

PREPARING FOR MONITORING AND ASSESSMENT OF TRANS-BOUNDARY RIVERS: THE UNECE RIVERS PILOTS PROJECTS

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Under the 1996 UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes, guidelines for the monitoring and assessment of transboundary rivers, groundwaters and lakes have been prepared. Following the adoption of the rivers guidelines, a series of pilot projects was set up to test them and to support countries with their implementation. The work undertaken in the pilot projects is briefly summarised. The pilot projects ended at the point of recommending improvements, because implementation requires decisions about institutional responsibilities, and additional funding is needed. These projects can thus be seen as preparing the way for transboundary monitoring and assessment, and their ability to do this is discussed. Lessons from the pilot projects are drawn out with respect to a) project preparation, b) project organisation, c) transboundary monitoring and assessment and d) revision of the guidelines. The European Union Water Framework Directive came into force during the lifetime of the projects, and will have to be taken into account in revising the UNECE guidelines. The experience gained will also be helpful for those undertaking similar pilot projects to test the guidelines for monitoring and assessment of transboundary groundwaters and lakes.

INTRODUCTION

Background

The UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes was established at Helsinki in 1992 and entered into force in October 1996. A Task Force on Monitoring and Assessment was established at that time, and Guidelines on Water Quality Monitoring and Assessment of Transboundary Rivers were prepared and published in 1996 as one of the first outputs from the Task Force (UNECE, 1996). The Task Force became the Working Group on Monitoring and Assessment in 2000, and the first revision of the guidelines was undertaken in that year (UNECE, 2000). Equivalent guidelines for the monitoring of transboundary groundwaters (UNECE, 2001) and lakes (UNECE, 2003) have also been prepared.

Following the adoption of the river guidelines in 1996, it was agreed by the Task Force to establish a series of pilot projects on transboundary rivers in the UNECE region. Eight river basins were proposed, and pilot projects under the Task Force were established in five of them. A Core Group on River Pilots was set up by the Task Force to coordinate and undertake these pilot projects. The locations of the eight rivers are shown in Figure 1 and the key features of the five UNECE pilot project basins are summarised in Table 1. As the pilot projects drew to a close, the opportunity presented itself to review and evaluate the experience of the Core Group and the project teams, and this paper summarises the outcome with respect to the lessons learnt for project implementation, for transboundary monitoring and assessment and for the next revision of the guidelines.

Table 1 Summary characteristics of the five pilot project basins

	Bug	Morava	Mures/Maros	Ipeľ/Ipoly	Latorica/Uzh
Size (km ²)	39,400	26,580	28,310	5171	3129/2644
Countries	Ukraine (28%) Belarus (23%) Poland (49%)	Czech Rep (78%) Slovakia (8%) Austria (14%)	Romania (93%) Hungary (7%)	Slovakia (71%) Hungary (29%)	Ukraine (85%) Slovakia (15%)
Setting of basin	Tributary of the Vistula	Tributary of the Danube	Tributary of the Tisa, within the Danube basin	Tributary of the Danube	Tributaries of the Bodrog, which flows into the Tisa and then the Danube
Border lengths (km)	PL/UA - 195 PL/BY - 175	CZ/SK - 40 SK/AT - 70	None, crosses from Romania to Hungary	SK/HU - 123	None, both cross from Ukraine to Slovakia
Mean discharge (m ³ /s)	157	119	155	19	34/31
Population in the river basin	3,785,000	3,100,000	2,335,000	310,000	?
Population density (/km ²)	Ukraine - 182 Belarus - 60 Poland - 63	Czech Rep - 130 Slovakia - 94	Romania - 83 Hungary - 73	Slovakia - 57 Hungary - 70	Very low
Large cities	L'viv, Brest	Brno	None	None	None
Special features	Flows into Zegrynskie Lake which supplies water to Warsaw	Austria did not participate	Mining and industry in specific tributary basins	River forms the border for high proportion of its length	Dominantly wetland in character in the lower parts



Figure 1 Location of pilot project rivers

Objectives of the pilot projects

The three main objectives for the UNECE rivers pilot projects were to:

- demonstrate application of the guidelines on monitoring and assessment of transboundary rivers
- support countries in the application and implementation of the guidelines
- learn from the experience gained in the pilot projects to identify gaps or weaknesses in the guidelines to be taken account of in their review.

PROGRAMME OF WORK

The work programme for the pilot projects commenced in 1997, and the main phases and activities that were originally anticipated for each pilot project were described by Roncak et al (1997) and are shown in Table 2. In practice, the pilot projects have ended at the stage of recommending improvements, because in order to implement the recommendations, important decisions about institutional responsibilities and additional funding are required. Phases 1 and 2 in Table 2 can, therefore, be considered together as preparatory steps before the actual implementation of transboundary monitoring and assessment in Phase 3, which becomes a continuous process (the monitoring cycle, Timmerman and Mulder, 1999), with regular feedback loops and evaluation and design modification processes to keep abreast of changing functions, uses, issues, legislative requirements and funding availability.

Project activities are also shown in Figure 2, indicating that those in the first five open boxes would contribute to Report No 2 and those in the final three shaded boxes to Report No 3. In practice and to account for the varying rates of progress of the individual projects, specification of information needs was moved into Report No 3 for the Bug, Morava and Mures/Maros and reports 2 and 3 have been combined for the Ipeľ/Ipoly and the Latorica/Uzh. The Mures/Maros, Morava and Bug recommendations reports (No 3) have been completed and printed. The Ipeľ/Ipoly and Latorica/Uzh reports are still in progress, but should be completed during 2004. The three remaining pilot projects originally identified, the Tobol, Kura and Severski Donets have been combined with a pilot project on the Pripjat in the EU TACIS Joint Rivers Management Project, which were scheduled for completion by the end of 2003.

Phase	Activity	Report
1. Inception	Prepare and agree MoU Prepare funding proposal Establish project teams and organizational responsibilities Prepare work plan and inception report	<i>Report No 1</i> Inception Report
2. Analysis of monitoring and assessment needs	Carry out inventory of basin and establish main water uses Review and evaluate existing legislation Carry out preliminary surveys of water quality and review existing quality data Make inventories of polluting activities Identify main water quality and water management issues Specify information needs accordingly	<i>Report No 2</i> Identification and Review of Water Management Issues
		<i>Report No 3</i> Recommendations for Improvement of Monitoring and Assessment
2. Develop recommendations	Evaluate ability of existing monitoring to meet these needs Develop strategies for monitoring and assessment Recommend improvements and prepare cost estimates	
3. Implementation	Redesign monitoring programmes Implement recommended sampling and analytical methodologies, data handling and data exchange Procure additional equipment as required Develop quality assurance programmes Train required staff at all levels Make reports on water quality for all stakeholders	Beyond the scope of the pilot projects

Table 2 Phases and activities of rivers pilot projects

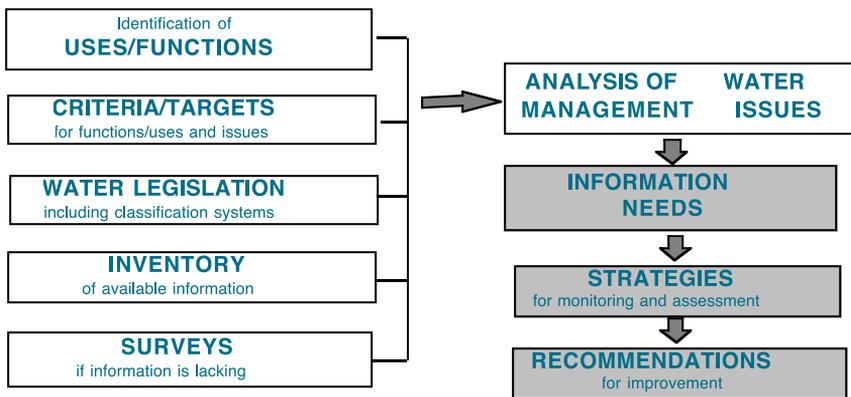


Figure 2 Steps in the Preparatory Phase of the River Pilots

EVALUATION

The evaluation process

Some early lessons drawn from the experience of setting up and implementing the rivers pilot projects have been reported by Adriaanse (2002). During the rivers pilots’ Core Group meeting in October 2002, the participants agreed that when they had been meeting together during the course of the project, they had always been under pressure to complete tasks and reports, and had not had time to reflect properly on the lessons learnt. It was therefore agreed that there should be

a workshop specifically for evaluation of the pilot projects and the experience gained in them, and this took place in May 2003. The experiences of the TACIS projects were also reported and discussed at the workshop and have contributed to this evaluation. This paper sets out the principal findings of the workshop in the form of lessons learnt for future projects of this type and reflections on the implications for transboundary monitoring and assessment and review of the guidelines.

Lessons learnt from project preparation

The first important lesson that can be drawn from the rivers pilot projects is that they have taken much longer than originally envisaged; the proposed three year schedule extending to five or six years. There are several reasons for this. Firstly, considerable time was required to obtain the necessary political commitment at a high level in the relevant institutions of the participating countries during a time of transition and change in central and eastern Europe. Within this general situation of institutional change, the environmental sector has many interested organizations, and identifying the stakeholders in transboundary monitoring and assessment at national, provincial or district level was not easy and took time. Considerable time and effort was needed to explain the concepts of transboundary monitoring and assessment set out in the guidelines, which were new and challenging for those within the basins who would need to give the necessary support to the projects. All of the project teams highlighted the need for strong formal commitment and the evaluation concluded that:

- A Memorandum of Understanding between the partners is essential and should be formulated and signed early in the inception phase of such a project

This can be facilitated by:

- Establishing and maintaining links between the project and existing bilateral or international river basin commissions
- Informing and involving all stakeholders in the project from the beginning
- One contributory factor to the delay in getting commitment was uncertainty amongst institutions and stakeholders as to what was required from them. It is therefore concluded that:
- Projects of this type need achievable objectives and clear and realistic Terms of Reference, which should nevertheless be sufficiently flexible to take account of the specific characteristics of the basin

These characteristics include the number of partner countries and their proportions in the basin, the political, social, institutional and economic situation of the partners and the physical nature of the basin itself, and some are summarized in Table 1.

Lessons from project organisation

The original intention for the pilot projects to be supported by significant external funding proved impossible to achieve. This led to some delays to project implementation because partners were waiting for funding that did not come. More importantly, it meant that project activities were largely or entirely undertaken by existing staff, all of whom already had many other tasks and commitments within their own organizations, which were in any case often understaffed and under-funded. This meant that allocation of time and resources to the pilot projects and continuity of involvement of the designated team members was difficult. While this was an issue to a greater or lesser extent for all countries participating in the pilot projects, the problem can be partly addressed by good communication and support between partners and it is clear that:

- It is necessary but time consuming to create good project teams
- It is necessary to involve people with the right levels of responsibility and authority, although it can be difficult to get them together if these are at different institutional and political levels in the partner countries
- Regular meetings and workshops, both within and between projects, are essential to build cooperation, mutual trust, communication of ideas and data, and common understanding of project objectives and concepts, some of which may be new

The regular meetings of the pilot project teams and Core Group advisers also helped to maintain progress within the framework of the common project structure (Table 2 and Figure 2). To this end:

- A clear and agreed project structure, with defined phases, tasks and reports is essential
- Within this structure, an inception phase and report is necessary to establish project objectives, structure and timescale, and project teams and their responsibilities

The experienced advisers were able to help explain the new ideas and concepts in the guidelines, such as focusing on information needs and the Drivers – Pressures – State – Impact - Response (DPSIR) framework and taking a basin approach, and to put the projects in their broader international context. Use of the DPSIR framework is also an important component of the guidance on monitoring provided by the European Environment Agency to countries of the region participating in EUROWATERNET (<http://reports.eea.eu.int/>; EEA, 1999).

While the reporting was a major task, the common report outlines, which were modified and developed during the project, guided project teams towards the information required to meet their objectives. The project teams gained valuable experience in report writing and in agreeing a common language and terminology. However, while use of English for the major project reports facilitated external distribution, it seriously restricted circulation within the participating countries, especially at the political and institutional level. This is an important limitation with regard to take up of the project recommendations towards implementation of improved transboundary monitoring and assessment, and:

- English is an essential working language for communication within and between project teams, but key project outputs need to be in national languages to obtain political commitment for implementation

The final clear lesson from the experience of undertaking the projects is that some of the workshops and meetings should be held within the basin. Joint surveys and field visits further facilitated exchange of information and helped to identify missing information and, most importantly, began to broaden thinking about monitoring and assessment:

- Joint field visits, surveys and common sampling by project teams are essential

Moreover, joint field visits can have many social, institutional and technical benefits and greatly improve communication, understanding and trust between the transboundary partners.

Lessons from the pilot projects for transboundary monitoring and assessment

While many of the experiences and recommendations outlined above are not specific and are broadly applicable to international projects, the pilots nevertheless identified some important lessons for transboundary monitoring and assessment. These lessons are summarized below, and many will in due course become recommendations for the next revision of the guidelines.

At the beginning, expectations of the pilot projects differed greatly. Participants had not anticipated the broad scope of the guidelines and:

- Existing perceptions of the requirements of monitoring were often rather narrow, and the broader process of water quality assessment was not well understood

The introduction of the information needs approach, consideration of functions and issues and the concept of the monitoring cycle (which forms the framework for the UNECE guidelines) were new to many participants in the pilot projects. The project teams found that:

- Deriving indicators from information needs within the DPSIR framework proved to be difficult, and further guidance with practical examples is needed

Clearly, the analysis of functions, uses and issues within water management (Table 2 and Figure 2) has required the project teams to consider the whole basin, and to assess the spatial distribution of functions and issues in relation to the main river and its tributaries. Adoption of control measures and monitoring and assessment of their impact requires knowledge of where the main polluting

activities are located and what are the most likely pollutants originating from them. Therefore:

- A major benefit of the projects and the guidelines was that they introduced the river basin approach where previous focus had been on the quality of water at the border

One important consequence of taking a basin approach and giving due consideration to the underlying geology and hydrology was that:

- The need to take account of groundwater-surface water interactions from both a quantity and quality point of view was often overlooked, but both could have significant functions and issues

Given the broad range of characteristics of the pilot projects (Table 1), and the varying levels of technical and institutional capacity and financial resources, the project teams felt that:

- There should be more emphasis on a “tailormade” approach and “step-by-step” implementation of improved monitoring and assessment

The EU Water Framework Directive (WFD, EC, 2000) became a dominant factor in monitoring and assessment during the lifetime of the pilot projects, and many members of the various project teams have become closely involved in work in their own countries in preparation for adopting the WFD. In comparing the EU and UNECE approaches, the project teams suggested that in future monitoring and assessment activities under the Convention there will need to be:

- still more emphasis on the basin-wide approach
- greater emphasis on the analysis of pressures and impacts
- adoption of the concept of modified water bodies
- significant efforts to develop better ecological assessments
- more emphasis on hydrobiological components
- clear linkages between parameter choices based on information needs and WFD priority pollutants

Together with the lessons outlined above, these will need to be considered for incorporation in subsequent revisions of the UNECE guidelines.

CONCLUSIONS

While many of the experiences and lessons related to the preparation and organisation of the projects are generic and would be broadly applicable to any international projects, the pilots nevertheless identified some important lessons for transboundary monitoring and assessment. These lessons have been summarized above, and many will in due course become recommendations for the next revision of the guidelines. Thus, while the guidelines should be considered as evolving to meet changing requirements over time, they have, nevertheless, provided a sound basis for evaluating the existing transboundary monitoring and assessment programmes in the five pilot projects and proposing improvements to these programmes.

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