
**Comparative study of pressures and
measures in the major river basin
management plans in the EU**

**Task 4 b: Costs & Benefits of WFD
implementation**

**Guidance note on the
assessment and reporting
of costs and benefits**

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Note to the reader

This guidance note has been prepared by ACTeon in the context of Task 4b of the EU project entitled *Comparative study of pressures and measures in the major river basin management plans in the EU*. It complements the main report prepared under this task 4b that presents the current cost and benefit knowledge available in RBMPs and accompanying reports.

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1 Context

The Water Framework Directive (WFD) is promoting the application of sound economic principles, methods and instruments for supporting the achievement of its objectives (good ecological status) in Europe. However, at the start of adoption of the WFD, few countries had experience in water economics. Despite initial efforts by many Member States and the specific guidance on water economics developed under the CIS process, the economic knowledge in the field of water has been built only progressively and in a very heterogeneous manner throughout Europe.

The more recent River Basin Management Plans (RBMP) reported to the EC illustrate the emerging role of economics for supporting water management, the very partial economic information being reported by EU member states (MS) and the lack of transparency on results, methods and assumptions presented. As a result, building a common economics knowledge base, making direct comparative assessments of costs and benefits in different River Basins or extrapolating available results to an EU wide assessment of the costs and benefits of the WFD remains a difficult and very challenging task!

At the same time, with the increasing competition on water resources and the current economic and financial crisis, there is a strong demand from all stakeholders and in particular from economic operators for more robust economic assessments to justify water management and policy decisions.



2 Assessing WFD costs & benefits in the context of the EU Pressures and Measures project

To respond to these challenges, a specific task (4.b) on costs & benefits has been included in the EU project entitled *Comparative study of pressures and measures in the major river basin management plans in the EU*. The overall objectives of this task are to develop a knowledge base on the economic dimensions of water management (i.e. costs, benefits & financing) that will contribute to:

- Directly, to the overall assessment of the economic impact (costs & benefits) of the WFD (or its first cycle);
- Indirectly, to the economic assessment of policy options considered under the forthcoming EU Water Blue Print.

In addition to these primary objectives, Task 4b will also provide recommendations on:

- How costs and benefits might best be assessed and reported under the WFD (and potentially other EU water-related directives that address economic issues);
- Enhancing the existing water economic knowledge base so it better support water management and EU water policy making in the medium term.

To achieve this objective, the first activity carried out under Task 4b involved the development of a **cost and benefit database**, aimed at providing a complete overview of available information and allowing for the extrapolation of cost or benefit information to those river basin districts in which less or no information on costs or benefits is available. This implied, among other things, that information was collected and organized to allow comparisons among different river basin districts (RBDs).

This review of costs and benefits of the WFD implementation focused on countries for which cost and benefit information was more readily available, namely France (FR), Belgium (BE), the Netherlands (NL), Luxembourg (LU), Latvia (LV), Lithuania (LT), Estonia (EE), Romania (RO), Spain (ES) and the United Kingdom (UK). Other countries such as Germany (DE), Italy (IT), Cyprus (CY), Greece (EL) and Malta (MT) were also investigated, although less information could be found for these countries.



3 Why a guidance note on the assessment and reporting of costs and benefits?

The collection and review of cost and benefit information, besides providing an exhaustive overview of what is currently available for selected countries, helped identifying the main differences in the types of information provided across different countries and across different RBDs. This diversity of information posed some challenges for the comparison of costs and benefits between different river basins, and also for the aggregation of cost and benefit figures at the EU level. In the case of costs, despite challenges encountered, it was still possible to perform comparison, statistical analysis and aggregation of available cost figures. In the case of benefits, the extreme diversity of figures available (and methodologies for obtaining them), as well as the low number of data, imposed severe limits to the possibilities of data analysis, comparison and aggregation.

Such issues and challenges encountered suggest a need for common guidelines for cost and benefit assessment and reporting at the MS and RBD level. Therefore, building on the experience developed while collecting, reviewing and analyzing cost and benefit information in the context of Task 4b, the present guidance note will attempt to provide some recommendations for the assessment and reporting of costs and benefits of WFD implementation, with the purpose of obtaining more homogeneous and comparable information from Member States reporting activities in the context of WFD implementation. This information can then build the sound basis of further policy development.

To give a complete overview, the first section of this note will rapidly review the main issues and challenges encountered so far while dealing with available information¹, whereas the second section of this note will provide some recommendations for future assessment and reporting of both costs and benefits, proposing options involving different levels of effort.

¹ An in-depth discussion on the differences found across MS, as well as issues and challenges for comparison and aggregation of available information can be found in the Final Report of Task 4b.



4 Main issues and challenges encountered

4.1 Cost information

In general, cost information can be found for most of the countries reviewed in the present project. However, the available information differs significantly concerning the level of details provided (e.g. with regards to the geographical scale) and the transparency regarding the elements taken into account during cost calculation (This will be further detailed in the following). In most cases, cost information is given in the RBMPs and accompanying documents, in some other cases it is only provided in WISE.

Differences related to the details and the amount of cost figures provided in the different MS can be analyzed with respect to three important issues, namely: the planning cycles taken into account for the calculation of cost figures; the handling of different types of measure types (basic versus supplementary measures); and, the inclusion of investment and operation and maintenance costs or information thereof, respectively.

The analysis of the first issue shows a relative similar approach in the different MS. Apart from LU, all countries have published cost information for the implementation of the PoM of the first river basin management planning cycle (2010-2015). ES (partly), FR (partly), LU and NL gave in addition cost estimates for the entire WFD implementation period (2010-2027) and/or for reaching good ecological status in all water bodies. For RO and the Guadeloupe RBD in France, information is also provided on the costs of the second and third management cycle.

Concerning the handling of the different measure types (basic vs. supplementary), it was found this question is treated very differently in the different countries. In many of the French RBDs and in Northern Ireland, for example, only cost figures for supplementary measures are calculated. In NL, the situation is similar, with a combination of supplementary and additional measures. In LU, on the other hand, only costs of the two types of basic measures are provided. In all other countries, both cost data is given for basic and supplementary measures, but with different levels of disaggregation.

Other differences exist regarding the type of costs which are taken into account in the cost calculations for different countries, or sometimes different RBDs of the same country. In France, for example, the Seine-Normandy RBD includes only investment costs into its cost calculations, whereas all other RBDs consider both investment and operational and maintenance costs². Differences between RBDs can also be found in the Spanish case³. In general, transparency is often lacking regarding the type of costs taken into account.

Furthermore, the disaggregation of cost information is not homogeneous among MS: several countries provide cost information disaggregated for different categories (sectors, pressures, or

² For the French RBD of the Réunion and the Estonian RBDs, it is unclear whether other costs than investment costs have been taken into account.

³ Only cost information provided in WISE has been considered.



other groups of measures), with the categories used being quite different from one country to another and even within countries.

The differences described above impose significant limits to the possibilities for comparison and aggregation of cost information. In particular, the absence of clear differentiation between basic and supplementary measures (and their related costs) constraints the assessment of the (additional) costs imposed by the WFD requirements. Furthermore, even with countries providing detailed cost information, it has not been possible to confront costs of measures to the relative share of water management issues and problems in given river basins. While this task might appear at first glance relatively straightforward, it was not possible to carry out this task as individual countries (or in some cases RBD) uses different cost categories to disaggregate total costs. Taking into consideration the large differences between cost assessments, comparing costs and explaining cost differences remains difficult. And results from assessments of total costs (or costs per inhabitant) at the EU scale needs to be considered with cautious.

4.2 Benefit information

One of the main issues concerning the available benefit information is the limited number of studies undertaking complete valuation exercise (that is, providing at least a total yearly value of total benefits) at the RBD or national level. Across all selected countries, only 21 studies could be considered complete, providing information for 20 RBDs only⁴. This makes it impossible to carry out any sound statistical data analysis. As a result, it posed significant challenges with respect to the development of a protocol where benefits are transferred to RBDs for which benefit information is not available. Besides, the distribution of available information across Europe is not homogeneously distributed, and information tends to be concentrated in some countries and absent in others.

The main differences in available benefit information relate to:

- Source and context: benefit information is provided in the RBMPs in one case only (UK, with the exception of Scotland). In other countries, benefit information is available in accompanying studies and documents developed either by the RBD authorities or by external research teams;
- Geographic scale: benefit information is provided at different geographic scales. Furthermore, benefits are not always assessed, nor reported, at the scale of river basins/ RBMPs. And different assessment and reporting scales are found within a given country;
- Reference to the EGS framework: the relationship between the assessed benefits and the Ecosystem Goods & services (EGS) framework is rarely made explicit (apart for BE and NL). Thus, comparing values and information obtained from different sources that might encompass different services remains a clear challenge (see below);
- Type of benefits considered: the greatest differences across countries and studies is linked to the types of benefits assessed in the different studies. Using the EGS framework as a

⁴ Two complete studies were both referring to the same RBD, namely the Guadalquivir basin in Spain.



references, ecosystem good and services assessed in individual sites/studies are then aggregated so that different 'bundles' of EGS are valued as a single benefit. This is particularly true when contingent valuation is applied, as it can include different goods and services depending on the questionnaire applied. This implies that it is often impossible to capture the value of individual ecosystem good and services. In general, recreational services are taken into account in most of the available studies, although often bundled with other services;

- Valuation techniques: different valuation techniques are applied in different countries and sites. Contingent valuation has been the most commonly applied method;
- Time horizon: depending on the study, benefits are estimated on a yearly basis or for a longer time period that might not always be well specified.

Due to the issues listed above, and the limited number of benefit studies available, any comparison and aggregation exercise remains challenging and can only deliver rough indications. However, the analysis of available information provide useful hints when on what could be future assessment and reporting that would facilitate further use of the information obtained.

In conclusion, whereas cost information is rather abundant although not adequately structured, available benefit information is very limited and revealed a pressing need for a better guidance on assessment and valuation at the MS and RBD level.



5 Options for a guidance on assessment and reporting of costs and benefits of WFD implementation

5.1 Costs

Different recommendations have been identified to enhance the coherence in the assessment and reporting of the costs of the Water Framework Directive. These include:

- Recommendation 1 – Clearly differentiate between the **types of measures** (basic, supplementary/additional measures) and their costs. This is already foreseen in the current WISE reporting scheme, but is not respected by all MS.
- Recommendation 2 – Assess and report the total costs for the specific **river basin planning cycle**, and whenever possible a) the expected costs of the following cycles and b) the total costs for achieving good ecological status. Ensure that the costs of the efforts made can be easily compared with the expected change in water status that will result from the implementation of proposed measures.
- Recommendation 3 – When preparing the second RBMP, report the total **costs of measures that have effectively taken place** for comparing a) the foreseen costs and actual costs, and thus identify areas where cost estimates need to be refined, and b) the actual costs with the improvements in water status that have effectively taken place.
- Recommendation 4 - More **transparency** is needed regarding the **methods used for calculating costs**. For example, basic rules are required to ensure that the main cost types are considered in assessment, and that reporting clearly specifies the cost types that have effectively been taken into account. When annualized costs are provided, the time duration and the discount rates applied need to be specified. Furthermore, **consistency** between cost figures reported in WISE and in the RBMPs should be ensured.
- Recommendation 5 - The **WISE reporting** sheets could include **specific space for directly integrating cost figures** (instead of integrating them into a text format) disaggregated to a given level. This would: a) facilitates data entry for MS who have carried out disaggregated assessments; and b) translate guidance into a visible format that might pull countries towards progressively assessing and reporting costs with the right disaggregation. The provision of explanatory text in English would clearly help broader use of the information by MS or at the EU level.
- Recommendation 6 – To ensure that further assessments of costs provided for the PoM can be carried out so EU wide policy lessons are drawn, it would be useful that costs of measures are **disaggregated into consistent groups that have clear water and economic relevance**,



e.g. per main economic sector/water use and/or per type of pressures (quantity, quality, morphology...) imposed on aquatic ecosystems. This would help for example assessing the level of effort required from a given economic sector, addressing affordability issues at the global scale and analyzing possible links with other sector policies and with EU financial instruments.

- Recommendation 7 – The WISE reporting template could include (or provide access to) some **basic characteristics and statistics of river basins** (e.g. total number of water bodies, number of water bodies targeted by measures, length of river body stretches, number of inhabitants, farm area, etc.) that could facilitate the understanding of costs (and other information of the PoM) data and possible differences between countries and river basins.

A possible structure for “cost assessment and reporting” is presented below as food for thoughts. The template proposes two options for reporting requirements: an option requiring MS a basic level of effort and a suggestion for additional requirements.



Table 1 Proposed structure for cost assessment and reporting by MS

COUNTRY: _____		RIVER BASIN DISTRICT: _____				
Objective for cost assessment: expected improvement of the ecological status with PoM implementation						
Total No. of surface water bodies						
Total No. of ground water bodies						
No. of surface water bodies in Good Ecological Status (GES) or Good Ecological Potential (GEP) before PoM implementation						
No. of ground water bodies in good ecological status before PoM implementation						
Expected number of surface water bodies reaching GES or GEP after PoM implementation (at the end of the planning cycle)					Basic level of effort required	
Expected number of ground water bodies reaching GES after PoM implementation (at the end of the planning cycle)						
Basic characteristics of the River Basin District						
Total area (km ²)						
Inhabitants (number)						
Main economic activities (key words)						
GDP/capita (€/person)						
ASSESSMENT OF EXPECTED COSTS						
<i>Costs of the current planning cycle</i>						
<i>Costs disaggregated by type of measure</i>						
Type of measure	Investment costs	O & M costs	Other costs		Total costs	
	M€	M€	Specify cost types	M€	M€	
Basic measures linked to other Directives (Art.11(3)(a))					Basic level of effort required	
Basic measures of the WFD (Art.11(3)(b-l))						
Supplementary measures (Art.11(4))						
Additional measures (Art.11(5))						
Total costs of measures						
<i>Cost disaggregated by user group</i>						
User group	Investment costs	O&M costs	Other costs		Total costs	
	M€	M€	Specify cost types	M€	M€	
Household					Additional information which might be requested from MS	
Industry						
Agriculture						
Government						
Other (please specify: _____)						
Total costs						
<i>Cost disaggregated by type of pressure</i>						
Type of pressure	Investment costs	O&M costs	Other costs		Total costs	
	M€	M€	Specify cost types	M€	M€	
Pressures affecting water quantity					Additional information which might be requested from MS	
Pressures affecting water quality						
Pressures affecting geomorphological aspects						
Other (please specify: _____)						
Total costs						
<i>General information on the cost assessment</i>						
Qualitative description of the main methodology applied (including assumptions for cost calculations)						Basic level of effort required
References (reports, web sites, etc.)						
<i>Costs of the past planning cycle</i>						
Type of measure	Investment costs	O & M costs	Other costs		Total costs	
	M€	M€	Specify cost types	M€	M€	
Basic measures linked to other Directives (Art.11(3)(a))					Basic level of effort required	
Basic measures of the WFD (Art.11(3)(b-l))						
Supplementary measures (Art.11(4))						
Additional measures (Art.11(5))						
Total costs						



These preliminary recommendations aimed at improving cost assessment and reporting need to be further developed and discussed with relevant MS economists and water experts. These recommendations should not, however, hide the problem of MS or RBDs which did not yet report any cost information, limiting the cost knowledge base that can be used for further policy analysis and assessment.

5.2 Benefits

Due to the high diversity encountered while reviewing benefit information available in MS, the development of common guidelines and recommendations for benefit assessment and reporting at the MS level appears as a major step. This is the basis however of making available information usable! Guidance could be developed in the context of the Common Implementation strategy, with the application of common guidance being either mandatory or voluntary, a voluntary application in the short term helping to gain and share experience and to assess the usefulness of strengthening consistency. At the same time, a voluntary coherent approach might provide incentives for MS that are not familiar with economic valuation to move progressively in this field and bring additional values and knowledge.

It is important to emphasize that differences in valuation and WFD benefits assessments will always remain, even when similar methodologies are applied. Indeed, shared scientific standards are still under development for some of the valuation methods applied (see for example the application of contingent valuation which results can be influenced by many study-specific factors). And, although common practice in terms of transparency is a must, the application of a common methodology remains questionable, in particular when looking at the use effectively made of valuation studies in the context of RBMPs and local processes.

As shown later in this section, possible options for developing guidance for benefit assessment and reporting might include different levels of detail and, as a consequence, variable level of effort for MS. Nevertheless, some general principles will be required whatever the option considered:

- In the context of the RBMP and WFD implementation process, it is important that **benefits are assessed or estimated** (using sound and transparent aggregation or transfer protocols) **at the RBD scale**;
- **Benefits assessment needs to be linked to the objectives of the RBMP** or, in other words, to the global outcomes (that needs to be well specified in terms of changes in water status expected and number of water bodies targeted) expected from the proposed Program of Measures. As seen in the course of this review, identifying the benefits stemming from single or even groups of measures is extremely difficult, as different types of measures can contribute to the same benefits. Assessing and reporting on the benefits of the PoM as a whole thus reduces difficulties that one might face in using only partial benefit results ;
- Reporting must indicate **the time horizon and the discount rate** applied to estimate total annualized benefits so a) these can be more easily compared and aggregated and b) comparison can be made with total costs.



- At best, benefits should be **reported by combining**: a) some **qualitative** text explaining with key words the benefits expected; b) some **quantitative** figures stressing the magnitude of the benefits (in terms of people positively affected, number of hectares, etc.) and c) **values** provided in monetary terms. Reporting monetary values without qualitative and quantitative information strongly reduces the possibility to use such values be it for comparison or for EU wide assessment.

Table 2 presents a possible summary template that could be used for basic reporting of benefits; Table 3 proposes a more complex reporting format, which takes into account the EGS framework.

Table 2. Proposed structure for basic benefit assessment and reporting by MS

Objective for benefit assessment: expected improvement of the ecological status with PoM implementation						
Total No. of surface water bodies						
Total No. of ground water bodies						
No. of surface water bodies in good ecological status before PoM implementation						
No. of ground water bodies in good ecological status before PoM implementation						
Expected number of surface water bodies reaching GES after PoM implementation (at the end of the planning cycle)						
Expected number of ground water bodies reaching GES after PoM implementation (at the end of the planning cycle)						
Basic characteristics of the River Basin District						
Total area (km ²)						
Inhabitants						
Main economic activities						
GDP/capita (€/person)						
ASSESSMENT OF EXPECTED BENEFITS						
General description of the assessment exercise						
<i>Please add some qualitative text describing the expected benefits (use keywords if possible)</i>						
Basic reporting template						
Time horizon of the assessment (years)						
Selected discount rate						
Benefits (or bundles of benefits) considered	Magnitude of benefits (add when possible)			Valuation technique	Yearly value	Total net present value
	No. of people positively affected	No. of hectares positively affected	No. Of water bodies possibly affected		€/year	M€
1. _____						
2. _____						
3. _____						
4. _____						
5. _____						
<i>(Add more if necessary)</i>						
Total expected benefits						



Table 3 Proposal for a more complex benefit reporting format accounting for the Ecosystem Goods & Services (EGS) S framework

ASSESSMENT OF EXPECTED BENEFITS															
General description of the assessment exercise															
<i>Please add some qualitative text describing the expected benefits (use keywords if possible)</i>															
Advanced reporting template															
Time horizon of the assessment (years)															
Selected discount rate															
Type of EGS	Ecosystem good and services	Is the EGS included in the assessment? (Yes/No)	If not included: motivation	(Possible) Quantitative parameters			Corresponding benefit(s), as taken into account in the assessment	Magnitude of benefits (add when possible)			Valuation technique	Unitary value (if available)		Yearly value €/year	Total net present value M€
				Parameter	Measurement unit	Value		No. of people positively affected	No. of hectares positively affected	No. Of water bodies possibly affected		Unit of measure	Value		
Provisioning services	Food														
	Water														
	Raw materials														
	Genetic resources Medicinal resources														
Regulating services	Climate regulation														
	Moderation of extreme events														
	Regulation of water flows														
	Waste treatment														
	Erosion prevention Maintenance of soil fertility Biological control														
Habitat services	Maintenance of life cycles of migratory species														
	Maintenance of genetic diversity														
Cultural services	Aesthetic information														
	Opportunities for recreation and tourism														
	Inspiration for culture, art and design														
	Spiritual experience Information for cognitive development														
Total expected benefits															



The development of guidance for assessment and reporting questions the choice of the theoretical framework that could be adopted to support and structure guidance. In the academic literature on the assessment of environmental benefits, there is increasing use of the Ecosystem Goods and Services (EG&S) framework that provides the basis for a comprehensive assessment of possible benefits. Most of the valuation studies available today, however, do not refer to the EG&S framework or provide a weak link between economic values and EG&S, the EG&S accounted for in economic values being often imprecisely specified. Furthermore, and unlike specified in the MSFD, the technical assessment required by the WFD do not ask for a (technical) assessment of EG&S that could form the basis for further economic valuation work. Thus, the introduction of the EG&S framework might pose a challenge for most MS or additional efforts at the EU level in the form of technical guidance aimed at supporting MS and RBD managers. Focusing on a few EG&S that are recognized as most commonly delivered by achieving good ecological status might provide a middle-way round (with the issue of agreeing on these few EG&S).

Assessment and reporting guidance could be developed with different levels of detail, in particular:

1. **Benefit assessment and reporting are required to MS, but no specific directions are provided**, leaving MS free to choose the benefit to be considered and develop their own methodology;
2. **Requirements for benefit assessment and reporting clearly identify a specific bundle of benefits to be estimated**; MS are left free to develop their own methodology and choose a valuation technique;
3. **Requirements for benefit assessment and reporting clearly identify a specific bundle of services, a preferred methodology and a valuation technique**, while survey design and data analysis is left to MS;
4. **An actual handbook for benefit assessment and reporting is developed**, guiding MS in all the steps of the valuation exercise including survey design and data analysis.

Table 1 further describes the different options along with their pros- and cons.



Table 4. Proposed options for the development of guidance on benefit assessment and reporting

Option 1	
Description	Benefit assessment and reporting are required to MS, but no specific directions are provided. Under this option, a new assessment and reporting requirement would be included in the context of WFD implementation. Member States, however, would be left free to develop their own methodology, including the selection of benefits to be assessed and valued and the choice of the valuation technique. Transparency would however be required with regards to the “good” (or EG&S) considered in the assessment, the methodology applied, the scale of the assessment and the time elements of benefits (time scale, discount rate) reported.
Level of effort required from MS	Very limited for MS that already report benefits (only clarifying methodological issues) Depending on whether reporting is made compulsory or not, might be high for MS with no experience in assessing benefits
Level of effort required from CIS Working Group	Low: limited guidance on “transparency reporting” should be developed by the CIS Working Group.
Pros	Each Member State and RBD authority would be free to develop an assessment methodology tailored on the specific RBD’s or country’s characteristics. For example, in some RBDs the benefits deriving from higher water security have the highest priority (e.g. ES, EL, IT), whereas in other RBDs some benefits linked to the recreational uses of water bodies are more relevant (e.g. NL, UK). A more systematic “transparency” reporting will facilitate further use (including value transfer) of the information reported by identifying what can or cannot be compared and jointly used. This might progressively give some incentives for MS with limited experience to consider values. On the CIS side, very limited effort would be required.
Cons	As each MS or RBD’s authority is free to develop its own methodology and consider different types of “goods”, very different studies will be produced. Thus, making comparison and aggregation of benefit information across the EU will remain a difficult task. The benefit information base might further develop but it will not be possible to use part of the knowledge reported. The review of existing benefit studies conducted under Task 4b suggests limited familiarity by MS and RBD’s authorities with benefit assessment and valuation. In the absence of more specific guidelines, problems of adequate understanding of what might be done for valuation remains.
Expected acceptance on MS side	As mentioned above, this option will be well accepted in all MS familiar with benefit assessment and valuation techniques. For those with no experience or unwilling to assess benefits, acceptance is expected if leaving blanks in compulsory reporting is possible.
Option 2	
Description	Requirements for benefit assessment and reporting clearly identify a specific bundle of benefits to be estimated; MS are left free to develop their own methodology and choose a valuation technique. In addition, total benefits could also be reported if no disaggregation is made between services in valuation (e.g. for some contingent valuation studies). In addition, to ensure a stronger significance of the assessment and valuation exercises different bundles of services could be identified for different ecoregions, so that the most significant benefits relevant to individual MS are included (e.g. benefits linked to increased water security in water scarce regions, and benefits linked to recreational uses where such uses are the most relevant).
Level of effort required from MS	High: although some directions are provided to MS on the bundle of benefits to be taken into consideration in the assessment, each MS or RBD’s authority should still develop the full methodology that ensures that these benefits are assessed.



Level of effort required from CIS Working Group	Medium: the CIS Working Group should develop guidance on the assessment of total benefits and of specific benefits considered of priority.
Pros	<p>The identification of common bundles of benefits would allow a better comparison, transfer and aggregation of results across MS. At the same time, each MS would be left free to develop the most suitable methodology according to the specific country conditions and the available expertise, and to assess other services/benefits if felt relevant.</p> <p>On the CIS side, short guidance would need to be developed, implying a limited effort (the major part of the effort might be in identifying the “common pool of services” considered relevant to all/most countries).</p>
Cons	<p>The review and analysis of existing benefit studies revealed that the two most important factors influencing the final benefit value are the expected change in water status and the chosen valuation technique. While it could be expected that different changes in water status imply different levels of benefits, the strong influence of the valuation technique on the final results could be controlled or limited by applying the same technique all over the EU. When this is not the case, as it would under this option, the resulting benefit information base might still face comparison and aggregation challenges. Although the same bundle(s) of benefits would be valued in all MS/RBDs, the application of different methodologies and valuation techniques might result in incomparable benefit values.</p> <p>Although MS would receive guidance on the bundle(s) of benefits to be estimated, they would still have to develop their own full methodology: as it was the case in the previous option, many MS seem to have limited familiarity with valuation exercises. And the absence of detailed guidelines might result in non-compliance with assessment and reporting requirements.</p> <p>Because there is no specific requirements for benefit valuation in the WFD, MS are likely to oppose by principle the need to assess and report.</p>
Expected acceptance on MS side	As mentioned above, this option might not be well accepted in those MS not familiar with (or not willing to do) benefit assessment, potentially resulting in non-compliance with such requirement. The country which already undertook a benefit valuation exercise (e.g. UK), however, might oppose the request of carrying out a new study in case the required bundle(s) of benefit does not match with the bundle of benefit valued in the existing study.

Option 3	
Description	Requirements for benefit assessment and reporting clearly identify a specific bundle of services, a preferred methodology (or preferred methodologies adapted to different services) and valuation technique, while survey design and data analysis is left to MS. As mentioned for option 2, different bundles of services could be identified for different ecoregions, so that the most significant benefits for individual MS are included.
Level of effort required from MS	Medium: more detailed directions on methodology and valuation technique would be provided to MS, which would only need to work on the survey design and data analysis.
Level of effort required from CIS Working Group	Medium: the guidance to be developed by the CIS working Group would need some effort.
Pros	<p>The valuation of common bundle(s) of benefits by using the same valuation technique (or techniques) across all MS/RBDs would ensure a high comparability of results that could then be easily aggregated at the EU level or compared. MS would still have some degree of freedom in developing their own survey design and adapt it to the country-specific conditions. Comparable results could be obtained, and at the same time the valuation exercise could take into account some country-specific characteristics.</p> <p>In addition, a more detailed guidance might be appreciated by MS and RBD’s authorities, especially when there is little familiarity with benefit assessment and valuation methodologies.</p> <p>On the CIS side, efforts would be required to establish common valuation guidelines for the services/benefits selected, but such efforts would be limited to some guidelines and lower than the efforts required under option 4.</p>



Cons	<p>The development of different survey designs across MS/RBDs might result in slightly heterogeneous results across the EU; as the same valuation technique(s) would be used, however, it should be possible to handle these differences across MS and still compare, transfer or aggregate results.</p> <p>MS might still have some difficulties in developing the survey design on their own, but the indication of specific valuation technique(s) should limit the challenges to be addressed. Because there is no specific requirements for benefit valuation in the WFD, MS are likely to oppose by principle the need to assess and report.</p>
Expected acceptance on MS side	<p>Expected good acceptance: MS and RBDs authorities would receive clear guidelines to follow, and still keep some degree of freedom concerning how to estimate the benefits in practice.</p> <p>The country which already undertook a benefit valuation exercise (UK), however, might oppose the request of carrying out a new study.</p>

Option 4	
Description	<p>An actual handbook for benefit assessment and reporting is developed by the CIS Working Group, guiding MS in all the steps of the valuation exercise, thus including also survey design and data analysis.</p> <p>Also in this case, different bundles of services could be identified for different ecoregions, so that in each MS the most significant benefits are included.</p>
Level of effort required from MS	<p>Depending on MS willingness to value and use the guidance: although the valuation exercise in itself can still be a time-consuming task, MS should simply apply a step-by-step methodology. For those with no experience in valuation, the expected level of effort might be high.</p>
Level of effort required from CIS Working Group	<p>High: the development of a detailed handbook would imply a high level of effort on the CIS side.</p>
Pros	<p>A step-by-step handbook for benefit assessment and valuation would result in a high comparability of results across MS and RBDs, as all studies would be conducted applying the same valuation technique(s) and using the same types of survey design. Furthermore, the handbook would definitely ease the valuation exercises conducted by MS and RBDs authorities, which should simply follow the described procedures without mobilizing additional expertise.</p>
Cons	<p>The indication of a specific methodology for the assessment, including valuation technique(s), survey design and data analysis, sets a “rigid” procedure to be followed by each MS, which therefore might not always be well-suited for all country-specific characteristics.</p> <p>On the CIS side, the development of a detailed handbook for assessment and valuation obviously require a lot of effort. At the same time, as the handbook will not be linked to compulsory assessment and reporting, this option might not increase the number of valuation studies that can be included in the common knowledge base.</p>
Expected acceptance on MS side	<p>Expected good acceptance: the handbook would provide MS and RBDs authorities with very detailed guidelines, easy to apply.</p> <p>The country which already undertook a benefit valuation exercise (UK), however, might oppose the request of carrying out a new study, even in the case full guidance is provided.</p>

It seems clear that the creation of a detailed handbook for benefit assessment and valuation as suggested in Option 4 would ensure the best final results in terms of comparability and possibility of aggregation of benefit figures at the EU level, while providing MS with a clear and easy to apply methodology at the same time. The development of such detailed guidelines, however, would imply MS’s agreement and a high level of effort at the CIS level. Furthermore, as benefit valuation is not compulsory, it might increase only marginally the number of studies available. Under Option 3, in contrast, more limited efforts are required in the CIS, while MS would still receive detailed directions.



The use of coherent/common valuation techniques would ensure the comparability of the results that could be aggregated at the EU level or more easily used for benefit transfer. Option 1 and 2 would provide too limited guidance on benefit assessment and valuation, although both options imply limited effort.



6 Conclusions

The collection and review of cost and benefit information in European RBDs in selected countries revealed an often great diversity in the type of information provided across different countries and RBDs. In the case of costs, it was still possible to perform comparison, statistical analysis and aggregation of available cost figures despite these challenges, although the resulting cost figures must be taken as a first indication. In the case of benefits, in contrast, available figures proved to be extremely diverse, and only a very limited number of studies could be found: for this reason, severe limits to the possibilities of data analysis, comparison and aggregation were encountered in the course of Task 4b.

Such issues and challenges encountered suggested a need for common guidelines for cost and benefit assessment and reporting at the MS and RBD level. The present guidance note was thus aimed at providing some recommendations for the assessment and reporting for costs and benefits of WFD implementation, and it built on the experience developed in the context of Task 4b.

The recommendations and guidance elements provided in this note are summarized in the following paragraphs.

Recommendations for future reporting of cost information

To enhance the coherence in the assessment and reporting of WFD costs, the following set of recommendations for future reporting was developed:

1. Clearly differentiate between the types of measures (basic, supplementary and additional measures);
2. Reported costs should be referred to the specific river basin planning cycle;
3. When preparing the second RBMP, it is useful to report the total costs of measures that have effectively been implemented;
4. Basic rules for assessment and reporting can be crucial for ensuring the transparency of the cost calculations;
5. The WISE reporting sheet could include specific space for directly integrating cost figures (instead of integrating them in a text format);
6. It would be useful that costs of measures are disaggregated into consistent groups that have clear water and economic relevance (e.g. per main economic sector/water use and/or per type of pressure imposed on aquatic ecosystems);
7. The WISE reporting template could include some basic characteristics and statistics of river basins, to better contextualize cost information.

Following these recommendations, a template for future reporting of cost information was proposed: it includes two options for reporting requirements, one requiring MS a basic level of effort and one proposing additional requirements.



Recommendations for future reporting of benefit information

The issues and challenges encountered while reviewing and attempting to aggregate available benefit information allowed to formulate some basic recommendations for future reporting:

- Benefit should always be assessed at the RBD scale;
- Benefit assessment should always be linked to the objectives of the RBMP;
- The time horizon and discount rates used in valuation exercises must be clearly indicated;
- Benefit should be reported by combining qualitative and quantitative information, as well as monetary values.

Based on these basic requirements, two templates for future benefit assessment and reporting were developed and proposed: a basic template which does not impose any specific definition and disaggregation of benefits; and a more detailed reporting format which takes into account of the Ecosystem Good and Services (EGS) framework. Building on these templates, different options for developing assessment and reporting guidance at the EU level are then described, each option requiring different levels of effort either on the side of the CIS Working Group or on MS' sides. Besides specific recommendations, results obtained in the course of Task 4b highlight a pressing need for providing MS better direction for assessment and reporting, as more complete information on the costs and benefits of WFD implementation could provide a fundamental support to the water policy (*ex-ante* and *ex-post*) evaluation process in general.