Meeting the EU Water Framework Directive Through Watershed Demonstration Projects in the Baltic States


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Abstract
IN 1998 the United States Environmental Protection Agency (USEPA), in cooperation with the Ohio River Valley Water Sanitation Commission (ORSANCO) and the Conservation Technology Information Center (CTIC), initiated the Great Lakes/Baltic Sea Partnership to assist the Baltic Countries of Estonia, Latvia, Lithuania and Russian Oblasts Kaliningrad and Pskov with watershed management capacity building. The purpose of the effort is to work with the appropriate Ministries and government agencies at the national and regional levels and local units of governments within the demonstration/pilot areas on developing the necessary approaches and social skills to develop watershed management plans that would comply with the European Union’s Water Framework Directive (WFD). WFD is a requirement for the Baltic Countries accession European Union which is expected in May 2004. The program also addressed Pskov’s and Kaliningrad’s desire to work cooperatively with their neighboring countries concerning shared waters. The program consists of three components: transboundary institutional cooperation; local decision making capacity building through training and volunteer monitoring; and Non Governmental Organization (NGO) leadership for civil society engagement. Five watershed demonstration projects were initiated, four involved joint country efforts: Koiva (Estonia and Latvia) volunteer monitoring, environmental education and local decision making; river basin assessment and management planning for the Lielupe Basin (Latvia and Lithuania); Peipsi (Estonia and Pskov Oblast) volunteer monitoring and local decision making; data base development and cooperative water quality survey and analysis for the Sesupe River (Lithuania and Kaliningrad Oblast); and Parnu River (Estonia) nutrient modeling and bacteria survey to support development of a watershed management plan and local sub watershed plan development. The demonstration/pilot projects were highly successful. The NGO component was at the national level for the Baltic Countries and Pskov Oblast. The benefits of the program include enhancing technical skills and the forging of relationships, without which achieving effective watershed management will be difficult to achieve. The paper focuses on: major challenges faced in the transboundary watershed management capacity building efforts, overarching specific accomplishments of the program focusing on the demonstration/pilot projects, and USEPA’s future activities in Countries of Estonia, Latvia, Lithuania.

Key Words
Baltic Countries, Pskov Oblast, Kaliningrad Oblast, EU Water Framework Directive, Demonstration/Pilot Projects, Watersheds, Transboundary

BACKGROUND
The European Commission issued the Water Framework Directive (WFD) in December 2000. WFD provides the structure for European Union (EU) countries managing their surface water resources on a watershed basis. Countries aspiring to become members of the EU,
including the countries of Estonia, Latvia and Lithuania, must engage in watershed management capacity building to satisfy the Framework’s mandates on an international level. In addition, the Kaliningrad and Pskov Oblasts of the Russia Federation are working to achieve more effective watershed management and to increase cooperation with Lithuania and Estonia, their neighboring countries, where watersheds are shared.

Given the similarity of the environmental issues and challenges associated with the Great Lakes and the Baltic Sea, representatives of the United States, Canada, Estonia, Finland, Latvia, Lithuania, Russian Federation, and Sweden reached an agreement of cooperation in November 1998. That agreement, referred to as the Great Lakes/Baltic Sea Partnership (Partnership), promoted improvement of the water quality of the Great Lakes and Baltic Sea by sharing information, expertise and management approaches at various levels of interest from international governmental exchange to local level discourse. Although the Partnership undertook a number of activities, this paper focuses on one - the Watershed Management Capacity Building Program. This program consists of three components: transboundary institutional cooperation; building local decision making capacity through technical/management training and volunteer monitoring; and Non Governmental Organization (NGO) leadership for civil society engagement.

The United States Environmental Protection Agency (USEPA) Region 5 Office led the Partnership within the United States; the Environmental Ministries or their equivalent had the overall lead for the Baltic Countries and the Kaliningard Oblast. In developing and implementing the Partnership, USEPA expanded the effort to include many other partners within the United States and the Baltic Sea area. U.S.-based partners invited to contribute their expertise to the capacity building program were: Ohio River Valley Water Sanitation Commission (ORSANCO), Conservation Technology Information Center (CTIC), Illinois Environmental Protection Agency (IEPA), Tetra Tech Inc. (TTI), Penn State University - Agricultural Economics and Rural Sociology, Friends of the Milwaukee River and the Chicago Botanic Gardens. The goal was to provide the highest quality resources and expertise available to support the capacity building efforts. The expertise and resources applied varied by each of the three components of the program: transboundary institutional cooperation; building local decision making capacity through watershed management training and volunteer monitoring; and NGO leadership. Several non ministry organizations and units of government in the Baltic Seas Countries and the Russian Federation supported the program as well.

**Transboundary Institutional Cooperation:**
The Transboundary Institutional Cooperation component utilized training and on-the-ground demonstration projects to build international understanding and cooperation. ORSANCO, an interstate compact water pollution control agency created to abate interstate water pollution in the Ohio Valley region of the United States, participated in the development and implementation of the Transboundary Institutional Cooperation component. ORSANCO was selected based upon its extensive experience facilitating intergovernmental cooperation in
water quality management and water quality monitoring efforts involving multiple jurisdictions. Through USEPA support, ORSANCO worked with the Center for Environmental Policy (Lithuania), the countries of Estonia, Lithuania, and Latvia, as well as the Kaliningrad Oblast in the development and implementation of capacity building watershed management demonstration/pilot projects. A key criteria factored in the selection of the Transboundary demonstration/pilot projects was workable scale.

In addition to workable scale, selection criteria for demonstration/pilot projects were as follows:
1) Ongoing/Planned Cooperative Projects,
2) Helsinki Commission Hot Spots, and
3) Diverse Water Quality Problems and Issues.
Although diverse watershed problems were one of the selection criteria, the program employed an underlying premise that lessons learned from one project should be applied to other locations within the cooperating countries with minimal cost and effort. Therefore, projects could not be so unique as to preclude transferability.

WATERSHEDS SELECTED AND PROJECT DESCRIPTIONS
Three watersheds (Figure 1) were selected as demonstration/pilot projects for the Transboundary Institutional Cooperation component; the Parnu (Estonia), Sesepe (Lithuania and Kaliningrad) and Lielupe (Lithuania and Latvia) Watersheds. For more information regarding the watersheds go to: http://www.greatlakesbalticseapartnership.org/. This component is described in: "Building Capacity of the Baltic States to Meet the EU Water Framework Directive Through Watershed Demonstration Projects" (Vicory et al.; 2001)
The Parnu Watershed has a moderately sized river system located entirely within Estonia. Specific transboundary concerns included nutrient impacts on Parnu Bay and the Baltic Sea, nutrient levels in the Parnu River and the need to protect a nearby high quality resort beach from bacteria sources. The demonstration/pilot project for this watershed utilized the Enhanced Stream Water Quality (QUAL2) model to evaluate Parnu River dissolved oxygen levels, and nutrient reduction scenarios. A specific study in the City of Parnu was conducted to investigate bacteria sources and impacts to Parnu Bay beaches. ORSANCO provided the QUAL2 model and organized training on its setup, calibration procedures and use. In addition, ORSANCO and USEPA provided technical consultation on survey design, field collection protocols and laboratory quality assurance on the bacteria study.

The Sesupe River forms a portion of the border between Lithuania and Kaliningrad. The Sesupe is a tributary to the River Nemanus, which discharges to the Baltic Sea at the Curonian Lagoon. The focus of this demonstration/pilot project was developing an approach and mechanism for environmental data generation, assessment and management on a watershed basis. The countries conducted joint water quality monitoring, while developing a common geographically based data base and completing an overall river basin assessment to support future joint watershed management efforts.

The Lielupe Watershed drains from Lithuania into Latvia and discharges at the environmentally sensitive area of Jurmala on the Baltic Sea coast. This demonstration/pilot project served to evaluate the mechanism for international cooperation regarding river basin management Building on a PHARE-sponsored study of the Lielupe Watershed: the Lithuanian/Latvian Partnership developed a watershed management plan that documented the environmental status, problems and additional information needs in the watershed as well as action steps toward transboundary watershed management was developed. The countries now are in the process of implementing the watershed management plan. ORSANCO provided technical assistance to both countries in the development of the watershed management plan; CTIC and TTI, provided training and technical assistance to the countries on local decision-making, stakeholder involvement and outreach. CTIC is an internationally recognized public private partnership focused on watershed management and agricultural conservation. TTI is a national consulting company with interest in environmental management.

These three projects provided a range of opportunities for developing and testing management approaches for cooperating countries. These projects allowed all three countries to explore an assortment of institutional arrangements and identify potential barriers and opportunities for future efforts.

**Local Capacity Building:**
The local capacity building component of the Watershed Management Building Capacity Program consisted of volunteer monitoring training, environmental education and leadership development in watershed management. The Partners promoted a flexible four-step approach to watershed management that encompasses a collaborative process. The approach, which
responds to common needs and goals utilizes assessments and decision processes that are based on a combination of biophysical, social and economic information, and local knowledge. The objective of the process is to provide a coherent framework for enabling planning and adaptive management on a geomorphic basis: the watershed. Monitoring and evaluation is an indispensable component of the watershed management process, along with partnership building, planning, implementation and evaluation.

Because the watershed management approach combines various disciplines, the Watershed Management Capacity Building Program promoted the use of both technical and social skills. The technical theme incorporates environmentally sound management in the watershed context including appropriate collection and use of data, understanding of water process, etc. The social theme creates the economic and social conditions, including empowerment and participation, needed to allow and motivate stakeholders to take responsibility for and effective care of the watershed.

For the watershed management process to be effective, people living, working, and owning or using the land in the watershed must make the right environmentally responsible short and long term decisions. Their challenge is to balance short term demands for production and services with long term sustainability of a quality environment. The widely accepted definition of “sustainability” from the Bruntland Commission’s Our Common Future (World Commission on Environment and Development, 1987) is “development (or management) that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Utilizing this definition as a guide, watershed planners were trained to work with stakeholders to avoid emphasizing either production or quality of life principles at the expense of the other. People (watershed residents) must become involved in all phases of the watershed management process to ensure the balancing of these principles.

The “recommended watershed management process” consists of a series of four basic phases: assessment, planning, implementation and evaluation each of which rely on stakeholder involvement, social capacity building and comprehensive monitoring. Although listed sequentially here, all the phases were interconnected and are most appropriately viewed in a circular manner (Figure 2). The quality of the project depends on ownership by stakeholders and their awareness of the scope and limitations of project actions. A case study approach was utilized in the training. The training was organized by the following geographic areas:
1) Koiva (Estonia and Latvia),
2) Lake Peipsi (Estonia and Pskov Oblast),
3) Lielupe (Latvia and Lithuania), and
4) Sesupe (Lithuania and Kaliningrad Oblast).

The training resulted in the development of material that participants could utilize immediately in their watershed efforts. For example; the social capacity building training stressed the need for projects to develop and promote a unique identity. The Lielupe Watershed participants developed a logo for the Lielupe Watershed Management Plan that both Latvians and Lithuanians could use. Throughout the training, the importance of partnerships, working
together across country borders, was stressed and the involvement of stakeholders was encouraged. Participants in the Lielupe and Koiva trainings developed strong working relationships that formed the basis for cooperative watershed management plan development and other transboundary projects.

![Watershed Management Process](image)

**Figure 2 Watershed Management Process (Davenport, 2002)**

The training material for the local capacity building effort was based upon: “The Watershed Project Management Guide” (Davenport, 2003), CTIC Watershed Partnership Guides (1995), Getting in Step (1999) and “Urban Runoff and Stormwater Management Handbook” (Terrene, 1990). Portions of the training material (CTIC Watershed Partnership Guides, Getting in Step and Urban Runoff and Stormwater Management Handbook) were translated into Latvian, Russian and Lithuanian. Process worksheets were developed for use by participants to guide them through the watershed management process using local examples. The trainings utilized hands-on, interactive group activities to engage the participants in learning the process and to develop their skills for watershed management planning. As noted, the watershed management
process requires data to work - volunteer monitoring was identified as one of the ways to obtain data.

Volunteer monitoring provides citizens an active way to learn about their water resources, build awareness of pollution problems, become trained in pollution prevention, help clean up problem sites, provide data for waters that may otherwise be unassessed, and increase the amount of water quality information available to decision makers at all levels of government. Among the uses of volunteer data are delineating and characterizing watersheds, screening for water quality problems, and measuring baseline conditions and trends.

To help build local capacity in water resource management, volunteer monitoring training for streams and lakes was conducted in five areas throughout the selected Baltic countries. The program supported environmental education, local watershed management efforts and leadership development. As part of the watershed management approach, volunteers monitoring data can be used to identify problems, track implementation efforts, and document success.

USEPA and Illinois Environmental Protection Agency, in conjunction with the Council for Cooperation of Border Regions of the Republic of Estonia, Russian Federation (Pskov) and the Republic of Latvia’s 3 Rivers, 3 Countries Project cooperators, provided volunteer lake monitoring training. The volunteer monitoring training focused on providing simple techniques that would generate data to support school-based environmental education efforts and citizen involvement in local watershed management. Parameters included Secchi disk measurements, plant mapping and testing the color of lake water. In Estonia, the Voru Environmental Services Program supported expansion of the initial volunteer monitoring effort to provide baseline data utilized in the development of the Koiva watershed plan. The training material and book; “Lake Pocket Book” were translated into Estonian and Latvian.

USEPA, the Chicago Botanic Gardens, and TTI in cooperation with local partners and organizations in the Sesupe, Liepule and Lake Peipsi Watersheds (Lithuania, Latvia and Estonia respectively) trained students and teachers to monitor stream water quality. The training focused on macroinvertebrate identification (indicator) as a means to document stream health. In the Sesupe Watershed, the Marijampole Nature Center expanded on the basic training course to include plant identification. To increase the number of schools and volunteers participating in the program, the Nature Center has since held training courses at a number of schools across the watershed. The regional environmental board in Lithuania utilizes the volunteer data to assist in targeting their enforcement and assistance efforts. The training material and book; “River Watch” were translated into Lithuanian, Russian and Latvian.

In response to a request from Lithuania, Latvia and Estonia partners working on the local capacity building component; a waste water treatment plant (WWTP) operators training occurred. The purpose of the training to was to provide new ideas and tips on how to increase the efficiency of existing WWTP operations. The training was held in Pskov.
Local capacity building training is being continued at the local and national level in several locations. The volunteer monitoring effort is being continued and expanded in all five locations.

**Non Governmental Organization Leadership:**
This component of the program transferred U.S. experiences and approaches to develop focused on developing capacity and expertise of NGOs and other organizations working on watershed management issues in Estonia, Latvia, Lithuania and Pskov Oblast. In these countries no formal mechanism has been established to comply with public participation requirements of WFD. This project tested approaches to increase public awareness of and interest in watershed planning and management.

The effort concentrated on three areas: bridging water resource protection and sustainable development issues in preparation and implementation of watershed management plans; implementing legislation (national and local) on the environment and regional development; and international requirements (EU Directives) for engaging the public. Through the three areas, this project supported NGOs in their efforts to initiate discussions with their respective governments and watershed authorities on the role of stakeholders and NGOs in preparation and implementation of WFD watershed plans.

The WFD requires the involvement of the general public on three levels: 1) access to information, 2) consultations, and 3) active participation (including the planning process). Within the Countries and Oblast and at the three levels, the role of the public in water management planning and implementation is varied. The European Commission has developed an extensive guide to assist countries with fulfilling the public involvement requirements in implementing WFD. The framework directive’s guide to involving the public describes in detail the methods and techniques which can be used in each phase of watershed management and gives suggestions to evaluating results and initiating discussions. Consistent with the United States approach, the guide recommends involving the public (with information and training) at the earliest possible phase of the planning to maximize the public’s potential in the whole process.

The NGOs piloted a unique engagement with their respective governments to test the public participation methodology required by the WFD. The USEPA provided financial support and technical assistance to World Wildlife Federation (Latvia), Center of Environmental Policy (Lithuania), Center for Transboundary Cooperation (Estonia). The Chudskoe Project (Pskov Oblast), was funded by the Regional Environmental Center so that the Russian side could be included in the project. These NGOs worked on the development of country based public involvement strategies and Baltic - wide approach for assisting in the implementation of WFD. The Center for Transboundary Cooperation provided coordination and oversight in this effort.

Each country tested a multi faceted approach, and focused on an important and controversial river ecosystem. A public participation survey, designed by Tartu University (Estonia), in cooperation with project partners, was used in the key river systems. These surveys targeted stakeholders and administrators to determine baseline information for what might be needed to have the public engaged, and provided an assessment of current status of engagement.
Outreach meetings with local and regional partners were held to talk about the common issues and strategies for public participation. In each key watershed, the NGOs tested the citizen jury approach to increase understanding of watershed issues. This technique had mixed success, but was important for the NGO community to understand how different methods of engagement will lead to different community outcomes. Each country NGO produced a country report which characterizes the situation and outlines an action plan (www.riverdialogue.org/ngo). The national plans are being joined and will form the basis for future work. An unintended outcome of this effort was the creation of a new environmental organization; “Baltic Rivers Network” (BRN). BRN is the first Baltic NGO to focus on river management issues; environmental NGO’s in this Region generally have nature protection as their fundamental interest.

MAJOR ACCOMPLISHMENTS AND PROBLEMS ENCOUNTERED
The demonstration/pilot projects were highly successful, primarily because individual designs were determined by the Baltic Countries and Russian Oblasts representatives. The success of these efforts has allowed the Baltic Countries to enhance and expand their efforts related to WFD. In addition to the capacity building skills gained through the workshops held throughout the projects, participants from each country formed key interpersonal relationship. Positive working relationships are vital to the future success of cooperative watershed management efforts in the Baltic Seas Basin. The web site: http://www.greatlakesbalticseapartnership.org/ has more details on the accomplishments of the Program and Partners.

Project wide accomplishments are:
- A technical and program resource package for watershed management planning was developed for the use in the Baltic Countries and can be accessed through the web site: http://www.greatlakesbalticseapartnership.org/
- Enhancement and expansion of existing volunteering monitoring efforts in Estonia, Lithuania and Latvia.

Demonstration/pilot specific accomplishments are:
- Parnu Project – River modeling was utilized to support development of a watershed management plan. First wet weather survey of sewer overflow impacts was conducted and this is leading to the development of a subwatershed plan in the City of Parnu led by school children.
- Lielupe Project – Process and infrastructure were identified to support international river basin management. A joint watershed management plan was developed and is being implemented. A partnership at the local level was developed and is leading implementation efforts. The cooperation on this project lead to multiple international agreements between Lithuania and its neighboring countries on watershed management.
- Sesupe Project – First international joint water quality monitoring survey between Lithuania and Kaliningrad occurred. A watershed report was written and a web site developed.
- Public involvement strategies have been developed for each country and Pskov Oblast to assist in the development of WFD watershed plans.
A new environmental organization; “Baltic Rivers Network,” was created. It’s the first Baltic NGO to focus on river management issues.

**Major challenges included:**
- Lack of or weak public involvement. Local citizens need to understand their connection to environmental issues affecting their watershed in order to best manage their water resources. The local people had some difficulties in dealing with environmental issues due to the lack of basic environmental education.
- Resistance of government officials to involve the public in planning and implementation of watershed management planning.
- Cultural differences and historical mistrust between countries. This manifested itself in hesitancies to share information between citizens and other agencies.
- Existing information has not been compiled and made available to all agencies (within country), the public, nor to neighboring countries.
- Lack of baseline information, conflicts in water quality criteria, incompatibility of respective country equipment, and differences in monitoring approaches. These issues make data sharing and assessment difficult between countries.
- Inclusion versus Expediency. The desire of NGOs and other organizations not related to the Environmental Ministries to participate in compiling watershed management plans is often considered as an interruption to the development and implementation processes. The Program promoted involving the public in the watershed management plan processes as early as possible, not when the plan is developed and the public can only accept or reject it.
- Difficulty of country representatives to make commitments.
- Delays and uncertainty in funding support and inability to provide timely and ongoing on-site assistance. Partners delays, particularly those of U.S. participants created delays and constant revisions to projected work plans and schedules.
- Overcoming the Soviet legacy of “there is an expert to solve each problem.” National, local and NGO representatives continue to struggle with the need to make collective decisions.
- The number of reorganizations and realignments of governmental agencies at the ministry level. As with any bureaucracy, changes in agencies and personnel resulted in lose of momentum and course corrections to relate the new personalities.
- Overcoming differences in cultural, language and terms, and the lack of institutional understanding (particularly U.S. participants).

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