working Groups on '*Analysis of pressures and impacts*'; '*Reference conditions for inland surface waters*'; '*Typology of transitional, coastal waters*'; '*Geographical Information Systems*'; '*Intercallibration'*; and '*Tools on assessment, classification of groundwater'*].

Annex III *Economic analysis*, states that the economic analysis required by Article 5 "shall contain enough information in sufficient detail" for (a) applying the principle of recovery of costs of water services (taking into account long-term forecasts of supply and demand in the relevant RBD); and (b) judging the most cost-effective measures relating to water use (to be included in the programme of measures for the RBD). **[Note: The establishment of common principles and practical guidance for implementing the provisions of this Annex fall under the remit of the WFD CIS Working Group on '*Economic analysis*']**.

Annex IV *Protected Areas*, lists five types of Protected Areas to be included in the register for each RBD established by Article 6. It also requires Member States to map the location of each Protected Area and to identify the relevant Community or national legislation under which it has been designated.

Annex V (untitled) is lengthy and complex. Basically, it sets out the criteria to be used for assessing **surface water 'ecological status'** and **groundwater 'quantitative status'**, together with the corresponding **monitoring programmes and reporting procedures** required.

For surface water bodies Annex V covers:

- The scientific/technical parameters, definitions and standards to be used for the classification of ecological status ('high', 'good' or 'moderate') for each of the surface water body types identified in Annex II (including high, good or moderate ecological potential for artificial or heavily modified water bodies).
- Design of 'surveillance monitoring programmes' (to be used in combination with the impact assessment procedure in Annex II) for developing the monitoring components of RBMPs.
- Design of 'operational monitoring' for (a) establishing the status of water bodies at risk of failing to meet the WFD environmental objective of 'good status'; and (b) assessing the effectiveness of the programme of measures in improving the ecological status of such water bodies.
- Design of 'investigative monitoring'.
- Frequency of monitoring.
- Additional monitoring for protected areas (both drinking water abstraction points and protected areas for habitats and species).
- Presentation and reporting of ecological status and monitoring information.

For groundwater bodies Annex V covers:

- Definition of 'good quantitative status' (based on groundwater level).

- Design of groundwater level monitoring network.
- Definition of 'good chemical status' (based on concentrations of pollutants and conductivity).
- Design of chemical status monitoring network, including 'surveillance' and 'operational' monitoring components. Surveillance monitoring should be carried out (a) to supplement the impact assessment procedure required by Annex II; and (b) to provide the information needed for assessing long-term trends due to natural or human-induced changes. Operational monitoring should establish the chemical status of all groundwater bodies at risk of failing to meet the WFD objective of 'good status' and establish the presence of any human-induced upward trend in pollutant concentrations.
- Frequency of quantitative and qualitative monitoring.
- Basis for identification of trends in pollutants.
- Interpretation, presentation and reporting of information on groundwater status.

[Note: The establishment of common principles and practical guidance for implementing elements of this Annex fall under the remit of the WFD CIS Working Groups on '*Heavily modified waters*'; '*Intercallibration*'; '*Monitoring*' and '*Tools on Assessment, classification of groundwater*']

Annex VI *Lists of measures to be included in the Programme of Measures*, sets out the elements to be included in the Programmes of Measures required by Article 11 and which form the basis for implementation of RBMPs. These include:

- The compulsory measures required by 11 EU Directives already in force at the time of the WFD's publication in the Official Journal (e.g. Bathing Waters, Birds, Drinking Water, Habitats, Nitrates, and Urban Waste Water Directives).
- A non-exhaustive list of 'supplementary' measures covering *inter alia* legislative, administrative, and economic/fiscal instruments, emission and abstraction controls, codes of good practice, recreation and restoration of wetlands, demand management measures, and water efficiency/re-use measures.

[Note: The establishment of common principles and practical guidance for implementing the provisions of this Annex fall under the remit of the WFD CIS Working Group on *'Best practice in river basin planning'*]

Annex VII *River Basin Management Plans*, establishes the mandatory elements for RBMPs. These include:

- A general description of RBD characteristics (as required by Article 5 and Annex II).
- A summary of significant pressures and impacts from human activities in each RBD.
- Identification and mapping of protected areas as required by Article 6 and Annex 4.
- A map of the monitoring networks required by Article 8 and Annex 5, together with mapping of selected monitoring data.
- A list of the environmental objectives established under Article 4 for surface waters, groundwaters and protected areas (including identification and justification of instances where derogations and deadline extensions have been permitted).
- A summary of the economic analysis of water use required by Article 5 and Annex III.
- A summary of the Programme of Measures adopted under Article 11. The summary must cover *inter alia*: steps taken to apply the principle of cost recovery for water services; controls on water abstraction and impoundment; controls on point source discharges; identification of authorised direct discharges to groundwater; measures taken for priority

substances; measures taken to prevent or reduce accidental pollution; measures taken to improve status for water bodies unlikely to achieve 'good status' by 2015.

- A register of any more detailed programmes and management plans within the RBD, e.g. those for an individual sub-basin or a specific sector.
- A summary of public information and consultation measures taken.
- A list of competent authorities and contact points for obtaining additional information.

[Note: The establishment of common principles and practical guidance for implementing the provisions of this Annex fall under the remit of the WFD CIS Working Group on *'Best practice in river basin planning'*]

Updates of each RBMP must *inter alia* summarise any changes since publication of the previous version; assess progress made towards achieving the WFD's environmental objectives; summarise and explain any measures foreseen in the previous RBMP that have not yet been implemented.

Annex VIII *Indicative list of the main pollutant*s, lists 12 categories of "main pollutants", which should be given particular attention when undertaking the impact assessment procedure set out in Annex II.

Annex IX *Emission limit values and environmental quality standards*, lists those EU Directives that set emission limit values and environmental quality standards for the purposes of the WFD, notably the provisions of Article 16.10.

Annex X *Priority substances*, lists "priority substances" within the meaning of Article 16, which requires the European Parliament and the Council to adopt EC proposals for both the selection of the priority substances and the specific measures against pollution to progressively reduce, phase out or cease (depending on the substance in question) emissions of such substances into the environment.

Annex XI consists of two maps: one showing the *ecoregions for rivers and lakes* to be used in conjunction with Annex II; the other showing the corresponding *ecoregions for transitional waters and coastal waters*.

Appendix II – Additional practical examples

The following boxes provide additional practical examples illustrating the 'cross cutting principles', 'lessons learned' and elements of 'good practice' derived from the 'Water Seminar Series. They are cross-referenced in the text of Chapter 5.

Appendix II.1

Impacts of Agriculture in Central and Eastern Europe

The 'Danube Integrated Environmental Study' quoted in the Seminar 1 paper by H. Kieft and D. Znaor reported agriculture as being responsible for:

- 50% of the nitrogen loading and
- 53% of the phosphorous loading in the Danube River basin.

In addition, agriculture was found to account for significant inputs of pesticides, heavy metals (cadmium, copper, zinc), bacteria and viruses.

Another study calculated that a 25% reduction in nutrient loading from 1989–1991 levels would be required to meet environmental quality criteria for the Danube, and even greater reductions if eutrophication of the Black Sea was to be halted. Kieft & Znaor pointed out that economic pressures have led to a collapse in the use of agrochemicals in much of the Danube basin and that current levels of usage approximate those identified as being more environmentally sustainable. However, the official agricultural policies of most countries in the region currently foresee future intensification of agriculture with increased fertiliser and biocide inputs.

Source: Seminar 1 *Proceedings*, paper by H. Kieft and D. Znaor.

Appendix II.2

Wetland inventories

Information on European wetlands is surprisingly fragmented. Given the vital role of wetlands in water regulation, as well is provision of numerous other services, completion of a wetland inventory for each RBD should be given high priority. There are currently no agreed guidelines at global or Pan-European level for the preparation of wetland inventories, although a methodology for Mediterranean wetlands has been established (largely through EC funding support) by the 'MedWet' initiative under the 'Ramsar' Convention on Wetlands. A number of European countries have established national or sub-national wetland inventories using widely differing methodologies. In the case of shared RBDs, it will be important that a common approach is used by the Member States (and any non-Member States) concerned.

Source: Seminar 2 *Proceedings*, paper by M. Moser

Appendix II.3

The use of agricultural policy modelling to investigate the root cause of wetland degradation in the Tablas de Daimiel, Spain

Under natural conditions, the internationally important wetland complex 'Las Tablas de Daimiel' (in the Spanish Autonomous Region of Castilla–La Mancha) was maintained through discharge of groundwater from a major groundwater body, 'Aquifer 23'. In 1987, the Hydrographic Confederation of the Guadiana Basin, acting on the basis of Spain's then new Water Act, provisionally declared Aquifer 23 to be overexploited due to the rapid expansion of irrigation – supported by the EU Common Agricultural Policy (CAP) – for crops such as sugar beet and maize. From 1991 onwards, restrictions on use of the aquifer were introduced, but these were not effective for a variety of reasons (e.g. unregistered and/or unmetered boreholes, resistance of farmers). Subsequently, the agri-environment Regulation 2078/92 under the CAP was used to introduce a compensation scheme, offering farmers payments for switching to less water-intensive crops[31]. The total cost of the scheme is estimated to be around 100 million Euros.

In view of this very high sum being paid out as compensation, modelling was used to identify the environmental impacts (in terms of water consumption) and the financial costs of other possible options, taking into account various theoretical directions of possible future agriculture policy.

All the agricultural policy options simulated (e.g. use of cross-compliance – see Box 5.3.1 in Chapter 5) were found to be cheaper than the option being implemented through the agri-environment compensation scheme, while some of them produced better or similar results in terms of water saving. This suggested a certain wastage of public resources in maintaining the *status quo*. On the other hand, all of the alternative scenarios modelled led to a loss of farm incomes (though the magnitude varied from farm to farm). This clearly demonstrated the value of modelling as an analytical tool in helping to define the Programme of Measures for a given RBMP.

Source: Seminar 1 *Proceedings*, paper by J.M. Sumpsi

Appendix II.4

Ongoing International River Basin Management Initiatives

The 'Water Seminar Series' stressed that river basin planning is not something new. On the contrary, there are numerous national, regional and international river basin initiatives already under way in Europe (and elsewhere around the world). Given the tight timetable for WFD implementation, it will be essential that this wealth of existing experience is fully utilised. At international level, some of the most relevant initiatives and processes include:

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– The work of transboundary river Commissions such as those for the Danube and Rhine (see http://www.icpdr.org and http://www.iksr.org/icpr/index.htm)

– Follow-up to the recent report of the World Commission on Dams (see http://www.dams.org)

– The World Water Vision launched by the World Water Council at the Second World Water Forum in March 2000 (see http://www.worldwatercouncil.org/vision.htm)

– The River Basin Initiative of the Convention on Biological Diversity and the 'Ramsar' Convention on Wetlands (see http://www.ramsar.org/w.n.rbi_progress1.htm)

– The Ramsar Convention guidelines on 'integrating wetland conservation and wise use into river basin management' available in English, French and Spanish (see http://www.ramsar.org/key_guidelines_index.htm)

[31] It was noted during the seminar discussions that agri-environment programmes should really be used in a much more positive way. They are intended to promote agricultural practices that add real environmental value, above the level of minimum compliance with EU environmental legislation. This was not the case in the example of Daimiel.

Appendix II.5

Groundwater Nitrate Reduction
Groundwater protection measures in Styria, Austria

As a result of changes in agricultural land use during the 1980s (switch from conventional 'mixed' land use with crop rotation to intensive pig rearing), parts of the Austrian Province of Styria experienced significant water quality problems. This reflected a national-scale problem, with up to 73% of Austrian groundwater being classified as 'in need of restoration' and unfit to be used directly for human consumption. The designation of 'water protection areas' in one area of Styria, where strict controls on agricultural land use were applied, led to a substantial reduction of groundwater nitrate levels. The establishment and enforcement of regulations (tested and 'fine tuned' over a period of several years) within the water protection area, together with intensive awareness-raising work with all potential 'polluters', were identified as key ingredients of the approach used, as was a commitment respecting the need of farmers to operate profitable businesses. However, it was also noted that the costs of the programme were partly paid for by consumers. Given that the passing on of costs to the consumer (either directly through higher water bills, or indirectly through increased taxation) is not in accordance with the 'polluter pays' principle, the limitations of this approach need to be recognised.

Source: Seminar 1 *Proceedings*, paper by G. Suette

Editorial note: indents will be converted to bullets in final layout.

Appendix II.6

Production of organic beef as a river basin management tool
Vindel River, Sweden

The decline of traditional grazing practices in northern Sweden has led to the abandonment of riverine meadows , with widespread colonisation of bushes leading to the disappearance of wet grassland and degradation of biodiversity. In 1997, WWF started a rural development project to reverse the negative trends in one area of the Vindel meadows. By encouraging and supporting the production of high quality beef raised with low artificial inputs and grazed largely on 'natural' pastures, the project has succeeded in maintaining or restoring 75ha of meadows. Support for continuation of the project until at least 2006 has been sought through the EU Structural Funds. Elements important to the project's success were identified as follows:

- Bottom-up approach during planning and rapid implementation giving fast, visible results.
- Strong market for 'green', regionally-produced quality products.
- Regional interest in cultural and biological conservation has engaged people.
- Cooperation at a range of levels: EC, Member State, Municipality, local farmers.

Source: Seminar 1 *Proceedings*, paper by O. Jennersten

Appendix III – Acronyms and abbreviations

The use of acronyms and abbreviations has intentionally been kept to a minimum in this document. Those that appear are listed below:

CAP	Common Agricultural Policy of the European Union
CIS	the Common Implementation Strategy for the Water Framework Directive being developed jointly by the Member States and the European Commission
DG	Directorate General of the European Commission
EC	European Commission
EEA	European Environment Agency
EEB	European Environment Bureau
EFP	WWF European Freshwater Programme
EU	European Union
ISPA	Instrument for Structural Policies for Pre-Accession (the EU financial instrument for infrastructure projects in Candidate countries)
JRC	Joint Research Centre of the European Commission, based in Ispra, Italy
LIFE	The EC financial instrument for the environment
NGO	Non-Governmental Organisation
RBD	River Basin District
RBMP	River Basin Management Plan
SAPARD	Special Action for Pre-Accession Measures for Agriculture and Rural Development (the EU financial instrument to support agriculture and rural development in Candidate countries)
UN ECE	United Nations Economic Commission for Europe
WFD	Water Framework Directive (reference number 2000/60/EC)
WWF	The world's largest independent conservation organisation

Editorial note: This section to be laid out to make it clear and easy to read.

Appendix IV – Contributors

While space limitations preclude a listing of all participants, the outputs from the 'Water Seminar Series' reflect the contributions of more than 300 'water stakeholders' from across Europe (both EU Member States and EU-Candidate countries), who attended the three meetings and whose names and affiliations[32] can be found in the corresponding *Proceedings* volumes[33]. However, the following is a complete list of presenters (and co-authors) of seminar papers (reproduced in full in the *Proceedings*):

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[32] This listing is provided purely as a means of acknowledging contributors to the 'Water Seminar Series' and to demonstrate the broad range of participation. It does not imply endorsement of the published seminar outputs, including this *Practical Resource* document by any particular individual, organisation, agency or company.
[33] http://www.panda.org/europe/freshwater/seminars/seminars.html

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A draft of this *Practical Resource* document, prepared by Tim JONES, an independent technical adviser to WWF, was discussed at a 'validation workshop' held in August 2001 and attended by the following participants (who also provided comments on a revised draft after the workshop):

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Further acknowledgements can be found in Appendix V.

Editorial note: This section to be laid out to make it clear and easy to read.

Appendix V – Acknowledgements

The main technical contributors to the 'Water Seminar Series' are listed in Appendix IV, together with participants in the August 2001 'validation workshop' that helped develop this *Practical Resource* document. WWF and the European Commission are most grateful to all of these individuals (and corresponding organisations) for their time and expertise, which provided the basis for the published outputs of the seminar series. In addition, the organisers would like to acknowledge the important role played by the Session Chairs and Rapporteurs, Seminar logistics coordinator, and Agenda Coordinator, all of whom are listed below.

Seminar Session Chairs
Friedrich Barth, DG Environment, European Commission
Gordana Beltram, Ministry of the Environment and Spatial Planning, Slovenia
Helmut Blöch, DG Environment, European Commission
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Seminar Session Rapporteurs
Charlie Avis, WWF Danube-Carpathian Programme Office
Annali Bamber Jones, WWF European Policy Office
Guy Beaufoy, Institute of Sustainable Rural Development (Spain)
Klaus Lanz, International Water Affairs, Germany
Josefina Maestu, Mediterranean Water Network
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[34] Change of affiliation between seminars.

planning and implementation of the project, drawing mainly on staff from the European Freshwater Programme Coordination Unit, as follows:

Technical coordinator for WWF

Jane Madgwick (to May 2001)

Overall project manager for WWF

Eva Royo Gelabert

Independent Technical Expert

Tim Jones

Communications Coordinator

Mark Vanderbeeken

Administrative assistant[35]

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Martin Winther

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[35] This was a single position, staffed consecutively by the four individuals listed
[36] As a resource for possible follow -up, particularly at national or regional levels, a complete list of members of the WFF WWF European Freshwater Team can be found at: http://www.panda.org/europe/freshwater

Appendix VI – Sources of further information

For further information concerning the outputs from the 'Water Seminar Series', please contact:

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The following web sites are recommended as sources of additional information covering many of the issues raised in this document:

- Convention on Wetlands (Ramsar, 1971) guidelines on 'integrating wetland conservation and wise use into river basin management' available in English, French and Spanish:

  http://www.ramsar.org/key_guidelines_index.htm

- European Commission, DG Agriculture, agriculture and environment pages:

  http://europa.eu.int/comm/agriculture/envir/index_en.htm

- European Commission, DG Environment, site index:

  http://www.europa.eu.int/comm/environment/index_en.htm

- European Environmental Bureau (EEB) Position Paper on 'Making the EU Water Framework Directive Work: Ten Actions for Implementing a Better European Water Policy' (downloadable in pdf format):

  http://www.eeb.org/publication/general.htm

- European Union of National Associations of Water Suppliers and Waste Water Services

  http://users.skynet.be/eureau/

- International Commission for the Protection of the Danube River:

  http://www.icpdr.org

- International Commission for the Protection of the Rhine:

  http://www.iksr.org/icpr/index.htm

- River Basin Initiative of the Convention on Biological Diversity and the 'Ramsar' Convention on Wetlands:

  http://www.ramsar.org/w.n.rbi_progress1.htm

- United Nations Economic Commission for Europe, water pages:

  http://www.unece.org/env/water/

- World Commission on Dams:

  http://www.dams.org

- World Water Vision launched by the World Water Council at the Second World Water Forum in March 2000:

  http://www.worldwatercouncil.org/vision.htm

- WWF, European Freshwater Programme:

  http://www.panda.org/europe/freshwater

[BACK COVER TEXT – LOGOS INCLUDED]

This *Practical Resource* document results from a series of **open, transparent and participatory seminars** - comprising the 'Water Seminar Series' – which brought together hundreds of 'water stakeholders' to discuss approaches and tools for **implementation** of the European Union Water Framework Directive (WFD). This challenging new legislation entered into force at the end of 2000 and sets out the basis for **sustainable use of water resources** across Europe. It will affect **everyone involved directly or indirectly with water resource management and use** in both Member States and EU-Candidate countries alike.

The seminars focused on **three key issues,** which the organisers, WWF and the European Commission (EC), had identified as needing special attention when implementing the WFD:

- Water and Agriculture
- The Role of Wetlands in River Basin Management
- Good Practice in River Basin Planning

Who should read this document?

- Those involved with water planning and management at regional and local levels, including land-use planners, water supply and treatment companies, and local authorities.
- 'Stakeholder' groups with an interest in how an individual river basin is managed, for example: Community associations, farmers, environmentalists.

Logos: WWF top left, EC top right, with TAIEX underneath