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Applying European market leadership to river basin networks and spreading of innovation on water ICT models, tools and data.

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1. Introduction

This draft requirements report (D 3.1) presents the results of the assessment of market requirements of actors in the field of river basin management, which is part of the work package number 3 of WaterInnEU. This analysis will determine the design and selection of functionalities and tools to be taken up by the virtual *Market Place* of WaterInnEU.

The overall assessment is based on a consultation process comprising two phases.

Phase 1 encompasses the identification of user needs from actors involved in river basin management throughout Europe. Information needs, preferences and challenges in selecting and applying existing tools were assessed through an online survey. Preliminary results regarding user requirements and corresponding recommendations for potential functionalities of the marketplace are presented in this draft requirements report.

Based on this assessment, direct consultations (e.g. interviews) of river basin managers working at different levels in different European regions will follow **in phase 2**. A comprehensive consultation will be performed with potential end users[1] in the two transboundary river basins selected as case studies within this project.

Putting together all the results obtained during phases 1 and 2 of this assessment, a final report defining user requirements on offerings and functionalities of the market place will be submitted in month 16 of the project.

The following section 2 elaborates on the methodology of user identification, survey consultation and analysis. An analysis of the survey results follows in section 3. Based on this analysis, recommendations regarding user requirements on offerings and functionalities of the market place are formulated in section 4.

2. Consultation methodology

The consultation methodology described in this section encompassed **phase 1** of the overall consultation process. Phase 1 consisted of three stages **(1)** Identification of potential end users, **(2)** Survey conduction and **(3)** Survey analysis. These stages will be described in more detail in the following paragraphs.

(1) Identification of potential end users

The identification of potential end users to be surveyed, and potentially interviewed in the following phase of the consultation process, has been realised through different approaches. Many contacts have been provided by project partners from different European countries. Additionally, institutions

[1] Within WaterInnEU **end users** are those parties actively involved in the day to day planning and management of river basins: river basin managers at different levels that are potential users of the virtual *Market Place*.

from different European countries that are in charge of the implementation of the Water Framework Directive (WFD) have been identified through the review of River Basin Management Plans (RBMP) available online. A subsequent intensive internet and telephone research contributed to the compilation of a long list of relevant end users from North, Central, South and Eastern Europe. Due to difficulties in accessing contacts at the local level and language barriers of local websites, the focus has been placed on potential end users from national and regional levels.

(2) Survey conduction

WaterInnEU aims at providing a newly designed and validated portfolio of currently underexploited but relevant tools, specifically from previous funded European Union (EU) projects, via an online-platform, available to all interested parties. Therefore, the online survey aimed at identifying current requirements for tools and information platforms related to river basin management for actors involved in implementing the EU Water Framework Directive (WFD). The survey sought to assist in identifying the key priorities and current gaps in supply and capability in relation to tools for river basin management in order to provide recommendations for the virtual *Market Place*.

The questionnaire, which was designed in close cooperation with partners of the consortium, consists of four parts. In the first part, (1) general information was gathered to create a respondent's user profile. The second and third part focus respectively on (2) tools and (3) platforms, assessing the respondent's knowledge about existing tools and platforms, barriers in selecting and using them and further needs with respect to the availability of tools and platforms. The survey concludes with questions regarding user requirements of services (4) that should be provided if a new marketplace for information, products and services in the field of river basin management was available. It was taken into consideration to leave enough space for comments to receive as much qualitative data as possible.

The link to the survey including information material and the letter of support from the European Commission has been sent out to 270 contacts all over Europe.

Additionally, the national and regional coordinating bodies and governmental organizations were asked to forward the link of the survey within their networks.

The Survey-Link has further been sent to 15 other project coordinators of H2020 projects and other FP7 projects in the water cluster.

(3) Analysis of survey results

The survey has been activated on June 11 2015. 219 people provided answers (ranging from one to 19 answers) that are included in the present analysis. Out of those, 49 completed surveys have been submitted. Table 1 gives an overview of statistics on the survey conduction. The survey responses obtained are a representative sample of all European regions. A detailed list of submitted surveys by country and region can be found in Annex 1.

Table 1: Statistics of survey conduction

Statistics on survey conduction (state of 21/09/2015):	
Category	**Number**
Total responses	219
Incomplete responses	137
Survey submitted	49
Contact details provided for further project-related issues	76 (e-mail) / 60 (telephone) / 60 (address)

A qualitative results analysis of the conducted survey has been carried out.

After a first review of the completed survey questionnaires, answers to a specific question were grouped according to content in order to be able to compare the answers given.

Response texts of the questionnaires were read systematically; important information was noted and sorted into different categories according to the ideas represented in the statement.

This inductive method has been complemented in the next step by matching these categories with the guiding questions previously formulated for the development of the survey (see table 2).

Table 2: Guiding Questions

	Guiding Questions	Respective Objectives WP3
1	How is the **state of knowledge** regarding existence and use of tools and projects for the work on River Basin Management Plans within the stakeholder landscape in the European Union?	What are **preferences** and **information needs** of the stakeholders?
2	**Which tools are used** for the work on River Basin Management Plans (direct or indirect)?	
3	Which additional **tools and services are required**?	
4	What are possible **reasons for non-use** of available tools and **failure of dissemination** initiatives?	What are **challenges** in selecting and applying existing tools?
5	What is required to **improve knowledge and use** of tools?	

To summarize, the results of the survey have been analysed according to three main categories: **knowledge, barriers** and **needs**. Based on this analysis and the recommendations already given by potential end users within the survey, feasible concrete functionalities to be incorporated into the virtual *Market Place* can be suggested.

3. Survey results analysis

The results of the survey will be presented and analysed in the following paragraphs.

3.1. User profile

Survey respondents work for different organisations and institutions. Most of them work in Regional governmental organisations; national governmental organisations and river basin organisations (see Figure 1). Only one person completing this question works for the Industry and two persons for an interest group and a consultancy respectively, which might be due to the fact that the survey targeted organisations responsible for RBM, which are mostly public in Europe.

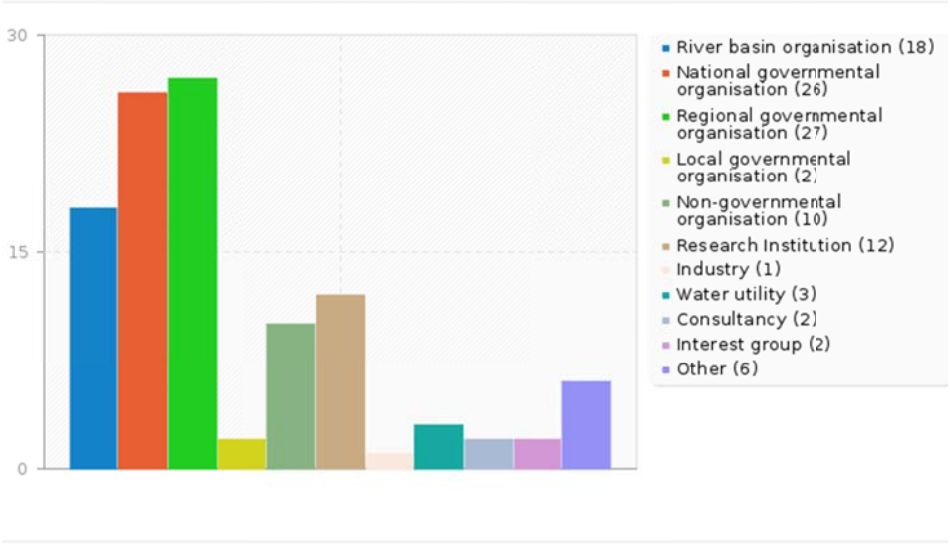

Figure 1: Work field of survey respondents

Survey respondents represent in total 51 European river basins. A detailed list is provided in Annex 2.

Multiple answers were possible, as it has to be taken into account that several survey respondents indicated that they have responsibilities regarding various river basins on the national level and not only within one river basin.

3.2. Tools: knowledge, barriers, needs

Within WaterInnEU, tools are defined as instruments that support the implementation of the WFD, including models and other ICT tools, decision support systems, economic tools, public participation approaches, and other governance tools.

This section describes the knowledge, barriers and needs regarding tools contributing to the design and implementation of river basin management plans.

Key priorities of the survey respondents in using tools for a specific topic vary broadly. Topics that seem to be most relevant for the work of survey respondents are: Pressures and impacts (e.g. climate change), setting environmental objectives (Art. 4 WFD), selecting measures to reach the

objectives, characterization of water bodies, public participation, data processing (e.g. spatial data), and monitoring and reporting (see figure 2).

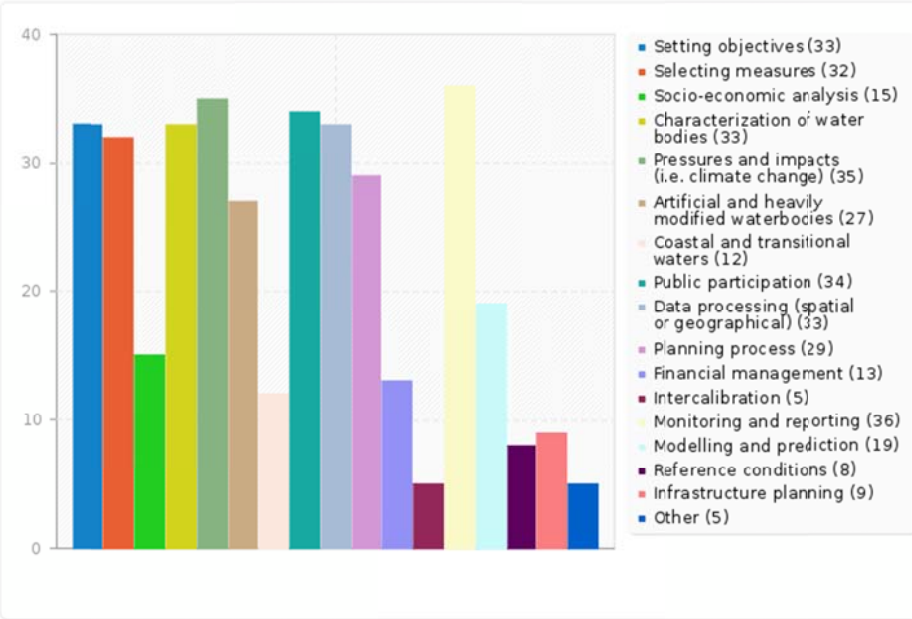

Figure 2: Relevant topics for the work of RBM

Interesting insights can be obtained by comparing the tools that the respondents mention as the most important ones for the work of river basin managers (Section 3.2.1) with the tools that they mention as additionally required (Section 3.2.3). Such a comparison allows identifying tools that have the potential to satisfy current needs of river basin managers, but whose use or prominence is rather low.

The advantages and disadvantages of the most frequently used tools, which have been mentioned in the survey, are described in more detail in the following paragraphs.

3.2.1 Currently used tools (knowledge)

This chapter gives an overview of the currently most used tools supporting the implementation of the WFD based on the survey results.

Common Implementation Strategy (CIS) Guidance Documents

CIS guidance documents are developed as part of the CIS of the European Commission and the Member States, are being used as a basis for the characterization of water bodies, to assess pressures and impacts on water bodies, for the analysis of artificial and heavily modified waterbodies and coastal and transitional waters. Moreover, according to survey respondents, these documents lay the foundation for the development of specific tools.

Models

Models are mentioned as important tools, not only for modelling and prediction, but also for selecting measures and setting objectives. The model “MOdelling Nutrient Emissions in RIver

Systems" (**MONERIS**) has been mentioned the most. Furthermore, the river quality model (e.g. **SIMCAT**) and the source Apportionment-GIS (**SAGIS**) modelling framework support river basin managers in setting objectives, selecting measures, intercalibration, planning processing and data processing. The interface of those modelling tools has been described as being especially user friendly. A negative aspect of many commercial tools is that they are expensive and are also quite time-consuming to learn.

Regional networks and Information systems

Regional networks and Information systems serve as an important source of information. Transboundary commissions, river basin organisations, steering committees, committees for the implementation of measures, catchment partnerships and similar organisations work on internal databases, lists for recommended tools, reference conditions and general reports. Hence, those networks provide useful information, partially tailor-made solutions and therewith support river basin managers with monitoring and prediction, infrastructure planning and setting objectives.

Moreover, published river basin management plans are mentioned to be a useful guideline or source of information for data processing and planning processes.

Economic and socio-economic tools

Various economic tools have been mentioned to be used for the selection of measures and for socio-economic analysis. Those are: the **Cost Effectiveness Analysis** (CEA), **Disproportionate Cost Analysis** (DCA) and **Cost Benefit Analysis** (CBA).

Multi-criteria analysis and **time series analysis** of impacts on water resources are described as useful tools for socio-economic analyses.

Geo-Information System (GIS)

The **GIS** is a tool frequently used for multiple purposes: for selecting measures, monitoring and reporting, to set reference conditions and especially for processing of spatial or geographic data.

Data bases

Online, open source databases are accessed for the purposes of monitoring and reporting, socio-economic analyses, for the characterization of water bodies and data processing. Besides, many organisations reported to develop their **in-house databases.**

Public Participation

Public participation is mentioned to be an important tool for many river basin managers – mainly for planning processes regarding the implementation of the WFD. More concretely, regional conferences and information events serve as a useful tool, as well as online information and publications. Likewise, commercial social network channels seem to gain importance in many regions. **The catchment based approach (CaBA)** is described as a community-led approach to engage people and provides planning information and discussion

tools. **Ketso** is a tool including an online mapping function and 3d visualisations, cartography and innovative visualisations of model outputs.

Microsoft Excel

Excel is mentioned to be used for the documentation of characteristics of water bodies, including artificial and heavily modified waterbodies and pressures and impacts on those.

Informational application

Decision support systems are mentioned as tools that make planning processing, financial management, modelling and prediction more effective and efficient.

3.2.2 Key challenges in selection and application of tools (barriers)

The survey results clearly show some **key challenges in selecting and applying existing tools.**

Limited access to tools

The access to certain tools is **determined by their price** as licenses for some tools are quite costly (e.g. GIS-licenses). According to survey respondents, a **lack of budget for procurement** is prevailing in many organisations and institutions.

While the overall **costs** of certain tools are one important criterion for the selection of tools to be used, other factors are similarly important. Getting access to 'third party' models and data developed by contractors or academia for government is not always possible. **Third party intellectual property rights** generally prevent these from being adopted more widely.

An important challenge for river basin managers is the **lack of free licences for non-commercial** use of certain tools. Respondents agree that **open source data, information and tools** are most attractive to use. Using open source tools allows an easy interchange with other offices and public administrations. Some well-working tools developed e.g. by universities need to be made available but missing funds to support this impedes the promotion of new tools.

Missing guidance for complex tools

In general, the **complexity of certain tools** forms an important obstacle. Additionally, **missing documentation or training material** for complex tools make a quick familiarisation with new tools more difficult. Based on the responses it can be assumed that in many cases the information provided about a tool is neither correct nor complete. This results in quite a lot of uncertainties in the selection and application of tools. The decisive factor in the selection of tools is then the comprehensiveness and reliability of information provided regarding the use of a tool.

Missing decision support on selection of tools

Out of the **huge offer of similar tools**, selecting adequate tools is difficult. Some respondents, on the other hand, see the wide range of options as an advantage for effective

work. The **selection of adequate tools** requires a certain amount of knowledge, experience and time. Models need to be applied at an adequate and relevant scale according to the purpose and type of parameters (e.g. for nutrients the relevant scale is river basin, while for organic substances the relevant scale is water body). The risk of applying overlapping tools for different environmental functions, such as for the WFD and for biodiversity targets within one basin, might lead to additional work for river basin managers.

High work load

Another challenge is the effort needed to keep tools up to date. Data sources and processing tools are very diverse and cover a large spectrum of topics relevant to the RBMP. The effort of keeping them all up to date is large (e.g. tabulation program, spreadsheets, charts, data analysis tools, online databases, own databases for many of the topics listed above).

Narrow field of application

According to respondents, certain tools work well on large scale but do not apply on small catchments, because the results would be less accurate. Examples where the **size of the catchment** matters are models for pressures and impacts, such as the evaluation of diffuse pollution, Pegasus or Moneris.

High input requirements

Another resulting challenge is that many tools require the **input of complex data**, which in many cases is not available. Henceforth, a lack of reliable and complete input data, e.g. monitoring data, data about reference conditions, water types without classification criteria, long time series data for input parameters, prevents the use of certain tools. The use of tools therefore depends on the data availability in the countries.

Missing support for effective public participation

Some respondents criticized the current public participation processes on both international and national levels. Poor governmental support might impede public participation and public consultation processes. Another aspect mentioned, is that public participation processes are too complicated and not user-friendly, which might support the fact that processes do not really reach the broad public but rather a very limited audience.

3.2.3 Additionally required tools (needs)

The survey further focused on requirements and needs of additional tools for river basin management. An overview of additional tools that would facilitate work in river basin management can be seen in figure 3.

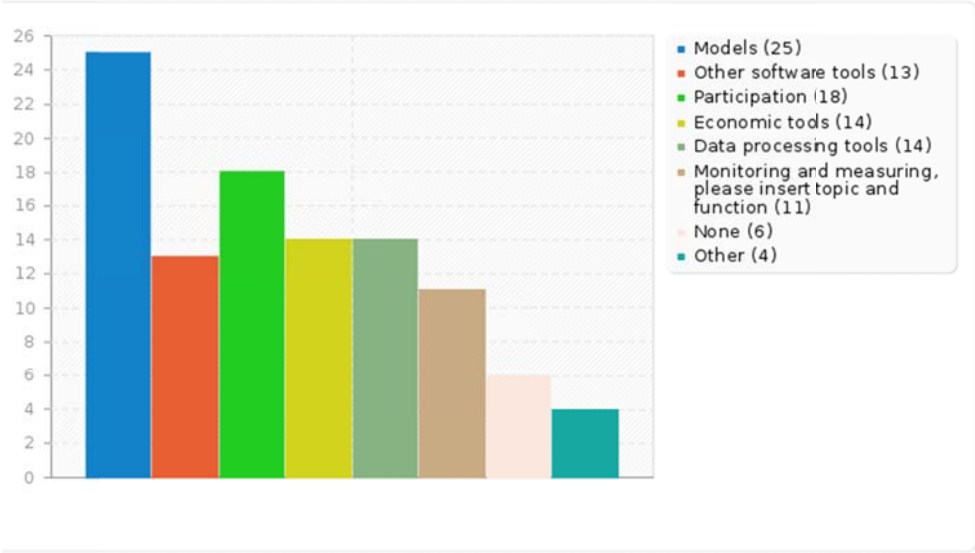

Figure 3: Additional required tools

According to survey respondents, tools, for example related to climate change impacts, pressures and impacts on the ecological and chemical status of groundwater and surface water bodies are required the most. Likewise, the requirement of tools to support an effective **participation process** is high. Especially required are tools for increasing participation and engagement, presenting river basin management plans, planning of awareness-raising events, as well as tools to guide online surveys via social media, like Facebook and twitter.

In addition, **economic tools** are of high demand, such as tools to carry out **Cost-Benefit-Analyses**, tools for valuation and monetisation of effects including willingness-to-pay features.

Also, **data processing tools**, for example for validation of data and for statistical processing of monitoring data are required by respondents. In addition, survey results show that tools which are suitable to track and record the implementation of concrete measures and the delivery of outcomes are especially needed.

3.3. Information platforms: knowledge, barriers, needs

In this context, information platform can be understood as an online platform providing access to various kinds of information which assists river basin managers in completing river basin management plans. This section assesses the knowledge about information platforms in the field of river basin management as well as their use, possible reasons for non-use and needs for other or modified information platforms.

3.3.1. Used platforms (knowledge)

The survey sought to find out which online platforms are used in the field of river basin management to assess and exchange information suitable for the completion of the river basin management plans.

The prominence and usage of ten international platforms has been surveyed, and it was asked for additional platforms and specifically for country and regional specific platforms that are being used. Table 4 illustrates the knowledge and use of thematic relevant selected platforms. The platform WISE-RTD, European Innovation Partnerships (EIP) for water and European Water Community are mostly known, whereas country and regional platforms are used the most by survey respondents, as well as WFD CIRCABC and WISE-RTD. Only one person knowing the EIP for water indicated to use this platform for work.

Table 3: Knowledge and use of selected international platform

Information Platform	I have heard about this platform	I have used this platform
WISE-RTD	21	14
European Innovation Partnerships (EIP) for water	15	1
GWP toolbox	9	6
ICT4water	6	0
AquaKnow	3	0
EU- Open Data Portal	6	3
WFD CIRCABC	3	19
European Water Community	11	3
Community Research and Development Information Service (CORDIS)	9	4
Country and regional specific platforms	4	24
Others	2	3

A comprehensive overview of national, country and regional specific platforms can be found in Annex 2.

3.3.2. Challenges in using specific platforms (barriers)

In order to find out about possible challenges for the use of the selected platforms, five possible reasons have been preselected: relevance, up-to-date information, complexity, available support services and selectable languages. Missing relevance of information for the practical work and

complexity of the content provided seem to be the most important challenges for the use of platforms.

Table 5 provides an overview of reasons for the non-use of the selected platforms.

Table 4: Reasons for the non-use of selected information platforms

Information platform	Not relevant	Incomplete / outdated	Too complex	No support services	Language barriers
WISE-RTD	3	2	3	1	2
European Innovation Partnerships (EIP) for water	3	0	4	3	2
GWP toolbox	4	0	1	1	1
ICT4water	4	1	1	3	1
AquaKnow	6	1	0	1	1
EU- Open Data Portal	3	0	3	3	1
WFD CIRCABC	3	0	1	1	1
European Water Community	3	0	2	1	1
Community Research and Development Information Service (CORDIS)	5	0	0	0	1
Country and regional specific platforms	1	0	1	1	1

Further reasons why certain familiar platforms are not used are that (1) reviewing all platforms would take too much time and (2) there are no experience reports of certain platforms available to ease selection of a suitable platform.

Respondents commented that the information provided on these platforms is too general and often focussing on the EU in general and less on specific countries.

Furthermore, it has been stated that a lot of information provided is not directly related to the work in practice, i.e. more focused on research than on demonstration.

Criticisms within the survey indicate that one major challenge for the end user is the navigation on platforms. The analysis of response texts shows that a lot of platforms are overloaded with information, which makes it difficult to select relevant information. Poor search engines and complicated, non-intuitive menu navigation have been identified as key challenges for end users in using platforms.

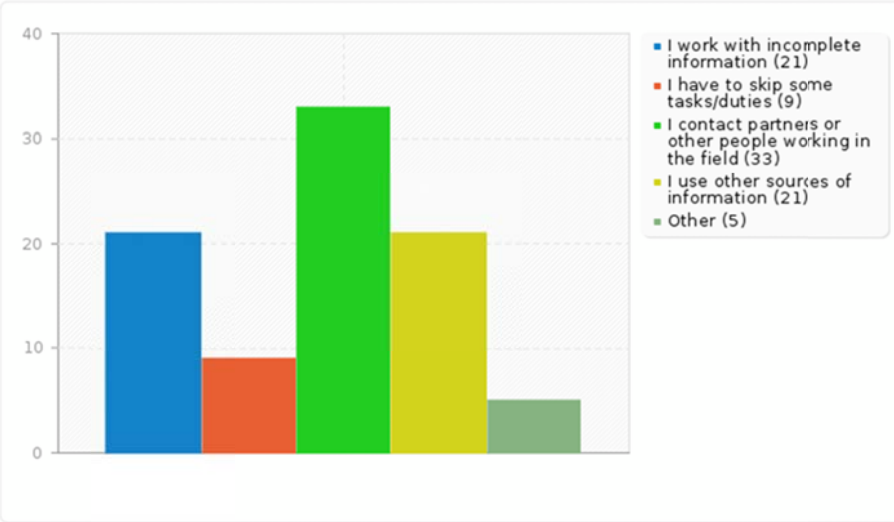

Figure 4: Compensation for insufficient and incomplete tools and information

Another challenge for river basin managers consists in compensating for insufficient or incomplete tools and information currently provided on platforms. The survey aimed at identifying alternative sources of information of end users in order to gain a better understanding of their working procedures (see figure 4). Most of the survey respondents stated to retrieve information from partners or other people working in the field. This means informal networks play an important role within the process of river basin management. Other sources of information indicated within the survey are national, regional and special field data. Numerous respondents indicated to work with incomplete information.

3.3.3. Additional required information and services for the selection and application of tools (needs)

The survey further aimed at identifying contents missing on platforms which would ease the selection and application of tools for river basin management.

Based on the analysis of responses, the biggest gap identified is the need for region- and basin-specific information, which currently does not seem to satisfy river basin managers.

Another widely missing option is to be able to contact experts, consultants or service providers directly. This means that the provision of contact information to relevant actors is a service required by many respondents.

Selection of tools

A well elaborated list of tools recommended by the European Commission (EC), in direct link with EU prerogatives, results to be an important requirement. Many end users indicate that specific recommendations coming from that side would facilitate the selection of tools and make processes more efficient.

In terms of additional assistance and support services which are required in order to select tools for river basin management, **case studies** of successful deployment of tools for RBM and **information on compatibility with legacy system** are the most required services. This is followed by the need for information regarding evidence of **compliance with certain standards** and **interoperable connection to other systems**.

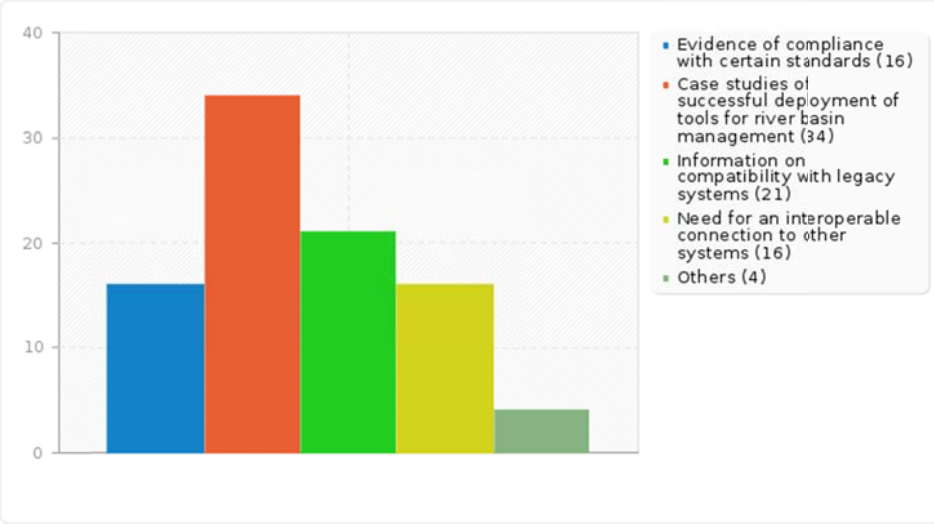

Figure 5: Information requirements for selection of tools for RBM

Figure 5 gives an overview of information requirements for the selection of tools for RBM.
Various information sources supporting the selection of tools have been preselected for the survey. Professional and personal networks were named as the most important source for information retrieval. Furthermore, professional journals and papers were indicated as important sources of information. Only a few people gain their information at exhibitions and fairs.

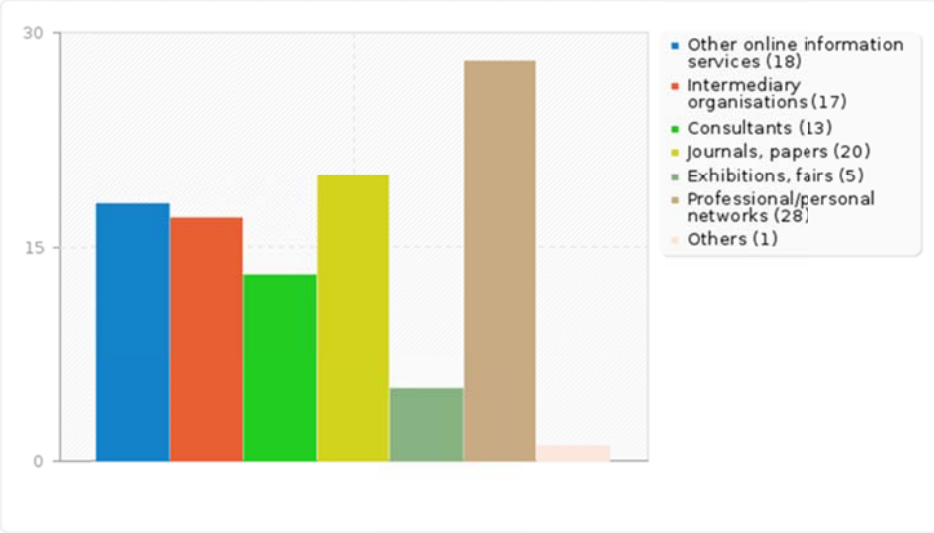

Figure 6: Information sources for support of tool selection

Figure 6 presents an overview of current information sources for the support of tool selection.

Application of tools

The survey results show that more instructions regarding the application of tools are required on information platforms. This, together with **training materials or tutorials** available on platforms, would ease the application of tools. The survey reveals that **catalogues of good practices** are a good source for specific information and ease the selection of tools. Further, direct contact to and support from developers and modellers can be formulated as a need of potential end users. Missing information on compatibility of certain tools with legacy systems also seems to complicate the application of tools. Another need which has been identified is the indication of possibilities to combine different tools in support of an integrated perspective (e.g. integrated model for linkage between surface waters and groundwater).

4. Recommendations

Based on the analysis of additionally required information and services for the selection and application of tools, possible functionalities to be adopted and information gaps to be filled by the virtual *Market Place* were identified.

Besides asking survey respondents about their knowledge, barriers and needs with respect to tools and platforms, they were also given the chance to formulate their own recommendations regarding offerings and functionalities, design and structure as well as quality and quantity of information that should be provided by a good information platform.

A key challenge which needs to be taken into account is the often abstract management framework set by governmental organisations. Correspondingly, the selection of tools should be **application-oriented,** which means mainly “handy tools for daily work”, with a focus on the practical work of river basin managers, should be included. This way, the strategic process of river basin management can be brought in line with the needs of every day environmental management on the local level. Still, the platform should have a focus on the integration of preferably **open source tools**, **affordable tools** or tools with **free licences** for non-commercial use. Tools to be found on the virtual *Market Place* should be diverse - duplication should be avoided. Likewise, tools should be suitable for different kinds and different sizes of river basins, reflecting diverse environmental conditions.

A careful analysis of user recommendations, together with the needs assessment, results in the suggestion of potential functionalities for the virtual *Market Place* in the subsequent sections.

Product Specification Sheet (PSS)

Besides including a short description of each tool, another function of the virtual *Market Place* could be the provision of a **Product Specification Sheet (PSS)** for each tool. Such a PSS could

specify the basic conditions that would help end users in the selection and application of tools. Based on needs formulated by potential end users in this respect, the following list suggests categories to be integrated in the PSS:

- Category of the tool (e.g. models, other software tools, participation tools, economic tools, data processing tools, monitoring and measuring tools);
- Use and purpose of the tool;
- Short description of user-profile to define target audience, including accessibility requirements;
- Indication of open source or private software;
- Relevance of tools with regard to the WFD;
- Cost estimate for using the tool;
- Type of input data requirements;
- Interoperability requirements/possibilities;
- Relevant scale of application (e.g. potential applicability of models for catchments of different sizes);
- Potential to combine different tools in support of integrated perspective (e.g. integrated model for linkage between surface waters and groundwater, climate models);
- Indication on where to find case studies and best practices of successful application of tools for RBM/experience reports (e.g. through links);
- Information on compatibility with legacy systems;
- Indication of existing training manuals or tutorials for the tool;
- Download material (worksheets etc. to be provided by the supplier of the tool);
- Contact details to product and/or service providers, other river basin managers and consultants related to the specific tool.

An additional suggestion is the integration of a **commenting function for users** linked to the PSS. This function would allow the end user to rate the tool, to share experiences and provide **lessons learned** to others.

It seems obvious that not all categories of that list can be filled out instantly and previously to the uptake of a tool to the virtual *Market Place*. The PSS will rather be completed during the development and further implementation of tools with the availability of more and more progress reports. Where possible, the product and service providers should assist in completing the PSS. It needs to be considered that the selection of tools seems to be mostly depended on the interoperability of a certain tool with the respective national reporting systems. The PSS makes important features of the tools visible at one sight and could therefore ease decision-making in selecting new tools in support of the preparation of the river basin management plans.

Support of tool selection

According to many survey respondents, the provision of a **priority list of tools recommended by the European Commission (EC)** would be the ideal solution to ease the selection of relevant tools and is strongly recommended. WaterInnEU could provide a **sortable inventory of tools** according to the different categories of the PSS (i.e. type of tool, field of use, open source or private) could be an approach to fulfil the need for a priority list of tools.

Besides linking available case studies for the application of tools in the PSS, a separate functionality of the platform could be the provision of **comprehensive Case Studies** representing the different European regions. Within these Case Studies - ideally provided by experienced river basin managers - the combination of different tools could be exemplified.

Support of tool application

Further Information e.g. regarding tools and the WFD in general should be provided in the form of **links to selected websites, tools, downloads of information or data** etcetera. A short description of the linked websites needs to be elaborated accordingly. Especially **region-specific and basin-specific information, metadata** and **information on methodologies** allowing direct implementation and use of data appear to be important for potential end users according to the survey responses. Links should be selected together with experts working in river basin management in order to keep the list relevant and comprehensive, but short in order not to overload the platform with information.

Next to the E-learning function which will be part of the virtual *Market Place* with the intention of supporting its use, the provision of **(online) trainings to support the application of tools** appears to be of paramount importance to potential end users. This could have the form of online tutorials including interactive videos, and download material, such as worksheets for the tools. Further-reaching assistance like funded trials, trainings and active modeller support could be an offer by external service providers or consultants to be promoted by the virtual *Market Place*. **Training and brokerage events** for the presentation and explanation of innovative tools, where the supply chain meets decision makers and river basin managers, are another good possibility to support and ease the selection and application of tools.

Sources of information for the end user

Information about offers and events could be promoted by WaterInnEU through integrating an **events calendar** to the virtual *Market Place*. Similarly, end users should have the option to sign up for a regular **newsfeed**. This would inform end users about the above mentioned trainings and events as well as about news regarding the WFD and innovation of tools.

An advanced **search function including a keyword search,** browsing through the different categories of the PSS and other contents, is another central functionality for a quick and easy information search. The search-engine should allow end users to search in different languages and receive results in the selected language (if existing) and in English. Additionally, the integration of a quick translation function, e.g. of keywords, could be considered.

Interaction between users and with experts

The overall service function of the virtual *Market Place* is to offer an **entry point for supply and demand** side regarding tools for river basin management. The possibility to **consult experts** through the platform is a functionality often requested by the survey respondents. The interaction between expert and end user could be promoted directly in the form of a **forum for information exchange** or indirectly with a function including **frequently asked questions (FAQ).** Forums can be designed according to the active end users; sub-forums according to different topics as well as national-sub-forums and in different languages could be created. The function FAQ needs to be developed together with end users/experts and should be adapted continuously.

Moreover, an **"Ask the expert"-functionality** could create an added value for the platform. Questions posed in this functionality could either be forwarded to a corresponding expert or alternatively a separate forum could be designed, where only experts have the permission to provide answers.

Possibilities to effectively link **platforms of social networks** to the virtual *Market Place* should be explored in the further project development.

Design and user interface

Simple and intuitive **menu navigation** is demanded by many survey respondents. An advantage would be the option to select different languages of the user interface. This could enhance the use of the virtual *Market Place*. Altogether, the need for a **simple and focussed** rather than overly comprehensive platform becomes clear from the analysis of the survey results.

5. Perspective

The consultation process for the assessment of market requirements of actors working in the field of river basin management will continue in **Phase 2** with the conduction of structured interviews with selected potential end users representing a good cross section of European river basins.

The formulation of questions to be discussed during interviews will be realised in a next step.

So far, the analysis concentrated on river basin managers and actors involved in the completion of river basin management plans. Actors working in industry, water utilities and consultancies have not been considered especially for now. The survey results however show that consultancies could

possibly be a good target group for interviews, because they influence the selection of tools significantly.

Overall, many survey respondents stress the fact that the trend-setting innovation of the virtual *Market Place* should consist in simplicity and flexibility, showing that there is a demand for a simple and new platform. It seems essential to adopt the user's perspective with the intention of understanding real demands when developing the functionalities of the virtual *Market Place*.

Synergies with end users of supply chain, other platforms and further H2020 projects, such as FREEWAT, should be considered at all steps of the effective development of the virtual *Market Place*.

Annex 1: Overview of submitted survey by region

Submitted Surveys by Country and Region		
Answer		**Count**
Northern Europe (NE)		
	Denmark	1
	Estonia	1
	Finland	1
	Latvia	-
	Lithuania	-
	Norway	2
	Sweden	-
		Total NE: 5
Eastern Europe (EE)		
	Bulgaria	3
	Croatia	-
	Cyprus	-
	Czech Republic	1
	Hungary	-
	Poland	-
	Slovakia	3
	Slovenia	1
		Total EE: 8
Central Europe (CE)		
	Austria	-
	Belgium	3
	Germany	12
	Luxembourg	-
	Ireland	2
	Malta	-
	Netherlands	-
	United Kingdom	9
		Total CE: 26
Southern Europe (SE)		
	France	1
	Greece	-
	Italy	3
	Portugal	-
	Romania	4
	Spain	1
		Total SE: 9
		Total all: 48

Annex 2: River basin and countries of end users

River Basin	Countries of RB within EU
Adriatic Sea basin	HR
Anglian RBD	UK
Northern Appenines	IT
Danube (Sub-basins mentioned by respondents: Tisza River Basin, Black Sea, Dráva, Sava, Danube Delta)	AT, BA, BG, HR, CZ, DE, HU, RO, SK, SI
Daugava	LV
Dee RBD	UK
East Aegean River Basin (incl. Maritsa River Basin)	BG
East-Estonia RB	EE
Eastern	IRL
Eider	DE
Elbe	DE, CZ
Ems	DE, NL
Humber RBD	UK
Koiva RB	EE
Lielupe	LV, LT
Cantábrico Occidental	ES
Main	DE
Meuse	BE, DE, FR, LU, NL
Miño-Sil	ES
Neagh Bann	UK, IE
Nemunas	LT
North Eastern	UK
North Western	IE
North Western	UK
Northumbria RBD	UK
Oder	CZ, DE, PL
Po	IT
Rhine (Sub-basins mentioned by respondents: Mosel, Saar, Neckar, Main)	DE, FR, NL, AT, IT, BE
Scotland RBD	UK
Schelde	BE, FR, NL
Schlei/Trave	DE
Seine-Normandie	FR
Severn	UK
Shannon International RBD	UK
Solway Tweed RBD	SCO
South East	UK
South Eastern RBD	IR
Shannon	IE
South Western RBD	IE
Thames RBD	UK
RBD 3: Bornholm	DK
Vah	SK
Venice Lagoon	IT
Venta	LV, LT
Vistula	PL, SK
Warnow/Peene	DE
Weser	DE
West Aegean River Basin	BG
West-Estonia	EE
Western RBD	IE
Western Wales	UK

Annex 3: Overview of national, country and regional specific platforms

International Platforms	Country/ Region	Link	Comment
WISE-RTD	EU	http://www.wise-rtd.info	Water Knowledge Portal - Currently not accessible
European Innovation Partnerships (EIP) for water	EU	http://www.eip-water.eu/	Initiative within the EU 2020 Innovation Union. Aims: speed innovations; bringing together public and private actors at EU, national and regional level, combining supply- and demand-side measures.
GWP toolbox	INT	http://www.gwp.org/en/ToolBox/	The IWRM ToolBox comprises of an organized collection of case studies, reference documents, reader lists, external web sites and other supporting materials in water resources management, which have been submitted by various contributors and are peer reviewed.
ICT4water	EU	http://ict4water.eu/	Website is a hub for several EU funded sister projects on ICT and Water Management.
AquaKnow	EU	http://www.aquaknow.net/	AquaKnow is a European Commission initiative managed by the Joint Research Centre of Ispra, Varese, Italy. It is a collaborative workspace and content management system dedicated to technical and scientific knowledge for the sustainable development of the water sector.
EU- Open Data Portal	EU	https://open-data.europa.eu/en/data/	Open Data Hub of the European Union
WFD CIRCABC	EU	https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp	Information Exchange Platform of the EC
European Water Community	EU	http://wsstp.eu/	**WssTP is the European Technology Platform for Water**. Initiated by the European Commission in 2004, WssTP strives to promote coordination and collaboration of Research and Innovation in the European water sector, improving same time its competitiveness. **WssTP consists of 145 members** and a network of more than 700 individuals from Industry, research, technology providers, policy makers and water users.
Community Research and Development Information Service (CORDIS)	EU	http://cordis.europa.eu/	CORDIS is the European Commission's primary public repository and portal to disseminate information on all EU-funded research projects and their results in the broadest sense.
International Commission for the Protection of the Danube River	Danube Riparian Staates	http://www.icpdr.org	The International Commission for the Protection of the Danube River (ICPDR) is an International Organization consisting of 14 cooperating states and

			the European Union.
Danube Transnational Monitoring System	Danube Riparian States	http://www.icpdr.org/main/activities-projects/tnmn-transnational-monitoring-network	TOOL: The TransNational Monitoring Network is an important tool under the DRPC, who's Contracting Parties are committed to co-operate in the field of monitoring and assessment. Formally launched in 1996, it aims to provide a well-balanced overall view of pollution and long-term trends in water quality and pollution loads in the major rivers in the Danube River Basin.
EEA platform	EU	http://www.eea.europa.eu/themes/water	European Environment Agency (EEA) is an agency of the EU. Task: provide sound, independent information on the environment; major information source for those involved in developing, adopting, implementing and evaluating environmental policy, and also the general public. Currently, the EEA has 33 member countries.
WWF WaterRisk Filter	Global	http://waterriskfilter.panda.org/	TOOL: This tool helps companies and investors ask the right questions about water. It allows you to assess risks and offers guidance on what to do in response.
Platform	**Country**		**Comment**
Danish Nature Agency	DK	http://naturstyrelsen.dk/	Ministry of Environment and Food
Danish AgriFish Agency	DK	http://naturerhverv.dk/	Under die Ministry of Environment and Food; The staff of the Danish AgriFish Agency strives countrywide to create the optimal conditions for sustainable growth and green transformation in the fields of: • Agriculture • Fisheries and aquaculture • Plants and horticulture Aim: secure an efficient and professional administration and reap the most benefits from working across our respective areas.
Vannmiljø	NO		Wep-map application for monitoring data
Vann-Nett	NO		Web-map application for management of water bodies
The Société Publique de Gestion de l'Eau (SPGE, Public Water Management Company)	FR	http://www.spge.be/de/plans-d-assainissement-pash.html?IDC=2017	Public limited company set up by the Walloon Region in 1999. Its main mission is to take care of the coordination and the financing of the water sector in Wallonia. Together with the other water collaborators, it primarily deals with wastewater sanitation and catchment protection.
Italian WISE Node SINTAI (ISPRA)	IT	http://www.sintai.sinanet.apat.it/	
Wasserblick	DE	www.wasserblick.net	Seperate portals according to region/"bundesland"
Catchment Based	UK	www.catchmentbase	The Catchment Based Approach

Approach (CaBa)		dapproach.org	(CaBA) embeds collaborative working at a river catchment scale to deliver cross cutting improvements to England's water environments.
geodatastore	UK	http://www.geodata.soton.ac.uk/geodata/about/	Research, Communication and Management for a Sustainable Environment and Society
data.gov (Opening Up Government)	UK	https://data.gov.uk/	Open government data helps governments be more transparent, supports business, academics and the third sector. Data.gov.uk provides a search engine to offer several ways of finding the data you want. You can view all the datasets to see everything that is currently available, or search by keyword, category, themes, file format or department/agency. Each dataset provides guidance on accessing its data.
Regional Energy Agency	DE	http://www.energieagentur.nrw.de/wasserkraft/themen/gesetze-und-richtlinien-5767.asp	Information regard WFD currently not accessible
Evidence sharing platform	UK	http://wrt.org.uk/project/caba-evidence-sharing-platform/	The CaBA Evidence Sharing platform is a trial of two platforms designed to facilitate information sharing within the Environment Agency and between EA and CaBA partnerships. Outputs will include development of protocols, recommendations and guidance for facilitating community groups to more effectively input to River Basin Management Planning and sharing of near real-time field work and monitoring plans to enable better coordination between CaBA partners.
Catchment Data Explorer	UK	http://environment.data.gov.uk/catchment-planning/	Website of UK Environment Agency
EnviroInfo	DE	http://www.enviroinfo.eu/	Website only in German.
The Working Group on water issues (LAWA)	DE	http://www.lawa.de/index.php?a=2	The LAWA is the German Working Group on water issues of the Federal States and the Federal Government represented by the Federal Environment Ministry. Aims: discuss questions arising in the areas of water management and water legislation, to formulate solutions and to put forward recommendations for their implementation.
National planning guides	FI	www.ymparisto.fi/vesienhoito/opas	Joint website of Finnland's environmental administration
National governmental websites	Throughout EU		Example: Platform of Ministry of Environment and Spatial Planning (SL); http://www.mop.gov.si/en/
Regional governmental websites	Throughout EU		

Websites of Municipalities	Throughout EU		

Acronyms

EC	European Commission
EU	European Union
CIS	Common Implementation Strategy
PSS	Product Specification Sheet
RBM	River Basin Management
RBMP	River Basin Management Plan
WFD	Water Framework Directive