UNDP/GEF Danube Regional Project

Strengthening the Implementation Capacities for Nutrient Reduction and Transboundary Cooperation in the Danube River Basin

Final Synthesis Report

The Economic Analysis according to the Water Framework Directive in the Danube River Basin

Projec Component 1.1-3:Applying EU Economic Guidelines for the Economic Analysis to the Danube River Basin

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The Economic Analysis according to the Water Framework Directive in the Danube River Basin

A Cross-Country Assessment of Implementation Capacities and Priority Gaps

Prepared within the Project Output 1.1 – Activity 1.1-1.3:

Applying EU Economic Guidelines for the Economic Analysis to the Danube River Basin

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Foreword

This report is one of the outcomes of a project entitled *"Applying EU Economic Guidelines for the Economic Analysis according to the Water Framework Directive to the Danube River Basin"*. The project forms part of the UNDP/GEF Danube Regional Project. Its main objectives are:

- To take an inventory of the present information base available for conducting the economic analysis according to the EU Water Framework Directive (WFD) within GEF-eligible countries in the Danube River Basin (DRB) through National Scoping Studies (conducted by national consultants);
- To identify current data and capacity gaps and propose preliminary measures for filling these gaps on the basis of the National Scoping Studies ;
- To support and facilitate capacity building with regard to the economic analysis through workshops and supporting activities for the work on the national scoping studies;
- To elaborate a cross-country comparison which identifies the current overall capacity within the DRB to conduct the economic analysis and proposes measures for closing priority gaps.

The project is undertaken by Ecologic, the German-based non-for-profit Institute for European and International Environmental Policy with wide experience in the field of European water policy in general and the implementation of the Water Framework Directive in particular.

The present synthesis report builds on National Scoping Studies (NSS) prepared by national consultants in July-August 2003. It analyses in how far the upcoming demands for the economic analysis due 2004 can be met with the presently available capacities within the DRB. A draft version of this report has been presented and discussed at a workshop in Budapest 9-10 July 2003 under the participation of national experts dealing with the implementation of the economic aspects of the WFD in the Danube Basin as well as with the national consultants. Based on these discussions and taking into consideration the revised national scoping studies, this final cross country analysis has been prepared.

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The European Union (EU) Water Framework Directive (WFD) is one of the first environmental policy directives of the European Community that explicitly draws on economic considerations for achieving its objectives. In particular, according to the requirements stipulated in Article 5 of the Directive, an economic analysis of water uses has to be carried out by 2004 on a river basin district scale.

This synthesis report makes a cross-country assessment of the Danube River Basin (DRB) countries' capacities to carry out specific tasks of the economic analysis as required by the EU WFD by the year 2004. This first step of the economic analysis requires in particular to:

1. Report on the economic importance of water uses;
2. Construct a baseline scenario that assesses forecasts for key economic drivers likely to influence pressures and thus water status up to 2015;
3. Assess current levels of the recovery of the costs of water services;
4. Make first preparatory steps for the cost-effectiveness analysis of measures.

This report is based on National Scoping Studies (NSS) conducted by national consultants for all GEF-eligible countries[1] within the DRB. These NSS investigate the current information availability and quality on the four key issues under consideration, based on a list of socio-economic indicators developed by the ICPDR Expert Subgroup on Economics (Econ ESG) on the basis of the recommendations of the European WATECO-working group. The results of a cross-country comparison of all NSS are presented in this synthesis report. The analysis highlights priority gaps and proposes preliminary measures to remedy these gaps. Special emphasis is given to the participating countries' administrative capacities for carrying out the required tasks. Furthermore, proposals are made as to which gaps can best be approached at the Danube level and where national activities will be more effective.

[1] With two exceptions: A national scoping study was not conducted for the Ukraine and Serbia and Montenegro so that the situation there is not investigated in the present study.

2 List of Abbreviations

BLS	Baseline Scenario
CIS	Common Implementation Strategy
DRB	Danube River Basin
DRP	Danube Regional Project
Econ ESG	Economics Expert Sub-Group (initiated by the International Commission for the Protection of the Danube River)
GEF	Global Environment Facility
HH	Households
ICPDR	International Commission for the Protection of the Danube River
NA	No information available (e.g. indicator is not monitored)
NN	No information provided
NSS	National Scoping Study
QNE	Quality not evaluated
RBMP	River Basin Management Plans
UNDP	United Nations Development Programme
WATECO	Working Group on Water Economics
WFD	European Water Framework Directive

3 Background and Rationale of this Study

The overall UNDP/GEF Danube Regional Project (DRP) started in December 2001. The project is to assist 11 Danube countries in reinforcing their capacities of developing effective mechanisms for co-operation for the protection of international waters and biodiversity. The project complements the activities of the International Commission for the Protection of the Danube River (ICPDR) in its attempt to strengthen a regional approach to transboundary problems. As part of its Objective 1 "Creation of sustainable ecological conditions for land use and water management", the DRP assists the Danube countries in particular areas of the implementation of the Water Framework Directive (WFD) in the Danube River Basin (DRB). Within the scope of Objective 1, Activities 1.1 – 1.3 "Applying EU Economic Guidelines for Economic Analysis to the DRB" are intended to assist the ICPDR and member countries in applying the EU WATECO[2] Guidance document to the DRB.

The overriding objective of this project component is the facilitation of capacity building. The participating DRB countries are assisted in the development of common tools and in the implementation of common approaches, methodologies and guidelines for the economic analysis as required by the EU WFD by the year 2004. In this framework, a series of workshops has been conducted.[3] On 10 – 11 July 2003 a Workshop has been conducted in Budapest on "Applying EU Economic Guidelines for the Economic Analysis to the Danube River Basin". A draft version of the report at hand has been presented and discussed at this workshop under the participation of national experts dealing with the implementation of the economic aspects of the WFD in the Danube Basin as well as with the national consultants that conducted the national scoping exercises on which this report is build (see section 3.1). Based on these discussions and taking into consideration the revised national scoping studies, this final cross country analysis has been prepared.

3.1 The National Scoping Studies

As a major step within the described project component (Activities 1.1 – 1.3) a National Scoping Study (NSS) has been conducted in all participating DRB countries, which assesses the current status (availability and quality) of economic data and identifies data gaps as well as necessary measures for filling priority gaps. The NSS are based on a common template, which was prepared by Ecologic. This template has been discussed and communicated to the national consultants responsible for carrying out this scoping exercise at a workshop in Bratislava on 5-6 April 2003. After the workshop, the template has been finalised and distributed to all national consultants as the basic guidance for their work on the NSS.

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[2] The "WATer ECOnomics" working group (under the lead of France and the Commission) consisted of approximately 40 members, most of them water economists from EU-Member States and Accession Countries. Its task was to clarify the understanding of the economic aspects of the WFD with a focus on the requirements for the economic analysis due 2004 (Article 5, Annex III) and provide guidance on how to practically implement the requirements of the WFD. From the set-up of the working group (December 2000) until the finalisation and endorsement of the WATECO-guidance document by the water directors of the Member States in June 2002, this group met 6 times.

[3] On 3-4 February 2003, the first project workshop took place in Vienna at which members of the Econ ESG and other national representatives where introduced to the objectives of this project and the overall content and aim of the economic analysis and the WATECO process. In the aftermath of this workshop, national consultants where contracted for conducting national scoping studies (NSS) for the economic analysis at the national level of the Danube countries (see section 3.1). On 5-6 April 2003, a capacity building workshop was conducted in Bratislava for the contracted national consultants, at which a template for the preparation of the NSS was discussed and agreed upon and general guidelines for conducting the scoping expercise were provided. The Budapest Workshop on 10-11 July 2003 finally discussed the cross-country comparison of the NSS and provided a forum for discussion and exchange between the Econ ESG group and the national consultants.

The role of the NSS is to provide country specific information needed for the economic analysis as an input for the overall UNDP/GEF-project, and therefore also to support the implementation of the economic elements of the WFD at national level.

3.2 The Synthesis Report

This synthesis report makes a cross-country assessment of the DRB countries' capacities to carry out specific tasks of the economic analysis as required by the EU WFD by the year 2004. A preliminary version of this comparative analysis of the entire set of NSS was prepared as a background document to the Budapest Workshop.

This report focuses, analogous to the NSS, in particular on:

- Availability and quality of relevant economic data for water use;
- Identification of main gaps (data and capacity) and
- Assessment of the DRB countries' abilities to carry out specific tasks required by the economic analysis and identification of necessary measures for strengthening these abilities.

By indicating a first assessment of possible steps towards closing the main identified gaps, the Synthesis Report facilitates the future stages of the UNDP/GEF-Project.

3.3 Scope of the Report

The study focuses on the GEF-eligible countries within the DRB. Accordingly, the following countries are included in this cross-country comparison:[4]

- Bulgaria, Croatia, Czech Republic, Hungary, Moldova, Romania, Slovak Republic, Slovenia;

It should be noted, that due to the limited time available for conducting the national scoping studies it has not always been possible to identify whether a reported lack of information is due to:

- Information being not available or;
- Difficulties in identifying within the available timeframe, whether this information is collected or whether estimation on the basis of other existing data could be feasible.

These two cases cannot be differentiated in all studies and therefore a clear-cut analysis is not in all cases feasible in this synthesis report, which is then highlighted in the relevant sections and tables.

Members of the ICPDR Economics Expert Sub-Group (Econ ESG) serving as national implementation contact points for this project facilitated the scoping activities by assisting the national consultants in their work, providing feedback and comments as well as by cross-checking the NSS.

3.4 Structure of the Report

The report is structured as follows: Chapter 4 gives a short introduction to the economic elements of the WFD and the upcoming reporting requirements for 2004 as well as an overview on the institutional framework for the implementation of the WFD in the DRB.

Chapter 5 presents a cross country analysis of the information availability for the economic analysis in the DRB. After having outlined issues of general relevance within the framework of this analysis (Section 5.1), the analysis is divided into four distinct parts complementary to the requirements for the Economic Analysis due 2004 and the list of “Socio-Economic Indicators” prepared by the Econ ESG:

[4] Of the GEF-eligible countries within the DRB, only the Ukraine and Serbia and Montenegro did not participate in this study.

- Economic Importance of Water Uses (Section 5.2);
- Baseline Scenario (Section 5.3);
- Assessing Current Levels of the Recovery of Costs of Water Services (Section 5.4);
- Preparing for the Cost-effectiveness Analysis of Measures (Section 5.5).

For each of the four issues, information availability and quality within the DRB countries is evaluated with an emphasis on existing data gaps as well as necessary measures for filling priority gaps. Key messages that can be extracted from the comparison are highlighted. In addition, Section 5.6. evaluates the administrative capacities available within the DRB countries for carrying out the economic analysis by 2004. Detailed tables of the cross-country analysis on three of the four issues (excluding Section 5.5 since the information provided by the NSS was too diverse for presenting it conveniently in a table) can be found in the Annex to this report.

Chapter 6 finally presents a synthesis of the main identified gaps and a first assessment of possible key measures that could be initiated for filling priority gaps. A draft version of this report has been reviewed and discussed at the Budapest Workshop with a particular focus on chapter 6, the synthesis. The report has been amended in accordance with the suggestions made by the participants and the results of the dicussions have been included

4 Implementation of the Economic Aspects of the WFD at the DRB

4.1 Economic Aspects and Requirements of the Water Framework Directive

The EU Water Framework Directive (WDF) is one of the first environmental policy directives of the European Community that explicitly integrates economic considerations for achieving its objectives. Economic principles are foremost addressed in Article 5 (and Annex III) and Article 9 of the Directive.

According to the requirements stipulated in *Article 5*, an economic analysis of water uses has to be carried out by 2004 on a river basin district scale as part of the Directive's river basin management approach. Annex III complements Article 5 by detailing which factors need to be included in the economic analysis.

Article 9 requires that by 2010, Member States take account of the principle of cost-recovery, including environmental and resource costs. The polluter pays principle will be key to establishing who should pay for existing and future water services. More specifically, Member States have to ensure by 2010 that water pricing policies provide adequate incentives for water users to use water efficiently and to secure that different water uses contribute adequately to the recovery of the costs of water services.

Article 11 of the Directive requires each Member State to ensure for each river basin district, or for the part of an international river basin district within its territory, a programme of measures, which takes account of the results of the analyses carried out under Article 5 in order to achieve the Directives objectives. Therefore, Annex III requires the economic analysis conducted in reference to Article 5 to be in sufficient detail for preparing the selection of programmes of measures on the basis of cost-effectiveness.

Besides these direct and explicit references to economic instruments, the WFD refers implicitly to economic principles in many of its Articles, for example by allowing for derogation (e.g.: time and quality) in the case of "disproportionate costs".

The implementation of the WFD raises challenges which are widely shared by Member States. With many European river basins transcending territorial and administrative boarders, concerted and co-ordinated action, a common understanding and a joint approach are considered prerequisites for a successful and effective implementation. Therefore, the Common Implementation Strategy (CIS) has been agreed upon at the EU level, to allow for a coherent and harmonious implementation of the WFD. More than 15 European expert and working groups have been set up within the CIS on different areas of the WFD.

As one of these EU Working Groups, the group WATECO (WATer ECOnomics) has developed a "Guidance Document for the Implementation of the Economic Elements of the EU WFD". As all of the guidance documents, it is legally non-binding. Being conceptualised as a general guide to the economic aspects of the WFD, the WATECO guidance document needs further specification and application to the specific situation of each river basin. This step will be facilitated for the Danube River Basin (DRB) during this project.

4.2 The Economic Analysis for 2004

The year 2004 constitutes the first key milestone for the WFD implementation process in general, but also for the economic analysis. In essence, it is required to analyse for each river basin district (RBD) the following four focal issues:

1. *Assessing the economic importance of water uses*

According to Article 5 (and Annex III) of the WFD, an economic analysis of water uses has to be conducted in order to assess how important water is for the economy and the socio-economic development of the river basin district. The economic analysis should provide the river basin's economic profile in terms of general indicators, e.g. economic turnover, gross income, employment or number of beneficiaries for significant water uses.

In a broader context, the economic analysis is intended to pave the way for the assessment of significant water management issues to be reported to the public by 2007 and the ensuing cost-effectiveness analysis, by initiating investigations of likely trade-offs between socio-economic development and water protection within the river basin.

2. *Baseline scenario*

The specific role of the economic analysis in the development of a baseline scenario (BLS) is the assessment of forecasts in key economic drivers likely to influence pressures and thus water status up to 2015. In the BLS, trends in water supply and water demand will need to be evaluated. The focus should be on changes in general socio-economic variables (e.g. population growth), in economic growth of main sectors as well as changes in the implementation of planned investments linked to existing regulation. Both hydrological as well as socio-economic drivers have to be investigated.

3. *Assessing current levels of cost-recovery*

The assessment of current levels of costs recovery of water services is in accordance with Article 9 of the WFD. Key elements to be investigated in the economic analysis include the status of water services, the institutional set-up for cost-recovery, the extent of the recovery of the costs (financial, environmental and resource costs) of the water services, the contribution of key water uses to the costs of these services as well as the incidence of subsidies.

4. *Prepare for cost effectiveness analysis*

In preparation for the cost-effectiveness analysis of possible measures and their combination, the existing gaps in cost information should be reduced and data on the unitary costs of key measures to be considered for the development of River Basin Management Plans (RBMP) should be gathered. Ranges of costs (minimum, maximum) will have to be estimated and collected for individual measures, along with key parameters influencing these costs. The emphasis will be on costs that are non site-specific (i.e. financial costs of measures, indirect non-water related environmental costs) and on basic measures.

The NSS are structured around these elements and focus on assessing for each of the four focal points, gaps in information, knowledge and capacity and on proposing possible measures for filling priority gaps. They thus conduct the first necessary preparatory steps, and indicate upcoming and existing problems for the economic analysis by 2004. Accordingly, they may provide a key input for the implementation of the economic analysis for 2004, not only at DRB level, but foremost also at national level.

4.3 The Economic Analysis within the Danube River Basin

For a large international River Basin like the DRB, it is important to clarify the responsibilities for the implementation of each aspect of the WFD. Therefore in the following, the division of responsibility for the practical implementation of the WFD in general and the economic analysis in particular within the DRB is reviewed briefly. The (potential) role of the ICPDR is investigated, as well as the national status of transposing WFD requirements into national law and in assigning clear lines of responsibility for conducting the economic analysis.

4.3.1 The Role of the ICPDR

The role that the ICPDR will play for the implementation of the WFD in general follows the overall approach formulated in the relevant ICPDR documents:[5] A two-tier approach will be followed for the preparation of the economic analysis document for 2004, consisting of a

- *Part A*[6], an umbrella or roof report giving all relevant information of basin-wide importance (consisting of descriptive text, illustrative maps on the DRB overview scale and a description of the methodological approach) and a
- *Part B*[7] consisting of national reports giving all relevant further information on the economic analysis.

The Part A report will be prepared on the basis of the national analysis; therefore, a common approach for conducting the economic analysis will be needed in order to allow for the compilation of this roof report.

The decision on which parts of the economic analysis will be reported at the Danube level (under the responsibility of the ICPDR) based on information from the DRB countries is pending and will have to be prepared by the Econ ESG working group. The present scoping exercise can support the decision on which elements of the economic analysis were better to be conducted at the Danube level and which parts should be subject to national reporting. Furthermore, by highlighting current dissimilarities in data availability and quality, the NSS help to identify areas in which co-ordinated action is required if reporting is to be done at Danube level.

4.3.2 The Implementation of the Water Framework Directive at National Level

The NSS provide insights into the present status of implementation of the WFD in the DRB countries. They detail which national institutions are involved and responsible for WFD implementation, as well as present the current status of WFD transposition into national legislation.

Table 4.3—1 gives an overview on the information on national WFD implementation that can be deduced from the NSS.

[5] The overall approach is for example outlined in the "Strategic Paper for the Development of a Danube River Basin District Management Plan", prepared by the River Basin Management Expert Group of the ICPDR (May 2002).

[6] It should be stressed that, while Germany and Austria do not participate in this study as they are not GEF-eligible countries, information on the two countries will be included in the Part A roof report.

[7] National reports for Part B are obligatory for EU Member States and Accession Countries.

Table 4.3—1: National Status of WFD Implementation in Danube Countries

Country	Status of WFD Transposition into National Law	Responsible Institution for WFD Implementation
Bosnia & Herzegovina	Partial transposition through the law on water protection;	*Expected*: Ministry of Foreign Trade and Economic Relations;
Bulgaria	Considerable parts of the WFD are conveyed in the Water Law; full transposition is expected by 2005;	Ministry of Environment and Water;
Croatia	Partial transposition;	Main responsibility: State Water Directorate and Croatian Waters; concrete division of tasks has not yet taken place;
Czech Republic	Partial transposition; full transposition is expected by the end of 2003 with the amendment of the Water Act;	Main responsibility: Ministry of environment; assistance from ad-hoc working groups with representatives form other ministries, state authorities and experts;
Hungary	Partial; full transposition expected for December 2003;	Ministry of Environment and Water (with involvement of Ministry of Agriculture and Regional Development, Ministry of Interior, Ministry of Economics and Transport and Ministry of Finance). relevant division of ministry is nominated: Department of River Basin Management;
Moldova	Not completed: the responsible authority for WFD transposition into national law will be the Ministry of Environment, Construction and Territorial Development;	*Expected*: Ministry of the Economy or National Environmental Fund (under the Ministry of Environment and Construction, Territorial Development);
Romania	Partial transposition;	Ministry of Water and Environment Protection as well as the National Administration "Apele Romane" (NAAR);
Slovak Republic	Partial transposition exists (New Water Act); Full transposition is expected by 2003 through an amendment of the New Water Act;	Inter-ministerial committee; Ministry of Environment is the national contact point; implementation process is supported by Working Groups and independent experts;
Slovenia	Fully transposed since July 2003 (New Water Act);	Ministry of Environment, Spatial Planning and Energy;

Source: Authors' own compilation on the basis of the NSS.

As indicated in the table, DRB countries are at different stages of WFD implementation. Most of the countries have established which governmental body will have the overall responsibility for implementing the WFD. However, a clearer subdivision of tasks is often still missing (see also section 4.3.3), and in some countries no final decision on the responsible authority for WFD implementation has been taken so far (Moldova, Bosnia & Herzegovina). Of the countries investigated, only the NSS for Slovenia reported that the process of transposing the WFD into national legislation has been completed. It should however be noted that, as the deadline for full transposition is (according to article 23 of the WFD) December 2003, not all EU Member States have so far achieved full transposition.

4.3.3 The Implementation of the Economic Analysis at National Level

The NSS may serve as a facilitator for the national economic analysis by identifying existing information or data gaps and preliminary measures. Table 4.3—2 depicts which countries have already decided on the competent body for implementing the economic analysis.

Table 4.3—2: Responsible National Institutions for the Economic Analysis in Danube Countries

Country	Responsible Institution – Economic Analysis
Bosnia & Herzegovina	Not specified yet;
Bulgaria	Strategy, European Integration and International Co-operation Directorate (assistance provided by external consultants);
Croatia	Assumption: State Water Directorate and Croatian Waters;
Czech Republic	Ministry of Agriculture (in collaboration with Ministry of Finance; Ministry of Environment, Ministry for Regional Development and Ministry for Industry and Trade);
Hungary	Not specified yet. (The most probable organisation could be either the regional water directorates or the newly formed background institute of MOEW);
Moldova	Ministry of Economy (supported by a Commission within the Ministry of Environment, Construction and Territorial Development with envisages the creation of an inter-ministerial working group on the implementation of the economic analysis);
Romania	Ministry for Water and Environmental Protection (in co-operation with relevant institutes, ministries and other actors);
Slovak Republic	Working Group 2.6: Slovak Water Management Enterprise (lead); Water Research Institute; Slovak Hydrological Institute;
Slovenia	Institute for Water (supported by sub-contracted economic experts and expert institutes);

Source: Authors' own compilation on the basis of the NSS.

Three of the NSS indicate that no final decision has yet been taken with regard to the responsibility for the implementation of the economic analysis. In order to prepare for the economic analysis according to the WFD, it is crucial to tackle this issue very soon and to establish clear lines of responsibility. As long as responsibilities have not been clearly defined, co-ordination is inherently difficult, and progress on important preparatory steps for 2004 might be severely hampered.

As a clear allocation of responsibility is of high importance to a successful implementation of the economic analysis by 2004, this discussion will be resumed in Section 5.6 on administrative capacities.

5 A Cross-Country Comparison of Data Availability for the Economic Analysis in the DRB

The following cross country comparison on data availability for the economic analysis in the DRB aims in particular at highlighting parallels and differences across DRB countries with regard to the different aspects related to the implementation of the economic analysis.

For each of the four focal issues of the economic analysis outlined in section 4.2 (economic importance of water uses, baseline scenario, assessment of the recovery of costs of water services and preparation of the cost-effectiveness analysis of measures), data availability and quality is evaluated with an emphasis on existing data gaps as well as necessary measures for filling priority gaps. Particular emphasis is also given to the evaluation of the administrative capacities available within the DRB for carrying out the economic analysis by 2004. Key messages that can be extracted from the cross-country comparison are highlighted.

Overview tables summarising the written information are integrated in this chapter. For detailed tables containing information on indicators for each individual country please refer to Annex 1.

5.1 General Issues for Consideration

A number of issues have been identified as being of general interest to the evaluation of the DRB countries capacities for carrying out the economic analysis by 2004. This section treats three aspects in greater detail, namely the issue of

- quality evaluation;
- the right spatial scale; and
- restructuring available information according to hydrological boundaries,

as they are of particular importance and should be borne in mind during the upcoming analysis. To make the reader aware of their respective specificity, the main aspects are revisited briefly in this section.

5.1.1 Quality Evaluation

The NSS report not only on the availability of information, but also evaluate its quality. These quality judgements are generally based on the opinion of interviewed experts or evaluations given in sources used for compiling the NSS. As the quality assessments do not adhere to a common definition and are of an inherently subjective nature, they must be interpreted with great care, and cannot be easily compared across countries. Furthermore, the quality assessments can only be very preliminary, as quality will directly relate to the use which will be made of the information or the scale at which indicators will eventually be computed and effectively used for taking a given decision. Similar limitations apply to the evaluation of the extent to which hydrological restructuring is feasible.

5.1.2 The Issue of Scale

In order to fulfil the information requirements of the economic analysis in a way that supports reaching the overall goals of the WFD, the information has to be provided at different spatial scales. Therefore, the NSS provide insights on the scale at which information is available. In addition, the lowest possible scale at which information is readily available is investigated. This does not imply that "the lower the scale, the better", but it constitutes important knowledge, since it is easier to restructure disaggregated data according to hydrological boundaries (see below).

The decision on the appropriate reporting scale for the different information categories has yet to be taken, both within the ICPDR as well as at a national level. This report provides an input to this decision making process by presenting the existing disaggregation/aggregation possibilities.

5.1.3 Restructuring Information According to Hydrological Boundaries

Due to the WFD's river basin management approach, key units for reporting are derived from hydrological boundaries. However, only a very small percentage of the data required for the economic analysis currently is available in accordance with hydrological boundaries. Existing data collection systems are normally conceptualised on the basis of administrative entities and data are gathered at the municipal, regional (county), state or national level. To make these data applicable to WFD reporting, they have to be restructured, depending on the particular indicator, according to e.g. river basin districts, (sub-) river basins, (sub-) catchments or water bodies. As the extent to which data restructuring can be done determines to a large degree whether the available information is suited for WFD reporting, this issue will be addressed in greater detail at different stages of this study.

5.2 The Economic Importance of Water Uses

Section 4.2 provided the background from the WFD on the "Economic Importance of Water Uses", one of the four focal issues of the economic analysis for 2004.

The National Scoping Studies (NSS) investigated for a list of indicators[8] on the economic importance of water uses:

- In how far the information on each indicator is currently *available*, with special emphasis being given to the periodicity of update, the most recent figure available, the scale at which the indicator is collected as well as the lowest scale at which it is available. In case the indicator is currently not readily available, the NSS were to indicate in how far it could be estimated on the basis of other existing data and information;
- The *quality* and reliability of the indicator (based on e.g. an assessment of the methods used for projecting, on whether or not the projections are current, whether recent political decisions support the projection, etc.); accordingly, quality judgements are of a subjective nature only;
- The *source / reference* compiling the data or information;
- In how far the information or data can be restructured according to *hydrological boundaries* (e.g. the national sub-unit scale) is possible (e.g. evaluated on the basis of expert interviews, etc.).

In the following, the information provided by the different NSS is presented by means of an analytical cross-country comparison. Data availability and quality is analysed for all groups of indicators. Problematic data clusters that will require further attention are highlighted. In case there are national exceptions that divert from the clustered group, they are mentioned explicitly.

Special emphasis is given to the feasibility of restructuring the available information according to hydrological boundaries. Finally, key messages emerging from the analysis are outlined and preliminary measures for closing priority gaps are proposed.

5.2.1 Data Availability and Quality

The information presented in the NSS on data availability and quality can best be summarised along the main thematic indicator groups, namely into:

1. General Socio-economic Indicators;
2. Characteristics of Water Services;
3. Characteristics of Water Uses.

[8] Econ ESG, 4 November 2002: Preliminary List of Socio-Economic Indicators; this document was the msot recent one available at the start of the project and for the preparation of the NSS.

While evaluating indicators within these three groups still produces heterogeneous outcomes, this aggregation (or combined analysis) has the advantage of providing an overview not only on individual indicator availability but also on the degree to which information can be provided on these "activities" in general and not only on one specific indicator.

General socio-economic indicators:

Information has been compiled in the NSS on the following indicator groups: population, gross domestic product, rate of economic growth, monthly net average income as well as employment and unemployment.[9]

Cross-checking and combining the information presented in the different NSS on the availability of information on the requested indicators leads to the following results:[10]

- The information on general socio-economic indicators is generally not confidential;
- The standard periodicity of update is annual with at times monthly updates (e.g. rate of economic growth per sector);[11]
- The indicators have a high overall rating in terms of quality, with an average rating of 1-2 (on a scale from 1 excellent to 5 poor).[12]

Characteristics of Water Services

In general, it can be noted that the information provided on water services is reported less completely by the NSS than information on the group of general socio-economic indicators: A number of NSS provides no information (NN) on certain indicators, which may signal the increased difficulty of obtaining the required information or alternatively that this information is not available.

In terms of availability, the indicators on water services can be grouped into three distinct groups:

- **Group 1** contains the following (groups of) indicators: total water production, drinking water production, water supply, leakage rate and wastewater treatment. Information on these indicators or groups of indicators is on average *unproblematic* to obtain and generally not confidential (exception: Bosnia & Herzegovina, here information is often only available at request). In general, the quality of these indicators is rated as good (average rating of 1-2 on a scale from 1 to 5), with the exception of the leakage rate, where reported quality ranges from 1 (Czech Republic) to 5 (Romania). The periodicity of update is generally annually (with the exception of Moldova, where some of the updates are conducted on a quarterly basis);
- **Group 2** consists of indicators on other services (e.g. deposit volume of water reservoirs) as well as water supply to agriculture. Compiling information on these indicators seems to be *moderately problematic*, and information is often not readily available. The quality of information is on average rated as being of medium reliability with a ranking of 2-3. For the data for which an indication on the periodicity of update has been provided it is annually;
- **Group 3** comprises of indicators on irrigation water supply as well as indicators on self-supply. According to the information provided by the NSS, it is *highly problematic* to report on these indicators, as information is either not available at all, or not available in the required

[9] Please refer to Annex 1: Economic Importance of Water Uses – Information Availability for the complete list of indicators investigated by the NSS.

[10] Because the information provided in the national scoping studies is at times incomplete, the following generalisations can only be taken as tentative evaluations. However, as an indication of data availability has been given for the majority of general socio-economic indicators, no significant changes will be needed for the generalised interpretations.

[11] In many cases, the most recent date at which an indicator is available has not explicitly been mentioned. However, considering annual updates, availability should in most cases be given for 2001.

[12] With the exception of Moldova that has an average rating of 3.

form.[13] The reliability of available information is very mixed, both within as well as across countries, ranging from excellent to poor. The periodicity of update of the data has often not been indicated in the NSS. For those indicators where it has been mentioned, updates take place on an annual basis (with the exception of the Slovak Republic where seasonal and weekly updates are provided on irrigation water supply linked to the provision of subsidies).

Characteristics of Water Uses

The availability of indicators on water uses is mixed, both within indicator subgroups (e.g. indicators on agricultural water uses, tourism, etc.) as well as across the entire set of indicators. Particular problems in terms of availability of information relate to indicators on agriculture; navigation and transport; leisure fishing; boating and wind-surfing; tourism; and flood and drainage systems. For those indicators where information is provided, quality is generally considered to be good to medium (1-3). The standard periodicity of update is annually. The scale at which information is provided ranges from municipal, to county and regional up to the national level. In most cases, information is available on a lower scale (e.g. the municipal level) as well as at national level.

Table 5.2—1 provides an overview on the availability and quality of information on the economic importance of water uses, as well as on the standard reporting scale and the periodicity of update.

Table 5.2—1: Summary Table – Economic Importance of Water Uses

Indicator Group	Availability	Confidentiality	Quality 1-excellent 5-poor	Periodicity of Update	Scale [1. highest and 2. Lowest available scale]
General Socio - Economic Indicators	Complete availability;	Not confidential;	1-2	Annually;	1. National; 2. Municipal;
Characteristics of Water Services	Mixed; Particular problems relate to: - Water supply to agriculture; - Self-supply; - Irrigation water supply; - Other services;	Not confidential;	2-3	Annually;	1. National; 2. Regional/ Municipal;
Characteristics of Water Uses	Mixed; Particular problems: - Agriculture; - Navigation/ transport; - Leisure fishing; - Boating & wind-surfing; - Tourism; - Floods & drainage;	Not confidential;	1-3	Annually;	1. National; 2. County/ Regional;

Source: Authors' own compilation on the basis of the NSS. (HH: households)

[13] Data on the "topic" (e.g. navigation) is available but not on the specific indicators required by the List of Socio-Economic Indicators of the Econ ESG.

5.2.2 Restructuring of Available Indicators According to Hydrological Boundaries

According to the information provided in the NSS, a significant part of the available information can be restructured according to hydrological boundaries. When comparing the information availability in general with the reported feasibility of restructuring, it becomes apparent that for many of the indicators that are difficult to restructure information is in general difficult to obtain. The reported difficulties with restructuring are thus partly a logical consequence.

While in the draft versions, most NSS did not specify to which level of hydrological boundaries restructuring is feasible or not (e.g. whether only restructuring to the river basin district is feasible or also to sub-districts) the final versions clarified in many cases, that restructuring to the river basin scale is the most feasible option. It should be noted in this assessment that the evaluations made by the national consultants are often based on expert judgement and have so far not been validated in practice. Accordingly, difficulties may arise in the actual implementation, even if an indicator has been ranked as posing no significant problems.

5.2.3 Key Messages: The Economic Importance of Water Uses

The following key messages can be identified from the cross-country analysis:

Positive Results

The group of socio-economic indicators (as a sub-group of indicators on the economic importance of water uses) is in general terms not expected to pose major difficulties to reporting for the economic analysis, both in terms of availability and quality (having in mind the issue of quality assessments possibly being misleading, see section 5.1.1). Furthermore, if availability of information is given, no particular quality concerns are related to the majority of indicators on the economic importance of water uses: the information which is available is on average considered to be of reliable to medium quality. Under the restrictions outlined in section 5.2.2 on this topic, hydrological restructuring has been reported as being unproblematic or feasible without significant problems for a number of important indicators groups.

Identified Problems

The major gap linked to indicators on the economic importance of water uses is missing or incomplete information availability. Indicators that are currently not available in a number of countries include, for example fish farming; boating and wind-surfing; leisure fishing; indicators on irrigation water supply; indicators on agricultural water uses; indicators related to navigation/transport and to self-supply. Furthermore, in particular with regard to the characteristics of water services, a major problem may be the diversity of information quality. As section 5.2.2 outlined, important difficulties may also relate to the restructuring of some of the main indicators according to hydrological boundaries.

For some of the countries investigated, the issue of "shadow economy" may render available information practically unreliable as economic-related indicators based on official information and data would only give a partial picture of the current situation.

A potential problem that could not be investigated in-depth within the scope of this project relates to possible differences in variable definitions that might hamper the comparability of the different national data sets.[14]

Compilation of Proposed Measures

Indicators that are not or only incompletely available are generally the same in the majority of the countries studied. Therefore, the lacking information could be collected (or estimated through extrapolation techniques / expert judgement) in a comparable way in order to facilitate Danube-wide

[14] Indicators from the group "Employment & Unemployment" for example are subject to different definitions across countries.

comparisons. To facilitate the filling of these gaps at minimum costs, the ICPDR member countries could agree on common data definitions and collection systems. A similar approach could be taken with regard to restructuring available data according to hydrological boundaries.

At the Budapest Workshop, some advances could be made on some of the identified problematic issues in particular with regard to whether a Danube wide action would be required and welcomed by the countries to remedy the existing gaps or difficulties:

- It was agreed that no specific Danube-wide activity or common action was required on the issue of shadow economy, as it only concerns certain countries;
- With regard to self-supply for households, it was agreed that a common approach of how to calculate self-supply at Danube level should be decided on;
- Irrigation water supply was considered by the workshop participants as not requiring a Danube-wide approach – as it only concerns some of the Danube countries. Countries where this type of information is missing will individually find ways to estimate this parameter for their respective sub-units,
- Indicators on navigation and transport were regarded as being highly problematic in most of the NSS. It was agreed that the economic importance of both navigation and transport would be qualitatively described in the roof report for the DRB, stressing the countries for which these water uses are the most significant and providing quantified figures for some countries whenever available and seen relevant for illustration purposes. For 2004, only information that is currently available in the individual countries should be used and synthesised in an appropriate way for the roof report;
- The same applies for the importance of boating and windsurfing, water related tourism and leisure fishing. The roof report at Danube level will draw on the information provided in the different national reports – providing a qualitative assessment of the economic importance of these uses for the Danube complemented by quantified figures whenever available and seen as relevant for illustration;
- The discussion on hydrological re-structuring stresses that the sub-unit is the common scale at which indicators would be required "at the minimum" (i.e. lower common disaggregation may in the future be identified for specific variables and parameters) in the longer term.

5.3 Conducting the Baseline Scenario

The general requirements for the Baseline Scenario (BLS) according to the WFD have already been outlined in section 4.2. The NSS reported on the availability of projections of relevance for the BLS (based on the preliminary list prepared by the Econ ESG), both at a national or regional level. The information base for this section was centred more on published reports, studies, authority plans, national environmental action plans and national strategies and less on explicitly figures. For each parameter stated on the Econ ESG list, the NSS were to indicate:

- The source of information responsible for, or capable of, providing the required information and projections (e.g. ministries, private and public institutes, stakeholders, etc.);
- To what extent the projections are reliable (based on e.g. an assessment of the applied methodologies, etc.);[15]
- The methods used for projecting;
- The timeframe (i.e. projection period, for example for the period 2000-2020) of the available projections.

[15] Quality judgements are thus again of a subjective nature and should be interpreted with great care.

Furthermore, the NSS were intended to indicate which administrative body could be responsible for conducting the overall BLS.

In the following, the information provided by the different NSS is again presented by means of an analytical cross-country comparison. The quality and relevance of available projections is analysed for four major groups of policy projections, namely on:

- Exogenous drivers (e.g. population growth, general economic development, technological changes, changes in taxes or fiscal regime, etc.);
- Water policies and investments (e.g. estimated investments in water supply, wastewater treatment flood or protection, changes in water pricing policies, etc.);
- Macroeconomic policies (e.g. past trends and future projections in agricultural policy, industrial policy, energy policy and transport policy etc.);
- Global policies (e.g. impact of accession to the European Union on key economic sectors, WTO/GATS; etc.).

Policy areas for which information is only fragmentary or in poor quality available are highlighted. As the methodologies used for the existing projections may allow to draw conclusions on the availability of such methodologies as a required background for constructing scenarios, special emphasis is given to this aspect as reported in the NSS. It needs to be noted here that for constructing valid scenarios, not only methodologies for developing projections are needed, but an integrated approach based on various management decisions e.g. on prioritising and weighting sectoral developments etc.

Furthermore, it will be discussed which administrative bodies could be responsible for conducting the overall BLS. Finally, key messages emerging from the analysis are outlined and preliminary measures for closing priority gaps are presented.

5.3.1 Assessment of the Quality and Relevance of Available Projections

Exogenous Drivers

Projections of population growth and economic growth are considered as available and reliable by all countries (rating: 1-2). Difficulties seem to relate to projections on technological change, where only four NSS report that projections are available, however with highly variant quality ratings (1-5). With regard to changes in taxes or fiscal regimes, Bulgaria and Hungary report excellent data availability (1), while for Slovenia and Moldova the reliability is rated as poor (4). For Croatia, Romania, and the Slovak Republic, data is not available or only in draft form.[16]

Water Policies and Investments

Judging from the reported information availability, projections on the majority of indicators in the group of estimated investments (i.e. in water supply or wastewater treatment) are relatively easy to obtain. The reliability of projections is ranked in-between 1-4, with the highest ratings for the Czech Republic (1) and the Slovak Republic (1-2 on the majority of indicators) and the lowest rating for Moldova (3-4).[17] Reporting difficulties relate to the following indicators, which are either not available, or have not been reported on at all: Investments in the field of flood protection, nature conservation and wetland restoration, as well as river re-naturation. Bosnia & Herzegovina did not report on water policies and investments, which may signal a generally poor availability of data on this issue.

[16] At this point, it should again be noted that quality judgements are largely of a subjective nature and can only be compared across countries with great care.

[17] Hungary, Croatia, Slovenia and Romania rank data reliability on estimated investments with 2-3. For Bulgaria data reliability ranges from 1 to 3.

Similar difficulties apparently relate to the availability of projections on changes in water pricing policies. Only in the Czech Republic (rating 1), Moldova (rating 4) and the Slovak Republic (rating 1) projections are available.[18]

Macroeconomic policies

The availability of projections on macroeconomic policies is mixed, both within countries on the different indicators, as well as across countries. The quality of data is mainly considered to be moderate with ratings around 2-3. For Moldova the quality of available projections on macroeconomic policies has been evaluated to be relatively poor (with a quality rating of 4). The NSS for Hungary reports that no projections are available on industrial, energy and transport policies.

Global policies

Across countries, it seems to be difficult to find information on global policy projections in general. Only the NSS for Hungary and Romania report on all of the indicators and provide quality ratings: they evaluate the reliability of the obtainable information with 3 (Hungary) to 4-5 (Romania). In some cases, it seems to have been difficult to separate global and macroeconomic policy projections (e.g. Bulgaria, Slovak Republic). Slovenia and the Czech Republic rank those areas for which projections are available with an average quality of 1-2.

Table 5.3—1 provides a brief cross-country summary on information availability and quality for conducting the BLS within the DRB countries considered in this study.

[18] At the project's workshop in Budapest on 10-11 July 2003, it was mentioned by some of the national consultants, that information exists on possible changes in pricing policies, but not in the form of coherent projections or compilations.

Table 5.3—1: Summary Table - Baseline Scenario

Indicator Group	Availability of Projections	Quality of Projections [1-excellent; 5-poor]
Exogenous Drivers	Availability: - Group 1: Population growth; economic development: *good*; - Group 2: technological changes & changes in tax/fiscal system: *mixed*;	- Group 1: 1-2; - Group 2: if available 1-2; Exceptions: Slovenia (4-5), Moldova (4);
Water Policies and Investments	Availability: *good*; - Exceptions: Investments linked to nature conservation/ wetland restoration, River re-naturation, Changes in water pricing policies; Availability: *medium – poor*;	2 – 3 (medium); Exception: Moldova (3-4);
Macro-Economic Policies	Availability: *medium*;	2 – 3 (medium);
Global Policies	Availability: *poor*;	3 – 5 (poor); Exceptions: Slovenia (1-2) and the Czech Republic (1-2);

Source: Authors' own compilation on the basis of the NSS.

5.3.2 Responsible Authorities

The NSS provide an indication on which administrative body or agency is (or could be) responsible of constructing the *overall* baseline scenario (BLS), bringing together all the different main projections. In addition, information on which experts/administrative bodies will then actually conduct the BLS (as the executing body) was investigated.

In most of the countries under investigation no final decision has been taken yet on who will be responsible for conducting the overall baseline scenario. Only Croatia, Hungary, Romania and the Slovak Republic have indicated the general lines of responsibility[19]:

- *Croatia*: The need for an inter-ministerial co-ordinating body has been recognised, but no such institutional set-up has been established, yet;
- *Hungary*: A working group has been formed with representatives from the ministry of Agriculture, Interior, Economy and Finance as well as representatives of regional water directorates; the working group is chaired by the Ministry of Environment and Water. This group is considered by the national consultant as an appropriate forum for discussing and developing the overall BLS. Preparation of the actual study on the BLS (and co-ordination with the relevant aspects of pressures and impacts characterisation) will have to be carried out by a specialised institution that has not been identified yet;
- *Romania*: The National Administration Authority "Apele Romane" (NAAR) in co-operation with specialised institutions will be responsible for conducting the baseline scenario;
- *Slovak Republic*: A working group has been established through the "Strategy for the Implementation of the WFD 2000-60-ES in the Slovak Republic" that was prepared by the Ministry for the Environment. The Working Group is led by the Slovak Water Management

[19] The NSS for the Czech Republic, Moldova and Slovenia do not specify whether the responsibility for the BLS has already been identified.

Enterprise in co-operation with the Slovak Hydrometeorological Institute and the Water Research Institute. Clear working plans have however not been established so far.

These cases indicate already the two principal ways that exist for establishing institutional structures to conduct the overall BLS, namely either having:

1. A working group formed for the purpose of having the responsibility for the overall BLS with experts from different ministries and relevant institutions; or
2. A responsible authority that combines most of the required expertise in its own departments or has the competence to call in the necessary expertise from other administrative bodies.

The lack of clearly assigned responsibility indicates that the issue of BLS is not yet high on the water management/WFD implementation agenda. It needs, however, to be tackled soon in order to ensure an efficient preparation for conducting the BLS. The current lack of information or data availability can best be addressed by a specifically assigned body in a co-ordinated way, as this ensures a holistic view on the matter and will avoid inefficient double or piecemeal work.

5.3.3 Key Messages: Baseline Scenario

Positive Results

While some policy areas are neglected in terms of data availability (or quality), it should be noted that the general availability of projections signals that the foundation in terms of basic capacity exists and can be build on. Projections on exogenous drivers and water policies and investments seem to be available and relatively reliable so that these two areas will not pose major impediments to constructing the baseline scenario.

Identified Problems

Special problems in terms of data availability as well as quality relate to projections on global policies. For Bulgaria, it was noted that there is a lack of consistent documents assessing the impact of global policies. Judging from the fact that half of the NSS that reported on this section have not addressed information availability at all or indicated only partial availability, this assessment seems to be transposable to more general conclusion. This lack of available projections is closely linked to a lack of methodologies for developing projections. At present, projections on the evolution of global policies have been reported as being only rudimentarily available and thus constitute a major challenge for conducting the baseline scenario.

Lack of co-ordination and development of an overall BLS has been reported as a major problem in a number of NSS. Issues of co-ordination were identified on two levels: First, as e.g. indicated in the NSS of Croatia, the development of projections has been marked by an insufficient co-operation between the different ministries or institutions involved, which may lead to problems of coherence between existing projections; Second, intra-sectoral consequences of changes in one specific sector for some other sector are often not considered in the projections, rendering the applicability of obtained results questionable (Croatia and Bosnia & Herzegovina). While only a selected number of NSS explicitly addressed this issue, it seems to be likely that similar ambiguities prevail in other countries.

A problem applying to all of the four policy areas (exogenous drivers, water policies and investments, macroeconomic policies and global policies) which is shared by all countries studied is that projection periods are very different (both within as well as across policy areas). This difference in projection times will hamper the compilation of an overall BLS and needs to be addressed.

Finally, the lack of clear assignment of responsibility for the BLS and for its practical development must be considered as a serious impediment to the construction of an overall BLS. As responsibilities are not clearly defined, preparations for the overall BLS will only be of a piecemeal nature, hampering a later compilation and risking incompleteness. While it is possible to delegate certain tasks for the overall BLS to different administrative institutions or levels, a co-ordinating body is required that sees to the final compilation and completeness of the analysis.

Compilation of Proposed Measures

Since the development of the BLS is an important element of the economic analysis of Danube-wide importance, it will be important to define further which of the following measures could be taken concertedly and in priority at Danube level in order to enable the development of a river basin-wide BLS.

To address the problem of deficient information on certain projections (in particular on global policies), appropriate studies could be assigned that conduct the required projections. These studies should be of an interdisciplinary approach and incorporate all relevant actors and stakeholders. On the one hand, this ensures a complete and realistic projection (including possible effects on other sectors) while on the other hand it allows for efficiency gains due to combined resources and synergy effects from different administrative departments and actors.

With regard to global policies, the participants of the Budapest Workshop agreed that concerted action at the Danube level to remedy the existing difficulties would be valuable. The Common Agricultural Policy (CAP) was regarded as being likely to affect both national and Danube-level water status and therefore as being of relevance for the Danube as a whole. Furthermore, it was concluded that trends in the energy and industrial sectors could also be investigated at the Danube level. Accordingly, an exchange of ideas should be developed early on activities and their results pertaining to 2015 trends in these sectors.

A workshop aimed at exchanging information and training experts in the relevant techniques for scenario building may further enhance available capacities and facilitate the development of the BLS.

In response to the reported lack of co-ordination at the national level, the following steps could be taken:

- Initiate inter-ministerial working groups that combine the expertise of different experts on relevant issues, to enhance vertical as well as horizontal co-ordination within the state sector in order to obtain inter-sectoral projections. Furthermore, procedures for disseminating (statistical) information between different ministries could be defined;
- Increase communication between ministries and academics or institutes;
- Articulate the need for priority inter-disciplinary research projects focused on issues connected to the development of the BLS and initiate them;
- Integrate the expertise of national research institutes in the process of baseline scenario development as they may constitute an importance source of knowledge and experience.

Furthermore, it was emphasised at the Budapest Workshop that improved communication with decision makers is highly important, in order to enhance their understanding of the main issues and difficulties inherent in the development of trend scenarios and to raise awareness on the need for co-ordination.

As already outlined, the lack of clearly defined responsibilities for conducting the BLS needs to be resolved soon. The decision needs to be taken whether an existing national institution combines most of the required expertise in its field of operation and could be enriched with the missing capacity through additional experts, or whether a working group approach would be more compliant with the country's institutional set-up. Based on this, competent bodies both for the responsibility for the BLS development and for the practical implementation have to be defined.

5.4 Assessing Current levels of Cost Recovery of Water Services

As outlined in Section 4.2, the economic analysis for 2004 requires an assessment of the current levels of the recovery of costs of water services to be conducted.

The NSS provided information on the availability of information on institutional set-up of the water sector, the financial costs of water services, the current prices of water services and the incidence of subsidy payment. For a list of indicators[20], the NSS investigated:

- In how far the information on each indicator is currently *available*, with special emphasis being given to the most recent year of compilation, the periodicity of update, the scale at which the indicator is collected as well as the lowest scale at which it is available. In case the indicator is currently not readily available, the NSS were to indicate in how far it could be approximated;
- The *quality* and reliability of the indicator (based on an evaluation of e.g. consistency of data definition used; update periodicity sufficient; right spatial scale; element of cross-checking; official statistic; primary data versus estimates and approximations; etc.);[21]
- The *source* compiling the data or information;
- In how far the information or data can be restructured according to *hydrological boundaries* (e.g. the national sub-unit scale) is possible (e.g. evaluated on the basis of expert interviews, etc.).

Furthermore, the issue of environmental and resource costs was to be paid special attention to. In the following, the results from the combined analysis of all NSS on the issue of cost recovery of water services are presented. Hydrological restructuring of available information as well as environmental and resource costs are analysed in greater detail. Key messages emerging from the analysis are highlighted.

5.4.1 Data Availability and Quality

Institutional set-up

For all countries that reported on the institutional set-up of the water sector, information is readily available, not confidential and reliable. Most NSS provide a short overview on main actors and laws, important authorities and institutions.

Current Water Prices

Information on the water price level is generally available, not confidential and subject to an annual periodicity of update.[22] The quality of available information is, however, subject to great cross-country variability: While the NSS of Bosnia & Herzegovina, Bulgaria, Croatia, the Czech Republic, Romania, and the Slovak Republic report very good average quality (1), Moldova, and Slovenia consider the available information as far less reliable with a rating of 4-5.

A more diverse picture presents itself regarding information on price structure. While Bulgaria and Slovenia report that no information is available on these indicators, all other countries indicate that the

[20] Based on the Eco ESG list of socio-economic indicators (2002).

[21] Comparisons of quality judgements must again be done with great care due to their inherently subjective nature.

[22] Only in Slovenia, information is not published and only available upon request (with information on the water price level for agriculture being not available at all).

available information is not confidential, annually updated and of quality 1 (with the exception of Croatia (2), Hungary (3) and Moldova (4)).[23]

Data on Cross-Subsidisation are only available for Croatia, Romania and the Slovak Republic. Only for Romania has the quality been evaluated (2). Accordingly, information on cross-subsidisation constitutes a major lack of information availability and thus will pose problems to the determination of actual cost-recovery levels.

Information on collection efficiency may also pose major practical problems. While information is available in all of the countries investigated, it is often only available upon request or even confidential. Only Croatia (2), the Czech Republic (1) and the Slovak Republic (1) readily provide the data on an annual basis.

Subsidies

Information availability on subsidies is quite diverse (refer also to the detailed table in Annex 1). As with collection efficiency, data are often confidential or only available at request. However, in those countries where information on subsidies is (readily) available, quality ranks quite high (1-2).

Costs

Indicators on costs of individual measures can be grouped into three distinct groups, namely, indicators on investment costs, on operation and maintenance costs and on costs of prevention and mitigation measures.

Data on investment costs are confidential or only available at request in Bosnia and Herzegovina, Hungary, and Romania. For Bulgaria[24], Croatia and the Slovak Republic data are available, not confidential and reliable (1-3). Slovenia represents a special case, as here data are only available in the case of significant price increases that require governmental approval.

Information on operation and maintenance costs is generally not confidential (with the exception of Hungary) and often subject to annual updates. Reported data quality ranges from very reliable to average quality.

In most of the countries, data on the cost of prevention and mitigation measures is not systematically collected and thus largely not available. Only in Romania (on an annual basis and with medium quality (3)) and the Slovak Republic (no indication of periodicity or data quality provided) information is collected and made publicly available.

[23] Bosnia & Herzegovina does not report on information availability for water price structure.

[24] Only data on total investment costs are available for Bulgaria.

Table 5.4—1: Summary Table – Cost Recovery of Water Services

Indicator Group	Availability	Confidentiality	Quality [1-excellent; 5-poor]	Periodicity of Update
Institutional set-up	Good;	Not confidential;	Reliable: 1-2;	--
Current Water Prices	Mixed; Problems relate to: - Cross-subsidies (B&H, BU, HU, SL); - Price structure (SL, BU);	Not confidential; Exceptions: - Collective Efficiency (HU, BU);	Very mixed; Quality often not evaluated; Poor quality: - Price level (CR, HU, SL); - Price structure (CR, HU);	Mostly annually;
Subsidies	Mixed – see confidentiality;	Mixed – often confidential, or only available at request;	Quality often not evaluated; If evaluated: 1-2;	When indicated: annually (or at request);
Costs	Mixed;	Not confidential, except for: - Information on organisation, maintenance and administration costs (HU); - Financial costs of water services (HU, some indicators for RO); - Subsidies (CR);	Often not evaluated; when reported: 2-3;	Information often missing; Annual updates;

Source: Authors' own compilation on the basis of the NSS.

5.4.2 Environmental and Resource Costs

In all of the countries studied, no systematic estimations of the environmental and resource costs of water services is currently available, so that only fragmented and often inconsistent information can be obtained. To a certain degree, this deficit in information provision can be accounted for by a general lack of an overall approach and established methodologies for conducting this task. In light of these findings, reporting on environmental and resource costs constitutes one of the largest problems identified by most of the countries.[25]

Regarding the specific indicators of environmental and resource costs under evaluation for the NSS, main difficulties of acquiring information seem to relate to the assessment of environmental damage and changes in environmental quality as well as to determining the costs of restoring environmental quality. Furthermore, as pinpointed, for example, in the NSS for Hungary and Romania, particular problems are linked to the collection of information on the economic value or willingness to pay for environmental quality. This factor has not been paid attention to in most information collection

[25] It should be noted that EU Member States experience similar problems with regard to information on environmental and resource costs. A newly established sub-working group within CIS-process will work on this issue and is expected to present results by Mid-2004.

projects and therefore is scarcely ever available as an indicator. Both the Romanian as well as the Hungarian NSS identify the lack of methodology for monetising environmental benefits as responsible for the missing information on these variables.

While important difficulties are connected to the information collection on environmental and resource costs, nevertheless, some information is available. A number of the countries under investigation operate systems of charges and taxes for internalising environmental and resource costs to a certain extent and report this regularly. Furthermore, in the case of Croatia, studies are available that evaluate environmental and resource costs on a project basis.[26] It remains to be checked, however, to which extent this project based information or data could be generalised to serve reporting needs.

5.4.3 Restructuring Available Data According to Hydrological Boundaries

According to the information provided in the NSS, restructuring information on available indicators according to hydrological boundaries again poses a significant challenge in a number of cases. The NSS have provided less information on the feasibility for restructuring on this area (see also Annex 1) which might signal greater difficulties for restructuring on the basis of the existing data base.

5.4.4 Key Messages: Assessing Current levels of Cost Recovery

Positive results

Information on the institutional set-up of the water sector seems to be readily accessible in all countries and will thus not pose difficulties to reporting for the economic analysis.

Identified Problems

A particular problem (as already highlighted in section 5.4.2) shared by all DRB countries relates to the information availability on environmental and resource costs. Furthermore, a number of other indicators are subject to serious availability and quality constraints or are compiled on the basis of intransparent or inconsistent methodologies (e.g. (cross-) subsidies). Some cost categories also pose significant reporting difficulties, due to differences in definition and aggregation levels.[27]

Compilation of Proposed Measures

To remedy existing difficulties with regard to the availability of the above mentioned indicators (e.g. on the breakdown of investment costs), increased data collection is necessary.

Further methodological development seems to be needed on certain indicators (e.g. for assessing cross-subsidisation). International as well as national experts (e.g. from national or private research institutes) may contribute to this development by providing technical assistance.

At the Budapest Workshop, cross-subsidisation was agreed as being an issue meriting a common Danube-wide approach. However, before attempts can be made to compare methods for the assessment of cost-recovery, it will be important to know exactly which information is currently compiled and available at the national level. It was agreed that an expert workshop on this issue would be valuable, as it provided a platform for exchange and learning.

In general, greater comparability of national data from different sources (e.g. from different administrative levels) should be ensured, which seems to be a particular problem of information on the recovery of costs of water services.

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[26] These evaluations are conducted as part of environmental impact assessments or feasibility studies for projects.

[27] While the NSS for Bulgaria reports difficulties related to the breakdown of total investment costs, other NSS report that investment data are extremely fragmented, posing problems of aggregation.

In response to the current difficulties related to environmental and resource costs, the link between the CIS-sub-working group on environmental costs and the Danube basin/Danube Basin countries should be established. A strengthening of this link was also welcomed by the participants of the Budapest Workshop.

5.5 Preparing for the Cost-Effectiveness Analysis

Section 4.2 provided the reference background from the WFD on "preparing for the cost-effectiveness analysis" as one of the four focal issues of the economic analysis for 2004. With regard to this issue, the NSS aimed at providing an overview on the information on unitary costs of measures that is currently available in the different DRB countries and that could be used as a basis for the cost-effectiveness analysis.

As the indicators required for different sets of measures will vary, it was proposed in the template to investigate the information availability of past, present or planned measures in order to gain indications on costs of measures in the specific country. Information availability on both costs of "traditional" measures (e.g. wastewater treatment plants) as well as of "non-traditional" measures (agricultural programmes to reduce diffuse pollution, renaturating a wetland etc.) was to be investigated in the NSS. Sources of information investigated in the NSS compilation process included for example reports by international funding, regional plans or rural development plans, project documents (e.g. from past investment projects) or information provided by stakeholders.

In the following, a concise overview will be given on the presently available information base on key measures and its quality.

5.5.1 Data Availability and Quality on Key Measures

Some of the NSS could only report on a few selected measures with often incomplete information bases (e.g. information on environmental costs or the economic impact of measures missing). Even internal comparability is thus low rendering the generalisation of obtained results very difficult. Accordingly, data quality is in most cases not yet sufficient. This observation already triggers the preliminary conclusion that data are particularly hard to obtain. However, as the economic analysis for the year 2004 suggests initiating first preparatory steps for the analysis of cost-effectiveness, currently other issues are higher on the agenda. Nevertheless, remedying actions will be required soon in order to prepare for the cost effectiveness analysis by the year 2007.

In the following, a few cases from the NSS will be shortly reviewed as exemplary illustration. The main identified problems are generally similar across the different NSS:

For *Hungary*, the available information on measures does generally not specify their environmental costs and the associated economic impact. Organisation and maintenance costs, on the contrary, are in most cases reported (at least as estimates). Information sources used for the Hungarian NSS include information provided by the Ministry of Environment and Water, the National ISPA programme, industrial users as well as the water directorates.

The NSS on the *Slovak Republic* indicates that environmental costs of measures were estimated through baseline and approximation scenarios on costs (in the case of a study by the Danish Environmental Agency (DANCEE)).[28] It also reports that information on the economic impact of measures could be found for selected measures. Information sources consulted for the Slovakian contribution on measures include DANCEE, ISPA and PHARE financed projects as well as reports by the Ministry of Finance.

The information on measures presented in the *Romanian* NSS signals that the available information is relatively good: information on organisation and maintenance costs is available for all measures

[28] The Slovakian NSS also indicates that in all other cases, information on the economic impact of measures is very limited, in particular with regard to the indirect effects.

presented. Furthermore, for most of the presented measures information is available on environmental costs as well as on their economic impact.

In the case of *Moldova*, information on the operation and maintenance costs related to measures is reported as being difficult to obtain, while environmental costs and the economic impact of measures is not estimated. Consulted information sources on measures for the Moldovian case include the European Bank for Reconstruction and Development (EBRD), TACIS or Apa Canal Chisinau.

5.5.2 Key Messages: Preparing for the Cost-Effectiveness Analysis

Positive Results

A positive indication is that information on some individual measures (mainly "traditional" constructing measures) is available in most countries.

Identified Problems

The situation on this issue is the most problematic in comparison to the other focal topics of the economic analysis. Inconsistency in data provision creates problems of comparability and severely restricts the degree to which generalisations are feasible within countries and even to a higher degree across countries.

A general problem relates to the fact that information on costs of measures is not collected comprehensively within countries. The lack of comprehensive data on individual measures constitutes the major challenge which will have to be rectified. In particular, information is needed on the required timeframe, the geographical coverage as well as on the different categories of costs of measures. Information on non-traditional measures is scarce or not at all available in most of the countries studied.

Particular difficulties relate to information on environmental water related and non-water related costs (see also section 5.4.2). Furthermore, in most of the countries, there is no reliable information or method available for the assessment of the environmental impact of measures (in particular their indirect impact is mostly not evaluated or provided information on).

Compilation of Proposed Measures

A capacity building workshop (or a series of meetings) could be conducted, outlining the central issues of the cost-effectiveness analysis as anchored in the WFD in order to build up capacities in the DRB countries.

In addition, a reporting framework for measures could be developed in order to establish a "Guide on cost ranges for measures" as a preparation for selecting cost- effective measures. Information on past projects could then be "fitted" into this framework and it could be aimed at achieving a comparable database that can be build on over the upcoming years (maybe based on the already existing ICPDR-database). It will be important to include "non-traditional" measures as well as measures to be taken at the DRB level. Here action is required within a relatively short timeframe in order to facilitate the collection process and to achieve a meaningful database volume by the time it is actually needed.

Specific studies could be performed on which methodologies could be applied to the evaluation of the economic impact of measures or the evaluation of the environmental costs of measures. In case a working group is formed on this issue, the methodological cross-cutting issues with the baseline scenario should be taken into account in order avoid double work and exploit synergy effects. In this area, it will be particularly important to integrate economic and technical expertise in order to obtain better and more targeted results and approaches.

5.6 Administrative Capacities

The cross-country comparison of information provided in the NSS on the capacities of DRB countries to deal with the four focal issues of the economic analysis has revealed that important obstacles or bottlenecks can be related to insufficient administrative capacities.

As in particular the analysis in section 5.3 on the construction of BLS indicated, a general problem seems to relate to insufficient co-operation, both on an inter-ministerial level as well as between ministries and relevant public or private institutions or the academia (when it comes e.g. to the development of new methodologies). Due to a lack of (procedures for) communication between different parts of the public administration, only sub-optimal outcomes can at times be reached, or double work has to be conducted. Furthermore, this lack of co-operation often goes hand in hand with a lack of dissemination and sharing of statistical information between different ministries and other government institutions as well. This can easily lead to data being gathered according to inconsistent methodologies, rendering a combination or comparison difficult and making their use difficult for certain applications.

As section 4.3 revealed, many countries furthermore still struggle with certain regulatory issues as they have not yet clearly decided on who will be responsible for conducting the economic analysis (or for the implementation of the WFD in general). While first arrangements often already exist at a political level, they still need to be transposed to the working level to take effect.

In response to the problems outlined above, a number of remedying measures may be proposed. In order to address the issue of lack in co-ordination, insufficient communication and sharing of data, inter-ministerial working groups could be formed that combine the expertise of different experts on relevant issues, to enhance vertical as well as horizontal co-ordination within the state sector. Furthermore, procedures for disseminating (statistical) information between different ministries could be defined.

It will also be important to increase the integration of expertise outside of the concerned administrations and to aim at an integrated approach making use of private national as well as international expertise and to further (international) interdisciplinary exchange on priority problems. Furthermore, linking the implementation of the economic analysis with other areas of the WFD implementation process should be an issue of high concern, in order to facilitate learning from each other, to avoid double work as well as to strengthen the overall understanding of the key issues at stake across the different elements of the WFD implementation process. The failure to strengthen necessary ties from the early beginning on may lead to inconsistent approaches that might be difficult to reconcile later on.

With respect to the unclear responsibilities for the economic analysis as revealed in section 4.3.3, it should be stressed that missing to clearly allocate decision-making responsibilities, exact mandates and legal powers to the different actors involved can severely hamper the WFD's implementation. The issue of clear allocation of responsibility is intrinsically linked to the issue of staff working on the economic analysis. It will be vital to involve a sufficient number of staff in the implementation process of the economic analysis in order to be able to comply with the tight time-schedule set by the Directive.

It can be concluded that important benefits may be derived from an enhanced administrative capacity. Furthering progress in terms of capacity building will be decisive to a successful implementation of the WFD in general and the economic analysis in particular.

6 Synthesis of Identified Gaps and Necessary Measures

At the Budapest Workshop, a draft version of this report has been discussed. A special emphasis has been on the following synthesis chapter due to its orientation towards practical implementation and next steps. In light of the participants' suggestions and comments it has now been revised and amended. The participants' evaluation of the relevance of the identified priority gaps and the feasibility of the different measures proposed have been taken into account in the process of revision.

As a first step, section 6.1 identifies major gaps that a majority of countries has in common[29] and proposes measures that could be taken in response at the national level. The discussion is structured along the following three focal areas:

- Information and data related gaps (Section 6.1.1);
- Methodological deficiencies (Section 6.1.2); and
- Gaps related to institutional and administrative arrangements (Section 6.1.3).

As a second step, section 6.2 addresses those priority gaps that have been identified at the Budapest Workshop or during the cross-country analysis as meriting a Danube-wide approach. The final version of this section integrates the discussions at the Budapest Workshop and it has been amended by four in-depth proposals on concrete measures. Agreement was reached at the Budapest Workshop that these areas should be prioritised and that Danube-wide efforts on these issues would be valuable. Possible approaches on these issues were already discussed and elaborated in small working groups during the Budapest Workshop. In this synthesis chapter, an attempt has been made to elaborate on the proposals made by the different groups and to further specify possible actions on a practical level.

6.1 Identified Gaps and Necessary Measures at the National Level

It should be noted that the scope of this synthesis report only allows for advocating general guidelines on how the identified priority gaps could be tackled. It will be important to further specify the proposed measures for the different countries and to find a nationally adapted solution.

6.1.1 Information/data related gaps at the national level

The cross-country assessment of the analysed set of NSS as well as the discussions at the Budapest Workshop have indicated particular problems in terms of availability or quality of information and data related to the following indicators and parameters:

1. Providing information and data on indicators for the following *water uses* poses problems to a majority of the countries investigated:

- Agriculture (e.g. average income, average gross production per year);
- Leisure fishing, boating and wind-surfing, (in most of the countries investigated, no comprehensive information is currently gathered on related indicators; see Table 1, Annex 1);
- Water related tourism (e.g. number of beds, total turnover, average expenses per tourist per day);
- Flood and drainage systems (e.g. population protected, turnover of protected economic activities, potential loss of properties or economic activity).

With regard to *water services*, particular difficulties relate to gathering information on the following indicators:

[29] In addition to these cross-country gaps, there are also country-specific gaps that will not be treated in this summary chapter but should not be forgotten.

- Irrigation water supply (e.g. main products of irrigated areas, farmers connected to public irrigation water supply; total irrigation water supply, farmers with self-supply);
- Self-supply (e.g. population/ industry/ agriculture with self-supply, total water supply from self-supply).

2. The assessment of the *recovery of the costs* of water services (mainly with regard to cross-subsidies, collection efficiency and environmental and resource costs) poses significant problems due to restricted information availability or access;

3. The NSS report difficulties related to the availability of projections (e.g. projections on changes in water pricing policies, on the effects of EU accession on employment or on the development of key economic sectors) that are needed as a basis for developing the baseline scenario. A further problem in this context relates to the fact that projections are often only available for inhomogeneous timeframes (e.g. ranging from 2 to 30 years). Accordingly, harmonisation will be required, in order to allow for the development of a consistent baseline scenario up to 2015;

4. The availability of information on measures for preparing the cost-effectiveness analysis poses a particular challenge, since information on costs of measures is not collected comprehensively within countries and there is a lack of data on individual measures (e.g. on the required timeframe, the geographical coverage or the different categories of costs, etc.). In general, difficulties relate to information on non-traditional measures (such as agricultural programmes to reduce diffuse pollution) and the assessment of the environmental impact of measures;

Finally, it should be noted that due to the limited resources available for conducting the NSS the assessment of the quality of information is (in most cases) based on expert judgement only, and is thus subjective. These judgements could be inaccurate and thus misleading (even "official" data can be of low quality due to e.g. a large shadow economy). Accordingly, indicators that have not been identified as highly problematic in the NSS may, nevertheless, pose severe problems to the actual implementation of the economic analysis due to insufficient data reliability;

NECESSARY MEASURES AT NATIONAL LEVEL

The following measures could be taken in response to the identified information and data related gaps at the national level.

1. For each individual country, the most urgent information gaps should be specified precisely through a detailed national analysis. On a practical level, the current NSS could be expanded into a national action plan, which investigates in more detail the national gaps related to water management issues and prioritises necessary changes in data collection.

For some of the indicators identified above as posing particular problems, the following suggestions were made at the Budapest Workshop on how to proceed (for 2004):

- For problematic indicators on navigation and transport it was suggested that for 2004 only information that is currently available in the individual countries should be used and synthesised it in an appropriate way for the Danube roof report (a qualitative description will be provided in the roof report, stressing the countries for which these water uses are the most significant and providing quantified figures for some countries whenever available and considered relevant for illustration). The same procedure applies for indicators on boating and windsurfing, water related tourism and leisure fishing;
- Irrigation water supply was considered by the participants of the Budapest Workshop as not requiring a Danube-wide approach as this gap is only important in some of the Danube countries. Countries where this type of information is missing will individually find ways to estimate this parameter for their respective sub-units;
- With regard to self-supply for households, it was suggested that a common approach of how to calculate self-supply at Danube level should be decided on, but then proceeded with at the national level;

2. The participants of the Budapest Workshop agreed to the assessment made in the draft synthesis report that increased data collection (or estimations based on e.g. extrapolation techniques or expert judgement) will be needed on the categories identified by the cross-country analysis as problematic, in order to conduct the economic analysis by 2004. While, in light of the severe time constraints as well as due to financial restrictions, it will not be feasible to close all identified gaps by 2004, it will be important to initiate activities for closing priority gaps as soon as possible in order to ensure an improved information availability after 2004;

3. The problem of deficient information on certain projections (e.g. projections on the impact of EU accession on sector policies) could be addressed by conducting or assigning appropriate national studies. It will be important to use an interdisciplinary approach and to integrate all relevant actors and stakeholders into this process.

   With regard to insufficient information availability of projections on water policies and investment, the participants of the Budapest Workshop agreed that they are mainly of relevance at the national level (due to the fact that investment decisions are to a large extent made by national authorities) and suggested that they should therefore be remedied through individual national actions;

4. A reporting framework for measures could be developed in order to establish a "Guide on cost ranges for measures" as a preparatory step for selecting cost-effective measures. This reporting framework should build on information from past projects and include "non-traditional" measures (e.g. renaturation of wetlands).

6.1.2 Methodological difficulties

As the cross-country analysis revealed, a variety of methodological difficulties exist for conducting certain aspects of the economic analysis. This was confirmed by the participants of the Budapest Workshop. Methodological difficulties are mainly related to the following issues.

1. There is a limited comparability of data from different sources within a country (mainly on issues related to cost recovery) due to different methodological approaches and data classifications / definitions used across institutions and reporting levels. Depending on the level of accuracy and comparability required, this may act as an impediment to completing certain requirements of the economic analysis.

   Furthermore, differences in data definitions among Danube countries might hamper the comparability of the different national data sets. For those indicators which are considered as being of primary importance, it will be required to identify in greater detail the exact definition of those indicators. By means of a sensitivity analysis project, different approaches could then be compared. On the basis of this, an assessment could be made, indicating whether and which changes would be required in order to increase the comparability of national data sets on those areas where it is seen as a prerequisite;

2. Most of the NSS indicated that there is a of lack of experience with regard to methodologies to be applied in the construction of BLS. The participants of the Budapest Workshop stressed the limited experience of the water sector with BLS building. In all of the countries participating in this project, there is neither a general projection method available which is used for all sectors, nor a method for building an integrated BLS. Accordingly there is a clear need for methodological development and capacity building;

3. Furthermore, methodologies on dealing with other specific issues are limited, for example, for:
   - Defining and calculating subsidies (and cross-subsidies) for the assessment of cost recovery;
   - Assessing environmental and resource costs;
   - Evaluating the environmental impact of measures.

   It should however be noted that, while the necessary expertise may be missing in the institutions directly responsible for conducting the economic analysis, it may be possible that the required experience resides with academic research institutes and external consultants;
4. Difficulties relate to the restructuring of information according to hydrological boundaries, e.g. for information on certain aspects of water uses (e.g. rate of economic growth, agricultural water use, self-supply, etc.) and cost recovery related information.

NECESSARY MEASURES AT NATIONAL LEVEL

In response to the methodological difficulties outlined above, the following measures could be taken.

1. Existing national data collection systems could be adapted in a way that reduces inconsistencies in data definition and collection across countries. For this modification to take place, it will be important pinpoint more precisely, which variables are of priority importance. Furthermore, an exchange among relevant stakeholders will be required in order to bring forward a proposal for modification that not only suits WFD reporting, but also continues to fulfil other national (data) requirements;
2. A workshop aimed at exchanging information and training experts in the relevant techniques for scenario building could be conducted, in order to enhance available capacities and understanding of methodologies for the development of the BLS. It will be important to ensure that experts on the wide range of methods and approaches participate in this workshop, but also experts on the different sectors and fields of relevance to the scenario building. Furthermore, the participants of the Budapest Workshop stressed that improved communication with decision makers is highly important, in order to enhance their understanding of the main issues and difficulties inherent in the development of trend scenarios;
3. In the medium term, a specific study on methodologies for assessing cost-recovery could help to identify possible ways, in which specific problems could methodologically be dealt with, e.g. the issue of subsidies and cross-subsidies. Analogously, specific studies could help to develop possible methodologies for the evaluation of environmental and resource costs. In this learning process, it will be important to integrate and make use of economic as well as technical expertise. Research on the issue of environmental and resource costs should be linked to the current work of the CIS-working group at the EU-level in order to make use of possible synergy effects;
4. With regard to the problem of restructuring existing data according to hydrological boundaries, studies could help to develop methods of how to deal with this issue in a cost-effective manner. The collection of new data or information should be brought in line with the requirement of hydrological restructuring. With regard to this issue, it will important to integrate technical and economic expertise.

6.1.3 Institutional and administrative arrangements

A lack of the necessary institutional framework and administrative capacities for conducting the economic analysis has been noted, mainly due to the following issues:

1. Some of the NSS indicated that there is an insufficient number of experts currently available within the responsible institutions for conducting the economic analysis as well as a limited experience with the requirements of the WFD and the use of economic concepts;
2. In some of the countries under investigation the decision on who will be responsible for conducting the economic analysis (or for the implementation of the WFD in general) is still

pending. While first arrangements often already exist at a political level, they still need to be transposed to the working level to take effect. The dilatoriness to determine the required lines of responsibility may seriously hamper the implementation of necessary preparatory steps for the economic analysis (and the WFD implementation in general);

3. Some of the NSS identified a lack of co-ordination and co-operation between relevant ministries (and other stakeholders). For example, with regard to the development of the baseline scenario, it was indicated that there is a lack of clear assignment of responsibility for conducting the BLS as well as a lack of co-ordination for the development of an overall BLS.

NECESSARY MEASURES AT NATIONAL LEVEL

The following measures can be advised in response to the gaps in administrative and institutional arrangements outlined above:

1. In some of the countries, it will be necessary to increase the resources and capacities available for conducting the economic analysis, for example, increasing the number of people assigned for compiling the relevant information, for developing the necessary tools and methodological approaches and for co-ordinating the different activities. In this context, it should also be considered to which extent external experts could be integrated into the implementation process, providing methodological support;
2. It was stressed during the Budapest Workshop, that a clear division of roles for the economic analysis has to be a agreed on as soon as possible in those Danube countries that have not resolved the issue so far, as the entire process may otherwise be hampered;
3. To address the present lack of co-ordination and co-operation in some countries with regard to the economic analysis or parts of it (e.g. the BLS), inter-ministerial working groups could be formed that combine the expertise of different experts on relevant issues and could enhance vertical as well as horizontal co-ordination on these issues. Furthermore, procedures for disseminating (statistical) information between different ministries could be defined as well as further priority research needs.

6.2 Required Activities and Possible Supporting Measures at the Danube Level

Certain decisions need to be taken at the Danube level soon in order to support the timely development of both Part A (roof report) and Part B (national reports) of the economic analysis in the DRB.

- Since the economic analysis „shall contain enough information in sufficient detail (taking into account the costs associated with the collection of relevant data)" (Annex III WFD), the Econ ESG will have to reconsider the preliminary list of indicators for the economic analysis based on the availability of information/data as established in the current study. In those cases in which information is not available/not of sufficient quality, it needs to be decided what will be feasible until 2004 and which precise measures will have to be taken in order to close the gaps;
- Based on the current study, the issues of the economic analysis that will be dealt with in the roof report (Part A) have to be defined at the Danube level. Based on this, clear guidelines need to be developed on what information (and based on which methodology) will be required from the Danube countries in order to enable the production of a homogenous roof report. For some indicators (as outlined above, e.g. for leisure fishing), proposals have been made during the Budapest Workshop on how to report on them in the roof report, yet, a general procedure still has to be defined.

In addition, some of the identified gaps could best be addressed at the Danube level, both to take advantage of possible spill-over effects due to concerted and co-ordinated actions as well as to increase the comparability of national data and information, which will simplify the compilation of the roof report.

Section 6.2.1 proposes possible supporting measures at the Danube level, and outlines the expected benefits from co-operation. Section 6.2.2 then turns to treating four issues that were identified by the participants of the as priority issues for Danube-wide co-operation in greater detail, as was outlined in the introduction to this chapter.

6.2.1 Possible Supporting Measures at the Danube Level

Certain measures could be taken at the Danube level in order to support the national activities for conducting the economic analysis. Co-ordinating activities on the following issues would avoid double-work and facilitate the production of the roof report of the economic analysis since relevant national activities would be more comparable.

1. Since certain methodological difficulties are shared by many Danube countries (e.g. defining and calculating subsidies for cost recovery assessment, assessing the environmental affects of measures, restructuring information according to hydrological boundaries etc.), combined activities (workshops, studies etc., see above) to improve knowledge and capacities could lead to methodological developments being "shared by different countries";
2. Cross-subsidisation was agreed to at the Budapest Workshop as being an issue meriting a common approach. However, before attempts can be made to compare methods for the assessment of cost-recovery, it will be important to know exactly which information is currently compiled and available at the national level. The participants of the Budapest Workshop suggested that an expert workshop on this issue would be valuable, as it would provide a platform for exchange and learning. Possible approaches for concerted action with regard to the assessment of cost-recovery were discussed in detail in one of the working groups (see below, Section 6.2.2);
3. In order to increase efficiency of data collection, the quality and the comparability of information, integrated information systems with obligatory and systematic reporting based on common definitions would be useful at the Danube level. A basis could be the existing shared ICPDR database that would have to be adjusted to the requirements of the WFD and updated. This measure oriented towards the medium term and will not be able to enhance the reporting base for 2004, due to the time lag with which it will take effect;
4. Certain methodological questions (e.g. related to environmental and resource costs) are also currently being worked on in the EU Member States and at EU-CIS Working Group level. Therefore, it would be advisable that this work is being followed at the Danube level, checking in how far obtained results can be employed in the DRB and disseminating the information the DRB countries. This approach was welcomed by the participants of the Budapest Workshop and common action was considered valuable. In particular with regard to the development of methodologies for assessing environmental and resource costs, an exchange or a comparison of possible methods between countries was regarded as vital;
5. The issue of BLS is of importance for the entire DRB. Therefore, integrating national approaches into a Danube-wide approach (through specific workshops, a common working group on the issue, etc.) based on a identification of what has to be dealt with at the Danube level, will be vital for having a coherent picture of the development in the River Basin. It was agreed by the participants of the Budapest Workshop that Danube-wide co-operation on the issue of BLS would be most valuable, and possible approaches were discussed in-depth in two of the working groups (see below, Section 6.2.2);
6. A platform for exchange of information and experiences regarding the ongoing work for the implementation of the economic analysis (based on the Econ ESG and the ICPDR web-site) could be established in order to facilitate implementation and to support the comparability of national results;
7. Since the information on costs of basic measures is similar across many DRB countries, it would be advisable to develop the "Guide on cost ranges for measures" as a preparation for selecting cost- effective measures in common for the Danube level. Information on past projects would be "fitted" into this framework, and it would be important to include information on "alternative"

measures. Such a basin-wide approach would also have the advantage that the effects of certain measures would be assessed at a river basin scale and that basin-wide measures could be included into the preparatory work (based on the concept of integrated river basin management). Here action is required within a relatively short timeframe in order to facilitate the collection process and to achieve a meaningful database volume by the time it is actually needed.

6.2.2 Key Issues Revisited: Possible Activities for Addressing Priority Gaps

During the Budapest Workshop, four major issues, which had been identified during the discussion of the draft synthesis report as priority areas meriting Danube wide co-ordination, were discussed in small working groups in greater detail. The aim was to develop first ideas on how these priority gaps could best be addressed in order to facilitate a Danube-wide approach to the respective issue.

The following issues were selected at the Budapest Workshop for elaboration in small groups:

1. How can Danube-wide trends in key economic sectors be investigated?
2. How can (common) methodologies for the development of the baseline scenario at the Danube level be developed and tested?
3. How to agree on a common methods for assessing cost-recovery?
4. How to reach enhanced capacity for the cost-effectiveness analysis?

On the basis of the discussion results of the different working groups, the four priority issues have been further elaborated in this revised synthesis report. The initial ideas of the participants of the Budapest Workshop were translated into proposed activities with a realistic timeframe and practical implementation guidelines.

For each of the four issues, the concrete objective is outlined, and a possible agenda for the required activities is set up. Furthermore, the actors that should be involved in the different activities are identified and a tentative timeframe in which the proposed actions could take place is included.

1. INVESTIGATING TRENDS IN KEY ECONOMIC SECTORS

The national scoping studies have identified the existence of forecasts for key economic sectors in several countries. However, assessing the quality of existing forecasts, their coherence and consistency between countries and their relevance to the development of the baseline scenario for the Water Framework Directive could not be undertaken within the (short duration) of the study. Clearly, this assessment needs to be undertaken if existing forecasts knowledge and information is to be mobilised for developing the 2015 risk assessment.

The participants in the July 2003 workshop that discussed the preliminary finding of the scoping study for the Danube stressed the need to focus in priority on agriculture, with energy and industry (or sub-industrial sectors) been also important sectors to be investigated in the context of such activity.

Objective

The main objective of this activity is:

- To develop robust consistent forecasts for key economic sectors in the Danube region, with particular emphasis on agriculture, energy and industry.

Thematic focus of the activity and key steps

The activity aims at developing forecasts for key economic sectors significantly affecting water status in the Danube river basin. The results of this activity could already be input into the 2004 characterisation report for the Danube River. Although the three sectors are mentioned, it is expected that more emphasis will be given to agriculture because of the importance of diffuse pollution issues in the Danube region.

- *Step I* – Review of existing forecasts and trends for the three main sectors, identifying key assumptions made in existing forecasts, etc.;
- *Step II* – Share existing information and knowledge. Workshop with experts from water and economic sectors and experts in forecasting/modelling/statistics, for sharing information and identify gaps and complementary measures required for filling these gaps;
- *Step III* – (Based on workshop) propose methods for developing forecasts (including scale at which forecasts developed) for the three sectors and implement proposed methods for the Danube region;
- *Step IV* – Present draft results to water experts, representatives of economic sectors and decision makers for reviewing, refining and validating results;
- *Step V* – Report and disseminate.

Involvement

Work undertaken by consultants with involvement from experts from ministries in charge of the implementation of the WFD and sector ministries (agriculture, energy, industry) along with selected experts/stakeholders with good knowledge in the three sectors. Advisory group (possibility Econ ESG extended) with representative from the three economic sectors and key experts in these sectors and their forecasts.

Time frame

It is proposed to initiate the activity in November 2003 and end it in June 2004, thus to be able to provide some input into the 2004 characterisation report for the Danube river.

- *Step I* – November 2003 to December 2003;
- *Step II* – January 2004;
- *Step III* – February 2004 to April 2004;
- *Step IV* – May 2004;
- *Step V* – June 2004.

2. DEVELOPING AND TESTING METHODOLOGIES FOR THE BASELINE SCENARIO

Some of the national scoping studies have identified existing information on trends in key economic sectors and investments in the water sector. However, studies stress the absence of practical methodologies and capacity for integrating existing trend and forecasts information and develop the baseline scenario of relevance to the planning process of the Water Framework Directive (WFD). Indeed, specific efforts are required to ensure baseline issues can be tackled in a timely manner and adequately contribute to making the 2015 risk assessment basis for the identification of significant water management issues and the selection of measures.

Objective

The main objectives of this activity are:

- To propose and test methods for developing a baseline scenario of relevance to the Danube countries;
- To enhance capacity in the development of baseline scenario;
- To disseminate the results of the testing and communicate issues of relevance to the development of the baseline scenario to water experts and decision makers.

Thematic focus of the activity and key steps

The activity focuses on methodology development and its testing, i.e. how to develop a baseline scenario of relevance to the WFD and that can help better decisions and support development of selection of measures.

- *Step I* - Proposing methodology. Based on experience in selected countries, using the outcome of the CIS drafting group dealing with this issue, integrating lessons from the Lille IV conference. Methodology building on statistical trends, stakeholder knowledge and expertise, technical expertise for identifying significant pressures and their drivers;
- *Step II* - Testing the methodology in pilot sites (3 sites). Selection of pilot sites, training of experts and stakeholders who will get involved, identifying priorities for each pilot studies, undertaking the studies, workshop for discussing results and evaluating approach;
- *Step III* - Reviewing and combining the results. Review pilot studies, identify gaps and constraints in proposed methodology and propose likely changes, workshop for exchanging and discussing results/propose revised methodology;
- *Step IV* - Develop practical guidance on the revised methodology;
- *Step V* – Organise training session for experts from the Danube countries;
- *Step VI* - Inform and communicate with key stakeholders and decision makers.

Involvement

Work undertaken by researchers or consultants and experts from ministries/selected stakeholders (depending on key issues selected for the pilot studies), with an informal group of experts including 1-2 experts in participatory processes and 1-2 experts from pressures/impacts (or the Econ ESG) as advisory body. Active joint lead from the countries that will propose pilot sites for testing.

Time frame

It is proposed to initiate the activity in November 2003 and end them in June 2005. This stresses that the main objective of the activity is to ensure operational methods are available for the development of the river basin management plan, i.e. after the 2004 characterisation deadline.

- *Step I* – November 2003 to March 2004;
- *Step II* – April 2004 to September 2004;
- *Step III*– October 2004 to December 2004;
- *Step IV* – April 2005 to June 2005;
- *Step V* – June 2005;
- *Step VI* – April 2005 to June 2005.

COMPARING METHODS FOR ASSESSING COST-RECOVERY

Assessing the extent of cost-recovery is an important task to be undertaken by 2004 for the characterisation report. While it is recognised that the first assessment to be produced by that date will build on existing information and knowledge, it is important to stress that many questions still remain with regards to methodologies for assessing cost recovery in particular with regards to the way various subsidies, in particular cross subsidies and hidden subsidies, should be considered into the analysis. Clearly, different methods are likely to be applied within different institutional framework. However, it remains to be assessed whether such methods are effectively coherent and deliver comparative results.

Objective

The main objectives of the activity are:

- To compare and evaluate methodologies applied by different countries for assessing cost-recovery, with particular emphasis on the approaches chosen for integrating cross-subsidies and hidden subsidies;
- Through their comparison, to identify means for improving existing methodologies for delivering comparative results.

Thematic focus of the activity and key steps

Focuses of the activity are methods for assessing cost-recovery, with particular focus on subsidies, cross subsidies and hidden subsidies. However, as methods directly link to existing institutional frameworks, information collected on these frameworks will also be mobilised to adequately review existing methods and put them into their context.

- *Step I* - Exchanging information and first application of assessment. Proactive (electronic + through focused discussions at Econ ESG) exchange of information between the different Danube countries for sharing first assessment of cost-recovery;
- *Step II* – Participating in the Lille IV conference. Early contacts with the Lille conference organisers for ensuring cost-recovery sessions discuss key concerns of Danube countries, i.e. subsidies including cross-subsidies and hidden subsidies. For sharing experiences with other countries, and present first assessments undertaken by selected Danube countries;
- *Step III* – Reporting for the 2004 characterisation report;
- *Step IV* – h Proposing improvements for cost-recovery assessment methods. Workshop for comparing methods used by different countries, identifying comparability of results, identifying improvements in existing methods for enhancing the comparability of results;
- *Step V* – Dissemination and communication. Report on proposed methodological improvements – aiming at enhancing the quality and consistency of cost-recovery assessment to be included in the 2008 draft river basin management plan for the Danube.

Involvement

Experts from government agencies in charge of conducting the 2004 cost-recovery assessment for their country, selected experts in water services and institutional framework providing input into the comparative workshop (Step IV).

Time frame

- *Step I* – September 2003 to January 2004;
- *Step II* – February 2004;
- *Step III* – up to December 2004;
- *Step IV* – March to May 2005;
- *Step IV* – June 2005.

ENHANCING CAPACITY ON COST-EFFECTIVENESS ANALYSIS

Undertaking a cost-effectiveness of measures will be an important part of the analysis to be undertaken by 2008 (draft river basin management plan) for supporting the selection of measures. In most EU existing and future Member States, or for other countries of the Danube river basin, experience in cost-effectiveness analysis is rare, and almost non-existent at the scale of hydrological units. Enhancing capacity in making cost-effectiveness analysis operational is then a key step

identified by the participants in the July workshop for which a Danube wide approach can prove most cost-effective.

Objective

The main objective of the activity is:

- To develop capacity in the Danube countries in the application of methods and tools for undertaking a cost-effectiveness analysis of measures.

Thematic focus of the activity and key steps

Undertaking a cost-effectiveness analysis requires both expertise in economic issues (the cost element) and in the analysis of pressures and impacts (the effectiveness element). And integrating both expertise into a common analytical and methodological frame remains a challenge. In terms of the economic elements, it will be important to ensure issues linked to the scale at which the analysis is to be undertaken are adequately understood, along with the sensitivity of the analysis to the assessment of costs (i.e. which costs to be integrated).

- *Step I* – Launching the activity. Workshop with illustrations of cost-effectiveness analysis undertaken in different countries, review existing experience in Danube countries, identify specific elements of the cost-effectiveness analysis to be specifically investigated and for which experts are to be trained (taking account of progress and activities in the EU Common Implementation Strategy). To identify the "public" for which "capacity building" is required, and implication this choice has on possible training activities and material;
- *Step II* – Develop hand-on training sessions – selection of 3 case studies, development and testing of cost-effectiveness analysis (or specific components of this analysis: for example, the overall approach, assessing the economic impact on sectors/users, integrating non-water related environmental costs) in each case study, writing draft reports on the case studies, develop 2 day training for experts (researchers, consultants, experts from governmental organisations) who will undertake cost-effectiveness analysis in the future based on the results of the three case studies, develop 1 day training for experts from government departments responsible for delivering the economic analysis;
- *Step III* – Develop practical guidance using illustrations and results of the hand-on training;
- *Step IV* - Dissemination and communication. Policy reports on the results of the cost-effectiveness analysis in the three sites, shared and discussed during workshop/ bilateral meetings with water management experts and decision makers at different scales (Danube, countries, regions).

Involvement

Researchers and consultants from the different countries, participation from government officials/representatives and Econ ESG members in first workshop and in identification of the "public" for capacity building.

Time frame

- *Step I* – March 2004 to September 2004;
- *Step II* – September 2004 to July 2005;
- *Step III* – August 2005 to December 2005;
- *Step IV* – December 2005.

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Annex I: Detailed cross-country comparison

I.1 ECONOMIC IMPORTANCE OF WATER USES: INFORMATION AVAILABILITY

[NN: NO INFORMATION PROVIDED BY THE NSS; NA: NOT AVAILABLE; = REFERS TO CELLS IN BOLD PRINT ABOVE;]

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic	Croatia	Hungary	Moldova	Romania	Slovak Republic	Slovenia
General Socio-Economic Indicators									
Population (Confidentiality, most recent date of the information, periodicity of update)	**Not confidential, annually;**	**Not confidential, 2002, annually;**	**Not confidential, 2002, annually;**	**Not confidential, 2001, update: all ten years (census);**	**Not confidential, 2001, annually;**	**Not confidential, periodical update;**	**Not confidential, annually, Y missing;**	**Not confidential, 2001, annually;**	**Not confidential, 2002, annually;**
Total population	=	=	=	=	=	Not confidential, 2002, estimated;	=	=	=
Total No. of the population of economic active age	=	=	=	=	=	Not confidential, 2001, annually	=	=	=
No. of Households	=	Not confidential, 2001, annually;	=	=	=	Not confidential, 2001, annually;	=	=	Not confidential, 2002 annually
Distinction between rural and urban population	=	Not confidential, 2001, annually;	=	Only rough estimation possible (based on settlement classification);	=	Not confidential, 2001, annually;	=	=	NN
Population density, Distinction between rural and urban population	=	Not confidential, 2000;	=	Only rough estimation possible (based on settlement classification);	=	Not confidential, 2001, annually;	Not readily available, but basis for calculation available (simple);	=	Not confidential, 2002 annually;
Gross Domestic Product	**Not confidential, annually;**	**Not confidential, 2001, annually;**	**Not confidential, 2002, annually;**	**Not confidential, based on SNA 1993, annually**	**Not confidential, 2001, annually;**	**Not confidential, periodical update;**	**Not confidential, annually;**	**Not confidential, 2001, annually and quarterly;**	**Not confidential, 2002 annually ;**
Overall	=	=	=	=	=	=	= but with 1 year time lag;	=	=

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Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic	Croatia	Hungary	Moldova	Romania	Slovak Republic	Slovenia
Per capita	=	=	=	=	=	=	Not confidential;	=	=
Per employee	NN	=	=	=	=	=	=	=	=
Rate of Economic Growth	**Not confidential, annually;**	**Not confidential, 2001, annually;**	**Not confidential, 2002, annually;**	**Not confidential, annually;**	**Not confidential, 2001, annually;**	**Not confidential, 2002, quarterly, annual**	**Not confidential, annually;**	**Not confidential, 2001, annually and quarterly;**	**Not confidential, 2002 annually;**
Overall	=	=	=	=	=	=	=	=	=
Per sector	=; monthly updates for industry;	=	=	=	=	=	= but with 1 year time lag	=	=
Per branch	NN	=	=	NN	NN	NN	NN	NN	NN
Monthly Net Average Income Per capita	**Not available;**	**Not confidential, 2001, annually;**	**Not confidential, 2002, annually;**	**Not confidential, Monthly update (2 months lag);**	**Not confidential, 2001, annually;**	**Not confidential, 2002, quarterly, annual**	**Not confidential, annually with 1 year time lag;**	**Not confidential, 2001, annually and quarterly;**	**Not confidential; 2002, 2003 monthly;**
Per Household	=	=	=	=	= (per employee)	=	=	=	Estimation only;
Employment & Unemployment	**Not confidential;**	**Not confidential, 2001, annually;**	**Not confidential, 2002, annually;**	**Not confidential, Monthly update (2 months lag);**	**Not confidential, 2001, annually;**	**Not confidential, 2002, annually**	**Not confidential, annually;**	**Not confidential, 2001, annually, quarterly and, monthly for selected sectors;**	**Not confidential, latest available 2001, annually;**
Total number of people employed	=	=	=	=	=	=	=	=	=
Population employed in main economic sectors	=	=	=	=	=	=	=	=	=
Unemployment rate	=	=	=	=	=	= (and quarterly)	=	=	=

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic	Croatia	Hungary	Moldova	Romania	Slovak Republic	Slovenia
Characteristics of Water Services									
Total Water Production	**Available at request;**	**Not confidential, 2001, annually;**	**Not confidential, 2002, annually;**	**Not confidential, annually;**	**Semi-public (water sector), 2002, annually;**	**Not confidential, 2001, quarterly, annually**	**Not confidential, annually;**	**Not confidential, 2001, annually;**	**Not confidential, 2002, annually;**
From surface water	=	=	=	=	=	=	=	=	=
From Groundwater	=	=	=	=	=	Not confidential, not periodically, 1998;	=	=	=
Drinking Water Production	**Available at request;**	**Not confidential, 2001, annually;**	**Not confidential, 2002, annually;**	**Not confidential, annually;**	**Semi-public (water sector), 2002, annually;**	**Not confidential, 2001, quarterly, annually;**	**Not confidential, annually;**	**Not confidential, 2001, annually;**	**Not confidential, 2001, annually;**
From surface water	=	=	=	=	=	=	=	=	=
From Groundwater	=	=	=	=	=	Case study, quarterly, annual 1998	=	=	=
Water Supply	**Available at request;**	**Not confidential, 2001, annually;**	**Not confidential, 2002, annually;**	**Not confidential, annually;**	**Semi-public (water sector), 2002, annually;**	**Not confidential, Quarterly, annually;**	**Not confidential, annually;**	**Not confidential, 2001, annually;**	**Not confidential, 2002, annually;**
No. of water supply companies	=	=	=	=	=	=	Permanent count by the commerce register	=	=
Public water supply	**Available at request;**	**Not confidential, 2001, annually;**	**Not confidential, 2002, annually;**	**Not confidential, annually;**	=	**Not confidential, 2001, quarterly, annually; periodical update;**	**Not confidential, annually;**	**Not confidential, 2001, annually;**	**Not confidential, 2001, annually;**
Population connected to public water supply	=	=	=	=	=	=	Available;	=	Not confidential latest 2002;

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic	Croatia	Hungary	Moldova	Romania	Slovak Republic	Slovenia
Total public water supply	=	=	=		=	=	=	=	Not confidential, 2002, annually;
Surface water	=	=	=	=	NN	=	Available;	=	=
Groundwater	=	=	=	=	NN	=	Available;	=	=
Water supply to Households	=	=	=	=	=	=	=	=	=
Water supply to Industry	=	=	=	=	=	=	=	=	=
Water supply to the agricultural sector	=	=	=	=	=	=	=	=	Not available, officially not collected;
Self-supply	**NN**	**Not confidential, 2001, annually;**	**NN**	**Not confidential, annually;**	**Semi-public (municipality), 2002, annually;**	**Not available, estimation possible**	**Not confidential, annually;**	**Not confidential, 2001, annually;**	Not available, officially, not collected;
Population with self-supply	=	Not confidential, on the basis of estimations;	=	Not available;	=	=	Not available, estimation possible	=	Not available;
Industry with self-supply	=	=	=	=	=	=	=	=	Not confidential, 2002, annually;
Agriculture with self-supply	=	Not confidential, on the basis of estimations;	=	Not available;	=	=	=	=	Not available not collected so far;
Total water supply from self-supply	=	Not confidential, 2001, annually;	=	NN	NN	=	Not available, estimation possible;	=	Not available not collected so far;
Surface water	=	=	=	Not available;	NN	=	=	=	Not available not collected so far;
Groundwater	=	=	=	Not available;	NN	=	Not available, estimation possible;	=	Not available;
Water demand	**Available at request;**	**Not available, Alternative proposed;**	**Not confidential, 2002, annually;**	**NN**	**Semi-public (water sector), 2002, annually;**	**Not available, estimation possible;**	**Not available, estimation possible;**	**Not available; estimation possible;**	**Not available, calculation possible;**
Per capita	=	=	=	=	NA; estim. pos.;	=	Available “	=	=

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic	Croatia	Hungary	Moldova	Romania	Slovak Republic	Slovenia
Per household	=	=	=	=	NA; estimation possible;	=	=	=	=
Water demand per unit of production	NN	=	NN	=	NA; estimation possible;	=	=	=	NN
Leakage rate	**Available at request;**	**Not confidential, 2001, annually;**	**Not confidential, 2002, annually;**	**Not confidential, annually;**	**Semi-public (water sector), 2002, annually;**	**Not confidential, 2001, annually;**	**Not available, estimation possible;**	**Not confidential, 2001, annually;**	**Not confidential, latest available 2001;**
Waste Water Treatment	**Not confidential;**	**Not confidential, 2001, annually;**	**Not confidential, 2002, annually;**	**Not confidential, annually;**	**Semi-public (water sector), 2002, annually;**	**Not confidential, 2001, annually;**	**Annual Inventory;**	**Not confidential, 2001, annually;**	**Estimate available, not confidential;**
Population connected to public sewerage system	=	=	=	= (2000)	=	=	=	=	=
Population connected to WWTP	Not available;	=	=	=	-=	=	=	=	=
Treatment plants	**NN**	**Not confidential, 2001, annually;**	**Not confidential, 2002, annually;**	**Not confidential, annually;**	**Semi-public (water sector), 2002, annually;**	**Not confidential, 2001, annually;**	**Annual Inventory;**	**Not confidential, 2001, annually;**	**Estimate available, not confidential;**
Total No. and capacity	=	=	=	=	=	=	=	=	=
No. and capacity of mechanical treatment plants	=	=	=	=	=	=	=	=	=
No. and capacity of biological treatment plants	=	=	=	=	=	=	=	=	=
No. and capacity of advanced treatment plants	=	=	=	=	=	=	=	=	=
Publicly collected wastewater	**NN**	**Not confidential, 2001, annually;**	**Not confidential, 2002, annually;**	**Not confidential, annually;**	**Semi-public (water sector), 2002, annually;**	**Not confidential, 2001, annual**	**Not confidential, annually;**	**Not confidential, 2001, annually;**	**Not confidential, latest 2001, annually;**
Total per year	=	=	=	=	=	=	=	=	=
Total from Household sector	=	=	=	Data available for 1996 + 1999	=	=	Not confidential, annually;	=	=

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic	Croatia	Hungary	Moldova	Romania	Slovak Republic	Slovenia
Per capita per year	=	=	=	Not available;	=	NN	Not available;	=	=
Per household per year	=	Not confidential, estimation possible;	=	Not available;	=	NN	Not available;	=	=
Total from industrial sector	=	=	=	Data are available for 1996 and 1999;	=	=	Not confidential, annually;	NN	=
Total from agricultural sector	=	=	=	Data are available for 1996 and 1999;	NN	=	Partially available;	=	Not available, not collected;
Irrigation water supply	**Available at request;**	**Not confidential, 2001, annually;**	**Not confidential, 2002, annually;**	**Not available;**	**Semi-public (water sector), 2002, annually;**	**Case study 1998;**	**Not confidential, annually;**	**Not confidential, 2001, seasonal, weakly (for subsidy allocation);**	**Not confidential, 2001, annually;**
No. of irrigation water companies	=	=	=	There are no entities engaged in this activity	=	=	Available;	=	Not available;
Total area irrigated	=	=	=	Not confidential, annually;	=	=	Available, "yearly evidence";	=	=
Main products of irrigated areas	=	=	Not confidential;	=	=	Not confidential, 2001, annually, Case study;	Not available. Estimation possible (poor);	=	Not available;
Farmers connected to public irrigation water supply	=	**Alternative proposed;**	Not confidential;	=	=	**Not available, estimation possible;**	=	=	Not available;
Total irrigation water supply	**Not available; estimation possible;**	=	Not confidential;	**=**	NN	=	=	=	=
Surface water	=	=	Not confidential;	=	NN	=	=	=	=
Groundwater	=	=	Not confidential;	=	NN	=	=	=	=
Farmers with self-supply	available at request;	=	Not confidential;	=	=	=	NN	Not available;	Not available;

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic	Croatia	Hungary	Moldova	Romania	Slovak Republic	Slovenia
Total irrigation with self-supply	=	=	Not confidential;	=	NN	=	?	Not available, estimation possible;	Not available;
Surface water	=	=	Not confidential;	=	NN	=	Available, annually;	Not available, estimation possible;	Not available;
Groundwater	=	=	Not confidential;	=	NN	=	Not available, cannot be estimated;	Not available, estimation possible;	Not available;
Other services	**Available at request / with government approval;**	**Not confidential, 2001, annually;**	**Not confidential, 2001, annually;**	**Available;**	**Semi-public (water sector), 2002, annually;**	**Not available, estimation possible;**	**Not confidential, annually;**	**Not confidential, 2001, annually;**	**NN**
Storage capacity (for multi purpose and specialised)	NN	NN	=	=	=	=	=	=	=
No. of water reservoirs	=	=	=	=	=	=	=	=	Not available;
Volume of water reservoirs	=	=	=	=	=	=	=	=	=
Manageable/retentive volume of water reservoirs	=	= (only for complex dams)	=	=	=	=	=	=	=
Deposit volume of water reservoirs	=	= (only for complex dams)	=	=	=	=	=	=	=
Multipurpose or specialised	NN	= (only for complex dams)	=	NN	=	=	=	NN	=
Characteristic of Water Uses									
Agriculture	**Not confidential, annually;**	**Not confidential, 2001, annually;**	**Not confidential, 2001, annually;**	**Not confidential, 2001, annually;**	**Not confidential, 2001, annually;**	**Not confidential, 2001, annually;**	**Not confidential, annually;**	**Not confidential, 2001, annually;**	**Not confidential, 2001, annually;**
Total arable land	=	=	=	=	=	=	=	=	Not confidential, 2000, annually;
Use pattern	=	=	=	=	=	=	=	=	=
Farm and farming system	Not available,	Not confidential,	Not confidential,	Available, year	=	=	Not available,	Not confidential,	NN

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic	Croatia	Hungary	Moldova	Romania	Slovak Republic	Slovenia
types	estimation possible;	2002, annually;	2001, annually;	and periodicity missing;			estimation possible (poor);	2001, farm structure census;	
Livestock - No. per type	=	=	=	=	=	=	=	= (also monthly);	=
Total gross production	=	=	=	=	=	=	=	=	Not confidential, 2000, annually**;**
Average gross production per hectare	=	Estimation possible;	=	=	=	=	=	=	NN
Income – average income	NN	=	=	=	NN	Not confidential, 2001, quarterly, annually;	=	Not confidential, for each season 2000/2001, annually;	NN
Total use of key inputs	NN	NN, Alternative proposed;	=	=	NN	=	=	Not confidential, for each season 2000/2001 and in 5 year period, annually;	Not confidential, 2000, annually;
Nitrates	Not confidential, annually;	Not available, but Nitrogenous (not confidential, 2001, annually);	=	=	NN	=	=	Not confidential, for each season 2000/2001 and in 5 year period, annually;	Not confidential, 2000, annually;
Phosphates	Not confidential, annually;	Not available, but P_2O_5 (not confidential, 2001, annually)	=	=	NN	=	=	Not confidential, for each season 2000/2001 and in 5 year period, annually;	Not confidential, 2000, annually;
Pesticides	Not available;	Not available;	=	=	NN	=	=	Not confidential, for each season 2000/2001 and in 5 year period, annually;	Not confidential, 2000, annually;
Industry	**Not confidential, annually;**	**Not confidential, 2001, annually;**	**Not confidential, 2001, annually;**	**Not confidential, 2001, annually;**	**Not confidential, 2001, annually;**	**Not confidential, 2002 quarterly, annual, case study;**	**Not confidential, annually,**	**Not confidential, 2001 annually, monthly,**	**Not confidential, 2001, annually;**

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic	Croatia	Hungary	Moldova	Romania	Slovak Republic	Slovenia
Total turnover	=	=	=	=	=	=	=	=	=
Turnover for key sub-sectors	=	=	=	=	=	=	=	**Not confidential, 2001, annually;**	**=**
Services	**Not confidential, annually;**	**Not confidential, 2001, annually;**	**Not confidential, 2001, annually;**	**NN**	**Not confidential, 2001, annually;**	**Not confidential, 2002 quarterly, annual, case study;**	**Not confidential, annually;**	**Not confidential, 2001, annually, monthly,**	**Not confidential, 2001, annually;**
Total turnover	=	=	=	=	=	=	=	=	=
Turnover for key services	=	=	=	=	=	=	=	=	=
Hydropower	**Available at request;**	**Not confidential, 2001, annually;**	**Not confidential, 2001, annually;**	**Not confidential, 2001, annually;**	**Two sources: 1) Not confidential, 2001, annually;** **2) semi-public (water sector), 2001 , annually;**	**Not confidential, 2002 quarterly, annual, case study;**	**Not confidential, annually,**	**Not confidential, 2001, annually, monthly,**	**Not confidential, 2000, annually;**
Installed hydropower capacity	=	=	=	=	=	=	=	=	=
Total Electricity produced	Available;	=	=	=	=	=	=	=	=
As % of national production	=	=	=	=	=	=	=	=	=

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic	Croatia	Hungary	Moldova	Romania	Slovak Republic	Slovenia
Conventional thermal power and nuclear power	**Available at request;**	**Not confidential, 2001, annually;**	**Not confidential, 2001, annually;**	**Not confidential, 2001, annually;**	**Semi-public (water sector), 2002, annually;**	**Not available;**	**Not confidential, annually;**	**Not confidential, 2001, annually, monthly;**	**Not confidential, 2001, annually;**
Installed conventional power capacity/nuclear power capacity	=	=	=	=	=	=	=	=	=
Electricity produced Total	=	=	=	=	=	Not confidential, 2002 quarterly, annual, case study;	=	=	=
As % of national production	Not available, estimation possible;	=	=	=	=	=	=	=	=
Navigation/transport	**NN**	**These indicators are not available, but a range of other indicators related to Navigation and transport; see p. 12/13;**	**Not confidential, 2001, annually;**	**Not confidential, Quarterly;**	**Semi-public (water sector), 2002, annually;**	**Not confidential, 2002 annual;**	**Not confidential, annually;**	**Not confidential, 2001, annually;**	**Not relevant, Slovenias's rivers are not suitable for navigation;**
No. of boats through key points	=	=	=	=	=	=	=	=	NN
Goods transported		=	=	=	=	available		=	

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic	Croatia	Hungary	Moldova	Romania	Slovak Republic	Slovenia
Quantity	=	=	NN	=	=	=	=	=	Not confidential, 2001, annually;
Value	=	=	NN	Not available;	=	=	Not available, estimation possible;	NN	NN
Activity of harbours		=			=				NN
No. of harbours	Not confidential;	=	NN	=	=	NN	Permanently available;	=	NN
Quantity of goods	Available at request;	=	NN	=	=	NN	=	=	Not confidential, 2001, annually;
Quality of goods	Available at request;	=	NN	Not available;	=	NN	=;	=	NN
Gravel extraction	**Available at request;**	**Not confidential, 2001, annually;**	**Not confidential, 2001, annually;**	**Not confidential, annually;**	**Not confidential, 2001, annually;**	not available	**Not confidential, annually;**	**Not confidential, 2001, annually;**	**Not confidential, 2002, annually;**
No. of companies	=	=	NN	=	=	=	=	=	=
No. of sites	=	=	NN	Not available;	=	=	=	=	=
Turnover	=	Not available, estimation possible;	NN	=	=	=	Not available, estimation possible;	=	Not available;
Total volume of gravel extracted per year	=	=	NN	=	=	=	=	=	=
Fish farming	**Available at request;**	**Not available;**	**Not confidential, 2001, annually;**	**Not available;**	**Not confidential, 2001, annually;**	**Estimation possible: premise delivery;**	**Not confidential, annually;**	**Semi-Public, 2001, annually;**	**Not confidential, , annually;**
No. of fish farms	=	Not confidential, 2001, annually;	=	Not confidential, annually;	=	=	=	=	=, latest 2002
Turnover	=	=	=	=	=	=	=	=	Not confidential;

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic	Croatia	Hungary	Moldova	Romania	Slovak Republic	Slovenia
Quantities of fish sold per year	=	=	=	=	=	=	=	Not confidential, 2001, annually;	Not confidential;
Leisure fishing	**Not available, estimation possible;**	**Not available;**	**Not confidential, 2001, annually;**	**Confidential, annually;**	**Semi-public (individual collection of data), 2002, annually;**	**Estimation possible: premise delivery;**		**Confidential and incomplete;**	
No. of persons	=	=	NN	=	=	=	Permanent evidence;	=	NN
No. of persons per day	=	=	NN	=	=	=	Not available, vague estimation possible;	=	Data can be obtained from number of sold fishing allowances;
Boating and wind-surfing	NN	Not available;	Not available;						Data not available in a systematically collected way;
No.of persons per day	NN	Not available;	=	Not confidential; twice a year;	Semi-public (individual collection of data), 2002, annually;	NN	Not available, cannot be approximated;	Not publicly available; no estimation possible;	Data not available;
Tourism	**Not available, estimation possible;**	**NN**	**Not confidential, 2001, annually;**	**Not published (but obtainable from strategic documents);**	**Not confidential, 2001, annually;**	**Not confidential, 2001, quarterly, annually;**	**Not available, no estimation possible;**	**Not confidential, 2001, annually, quarterly;**	**Not confidential, 2001, annually;**
No.of tourists per day	Not confidential;	=	=	Not confidential, Monthly (2 months lag) and annually;	=	=	Not confidential, annually;	=	=
No.of beds	NN	Not confidential, 2002, annually;	NN	NN	NN	Not available;	NN	=	=
Total expenses from tourists	Available at request;	=	NN	=	=	Not available;	=	=	=
Average expenses per day	Available at request;	=	NN	=	=	Not available;	=	Not available; estimation not	=

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic	Croatia	Hungary	Moldova	Romania	Slovak Republic	Slovenia
								possible;	
Total turnover	Available at request;	=	=	=	=	Not confidential, 2001, quarterly, annual	Not available, can be estimated (poor);	=	=
Flood control and drainage	**Available at request and by governmental approval;**	**Not available;**	**Not confidential, 2001, annually;**	**Not published in official statistics; available upon request free of charge;**	**Semi-public (water sector), 2002, annually;**	**NN**	**Not confidential, annually;**	**Not confidential, 2001, annually;**	**Not systematically collected, available as a result of a study, latest 2000;**
Urban drainage and agricultural drainage	=	=	=	=	=	=	=	=	=
Overall length of water courses	Not confidential;	Not confidential, 2000;	=	=	=	=	=	=	Not confidential;
Overall length of conditioned water courses	=	=	=	=	=	=	=	=	Not confidential;
Population protected	=	Not confidential, 2000;	=	Not available, estimation possible;	Not available; estimation possible	=	Not available, estimation possible;	Not available, no estimation possible;	NN
Turnover of protected economic activities	=	=	=	Not available;	Not available; estimation possible;	=	Not available, no estimation possible;	Not available, no estimation possible;	=
Potential loss of properties/economic activities	=	=	=	Not available;	Not available;	=	=	Not available, no estimation possible;	=

Source: Authors‘ own compilation on the basis of the NSS. [NN: no information provided by the NSS; NA: not available; = refers to cells in bold print above;]

I.2 ECONOMIC IMPORTANCE OF WATER USES: QUALITY OF AVAILABLE INDICATORS

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic	Croatia	Hungary	Moldova	Romania	Slovak Republic	Slovenia
General Socio – Economic Indicators									
Population (Confidentiality, most recent date of the information, periodicity of update) *(If aggregation possible)*	2	1	1	1	1	3	1	1	1
Gross Domestic Product	2	1 national 4 district	1	1	1	3 (disputable methodology)	2	1	1
Rate of Economic Growth	2	1 national 3 district	1	1	1	3 (unclear methodology)	2	1	1
Monthly Net Average Income	Not available;	1 national 3 district	1	2	1	3 (shadow income)	3	1	1
Employment & Unemployment	3	1	1	1	1	3	2	1	1
Characteristics of Water Services									
Total Water Production	2	2	1	2	1	2	2	1	1
Drinking Water Production	2	2	1	2	1	2	3-4	1	1
Water Supply	1-2	1	2-3	1	1	2	2	1	3
Public water supply	1-2	1-2	1	2-4	1	2	2-3	1	2
Self-supply	NN	1 (for population and industry); 5 (agriculture and total water supply from self-supply)	2-3	2 for industry with self-supply; other indicators not available;	3	NN	Divers: 2-5	3	Not available (industry with self-supply: 2);

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic	Croatia	Hungary	Moldova	Romania	Slovak Republic	Slovenia
Water demand	NN	NN	1-3	NN	3	NN	4	NN	NN
Leakage rate	3	2	1	2-3	3	3	5	2	2
Waste Water Treatment	2 (partial)	1-2	1	NN	1	2	2-3 (if indicator available)	1	NN
Treatment plants	NN	1	1	NN	1	2	2	1	NN
Publicly collected wastewater	NN	1-3	1	NN	1	2	2	1	NN
Irrigation water supply	3 (partial)	1 (for available data)	1-2	5 for total area irrigated; other indicators not evaluated;	1	3	3-4 (exception: No. of water companies: 1)	1-3	NN
Other services	NN	1	1	NN	1	NN	2	1	NN
Characteristic of Water Uses									
Agriculture	1-3 (partial)	1	1	1-3	1	2	2 (exceptions: total arable land: 1, farm and farming system types: 5)	1	1
Industry	2	1	1	1	1	2	2	1	1
Services	2	1	1	NN	1	3	2	2	1
Hydropower	1	1	1	1	1	2	1	1	1
Conventional thermal power and nuclear power	1 (partial)	1	1	1	1	NN, electricity produced: 2	2	1	1
Navigation/transport	1 (partial)	NN	1-2	1 (where available)	1	3: No. of boats through key-points, NN	1-2	1	1
Gravel extraction	2-3 (partial)	1-2	2-3	1	1	NN	3	1	2
Fish farming	2-3 (partial)	1 (No. of fish farms; other indicators are not available);	2	1 (No. of fish farms, other indicators are not available);	1	NN	Divers: No. of fish farms: 1; turnover: 4; quantity of fish sold: 3;	NN	2
Leisure fishing	NN	Not available;	3	3 (No. of	3	NN	3	Data are not public and are	NN

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic	Croatia	Hungary	Moldova	Romania	Slovak Republic	Slovenia
				persons), NN				fragmented;	
Boating and wind-surfing	NN	Not available;	3-4	¾ of the data do not include private boats;	3	NN	NN	NN	NN
Tourism	2 (partial);	1 (bed-nights); NN	1-2	1 for number of tourists per day;	1	NN	Divers: No. of tourists: 2; expenses and turnover: 4;	2, but: protection of individual data;	1
Flood control and drainage	1-2 (partial);	1 (if indicator available);	1	NN	NN	NN	1 if indicator available; 3 for estimations;	3	2 (if indicator available);

I.3 ECONOMIC IMPORTANCE OF WATER USES: HYDROLOGICAL BOUNDARIES

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic*	Croatia	Hungary	Moldova	Romania	Slovak Republic	Slovenia
General Socio – Economic Indicators									
Population	Possible;	Possible;		Possible;	Possible but Costly;	NN (possible for total population)	Possible;	Possible;	NN
Gross Domestic Product	Possible;	Possible/ difficult;		Difficult: rough estimates based on expert knowledge;	Possible but Costly;	NN	possible; research needed;	Difficult;	NN
Rate of Economic Growth	Possible, but time consuming;	Very difficult;		NN	Possible but Costly;	NN	possible; research needed;	Difficult;	NN
Monthly Net Average Income	NN	Not possible;		Difficult: rough estimates based on expert knowledge;	Possible but Costly;	NN	possible; research needed;	Difficult;	NN
Employment & Unemployment	Possible, quality questionable;	Total No. of people employed: not possible; rest possible;		Possible;	Possible but Costly;	NN	possible; research needed;	Possible;	NN
Characteristics of Water Services									
Total Water Production	Possible;	Possible;		NN	Available;	NN	Possible;	Possible; already available at sub units;	NN
Drinking Water Production	Possible;	Possible;		NN	Available;	NN	Possible;	Possible; already available at sub units;	NN
WATER SUPPLY	No. of water supply companies:	Possible;		No. of water supply companies:	Available;	NN	Possible;	Possible; already available at sub	NN

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic*	Croatia	Hungary	Moldova	Romania	Slovak Republic	Slovenia
	possible, NN			possible, NN				units;	
Public water supply	NN; Public water supply to the industrial sector: possible;	Possible;		NN	Available;	NN	Possible;	Possible;	NN
Self-supply	NN	Possible;		NN	NN	NN	possible; research needed;	Possible;	NN
Water demand	Possible as projections;	NN		NN	NN	NN	possible; research needed;	Possible;	NN
Leakage rate	Possible (difficult);	Possible;		NN	NN	NN	possible; research needed;	Possible (difficult);	NN
Waste Water Treatment	NN	Possible;		NN	Available;	NN	Possible;	Possible; already available at sub units;	NN
Treatment plants	NN	Possible;		NN	Available;	NN	Possible;	Possible;	NN
Publicly collected wastewater	NN	Possible;		NN	Available;	NN	possible; research needed;	Possible;	NN
Irrigation water supply	Possible;	Possible (if indicator available);		NN	Available;	NN	Divers: possible; research needed;	Possible; already available at sub units;	NN
Other services	Possible;	Possible;		NN	Available;	NN	Possible;	Possible; already available at sub units;	NN
Characteristics of Water Uses									
Agriculture	Possible, partly difficult;	Possible (except for total gross production and if indicator available);		Difficult: rough estimates based on expert knowledge;	Possible but Costly;	NN	possible; research needed;	Possible (problematic for average income and gross production);	NN
Industry	Possible, partly difficult;	Possible;		Difficult: rough estimates based on expert knowledge;	Possible but Costly;	NN	possible; research needed;	Difficult;	NN

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic*	Croatia	Hungary	Moldova	Romania	Slovak Republic	Slovenia
Services	Possible (difficult);	Possible;		NN	Possible but Costly;	NN	possible; research needed;	Difficult due to the protection of individual data;	NN
Hydropower	Possible;	Possible;		Possible for installed hydropower capacity; NN	Available;	NN	Possible;	Possible;	NN
Conventional thermal power and nuclear power	Possible;	Possible;		Possible for installed conventional thermal power capacity/ nuclear; NN	Available;	NN	Possible;	Possible;	NN
Navigation/transport	Possible for indicators provided; (rest NN);	NN		NN	Available;	NN	possible; research needed;	Possible; already available at sub units;	NN
Gravel extraction	Possible;	Possible;		NN	Possible but Costly;	NN	Possible;	Possible; already available at sub units;	NN
Fish farming	Possible;	Possible for No. of fish farms;		Possible for No. of fish farms; NN	Possible but Costly;	NN	Possible, research needed;	Possible if data exist for each individual fish source;	NN
Leisure fishing	Possible;	Not available;		NN	Individual collection of data;	NN	Very difficult;	Uncertain;	NN
Boating and wind-surfing	NN	Not available;		NN	Individual collection of data;	NN	NN	NN	NN
Tourism	Possible;	Possible for expenses;		Possible for No. of tourists per day;	Possible but Costly;	NN	Difficult;	Difficult;	NN
Flood control and drainage	Possible;	Possible for overall length of water courses;		NN	Available;	NN	Possible;	Possible (if indicators are available);	NN

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic*	Croatia	Hungary	Moldova	Romania	Slovak Republic	Slovenia
		and of conditioned water courses;						already available at sub units;	

Source: Authors' own compilation on the basis of the NSS; Legend: NA - not available, NN - not filled out, QNE - indicator available but Quality not evaluated;

* For the *Czech Republic* no indicator specific information on hydrological restructuring has been provided; instead, the NSS States that "The majority of economical information are available only by administrative division (national, level, regional level and generally also in district level). Restructured data according to the hydrological boundaries is available at present only for hydrological and special water management data. Restructuring of other data according to the hydrological boundaries is not problematic by using of Graphic Information Systems (GIS). The negotiation about this problem between Ministries of Environment, Ministry of Agriculture and the Czech Statistical Office are running at present."

II. BASELINE SCENARIO: QUALITY OF AVAILABLE PROJECTIONS

Indicator	Bosnia & Herzegovina	Bulgaria * only piecement studies available	Czech Republic	Croatia ** information available in an overall document but not specifically	Hungary	Moldova No table on individual projections;	Romania	Slovak Republic	Slovenia
Exogenous Drivers									
Population Growth	2	1	1	2	1	NN	2	1	1
General economic development	2	2: shorter projection period;	1	2	1	NN	2	1	1
Technological changes	NN	NA	2	NA**	2	NA	uncertain data still under discussion;	1-2	5
Changes in taxes / fiscal regimes	1	2: shorter projection period;	2	NA**	1	4	as above;	draft version;	4
Water Policies and Investments									
Estimated investment			1	2/3		4			
Water supply	3	QNE	NN	2/3	2	3-4	3	1-2	3
New supply	NN	3 (not much developed prognostic part)	NN	2/3	2	NN	3	1-2	NN
New technologies	NN	3 (not much developed prognostic part)	NN	2/3	2	NN	3	1-2	NN
Wastewater treatment	3	1	1	2/3	2	NN	3	1-2	3
Collection systems	NN	1	1	2/3	2	NN	3	1-2	3
Treatment plants	NN	1	1	2/3	2	NN	3	1-2	3

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Indicator	**Bosnia & Herzegovina**	**Bulgaria** * only piecement studies available	**Czech Republic**	**Croatia** ** information available in an overall document but not specifically	**Hungary**	**Moldova** No table on individual projections;	**Romania**	**Slovak Republic**	**Slovenia**
Pollution reduction programmes in agriculture	NN	NA	1	2/3	2	3	3	3	2
Pollution reduction programmes for industries	NN	1	1	2/3	2	NN	3	3	2
Flood protection	NN	NA	1	2/3	2	3	2	3-4	NA
Nature conservation/ wetland restoration	NN	2 (shorter projection period)	1	NA	2	3	2	1-2	NA
River re-naturation	NN	NN	1	NA	3	3	2	1-2	NA
Changes in water pricing policies	NN	NA	1	NA	NA	4	NA	1	NA; under preparation;
Macro-Economic Policies									
Past trends and future projections in:									
Agricultural policy	2	2 (shorter projection period)	NN	3	3	4	3	1	3
Industrial policy	3	(2 shorter projection period)	1	QNE	NA	4	3	3	4
Energy policy	NN	(2 shorter projection period)	2	QNE	NA	4	2	3	2
Transport policy	2-3	(2 shorter projection period)	2	QNE	NA	NA	3	3	2

Indicator	Bosnia & Herzegovina	Bulgaria * only piecement studies available	Czech Republic	Croatia ** information available in an overall document but not specifically	Hungary	Moldova No table on individual projections;	Romania	Slovak Republic	Slovenia
Global Policies									
Accession to the European Union	NN	NN*	1	QNE, not entirely available;		NA			1
Impact on key economic sectors	NN	NN*	NN	QNE, not entirely available;	3	NA	4	1-3 (depending on the sector)	1
CAP	NN	NN*	1-2	QNE, not entirely available;	3	NA	4	1	2
Employment / Unemployment	NN	NN*	1-2	QNE, not entirely available;	3	4	5	1 (labour market)	QNE
WTO / GATS	NN	NN*	NN	QNE, not entirely available;	QNE	NA	4	NN	NA

III. ASSESSING COST RECOVERY: AVAILABILITY AND QUALITY

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic	Croatia	Hungary	Moldava	Romania	Slovak Republic	Slovenia (no written text)
Institutional set-up	Available, not confidential, QNE;	Available, not confidential; Q1;	Available, not confidential;	Available, not confidential, QNE;	Public and semi-confidential, 2003, Q2;	Available, not confidential, QNE;	Available, not confidential, Q1;	Available, not confidential, QNE;	Available, not confidential, QNE;
Current Water Prices									
Price level (agriculture, industry, household)	Available, not confidential; Q1;	Not confidential, 2001, annually; Q1;	Not confidential, 2002, annually; Q1;	Not confidential, 2000, annually, (agriculture not available) Q1;	Semi-confidential, 2003, Q2 industry and Household, Q5 agriculture;	Not confidential, 2001, annually, Q4;	Not confidential, annually, Q1;	Not confidential, annually, 2001, Q1;	Not published, available upon request, (agriculture not available), Q4;
Price structure (agriculture, industry, household)	NN	Not available;	Not confidential, 2002, annually; Q1;	Not confidential, 2000, annually, (agriculture not available) Q2;	Semi-confidential, Q3;	Not confidential, 2001, annually, Q4;	Not confidential, annually, Q1;	Not confidential, annually, 2001, Q1;	Not available;
Cross-subsidisation between the different economic sectors	Not available;	Not available consistently, QNE;	Cross-subsidisation is not allowed	Available (in favour of HH), QNE;	Not available (no aggregated data at any level);	Not available;	Available, Q2;	Not confidential, annually, 2001, QNE;	Not available;
Collection efficiency (i.e. gap / ratio between actual and projected revenues)	Available at request; Q2;	Confidential, 2002, annually, Q1;	Not confidential, 2002, annually; Q1	Not confidential 2000, annually, Q2;	Confidential, Q2;	Available on case study basis only, Q3;	Available, Q2;	Not confidential, annually, 2001, Q1;	Data provided upon request by public service companies, QNE;
Subsidies Government	Available at request; Q4;	Investment subs. Available, not confidential, Q1;	Not confidential, 2002, annually; Q1	Information is not publicly available, QNE;	Semi-confidential, Q2;	Not available;	Not confidential, annually, Q1;	Not confidential, annually, 2001, Q3;	Available for investment subsidies; (does not specify level), QNE;
EU	NN	Investment subs. Available, not confidential,	Not confidential, 2002, annually;	Available upon request, QNE;	=		Not confidential,	Not confidential, annually, 2001,	NN

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic	Croatia	Hungary	Moldava	Romania	Slovak Republic	Slovenia (no written text)
		Q1;	Q1				annually;	Q3;	
Region	NN	Not available (non-existent in Bulgaria);	Not confidential, 2002, annually; Q1	Available upon request; data are not transparent, QNE;	=	Not available;	Not confidential, annually;	Not available;	NN
Costs Financial costs of water services Investment costs (total)	NN	Not confidential, 2001, annually, Q1;	NN	Available, 2000, annually, Q3;	Confidential, Q2;	NN	NN	Not confidential, annually, 2001, Q1;	Available in cases of significant price ↑, QNE;
Historical value	Available at request and with government approval; Q2	Not available;	NN	=	=	NN	Confidential, Q4;	=	NN
Replacement value	=	Not available;	NN	=	=	NN	Confidential, Q3;	=	NN
Future investment cost	Not available;	Not available;	NN	=	=	NN	Not confidential, annually, Q4;	Not confidential, 2000, QNE;	NN
Operation and maintenance & Administration	Available at request and with government approval; Q2;	Not confidential, 2001, annually, Q1;	NN	Available, 2000, annually, Q3;	Confidential, Q2;	Not confidential, 2002, all 3 years; Q4;	Not confidential, annually, Q2;	Not confidential, 2000, QNE;	NN
Environmental and Resource costs	Not available		NN	Not available		Not available			Not available
Internalised through taxes and charges	Publicly available (abstraction & sewerage charges), Q1	Available, QNE;	NN	Available, 2002, Q2;	Semi-confidential, 2002, Q2 (for water abstraction charge);	NN	Not available;	Not confidential, 2000, Q3;	Partly internalised through waste water charges, QNE;
Direct assessment	NN	Not available;	NN		Not available;	NN		Not confidential; no regular update, fragmented information.;	NN

Indicator	Bosnia & Herzegovina	Bulgaria	Czech Republic	Croatia	Hungary	Moldava	Romania	Slovak Republic	Slovenia (no written text)
Changes in environmental quality	Not available;	Not available;	NN	Confidential; project based, QNE;	=	NN	Not available, estimation possible;	=	NN
Economic value / willingness to pay	Not available;	Not available;	NN	Not available;	=	NN	Not available, estimation possible;	NN	Not available;
Costs of preventive & mitigation measures	NN	Not available;	NN	Not available;	Not available;	NN	Annually (from 2001 onwards), Q3;	Not confidential, 2000, QNE;	Not available;