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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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<b>PU</b>	Public	X
<b>PP</b>	Restricted to other programme participants (including the Commission Services)	
<b>RE</b>	Restricted to a group specified by the consortium (including the Commission Services)	
<b>CO</b>	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.



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## 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:

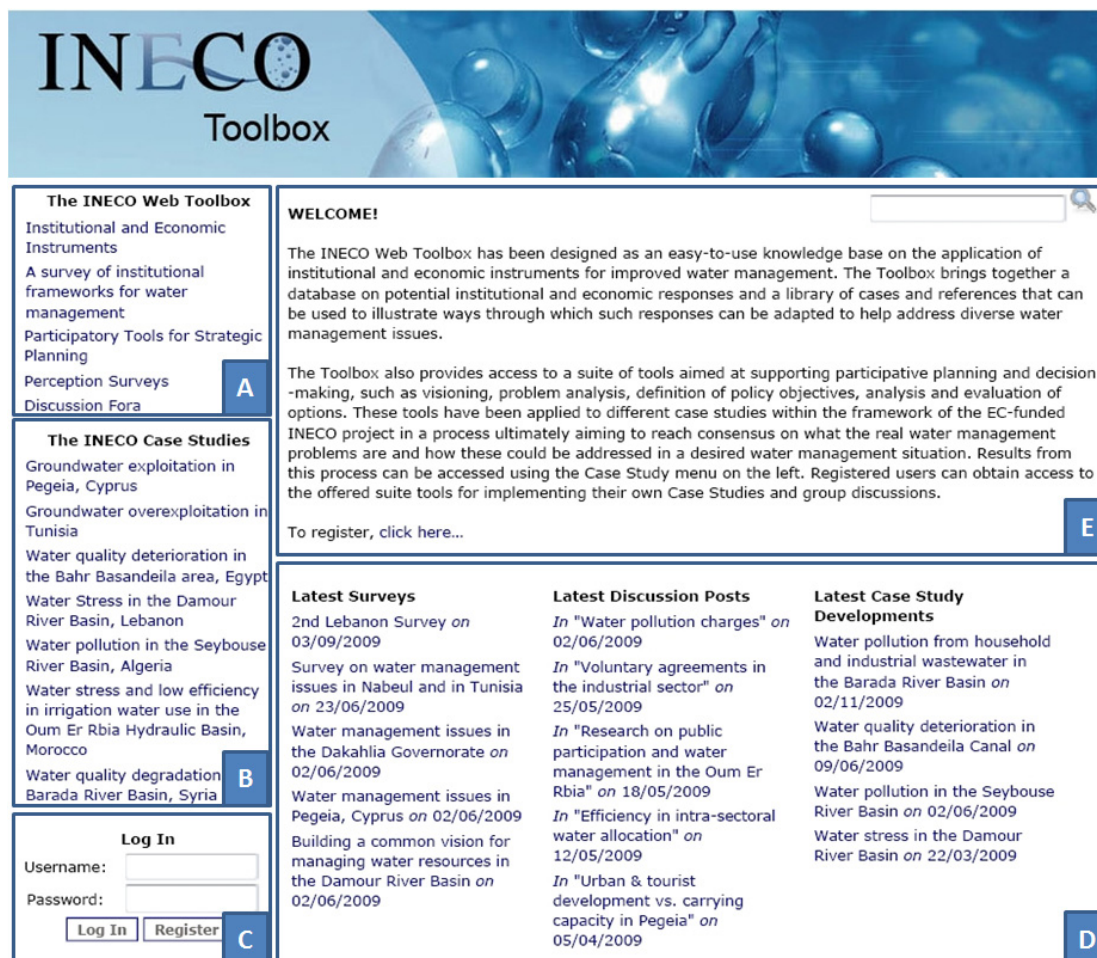
**Part A** comprises the Main Menu of the toolbox. Through the corresponding links, the toolbox visitors have access to the main functionalities of the web-based environment, including the INECO knowledge base and the web-based participatory tools (strategic planning sessions, surveys and discussion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



The screenshot shows the INECO Toolbox home page. At the top, there is a header with the INECO logo and the word 'Toolbox'. Below this, the page is divided into several sections:

- The INECO Web Toolbox** (Section A): This section lists various tools and resources, including 'Institutional and Economic Instruments', 'A survey of institutional frameworks for water management', 'Participatory Tools for Strategic Planning', 'Perception Surveys', and 'Discussion Fora'.
- The INECO Case Studies** (Section B): This section lists several case studies, such as 'Groundwater exploitation in Pegeia, Cyprus', 'Groundwater overexploitation in Tunisia', 'Water quality deterioration in the Bahr Basandeila area, Egypt', 'Water Stress in the Damour River Basin, Lebanon', 'Water pollution in the Seybouse River Basin, Algeria', 'Water stress and low efficiency in irrigation water use in the Oum Er Rbia Hydraulic Basin, Morocco', and 'Water quality degradation Barada River Basin, Syria'.
- Log In** (Section C): This section contains a login form with fields for 'Username:' and 'Password:', and buttons for 'Log In' and 'Register'.
- WELCOME!** (Section E): This section contains a welcome message and a link to 'To register, click here...'.
- Latest Surveys**: This section lists recent surveys, including '2nd Lebanon Survey on 03/09/2009', 'Survey on water management issues in Nabeul and in Tunisia on 23/06/2009', 'Water management issues in the Dakahlia Governorate on 02/06/2009', 'Water management issues in Pegeia, Cyprus on 02/06/2009', and 'Building a common vision for managing water resources in the Damour River Basin on 02/06/2009'.
- Latest Discussion Posts**: This section lists recent discussion posts, including 'In "Water pollution charges" on 02/06/2009', 'In "Voluntary agreements in the industrial sector" on 25/05/2009', 'In "Research on public participation and water management in the Oum Er Rbia" on 18/05/2009', 'In "Efficiency in intra-sectoral water allocation" on 12/05/2009', and 'In "Urban & tourist development vs. carrying capacity in Pegeia" on 05/04/2009'.
- Latest Case Study Developments** (Section D): This section lists recent case study developments, including 'Water pollution from household and industrial wastewater in the Barada River Basin on 02/11/2009', 'Water quality deterioration in the Bahr Basandeila Canal on 09/06/2009', 'Water pollution in the Seybouse River Basin on 02/06/2009', and 'Water stress in the Damour River Basin on 22/03/2009'.

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.

# INECO

## Toolbox

**The INECO Web Toolbox**  
Institutional and Economic Instruments

- Market instruments
- Liability and assurance regimes
- Financial encouragement / instruments
- Water charges (fees) and cost recovery
- Voluntary Agreements and Programmes
- Decentralisation
- Private sector involvement
- Public participation & Stakeholder involvement

A survey for institutional frameworks for water management

Participatory Tools for Strategic Planning

Perception Surveys

Discussion Fora

**The INECO Case Studies**

- Groundwater exploitation in Pegasus, Cyprus
- Groundwater overexploitation in Tunisia
- Water quality deterioration in the Bahr Basandella area, Egypt
- Water Stress in the Damour River Basin, Lebanon
- Water pollution in the Seyhousse River Basin, Algeria
- Water stress and low efficiency in irrigation water use in the Oum Er Rbia Hydraulic Basin, Morocco
- Water quality degradation in the Barada River Basin, Syria

Home > Institutional and Economic Instruments

**Institutional and Economic Instruments**

Policy instruments refer to legal, institutional, economic, social change and management mechanisms employed to improve efficiency in water management. However, they do not operate in a vacuum; incentive-based policies towards water conservation can be effective only when the required capacity exists both at the policy and decision-making levels and in society.

**Economic instruments** refer to mechanisms that create the economic incentives for individuals to freely opt for modifying or reducing their activities, thus indirectly producing an environmental improvement. They encompass a rather diverse toolkit of policies whose main characteristic is that they provide market signals by affecting or modifying relative prices, in order to influence the behavior of consumers, polluters and other economic agents, and provide incentives to them for internalizing the externalities that they may be producing. A tentative classification of instruments based on their type is presented in the Figure below.

**Property rights**

- Use rights (Licensing)
- Ownership rights

**Market instruments**

- Tradable emission permits
- Tradable water use quotas
- Tradable water use rights

**Fiscal instruments**

- Pollution taxes
- Abstraction taxes
- Input taxes
- Product (output) taxes
- Tax differentiation

**Charge systems**

- Pollution charges
- Withdrawal (use or abstraction) charges
- Charges for water services
- Administrative charges

**Financial instruments**

- Financial subsidies
- Soft loans
- Grants
- Location/relocation incentives
- Subsidized interest on investment loans
- Revolving funds
- Sectoral funds

**Liability systems & assurance regimes**

**Ex post internalization**

- Legal liability
- Non-compliance charges
- Natural resource damage liability
- Enforcement incentives

**Bonds & Deposit-refund systems**

**Ex ante internalization**

- Environmental performance bonds
- Deposit-refund systems

FIGURE 1: OVERVIEW OF ECONOMIC INSTRUMENTS FOR WATER MANAGEMENT BASED ON THEIR TYPE

**Log In**

Username:

Password:

The design and implementation of any economic instrument cannot be performed independently of the institutional environment, as these are strongly interlinked; economic instruments can effectively be embedded in water policies only when the institutional framework foresees and supports these and their implementation. Furthermore, and as seen from Figure 2, economic instruments are only part of a larger set of tools aimed at inducing behavioural change; other actions and policies for community engagement, the enabling environment and the setting of standards and examples can be equally or more important, depending on the local social, institutional and technical context.

**Engage**  
(e.g. community action, voluntary agreements)

**Enable**  
(e.g. capacity building, facilities, access to information, framework setting)

**Exemplify**  
(e.g. setting examples, consistency in policies)

**Encourage**  
(e.g. taxes, grants, incentives)

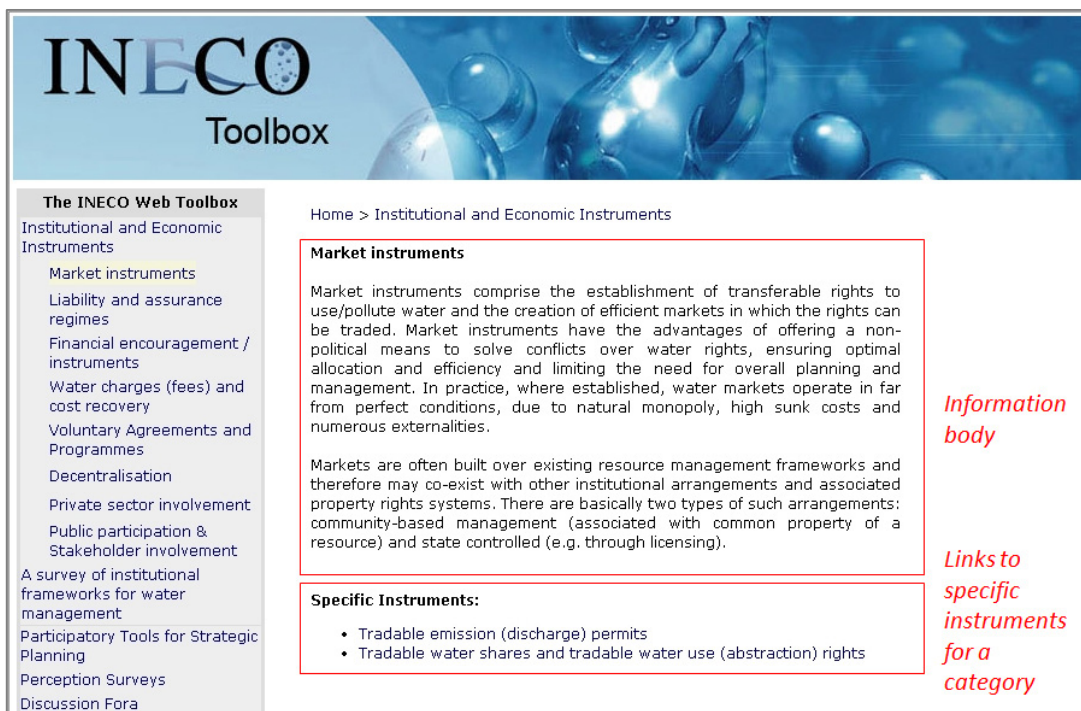
FIGURE 2: THE FOUR E'S FOR BEHAVIOURAL CHANGE

**Institutional instruments and arrangements** refer to overall enabling environment to support water management operations; they can be defined as the "sets of working rules that are used to determine who is eligible to make decisions arena, and what actions are allowed or constrained". These rules describe what procedures must be followed, what information must or must not be provided, and what payoffs are assigned to affected individuals.

In the above broad context, key themes that are considered most relevant to the INECO Web toolbox comprise:

- Ways of enabling public participation and fostering civic engagement;
- Decentralization at the appropriate level for maximizing effectiveness;
- Setting of standards, normative and executive water-related legislation, and enforcement of rules and regulations;
- Frameworks for private sector involvement;
- Monitoring processes, coordination and collaboration protocols, etc.

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



**INECO Toolbox**

**The INECO Web Toolbox**

Institutional and Economic Instruments

- Market instruments
- Liability and assurance regimes
- Financial encouragement / instruments
- Water charges (fees) and cost recovery
- Voluntary Agreements and Programmes
- Decentralisation
- Private sector involvement
- Public participation & Stakeholder involvement

A survey of institutional frameworks for water management

Participatory Tools for Strategic Planning

Perception Surveys

Discussion Fora

Home > Institutional and Economic Instruments

**Market instruments**

Market instruments comprise the establishment of transferable rights to use/pollute water and the creation of efficient markets in which the rights can be traded. Market instruments have the advantages of offering a non-political means to solve conflicts over water rights, ensuring optimal allocation and efficiency and limiting the need for overall planning and management. In practice, where established, water markets operate in far from perfect conditions, due to natural monopoly, high sunk costs and numerous externalities.

Markets are often built over existing resource management frameworks and therefore may co-exist with other institutional arrangements and associated property rights systems. There are basically two types of such arrangements: community-based management (associated with common property of a resource) and state controlled (e.g. through licensing).

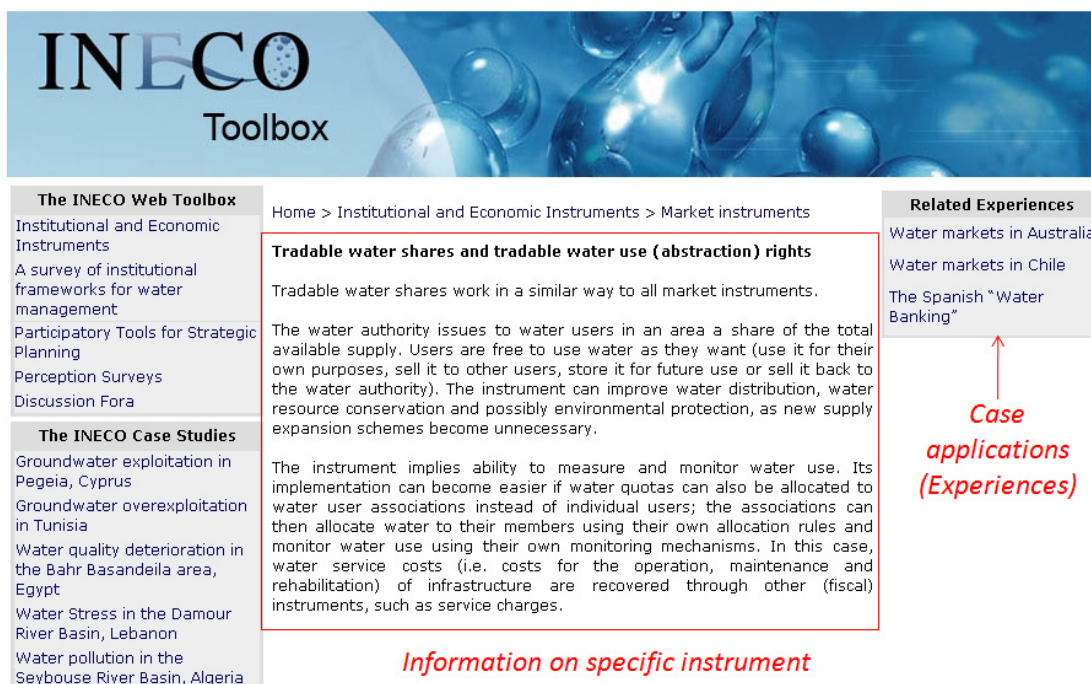
**Specific Instruments:**

- Tradable emission (discharge) permits
- Tradable water shares and tradable water use (abstraction) rights

*Information body*

*Links to specific instruments for a category*

Figure 3: Retrieving knowledge-base information on instrument categories



**INECO Toolbox**

**The INECO Web Toolbox**

Institutional and Economic Instruments

A survey of institutional frameworks for water management

Participatory Tools for Strategic Planning

Perception Surveys

Discussion Fora

**The INECO Case Studies**

- Groundwater exploitation in Pegeia, Cyprus
- Groundwater overexploitation in Tunisia
- Water quality deterioration in the Bahr Basandeila area, Egypt
- Water Stress in the Damour River Basin, Lebanon
- Water pollution in the Seybouse River Basin, Algeria

Home > Institutional and Economic Instruments > Market instruments

**Tradable water shares and tradable water use (abstraction) rights**

Tradable water shares work in a similar way to all market instruments.

The water authority issues to water users in an area a share of the total available supply. Users are free to use water as they want (use it for their own purposes, sell it to other users, store it for future use or sell it back to the water authority). The instrument can improve water distribution, water resource conservation and possibly environmental protection, as new supply expansion schemes become unnecessary.

The instrument implies ability to measure and monitor water use. Its implementation can become easier if water quotas can also be allocated to water user associations instead of individual users; the associations can then allocate water to their members using their own allocation rules and monitor water use using their own monitoring mechanisms. In this case, water service costs (i.e. costs for the operation, maintenance and rehabilitation) of infrastructure are recovered through other (fiscal) instruments, such as service charges.

*Information on specific instrument*

**Related Experiences**

- Water markets in Australia
- Water markets in Chile
- The Spanish "Water Banking"

*Case applications (Experiences)*

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

# INECO

## Toolbox

**The INECO Web Toolbox**

[Institutional and Economic Instruments](#)

[A survey of institutional frameworks for water management](#)

[Participatory Tools for Strategic Planning](#)

[Perception Surveys](#)

[Discussion Fora](#)

**The INECO Case Studies**

[Groundwater exploitation in Pegeia, Cyprus](#)

[Groundwater overexploitation in Tunisia](#)

[Water quality deterioration in the Bahi Basandeila area, Egypt](#)

[Water Stress in the Damour River Basin, Lebanon](#)

[Water pollution in the Seybouse River Basin, Algeria](#)

[Water stress and low efficiency in irrigation water use in the Oum Er Rbia Hydraulic Basin, Morocco](#)

[Water quality degradation in the Barada River Basin, Syria](#)

[Home](#) > [Institutional and Economic Instruments](#) > [Experiences](#) > [Cooperative agreements in Viersen, Germany](#)

### Cooperative agreements in Viersen, Germany

<b>Problem</b>	Increasing pollution of groundwater with nitrates in Viersen, North Rhine Westphalia
<b>Solution</b>	Development of a cooperative agreement between the local water company and farmers to limit fertilizer and manure application
<b>Instruments</b>	Negotiation, Cooperative agreements
<b>Implementation details</b>	<p>Viersen is a town of about 77 000 inhabitants surrounded by intensively used farmlands.</p> <p>About 25 years ago the water company reacted to the increasing nitrate concentration in groundwater by building deep wells. This measure led to a significant decrease in the average nitrate concentration in drinking water from 80 to 35 mg/l in the nineties.</p> <p>However, the use of deep groundwater did not prove to be a long-term solution due to hydrological reasons. Although the company purchased farmland near to the water works, the effectiveness of this measure was limited, so that the only solution was to enter into negotiations with farmers for limiting fertilizer applications.</p> <p>As a result, the nitrate concentration in groundwater has been decreasing continuously, so that the average value of 35 mg/l in drinking water has been maintained, and the installation of a treatment plant could be avoided. The economic net benefit resulting from the CAs amounts at least to 233 000 Euro per year. Consequently, a significant increase in water charges could be prevented. The proportion of the costs of the agreements to the water charge is only 3.5%. A further benefit resulting from this solution is the reversal of increasing pollution of the groundwater in accordance with the preventative principle, by which the natural resource will be protected in contrast to the "end-of-pipe" approach.</p>
<b>Evaluation</b>	
<b>Further information / References</b>	<p>Heinz I. (2007) Cooperative agreements and the EU: Water Framework Directive in conjunction with the Common Agricultural Policy, Hydrol. Earth Syst. Sci. Discuss., 4, 1593-1624, 2007.</p> <p>Available from: <a href="http://www.hydrol-earth-syst-sci-discuss.net/4/1593/2007">www.hydrol-earth-syst-sci-discuss.net/4/1593/2007</a></p>

**Log In**

Username:

Password:

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”

# INECO

## Toolbox

**The INECO Web Toolbox**

Institutional and Economic Instruments

A survey of institutional frameworks for water management

Lebanon

Tunisia

Algeria

Syria

Cyprus

Morocco

Egypt

Participatory Tools for Strategic Planning

Perception Surveys

Discussion Fora

**The INECO Case Studies**

Groundwater exploitation in Pegeia, Cyprus

Groundwater overexploitation in Tunisia

Water quality deterioration in the Bahr Basandeila area, Egypt

Water Stress in the Damour River Basin, Lebanon

Water pollution in the Seybouse River Basin, Algeria

Water stress and low efficiency in irrigation water use in the Oum Er Rbia Hydraulic Basin, Morocco

Water quality degradation in the Barada River Basin, Syria

**Log In**

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Password:

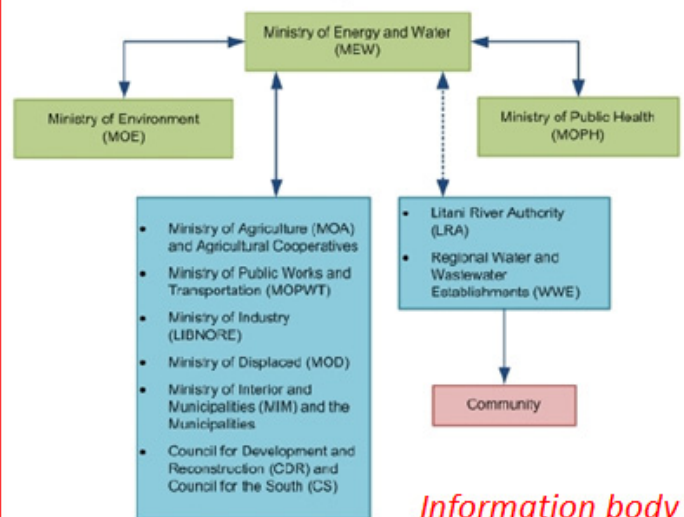
**Further information on specific aspects**

Home > A survey for institutional frameworks for water management

**Lebanon**

The water sector of **Lebanon** is currently governed by a centralized system and is under the jurisdiction of the Ministry of Energy and Water (MEW), the Ministry of Environment (MOE), and the Ministry of Public Health (MPH).

Other institutions, such as the Ministry of Agriculture (MOA), the Ministry of Public Works and Transportation (MPWT), the Ministry of Interior and Municipalities (MIM), the Ministry of the Displaced (MOD), the Regional Water and Wastewater Establishments, the Litani River Authority (LRA), and the Council for Development and Reconstruction (CDR) also have an important role. Local municipalities are responsible of implementing water projects according to the National Master Plan elaborated by the MEW.



**Information body**

*Figure 1: The organisational framework of the water sector in Lebanon*

The MEW is responsible for the development of the National Master Plan for water management. Additionally, the MEW undertakes by law the responsibility of supervising and coordinating the activities of all institutions dealing with water management issues. Coordination, however, remains limited due to the lack of human resources and the fact that the corresponding cooperation and coordination mechanisms are not defined in the pertinent legislation.

**Further information on:**

- Legislation
- Institutional Mapping - Responsibilities of different actors
- Financial framework

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:

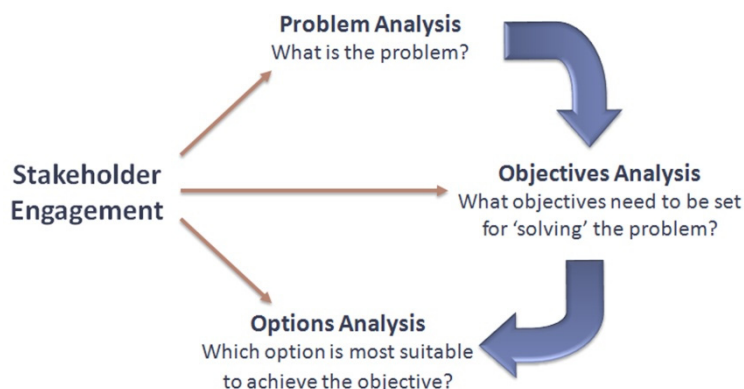
- Step 1: Definition of the Group’s name and elaboration of a description, if relevant;
- Step 2: Selection of Group members from the list of the Web Toolbox members;
- Step 3: Selection of one Group member to become the Moderator.

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.



The screenshot displays the INECO Web Toolbox interface. On the left, a sidebar lists various tools and case studies. The main content area is divided into three steps: Step 1: Problem Tree Analysis, Step 2: Objective Analysis, and Step 3: Option Analysis and Evaluation. Step 1 includes fields for specifying a new problem, selecting a case, and selecting a user group, with a 'Create Problem Tree' button. Step 2 and Step 3 provide instructions on how to proceed. At the bottom, a 'Moderator Menu' is visible, containing links for creating a new strategic planning session, starting a new discussion, creating a survey, and creating a new user group. A red box highlights the 'Create New Strategic Planning Session' link, with a red arrow pointing to it and the text 'Launch of a new Strategic Planning Session'.

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

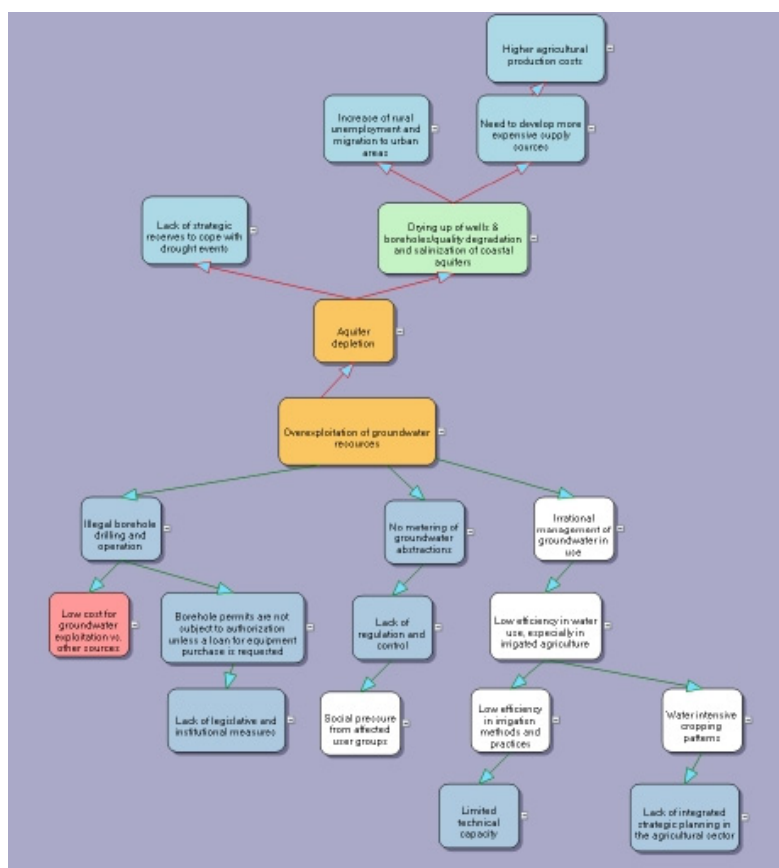


Figure 12: A completed "Problem-Tree"

### 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).

# INECO

## Toolbox

**The INECO Web Toolbox**

[Institutional and Economic Instruments](#)

[A survey of institutional frameworks for water management](#)

[Participatory Tools for Strategic Planning](#)

[Perception Surveys](#)

[Discussion Fora](#)

**The INECO Case Studies**

[Groundwater exploitation in Pegeia, Cyprus](#)

[Groundwater overexploitation in Tunisia](#)

[Water quality deterioration in the Bahr Basandeila area, Egypt](#)

[Water Stress in the Damour River Basin, Lebanon](#)

[Water pollution in the Seybouse River Basin, Algeria](#)

Home > Water quality degradation in the Barada River Basin, Syria > Strategic Planning Process by INECO\_Syria\_CS\_Group User Group

**Step 1: Problem Tree Analysis**

Step 1 has been completed.

---

**Step 2: Objective Analysis**

[Start Objective tree construction](#)

---

**Step 3: Option Analysis and Evaluation**

Step 2 must be completed to proceed to Step 3.

**Generate Report**

All the previous steps must have been completed in order to generate the process report.

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.

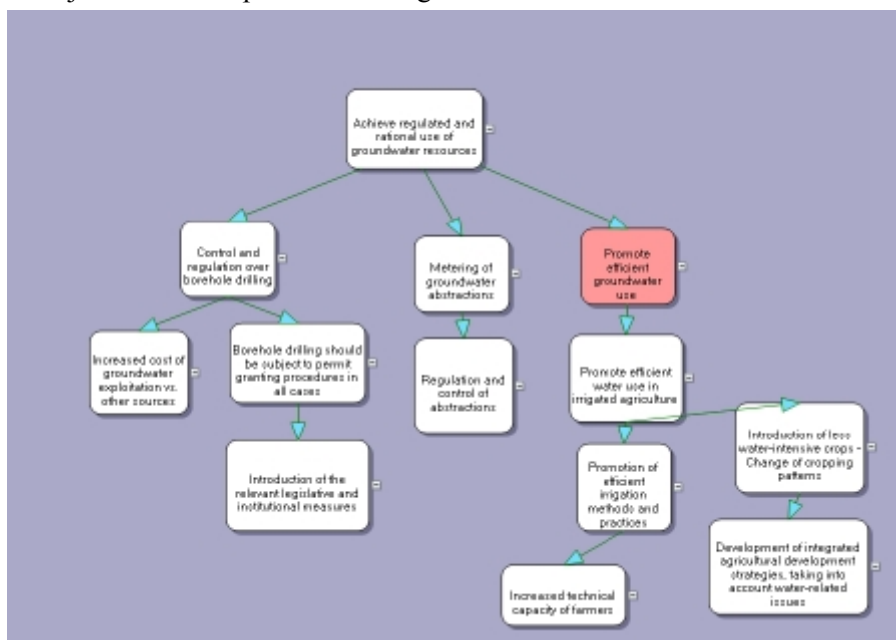


Figure 14: A completed "Objective Tree"

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).

## INECO

Toolbox

<p><b>The INECO Web Toolbox</b></p> <p><a href="#">Institutional and Economic Instruments</a></p> <p><a href="#">A survey of institutional frameworks for water management</a></p> <p><a href="#">Participatory Tools for Strategic Planning</a></p> <p><a href="#">Perception Surveys</a></p> <p><a href="#">Discussion Fora</a></p> <p><b>The INECO Case Studies</b></p> <p><a href="#">Groundwater exploitation in Pegeia, Cyprus</a></p> <p><a href="#">Groundwater overexploitation in Tunisia</a></p> <p><a href="#">Water quality deterioration in the Bahr Basandeila area, Egypt</a></p> <p><a href="#">Water Stress in the Damour River Basin, Lebanon</a></p> <p><a href="#">Water pollution in the Seybouse River Basin, Algeria</a></p>	<p style="font-size: small;">Home &gt; Water quality degradation in the Barada River Basin, Syria &gt; Strategic Planning Process by INECO_Syria_CS_Group User Group</p> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"> <p><b>Step 1: Problem Tree Analysis</b></p> <p>Step 1 has been completed.</p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"> <p><b>Step 2: Objective Analysis</b></p> <p>Step 2 has been completed.</p> </div> <div style="border: 1px solid #ccc; padding: 5px;"> <p><b>Step 3: Option Analysis and Evaluation</b></p> <p style="text-align: center; border: 1px solid #0070c0; padding: 2px 10px; display: inline-block; color: white;">Start Option Analysis and Evaluation</p> </div> <p><b>Generate Report</b></p> <p style="font-size: x-small;">All the previous steps must have been completed in order to generate the process report.</p>
--	--

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.

# INECO

## Toolbox

**The INECO Web Toolbox**

Institutional and Economic Instruments

A survey of institutional frameworks for water management

**Participatory Tools for Strategic Planning**

Perception Surveys

Discussion Fora

**The INECO Case Studies**

Groundwater exploitation in Pegeia, Cyprus

Groundwater overexploitation in Tunisia

Water quality deterioration in the Bahr Basandeila area, Egypt

Water Stress in the Damour River Basin, Lebanon

Water pollution in the Seybouse River Basin, Algeria

Water stress and low efficiency in irrigation water use in the Oum Er Rbia Hydraulic Basin, Morocco


Water quality degradation in the Barada River Basin, Syria

**Participatory Tools for Strategic Planning**

This section of the INECO Web toolbox offers access to a series of tools that can support participatory planning for the mitigation of water management issues.

The tools that can be accessed from this section implement the "Objective-Oriented Project Planning" method. The method is similar to the Logical Framework Approach and can be used to frame discussions with stakeholders.

The overall approach is divided into three stages, as outlined in the Figure below.



The framework for analyzing significant water management issues using the Objective Oriented Planning Method

The first stage is called "Problem Analysis". In this stage, a selected focal problem is analyzed in terms of causes and effects. The key issue in this stage is to correctly (and fully) determine and map cause and effect relationships between threats and their root causes.

The second stage, "Analysis of objectives" concerns the development of policy objectives from the identified problems, and the identification of means to end relationships.

The third stage, "Option analysis", involves identifying the different options that can contribute to the achievement of the selected objectives. Options are then evaluated by stakeholders in order to determine the most suitable strategy for achieving problem mitigation.

**Log In**

Username:

Password:

View existing cases

Participate in an OOP

Request joining a user group

← Access to session outcomes

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

# INECO

## Toolbox

**The INECO Web Toolbox**

Institutional and Economic Instruments

A survey of institutional frameworks for water management

Participatory Tools for Strategic Planning

Perception Surveys

Discussion Fora

**The INECO Case Studies**

Groundwater exploitation in Pegeia, Cyprus

Groundwater overexploitation in Tunisia

Water quality deterioration in the Bahr Basandeila area, Egypt

Water Stress in the Damour River Basin, Lebanon

Water pollution in the Seybouse River Basin, Algeria

Water stress and low efficiency in irrigation water use in the Oum Er Rbia Hydraulic Basin, Morocco

Water quality degradation in the Barada River Basin, Syria

**Case: Groundwater exploitation in Pegeia, Cyprus**

- Sea intrusion and aquifer depletion by Elina Manoli on 02/03/2009

**Case: Groundwater overexploitation in Tunisia**

- Groundwater overexploitation in Tunisia by Elina Manoli on 18/03/2009

**Case: Water quality deterioration in the Bahr Basandeila area, Egypt**

- Water quality deterioration in the Bahr Basandeila Canal by Elina Manoli on 09/06/2009

**Case: Water Stress in the Damour River Basin, Lebanon**

- Water stress in the Damour River Basin by Elina Manoli on 22/03/2009

**Case: Water pollution in the Seybouse River Basin, Algeria**

- Water pollution in the Seybouse River Basin by Elina Manoli on 02/06/2009

**Case: Water stress and low efficiency in irrigation water use in the Oum Er Rbia Hydraulic Basin, Morocco**

- Low efficiency in water use by Elina Manoli on 22/03/2009

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).

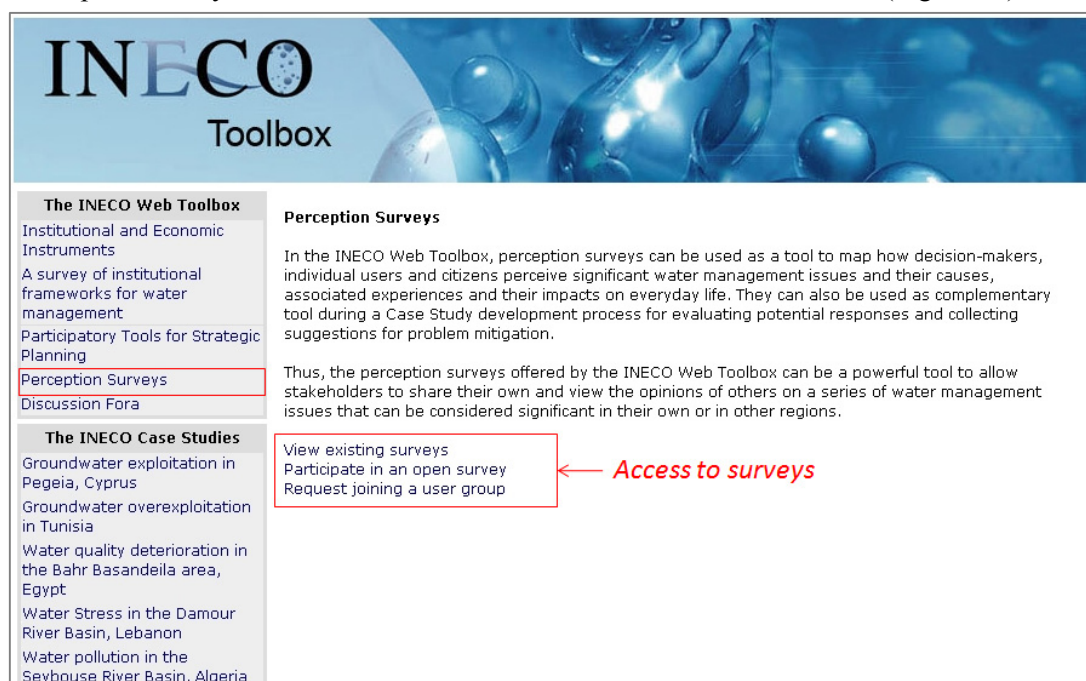


Figure 19: Access to the INECO Web toolbox surveys

#### 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

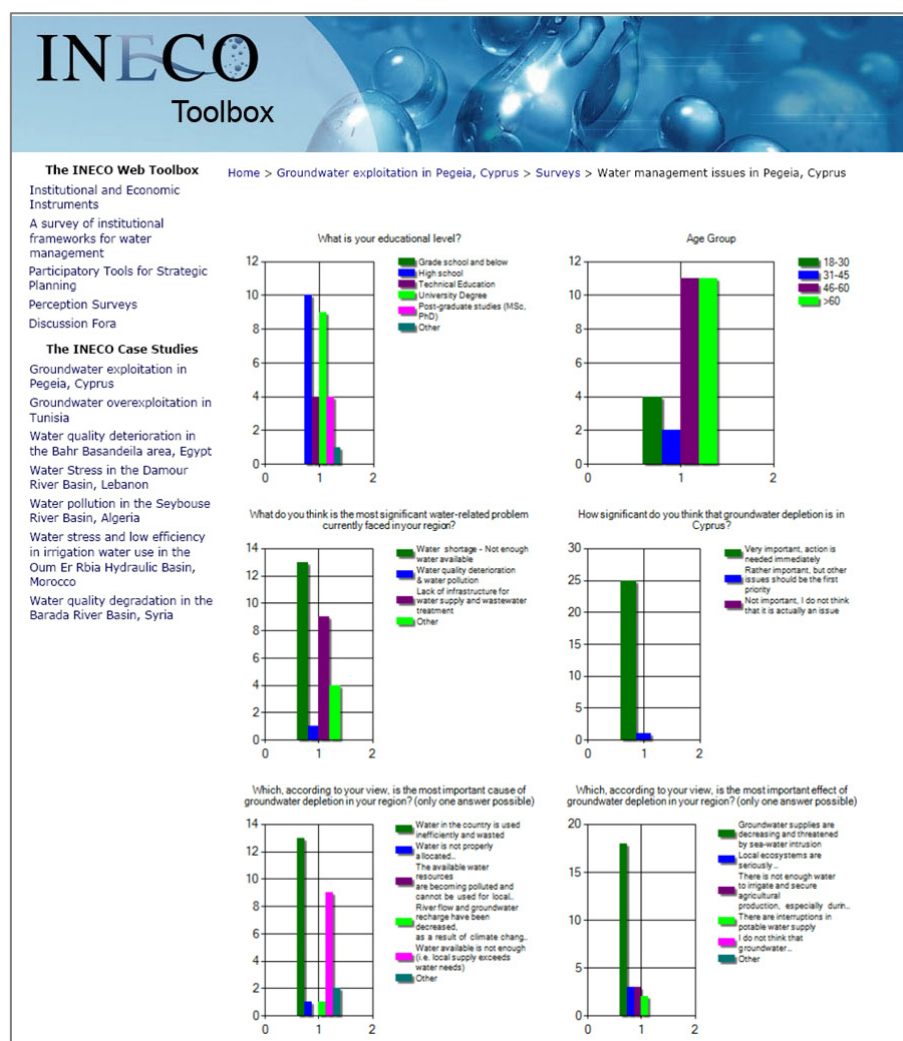


Figure 21: Browsing survey results

### 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).



The screenshot shows the INECO Toolbox website. The header features the INECO logo and the word 'Toolbox' in a large, stylized font. Below the header, there is a navigation menu on the left with links to 'The INECO Web Toolbox', 'The INECO Case Studies', and a 'Log In' section. The main content area displays a list of discussion topics, each with a title and a list of bullet points indicating the topics discussed. The topics are categorized by region or basin, such as 'Groundwater exploitation in Pegeia, Cyprus', 'Groundwater overexploitation in Tunisia', 'Water quality deterioration in the Bahr Basandeila area, Egypt', 'Water Stress in the Damour River Basin, Lebanon', 'Water pollution in the Seybouse River Basin, Algeria', 'Water stress and low efficiency in irrigation water use in the Oum Er Rbia Hydraulic Basin, Morocco', and 'Water quality degradation in the Barada River Basin, Syria'. Each topic is followed by a list of bullet points detailing the specific issues and the dates of the discussions.

**INECO Toolbox**

**The INECO Web Toolbox**  
Institutional and Economic Instruments  
A survey of institutional frameworks for water management  
Participatory Tools for Strategic Planning  
Perception Surveys  
Discussion Fora

**The INECO Case Studies**  
Groundwater exploitation in Pegeia, Cyprus  
Groundwater overexploitation in Tunisia  
Water quality deterioration in the Bahr Basandeila area, Egypt  
Water Stress in the Damour River Basin, Lebanon  
Water pollution in the Seybouse River Basin, Algeria  
Water stress and low efficiency in irrigation water use in the Oum Er Rbia Hydraulic Basin, Morocco  
Water quality degradation in the Barada River Basin, Syria

**Log In**  
Username:   
Password:

**Case: Groundwater exploitation in Pegeia, Cyprus**

- Water audits by Elina Manoli on 02/03/2009
- Small-scale desalination for the hotel sector by Elina Manoli on 22/03/2009
- Urban & tourist development vs. carrying capacity in Pegeia by Elina Manoli on 05/04/2009

**Case: Groundwater overexploitation in Tunisia**

- Regulation and monitoring of groundwater abstractions by Elina Manoli on 12/09/2008
- Expansion of water reuse schemes by Elina Manoli on 14/11/2008

**Case: Water quality deterioration in the Bahr Basandeila area, Egypt**

- Disclosure of information on drinking water quality by Elina Manoli on 19/01/2009
- Cost recovery for water services by Elina Manoli on 13/02/2009

**Case: Water Stress in the Damour River Basin, Lebanon**

- Reaching consensus on intersectoral water allocation by Elina Manoli on 08/07/2008
- Water pricing and financial sustainability in water service provision by Elina Manoli on 10/09/2008

**Case: Water pollution in the Seybouse River Basin, Algeria**

- Enhanced stakeholder involvement and public participation for water management by Elina Manoli on 02/12/2008
- Water abstraction and pollution charges by Elina Manoli on 15/01/2009

**Case: Water stress and low efficiency in irrigation water use in the Oum Er Rbia Hydraulic Basin, Morocco**

- Efficiency in intra-sectoral water allocation by Elina Manoli on 12/05/2009
- Research on public participation and water management in the Oum Er Rbia by Elina Manoli on 18/05/2009

**Case: Water quality degradation in the Barada River Basin, Syria**

- Voluntary agreements in the industrial sector by Elina Manoli on 25/05/2009
- Water pollution charges by Elina Manoli on 02/06/2009

Figure 23: Viewing discussion topics



# INECO

## Toolbox

**The INECO Web Toolbox**

Institutional and Economic Instruments

A survey of institutional frameworks for water management

Participatory Tools for Strategic Planning

Perception Surveys

Discussion Fora

**The INECO Case Studies**

Groundwater exploitation in Pegeia, Cyprus

Groundwater overexploitation in Tunisia

Water quality deterioration in the Bahr Basandeila area, Egypt

Water Stress in the Damour River Basin, Lebanon

Water pollution in the Seybouse River Basin, Algeria

Water stress and low efficiency in irrigation water use in the Oum Er Rbia Hydraulic Basin, Morocco

Water quality degradation in the Barada River Basin, Syria

Home > Groundwater exploitation in Pegeia, Cyprus > Discussions > Small-scale desalination for the hotel sector

Author	Message
	<p><b>Small-scale desalination for the hotel sector</b> 22/03/09 12:43</p> <p>Recently, and as a result of the acute drought faced in Cyprus, it is considered that hotels should be authorized to install their own desalination unit, so as to alleviate pressures exerted on the public water supply system, and secure enough water for meeting domestic and irrigation demands. This option is also strongly supported by some hotel owners, who suffer economic damage from the recurring water supply interruptions. As an extreme resort, the installation of a small-scale desalination plant could be a prerequisite for any new or existing large-scale tourist facility.</p> <p>Would you agree with this approach? Do you think that small-scale desalination would be a viable alternative and that the corresponding measure will be widely adopted and effective? In your opinion, should tourism water demand <b>always</b> be met <b>only</b> through own non-conventional supply sources or should this only be an extreme resort during drought periods?</p>
	<p><b>Re: Small-scale desalination for the hotel sector</b></p> <p>Posted by: [redacted] 25/03/09 16:43</p> <p>Yes, the hotels can easily pay for desalinated water and the cost to the tourists is not too high. The hotels need to provide a good and reliable service so using the desalination is to their benefit. If they have the desalination they do not need the residential supply and there will be more water available in dry years. Plus the hotels are making a lot of money that does not stay in the area so why should the citizens have to share the water supply with them if they have an alternative supply?</p>
	<p><b>Re: Small-scale desalination for the hotel sector</b></p> <p>Posted by: [redacted] 28/03/09 18:45</p> <p>The use of desalination as the exclusive means for water supply to tourist facilities is extremely expensive and not beneficial. Although small-scale desalination is a very good option to ensure a "good and reliable service" during dry seasons, this can be a complementary measure only. Transferring the cost of desalinating water to the customers would increase prices considerably, something which is not feasible if we want to sustain the tourist development of the area. It would impact on the number of tourists visiting and negatively affect the entire economy of the region and not just the hotels.</p>

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.

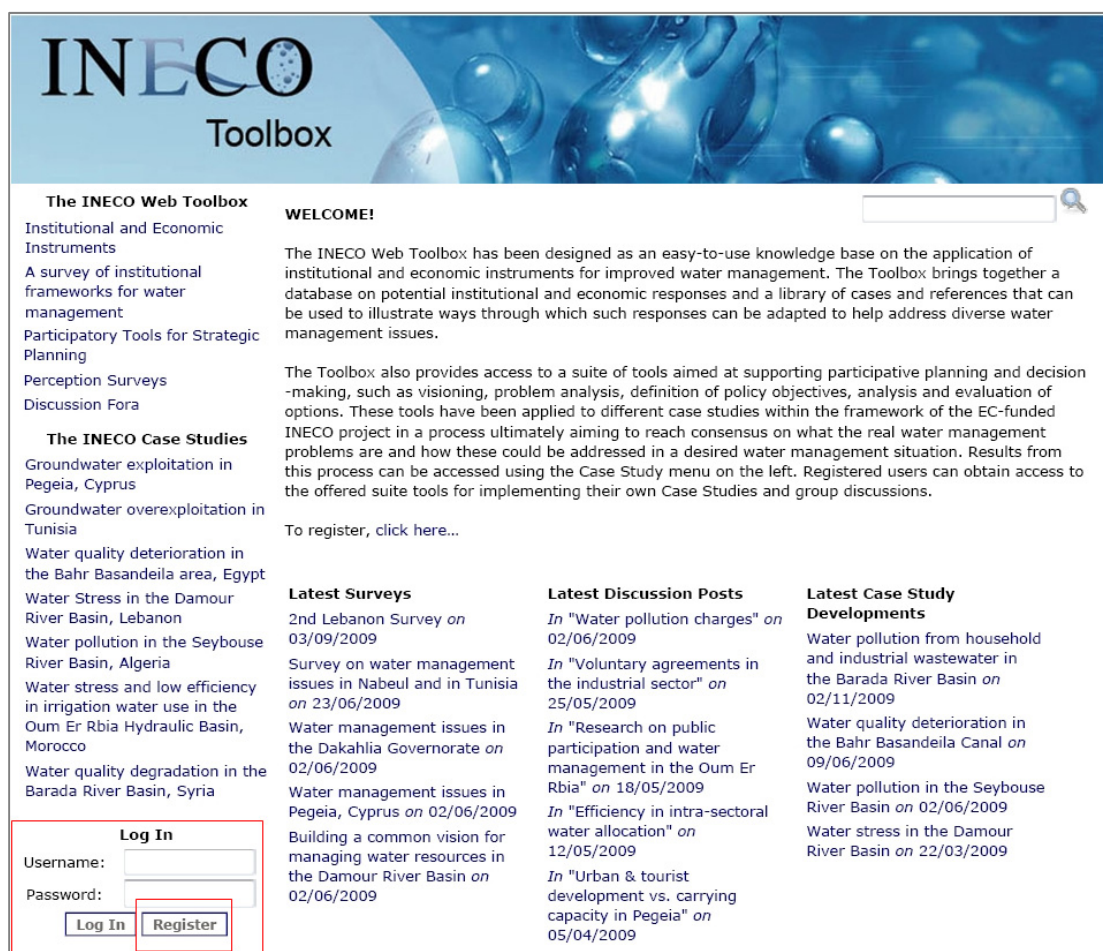
In this regard, this section of the Toolbox manual provides instructions on registration and participation in user groups.

### 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).

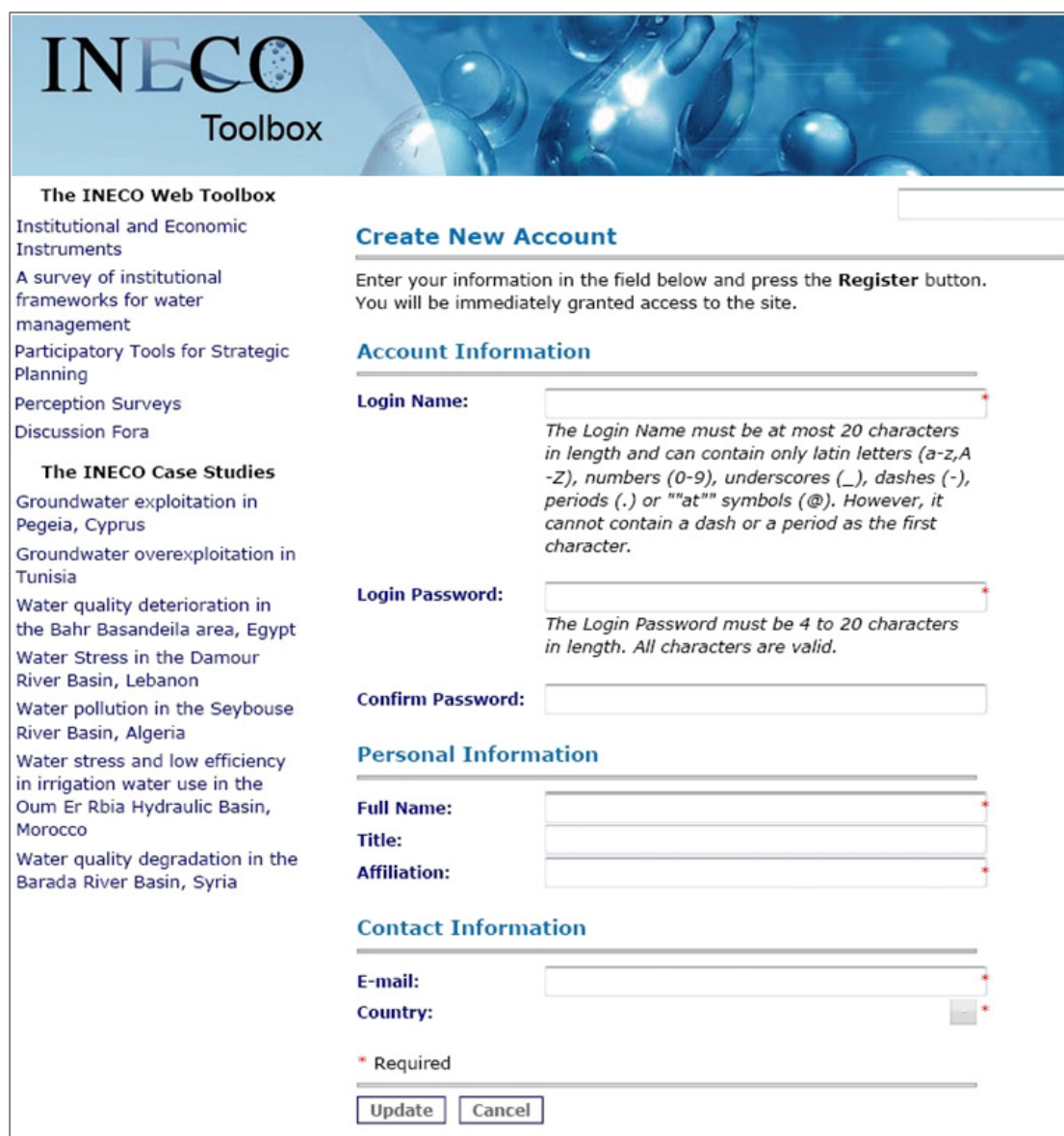


The screenshot shows the INECO Web Toolbox homepage. The header features the INECO logo and the word 'Toolbox'. The main content area is divided into several sections:

- The INECO Web Toolbox**: A list of tools including Institutional and Economic Instruments, A survey of institutional frameworks for water management, Participatory Tools for Strategic Planning, Perception Surveys, and Discussion Fora.
- The INECO Case Studies**: A list of case studies including Groundwater exploitation in Pegeia, Cyprus; Groundwater overexploitation in Tunisia; Water quality deterioration in the Bahr Basandeila area, Egypt; Water Stress in the Damour River Basin, Lebanon; Water pollution in the Seybouse River Basin, Algeria; Water stress and low efficiency in irrigation water use in the Oum Er Rbia Hydraulic Basin, Morocco; and Water quality degradation in the Barada River Basin, Syria.
- WELCOME!**: A welcome message stating that the INECO Web Toolbox is designed as an easy-to-use knowledge base on the application of institutional and economic instruments for improved water management. It also mentions that the toolbox provides access to a suite of tools aimed at supporting participative planning and decision-making.
- Latest Surveys**: A list of recent surveys, including the 2nd Lebanon Survey on 03/09/2009, Survey on water management issues in Nabeul and in Tunisia on 23/06/2009, Water management issues in the Dakahlia Governorate on 02/06/2009, and Water management issues in Pegeia, Cyprus on 02/06/2009.
- Latest Discussion Posts**: A list of recent discussion posts, including "Water pollution charges" on 02/06/2009, "Voluntary agreements in the industrial sector" on 25/05/2009, "Research on public participation and water management in the Oum Er Rbia" on 18/05/2009, "Efficiency in intra-sectoral water allocation" on 12/05/2009, and "Urban & tourist development vs. carrying capacity in Pegeia" on 05/04/2009.
- Latest Case Study Developments**: A list of recent case study developments, including Water pollution from household and industrial wastewater in the Barada River Basin on 02/11/2009, Water quality deterioration in the Bahr Basandeila Canal on 09/06/2009, Water pollution in the Seybouse River Basin on 02/06/2009, and Water stress in the Damour River Basin on 22/03/2009.

At the bottom left, there is a **Log In** section with fields for Username and Password, and buttons for **Log In** and **Register**. The **Register** button is highlighted with a red box.

Figure 25: The Log-in and register options



**INECO Toolbox**

**The INECO Web Toolbox**

Institutional and Economic Instruments

A survey of institutional frameworks for water management

Participatory Tools for Strategic Planning

Perception Surveys

Discussion Fora

**The INECO Case Studies**

Groundwater exploitation in Pegeia, Cyprus

Groundwater overexploitation in Tunisia

Water quality deterioration in the Bahr Basandeila area, Egypt

Water Stress in the Damour River Basin, Lebanon

Water pollution in the Seybouse River Basin, Algeria

Water stress and low efficiency in irrigation water use in the Oum Er Rbia Hydraulic Basin, Morocco

Water quality degradation in the Barada River Basin, Syria

**Create New Account**

Enter your information in the field below and press the **Register** button. You will be immediately granted access to the site.

**Account Information**

**Login Name:**  \*

*The Login Name must be at most 20 characters in length and can contain only latin letters (a-z,A-Z), numbers (0-9), underscores (\_), dashes (-), periods (.) or "at" symbols (@). However, it cannot contain a dash or a period as the first character.*

**Login Password:**  \*

*The Login Password must be 4 to 20 characters in length. All characters are valid.*

**Confirm Password:**

**Personal Information**

**Full Name:**  \*

**Title:**

**Affiliation:**  \*

**Contact Information**

**E-mail:**  \*

**Country:**  \*

\* Required

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.