



*Convention on Protection and Use of Transboundary Watercourses and International
Lakes*

Working Group on Monitoring and Assessment

Core Group Groundwater

WGMA 2002/5a

**Overall working programme on the implementation
of the guidelines on monitoring and assessment of
transboundary groundwaters**

Summary

In March 2000, during their second meeting in The Hague, the Meeting of the Parties under the Convention on the Protection and Use of Transboundary Watercourses and International Lakes adopted the guidelines on monitoring and assessment of transboundary groundwaters.

These guidelines are the result of a first step of the overall working programme for transboundary groundwaters (UNECE, March 2000). They form a part of a series of guidelines for the monitoring and assessment of rivers, groundwaters, lakes and estuaries.

A second step, as mentioned in the groundwater programme, is the initialisation of groundwater pilots through which the groundwater guidelines can be implemented and tested.

This working programme is based on the results of a preparatory study in which relevant developments important for the implementation and testing of the groundwater guidelines have been investigated.

Relevant developments are the experiences and lessons learned from the pilot studies on the implementation of the river guidelines and the experiences with two projects on transboundary groundwaters.

Other developments are the co-operation with UNESCO-IAH-FAO in the so-called ISARM/TARM project (March 2000) and the European Water Framework Directive which came into force at the end of 2000.

The implementation of the WFD will have possible interaction with the implementation of the ECE guidelines.

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1. Introduction

In March 2000, during their second meeting in The Hague, the Meeting of the Parties (MOP-2) adopted the guidelines on monitoring and assessment of transboundary groundwaters [1]. These guidelines are the result of a first step of the 'Working programme on the drafting of guidelines on groundwater monitoring and assessment' [2]. They form part of a series of guidelines for the monitoring and assessment of rivers, groundwaters, lakes and estuaries.

A second step, as mentioned in the groundwater programme, is the initialisation of groundwater pilots through which the groundwater guidelines can be implemented and tested. These activities are formulated and adopted during the 2nd Meeting of the Parties (see text below).

Update of programme area III (monitoring and assessment) of the 2000-2003 work plan under the Convention 1

3.1.3 Updating of the guidelines on monitoring and assessment of transboundary waters

The guidelines on monitoring and assessing transboundary rivers and groundwaters will be updated, if need be, in the light of experience gained with pilot projects, technological advances, economic and social factors as well as changes in scientific knowledge and understanding.

3.2 Pilot programmes on monitoring and assessment

Objectives:

Through pilot programmes, the Meeting of the Parties will provide assistance to countries to implement the Guidelines on monitoring and assessment of transboundary waters in a number of catchment areas to illustrate the application of the Guidelines, and to make possible adjustments/improvements to them. The implementation of the Guidelines through the pilot programmes will be supported by an advisory service, training and workshops (if necessary). Experiences gained in the pilot programme will also take into account aspects of the Water Framework Directive (WFD) related to monitoring and assessment of transboundary groundwaters.

3.2.2 Pilot programme on transboundary groundwaters

Overall supervision and project management. Continuation of the pilot project on the river Cetina and start-up of new pilot projects. Participation of designated institutions/experts in the TARM programme. (Proposal for a new text):

"To execute a preparatory study and on the basis of this study to draft a working programme for the implementation of the groundwater guidelines. To start-up new pilots and participate in the TARM programme."

Besides, some developments are very important to take into account when implementing the guidelines. At this moment a lot of information and experiences are available with the implementation of the river guidelines in five pilot projects which started three years ago.

Between the Netherlands and Germany some co-operation exists with respect to the water management plan for the transboundary river Vecht and also for a transboundary groundwater monitoring programme on a GIS basis. A second transboundary project concerns a water system optimisation of the cross-border Merkske catchment between Belgium and the Netherlands. Both studies are already described during the first phase of the working programme, as part of the original formulated sub-project 'case studies'.

Another important development is the co-operation between UNESCO-IAH-FAO and UNECE in the "TARM(ISARM)-project". In March 2000 UNESCO, IAH and FAO launched an international activity on

shared aquifers and drafted a programme proposal for an international initiative on transboundary aquifer resource management. For this programme co-operation has been established with UNECE for the implementation of the ECE guidelines on monitoring and assessment of transboundary groundwaters and the setting-up of training and exchange of information with the other regions.

In December 2000 the EU Water Framework Directive came into force and also this fact will give an opportunity to implement the groundwater guidelines. One of the considerations (no. 35) refers to the UN Convention on the Protection and Use of transboundary water courses and international lakes.

Consideration 35 of the Water Framework Directive (WFD)

Within a river basin where use of water have transboundary effects, the requirements for the achievement of the environmental objectives established under this Directive, and in particular all programmes of measures, should be coordinated for the whole of the river basin district. For river basins extending beyond the boundaries of the Community, Member States should endeavour to ensure the appropriate coordination with the relevant non-member States. This Directive is to contribute to the implementation of Community obligations under the international conventions on water protection and management, notably the United Nations Convention on the protection and use of transboundary water courses and international lakes, approved by Council Decision 95/308/EC and any succeeding agreements on its application.

The developments as mentioned above and the start of an International Water Assessment Centre (IWAC) were reasons to start with a preparatory study [3] to investigate all relevant developments which are important for implementing and testing the groundwater guidelines. The preparatory study has been discussed in the 11th Meeting of Core Group Groundwater in Szentendre, Hungary (5 and 6 April 2001) and formed the basis for the present working programme on 'the implementation of the groundwater guidelines'.

2. Pilot programme on transboundary groundwaters

2.1 General

The most important activity for implementing and testing the groundwater guidelines is the start of a so-called pilot programme. This pilot programme includes the assignment of a certain limiting number of pilot projects in the ECE-region in which the use of groundwater guidelines will be demonstrated.

2.2 Objectives

Through pilot programmes, the Meeting of the Parties will provide assistance to countries to implement the Guidelines on Monitoring and Assessment of transboundary waters in a number of *catchment areas* to illustrate the application of the Guidelines, and to make possible adjustments/improvements to them. The implementation of the Guidelines through pilot programmes will be supported by an advisory service, training and workshops (if necessary). Experiences gained in the pilot programme will contribute to the revision of the guidelines. The pilot programme will also take into account aspects of the EU Water Framework Directive related to monitoring and assessment of transboundary groundwaters.

2.3 Criteria

Some three years ago, after the "Guidelines for water-quality monitoring and assessment of transboundary rivers" were adopted, the pilot studies on transboundary rivers started. The Task Force on Monitoring and Assessment of Transboundary Waters (the present Working Group on Monitoring and Assessment, WGMA) defined some criteria for the selection of river basins. In some cases the criteria have been modified, but most of those criteria can also be used for the selection of groundwater pilots. Criteria for the selection of pilots included:

- the project should include the transboundary aquifer of a 'manageable' size;
- the existence of groundwater problems or at least a need for a monitoring programme;
- wells, boreholes or springs which could become monitoring sites should exist;
- two or more countries should participate, willing to implement the guidelines through a joint pilot project;
- signed or ratified bilateral or multilateral agreements and preferably established joint bodies should exist, that acts at least on an interim basis;
- the workload should be reasonable (max. project duration 3 years);
- the workload has to be borne by riparian countries who may seek financial/scientific support.

For the selection of pilots it will be recommendable if pilots deal with different types of aquifers. Other preferences are the existence of groundwater and surface water interaction in at least one pilot and, if possible, pilots that are geographically well distributed. In the case of groundwater and surface water interaction, it should be advisable to implement both the river and the groundwater guidelines.

2.4 Lessons learned from the river pilots and the two case studies

After a period of 3 years the river pilot projects have been evaluated [4]. Some of these lessons are very useful when starting the groundwater pilots. Also the evaluation of two transboundary projects between

the Netherlands and Germany 'Digital Water Way Vechte' [5] and the Netherlands and Belgium 'Merkske brook catchment' [6] provide useful information. Both studies were already described as part of the original subproject 'case studies', one of the subprojects of step 1 (preparation of the guidelines). Both from the two case studies and the river pilots, it can be learned that some conditions are very crucial for the start of projects. A signed agreement between the parties involved and the support and interest of the supervising bodies is crucial. Before starting a pilot project, a good project organisation has to be established in advance, including a qualified English speaking project leader and/or author of reports.

A point of discussion is: what kind of guidance should be given to the pilot projects?

- to be available for advise, occasionally, if asked;
- to give intensive training at crucial moments in the project, e.g. at the beginning of the project for those involved as project leader and/or author;
- to participate in the set-up of the project, with involvement in all project phases.

Finally, it should be realised what is the end product of a pilot project (with a view at the objectives):

- at least one final report of the pilot project;
- this report should have the character (and quality) to be a demonstration report of the ECE Working Group on Monitoring and Assessment;
- this report should include lessons learned concerning the implementation of guidelines and recommendations for the review of the guidelines.

2.5 Existing view on pilot studies of transboundary groundwaters (situation 2000)

In 1999 different possible groundwater pilots were mentioned. At this moment for three pilot projects actions have been undertaken or proposals are under discussion:

- a. Bosnia-Herzegovina – Croatia (Cetina river basin)
- b. Netherlands - Germany (river Vecht catchment)
- c. Hungary - Slovakia (Slovak Karst - Aggtelek aquifer)

For information about these pilots see annex 1.

In 2000 also Bulgaria and Romania expressed their interest and willingness to start a pilot for transboundary groundwaters. This idea was supported by water managers in both countries. At this moment it is not clear whether this idea still exists.

Besides these three (possible) pilots it is desirable to have at least one or two pilots more in order to get more experiences and to form a group of project leaders sharing their knowledge and ideas. Also for the organisation of workshops and courses it is desirable to have a certain minimum number of participants.

Also other pilot projects can ask the support of the Core Group. For those pilots the core group will only be available for advise, occasionally, if asked.

3. Pilot programme approach and description of ‘basic elements’

The overall groundwater pilot programme distinguishes two phases, the *preparatory phase* and the *implementation phase*. Both phases can be divided in two parts. The preparatory phase consists of an ‘inception study’ and a part ‘monitoring and assessment needs analysis’; the implementation phase consists of an ‘implementation’ part and the ‘evaluation’. The two phases can be considered as two separated projects.

3.1 Phasing and time schedule

a. Preparatory phase (project 1)

Inception

- arrangement of agreements between countries upon co-operation in the project;
 - preparation of project proposal and funding of the project;
 - establishment of project organisation;
 - inception study: including a very brief description of the project area (catchment area), current monitoring practices, responsible institutions, project organisation; resulting in a project plan for each catchment area;
 - conclusion of an overall project plan for the pilot-project programme.
- **report 1:** Inception report (Project programme document)

Monitoring and assessment needs analysis

- inventory of available information concerning groundwater quantity and groundwater quality issues, and current practices for monitoring and assessment, including results of previous investigations → description of ‘basic elements’¹ (see annex 2: basic elements of pilots (WFD));
 - evaluation of legislation and regulations;
 - preliminary surveys to obtain shortcomings in information;
 - specification of information needs, development of strategies for monitoring and assessment and evaluation of the current practices;
 - recommendations for improvement and cost estimate of improvements.
- **report 2:** Identification and review of water management issues
- **report 3:** Recommendations for improvement

b. Implementation phase (project 2)

Implementation

- (re)design of monitoring programmes;
- implementation of the recommended improvements in methodologies;
- procurement of missing equipment;
- training of technical staff.

¹ One of the activities of the preparatory phase is the ‘description of basic elements’. A list of these elements has been given in annex 2. This list comprises all relevant activities related to information gathering during the inception phase of a pilot project. The characterisation of the groundwater body is also one of the obligations of the EU Water Framework Directive (see Art. 5). In Annex II of the WFD the characterisation of a groundwater body has been elaborated.

Evaluation

- evaluation of the upgraded situation;
- reporting on the findings of the project;
- recommendations for review of the guidelines based on the findings of the pilot project.

➡ ***The present pilot programme concerns only phase a: the preparatory phase!***

The project duration (preparatory phase) of a pilot has been estimated for 1.5 to 2 years; for the 'inception study' 6 months and for the study 'Monitoring and assessment needs analysis' 1 to 1.5 year. Support will be given by the Core Group Groundwater and IWAC.

3.2 Products

The results (products) of the preparatory phase (project 1) can be specified more concrete as follows:

Inception report (report 1)

- general description of the catchment area
- copy of the agreement on co-operation between countries
- copies of financial proposals
- the project organisation structure

Report on the identification and review of water management issues (report 2)

- results of the inventory, including all available information which is relevant for the management of the transboundary groundwater basin
- results of the surveys of hot spots and key locations
- results of evaluation of the existing legislation and regulations

Recommendations report (report 3)

- specified information needs for the transboundary groundwater basin
- recommended monitoring strategies
- recommendations for improvement of current practices of monitoring and assessment
- a cost estimate of the proposed improvements (investments as well as operation and maintenance costs)

➡ *These (summary) reports will be based on reports on separate activities drafted by the different countries involved. The summary reports will be published as WGMA ((Working Group on Monitoring and Assessment) reports.*

The outline of reports 1 and 2 are given in annex 3.

During the execution of the pilot programme some international workshops for the project leaders of the different pilot are foreseen.

4. Other relative activities for the implementation of the guidelines

Beside initiating a groundwater pilot programme, which forms the most important activity for implementing and testing the groundwater guidelines, other activities are important for the implementation of the groundwater guidelines.

4.1 TARM/ISARM²

In March 2000 UNESCO, IAH and FAO launched an international activity on shared aquifers and drafted a programme proposal for an international initiative on transboundary aquifer resource management (TARM) [7]. In this programme objectives have been formulated for the short term (within one year), medium term (till March 2003) and long term (March 2005). Important objectives for the short term period are among others the implementation of the UNECE groundwater guidelines, the setting-up of training and exchange of information and a questionnaire based survey of significant Transboundary Aquifers in the world. One of the objectives for the medium term is the preparation of detailed case studies and for the long term the completion of the preparation of a "TARM toolkit".

During the 14th session of the council of UNESCO's International Hydrological Programme (Paris, 5-10 June 2000) this initiative has been adopted by Resolution XIV-12 [8]. For this programme a co-operation has been established with UNECE for the implementation of guidelines on monitoring and assessment of transboundary groundwaters and the setting-up of training and exchange of information with the other regions. As a result of this initiative regional workshops are organised in order to start regional transboundary co-operation. During these workshops the UNECE guidelines and the inventory report are presented and distributed together with the other background reports. For the implementation of the groundwater guidelines this initiative and the co-operation with UNECE is very important. This means that the groundwater guidelines and the supporting background documents will not only be used in the UNECE countries but are also recognised as basic documents for UNESCO-IAH-FAO worldwide.

➡ For the working programme on the implementation of the groundwater guidelines this means that support will be given on the activities of TARM/ISARM programme and in the meantime there will be a feedback from ISARM practices to the ECE groundwater guidelines.

4.2 EU Water Framework Directive (WFD)

The Water Framework Directive, *the European Parliament and Council Directive establishing a framework for Community action in the field of water policy* came into force on 22 December 2000. The Directive is setting the objectives for water protection that should be obtained by a certain deadline. It forms the needed legal framework to enable (and force) the national authorities to make the necessary arrangements and budgets for the implementation of the Directive (and through the Directive also for the application of the Guidelines) available. The Directive contains the tasks and programmes, which should be carried out by the EU Member States and it describes the information that should be provided to the European Commission. The tasks are comparable with the concerted action plan given in the Guidelines. One of the objectives of the preparatory study [3] was to investigate the possible interaction between the implementation of the WFD and the application of the groundwater guidelines. Generally speaking, the

² ISARM stands for International Shared Aquifer Resources Management and is another name for the same project.

WFD and the groundwater guidelines can be seen as complementary. The WFD follows more or less the general set-up of the monitoring cycle (see figure).

The Directive defines the objectives for water protection, including the protection of transboundary watercourses (Convention of Helsinki). An important obligation is the monitoring and assessment of data in order to generate the required information. This obligation forms one of the most important applications of the Guidelines, like the set-up, strategy development and establishment of the required monitoring programmes and monitoring networks. A point of special interest will be the tuning of the different types of monitoring which are distinguished in the Directive and in the Guidelines. Items as data management, quality management, joint bodies and the need for a joint database management system are much more elaborated in the groundwater guidelines and can be used for the implementation of the Directive.

Important actions for the implementation of the EU Water framework directive are:

- 2004 Analysis of the characteristics of the river basin districts, review of the environmental impact of human activity and economic analysis of water use (article 5).
- 2006 Establishment of monitoring programmes (article 8).

These activities correspond in general with the actions as described in chapter 3.

- ➡ For the working programme the tuning and integration of the groundwater guidelines the WFD will have special attention. This activity should be incorporated in at least one of the groundwater pilot projects.

4.3 IWAC

The International Water Assessment Centre (IWAC) [9] is an initiative under the Convention on the Protection and Use of Transboundary Watercourses and International Lakes. IWAC (established in September 2000) will support and facilitate the activities of the Working Group on Monitoring and Assessment. One of the tasks of IWAC is the organisation of training courses and workshops, and/or render assistance to UNECE countries and joint bodies in conducting such events to improve monitoring and information systems for decision-making.

- ➡ For the execution of the groundwater pilot programme IWAC can play an important role in supporting special knowledge and training facilities.

5. Organisation, planning and financing

5.1 Organisation of the overall working programme on the implementation of the guidelines

Core group

In 1996, the former UNECE Task Force established a Core Group Groundwater for the implementation of the programme on transboundary groundwater monitoring and assessment. This group is also responsible for the elaboration of this working programme on the implementation of guidelines and the supervision and coaching of the pilot programme. Beside the present members of the Core Group also other persons involved in the pilot programme, like pilot project leaders, can be members of this group. As mentioned before, the role of this group is to give support to the execution of the implementation of the programme and to act as an advisory board.

The core group members will also contribute to activities related to the ISARM project, i.e. to present the results of the UNECE activities in different workshops organised with UNESCO and IAH.

The members of the core group represent different groups and organisations and guarantee a good interaction between and the tuning of the activities of other institutions.

Other tasks of the Core Group are:

- to prepare the overall working programme;
- to monitor (guard) the process of implementing the groundwater guidelines;
- to be a resource and to act as a facilitator in advising the pilot project teams;
- to monitor the progress of the pilots;
- to prepare workshops;
- to co-ordinate the results with those of other pilot projects (learning from experiences);
- to act as a forum for discussion of the results of activities;
- to review the groundwater guidelines (drafting of recommendations for improvement of the UN/ECE guidelines, based on the findings of the pilot projects, ISARM programme and other relevant activities);
- to report to the Working Group on Monitoring and Assessment and to the Meeting of the Parties;
- participate and contribute to activities of the ISARM.

The frequency of the meetings of the Core Group Groundwater are at least once or twice a year depending on the progress made and the urgency of taking further decisions. These meetings will be combined mostly with the meeting of the WGMA and pilot meetings.

The present Core Group members are:

Geo Arnold (RIZA, Ministry of Transport, Public Work and Water Management, Netherlands)
Zsuzsa Buzás (Ministry of Environment and Water, Hungary)
John Chilton (British Geological Survey/United Kingdom – Collaborating Centre of the World Meteorological Organisation)
Eszter Havás (Ministry of Transport and Water Management, Hungary)
Peter Roncák (Slovak Hydrometeorological Institute, Slovakia)
Manuel Varela (Ministry of Environment, Spain)

In principle the Core Group Groundwater is open for new members.

5.2 Project organisation of pilots

Project leaders and project management of the groundwater pilots

The pilot projects will be implemented in co-operation with the countries riparian to the transboundary aquifer. National designated project leaders are responsible for the activities in their country and for the communication of the results. Administration and project management of financed activities will be realised by the funding organisation.

Steering groups

It is proposed that each pilot project should be driven by an international Steering Group, which should include high level representatives of the governments and representatives of the funding organisation and the UNECE Working Group. The Steering Group is intended to give guidance to the project and to set priorities, approving terms of reference for tendering and workplans, and serving as liaison to solve matters of principle at the government level. The Steering Group ensures that activities are consistent with Conventions, international agreements, programmes and official declarations.

5.3 Financing

- *Core group meetings*

If CGG meetings are not combined with WGMA and/or pilot meetings, financial support by the Dutch government can be considered.

- *Pilot projects*

Proposals for external funding for the other activities of the pilot programme will be submitted first under programmes of EU (PHARE/TACIS), GEF, WB, etc. A second source of funding can be found in national Environmental funds or under bilateral agreements between EU- and CEEC- or NIS-countries.

Items that may require external funding under the preparatory phase include:

- project co-ordination, travel and lodging for project meetings;
- inventories;
- surveys at hot spots and key locations;
- reporting on evaluation of current practices and drafting of recommendations;
- training, workshops, expert meetings of staff responsible for design of monitoring programmes and local staff in the fields of information needs and monitoring strategies.

Items that will require funding under the implementation phase will include:

- consultancy for the design and realisation of monitoring systems;
- purchase of sampling-, measurement- and analytical equipment, telemetric systems, etc.;
- introduction of inter-laboratory testing and quality control systems;
- training, workshops, expert meetings of local staff in the field of methodologies, quality control, data management, etc.

No external funding will be required for items like:

- personnel costs of governmental institutes;
- operation and maintenance costs of equipment

- *ISARM (UNESCO, IAH, FAO and UNECE)*

Principally, activities in relation to ISARM (see section 4.1) will be financed by UNESCO.

5.4 Time schedule

In the time schedule (see below) the different activities are mentioned in a time schedule.

Activity	2000				2001				2002				2003				2004			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Working programme																				
- proposal in MOP 2	x																			
- preparation					x															
- adoption in WGMA								x												
- reporting of activities in WGMA										x										
- reporting of activities in MOP 3													x							
- reporting of activities in WGMA														x						
- reporting of activities in WGMA																			x	
Pilot programme																				
1. Aggtelek Karst																				
- preparation								x	x											
- start meeting									x											
- inception study										x	x	x								
- m&a needs analysis													x	x	x	x	x	x		
- reporting																			x	x
2. Bug																				
- preparation									x	x										
- start meeting										x										
- inception study											x	x								
- m&a needs analysis													x	x	x	x	x	x		
- reporting																			x	x
3. Vecht																				
- preparation						x				x	x									
- start meeting											?									
- inception study												?	?							
- m&a needs analysis													?	?	?	?	?	?		
- reporting																			x	x
ISARM																				
- preparation framework document		x	x	x	x	x	x	x												
- participation in workshops									x	x	x	x	x	x	x	x				
Review groundwater guidelines																			x	x

Literature

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Inception Study. Report no. 1
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Identification and Review of Water Management Issues for the Bug Basin. Report no. 2

Annexes

Annex 1. Existing view on pilot studies of transboundary groundwaters

a. Bosnia-Herzegovina – Croatia (Cetina river basin)

In November 1999 two preparatory meetings have been organised for a joint project between Bosnia-Herzegovina and Croatia on “The protection of transboundary groundwaters in the catchment area of the river Cetina”. One meeting was held with participants from Croatia in Zagreb and the other was with participants from Bosnia-Herzegovina in Sarajevo. Both sides had expressed their interest and intention to develop a joint project. The condition was that additional funding would be provided, e.g. by the Global Environment Facility (GEF).

In March 2000 the preparatory meeting (joint technical meeting) was organised in Mostar (Bosnia-Herzegovina) under the auspices of the UNECE. Both Croatia and Bosnia and Herzegovina expressed their interest and intention to develop a joint project on the protection and management of transboundary waters in the Cetina catchment area and to implement the guidelines on monitoring and assessment of transboundary groundwaters in this project. During this meeting a project proposal was formulated. In first instance the project proposal was refused because from the B&H side their was no focal point. Mid 2000, in Bosnia-Herzegovina they decided to nominate two focal points, one year one from the side of the Federation and the other year one from the Republica Srpska. Presently the situation is not quite clear.

b. Netherlands - Germany (river Vecht catchment)

From the Dutch side a proposal has been prepared to start a pilot for the Vecht catchment area. For the river basin Vecht a co-operation exists between the province Overijssel and Germany to work on a water management plan. There also exists a joint project on the monitoring of groundwater and to develop a common GIS (based on REGIS).

Some months ago a discussion started about the willingness to define a common pilot between the Netherlands and Germany on the Vecht catchment to implement both the river and the groundwater guidelines and in the same time the relation with the Water Framework Directive will be taken into account. From the Dutch side there is some interest for a common project, from the German side there is less interest for a common project.

c. Hungary – Slovak Republic (Slovak Karst - Aggtelek aquifer)

Some years ago Hungary and the Slovak Republic started a co-operation to define a common pilot between both countries. Because of the delay of the UNECE working programme for the groundwater pilots they decided to postpone this initiative. In September 2000 during the session of the Slovak - Hungarian Joint Commission, both sides agreed to participate in a common pilot project in the Slovak Karst - Aggtelek aquifer. Professional contacts between relevant organisations should also be mentioned (Ministries, VITUKI, SHMI and Geological Surveys). In December 2000 a first document [11] has been drafted to promote the implementation of this pilot according to the directives of UNECE groundwater guidelines.

In March 2002 this pilot started officially and is in fact the first active pilot.

The Slovak Karst – Aggtelek aquifer is shared by the Slovak Republic and Hungary and provides groundwater resources of good quality in both countries. The karstic water is mostly used for drinking water purposes, a minor amount is used for agriculture.

The objectives of the project are (1) the implementation and testing of the “UNECE Groundwater guidelines”, (2) the initial characterisation of the Aggtelek Karst – Slovensky Kras Aquifer as a transboundary groundwater body according to the Water Framework Directive and (3) the vulnerability mapping on the aquifer applying the “European method” of the COST Action No. 620.

d. Poland - Belarus - Ukraine (Bug river basin)

The Bug river is one of the five pilot projects of the River pilot programme. Some years ago Poland proposed to start a groundwater pilot for the river Bug. After the finalisation of the 'Inception study' [12] in October/November 1998 a second report was prepared after the study 'Identification and Review of Water Management Issues' (April 2002) [13].

During this study it has proved that groundwater plays a major part in the total water resources of the Bug basin. The shallow alluvial aquifer in the northern part of the basin can be considered to be vulnerable to pollution from both diffuse and point sources and the impact of agriculture, industry, mining and waste disposal. The deeper limestone aquifer in the southern part of the basin may be vulnerable to the effects of increasing abstraction in the future. These issues and the fact that there already exists a good co-operation between Poland, Ukraine and Belarus established during the river pilot programme, and the information already collected make this project a good pilot study.

Annex 2. Basic elements of pilots

1. Characterisation of groundwater aquifer

(see Annex II of WFD)

- sources of information
- differences (quality) of information on both sides of the border

2. Inventory of potential monitoring sites

- location
- type (well, etc.)
- owner
- construction characteristics, equipment, casing
- use
- abstraction (Mm³/year)
- historical data (levels, quality)

3. Groundwater data

- level measurements (once or twice)
- sampling analysis

4. Reporting

- use of GIS, etc.

5. Network design

- guidelines

6. Time table

- chronogram
- budget

7. Conclusions, recommendations, etc.

Annex 3. Outline of reports

*Outline of the **Inception Report** (report 1):*

The report will contain the following chapters:

- Objectives		(1 page)
general objective:	to improve co-operation in the field of groundwater monitoring and assessment	
2 objectives:	- testing the guidelines (both for rivers and groundwater) - implement relevant parts of the WFD	
- MOU (the agreement on co-operation between countries)		(1 page)
- Establishment of project organisation		(1 page)
- Delineation of the pilot area		(map + 1 page)
- General (brief) description of the project (catchment) area		(2 - 3 pages)
- Functions and uses (brief overview)		(2 – 3 pages)
- Monitoring practices (groundwater and surface water) including a map of the whole area		(2 – 3 pages)
- Legal and institutional background		(2 – 3 pages)
- International co-operation agreements	(1 page)	
- Workplan (activities, time schedule, responsibilities)		(3 pages)
- Funding		(1 page)
- Annexes (literature, etc.)		(2 pages)
- <i>Summary in English!</i>		(1 - 2 pages)
	total	ca. 25 pages

Note:

In principle the inception report will be in the national languages. Only the summary will be in English. In the case of two languages it has been proposed to print the text in two columns on the same page.

Time schedule:

The concept inception report will be finalised before the end of December 2002.

Outline of the **Report on the identification and review of water management issues** (report 2):

Introduction

General characteristics of the Vechte area

 administrative and geographical location

 climatic conditions

 hydrological characteristics

 nature protection areas

Water uses and functions

Sources of pollution (point sources and diffuse sources, etc.)

Monitoring systems

Legislation, national strategy plans and policy

Risk assessments

Water-quality assessment

Surveys

Information needs