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Specific Measures in Support of International Cooperation (INCO)- Mediterranean Partner Countries (MPC)

INECO

Institutional and Economic Instruments for Sustainable Water Management in the Mediterranean Region

Coordination Action

DELIVERABLE NO 14

INECO TOOLBOX MANUAL

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Author(s)	A. Panagiotakis (NTUA) M. Mouzourakis (NTUA)		
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RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Preface

Deliverable 14 is the manual of the INECO toolbox, a web-based application developed by the INECO Coordination Action project (Contract No: INCO-CT-2006-517673).

The INECO Web Toolbox, available at: http://environ.chemeng.ntua.gr/toolbox, was developed within the framework of WP 10 of the Project, which had the objective of deploying a web-based environment to constitute a *"comprehensive source of knowledge, experience and guidance to contribute to sustainable water resources management in the Mediterranean Region."*

To respond to this objective, the INECO web toolbox incorporates:

- A web-based easy-to-use knowledge base on the application of policy instruments for water management. The knowledge base incorporates information gathered throughout the course of the project on economic instruments and best practice examples from their implementation to cope with water management issues of relevance to the Mediterranean context. It further includes descriptions on institutional frameworks from different countries and the analysis of governance structures undertaken in the first stages of INECO, for Cyprus, Syria, Tunisia, Lebanon, Algeria, Morocco and Egypt.
- Web-based tools to support participatory processes for addressing specific water management issues, implementing the overall methodological approach that framed the INECO Case Studies. These tools can be further used to develop similar analyses in different socio-economic and environmental conditions with the remote participation of stakeholder groups.

The toolbox was based on an evolving framework, according to feedback received; it has the capability of dynamic adjustment, to incorporate information on water management issues, with a minimum control over inputs received, and is expected to be further enhanced after the completion of INECO, in support of water-related research work and stakeholder engagement processes.

This Deliverable was compiled by the NTUA, the partner responsible for the Toolbox development, and has the form of a user manual to the Toolbox's web-based environment. The first section provides an introduction to the web-based functionalities of the toolbox, whereas the subsequent three chapters constitute the user guide to the Toolbox.

Contents

1. Introduction

1.1 Background – The objectives of the INECO Web Toolbox

The INECO Web Toolbox, whose manual is presented in this document, is one of the main outputs of the INECO EC-funded Coordination Action Project. INECO was launched in July 2006; it was a policy-oriented project, which, through the title "Institutional and Economic Instruments for Sustainable Water Management in the Mediterranean Region", aimed, among others, to develop recommendations for the application of (new) policy instruments towards more equitable and efficient water management. INECO adopted a problem-driven approach, to develop a "social experiment" in policy framing through the elaboration of seven (7) Case Studies on different water management issues experienced in countries of the Mediterranean Basin, and to disseminate current policy and research efforts in the relevant field in the EU and internationally.

In the above context, the INECO Web Toolbox was developed with the objective to support:

- The dissemination of efforts and experience towards the effective design and implementation of incentive-based policies for sustainable water management;
- The elaboration of future Case Studies, using a framework similar to the one followed within INECO, for the development of policy recommendations to address different water management issues at local level.

To address the above objectives, the Toolbox incorporates: (a) a knowledge base on institutional and economic instruments for water management, incorporating information from the pertinent literature, as well as reference cases on their application; (b) a web-based suite of tools for supporting participatory planning, based on the methodological framework used for the development of the INECO Case Studies.

The following sections of this document describe in more detail the different functionalities offered by the Toolbox in its current form, which is available from the web address: http://environ.chemeng.ntua.gr/toolbox.

1.2 The main toolbox interface

An overview of the main interface of the toolbox (i.e. its home page) is presented in Figure 1.

As depicted from the Figure, the Home page is divided in 5 parts:

Part A comprises the Main Menu of the toolbox. Through the corresponding links, the toolbox visitors have access to the main functionalities of the web-based environment, including the INECO knowledge base and the web-based participatory tools (strategic planning sessions, surveys and discussion fora) offered by the Toolbox.

Part B is the Case Study menu. It includes a collection of information for each Case Study that has been developed using the functionalities of the Toolbox.

Part C is the login-register area for existing users and visitors who whish to register and become members of the toolbox community.

Part D provides links to all most recent developments in Case Study formulation, survey launch and discussion posts, whereas **Part E** provides a welcoming introduction text, describing the Toolbox's scope and objectives.

A search engine, located at the top-right part of the screen, allows the retrieval and display of information of stored in the Toolbox's database.

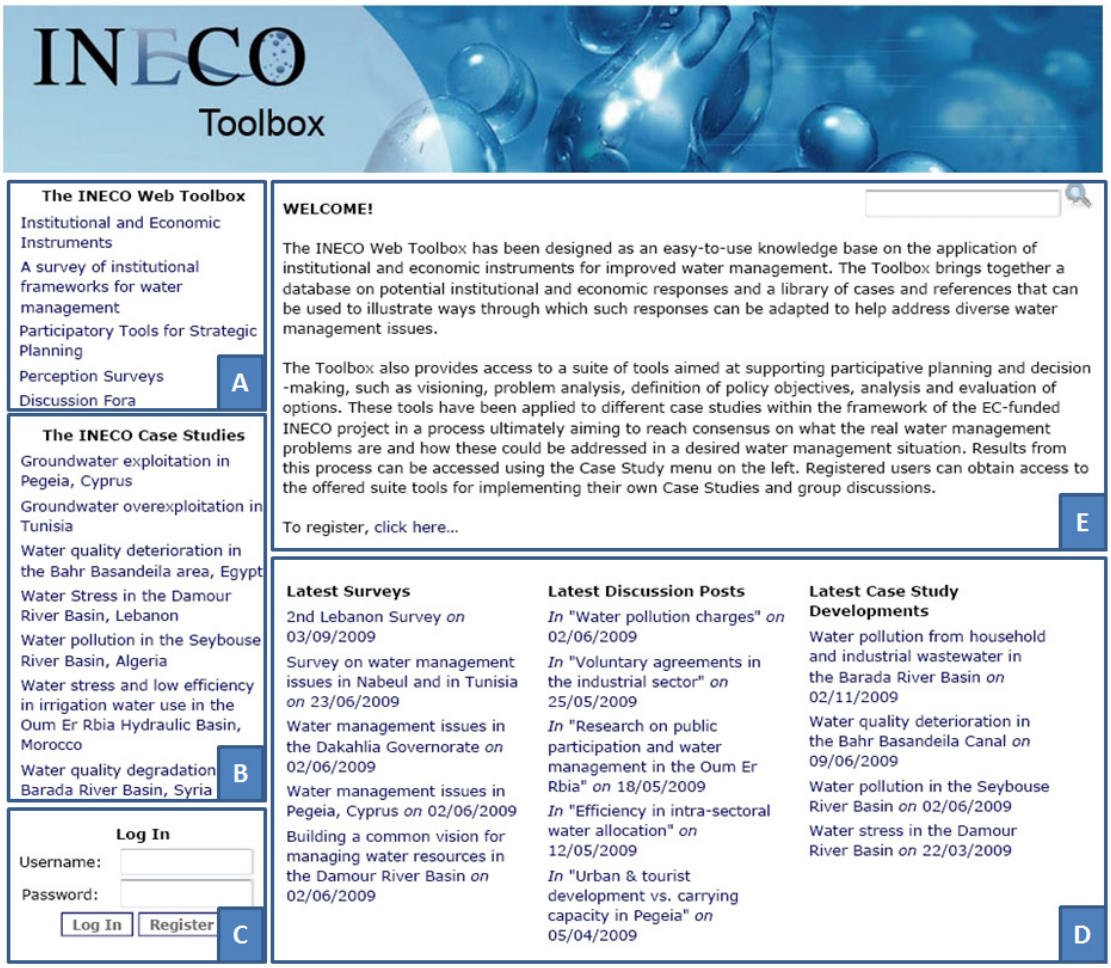

Figure 1: The Home page of the INECO web toolbox

The following sections present in detail the use of the Toolbox, focusing primarily on functionalities developed for facilitating stakeholder engagement and participatory planning.

2. The INECO knowledge base

The INECO knowledge base on institutional and economic instruments is accessible to the general public (registered users or visitors of the web site), and is divided in two parts.

The first part, titled "Institutional and Economic Instruments" brings together information on the application of policy instruments for water management. This part of the knowledge base is also dynamically linked to the web-based tools incorporated in the Toolbox to support strategic planning processes, as described in Section 3.

The second part, titled "A survey of institutional frameworks for water management", provides information on the current water governance context in countries of the Mediterranean Basin and the EU. Information concerns the current institutional framework and the overall organisation of the water sector, water-related legislation and implementation aspects and extends to the overall financial framework, outlining the rules for the involvement of the private sector for infrastructure development etc.

The next sections provide details on the different sections of the knowledge base, focusing on ways to navigate through the information stored.

2.1 The section on "Institutional and economic instruments"

The knowledge-base section of the Toolbox on "Institutional and Economic instruments" brings together information obtained from various literature sources on the application of policy instruments for water management. Relevant data from the informational database are made available through the corresponding link, titled "Institutional and Economic Instruments" on the top left side of the web-based environment (Figure 2).

To facilitate navigation through the different types of information, data are organized in categories, as follows:

- The first level on "Institutional and economic instruments" provides basic information on the categorization of data followed in the informational database;
- The second level provides information on the main categories of instruments, differentiating between: (a) market instruments; (b) liability and assurance regimes; (c)instruments aimed at financial encouragement towards environmental protection; (d) water –related charges and pricing policies (e) design of voluntary agreements and Programmes; (f) approaches towards decentralization; (g) different aspects relating to private sector involvement and (h) approaches towards enhancement of public participation and stakeholder involvement in decision-making processes. An example to this second level is provided in Figure 3 for market-based instruments.
- Finally, the third level includes, where applicable, more detailed information on the general principles concerning the design of specific instruments (Figure 4). Relevant information is accessible through links provided at the bottom of information displayed for each instrument category.

Table 1 summarises the structure of the pertinent information.

Table 1: Categorisation of information on institutional and economic instruments

Category	**Second-level information**
Market instruments	Tradable emission (discharge) permits; Tradable water shares and tradable water use (abstraction) rights
Liability and assurance regimes	Environmental performance bonds; Liability
Financial and fiscal instruments	Subsidies & Grants; Investment tax incentives; Other financial incentives; Taxes on inputs/outputs
Water charges (fees) and cost recovery	Environmental charges; Water pricing and cost recovery; Sewerage charges
Voluntary Agreements and Programmes	Voluntary agreements in the industrial sector; Voluntary agreements in the agricultural sector; Cooperative agreements
Decentralisation	*<Direct access to case applications>*
Private sector involvement	*<Direct access to case applications>*
Public participation and Stakeholder involvement	*<Direct access to case applications>*

One of the most versatile and useful aspects of the INECO web toolbox is that it brings together different **case applications** concerning the implementation of policy instruments in the water sector. Relevant experiences are linked through keywords to:

- A main instrument, which was the main mechanism employed;
- Relevant water management issues that the specific instrument was designed to address;
- Other instruments that have been applied to enable effective implementation;
- Broader issues that are linked to the implementation of the suggested instrument.

In its current form, the Toolbox brings together 50 case applications ("Experiences") from the Mediterranean area, the EU and internationally. Information for each case concerns:

- A general title, providing a description of the case application;
- A summary description of the corresponding targeted water management issue ("Problem");
- A summary description of the adopted "Solution";
- The "Instruments" that were adopted for problem mitigation;
- Implementation details with regard to the adopted approach;
- The overall outcome in terms of effectiveness ("Evaluation"), outlining also identified issues and deficiencies, if relevant;
- Link(s) for "Further information" or "References".

An example is presented in Figure 5.

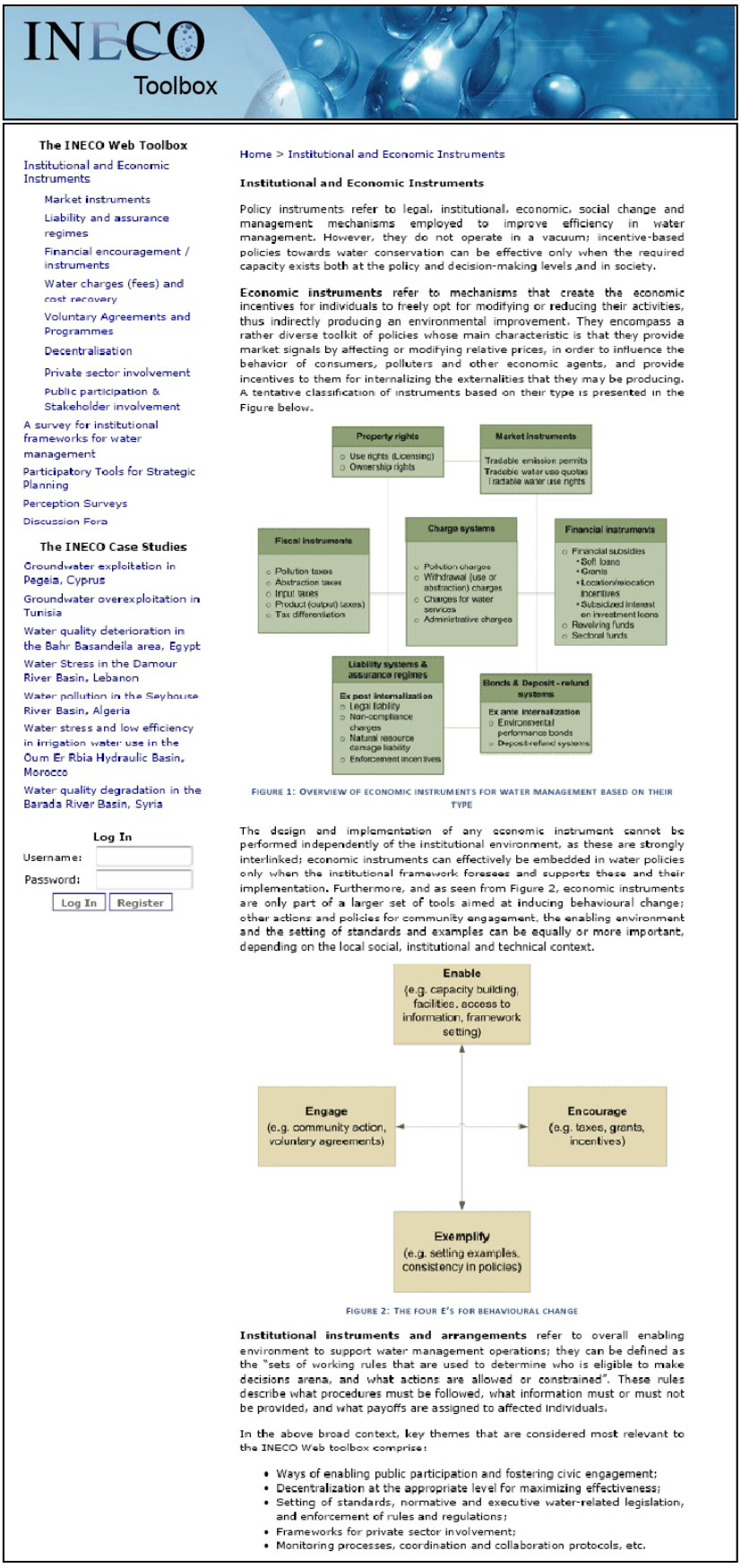

Figure 2: The knowledge-base introduction to "Institutional and Economic Instruments"

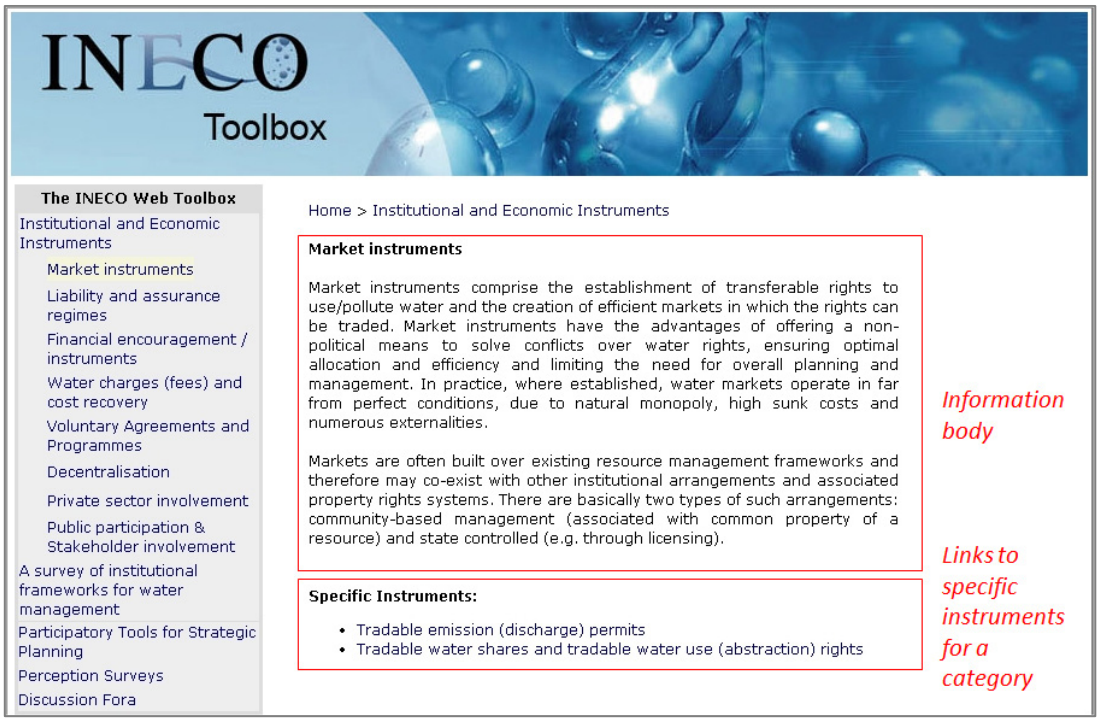

Figure 3: Retrieving knowledge-base information on instrument categories

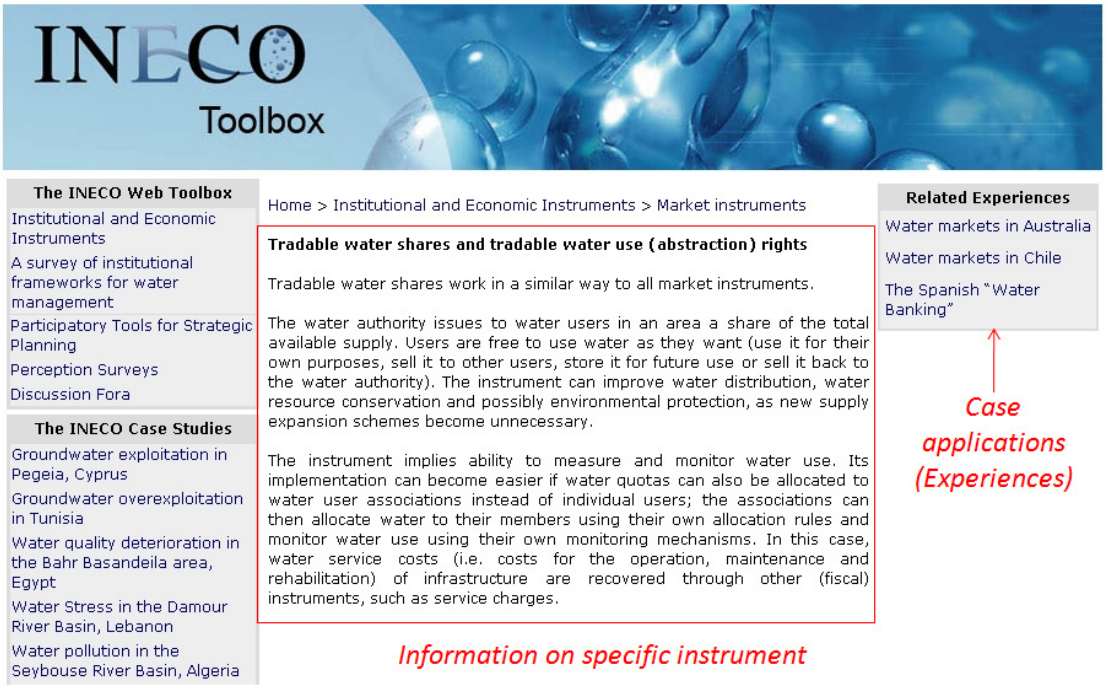

Figure 4: Retrieving knowledge-base information on a specific instrument

Figure 5: Browsing Case applications stored in the INECO Web Toolbox

2.2 The section on "Institutional frameworks for water management"

The "A survey of institutional frameworks for water management" provides a second link directly related to the informational database. Through this area, the INECO Web Toolbox browsers have access to:

- Information on the current institutional framework and the overall organization of the water sector;
- Water-related legislation and implementation aspects.

The information is provided at country level; in its current form, this section brings together data collected at the initial stages of the INECO project on the analysis of legislative and institutional frameworks in Lebanon, Cyprus, Egypt, Tunisia, Syria, Algeria and Morocco with regard to the formulation of water management policies and capacity building mechanisms. Further issues that are addressed through the information directly accessed through this section concern responsibility allocation for water management, planning and allocation, and the identification of financing issues and the constraints that these impose on integrated planning.

Figure 6 and Figure 7 provide an overview of how the visitors of the web site can navigate to directly access the relevant information.

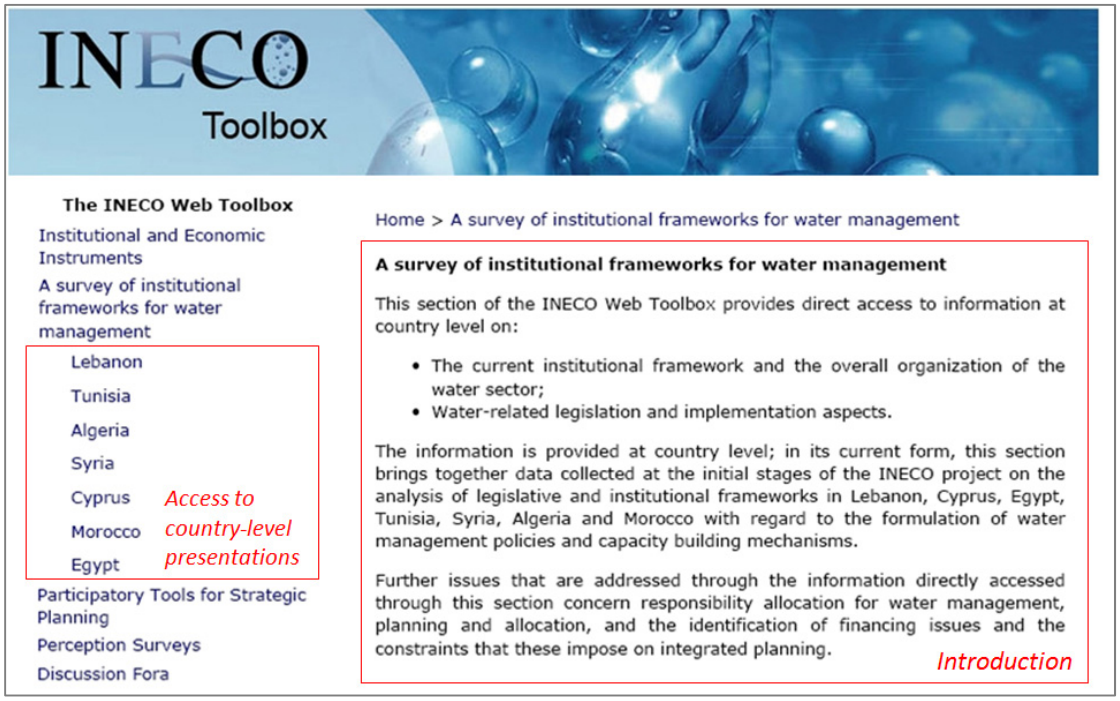

Figure 6: The introductory section of "The survey on Institutional frameworks for water management"

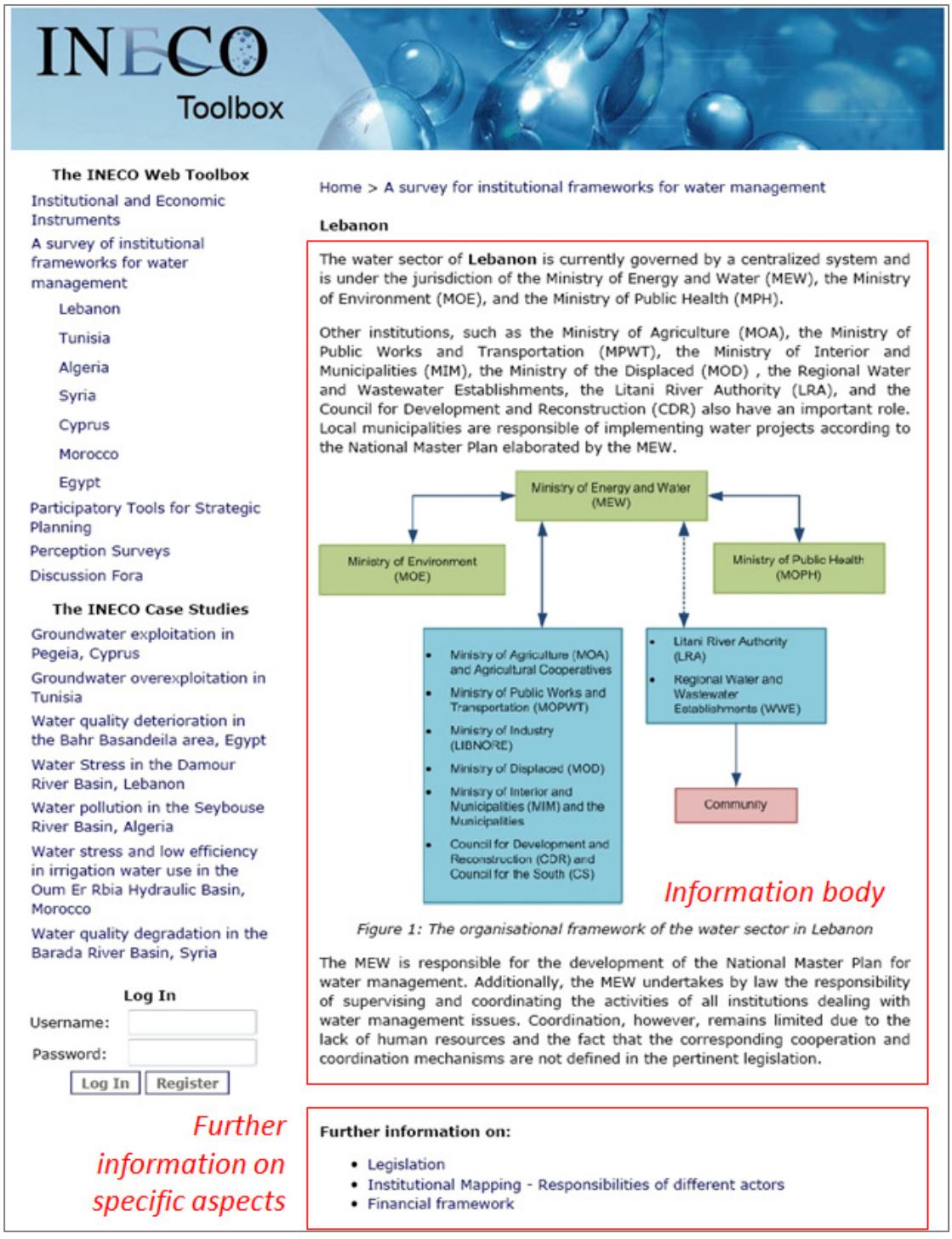

Figure 7: Second-level information (Country profiles)

3. Web-based tools for supporting participatory planning processes

3.1 Introduction

In addition to the knowledge base, the INECO web toolbox provides access to tools that can support participatory planning processes. These comprise:

- Tools in support of strategic planning sessions, based on the Objective Oriented Project Planning Method. These tools are aimed at supporting Case Study development processes and have been designed to allow interaction among members of user groups that have registered for a specific session. Offered functionalities concern the implementation of the three main steps of this process, and are described in Section 3.2.
- Perception surveys, to map views of users or visitors on a variety of water management issues, described in Section 3.3.
- Discussion fora, allowing the exchange of views on different aspects relating to water management.

Access rights to the use of the above functionalities depend on their scope, and are defined either by the Web toolbox administrator and/or the Strategic Planning Session moderator. Details on access rights are provided in the corresponding sections.

3.2 Case Studies and Strategic Planning sessions

3.2.1 Case Studies: Definition and aspects

Within the framework of the INECO Web toolbox a Case Study is defined as the "analysis of a specific water management issue (focal water management problem), through participatory processes to arrive to a proposal on options for the mitigation of the problem at hand". A Case Study is launched by the Toolbox Administrator or a Toolbox Moderator, hereafter referred to as the Case Study Moderator. A Case Study consists of four parts:

a. An Overview, including general information about the area,
b. Strategic Planning Process Outcomes, which includes the outcomes of the Participatory Tools for Strategic Planning for the specific Case Study,
c. Implemented Surveys for the Case Study, and
d. Discussions about aspects of the Study.

If considered relevant, the Case Study Moderator can upload at the Overview Section general information on the Case Study (e.g. area of application, data and indicators relevant to the Case Study, other relevant information that should be shared with session participants, etc.). An example from the Case Studies already developed by INECO and incorporated in the web toolbox is provided in Figure 8.

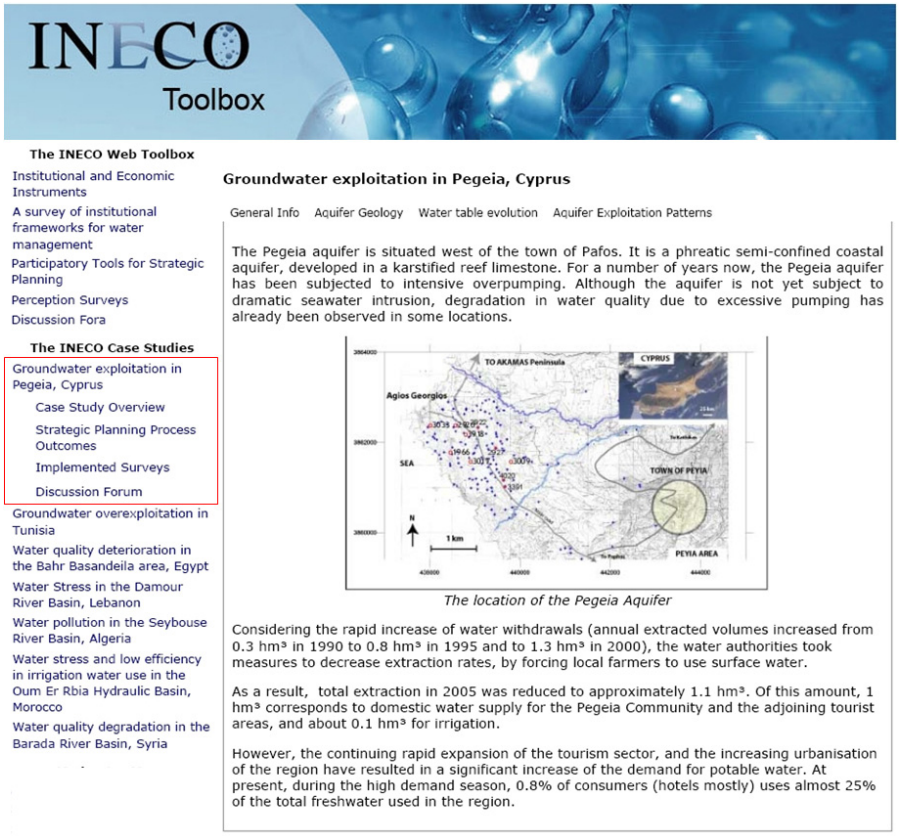

Figure 8: Overview information on a Case Study

3.2.2 Definition of User Groups

Subsequently to the launch of the relevant Case Study, the Case Study Moderator can initiate a "Strategic Planning Session", with the participation of a "User Group". A User Group is a team of users that focuses on a specific Study. Each group consists of Moderators and Users. Moderators facilitate and coordinate Discussions, Surveys and Strategic Planning. Each survey or discussion can be either Private (only members of the specific group can participate) or Public (every member, i.e. registered user of the Toolbox can participate).

The steps that should be implemented by the Case Study Moderator for defining a User Group are:

- Step 1: Definition of the Group's name and elaboration of a description, if relevant;
- Step 2: Selection of Group members from the list of the Web Toolbox members;
- Step 3: Selection of one Group member to become the Moderator.

It should be noted that ongoing (not completed) steps of "Strategic Planning Sessions" are not visible to the general public (i.e. visitors or registered users that are not members of the User Group that owns the corresponding session), since the User Group, with the help of the moderator can modify the analysis. Results are released to general view upon the completion of a session, and final outcomes can be freely downloaded as PDF documents for future reference.

3.2.3 Methodology for strategic planning sessions

The approach on which the design of strategic planning processes of the INECO web toolbox was based, was the one that was also adopted for the development of the INECO Case Studies, i.e. the method of Objective Oriented Project Planning - OOPP. The OOPP method, which is based on the Logical Framework Approach, has been proposed as a tool for supporting participatory planning processes. It is broadly divided in three stages, as depicted in Figure 9.

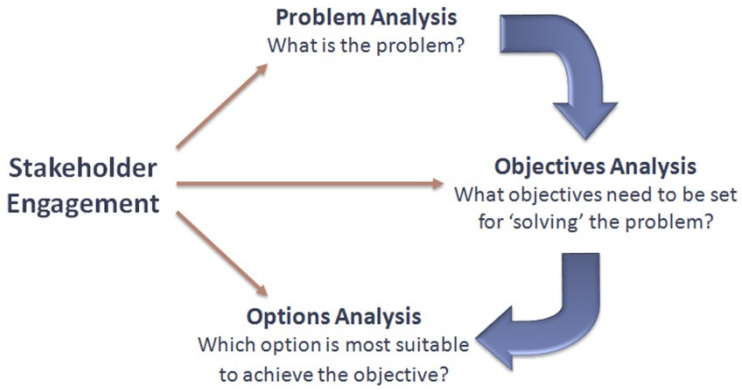

Figure 9: An Overview of the Objective-Oriented Project Planning Method

The first stage, **Problem Analysis**, aims primarily at identifying the main problems and establishes the cause and effect relationships. The key purpose of this analysis is to ensure that 'root causes' are identified and subsequently addressed, and that the analysis does not simply focus on the symptoms of the problem(s). A clear and comprehensive problem analysis provides a sound foundation on which to develop a set of relevant and focused objectives. The different factors which cause a particular problem are usually described with the help of Cause-And-Effect Diagrams. Cause-Effect Diagrams can be represented as **problem** or **problem-cause trees,** which illustrate dependent and independent variables that affect a particular problem. In a tree diagram the main (or focal) problem is represented as the tree-trunk. The causes of the problem are the tree's roots and the effects are the tree's branches.. The main stages in creating a problem tree are:

- Brainstorming, where one or more problems are drawn from personal experience;
- Clustering of the problems identified during brainstorming;
- Identification of the cause(s) of each problem;
- Identification of the effects (or consequences) of each problem.

After (or during) the identification of problems, causes and effects, the "Problem Tree" is developed. The tree trunk constitutes the problem; each branch designates a separate dimension or effect of the problem, whereas each root represents a different cause.

The second stage, the **Analysis of objectives**, concerns the development of policy objectives from the identified problems, and the identification means to end relationships. For the analysis of objectives, the first step is to translate problems (or causes) into positive statements. The outcome is an objective tree, which is derived from the problem tree through the following steps:

- Reformulating problems into positive, desirable conditions.
- Changing relationships from cause-effect into means-ends.

- Deleting/adding objectives.
- Adding lines between means-ends relationships.

Subsequently, the objective tree is revised by adding/deleting objectives. Stakeholder participation is a key element of the process, in order to ensure that (a) objectives are feasible, and within the scope of the analysis (b) inefficiencies and targets are in line with current policies, and contribute towards their implementation.

Finally, **Option analysis** includes the identification of different options that can contribute to the achievement of objectives. Suggested options then need to be further scrutinised to help firm up the likely scope of strategies for problem mitigation. In a last stage, options can be then evaluated by stakeholders in order to determine the most suitable strategy for achieving the mitigation of the problem at hand.

The above stages were conceptualised and implemented in the INECO Web Toolbox through a series of steps, providing the tools to facilitate discussion on focal water management issues. The way of using the functionalities of the Toolbox to support strategic planning exercises is described in the following sections.

3.2.4 The launch of a Strategic Planning Session

The launch of a Strategic Planning Session is undertaken by the Case Study Moderator, using the link "Create New Strategic Planning Session" from the "Moderator's menu" available at the lower left part of the screen.

For the initiation of the process, the moderator has to define:

- The problem that will constitute the focus of the session, i.e. the focal problem;
- The Case Study to which the Strategic Planning Session pertains;
- The User group that will participate in the session.

An example of the relevant interface is provided in Figure 10.

Figure 10: The launch of a Strategic Planning Process

By clicking the “Create Problem Tree” button, the web-based environment moves to a relevant screen that allows the definition of a “Problem Tree”, starting from the focal problem defined in the previous step.

3.2.5 The “Problem-tree” analysis step

In the next screen, presented in Figure 11, the Moderator, supported by the User Group, can start developing the problem tree. By selecting one of the tree’s elements, the Moderator can add effects and causes to the tree, using the arrow buttons of the dialogue at the right part of the screen. Furthermore, the Group can provide additional details and modify the appearance of the “Problem tree”, by:

- Changing the location, size and color of the different elements;
- Assigning keywords relating to the theme, sector and level of each tree element. This assignment is stored at the knowledge base of the toolbox, and is used in subsequent stages for the suggestion of alternative options for the mitigation of each of the tree’s contributing causes.

Figure 12 presents a finished “Problem Tree” using the above tools. By clicking the “Finish Problem Tree” button at the bottom of the screen, the step becomes completed, and the Group moves back to the “Process Overview” screen.

Figure 11: Developing a problem tree

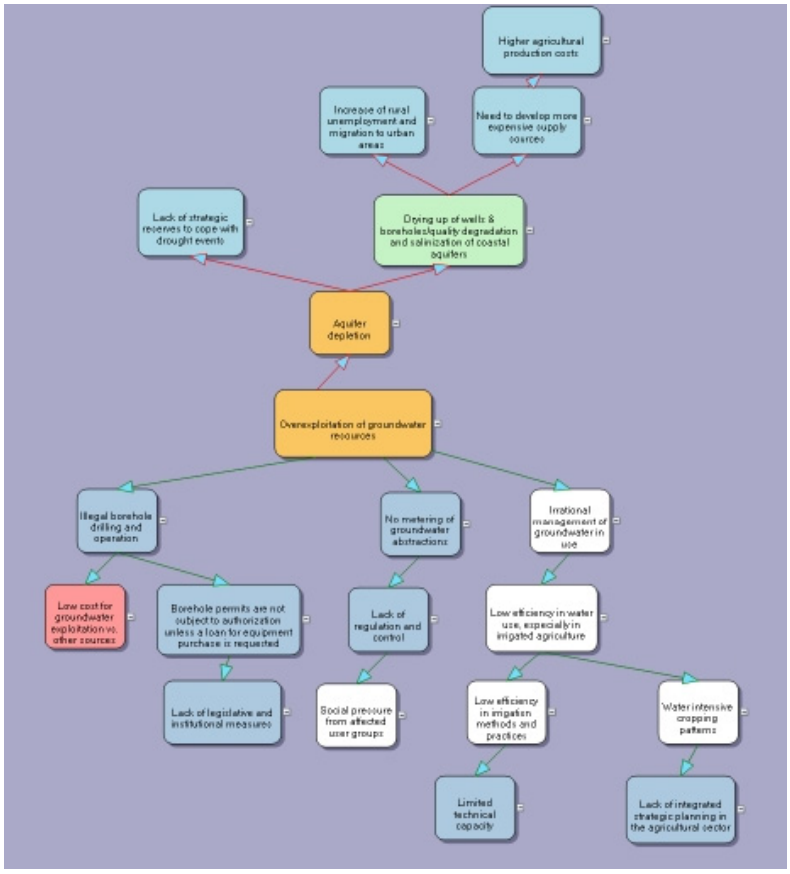

Figure 12: A completed "Problem-Tree"

3.2.6 The "Objective-tree" analysis step

After the completion of the "Problem-Analysis Step", the corresponding step in the "Process Overview" is flagged as completed; the User Group can then continue to the following stage, the "Objective Analysis", by clicking the corresponding button (Figure 13).

Figure 13: Initiation of the Objectives Analysis stage

For the initiation of the process, the toolbox creates and presents an initial structure of an Objective Tree, based on the outcomes of the Problem tree analysis of the previous stage. Using the same tools as before, the Group can work to transform causal interrelationships to means-ends relationships, thus developing the corresponding diagramme. The example of a completed Objective Tree is presented in Figure 14.

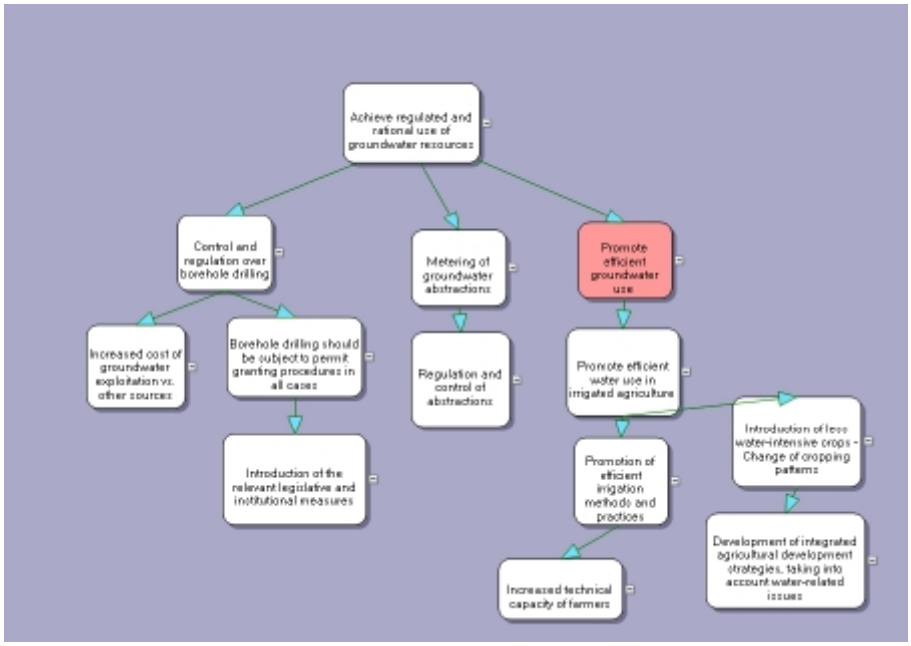

Figure 14: A completed "Objective Tree"

By clicking the "Finish Objective Tree" button at the bottom of the screen, the step becomes completed, and the Group moves back once more to the "Process Overview" screen.

3.2.7 The "Option analysis" step

After the completion of the "Objective Analysis" Step, this is flagged as completed step in the "Process Overview" screen. The User Group can then continue to the last stage, the "Analysis of Options", by clicking the corresponding button (Figure 15).

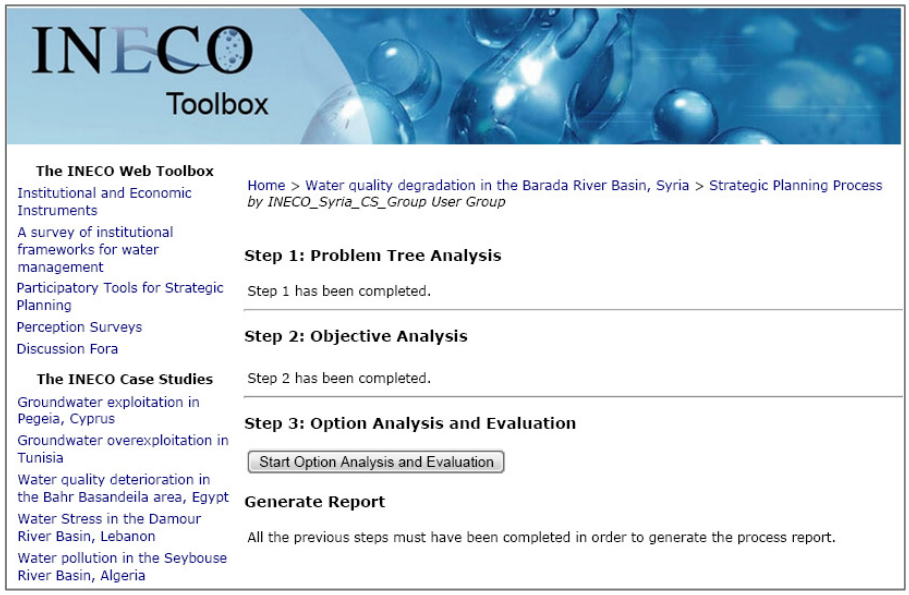

Figure 15: Initiation of the Options Analysis stage

Subsequently, during the option selection process, the group is navigated through each of the defined objectives, and defines options, as stored in the INECO Knowledge Base, for attaining the suggested objective (Figure 16).

Figure 16: Specifying Options for each Objective

For each objective, Options can be chosen from the "Available Options" list and/or add new Options in the Add New Options Text Box. Depending on the Theme, Level and Sector of the Objective and past connections between objectives and options by other users, the wizard may recommend some of the existing Options in a separate list box.

At the end of the Option Identification process, the User Group is provided with a summary display of all options suggested for each objective. Through dedicated links, the User Group can be directed to the corresponding information on instruments and view relevant implementation details, other case applications etc.

3.2.8 Viewing outcomes from Strategic Planning Sessions

Results from completed strategic planning sessions are accessible to the general public by choosing the option "View existing cases" available through the Participatory Tools for Strategic Planning" at the top left section of the web-based environment (Figure 17). This option displays a list of all sessions for which at least one step has been completed (Figure 18). Further clicking on a case displays the case progress, providing also links to view the outcomes of completed steps once the it has been completed.

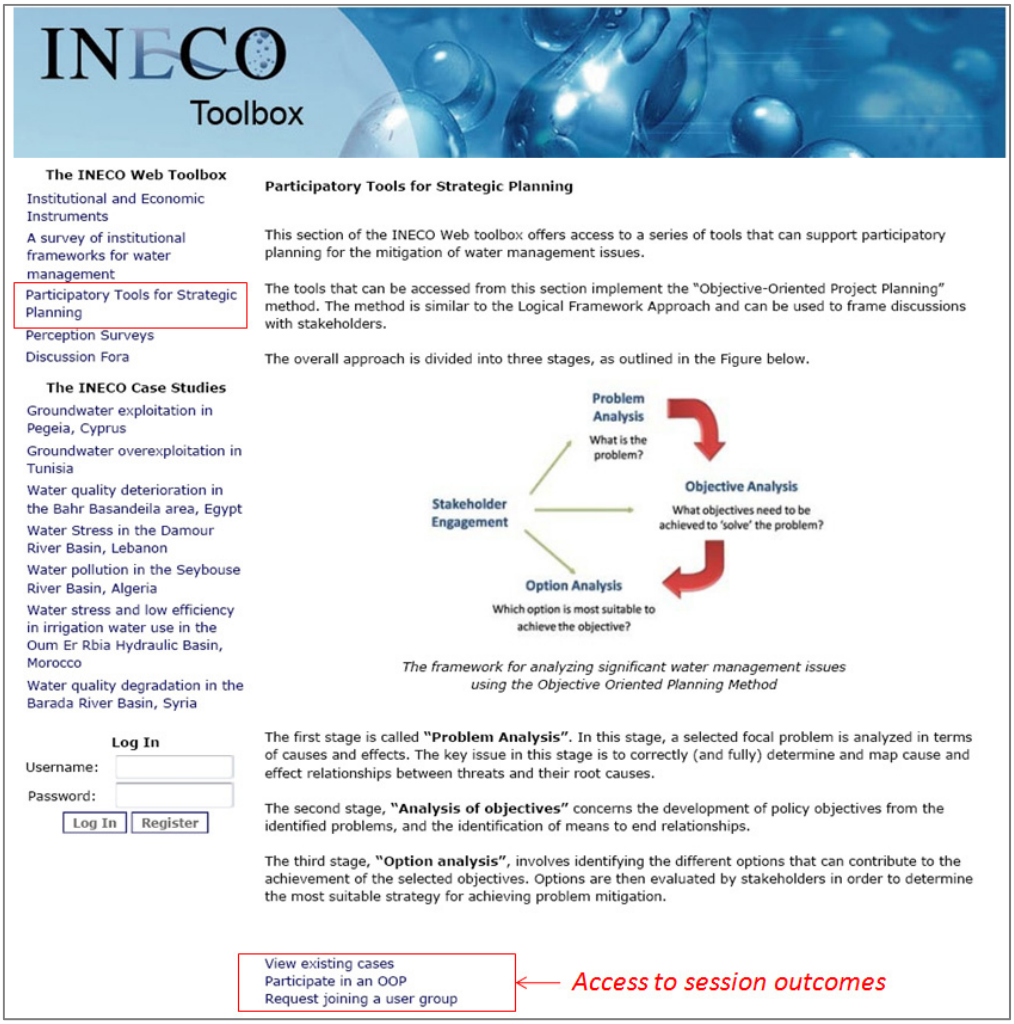

Figure 17: Access to the INECO Web toolbox Strategic Planning Sessions

Figure 18: List of completed strategic planning sessions

3.3 Perception surveys

In addition to the above tools, the INECO web toolbox allows the development of perception surveys. Surveys can be used as a tool to map how decision-makers, individual users and citizens perceive significant water management issues and their causes, associated experiences and their impacts on everyday life. They can also be used as complementary tools during a Case Study development process for the evaluation of potential responses and the identification of suggestions for problem mitigation.

Their scope can be:

- Dependent of a Case Study development process. In this case, surveys can be completed only by the members of the user group(s) taking part in the Case Study process.
- Related to a water management issue of general interest. In this case, they can be completed by users and/or visitors of the Toolbox, depending on the rights assigned by the survey administrator.

A survey usually runs over a specific timeframe; upon its completion, results can be readily viewed by the general public. Furthermore, respondents to the survey can also browse intermediate results, upon submission of their own replies. Surveys are accessed using the "Perception surveys" link at the left section of the web-based environment (Figure 19).

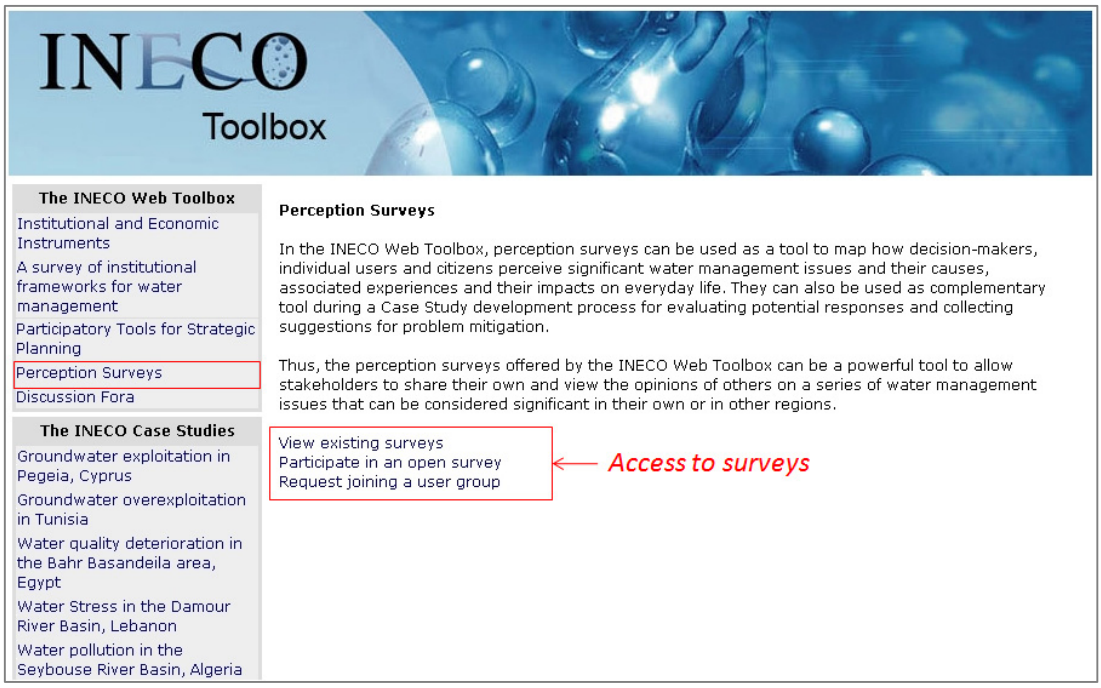

Figure 19: Access to the INECO Web toolbox surveys

3.3.1 Viewing survey results

Results from completed surveys are accessible to the general public by choosing the option "View existing surveys". This option displays a list of all completed surveys (Figure 20). Further clicking on a survey displays the results for each of the survey questions (Figure 21).

Figure 20: Viewing the list of completed surveys

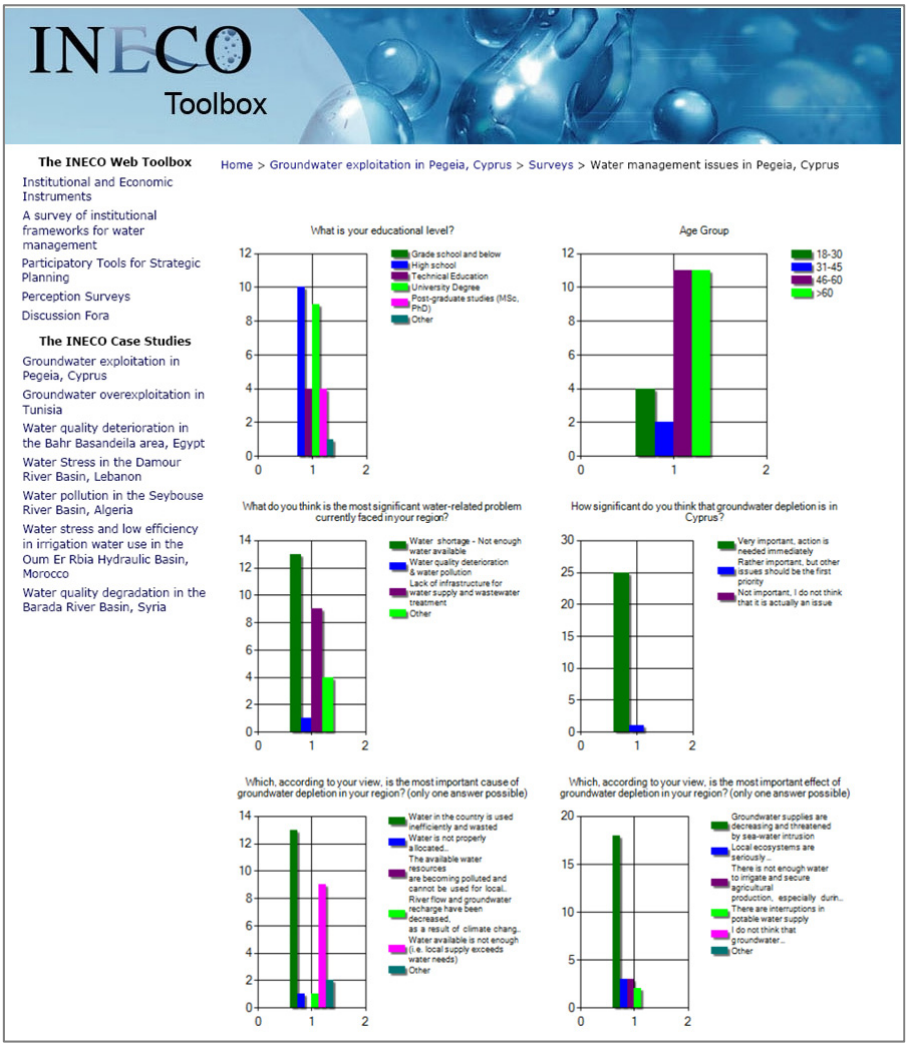

Figure 21: Browsing survey results

3.3.2 Providing feedback to a survey

The provision of feedback to a survey depends on the rights assigned by the survey moderator; surveys can be accessible to registered users only, to members of a user group or to the general public. Access to open surveys is provided through the link "Participate to an open survey" - Figure 19, which further displays a list of open surveys, similar to the one of Figure 20. Furthermore, access to open surveys at the Case Study level is also provided through the Case Study menu, using the link "Implemented surveys".

In case that a survey form is not available, users can request joining the user group targeted by the survey (relevant details are provided in Section 4).

3.4 Discussion fora

The discussion fora of the INECO Web toolbox have been designed to offer a free space where members of the INECO community can discuss and exchange opinions on a variety of water management issues both at local and broader geographical scale.

This functionality is also complementary to the Participatory Tools for Strategic Planning hosted within the INECO toolbox, allowing the exchange of views on the variety of issues that can emerge during the different stages of the planning process. In this regard, some themes are chosen by moderators and can be restricted to specific user groups, whereas others can be proposed by the users and can be moderated or non-moderated, depending on their purpose and scope.

Similarly to surveys, discussion threads can run over a specific timeframe. However, the viewing of discussions, completed or not, depends on the rights assigned by the moderators, as replies are not presented anonymously. Discussion fora can be accessed using the corresponding link at the left section of the Web Toolbox (Figure 22).

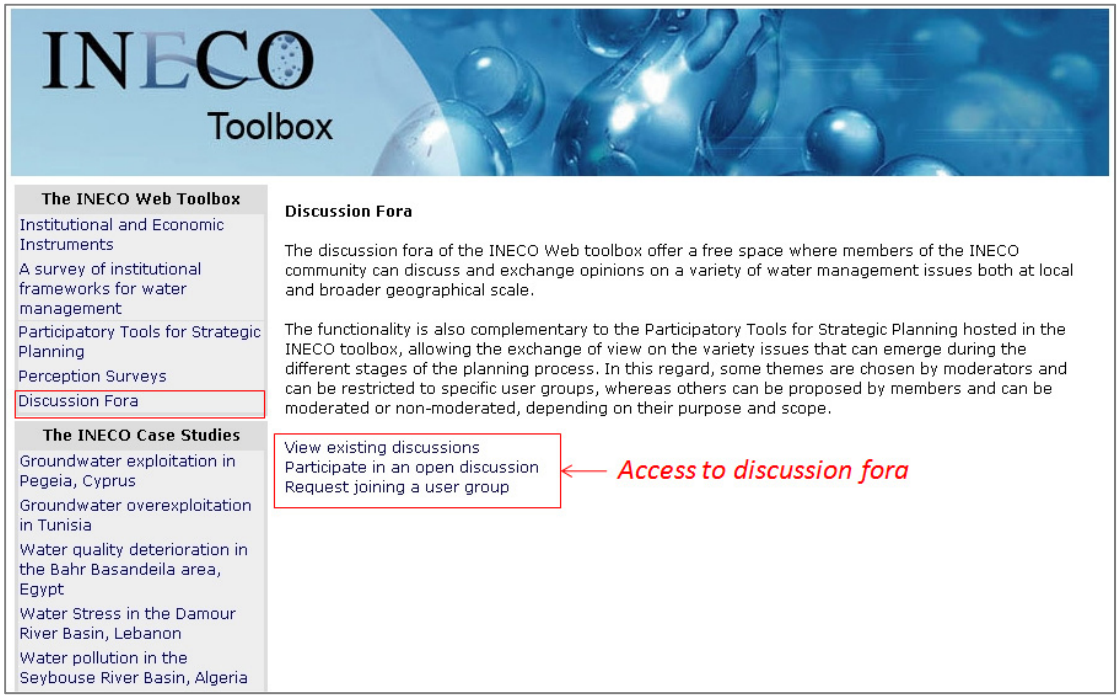

Figure 22: Access to the INECO Web toolbox discussion for a

3.4.1 Viewing Discussion Threads

Independently of the rights assigned to individual threads, discussion topics can be viewed by web site visitors by choosing the option "View existing discussions". This option displays a list of all discussion topics (Figure 23). Further clicking on a discussion topic displays the corresponding thread, provided that the user has logged-in and has access to the discussion forum (Figure 24).

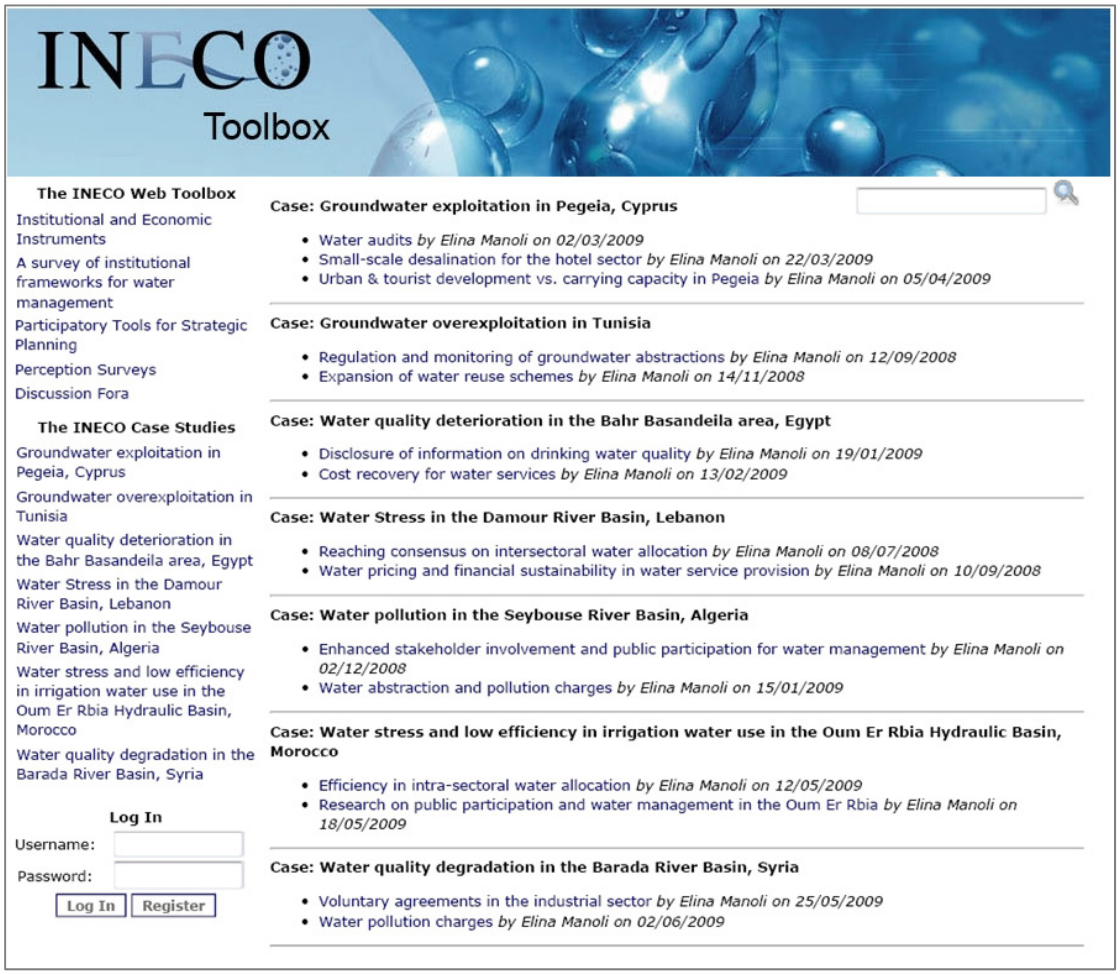

Figure 23: Viewing discussion topics

Figure 24: A discussion thread (names of respondents are not made visible as the discussion was restricted to User Group members)

3.4.2 Participating in a Discussion

Similarly to surveys, the participation in an open discussion depends on the rights assigned by the discussion moderator; discussion threads can be accessible to registered users or to members of a user group. Access to open discussion threads is provided through the link "Participate to an open discussion" - Figure 22, which further displays a list of open discussion topics, similar to the one of Figure 23. Furthermore, access to open discussions at the Case Study level is also provided through the Case Study menu, using the link "Discussion forum".

In case that a discussion topic is not available, users can request joining the relevant user group (further details are provided in Section 4).

4. Registering in the INECO Web Toolbox

As outlined in previous sections of this manual, some functionalities of the INECO Web Toolbox are only accessible to registered users or members of user groups.

In this regard, this section of the Toolbox manual provides instructions on registration and participation in user groups.

4.1 Registering as a simple user

Registered users automatically become members of the INECO Toolbox community, becoming informed of all updates and developments relating to INECO.

Registration is a two-step process:

- First, interested visitors can click on the "Register" button, at the bottom of the left side of the web-based environment (Figure 25);
- Then, they are requested to fill in the corresponding registration form; compulsory fields concern the user name, password, country of origin and affiliation (Figure 26).

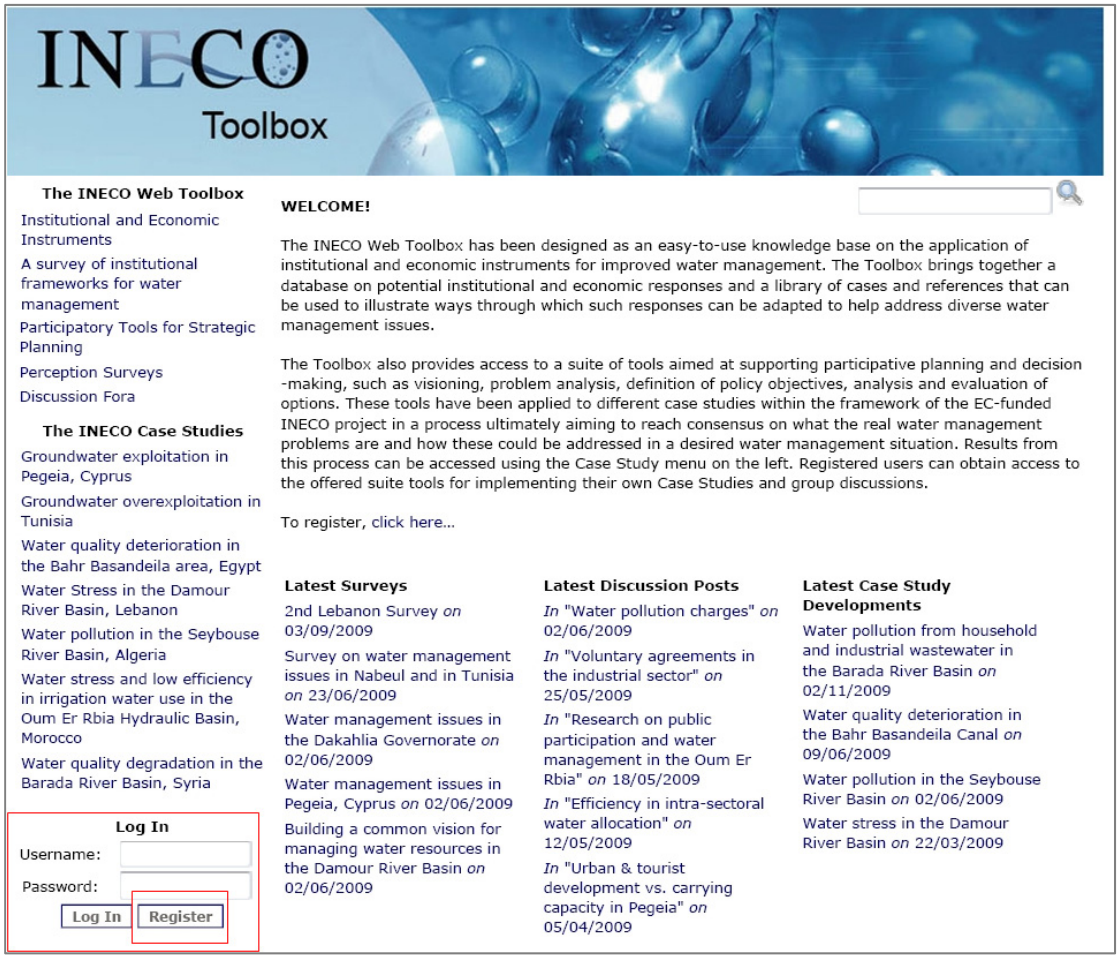

Figure 25: The Log-in and register options

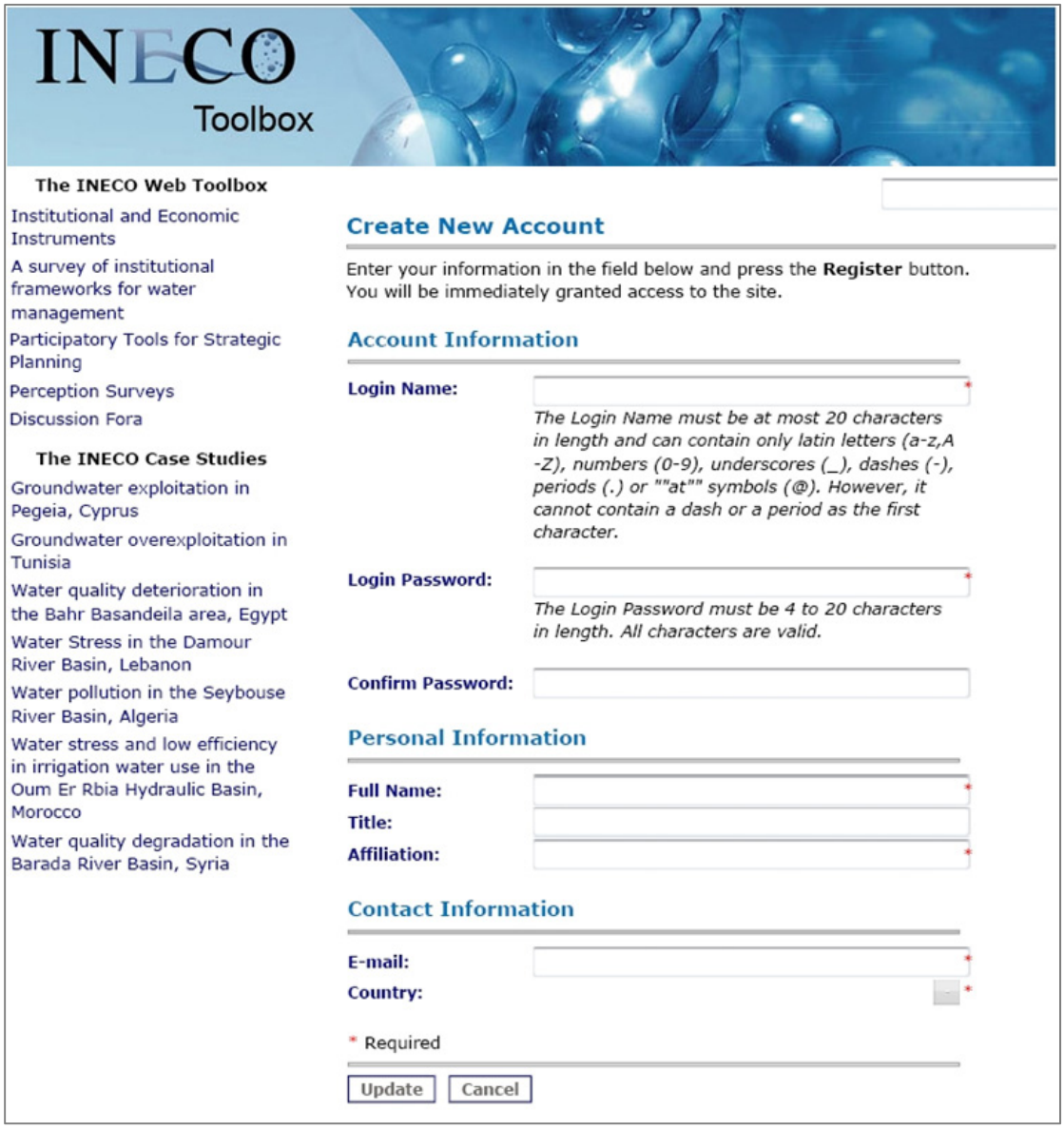

Figure 26: Registration form

Upon completion of the Registration Form, the user can login using their login name and password, without further authorisation requirements.

4.2 Joining a User Group

Access to a User Group is provided after a request is made by a registered user of the toolbox. Requests to join a User Group can be made by navigating to one of the web-based tools available from the Main Menu (i.e. Participatory tools for Strategic Planning, Perception Surveys and Discussion Fora), by clicking the corresponding link, titled “Request for joining a user group”.

Subsequently, the registered user is asked to choose the group he would like to join. An e-mail is sent to the group moderator, who can grant access rights and include the interested user in group activities.