



**System for Environmental and Agricultural Modelling;  
Linking European Science and Society**

**Manual SEAMLESS-IF**

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# Table of contents

<b>Table of contents</b> .....	<b>3</b>
<b>Table of figures</b> .....	<b>4</b>
<b>List of tables</b> .....	<b>6</b>
<b>General information</b> .....	<b>7</b>
<b>Executive summary</b> .....	<b>7</b>
<b>1 Introduction</b> .....	<b>9</b>
<b>2 Installation of SEAMLESS-IF</b> .....	<b>11</b>
2.1 <i>Technical requirements</i> .....	11
2.2 <i>Software requirements</i> .....	11
<b>3 General features</b> .....	<b>13</b>
3.1 <i>Import of text and text editing</i> .....	13
3.2 <i>Sorting of lists</i> .....	13
3.3 <i>Resizing of panels and columns</i> .....	14
3.4 <i>Save/Discard changes</i> .....	14
3.5 <i>Tool tips</i> .....	15
<b>4 Using SEAMLESS-IF</b> .....	<b>17</b>
4.1 <i>Logging in</i> .....	17
4.2 <i>Application version information</i> .....	17
4.3 <i>User roles</i> .....	18
4.4 <i>Managing projects</i> .....	18
4.4.1 <i>Opening an existing project</i> .....	19
4.4.2 <i>Closing a project</i> .....	20
4.4.3 <i>To create a new project</i> .....	20
4.4.4 <i>To remove a project</i> .....	20
4.5 <i>Suggested workflow</i> .....	20
<b>5 Pre-modelling activities</b> .....	<b>21</b>
5.1 <i>Project description</i> .....	21
5.2 <i>Narrative experiments</i> .....	22
5.3 <i>Indicator manager</i> .....	24
<b>6 Modelling activities</b> .....	<b>29</b>
6.1 <i>Experiment Designer</i> .....	29
6.1.1 <i>Context</i> .....	30
6.1.2 <i>Outlook</i> .....	31
6.1.3 <i>Policy</i> .....	32

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6.2	<i>Experiment queuing</i> .....	34
6.3	<i>Model chain viewer</i> .....	35
6.4	<i>Processing center</i> .....	35
<b>7</b>	<b>Post-modelling activities</b> .....	<b>37</b>
7.1	<i>Visualizations</i> .....	37
<b>8</b>	<b>Policy Analysis</b> .....	<b>43</b>
<b>9</b>	<b>Documentation</b> .....	<b>45</b>
<b>10</b>	<b>Ontology Browser</b> .....	<b>47</b>
<b>11</b>	<b>User Management</b> .....	<b>49</b>
11.1	<i>Creating a new user</i> .....	49
11.2	<i>Editing an existing user</i> .....	50
11.3	<i>Removing an existing user</i> .....	50
11.4	<i>Closing the User Management</i> .....	50
<b>12</b>	<b>How to use the Trac system</b> .....	<b>51</b>
12.1	<i>How to login to Trac</i> .....	51
12.2	<i>How to submit a ticket</i> .....	52
12.3	<i>How to get feedback from Trac</i> .....	55
12.4	<i>A Short guide to Trac Wiki</i> .....	56
12.4.1	<i>Comparing versions in Trac wiki</i> .....	56
12.4.2	<i>Editing a wiki page</i> .....	57
12.5	<i>Support of Frequently Asked Questions</i> .....	59
	<b>Glossary</b> .....	<b>61</b>

## Table of figures

<i>Figure 1: Ascending and descending sorting, respectively.</i> .....	13
<i>Figure 2: A resizable column</i> .....	14
<i>Figure 3: Do not forget to save your changes.</i> .....	14
<i>Figure 4: Tool tips.</i> .....	15
<i>Figure 5: The login screen of SEAMLESS-IF.</i> .....	17
<i>Figure 6: The about screen of SEAMLESS-IF</i> .....	16
<i>Figure 7: Opening a project.</i> .....	19
<i>Figure 8: Open the list of available projects within a spatial category by clicking on the blue arrow to the left.</i> .....	19
<i>Figure 9: Opening a project.</i> .....	19
<i>Figure 10: Closing a project.</i> .....	20
<i>Figure 11: Removing a project.</i> .....	20
<i>Figure 12: The task bar with tool tips.</i> .....	20
<i>Figure 13: The project description screen.</i> .....	21
<i>Figure 14: Choose spatial scale in the drop-down menu.</i> .....	21
<i>Figure 15: Choose model chain in the drop-down menu.</i> .....	21

<i>Figure 16: Model chain warning.</i>	22
<i>Figure 17: The Narrative experiments window.</i>	22
<i>Figure 18: Experiment composer. If you check the box at the head of the arrow, all experiments in the database are shown.</i>	23
<i>Figure 19: Text box to describe important characteristics of the analysis.</i>	23
<i>Figure 20: The Goal-Oriented Framework.</i>	24
<i>Figure 21: One theme/dimension box in GOF.</i>	25
<i>Figure 22: The indicator selection window.</i>	26
<i>Figure 23: The indicator information.</i>	26
<i>Figure 24: Fact sheet.</i>	27
<i>Figure 25: The indicator library.</i>	27
<i>Figure 26: Filtering indicators.</i>	28
<i>Figure 27: The structure of an experiment.</i>	29
<i>Figure 28: The modelling phase has four steps.</i>	30
<i>Figure 29: Choosing experiment.</i>	30
<i>Figure 30: The context tab.</i>	31
<i>Figure 31: The outlook screen.</i>	32
<i>Figure 32: The line turns green if the value is different from the baseline value.</i>	32
<i>Figure 33: The policy option screen.</i>	33
<i>Figure 34: Editing the control measures.</i>	34
<i>Figure 35: Experiment queuing.</i>	34
<i>Figure 36: The graphical representation of a model chain.</i>	35
<i>Figure 37: The process centre screen.</i>	36
<i>Figure 38: The visualization window</i>	37
<i>Figure 39: Open a visualization.</i>	38
<i>Figure 40: The table tab of the visualization editing window.</i>	39
<i>Figure 41: Cross table.</i>	39
<i>Figure 42: Bar chart.</i>	40
<i>Figure 43: Radar chart.</i>	41
<i>Figure 44: Map visualization</i>	42
<i>Figure 45: The documentation screen.</i>	45
<i>Figure 46: Ontology Browser button.</i>	47
<i>Figure 47: Ontology Browser window.</i>	47
<i>Figure 48: Searching the ontology.</i>	48
<i>Figure 49: User Management button</i>	49
<i>Figure 50: Creating a new user account.</i>	49
<i>Figure 51: Assigning project roles to a user</i>	50
<i>Figure 52: A direct link to the Trac system web site is the bug report button.</i>	51
<i>Figure 53: The Trac login.</i>	51
<i>Figure 54: Connect to the Trac server.</i>	52
<i>Figure 55: A list of available ways of sorting the tickets</i>	53
<i>Figure 56: Tickets sorted by milestone.</i>	54
<i>Figure 57: Click "New Ticket" in the upper right corner.</i>	54
<i>Figure 58: Describe your problem with all details needed to recreate it in the text box.</i>	55
<i>Figure 59: Where to change your Trac settings.</i>	55
<i>Figure 60: Remember to press "Submit changes" before you leave the page.</i>	56
<i>Figure 61: Compare changes between different versions of wiki pages.</i>	57
<i>Figure 62: All versions of a page are stored and can be retrieved from the data base.</i>	57
<i>Figure 63: Click "Edit this page" to be able to write text on a wiki page.</i>	58
<i>Figure 64: The editing window.</i>	58
<i>Figure 65: A draft version can be scrutinized before submitting the changes.</i>	59
<i>Figure 66: The menu of the SEAMLESS-IF wiki page in the Trac system.</i>	59

## List of tables

Table 1: Hardware requirements to run SEAMLESS-IF .....	11
Table 2: Standard rights on selected items for the different user roles in SEAMLESS-IF. A = administrator, PM = project manager, M = modeller, V = viewer.....	18
Table 3: Structure and themes of GOF. The same structure is valid in both domains.....	25

## General information

Task(s) and Activity code(s):	5.6.3.4
Input from (Task and Activity codes):	5.6.3.2
Output to (Task and Activity codes):	
Related milestones:	M5.1.6

## Executive summary

This document is a description of how to use SEAMLESS-IF. It describes the most important steps on how to install the software, create and manage projects including choosing indicators, choosing and running model chains and exploring the results. A brief introduction to the general features of the software, such as text formatting, sorting of lists and tables is also provided. Also the Trac system, a web-based management system of software development for reporting bugs, missing functions, glitches in design and usability as well as collecting wishes and requests for future versions, is described in a stepwise how-to format along with information about support and contact information.

This manual describes the delivered version of SEAMLESS-IF 02232009; design, look and functions are subjects to change in later releases.





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## 1 Introduction

The SEAMLESS-IF Manual is a description of how to install and set up the required software to use SEAMLESS-IF and how to accomplish the most important specific tasks. Also the general features of the software are described as well as how to handle projects. It is meant to help end-users of the SEAMLESS-IF system, and may leave out details that are only important to modellers and software engineers.

In this document SEAMLESS-IF most of the time refers to the Graphical User Interface (GUI) of the system. This is the part that the end-user accesses through a standard web browser (i.e. Microsoft Internet Explorer or Mozilla Firefox) and uses to control the system. The GUI connects over the internet to a server application and a database, but these parts of the system are not further described in this manual. Elaborations on this server part, the software design and the modelling environments used to create or run the models in the SEAMLESS-IF can be found under deliverables of WP5. For the models that are installed and run on the server as part of the SEAMLESS-IF system documentation is available in corresponding deliverables of WP3 and WP1.

This manual describes SEAMLESS-IF as delivered to the EC 02232009; design, look and functions are subject to change in later releases. Due to the rapid and always ongoing development of SEAMLESS-IF, some of the screenshots in the current software release available might look a little different from the ones in this document.

Lastly the web-based Trac system for reporting bugs and suggested enhancements of SEAMLESS-IF and the procedure to use it is described.



## 2 Installation of SEAMLESS-IF

SEAMLESS-IF is a distributed web service that can be used through your normal web browser.

### 2.1 Technical requirements

A distributed web service does not bring along any specific computer hardware requirements. Any somewhat modern Internet connected computer (Table 1) with a web browser installed can be used to run SEAMLESS-IF.

Table 1: Hardware requirements to run SEAMLESS-IF .

Windows	Macintosh	Linux
Intel® Pentium® II 450MHz or faster processor (or equivalent)	PowerPC® G3 500MHz or faster processor Intel Core™ Duo 1.83GHz or faster processor	Modern processor (800MHz or faster)
128MB of RAM	128MB of RAM	512MB of RAM, 128MB of Graphics Memory

### 2.2 Software requirements

Besides a web browser (Internet Explorer, Firefox, Opera and Safari for Microsoft Windows PCs, and Safari and Firefox for Apple PCs, have been tested to work properly) SEAMLESS-IF needs Adobe Flash Player 9 or higher to be installed as a plug-in in your Internet browser. You can check if you have the most recent Adobe Flash Player installed on <http://www.macromedia.com/software/flash/about/> . If you do not have at least Adobe Flash Player 9 installed, go to <http://www.adobe.com/products/flashplayer/> and follow the instructions shown on the web page to install it.

Adobe Flash Player is supported for most platforms and browsers, for a full list please go to <http://www.adobe.com/products/flashplayer/productinfo/systemreqs/>.



## 3 General features

### 3.1 Import of text and text editing

SEAMLESS-IF does not support import of text or external documents at this stage. The easiest way to get large text masses into SEAMLESS-IF is the classical copy/paste; Ctrl+C/Ctrl+V. Note that SEAMLESS-IF does not support any kind of formatting or font manipulation features like bold, italics, underlines and so on, not even the font size can be changed. All the formatting will be lost when you paste the text into SEAMLESS-IF.

You should use plain text only, without any special characters or symbols, as there is a danger that these might create problems, although not necessarily. Plain text in this context is the English alphabet, with letters and common operands (+, -, \*, etc), and no superscripts or subscripts, and no special symbols like euro symbol or similar.

It is not advisable to import text directly from Microsoft Word or similar word processing programs in their default text format, since that text contains all sorts of hidden formatting statements. To enter text into the GUI, do not copy it directly from your word processor, first create a plain txt-file with the text, and then copy from there. This removes all the hidden formatting text.

If you think that emphasising something is essential for the understanding of your text we suggest that you use asterisks, \*like this\*, or underscores like this.

### 3.2 Sorting of lists

To help you to find the item of interest in a list or a library, SEAMLESS-IF has a sorting function attached to many of its lists. By clicking the headline of the column of the item that you want to sort the list depending on, you can sort the list alphabetically or numerically (depending on the content of the column), ascending arrow showing) or descending arrow showing, Figure 1).

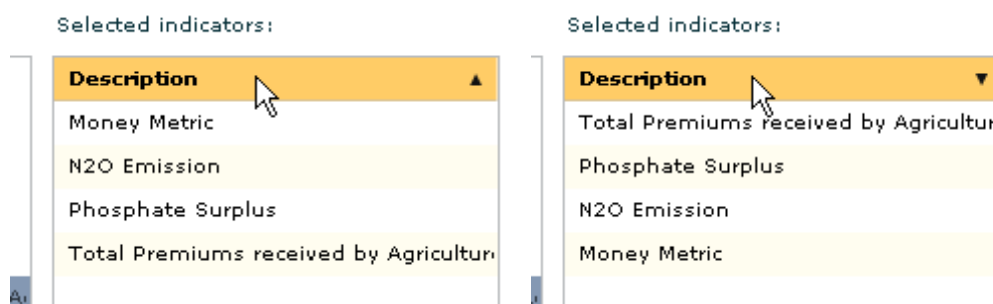


Figure 1: Ascending and descending sorting, respectively.

### 3.3 Resizing of panels and columns

Sometimes it is convenient to resize panels in SEAMLESS-IF to be able to read without too much scrolling, compare data in tables etc. Resizable panels can be recognized by the small mark on the divider, see Figure 2. Just put the cursor on the mark, the cursor will then change shapes, press down the left mouse button, move the panel border in the required direction and release the mouse button.

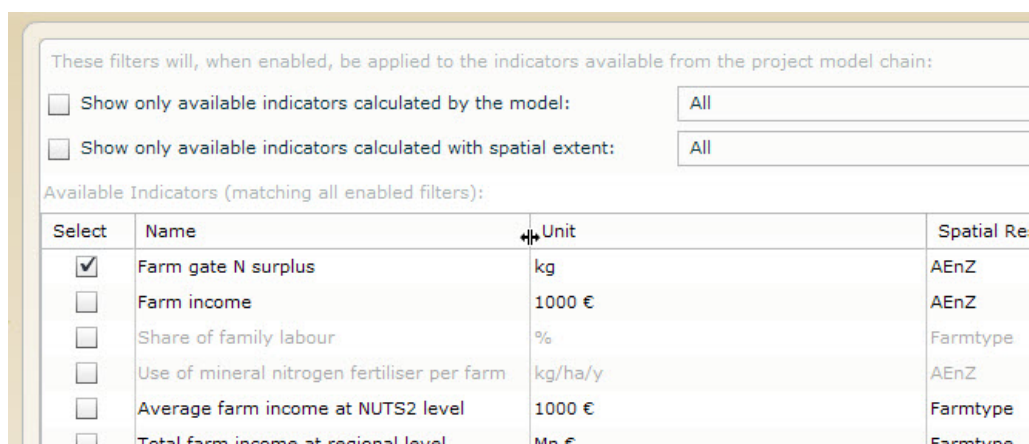


Figure 2: A resizable column.

Also columns in tables can be resized. Move the cursor to the headline of the table and place it on the border line that you wish to move, and proceed in the same way as described above.

### 3.4 Save/Discard changes

All changes and new input to the screens must be manually saved or discarded. At the bottom of every window, "Save" and "Discard" buttons are placed (Figure 3). Be aware that since the application is operating in the web browser on your computer but data is stored remotely on the server computer, if you do not use the "Save" button you might lose the modifications you made. Also closing the web browser window without saving will result in loss of data.

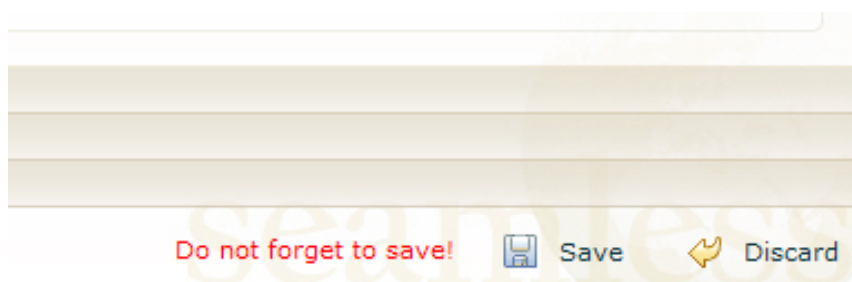


Figure 3: Do not forget to save your changes.



### 3.5 Tool tips

At current, the SEAMLESS-IF user interface makes use of the tool tip feature as its main help system (Figure 4). Hover with the cursor over an item or a word to see the explanation. Note that not all items and words have tool tip explanations.

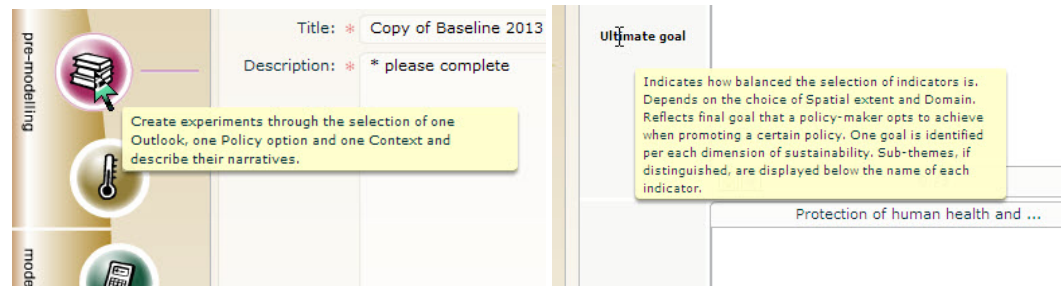


Figure 4: Tool tips.





## 4 Using SEAMLESS-IF

### 4.1 Logging in

To open SEAMLESS-IF go to <http://delivered.seamless-ip.org/>. If you cannot see the login screen (Figure 5) at this point you probably need to (re-) install the Adobe Flash Player, see section 2.2.

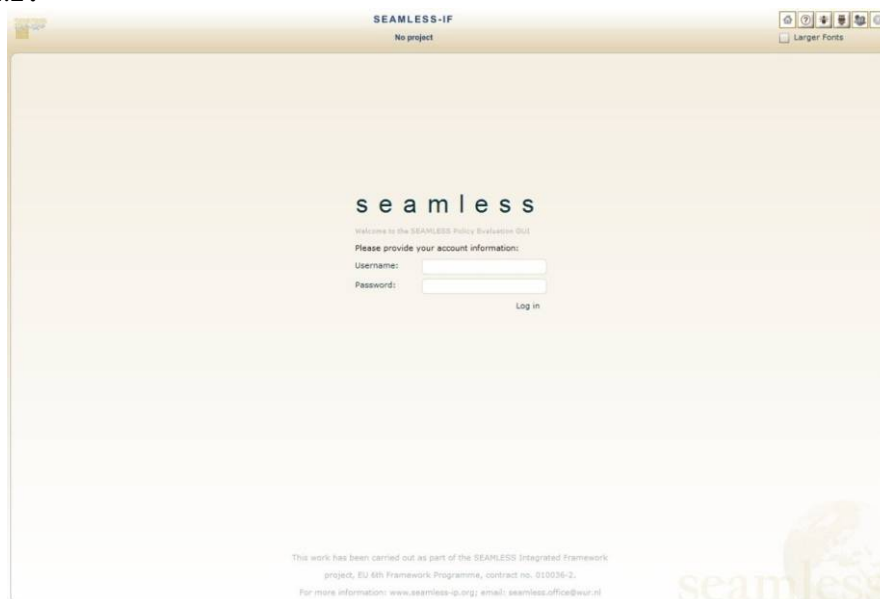


Figure 5: The login screen of SEAMLESS-IF.

Fill in the user name and password that you have been provided from the SEAMLESS administration and click “Log in”. If you do not have an account, please contact [SEAMLESS.office@wur.nl](mailto:SEAMLESS.office@wur.nl).

### 4.2 Application version information

Click on the SEAMLESS logo in the top left corner of the screen to open a window that lists the version information and addresses of the server application and database that are accessed by SEAMLESS-IF, in the bottom part. In case of problems this information is essential and should be mentioned when reporting the issue.

Close the window by clicking on the little cross in the top right corner.



Figure 6: The about screen of SEAMLESS-IF

### 4.3 User roles

Depending on your user role in SEAMLESS-IF, administrator, project manager, modeller or viewer, you have different rights to manipulate the software and its contents. The standard rights for each role are displayed in Table 2.

Table 2: Standard rights on selected items for the different user roles in SEAMLESS-IF. A = administrator, PM = project manager, M = modeller, V = viewer.

	Create/select	Read	Modify	Delete	Execute
<b>Project</b>	A, PM	V, PM, M	M, PM	A, PM	N/A
<b>Narrative Experiment</b>	M, PM	V, PM, M	M, PM	M, PM	N/A
<b>Experiment</b>	N/A	V, PM, M	M, PM	M, PM	M, PM
<b>Indicator selection</b>	M, PM	V, PM, M	M, PM	N/A	N/A
<b>Visualization</b>	M, PM	V, PM, M	M, PM	M, PM	N/A
<b>Institutional Analyses</b>	M, PM	V, PM, M	M, PM	M,PM	N/A

You are assigned a user role by the SEAMLESS-IF administrator when you apply for a user account. Your user role is stored in the SEAMLESS database, thus you automatically will have the proper set of rights when you log in to the system.

### 4.4 Managing projects

Available projects that are already stored in the database are visible in the project list that automatically opens after logging in (Figure 7). The projects are grouped according to spatial scale. Note that the list will only show the projects that you have access to based on the account you used to log in and the user role and rights assigned to it. For each project in the list the roles you have for it is displayed in one of the columns.

Each project can be either *published* or *unpublished*. This is indicated in the list by the colour of the text of the project title and description. Projects that appear in red are unpublished, and can be worked on (i.e. modified by users). Once a project is published it will appear in green in the list and further modifications are no longer allowed.

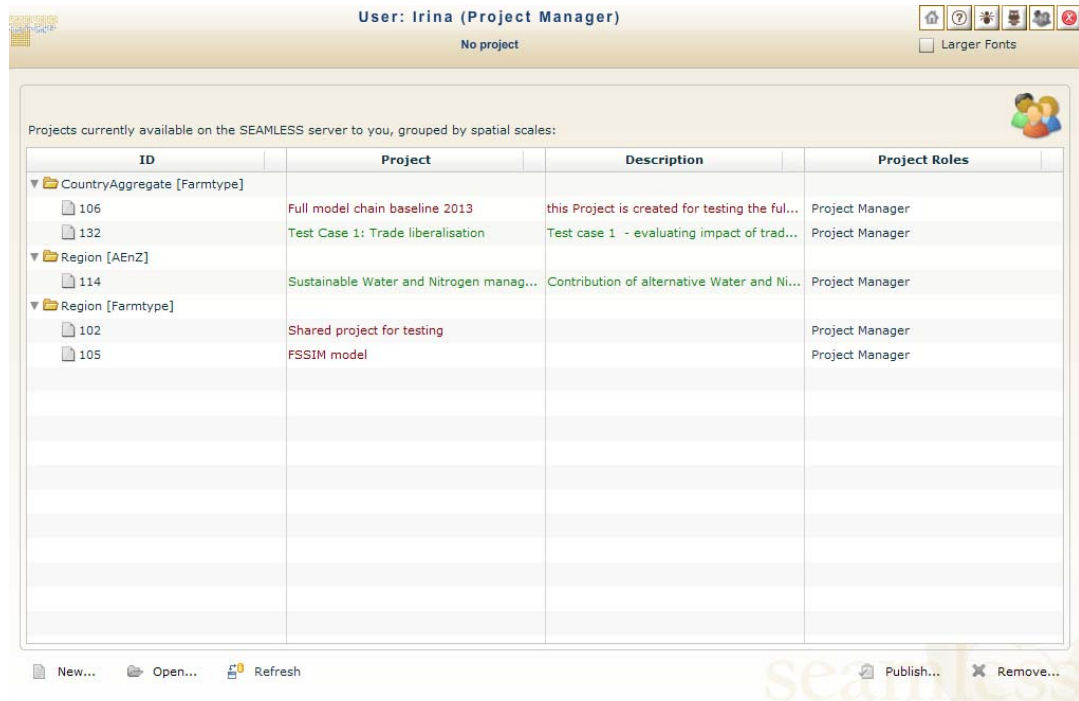


Figure 7: Opening a project.

To see the available projects, click on the arrow to the left of the spatial category.

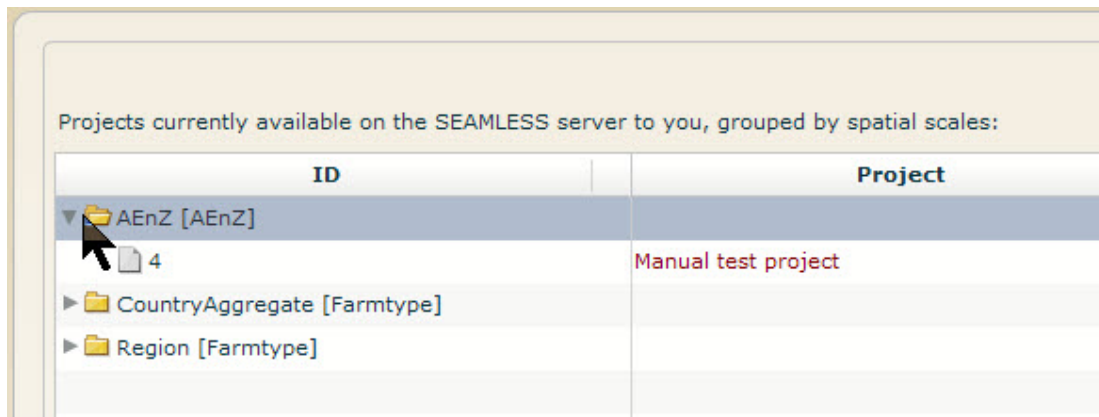


Figure 8: Open the list of available projects within a spatial category by clicking on the blue arrow to the left.

#### 4.4.1 Opening an existing project

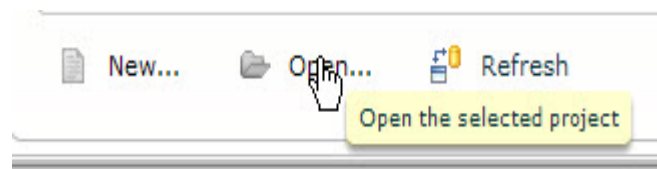
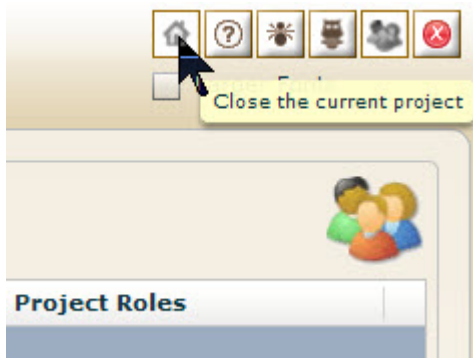


Figure 9: Opening a project.

To open an existing project, double-click the project name or highlight it by clicking on it and then click “Open” in the lower left corner of the screen.

#### 4.4.2 Closing a project



To close an open project and return to the project list, click the “Projects” button in the upper right corner.

Figure 10: Closing a project.

#### 4.4.3 To create a new project

Only a SEAMLESS-IF Administrator can create a new project. Please contact [SEAMLESS.office@wur.nl](mailto:SEAMLESS.office@wur.nl) to have a new project set up for you.

#### 4.4.4 To remove a project

Select the project in the project list. Click "Remove...".

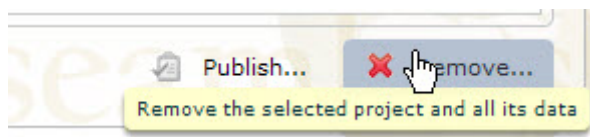


Figure 11: Removing a project.

#### 4.5 Suggested workflow



The design of SEAMLESS-IF suggests a certain workflow divided into three working phases; pre-modelling, modelling and post-modelling and within those phases different steps. The suggested workflow is clear from the task bar on the left hand side of the window. Please note the tool tip with an explanation of the different buttons if you put the cursor over it in minimized mode.

Figure 12: The task bar with tool tips.

## 5 Pre-modelling activities

### 5.1 Project description

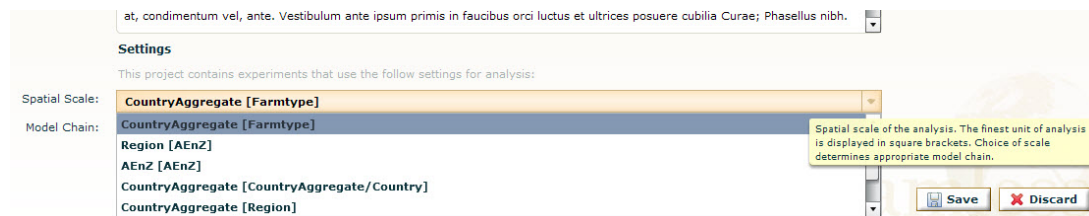
To describe the project and its aims, select the appropriate button in the task bar to the left to open the project description screen (Figure 12).



The screenshot shows a web interface for project description. It has a 'Project' section with a 'Title' field containing 'Manual test project' and a 'Description' field containing 'This project was set up to demonstrate SEAMLESS-IF'. Below this is a 'Problem' section with a 'Narrative' field containing several paragraphs of placeholder text. A mouse cursor is pointing at the 'Title' field.

Figure 13: The project description screen.

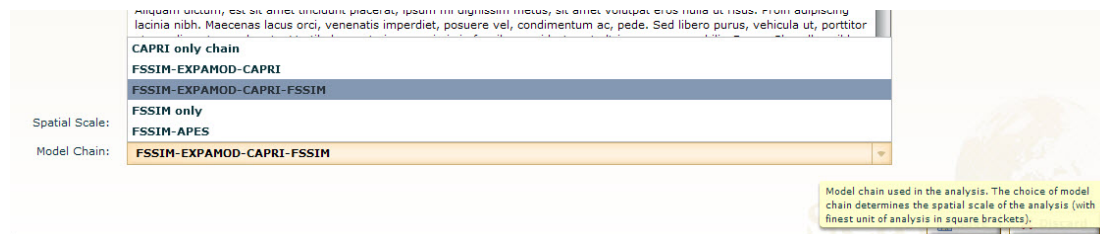
To specify the spatial extent of the project, use the drop-down menu (Figure 13).



The screenshot shows a 'Settings' section. It has a 'Spatial Scale' dropdown menu with 'CountryAggregate [Farmtype]' selected. Below it is a 'Model Chain' dropdown menu with 'CountryAggregate [CountryAggregate/Country]' selected. A tooltip is visible over the 'CountryAggregate [Farmtype]' option, stating: 'Spatial scale of the analysis. The finest unit of analysis is displayed in square brackets. Choice of scale determines appropriate model chain.' There are 'Save' and 'Discard' buttons at the bottom right.

Figure 14: Choose spatial scale in the drop-down menu.

To choose the model chain you want to use in your analysis, use the drop-down menu (Figure 14).



The screenshot shows a dropdown menu for 'Model Chain'. The menu is open, showing several options: 'CAPRI only chain', 'FSSIM-EXPAMOD-CAPRI', 'FSSIM-EXPAMOD-CAPRI-FSSIM', 'FSSIM only', and 'FSSIM-APES'. The 'FSSIM-EXPAMOD-CAPRI-FSSIM' option is selected. A tooltip is visible over the selected option, stating: 'Model chain used in the analysis. The choice of model chain determines the spatial scale of the analysis (with finest unit of analysis in square brackets).' There are 'Save' and 'Discard' buttons at the bottom right.

Figure 15: Choose model chain in the drop-down menu.

The combination of spatial scale and model chain must match, if you choose a combination that does not match you will get an error message (Figure 15). Note that you have to select a working spatial scale/model chain before you can create a complete experiment.

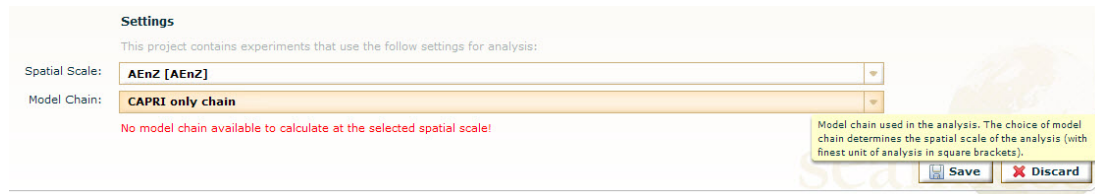


Figure 16: Model chain warning.

## 5.2 Narrative experiments

A narrative experiment consists of four main constituents; general information, context, outlook and policy option. A narrative allows you to describe an experiment in a semiformal way. The main purpose is for documentation.

Open the Narrative Experiments by clicking the appropriate button to the left on the screen (Figure 16).

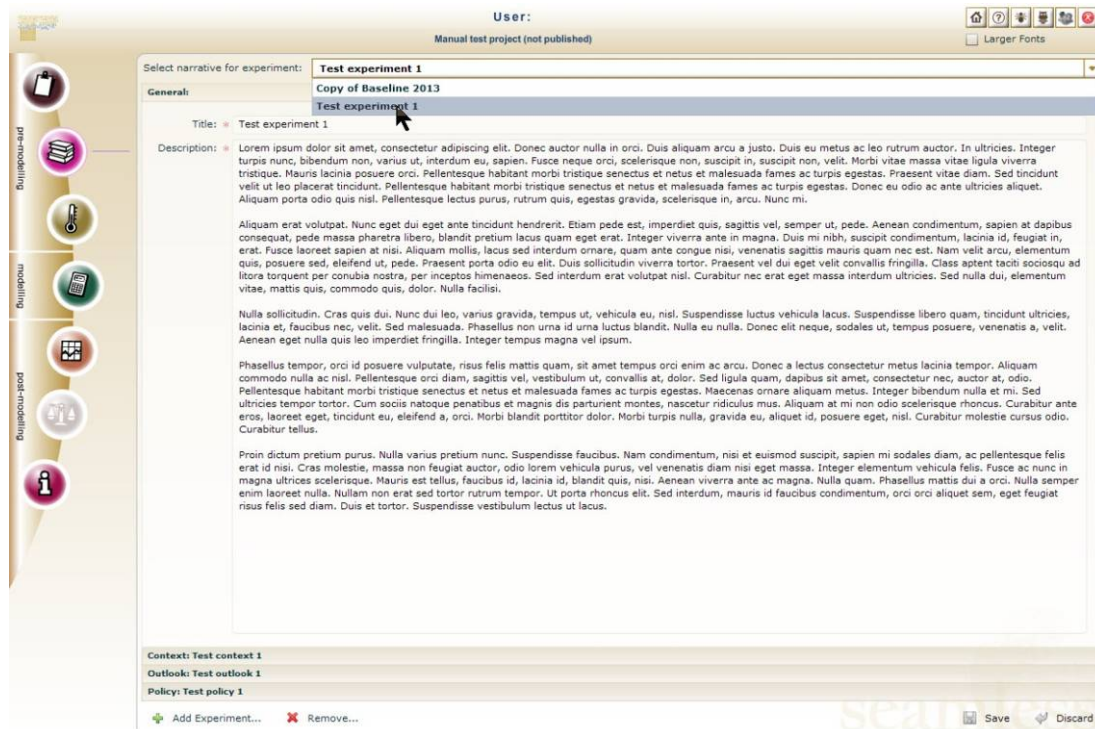


Figure 17: The Narrative experiments window.

In SEAMLESS-IF an experiment is a specific combination of outlook/context/policy options. To open an existing experiment, choose the experiment in the drop-down menu.

You can create a new experiment by clicking "Add Experiment" in the lower left corner. A window opens that lets you compose new experiment from already existing experiments, by choosing context, outlook and policy individually. Click the radio button to the right of the constituent you want use. When you have chosen context, outlook and policy for your experiment, give it a title and description in the appropriate text boxes and click "Save".

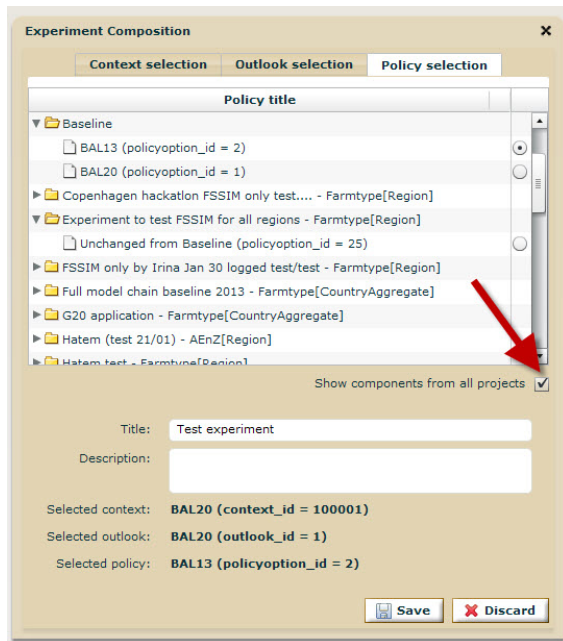


Figure 18: Experiment composer. If you check the box at the head of the arrow, all experiments in the database are shown.

Apart from this, outlooks etc are not created here, but in the Experiment Designer (see section 6.1).

The outlook should describe the driving forces of the modelled system, the trends and/or trend deviations in society, which affect the results produced by SEAMLESS-IF, but which are not forecasted by SEAMLESS-IF. These outlooks discuss trends and trend deviations exogenous to SEAMLESS. An outlook has parameters (e.g. unemployment rate or concentration of CO<sub>2</sub> in the atmosphere), and estimates of what values they may have. It is possible to have different outlooks with different values of the same parameters. If there are parameters, features, characteristics etc that are of particular interest in your analysis, you can describe them in the text box as shown in Figure 18. Note that you have to click "Add a row" before you can add text.

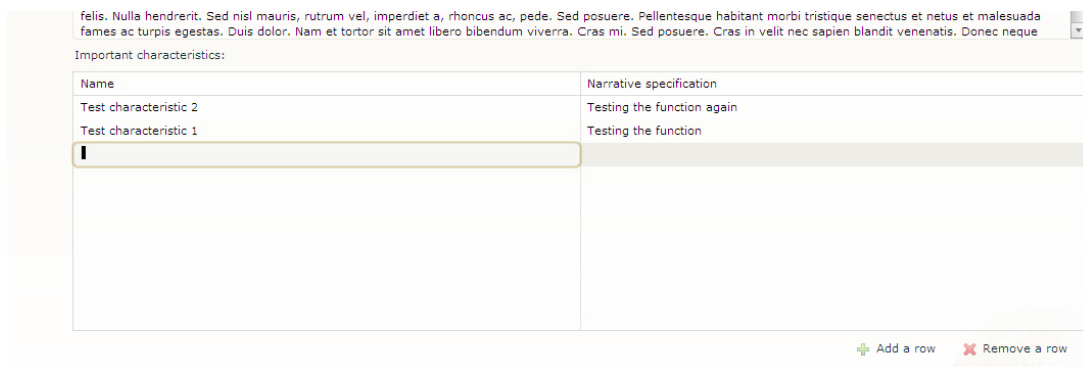


Figure 19: Text box to describe important characteristics of the analysis.

The context is the object of interest and its boundary conditions; geographical region, scale, farm type, crops and similar things. An example of a context is a medium sized low intensity arable farm in the Flevoland region in the Netherlands that could grow sugar beets, potatoes and spring wheat under conventional management definition. Each experiment should have *one* specific context.

The policy option is the potential political measures defined by a set of policy parameters within a given timeframe or for a time series that related to the problem and the experiment defined in the current project. You can combine several policy options.

### 5.3 Indicator manager

Open the indicator manager by clicking the appropriate button on the left side of the screen.

In the indicator manager you can use the Goal-Oriented Framework (GOF) to choose a set of indicators that is suitable to analyse your problem (Figure 19).

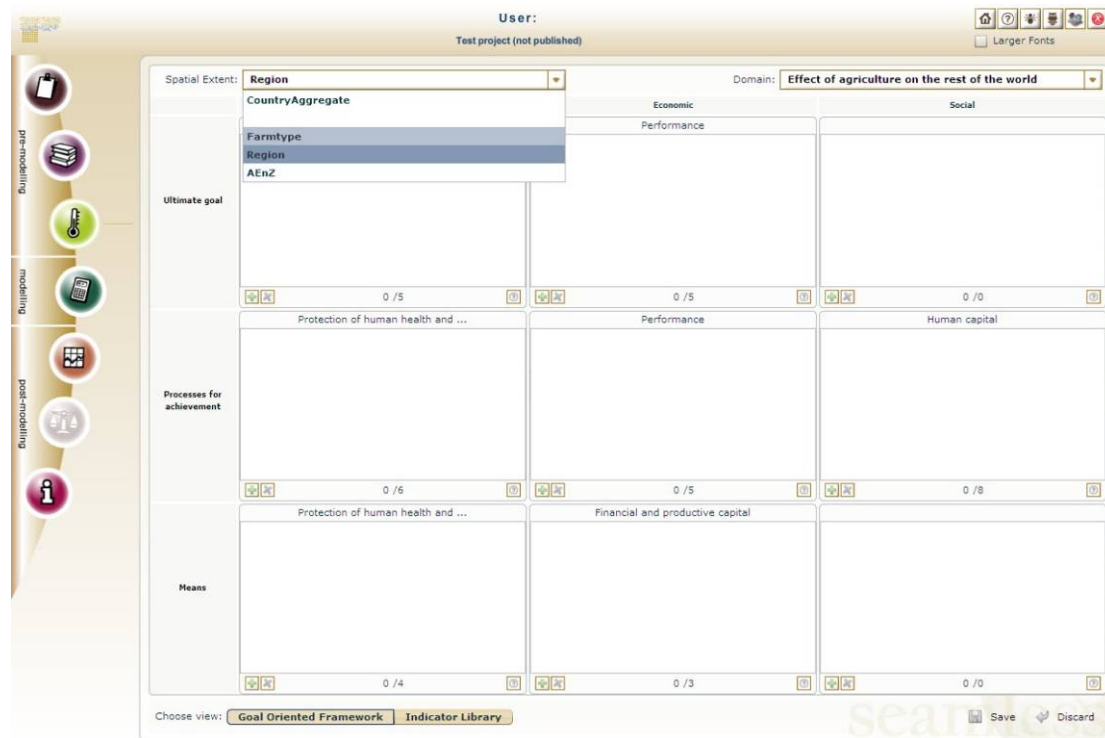


Figure 20: The Goal-Oriented Framework.

GOF divides the assessed system into three dimensions, the environmental, the economic, and the social, referring to the three pillars of sustainable development. Each of these aspects consists of indicators that refer to two “domains” of assessment which are considered as systemic units; impacts on agriculture and impacts of agriculture on the rest of the world. The “Impacts on agriculture” domain hosts indicators that assess impacts of the agricultural sector on itself. The second domain (impacts of agriculture on the rest of the world) hosts indicators that assess the impacts of agriculture on society as a whole: these indicators could also be named as the indicators measuring the external effects of agriculture on society as a whole (Table 3). GOF is based on three generic themes that are the same between the three dimen-



sions of sustainability (environmental, economic and social). Within each dimension each theme is thereafter specified for each dimension.

Table 3: Structure and themes of GOF. The same structure is valid in both domains.

	Environmental	Economic	Social
<b>Ultimate goal</b>	Protection of human health and welfare, living beings and habitats	Viability	Quality of life individual, in society
<b>Process for achievement</b>	Maintenance of environmental balances or functions	Performance	Social and human capital
<b>Means</b>	Environmental compartments and non-renewable resources	Financial and productive capital	Population

To select indicators for your project, use the drop-down menus to choose the spatial extent and the domain of interest. Click the green plus sign in the lower left corner of the theme/dimension box of interest (Figure 20).

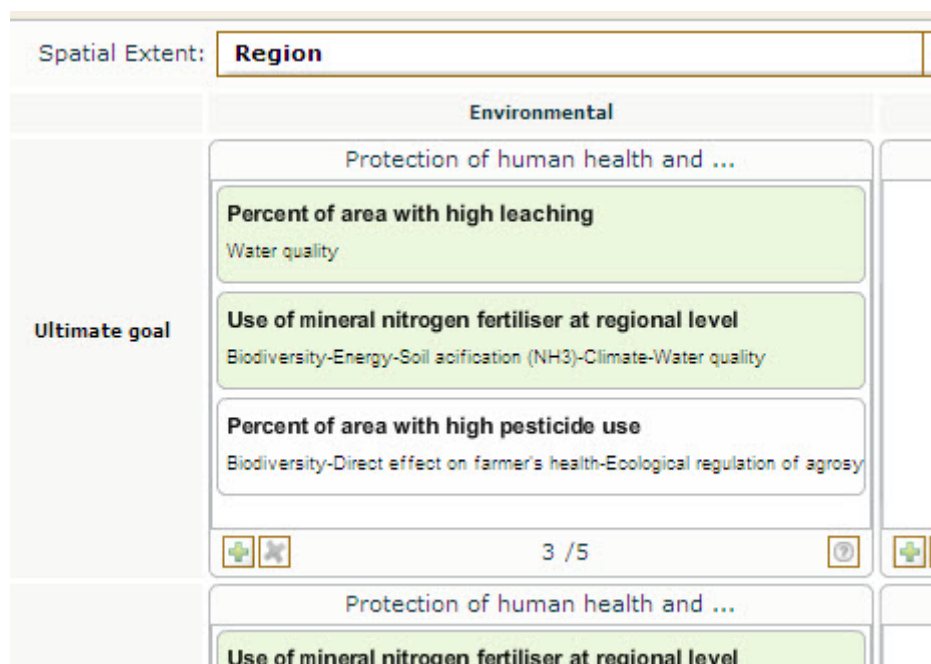


Figure 21: One theme/dimension box in GOF.

You can see the number of available indicators in each category, and how many are actually chosen at the bottom of the box. In Figure 20 three out of five available indicators are chosen. To see and add indicators click the green plus sign to open the indicator selection window (Figure 21). Click on the indicator to select it, click “Add selected”.

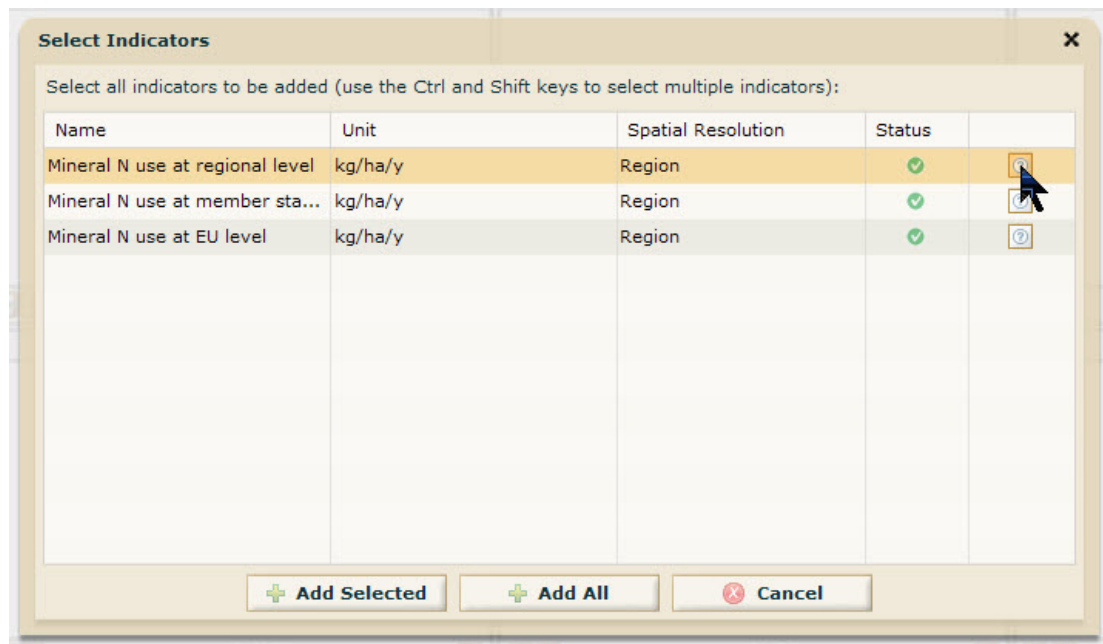


Figure 22: The indicator selection window.

To see more information about the selected indicator, double-click it in GOF or click the question mark as indicated in Figure 21 to open the indicator information window (Figure 22).

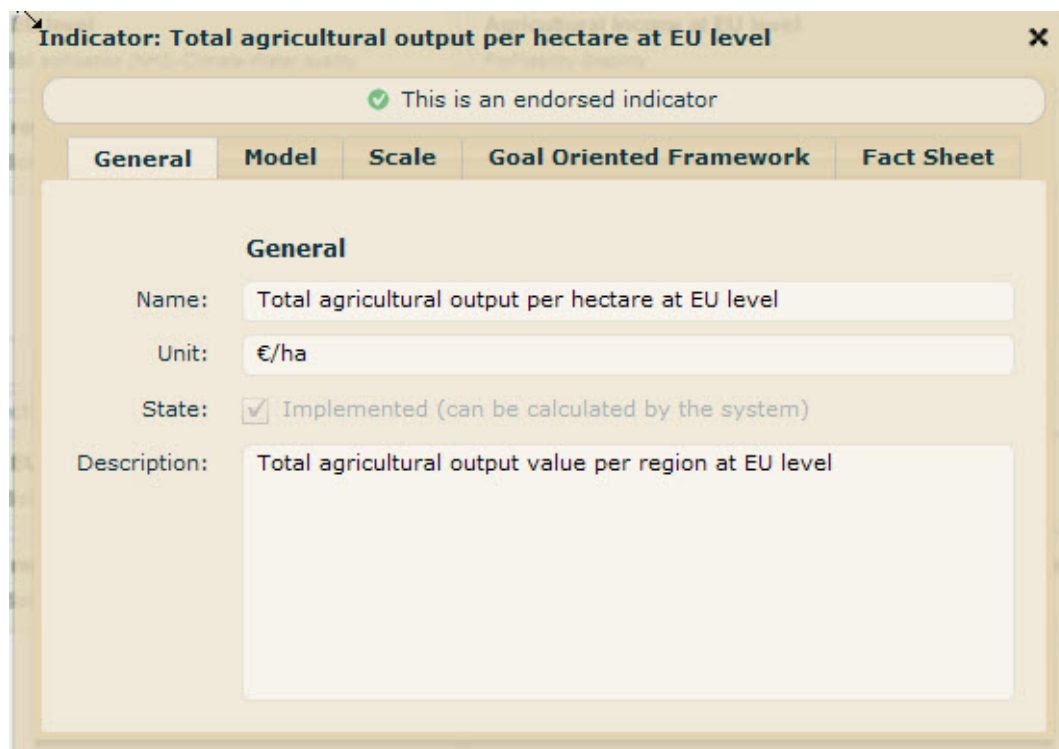


Figure 23: The indicator information.

The indicator information window has five different tabs with detailed information about the indicator, what model calculates it etc. If you would like to have even more detailed information about an indicator, go to the fact sheet tab and click “View fact sheet...” and a pdf –file will open in a new browser window (Figure 23).

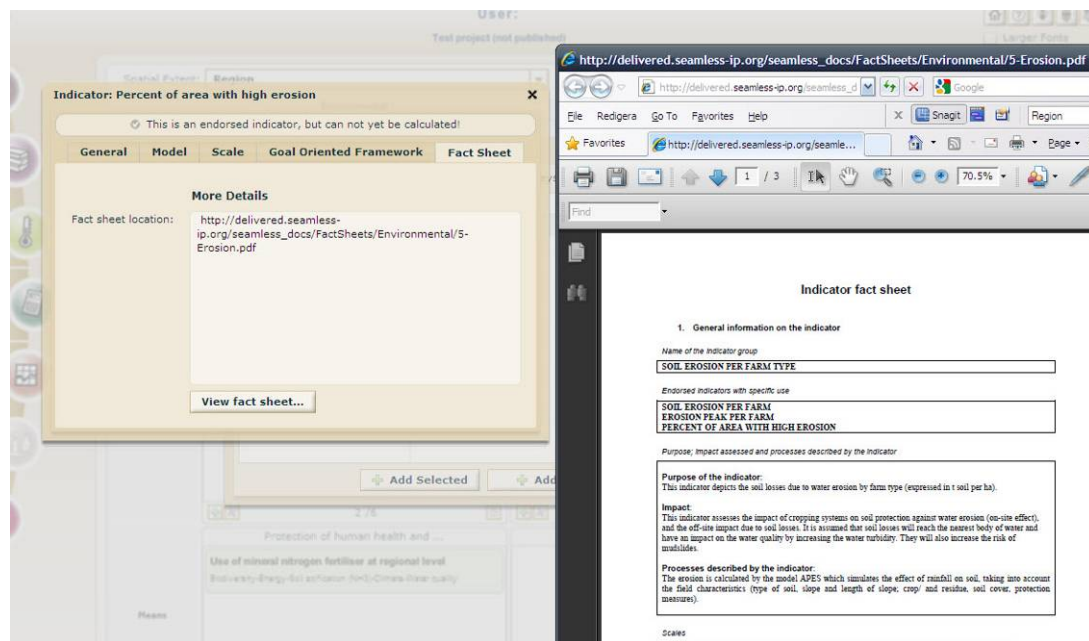


Figure 24: Fact sheet.

You can also choose indicators freely without the help of GOF. Click “Indicator Library” at the bottom of the screen to change the view. Select indicators by ticking the check boxes.

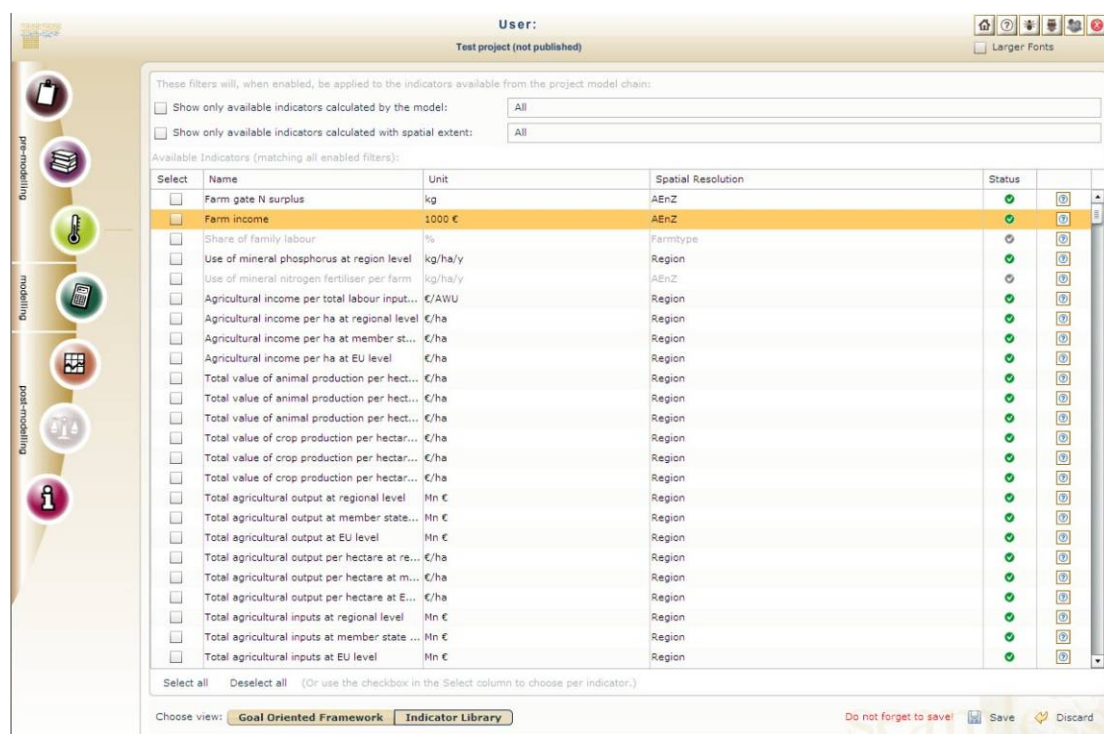


Figure 25: The indicator library.

You can filter the indicators according to model used to calculate it and/or spatial extent (Figure 25). Tick the check boxes and use the drop-down menus to see the different filtering options.



Figure 26: Filtering indicators.

## 6 Modelling activities

The main part of the modelling is the experiment design. An experiment consists of several different parts that all have their own screens in SEAMLESS-IF (Figure 27).

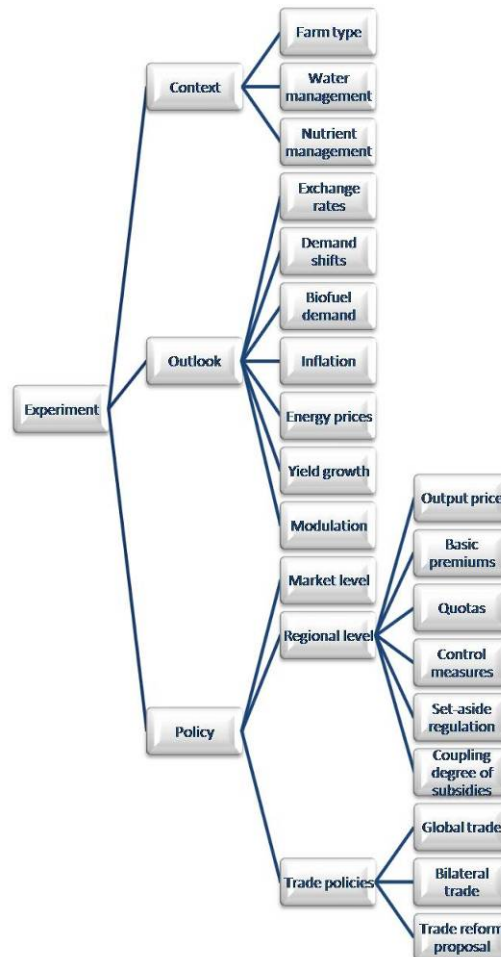


Figure 27: The structure of an experiment.

### 6.1 Experiment Designer

Start the modelling phase by clicking the appropriate button on the left side of the screen. By default the experiment designer opens, one of four steps in the modelling phase (Figure 28)

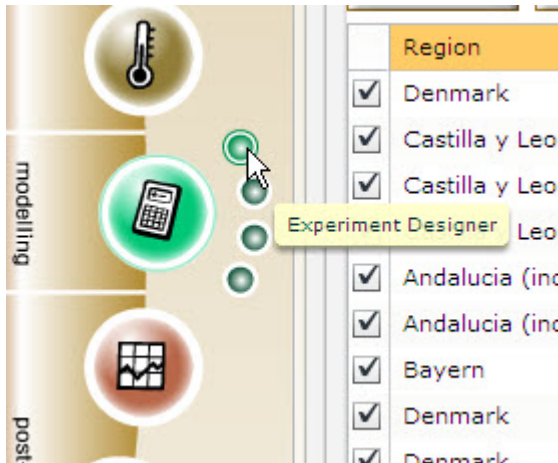


Figure 28: The modelling phase has four steps.

Choose the experiment you want to work with in the drop-down menu (Figure 29) and click “Load parameters” to retrieve the experiment from the SEAMLESS database.

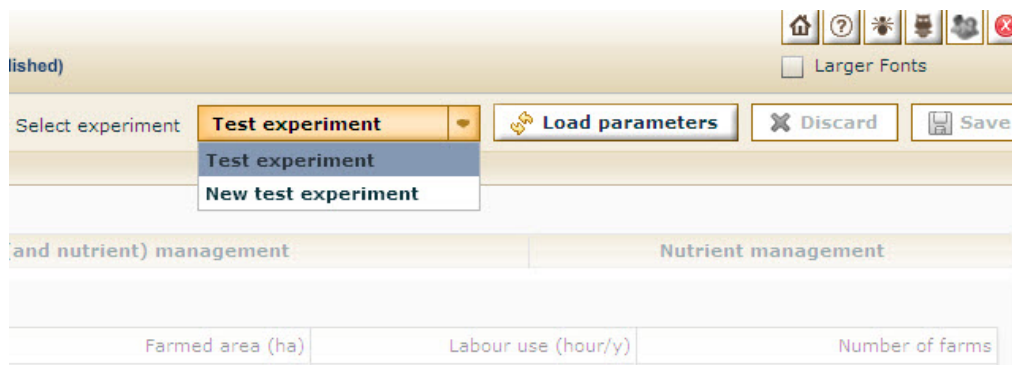


Figure 29: Choosing experiment.

### 6.1.1 Context

The context of a problem is the object of interest, which is delimited by the boundaries to the biophysical and agro-management system. These biophysical and agro-management boundaries determine what is inside and what is outside our system.

When opening the context screen, you are presented three different tabs (Figure 30). The context defines, among other things, the geographical context and the farm types to be considered in the experiment.

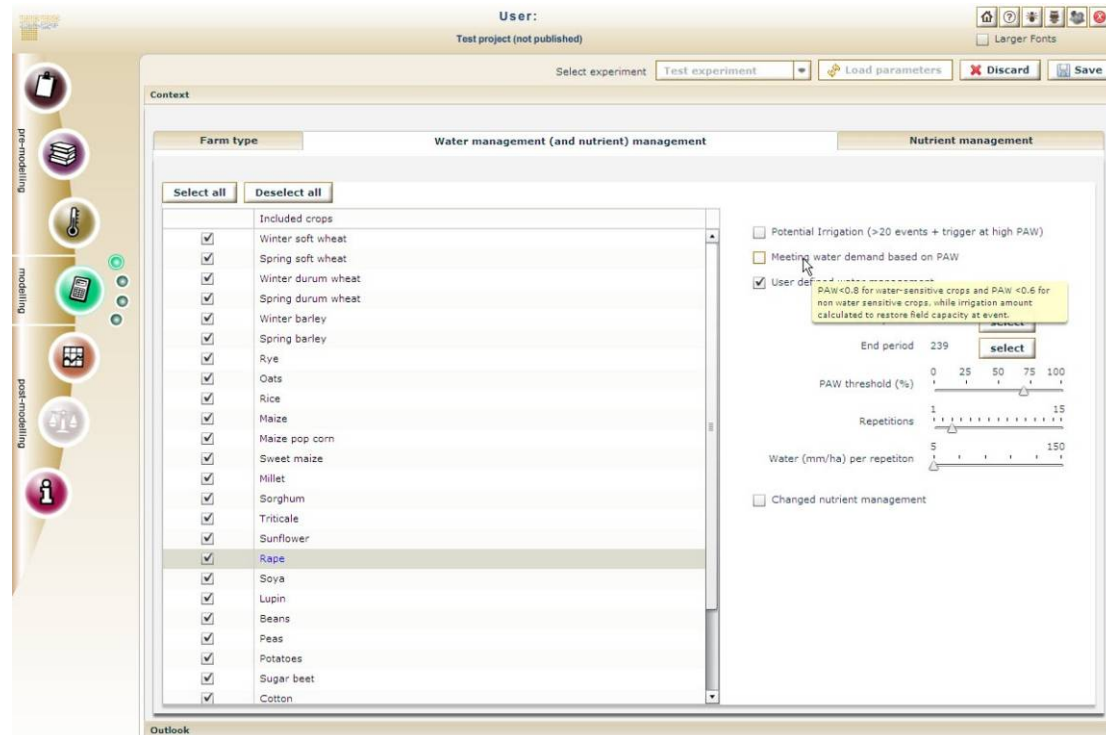


Figure 30: The context tab.

There are also tabs where you can specify product orientation, nutrient and water management.

### 6.1.2 Outlook

An outlook describes what trends and trend deviations are foreseen to occur in society that might affect the implementation of policy options within a given context, which are not modeled endogenously in SEAMLESS-IF.

The outlook tab consists of seven tabs (Figure 31)

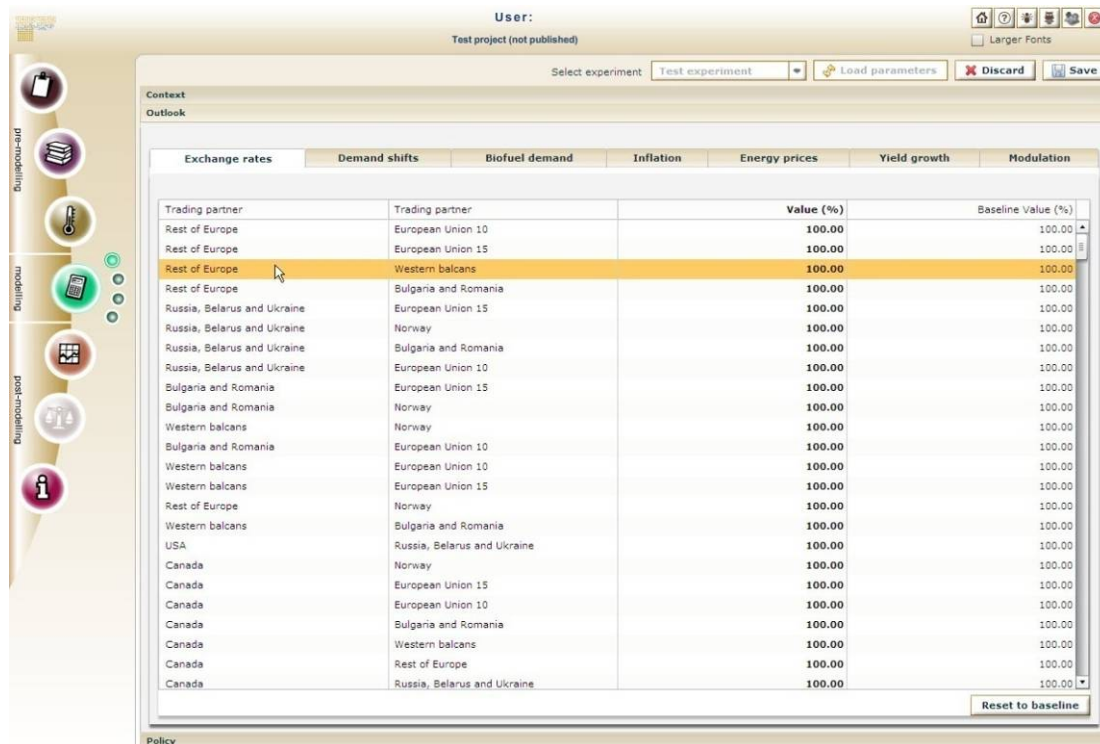


Figure 31: The outlook screen.

If you are logged in as a modeller or project manager, you can edit the numbers by clicking on them and then input the desired value. If a number is different from the baseline assumption, the line will be green (Figure 32). The values can be reset to baseline values by clicking “Reset to baseline” in the lower right corner of the screen.

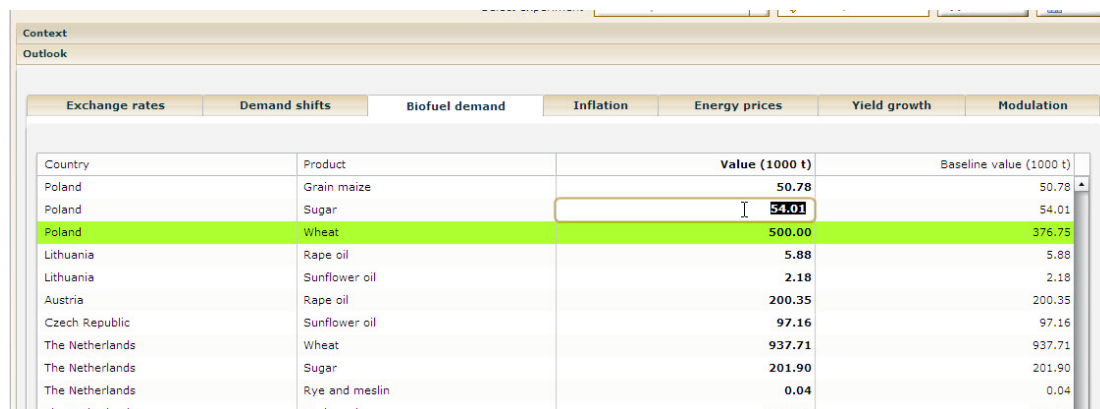


Figure 32: The line turns green if the value is different from the baseline value.

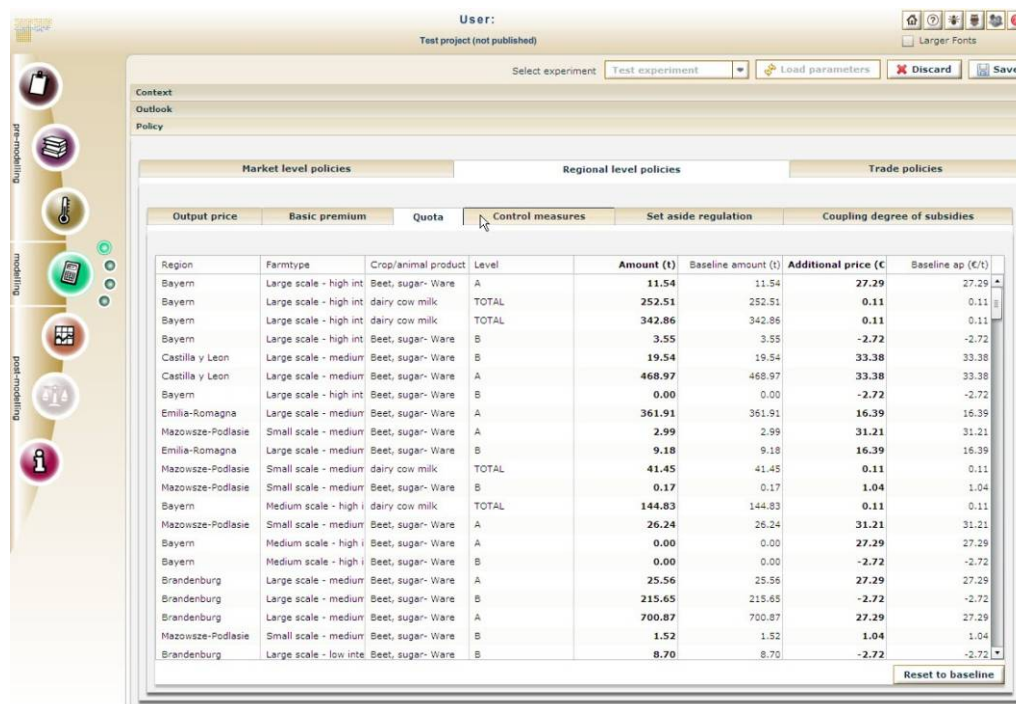
### 6.1.3 Policy

Each experiment within a project assesses the effects of one or a combination of several policy option(s). One policy option could refer to one or more policy measures as part of it.



Each policy option has a set of exogenous policy parameters within a given timeframe or for a given time series.

In the policy screen, three main tabs are presented. The market level policy is used to manipulate the export subsidies.



Region	Farmtype	Crop/animal product	Level	Amount (t)	Baseline amount (t)	Additional price (€)	Baseline ap (€/t)
Bayern	Large scale - high int	Beet, sugar- Ware	A	11.54	11.54	27.29	27.29
Bayern	Large scale - high int	dairy cow milk	TOTAL	252.51	252.51	0.11	0.11
Bayern	Large scale - high int	dairy cow milk	TOTAL	342.86	342.86	0.11	0.11
Bayern	Large scale - high int	Beet, sugar- Ware	B	3.55	3.55	-2.72	-2.72
Castilla y Leon	Large scale - medium	Beet, sugar- Ware	B	19.54	19.54	33.38	33.38
Castilla y Leon	Large scale - medium	Beet, sugar- Ware	A	468.97	468.97	33.38	33.38
Bayern	Large scale - high int	Beet, sugar- Ware	B	0.00	0.00	-2.72	-2.72
Emilia-Romagna	Large scale - medium	Beet, sugar- Ware	A	361.91	361.91	16.39	16.39
Mazowsze-Podlasie	Small scale - medium	Beet, sugar- Ware	A	2.99	2.99	31.21	31.21
Emilia-Romagna	Large scale - medium	Beet, sugar- Ware	B	9.18	9.18	16.39	16.39
Mazowsze-Podlasie	Small scale - medium	dairy cow milk	TOTAL	41.45	41.45	0.11	0.11
Mazowsze-Podlasie	Small scale - medium	Beet, sugar- Ware	B	0.17	0.17	1.04	1.04
Bayern	Medium scale - high i	dairy cow milk	TOTAL	144.83	144.83	0.11	0.11
Mazowsze-Podlasie	Small scale - medium	Beet, sugar- Ware	A	26.24	26.24	31.21	31.21
Bayern	Medium scale - high i	Beet, sugar- Ware	A	0.00	0.00	27.29	27.29
Bayern	Medium scale - high i	Beet, sugar- Ware	B	0.00	0.00	-2.72	-2.72
Brandenburg	Large scale - medium	Beet, sugar- Ware	A	25.56	25.56	27.29	27.29
Brandenburg	Large scale - medium	Beet, sugar- Ware	B	215.65	215.65	-2.72	-2.72
Brandenburg	Large scale - medium	Beet, sugar- Ware	A	700.87	700.87	27.29	27.29
Mazowsze-Podlasie	Small scale - medium	Beet, sugar- Ware	B	1.52	1.52	1.04	1.04
Brandenburg	Large scale - low inte	Beet, sugar- Ware	B	8.70	8.70	-2.72	-2.72

Figure 33: The policy option screen.

The regional level policies has tabs for set aside regulation, premiums, coupling degrees of premiums, quotas and prices which are straight forward fill in. To create control measures, use the drop-down menus in the control measures tab to decide what region should have a specific rule, then click “Add” in the lower right corner of the screen and then fill in the desired values in the columns. Delete a rule by clicking “Delete” to the right.

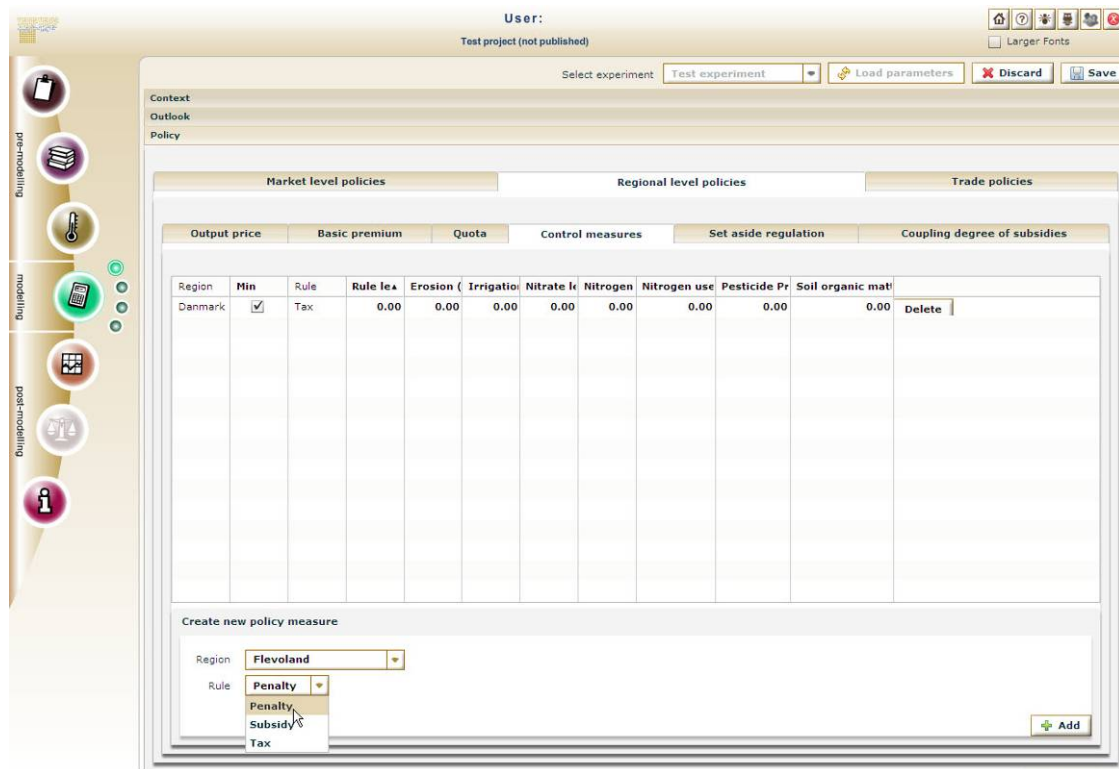


Figure 34: Editing the control measures.

In the trade policies, you can manipulate both global and bilateral trade agreements in the experiment.

## 6.2 Experiment queuing

Click on the second little green circle to the left to open the experiment queuing (Figure 35).



Figure 35: Experiment queuing.

Highlight the experiment that you want calculated and then click “Add to queue” in the lower left corner of the screen.

### 6.3 Model chain viewer

To see the available model chains in SEAMLESS-IF click on the third green circle to open the model chain viewer. This is shown graphically to give you an idea about how the different models are connected. To get a short description about a specific model put the cursor over its box and read the tool tip that shows up (Figure 36).

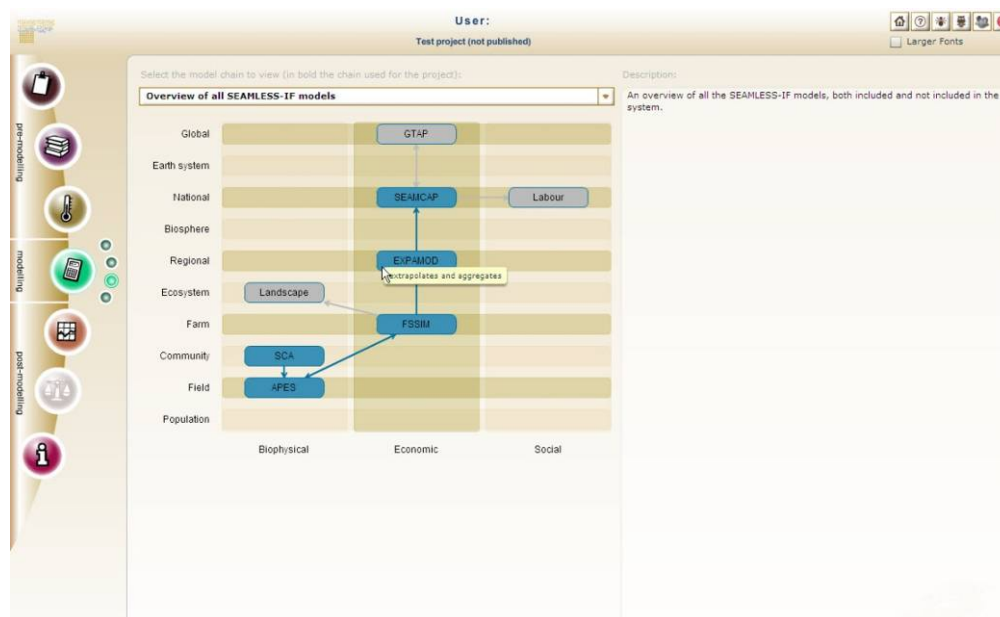


Figure 36: The graphical representation of a model chain.

### 6.4 Processing center

The processing centre screen is showing the information about the current state of the server calculations and the execution queue (Figure 37). To remove an experiment from the queue, highlight the experiment in the list and click “Remove from Queue” in the lower right corner of the screen.

The execution processing management screen is not working in the current release.

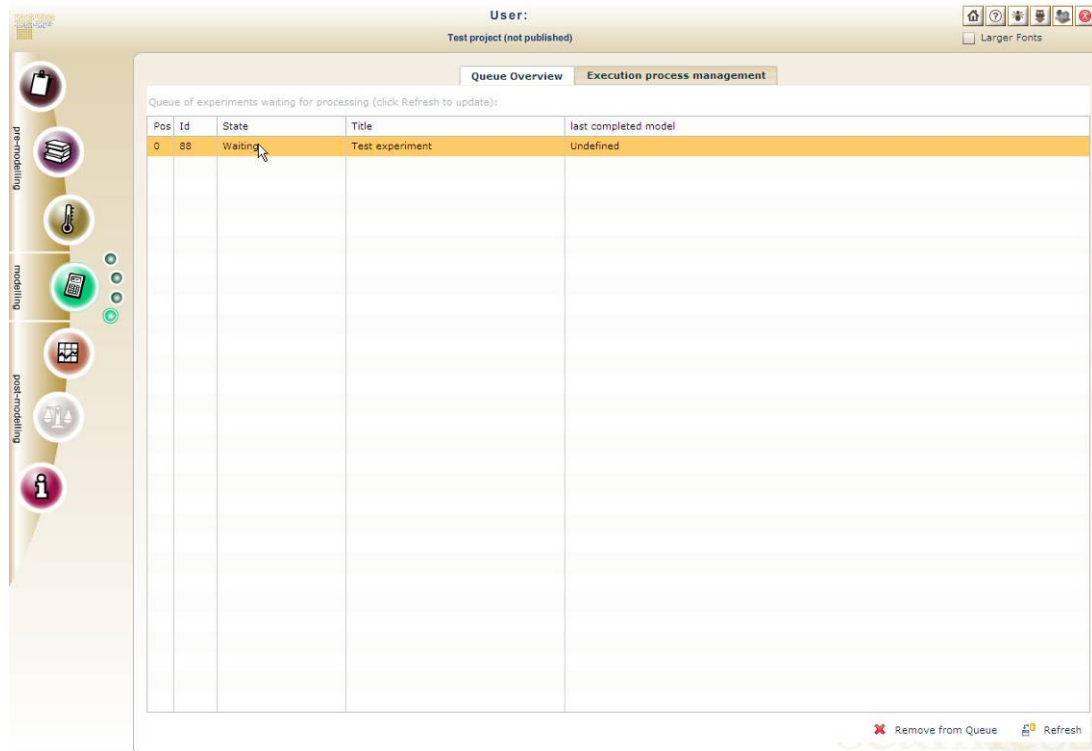


Figure 37: The process centre screen.

## 7 Post-modelling activities

Post-modelling activities in SEAMLESS-IF are restricted to visualizations of indicators in the current release.

### 7.1 Visualizations

A visualization is a graphical representation of the project data and/or results and is like a small project in itself. It consists of five different parts that should be considered.

Click the “Visualizations” button in the task bar. If you want to look at already existing click “Open...” in the lower left corner of the screen (Figure 38).

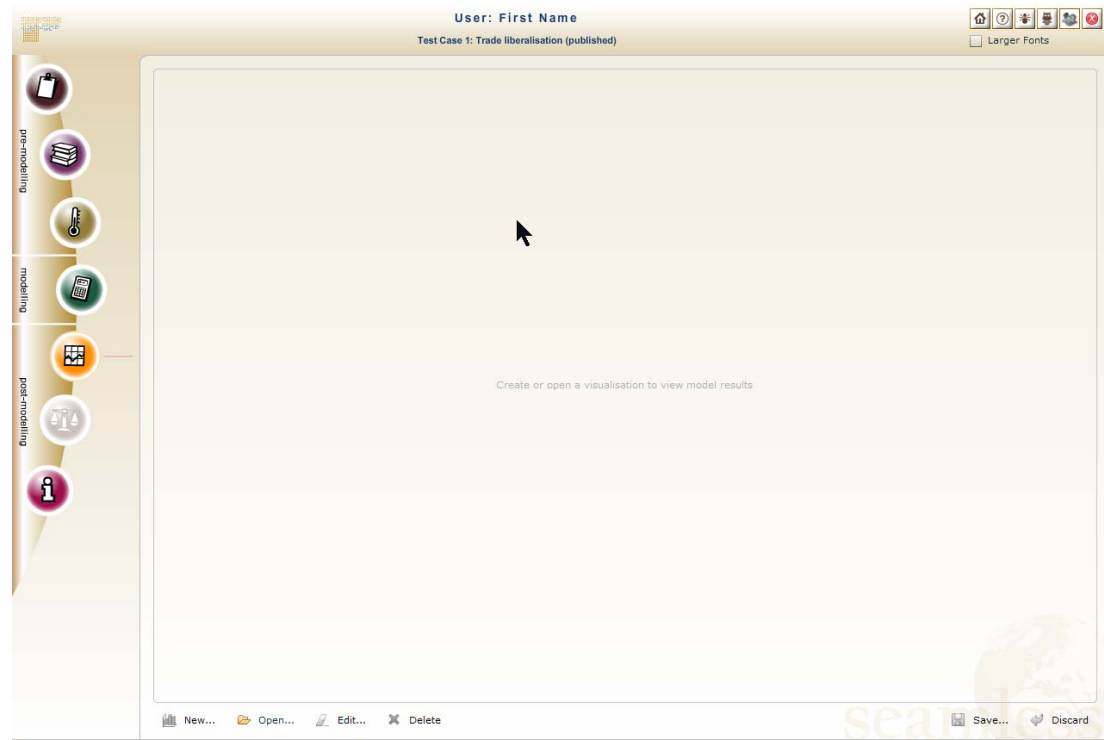


Figure 38: The visualization window

A list with the available visualizations opens up, highlight the desired visualization and click “Open” in the lower left corner of the screen.

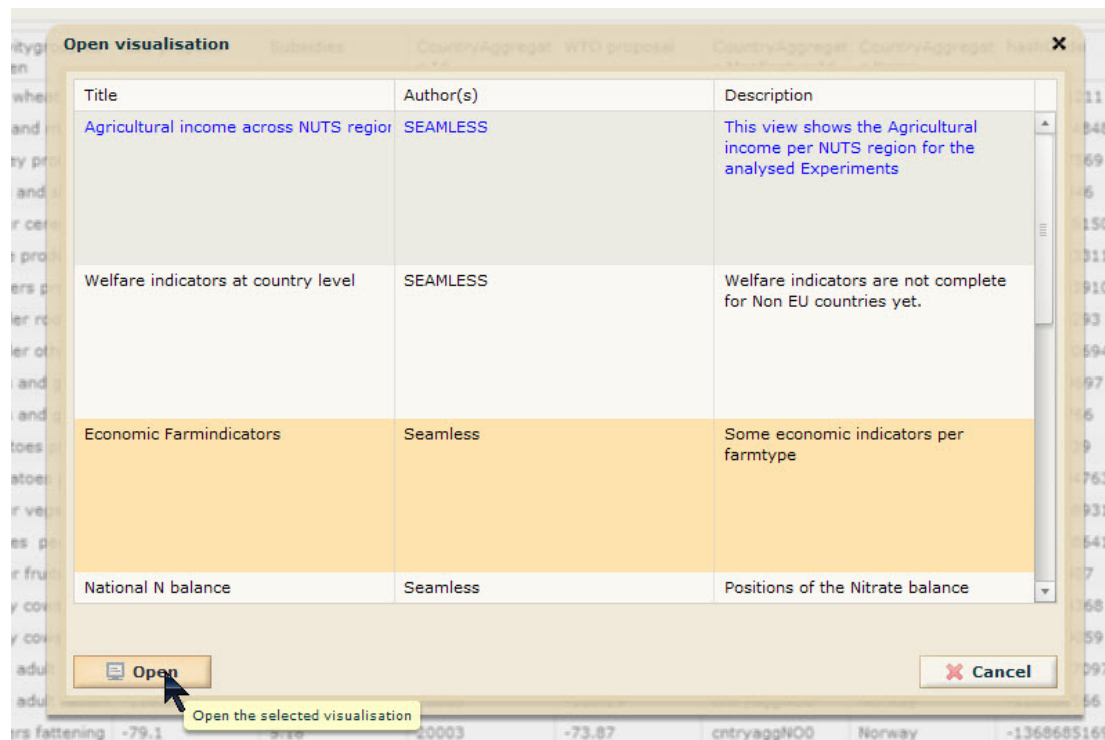


Figure 39: Open a visualization.

By default, the visualization opens in table mode. You can choose which indicator to study and to see the numbers as absolute numbers, absolute difference compared to the baseline or as relative change to baseline expressed in per cent, by using the drop-down menus (Figure 40). There is an option to have the results sorted in columns according to experiment by checking the appropriate check box. The internal fields option is for debugging purposes.

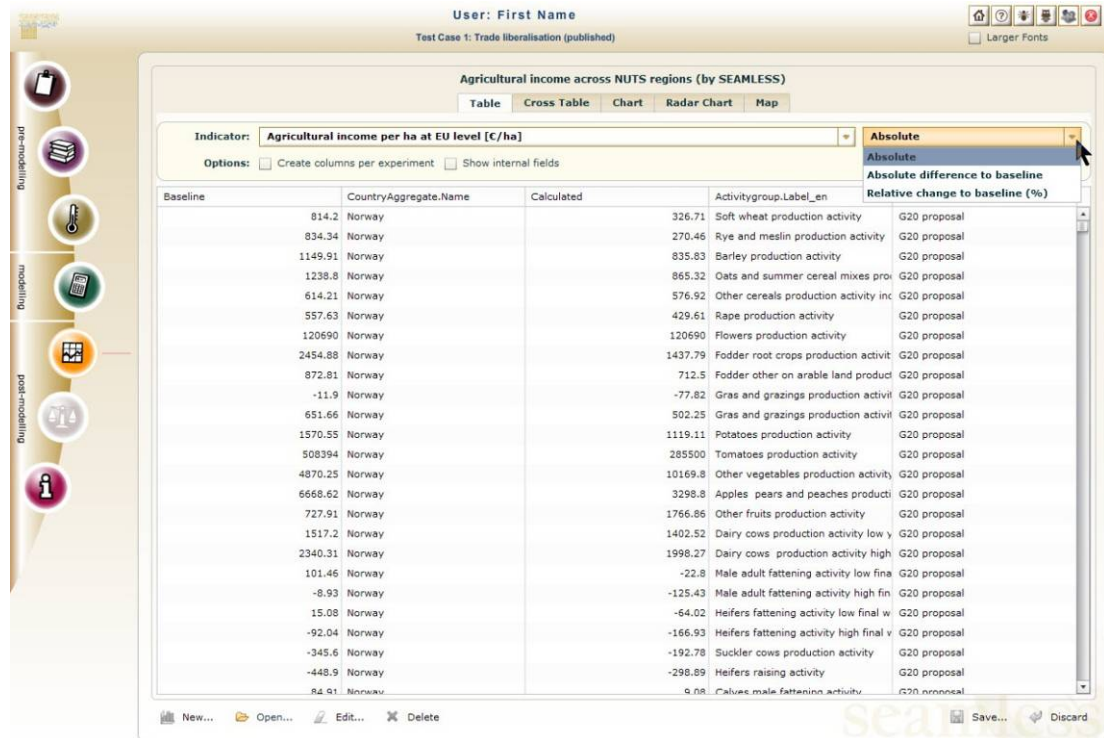


Figure 40: The table tab of the visualization editing window.

To copy the table contents to the clipboard, click “Copy” in the upper right corner of the screen (Figure 41). This can be pasted into spreadsheet software such as Microsoft Excel.

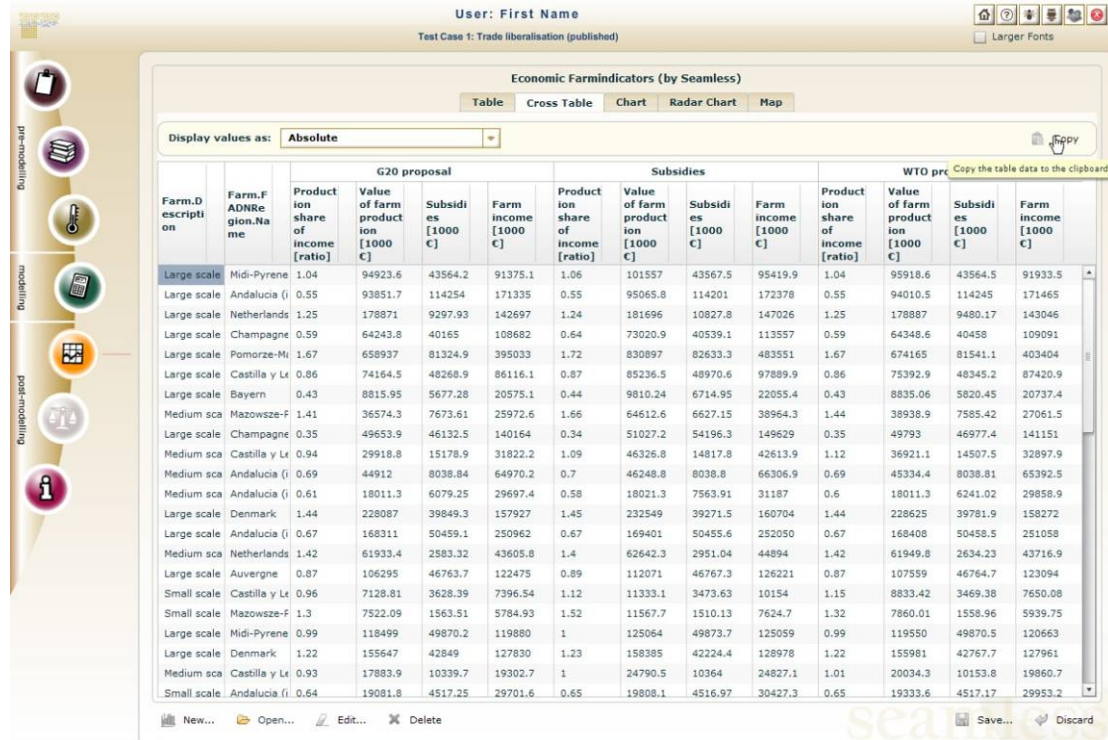


Figure 41: Cross table.

Click on the cross table chart to see the indicator set per experiment (Figure 41).

In the chart tab, you can see a bar chart of one indicator at a time (Figure 42). Choose indicator and format of the representation in the drop-down menus. If you hover with the cursor over a bar, you will see detailed information about this specific result.

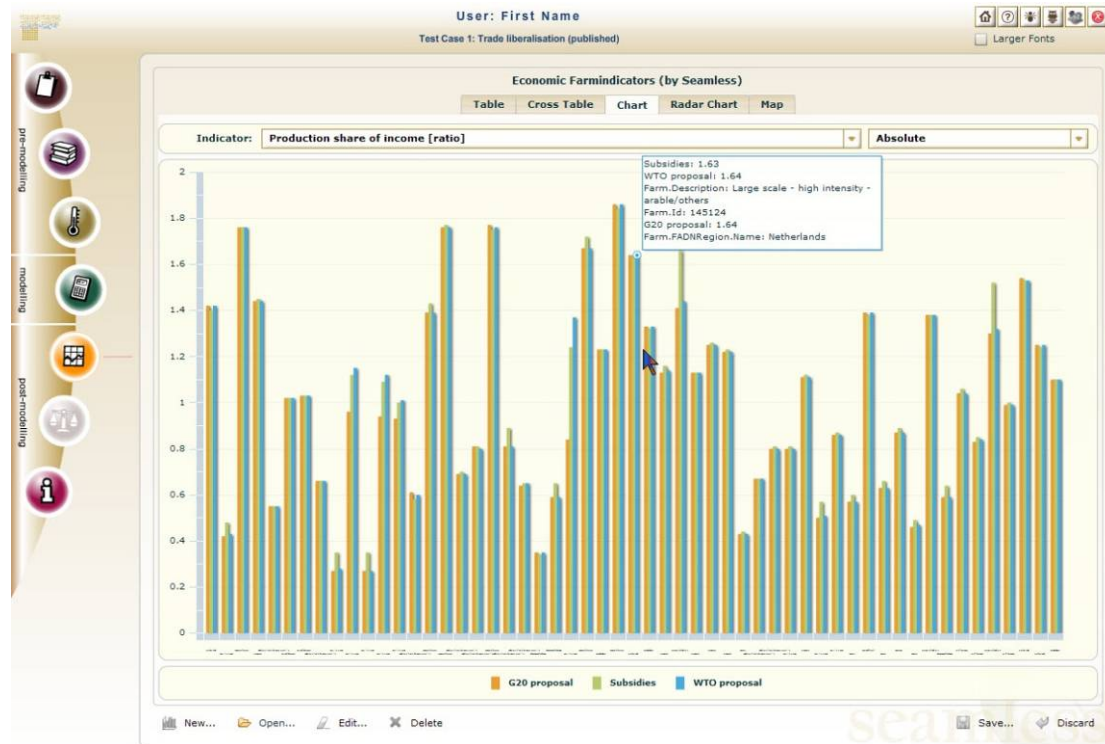


Figure 42: Bar chart.

To display multivariate data, the radar chart, also known as spider diagram, could be used.

Click the radar chart tab to open, choose what region and format to look at. To see detailed information about a data point, hover with the cursor over it (Figure 43).



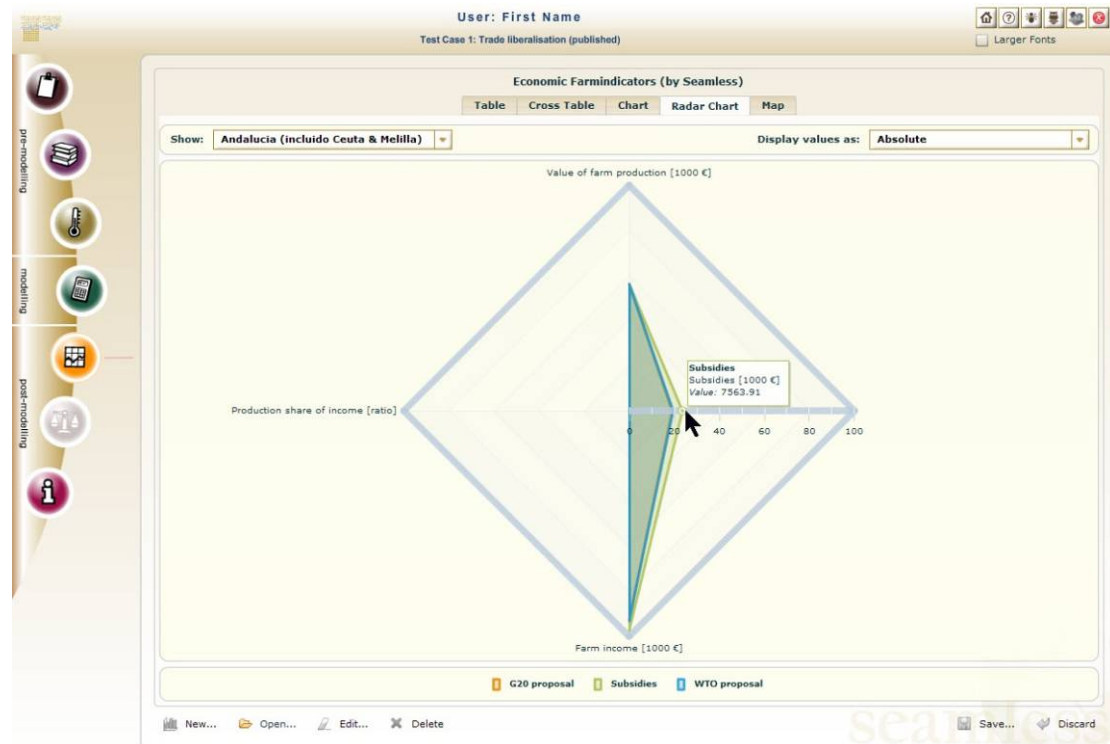


Figure 43: Radar chart.

To look at a map of spatially distributed data, click the map tab. Choose the experiment, the indicator and the format in the drop-down menus (Figure 44). To see details, hover over the region of interest. You can zoom the map by either using a scroll wheel on your mouse or by using the + and – keys on your keyboard. Pan the map either by right-clicking on the map and then move the mouse or by using the arrow keys on your keyboard.

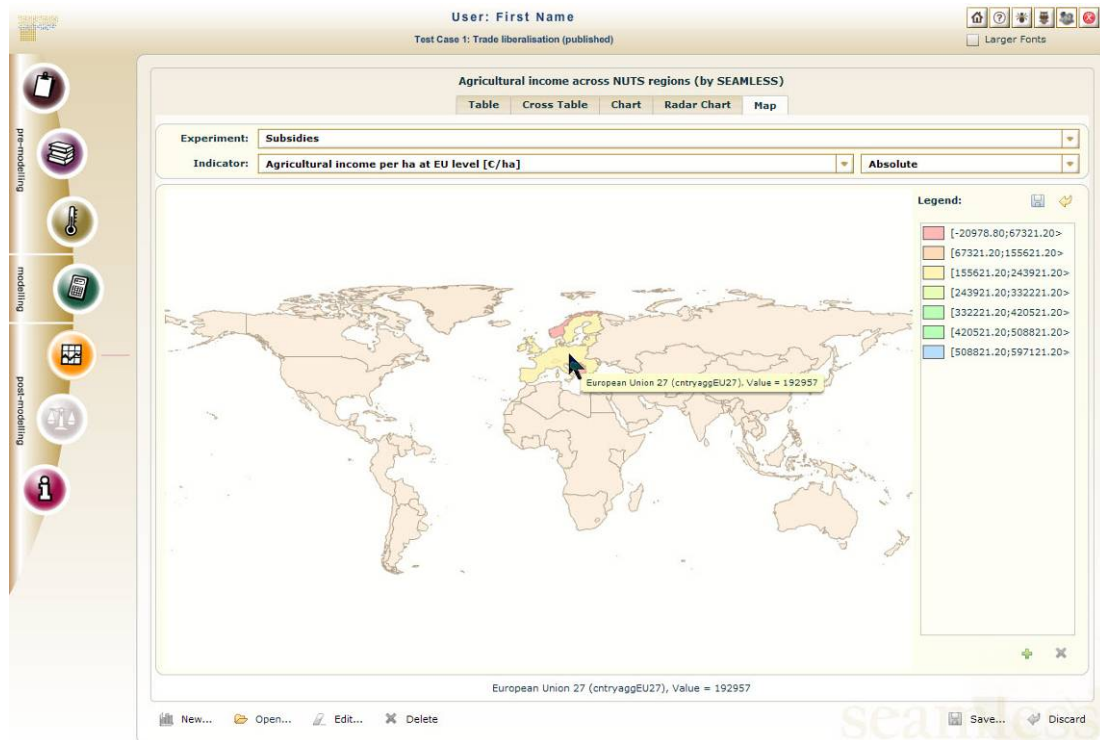


Figure 44: Map visualization

## **8 Policy Analysis**

Currently not implemented.



## 9 Documentation

Open the list of available documentation by clicking on the i-button to the left (Figure 45). Scroll through the list to find the document of interest, or use the search function to find it. To open the document, highlight it and click “Show topic...” in the lower right corner of the screen or just simply double-click on it in the list. A new browser window will open with the document in pdf-format.

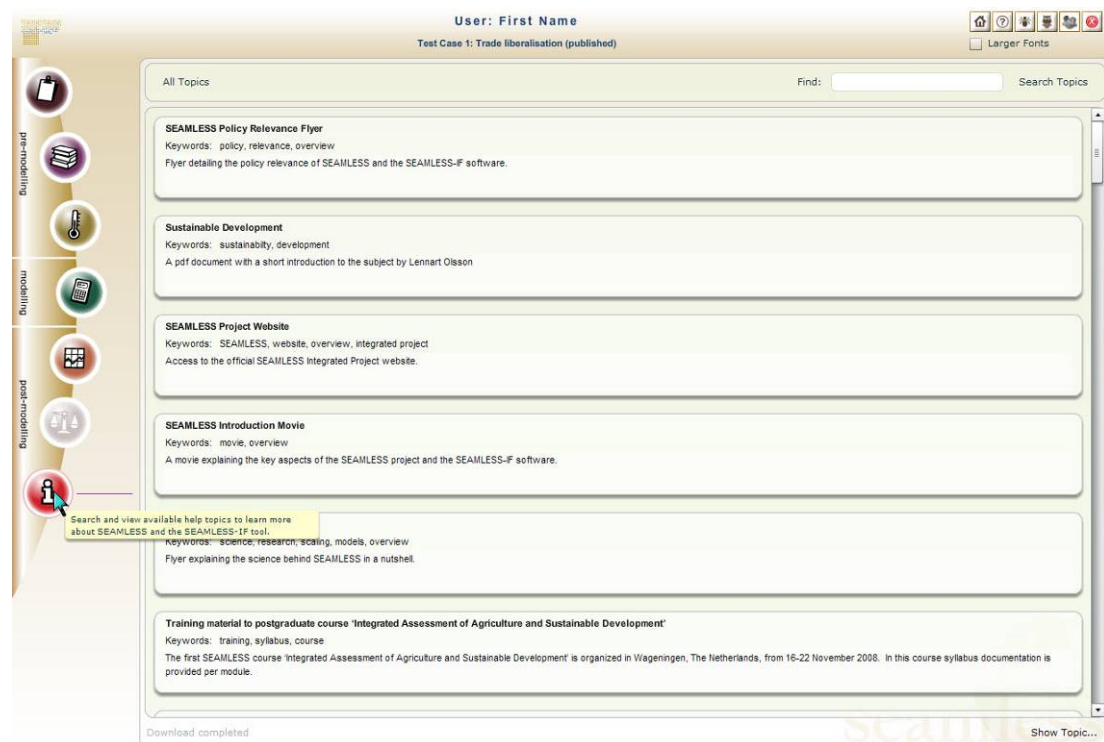


Figure 45: The documentation screen.



## 10 Ontology Browser

At the core of the SEAMLESS-IF system an ontology is used as base of the integration of data, knowledge, the software framework, the model components, and so on. An ontology is a formal representation of a set of concepts within a domain and the relationships between those concepts. To understand more about the system and the interactions between the used models the user interface provides access to an Ontology Browser. This can be started (in a separate browser window) by clicking on the Ontology Browser button in the top right corner.

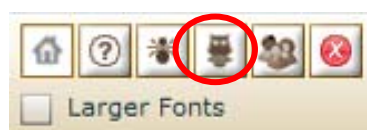


Figure 46: Ontology Browser button

The Ontology Browser window displays on the left (you might have to stretch the browser window a bit) a navigation structure with a number of panels. Click on one of the headers (e.g. “knowledge tree”, “ontologies”, “search results”) to open a panel. Each panel provides access to the ontology content in a different way, and you can use it to select one of the concepts defined in the ontology (and thus used in SEAMLESS-IF).

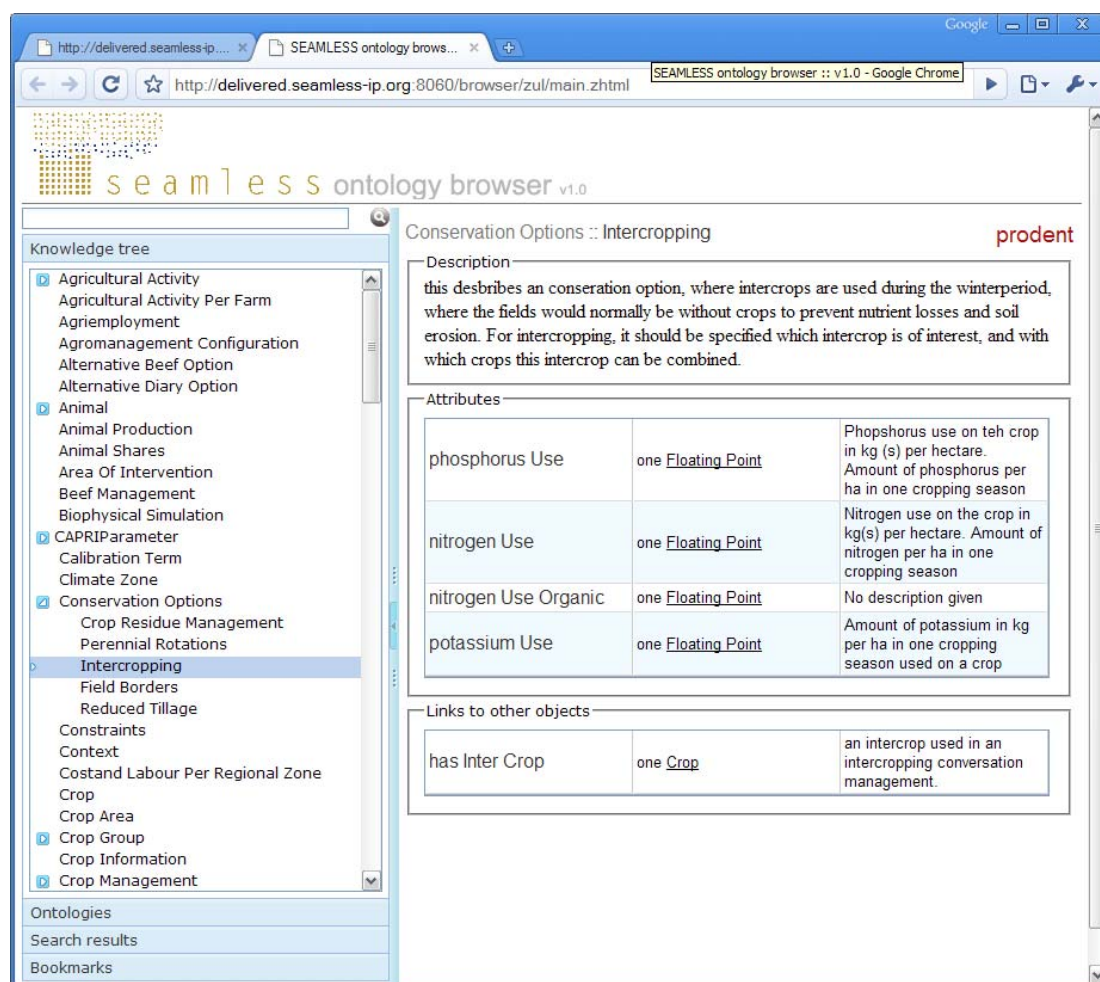


Figure 47: Ontology Browser window

On the right side of the Ontology Browser window the available detailed information of the selected concept is displayed. Not everything is described in full details yet. Text that is underlined usually provides a reference to another concept, the link can be followed by simply clicking on it.

It is possible to search the ontology for a certain text by entering the search phrase in the box above the navigation panels on the left. The search button next to it starts the search operation. Results will be displayed in the navigation panel and can be clicked to open the descriptions of the matching concepts.

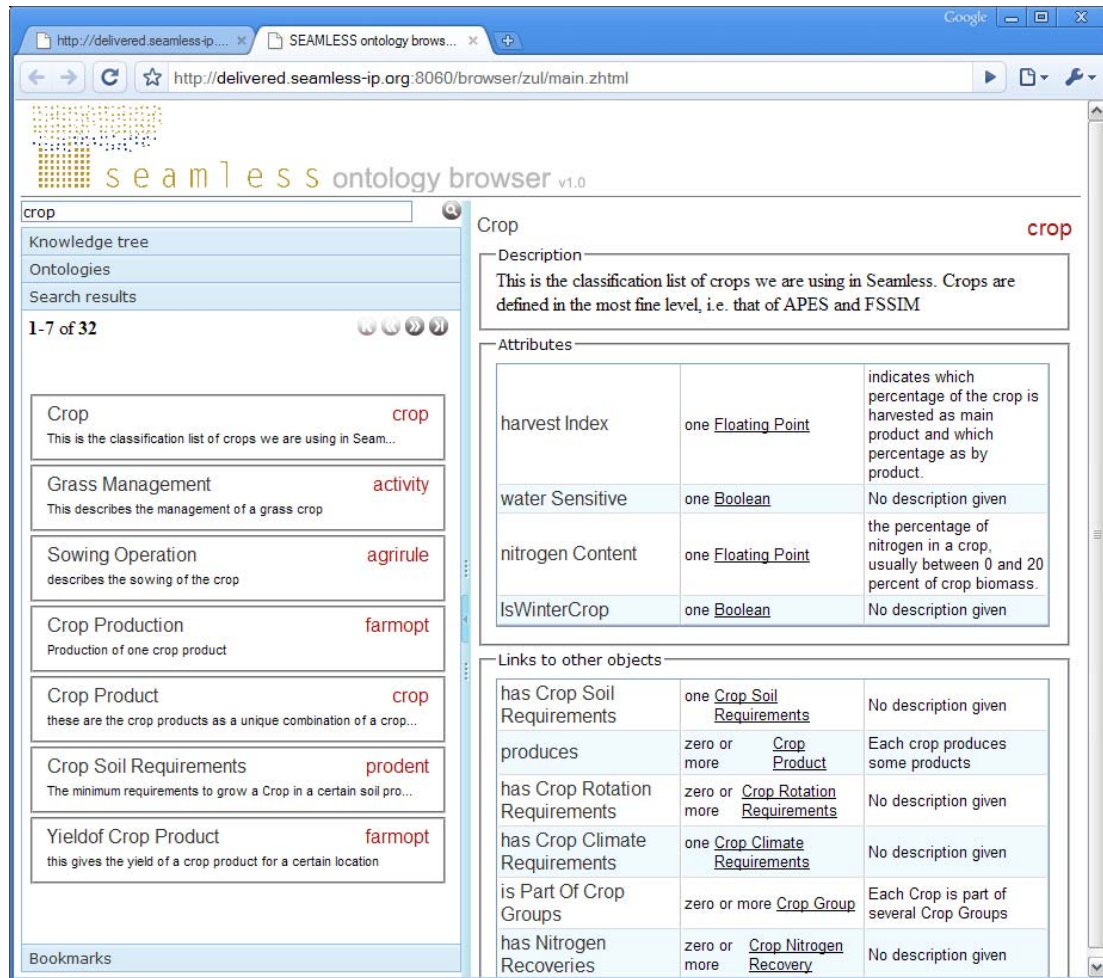


Figure 48: Searching the ontology

To close the Ontology Browser simply close the browser window that displays it. This will not affect the SEAMLESS-IF GUI in the other window. Please note that if you close the browser application completely this will also close the SEAMLESS-IF GUI and unsaved modifications will be lost!



## 11 User Management

In case you log in with an account that has *administrative* rights, you can enter the User Management screens by clicking on the User Management button in the top right corner.



Figure 49: User Management button

This opens the User Management screen, that lists information about all the known users and accounts to the system (not shown here for privacy reasons). Below the screen there are buttons for updating the list (“Refresh”), to create a new user, to modify data for an existing user, to remove a user/account from the system and to close the User Management and go back to using SEAMLESS-IF.

### 11.1 Creating a new user

In the main User Management screen click on the “New...” button to open the window that allows entering information about the new user. After filling out all the details click on the “Ok” button to save the data on the server. Click “Cancel” if you want to abort.

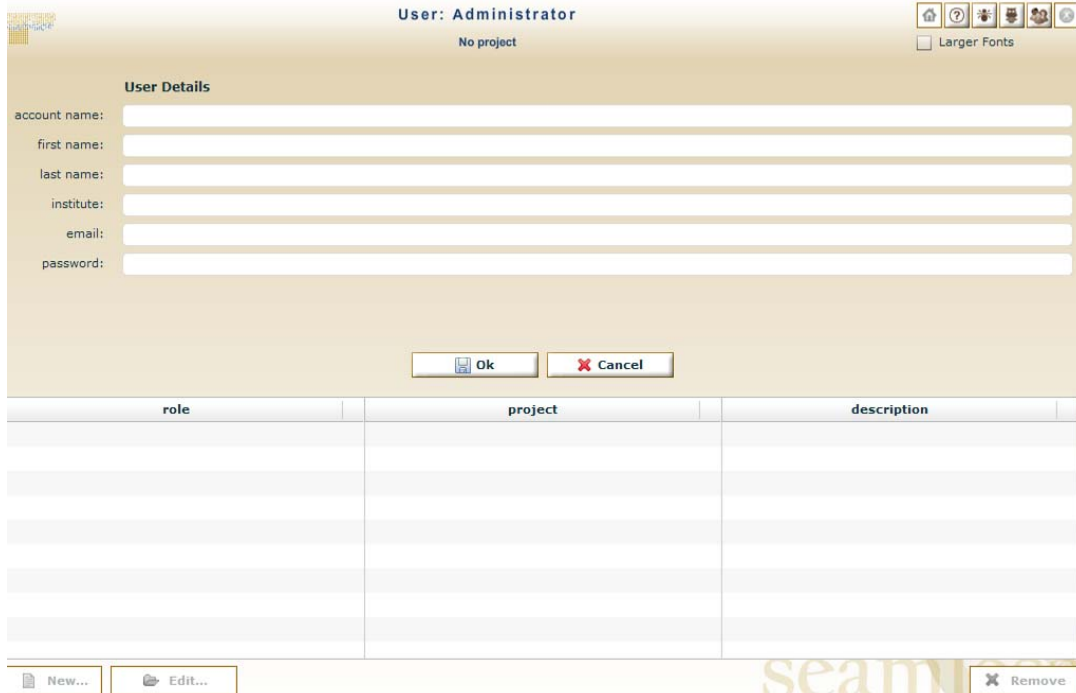
The screenshot shows a window titled "User: Administrator" with "No project" below it. At the top right, there is a toolbar with icons for home, help, refresh, edit, user management, and close, along with a "Larger Fonts" checkbox. The main area is titled "User Details" and contains several input fields: "account name:", "first name:", "last name:", "institute:", "email:", and "password:". Below these fields are "Ok" and "Cancel" buttons. At the bottom of the window, there is a table with three columns: "role", "project", and "description". Below the table, there are "New...", "Edit...", and "Remove" buttons. The "seamless" logo is visible in the bottom right corner of the window.

Figure 50: Creating a new user account

After creating the new user, the roles she or he has in projects has to be defined. To do so click on the “New...” button below the table that lists all the project roles for the user, in the lower part of the screen.

This opens the window that allows you to assign the project roles. Again, click “New...” to create a new project role, or select an existing one from the list and click “Edit...” to modify it. You can also select an existing role and delete it by pressing the “Remove” button.

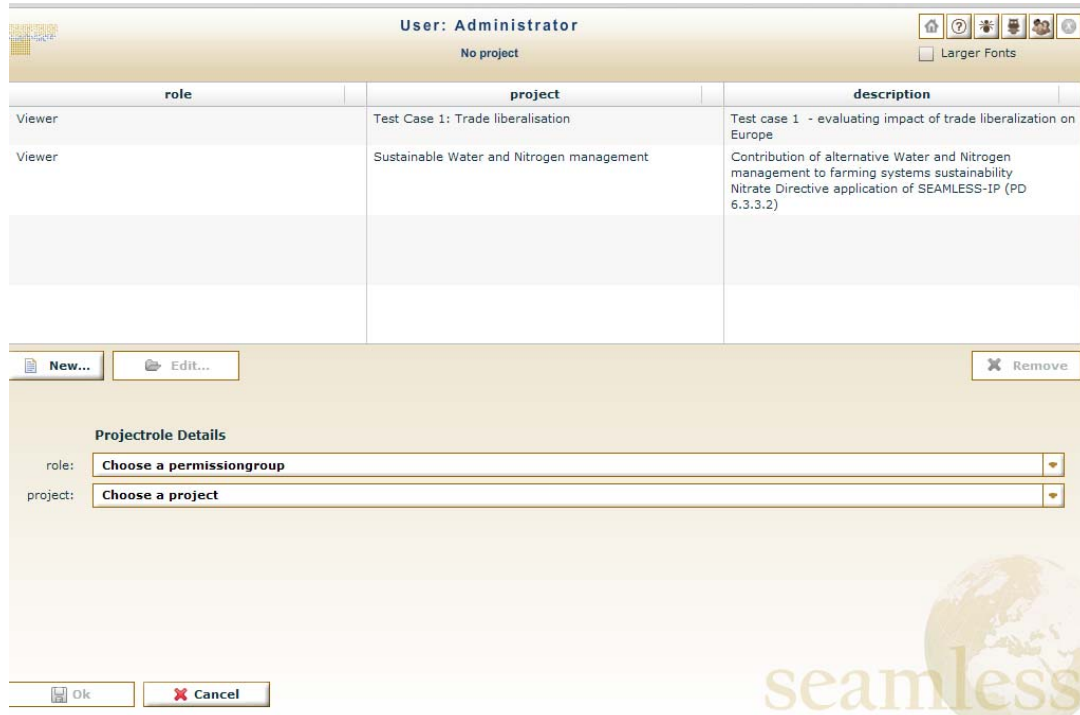


Figure 51: Assigning project roles to a user

When done editing the project roles for the user either click “Ok” to store the changes, or click “Cancel” to ignore them.

## 11.2 Editing an existing user

To modify account information and project roles of an existing user go to the main User Management screen, select the user in the list and click on the “Edit...” button below the list. You will see the same windows as described before (for creating a new user), but this time they work based on the data for the selected user. Other than that all functionality is the same.

## 11.3 Removing an existing user

The account for an existing user can be removed from the system by selecting it in the main user Management screen and clicking on the “Remove” button below the list. The user will no longer be able to access the system once the account is deleted.

## 11.4 Closing the User Management

When done updating the user accounts you can close the User Management by clicking on the “Close” button in the bottom right corner of the User Management screen. For security reasons you will be requested to log in again to the system. Other users will also only see the effects of your user management changes when they re-enter the system. E.g. when assigned new project roles the user should log out and back in again to use the new permissions.

## 12 How to use the Trac system

Trac is a web-based management of software projects, and is available for all SEAMLESS-IF users for reporting bugs, missing functions, glitches in design and usability as well as for collecting wishes and requests for future versions. Its goal is to simplify effective tracking and handling of software issues and improvement suggestions.

### 12.1 How to login to Trac

To use the SEAMLESS Trac system you need a login ID and a password. If you do not already have an ID or you have forgotten your ID or the password, please contact the SEAMLESS administrator, [SEAMLESS.office@wur.nl](mailto:SEAMLESS.office@wur.nl)

Click on the little bug button in the upper right corner of SEAMLESS-IF (Figure 52). Start logging in by clicking 'Login' in the upper right corner (Figure 53).

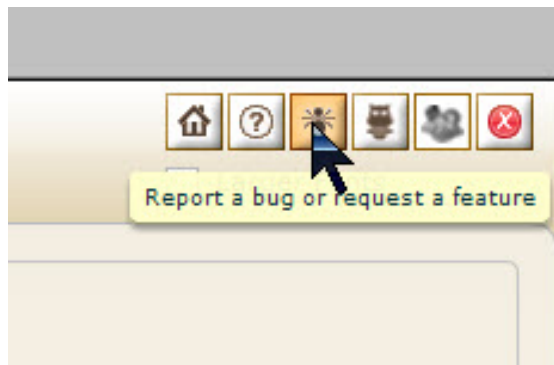


Figure 52: A direct link to the Trac system web site is the bug report button.

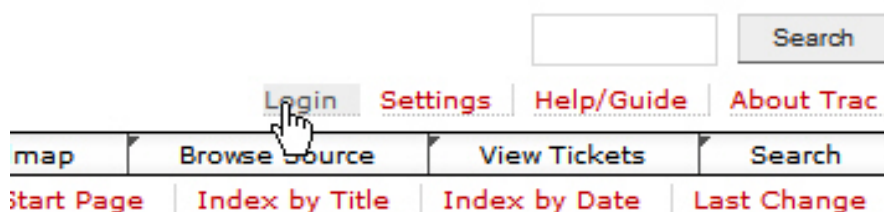


Figure 53: The Trac login.

The login screen appears (Figure 54) where you should fill in the user name and password provided by the Trac system administrator.



Figure 54: Connect to the Trac server.

## 12.2 How to submit a ticket

Start by browsing tickets already submitted by others to see if your issue/problem/request has already been addressed by someone else. Click 'View Tickets' in the upper right corner of the screen. You will be presented a list of available ways of sorting the tickets already in the system (Figure 55).



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## Available Reports

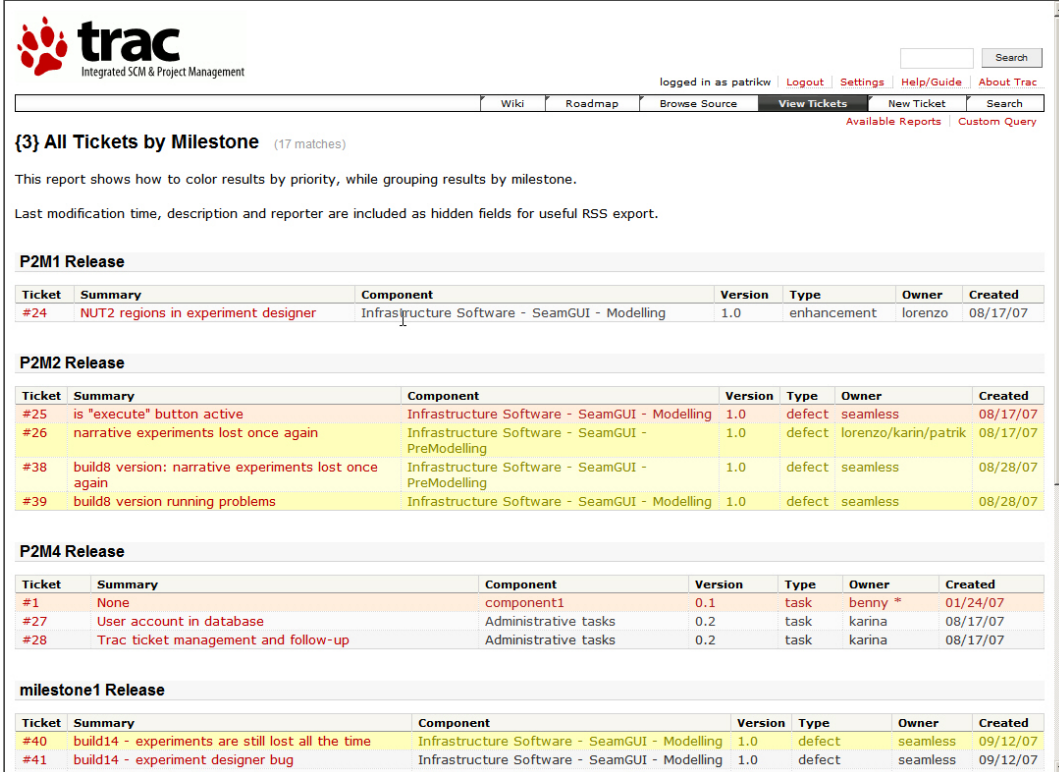
This is a list of reports available.

Report	Title
{1}	Active Tickets
{2}	Active Tickets by Version
{3}	All Tickets by Milestone
{4}	Assigned, Active Tickets by Owner
{5}	Assigned, Active Tickets by Owner (Full Description)
{6}	All Tickets By Milestone (Including closed)
{7}	My Tickets
{8}	Active Tickets, Mine first



Figure 55: A list of available ways of sorting the tickets

Choose a suitable report format (all tickets by milestone is often a good choice) by clicking on it. As you can see, you can also keep track of your own submitted tickets here for follow-up and to see the progress of its handling. In these reports, you can explore what tickets are submitted, to whom it has been assigned, the severity etc. (Figure 56). You can also look at individual tickets by clicking them in the list.



**{3} All Tickets by Milestone** (17 matches)

This report shows how to color results by priority, while grouping results by milestone.  
 Last modification time, description and reporter are included as hidden fields for useful RSS export.

**P2M1 Release**

Ticket	Summary	Component	Version	Type	Owner	Created
#24	NUT2 regions in experiment designer	Infrastructure Software - SeamGUI - Modelling	1.0	enhancement	lorenzo	08/17/07

**P2M2 Release**

Ticket	Summary	Component	Version	Type	Owner	Created
#25	is "execute" button active	Infrastructure Software - SeamGUI - Modelling	1.0	defect	seamless	08/17/07
#26	narrative experiments lost once again	Infrastructure Software - SeamGUI - PreModelling	1.0	defect	lorenzo/karin/patrik	08/17/07
#38	build8 version: narrative experiments lost once again	Infrastructure Software - SeamGUI - PreModelling	1.0	defect	seamless	08/28/07
#39	build8 version running problems	Infrastructure Software - SeamGUI - Modelling	1.0	defect	seamless	08/28/07

**P2M4 Release**

Ticket	Summary	Component	Version	Type	Owner	Created
#1	None	component1	0.1	task	benny *	01/24/07
#27	User account in database	Administrative tasks	0.2	task	karina	08/17/07
#28	Trac ticket management and follow-up	Administrative tasks	0.2	task	karina	08/17/07

**milestone1 Release**

Ticket	Summary	Component	Version	Type	Owner	Created
#40	build14 - experiments are still lost all the time	Infrastructure Software - SeamGUI - Modelling	1.0	defect	seamless	09/12/07
#41	build14 - experiment designer bug	Infrastructure Software - SeamGUI - Modelling	1.0	defect	seamless	09/12/07

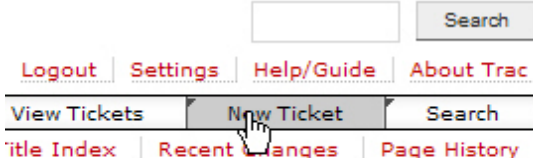
Figure 56: Tickets sorted by milestone.

If you find out that your issue is not already reported, click 'New Ticket' in the menu in the upper right corner of the screen (Figure 57). On the New Ticket page, enter a short summary that will give an idea of what the problem is. Below that, choose one of defect/enhancement/task that fits. Describe the problem in more detail under Full description.

The "Ticket Properties" box (Figure 58) contains some administrative information about the ticket: "Priority" can be set on a scale from "trivial" to "blocker", "Version" should be 0.2 for SEAMLESS-IF, and "Assign to" should be the names or user names of one or more of the developers in WP5. If you do not know whom to assign it to, just leave it empty. The rest of the entries can also be left empty if you do not know what to put there.

If you want to add a file to your ticket (for example a screenshot or a log), check the box at the bottom. You will be prompted for the filename.

You can see what the ticket looks like by pressing "Preview". Register it with "Submit ticket".



Search

Logout | Settings | Help/Guide | About Trac

View Tickets | **New Ticket** | Search

Title Index | Recent Changes | Page History

Figure 57: Click "New Ticket" in the upper right corner.

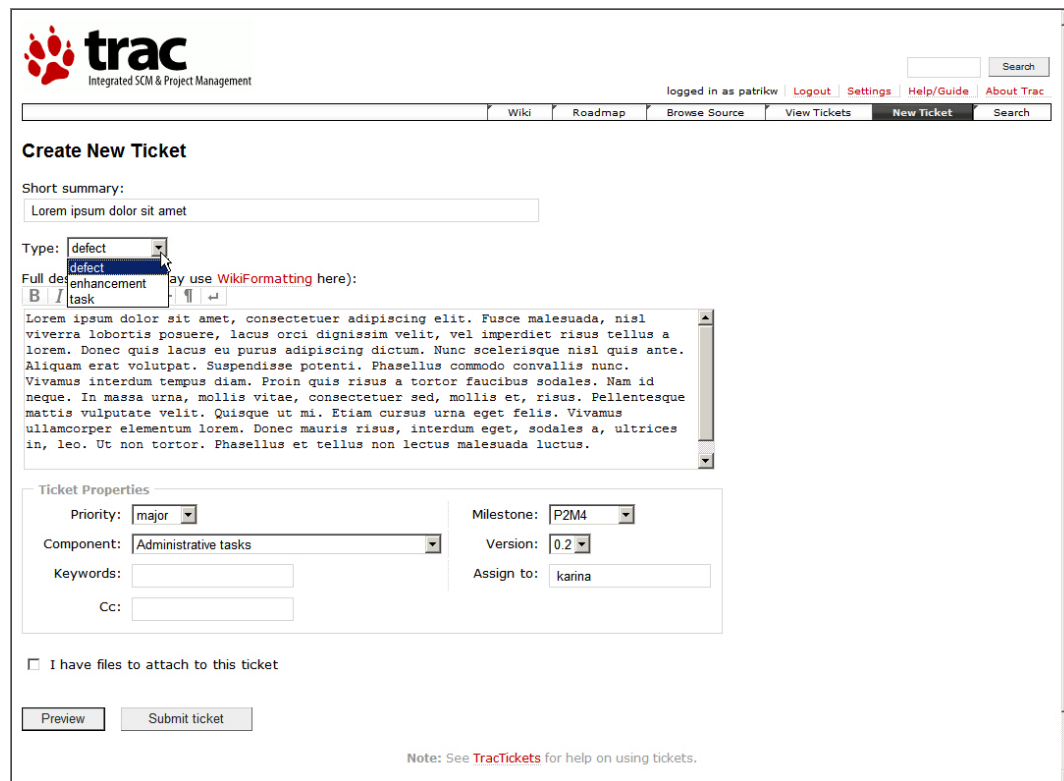


Figure 58: Describe your problem with all details needed to recreate it in the text box.

You can change the ticket properties by using the drop-down menus in the ‘Ticket Properties’ box. Priority can be set from lowest to highest and severity from trivial to blocker on multi step scales. How these properties are set is not critical; all tickets will be individually read, assessed and labelled by the software developers in WP5. Assign the ticket to a person. If you do not know to whom it should be assigned or otherwise are in doubt, assign it to a WP leader. You can provide some keywords to help the readers of the tickets in the sorting procedure, but that is optional. The CC field is not used. Submit the ticket by clicking ‘Submit ticket’.

## 12.3 How to get feedback from Trac

When you have opened a ticket in Trac, you can get updates about it by email. For this to work, you have to give Trac a valid email address.

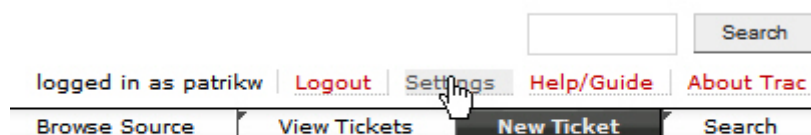


Figure 59: Where to change your Trac settings.

Press "Settings" in the row of links in the upper right corner (Figure 59). Enter your email address in the box under "Personal information". Press "Submit changes" (Figure 60).



Figure 60: Remember to press "Submit changes" before you leave the page.

Now Trac will send you email when you have created a ticket, as well as whenever something changes in it.

For the interested reader a lot of documentation and help functions are provided on the web page.

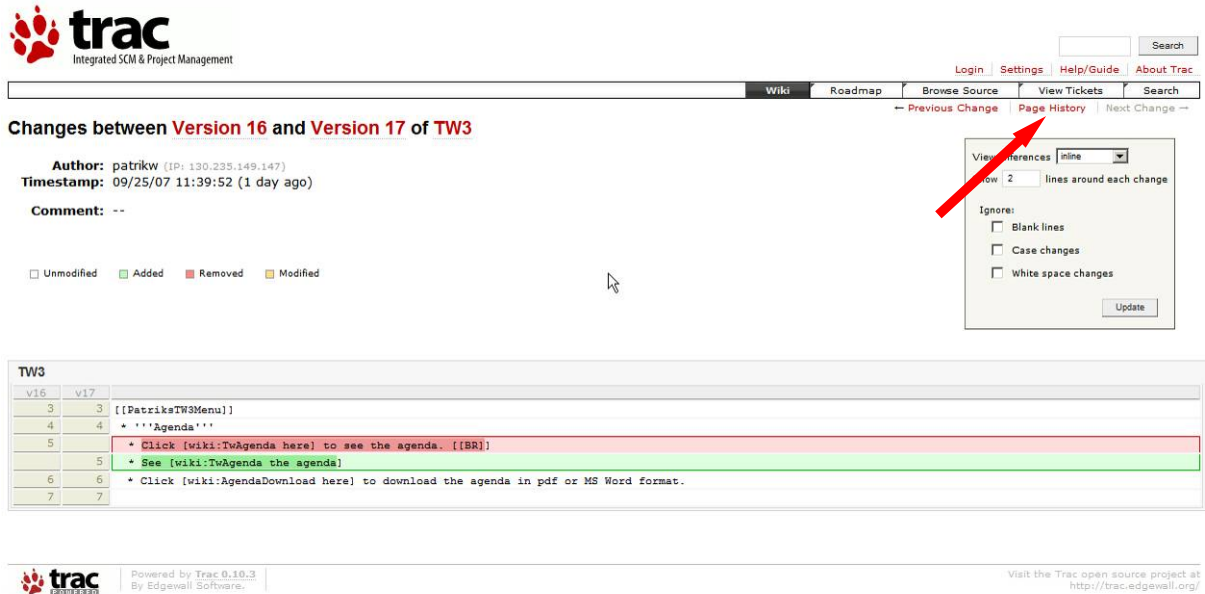
## 12.4 A Short guide to Trac Wiki

The Trac system also contains a wiki function. A wiki is a medium that can be edited by anyone with access to it, and provides an easy method for linking from one page to another. The Trac wiki is a typically collaborative website, this means that when you are logged in to the Trac system you can edit the pages you are reading.

### 12.4.1 Comparing versions in Trac wiki

The wiki always saves the different versions of a wiki page for easy comparison of different versions of the page. To view recent changes, click on "Last Change" (Figure 53) to open changes page (Figure 61). Click "Page history" (red arrow, Figure 61) to see all revisions of a page (Figure 62).





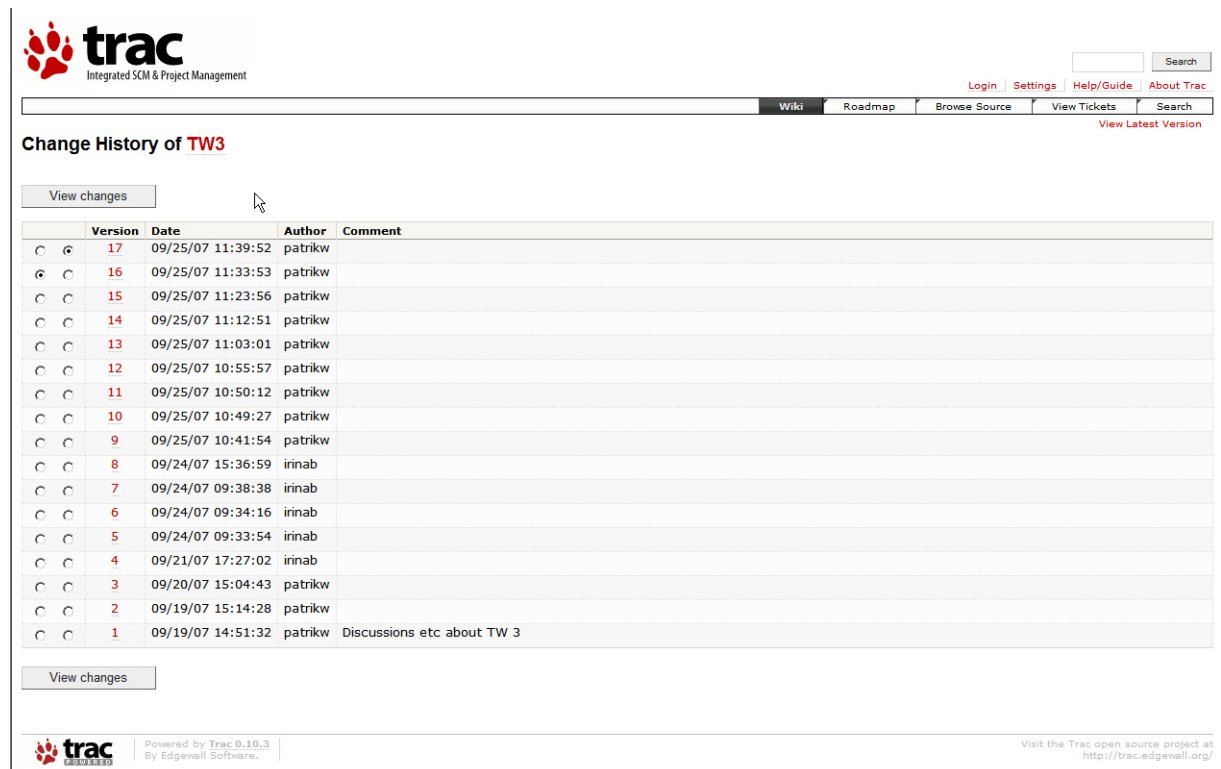
**Changes between Version 16 and Version 17 of TW3**

Author: patrikw (IP: 130.235.149.147)  
 Timestamp: 09/25/07 11:39:52 (1 day ago)  
 Comment: --

Unmodified  Added  Removed  Modified

v16	v17
3	3
4	4
5	5
6	6
7	7

Figure 61: Compare changes between different versions of wiki pages.



**Change History of TW3**

View changes

Version	Date	Author	Comment
17	09/25/07 11:39:52	patrikw	
16	09/25/07 11:33:53	patrikw	
15	09/25/07 11:23:56	patrikw	
14	09/25/07 11:12:51	patrikw	
13	09/25/07 11:03:01	patrikw	
12	09/25/07 10:55:57	patrikw	
11	09/25/07 10:50:12	patrikw	
10	09/25/07 10:49:27	patrikw	
9	09/25/07 10:41:54	patrikw	
8	09/24/07 15:36:59	irinab	
7	09/24/07 09:38:38	irinab	
6	09/24/07 09:34:16	irinab	
5	09/24/07 09:33:54	irinab	
4	09/21/07 17:27:02	irinab	
3	09/20/07 15:04:43	patrikw	
2	09/19/07 15:14:28	patrikw	
1	09/19/07 14:51:32	patrikw	Discussions etc about TW 3

View changes

Figure 62: All versions of a page are stored and can be retrieved from the data base.

## 12.4.2 Editing a wiki page

To be able to edit a wiki page you need to be logged in to the system. Once you have logged in, the appearance of the screen changes, allowing you to edit wiki pages (Figure 63).

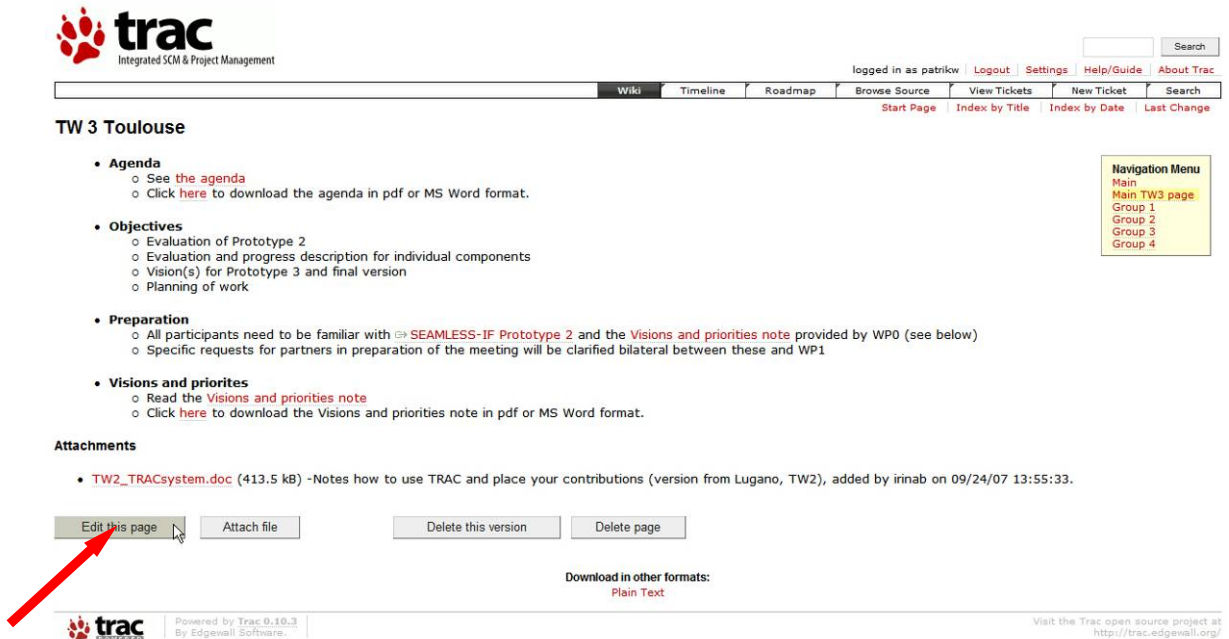


Figure 63: Click "Edit this page" to be able to write text on a wiki page.

Click "Edit this page" and type your text in the editing box that shows up. When you are finished editing click "Submit changes" (Figure 64). To format your text, use the buttons on the top of the editing window.

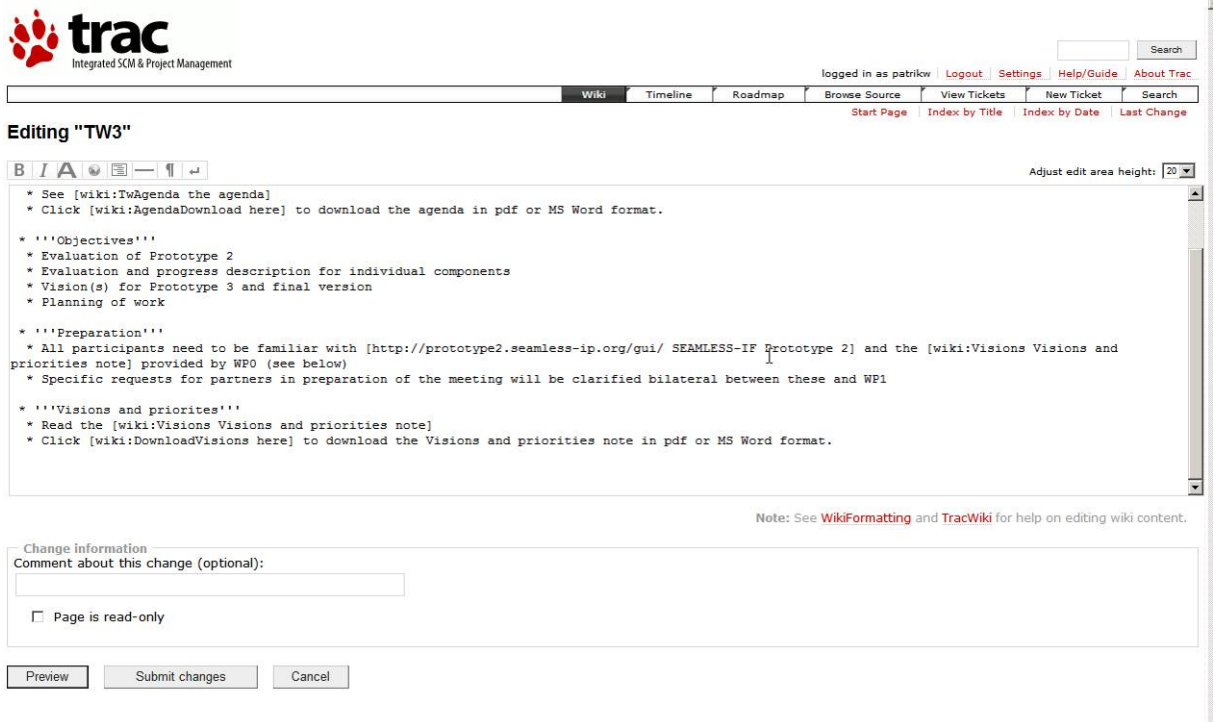


Figure 64: The editing window.

It is also possible to "Preview" the wiki page (Figure 65) before submitting it.

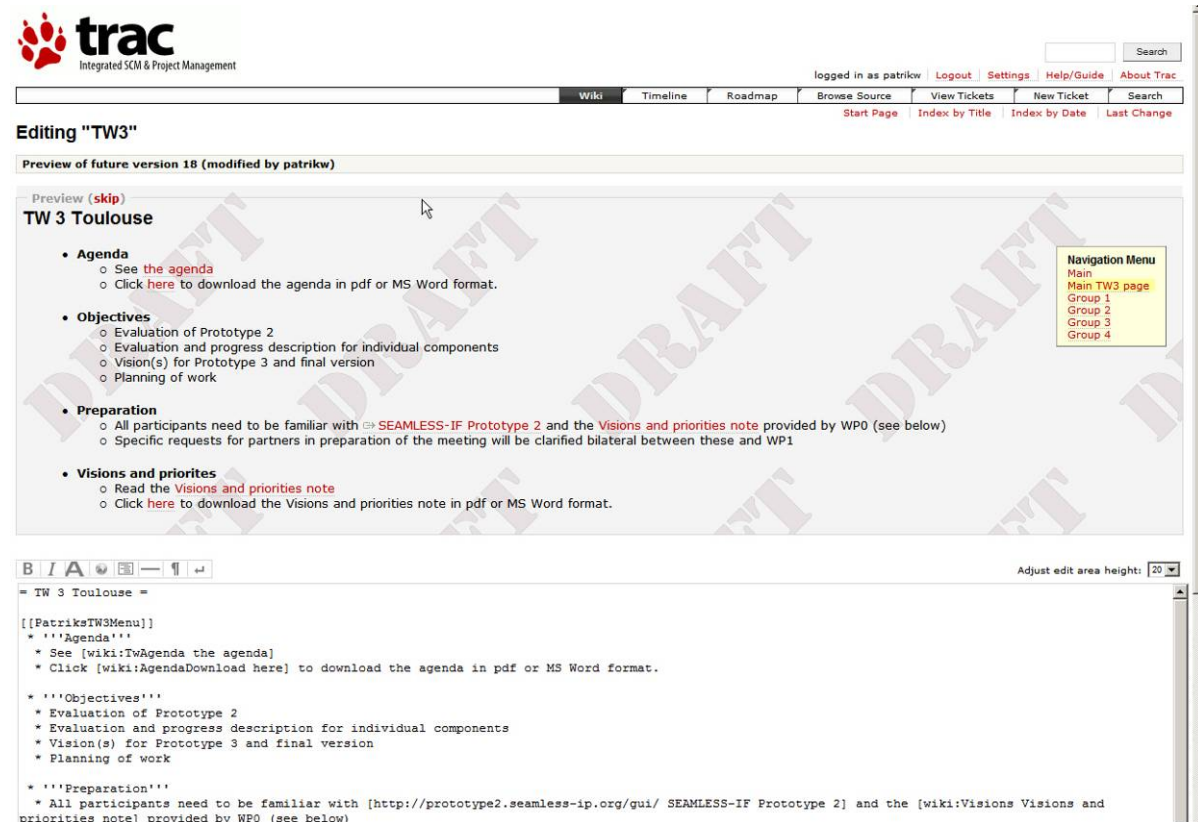


Figure 65: A draft version can be scrutinized before submitting the changes.

The interested reader can find lots of further information on wiki formatting, built-in functions etc in the Trac wiki documentation available on the web site.

## 12.5 Support of Frequently Asked Questions

An FAQ (Frequently Asked Questions) web page will be set up in the Trac system as soon as any FAQs have been collected. Just click on the link in the menu to the right on the web page (Figure 66).

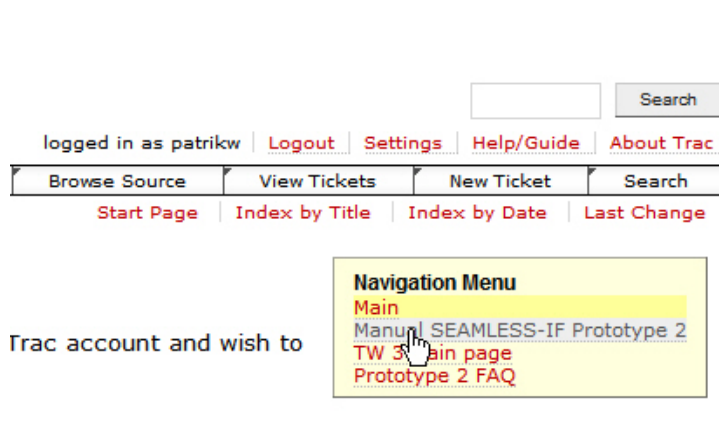


Figure 66: The menu of the SEAMLESS-IF wiki page in the Trac system.



## Glossary

**Context:** the object of interest and its boundary conditions, which is delimited by the boundaries to the biophysical and agro-management system. For example, arable farms in the Flevoland region with five different crops. Each Experiment needs one and only one specific context.

**Experiment:** an experiment is one run of the models within SEAMLESS-IF that evaluate the effects of one or a combination of 'policy options' in one context and one outlook

**Impact:** the expected changes in indicator-value due to changes in policy options, context and outlook on the future as compared to the reference (base) situation.

**Integrated modeler:** a researcher who is assigned a research project by the policy expert, which entails an integrated assessment, and wants to solve the questions in this research project by using the SEAMLESS-IF.

**Model Configuration:** It defines what kind of configuration of the models should be used. Either this may be defined by the model specifications, or it may be relevant to the Experiment.

**Outlook:** An outlook on the future, that describes the trends and/or trend deviations in society at large, which affect the results produced by SEAMLESS-IF, but which are not forecasted by SEAMLESS-IF. These outlooks discuss trends and trend deviations exogenous to SEAMLESS.

**Policy expert:** a stakeholder (e.g. policy maker at the EU, national or local government, or a farmers' representative) that wants to assess the impacts of a policy change and commissions a project to integrated modellers.

**Policy Option:** It is defined by a set of policy parameters within a given timeframe or for a time series that the integrated modeller concerns related to the problem and the experiment defined in the current project.

**Problem Definition:** the question the policy expert wants to have an answer to. The problem definition is defined by the policy evaluator and the integrated modeller helps to translate the problem to capabilities of the SEAMLESS-IF tools, for example: 'to assess the integrated cross impacts of a specific change in the CAP and/or an implementation of the Nitrate directive.' Each problem can be tackled in different ways, leading to one or more experiments for each problem.

**Project:** A project is used to tackle one problem that the user wants to assess by using SEAMLESS-IF. One project has one and only one problem; and has one or a set of 'Experiments'.

**Scale:** the physical dimensions (most commonly space and time) of observed entities and phenomena (meaning that dimensions and units of measurement can be assigned), which can be either spatial or temporal.