Twinning Project - SR 2005/IB/EN/01
Capacity Building of the Directorate for Water

between the Ministry of Agriculture, Forestry and Water Management of Serbia and the German Ministry for Environment, Nature Conservation and Nuclear Safety

Component 2: Support for the upgrading of the water monitoring system in Serbia

Sub-Component 2.2. Enhancing organisational capacity of institutions undertaking water management

Activity 2.2.1

" Assessment of intra- and inter-institutional communication procedures and data management"

Elaborated by

STE Mr. Olaf Voigt and RTA Mr. Christian Ebel in

presented in July 2008 by

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Twinning Project "Capacity Building of the Directorate for Water"
An EU funded project managed by the European Agency for Reconstruction

1. Introduction

Under the activity 2.2.1 the German expert assessed the existing communication procedures/structures of water monitoring data in the sphere of the water management administration. The works under this activity focused on the data management and data provision of the national water monitoring programme of groundwater and surface water to other users. The assessment was done giving special emphasis on the upcoming project at the Directorate for Water which seeks to design a Water Information and Management System.

2. Material and Methods

On one hand the data management was evaluated by carrying out personal interviews with the relevant persons of the key players of monitoring data producers as well as the known users of such data who produce or report the data in the concept of State of Environment (SoE)-reporting.

On the other hand in order to clarify the flux of data and information of water related monitoring results between involved institutions a specific questionnaire in Serbian was developed and sent to the identified relevant institutions. For a better evaluation of the returned questionnaires all institutions which were subject of the inquiry were invited to a specific workshop which took place on the 13.12.2006 (attendance list in the Annex). After holding the workshop the given answers of the questionnaire were evaluated and a gap analysis produced which is presented below.

2.1 Personal interview with relevant key institutions

All institutions and representatives were visited personally and the rationale of the projects activity explained and the elements and intentions of the envisaged of the questionnaire and content explained.

Serbian Environmental Protection Agency

A personal interview with SEPA was carried out on the 10.10.06 with Mr. Dejan Lekic as its representative. In the Interview the STE introduced himself and explained the nature of the questionnaire which was sent later to SEPA. SEPA is the competent authority in terms of international SoE-reporting to the European Environment Agency and further international obligations and agreements.

Directorate for Water (WD), Ministry of Agriculture, Forestry and Water Management

A personal interview with WD was carried out on the 13.10.06 with Mr. Goran Kamcev as its representative. The Water Directorate represents the Ministry level with respect to water related reporting issues

The Republic Hydrometeorological Service of Serbia (RHMS)

A personal interview with RHMS was carried out on the 11.11.06 with,Mrs. Milica Nadezdic (Water Quality Department) , Bojan Palmar (Hydrology Department), and Mr. Vladan Kocic (Groundwater Department).

Michail Pupin Institute, Belgrade

The Michail Pupin Institute, in person Milan Angelic, was visited on special request of the WD, as in the past this institute had a leading role in the development of Information systems in former Yugoslavia.

All interviews revealed that one upcoming result of the intended questionnaire would be the detection of deficits comprising the following areas.

- Lack of and operating water information systems
- Lack of modern geo information systems
- Absence of Information systems containing meta data
- Access and easy availability of environmental information according Arhus Convention

All involved institutions evaluated the questionnaire as feasible attempt to assess the situation and urged the experts to organize a embedding workshop (which was done) to flank the assessment and the results.

2.2 Elaboration of an assessment questionnaire

The following questionnaire was elaborated and sent to 11 different Serbian Institutions which were identified as key stake holders in the field of use of water monitoring data:

Questionnaire

Name: _____

Institution: _____

Information system: _____

1. What is the baseline from which the information system was developed?

☐ Legal obligation

Which?

_____

_____

_____

☐ Sub legal acts)

Which?

_____

_____

_____

☐ Others

Please name:

_____

_____

_____

2. Are the data/information transferred by routine processes or are they event driven?
(e. g. regular annual reports, special reports, etc.; event driven i.e inquiries from the parliament, administration, policy or havaries, etc.)

☐ Regular:

Frequency:

_____

Please specifiy:

_____

☐ Event driven

Frequency:

_____

Please specifiy:

_____

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3. How are the provided data described or specified?
(e. g. in Formats, bilateral agreements, meta information system, etc.)

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4. Which data are subject to transfer?

☐ Raw data (e.g measured values)
☐ Validated values (manually/automatically checked data)
☐ aggregated Daten

5. In which format is the data/information provided?

☐ Text Format (e.g. doc): _____

☐ Tables Format (e.g.. xls): _____

☐ Data bases Specify data bank: _____

☐ Geographical data Format (z.B. shp): _____

☐ Reports und annual books/reports

☐ Special reports for (political) decision takers

☐ Maps

6. How is the data information/submitted/transfered?

☐ **analog (i.e. data reports, reports, fax)**

☐ **digital (i.e. Email, Internet, Online-measuring systems)**

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7. **Do you apply geo data, are those produced or maintained or transferred? If yes, which GIS system is used?**

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8. Do you need specific data which actually you do not obtain or have difficulties of obtaining?

☐ no ☐ yes

Which information/data?_____

_____

From which organisation/institution? _____

9. Do you provide information via internet?

☐ yes ☐ no

http://_____

With which institutions, organizations or persons a regular transfer of water monitoring related data takes place?

On national und international in the following areas:

- Public administration
- Private economy
- Research and Science
- Organizations
- The public in general
- Others

Organization institution (Please name)	**Input - from**	**Output - to**

10. Where do you see the benefit of the presentation of data and information within a „Water Resource Information Management System (WRIMS)“ or all environmental media within one common system („Serbian Environmental Information System“)?

Thank you for your cooperation!

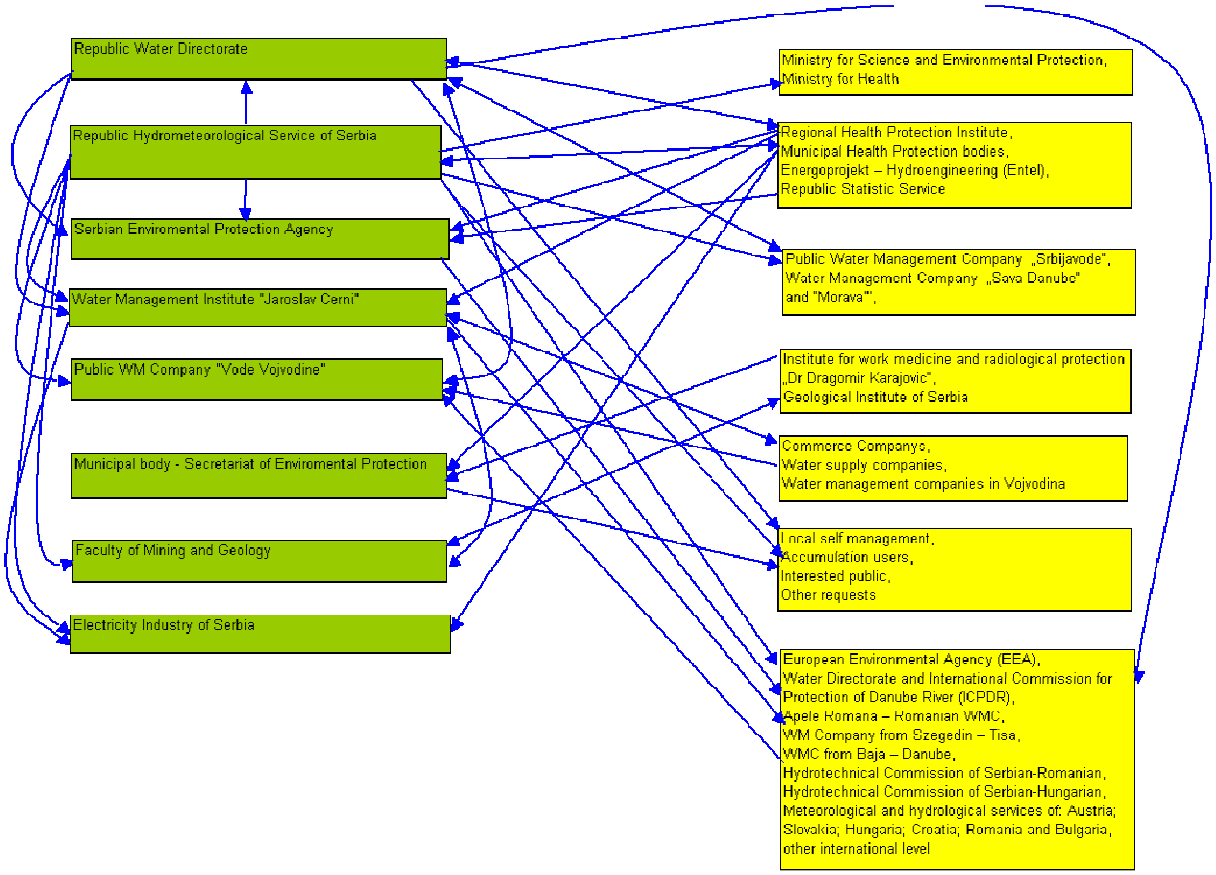
2.3 Workshop “Assessment of intra- and inter-institutional communication and data management concerning water monitoring” held on 13.12.2006 at RHMS

An evaluation workshop was organized for the institutions which obtained the questionnaire in order to wrap up the results and collect comments from the contributors.

3. Results

3.1 Scheme of data flow between institutions/organizations concerning water monitoring data

From 11 questionnaires which were sent out from the Twinning office we received the response of 8 institutions of which 1 institution sent two different answers. The answers of the question No. 10 was used to derive an overview of the data flow of monitoring data between the institutions. Picture 1 gives an overview of the complexity of water related state of environment (SoE) reporting in Serbia.



Picture. 1: Data flow / of monitoring data between institutions in Serbia and international organizations (the arrows indicate the direction of the flow).

3.2 Workshop "Assessment of intra- and inter-institutional communication and data management concerning water monitoring" held on 13.12.2006 at RHMS

More than 30 persons participated on the workshop. RTA Mr. Christian Ebel gave a short overview on the projects activity content and the expected outcome of this workshop. Mrs. Milena Damljanovic from the Water Management Institute Jaroslav Cerni and her colleague from RHMS Mr. Miksa Jovanovic explained in detail and as an example how the sent out questionnaire was filled out and what assumptions were made. During the workshop discussion it became clear that the current situation concerning data exchange and access between the institutions could be enhanced. For the participants of the workshop the elaboration of an Water Information and Management System might overcome this situation if the necessary organizational framework of the involved institutions and their competences is thoroughly and transparently described. The baseline for any Water Information and Management system and its proper implementation the structures of the involved institutions, duties and obligation must be described. The representative of the Michail Pupin institute gave a concise overview in form of a presentation what attempt have been made establishing information systems in the different institutions since the former Yugoslavia existed.

Summary of the results of the workshop

<u>Data communication and information exchange</u>

- The legal duties of reporting are formally fulfilled by the institutions.
- Unfortunately the access to data and information from institutions is often barred by bureaucratic hurdles and time consuming (e.g. often impossible to obtain data without contacts from director to director between the institutions).
- Exchange of information and data on the working level between institutions is nearly impossible
- Lack of the provision of geographical and spatial data is an important element and should be addressed within the project
- In the earlier Yugoslavia the access to information and data was easier, since regulated centrally. The organizational regulations concerning data exchange

and access which consider the new political situation are still not solved satisfactorily.

- A legal act regulating access to public information/data is necessary.
- The approach of only considering the exchange of water monitoring data is too narrow from the audience's viewpoint and should be widened up.

Water Information and Management System (WIMS)

- The representative from Michail Pupin institute urged to analyze the reasons why the implementation WIMS, although well developed, were not appropriately implemented due to lack of institutional development.

- Mr. Angelic (Institute Michail Pupin) stated that a study entitled "Developing a Water Information System" was carried out by his institution which analyzed the failures of the implementation of such systems in the past and offered to provide this publication.

It was agreed to hold another follow up workshop when the proposals are derived of what should be considered to improve the communication between the institutions concerning data exchange and reporting as addressed under project activity 2.2.2.

3.3 GAP - analysis of data management and information flows concerning water monitoring data

The following elements could be derived from the questionnaires obtained and interviews carried out under this activity.

Information systems

Unfortunately this question was not always answered. As only currently existing information system the “Geological information system – GEOLIS” of the Faculty of Mining and Geology was mentioned. In the carried out interview it became clear that existing Access or Oracle data bases are considered conceptually as information system. The concept of an information system as a much wider concept was not widespread among the institutions. Nevertheless attempt in the past were made to implement such structures but were not successful (Michail Pupin Institute, pers. communication). The elaboration of a Water Information and Management System is a must under the given framework mentioned above and is currently under way by a TA project under the Consortium of EPTISA in the Directorate for Water.

Legal framework

The legal baseline for data and information exchange is given. The most important elements could be found in the Water Law, the Law of Environment Law and the Law on Ministries. The international data exchange is carried out upon signed corresponding agreements.

Description of data

The question concerning this element was not always answered satisfactorily. The question aimed at existing standards and meta information systems. Standards are being used and the description of the format is available. A meta information system is currently not available but should be implemented or coupled with the implementation of the Water Information and Management System. Experience from Germany show that

implementing meta system after a media specific information system is existing (here water) is rather difficult.

Frequency of reporting

All types of data provision in different formats and report exist. Besides regular reports in the form of annual year books (RHMS) event driven or reporting on demand for specific “customers” takes place. Of prominent importance for monitoring data is RHMS as this institution by law is the competent originator of water related monitoring data. The many customers of RHMS reflect the necessity to bring forward automated i.e. IT based methods and tools for an efficient data provision.

Data formats/type of data

The evaluation of the questionnaires that currently ms-office, *.pdf, or maps, formats prevail when data are provided. Analog data are provided in Form of tables, reports and printed yearbooks. All types of data raw, aggregated or validated data are subject to exchange.

Geo information system (GIS)

The public water company Vode Vojvode and the faculty of mining use GIS systems. The Directorate for Water and the RHMS possess no GIS infrastructure currently. This is a deficit since at least the RHMS which deals with spatial data needs this in order to potentially upcoming reporting obligations of the EC, should Serbia become a member.

Exchange of Data

Picture 1 reveals that the data exchange is a complex issue. More than 24 reporting paths between the 8 institutions and a grouped set of at least 7 “clients” exist This reveals illustratively the necessity of restructuring the actual situation. Beyond organizational regulations, technical means have to be provided to change the given

situation. It is striking that SEPA and RHMS are reporting to institutions without any interference of a Serbian ministry.

Water Information and Management System (WIMS)

All responding institutions (but the faculty of Mining and Geology) shared the opinion that a positive effect could be expected from the provision of a WIMS from which their daily work could benefit.

The following positive aspects were identified:

- Centralized data storage
- WIMS as a part of an Environmental Information System
- Agreed and harmonized procedures
- Defined Interfaces and harmonized standards for data exchange
- Creation of a organizational framework to have faster access to data
- Integration of GIS functionality
- Elaboration of a meta system is potentially possible
- Automated data exchange and time saving
- Instrument of quality control
- Assistance in accidents.

4. Recommendations

The following recommendations were derived from the assessment questionnaire, the workshop and interviews under this project activity. The numbers of the recommendations reflect the priority of necessary measures/modifications concerning intra and inter-institutional communication data management in future. Clear organizational and legal regulations are the backbone which could be optimized with the help of information technology.

1. Elaborate regulations and binding descriptions which transparently regulate the data exchange and communication between the institutions.

2. Clear specification of competences of the involved institutions. A division of ministerial and operative tasks between the Serbian institutions is necessary (see also project activity 1.3.3).

3. Implementation of a WIMS according the organizational structure and competence distributions of the public water administration.

4. Thorough analysis of the data communication, management and data flow within the upcoming works of the WIMS.

5. Providing GIS capacity at the competent authority of reporting and data provision.

6. Integration of the WIMS into a Serbian Environmental Information System.

7. Implementation of a presentation module within the WIMS to reach or satisfy the public information demand thus enhancing public participation in future.

The findings of this report will be used as starting point of the works carried under the project activity 2.2.2.

Completed in February 2007

Annex

Attendance list of Workshop, RHMS, 9.30am
13. December 2006

Participants

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