Project co-financed by the European Regional Development Fund

STDM

(Support on-line Tool for Decision Makers)

Step-by-step user guide

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1. Introduction

STDM (Support online tool for Decision Makers) has been designed for use by local authorities managers, decision makers, consultants, researchers, and other stakeholders working on municipal waste management at local and regional level. The tool is based on the Analytical Hierarchy Process (AHP) method (see Saaty, 1980), which combines information provided by stakeholders and produces a ranking of optional pathways.

The necessary information that needs to be introduced in STDM to perform an analysis is:

- Objective: defines the aim of the analysis. It is established by the team in charge of the decision-making process;
- Criteria: are guiding elements on which decisions are based. An initial list is generated by the team in charge of the process and finalized after stakeholder consultation (use of the results of the Deliverable ACTION PLANS of the Blueislands project);
- Options: refers to available alternatives. A list of possible options is elaborated by the team in charge of the decision making process following a thorough literature research, expert consultation and policy analysis (use of the results of the deliverable ACTION PLANS of the Blueislands project);
- Weights: indicate the relative importance of the different components of the Multi Criteria Evaluation process. The weights needed to evaluate the different options are provided by the relevant stakeholders through public consultation, workshops, interviews, and the like

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2. Step 1: Access to STDM software tool

STDM is an online tool that can be accessed from the following website:

http://blueislands.dssys.eu

Introducing the above address in any web browser, a login screen is open for the user to carry out the registration process (**Figure 1**).

The user must register with:

Username : *[username]*
Password: *[password]*

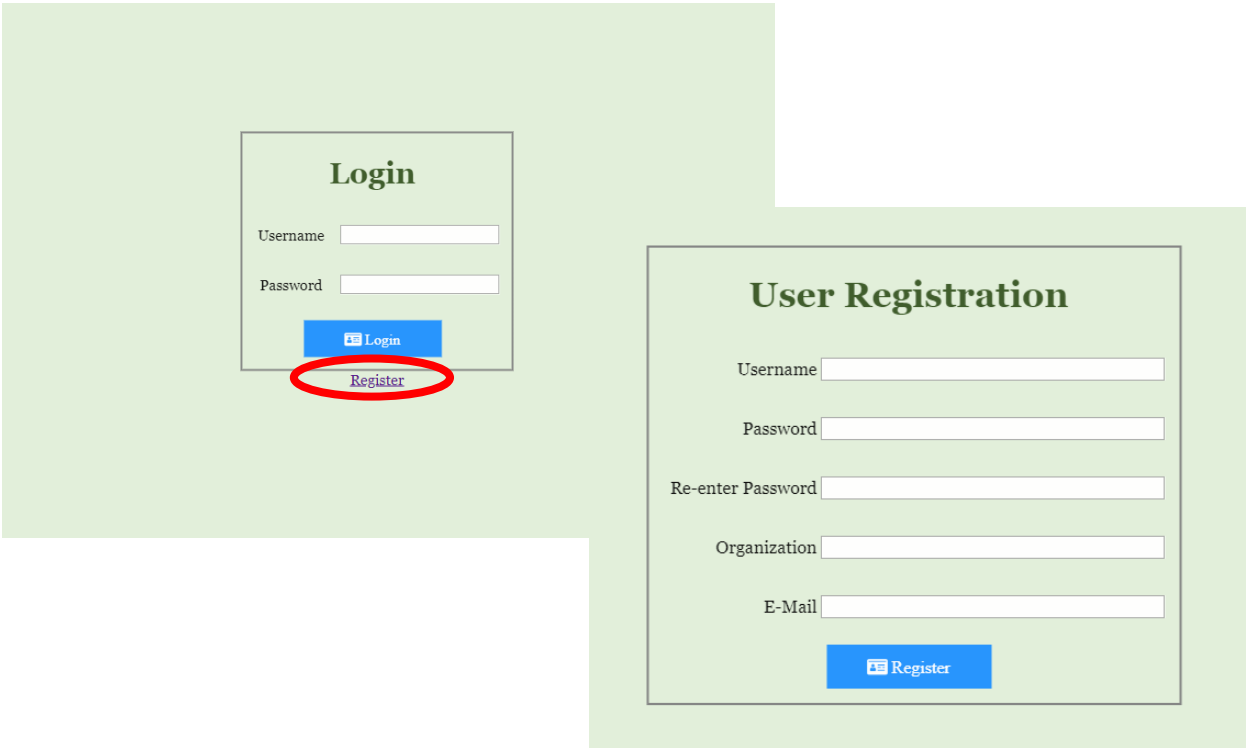

Figure 1: Access screen of STDM software tool.

After introducing the address in any web browser, the user is presented with a main screen to access the main programme (**Figure 2**).

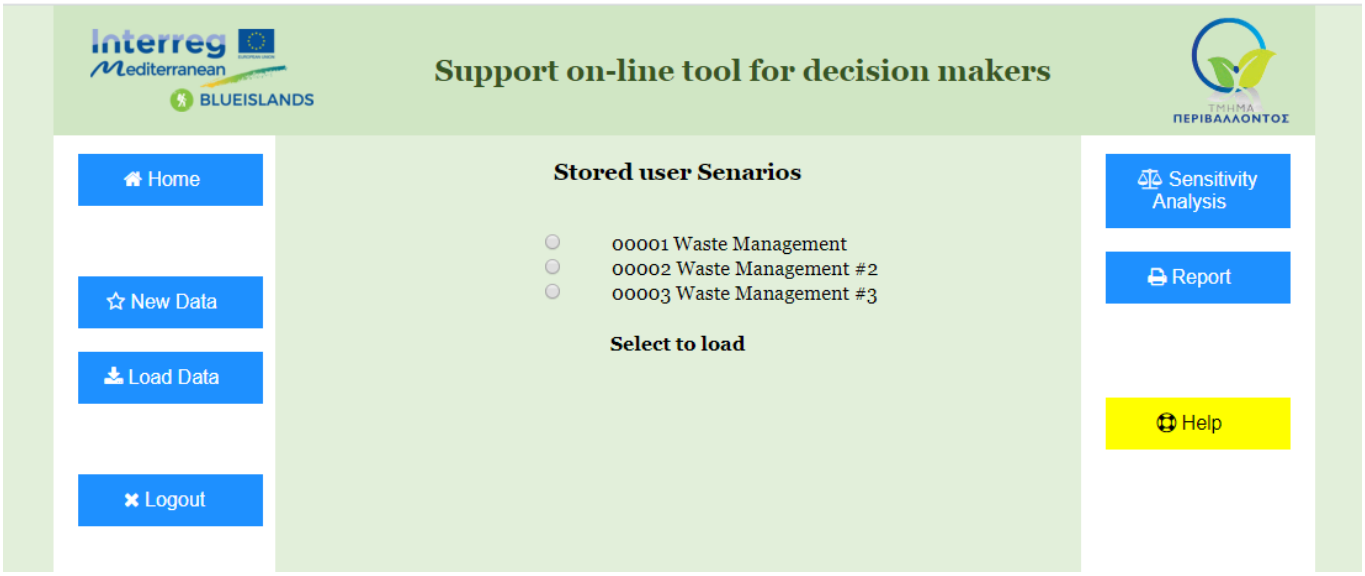

Figure 2: Access screen of STDM software tool.

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3. Step 2: How to start a new analysis

Once you have accessed STDM, the home screen displays all the analyses (henceforth *projects*) saved by the user. To start a new process, you must click on the **New data** button (**Figure 3**).

Figure 3: Starting a new analysis from the home screen

The initial screen of the process displays the basic information needed (**Figure 4**). This information includes the ***Objective*** of the analysis (which once introduced, becomes the name of the analysis for identifying the different projects in the saved projects list shown on **Figure 4**), the decision guiding ***Criteria***, the optional pathways available identified as ***Options***.

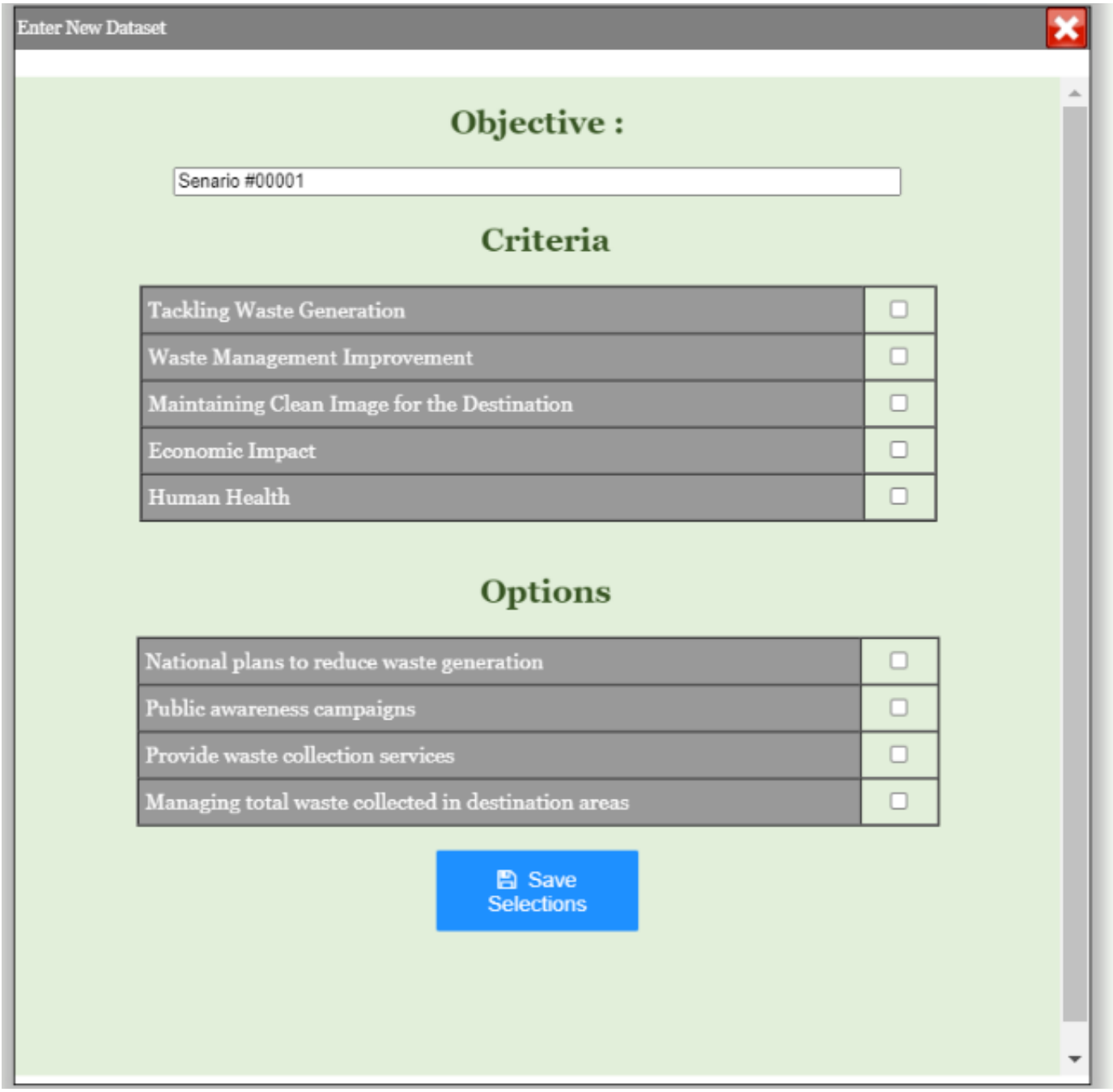


Figure 4: New Data Set window displaying the basic information needed – Criteria and options

The user must introduce the Objective by typing the *Objective name* in the *Objective* field (e.g. Senario #00001).

The next requires the user to select the ***Criteria*** and ***Options*** to be used for the analysis of the introduced ***Objective***.

To introduce the ***Criteria***, the user can choose up to five predetermined criteria found in the *Criteria* field (**Figure 5**). The desired ***Criteria*** can be selected one after the other in the *Criteria* fields. After selecting the last criterion, the same procedure is required for the selection of the desired ***Options***.

To introduce the *Options*, the user can choose up to four predetermined options found in the *Options* field (**Figure 5**). The desired *Option*s can be selected one after the other in the *Options* fields. After selecting the last option, the list of *Options* is complete.

Criteria and Options selection is saved by clicking the ***Save Selections*** button.

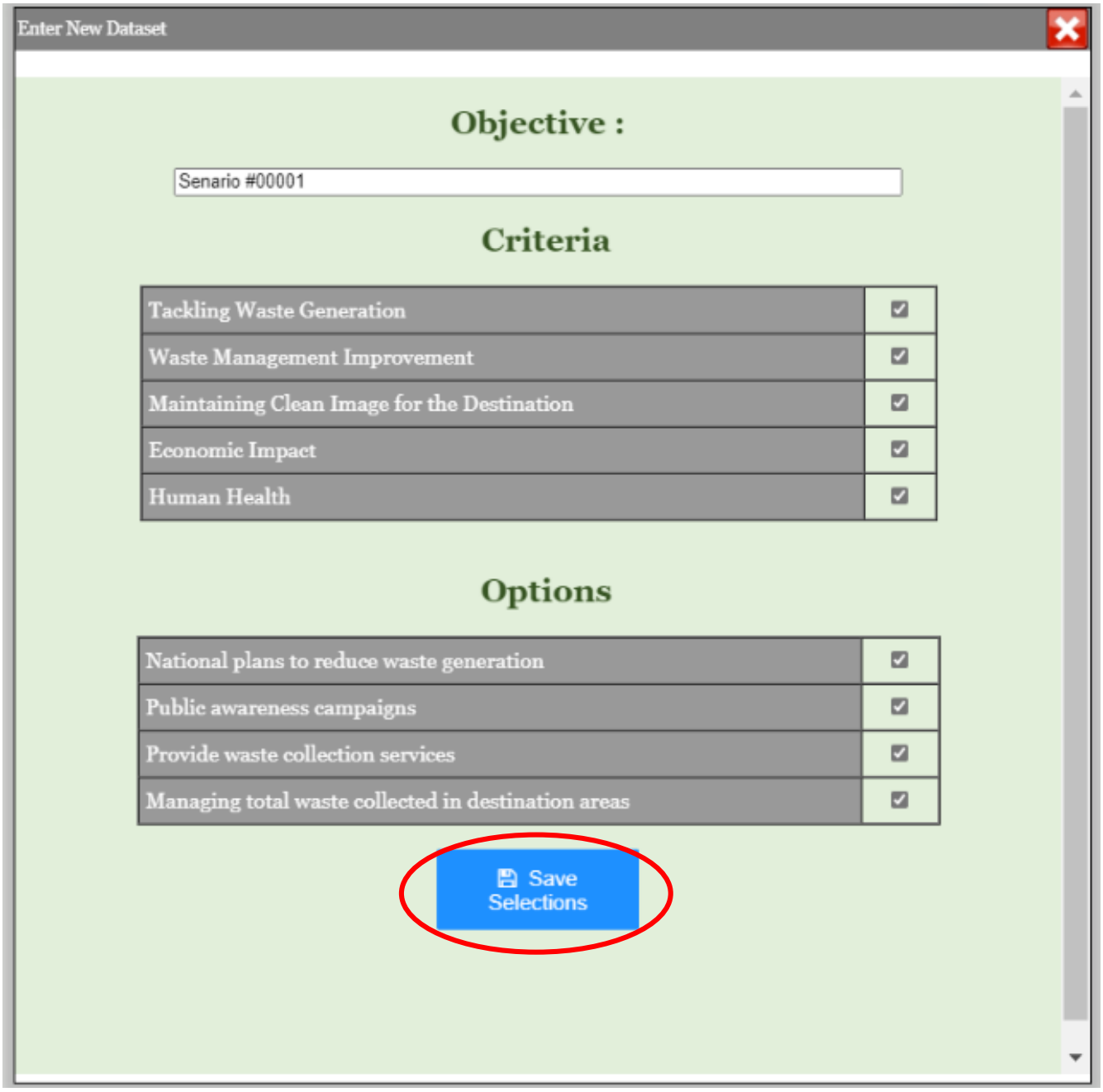


Figure 5: New Data Set window displaying the basic information needed - Selection of Criteria and options

4. Step 3: How to introduce information into the system

The initial information required to begin the process are the Criteria, and Options. Pressing the **Load Data** button the ***Criteria and Options Setup Window*** opens.

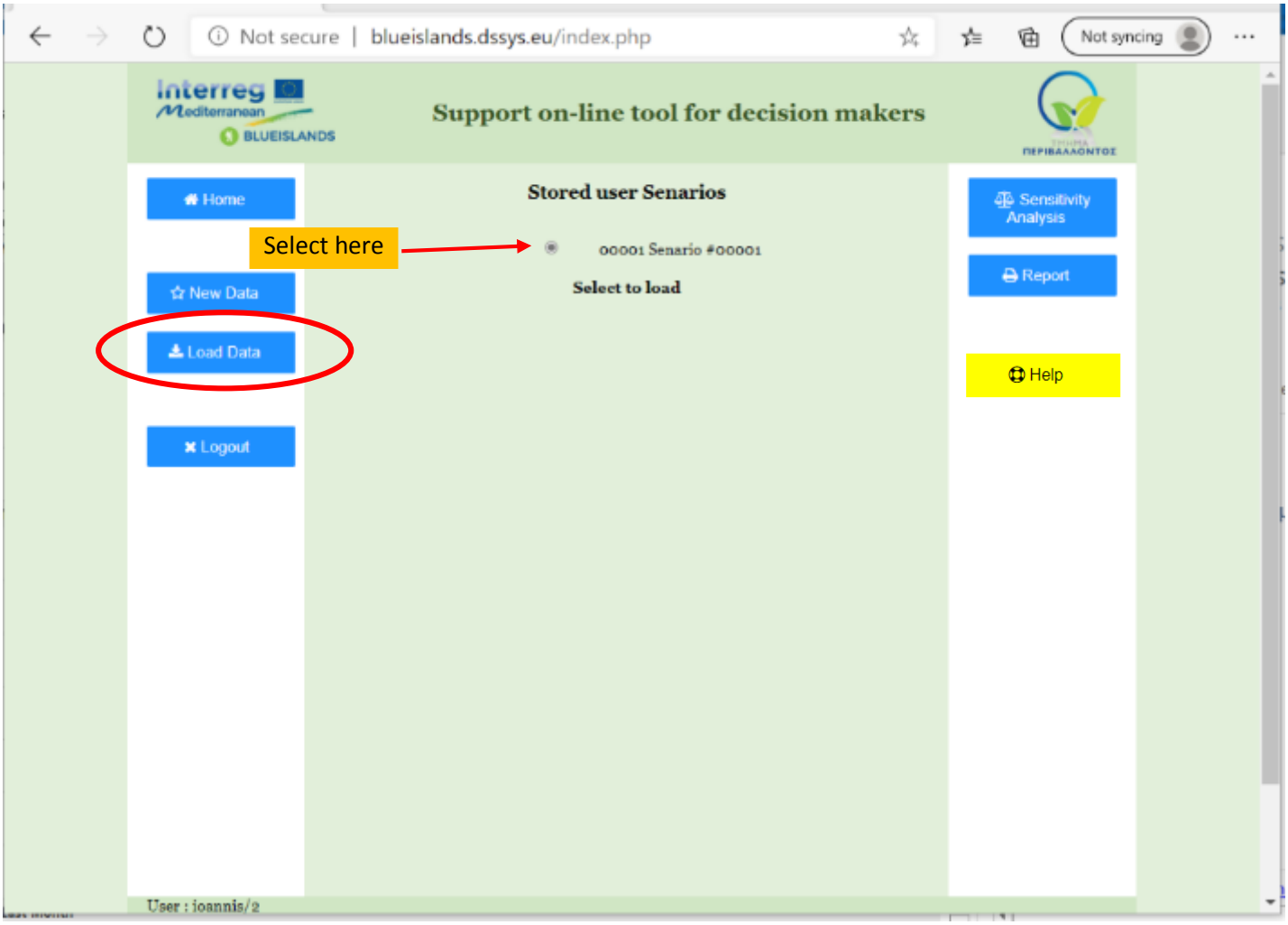


Figure 6: New Data Set window displaying the basic information needed – Loading Data

5. Step 4: How to conduct pairwise comparisons (providing weights for Options)

Once you have introduced the information on *Objective*, *Criteria*, and *Options*, the relative importance of each of these components is assessed by providing weights to pairwise comparisons. On the initial screen where the basic information is introduced, the *Options* are compared against each other (the level of importance of one option over another) with regards to each criterion. Example:

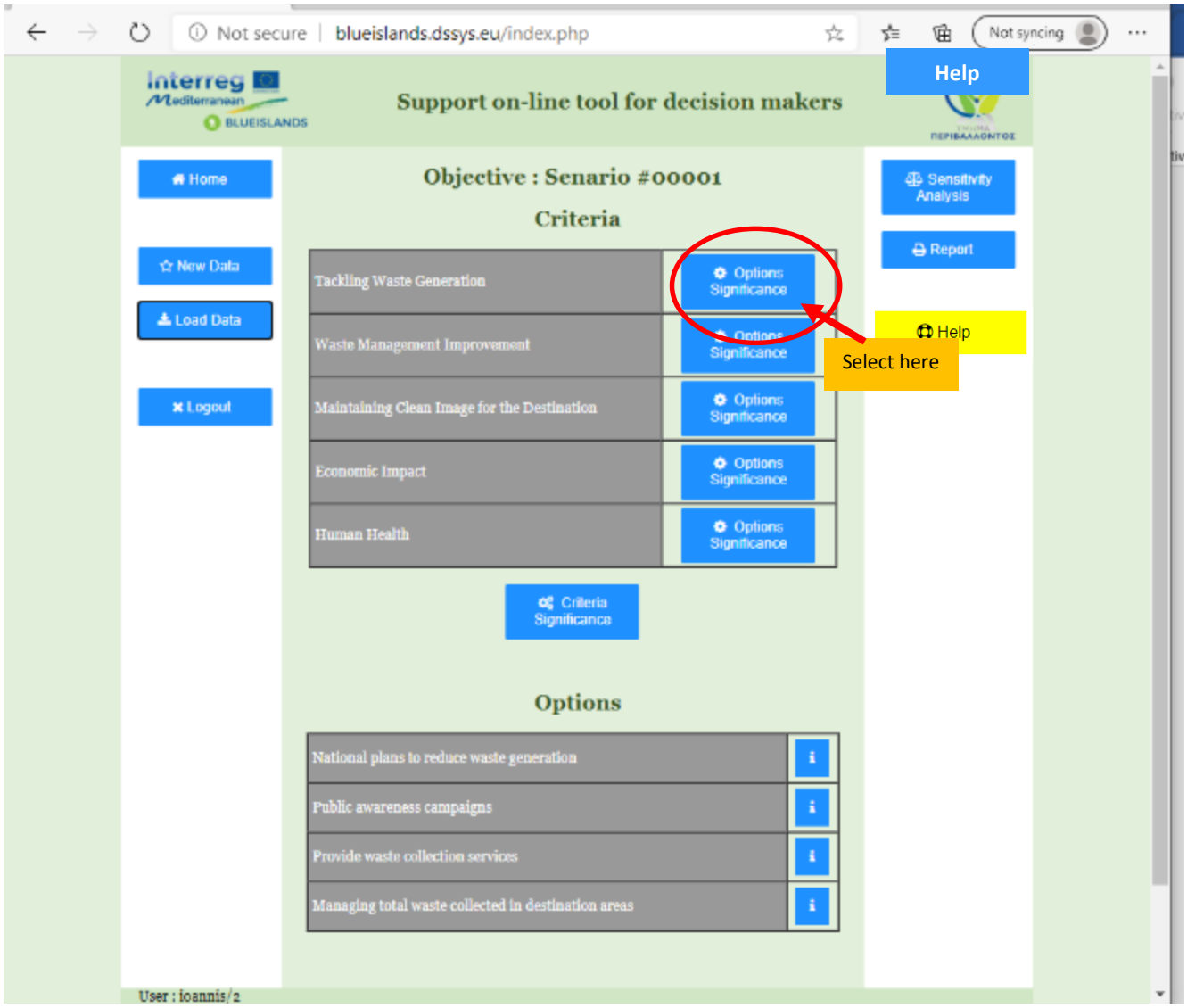


Figure 7: Introducing the decision guiding *Criteria.*

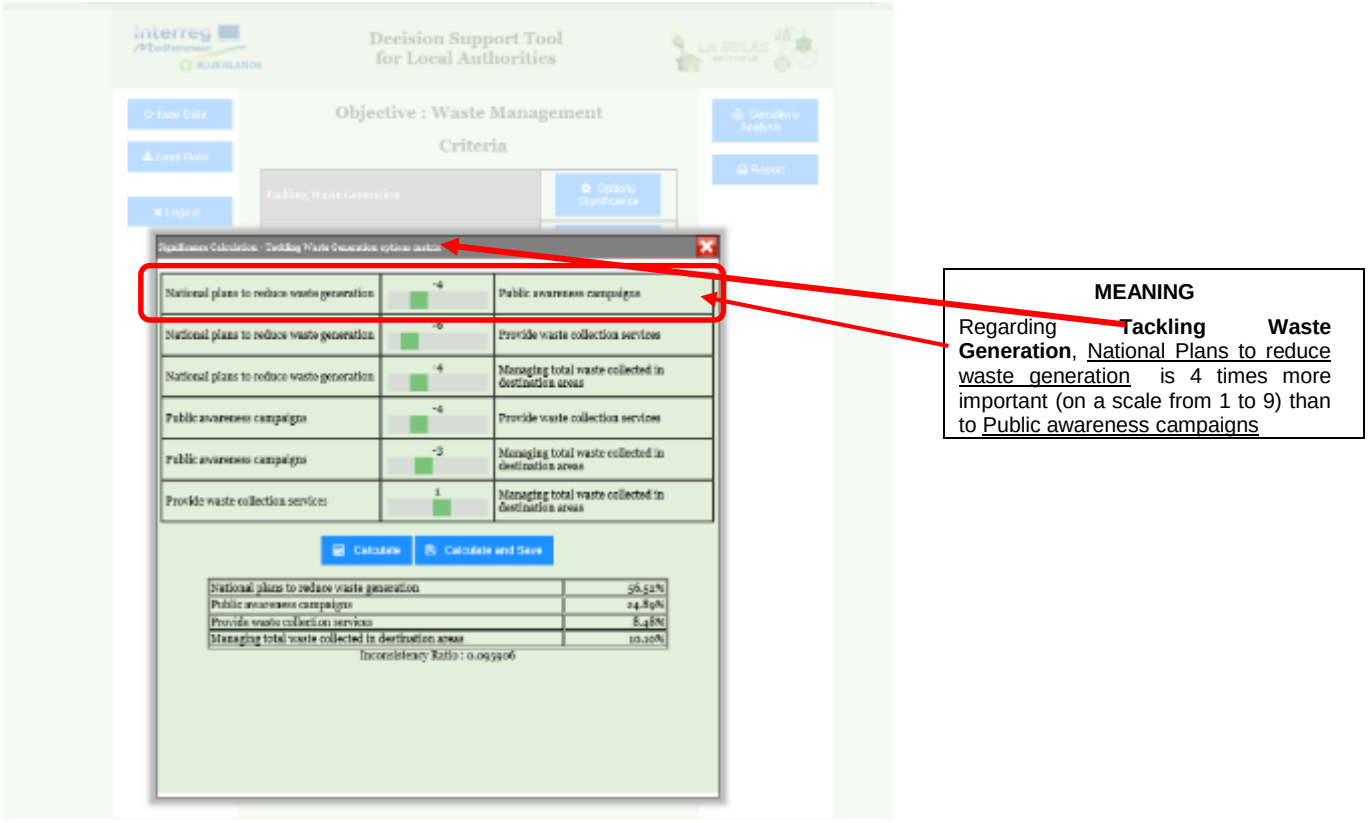


Figure 8: Example of pairwise comparisons of Options, and their interpretation.

In order to complete this step, all options are compared in pairs with regards to the first criterion. Once all weights are introduced in this pairwise comparison regarding the first criterion (**Figure 8**), the next criterion is selected (clicking on it in the right Criteria section: "Option significance" button) to proceed with the pairwise comparison of *Options* with regards to the second criterion (**Figure 8**). This operation is repeated until all *Options* have been compared pairwise with regards to each *Criterion*.

After providing weights to pairwise comparisons the calculation is effected by pressing the **Calculate** button. Once this comparison is completed, please check whether the *Inconsistency Ratio*[1] is still not higher than 0.1 before moving on to the next criterion. In order to save the final calculation press the **Calculate and Save** button and then move to the next criterion.

[1]The developer of the Analytical Hierarchy Process (AHP) method (in which OPTamos is based), established that an acceptable value of inconsistency is ≤0.1. For more information, see Saaty (1980).

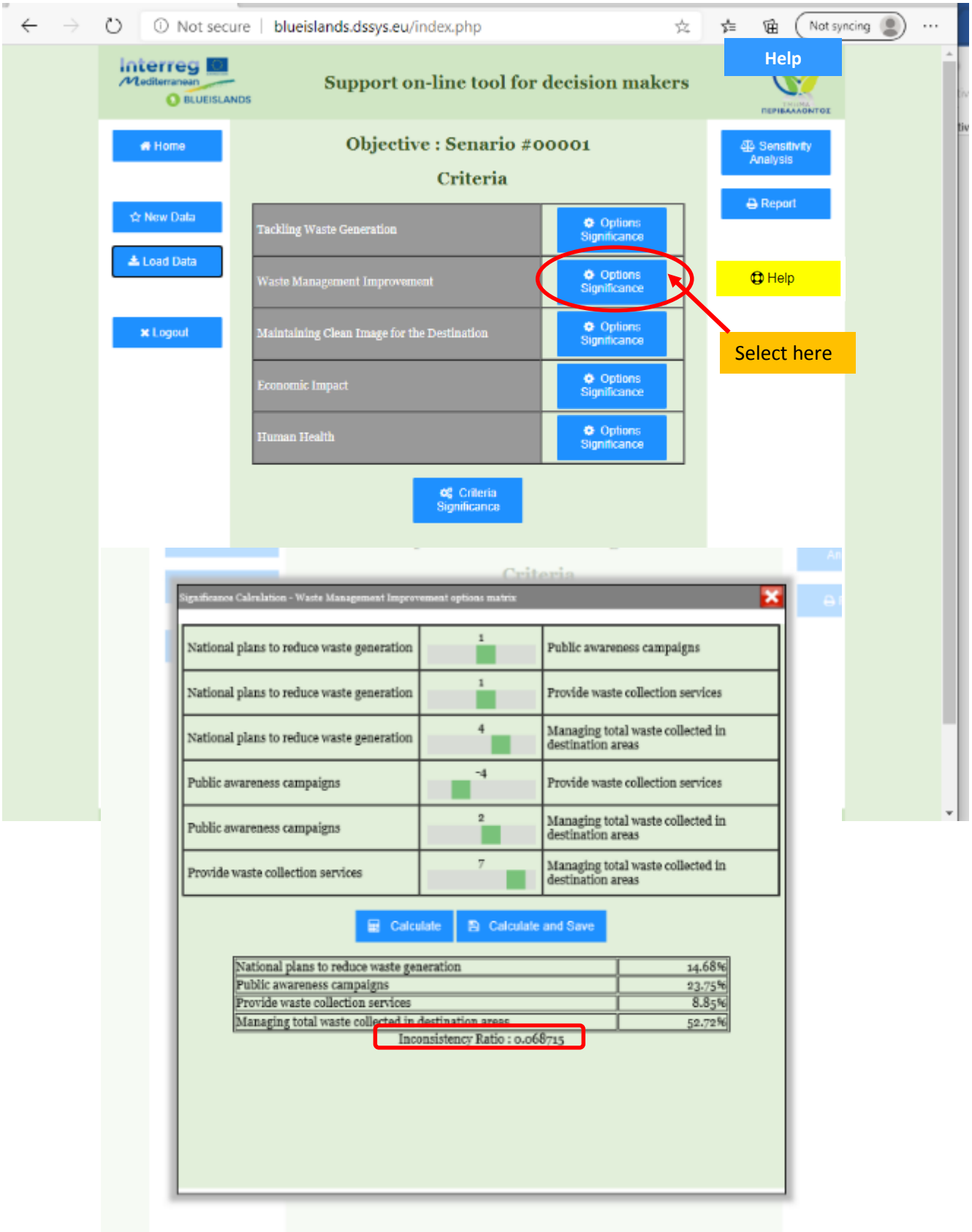


Figure 9: Selecting the Criteria to conduct the pairwise comparisons for the Options.

6. Step 5: Pairwise comparisons (providing weights for Criteria)

Clicking on the **Criteria Significance** button moves the process to the following stage, which displays the pairwise comparisons of the *Criteria* (**Figure 10**). On this page all possible combinations to compare each criterion against the others are presented (level of importance of one criterion over another) with regards to the *Objective* providing weights in the same scale and manner as they are provided in the pairwise comparisons of the *Options*.

Figure 10: Providing weights for the pairwise comparisons of the Criteria.

Once the values are given for each comparison, the user can move to the **Results Page** by clicking on the ***Sensitivity Analysis*** button.

7. Step 6: Results presentation & Sensitivity Analysis

The final results of the assessment are presented in the **Sensitivity Analysis** window as numerical values as well as charts.

The results present the options significance analysis, with the higher percentage value as the most preferred option.

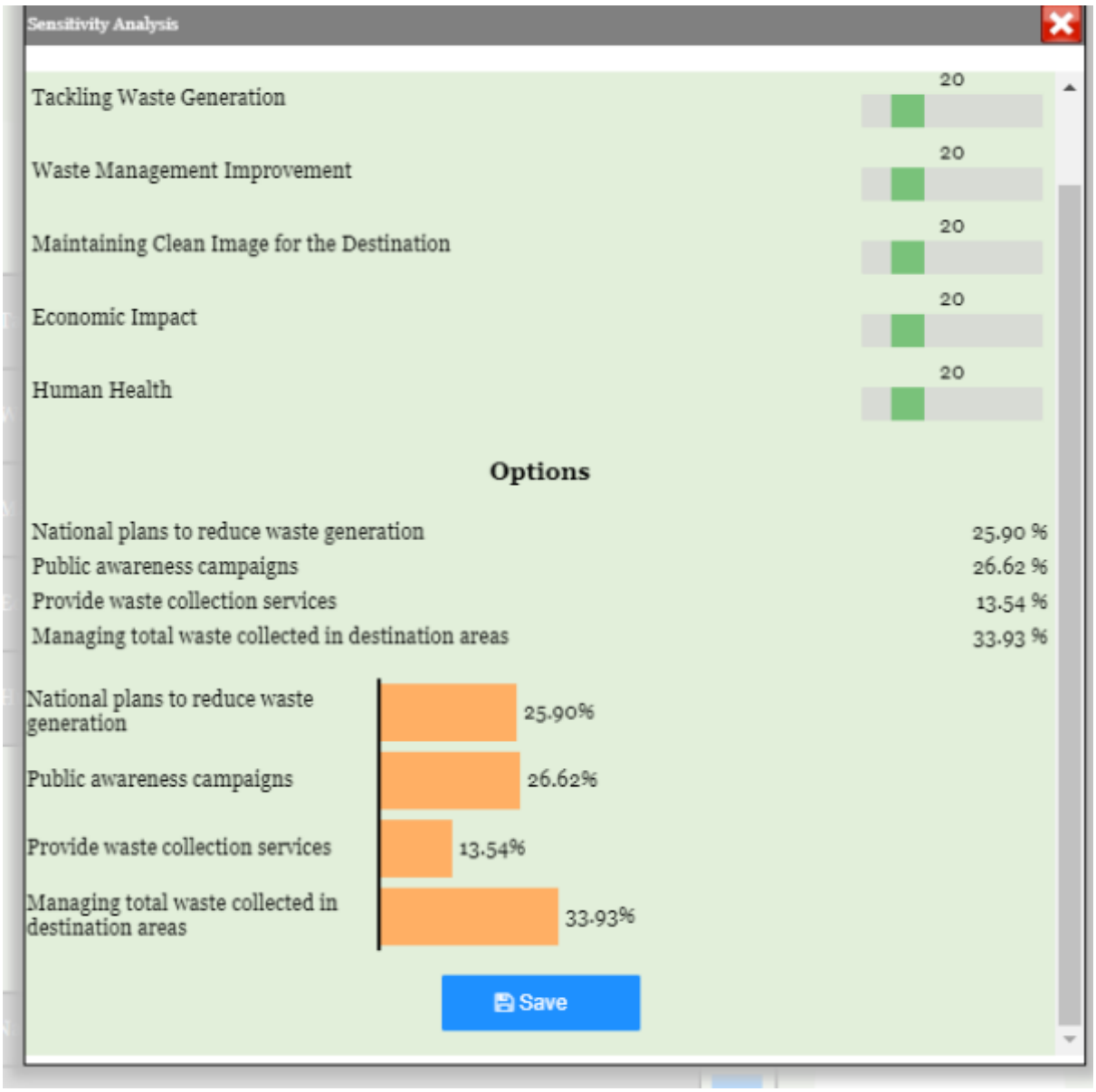


Figure 11: Providing weights for the pairwise comparisons of the Criteria.

The user in the **Sensitivity Analysis** window can assess how the Options Significance is affected by changing the weighted values of the selected Criteria.

The user can change the weighted factor of each of the criteria and

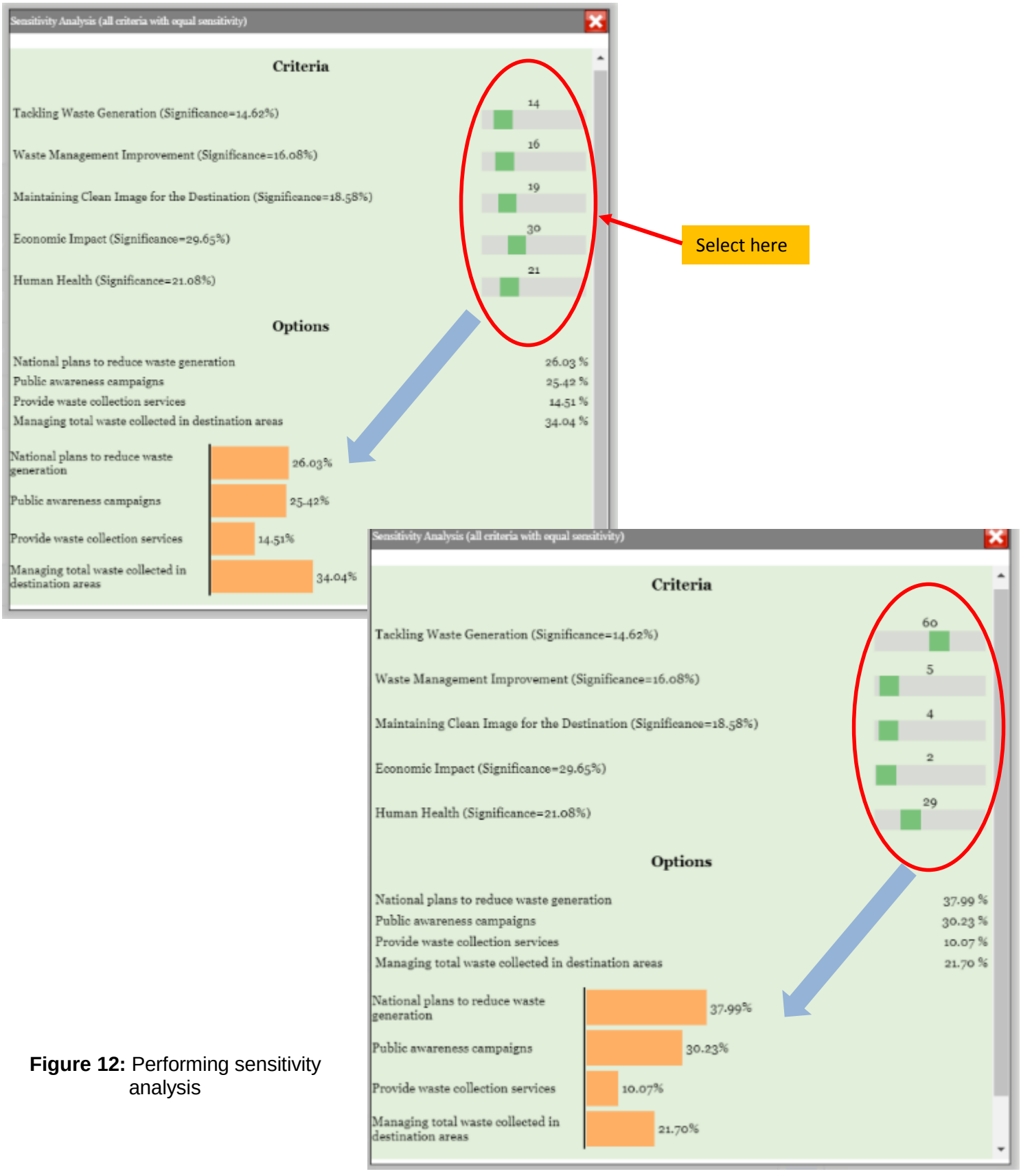


Figure 12: Performing sensitivity analysis

8. Step 7: Report

Once the analysis is finalized a report in pdf format is prepared by clicking on the ***Report*** button.

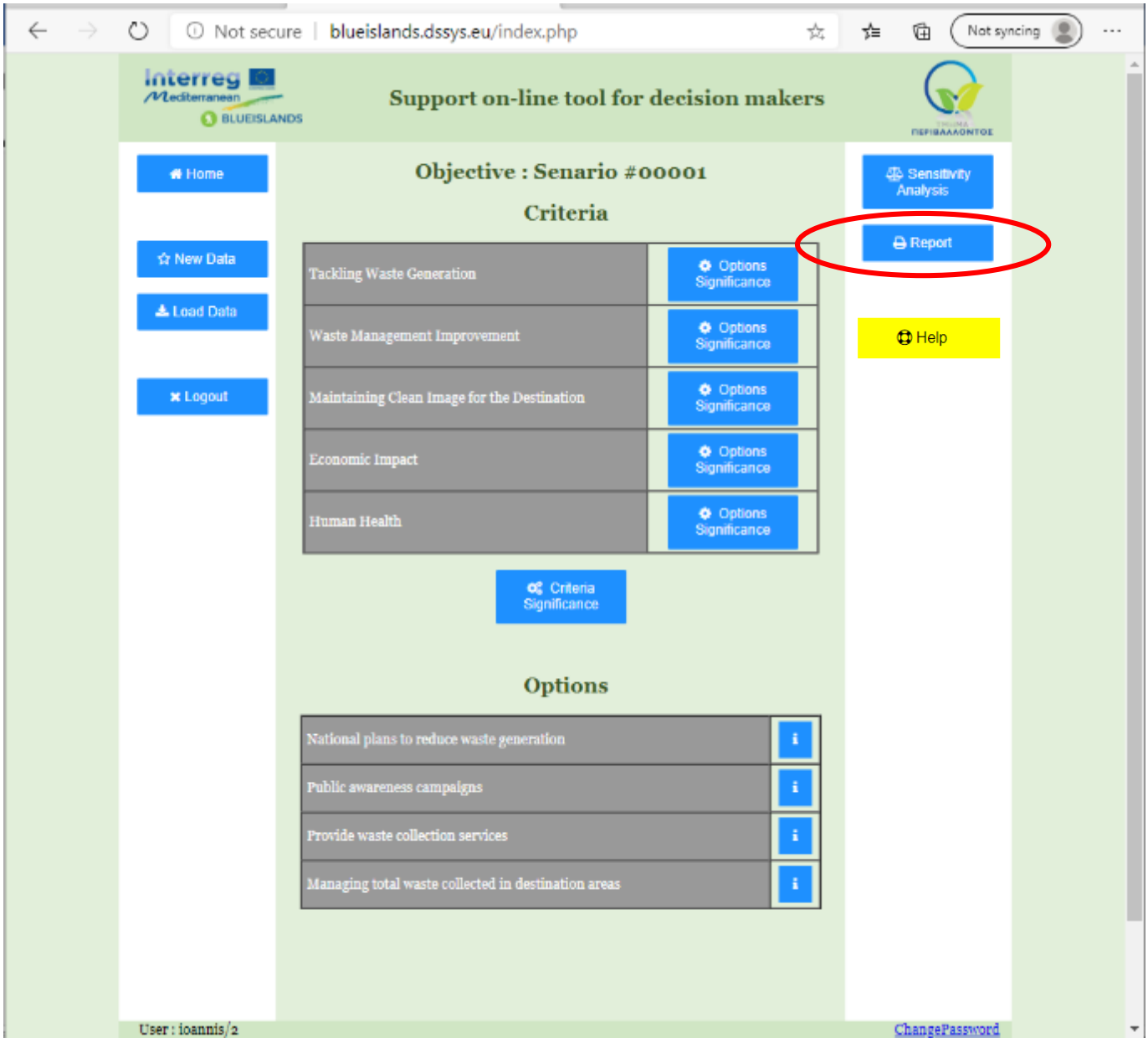


Figure 13: Report page

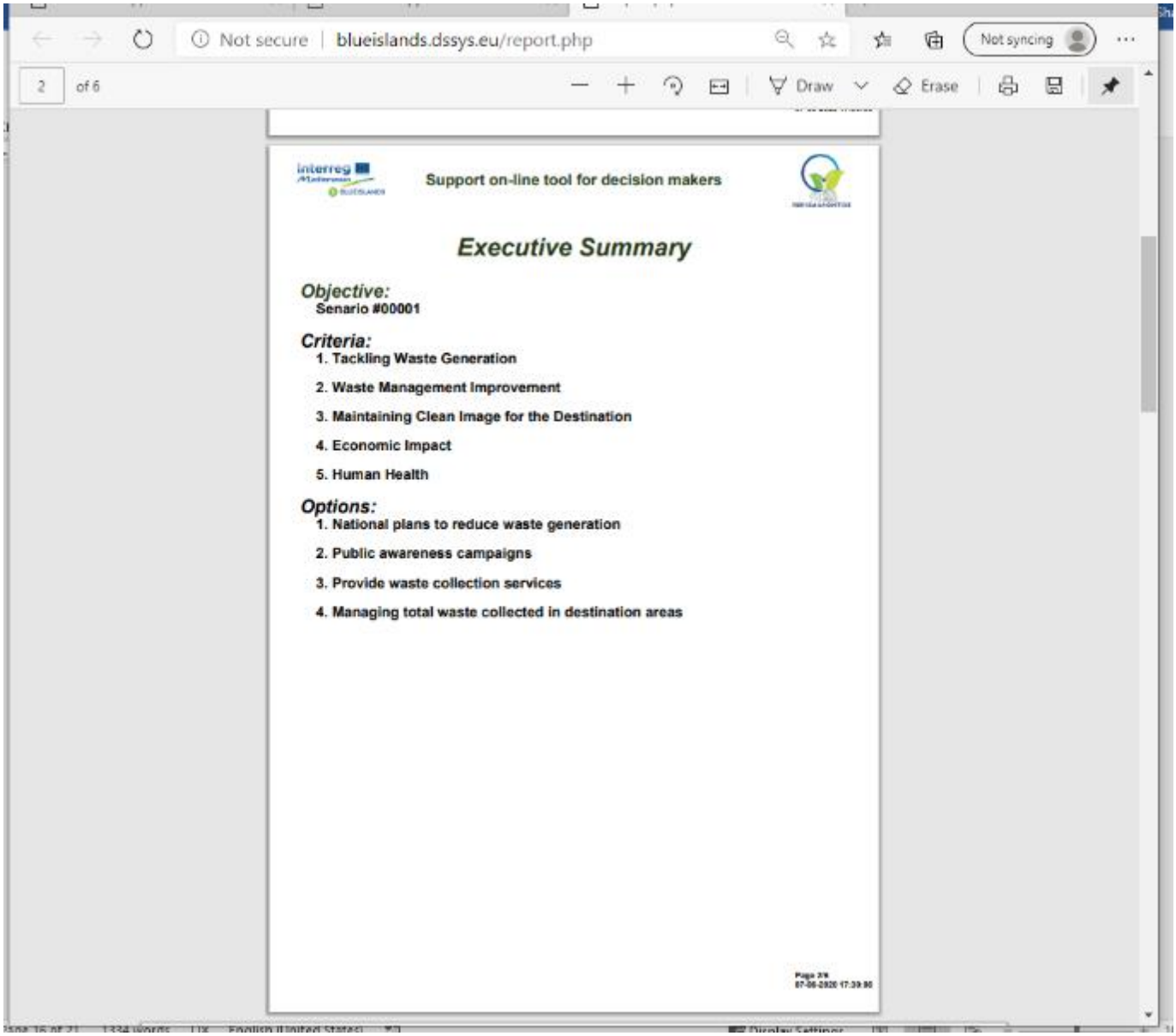
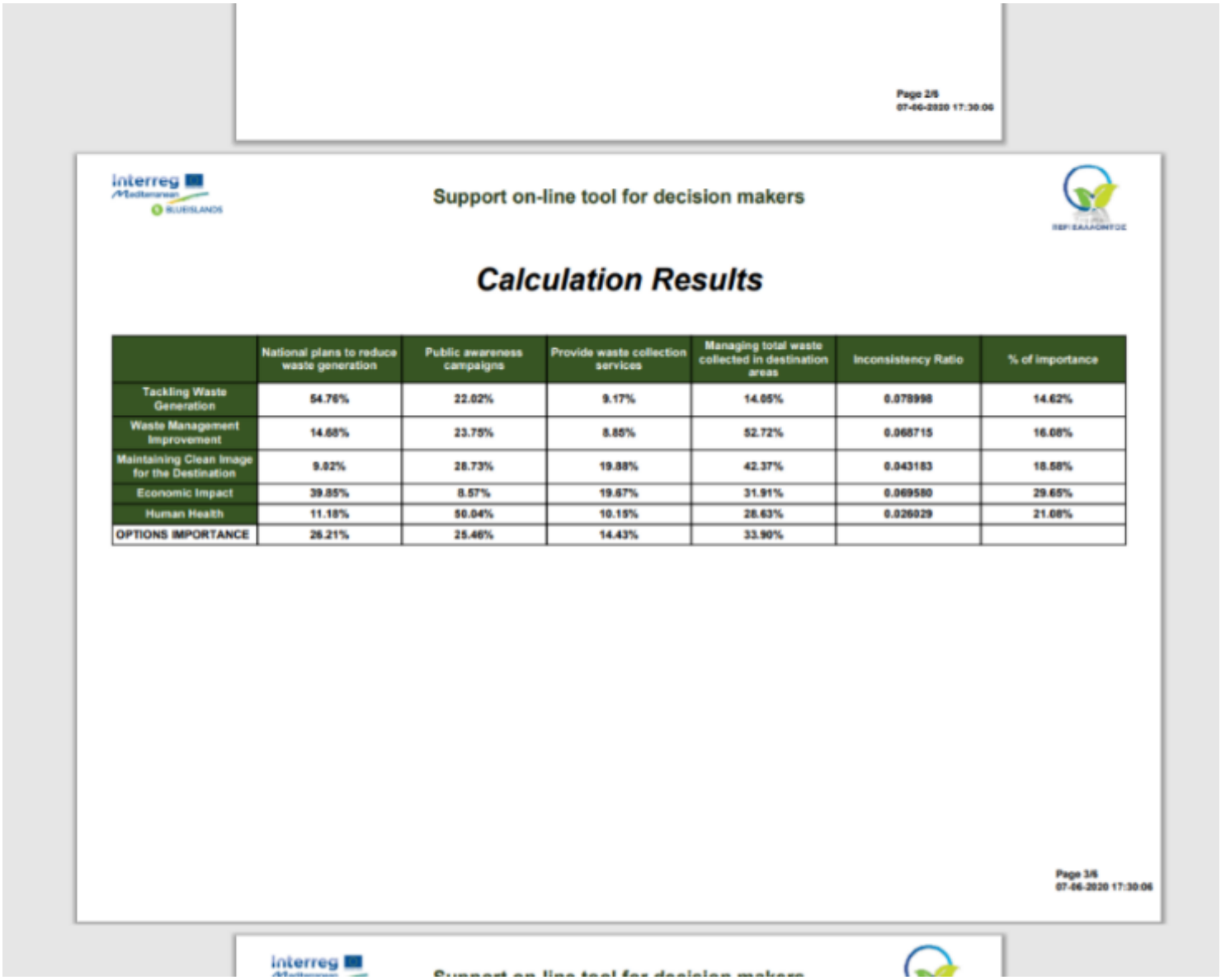


Figure 14: Report page



Support on-line tool for decision makers

Calculation Results

	National plans to reduce waste generation	Public awareness campaigns	Provide waste collection services	Managing total waste collected in destination areas	Inconsistency Ratio	% of importance
Tackling Waste Generation	54.76%	22.02%	9.17%	14.05%	0.078998	14.62%
Waste Management Improvement	14.68%	23.75%	8.85%	52.72%	0.068715	16.08%
Maintaining Clean Image for the Destination	9.02%	28.73%	19.88%	42.37%	0.043183	18.58%
Economic Impact	39.85%	8.57%	19.67%	31.91%	0.069580	29.65%
Human Health	11.18%	50.04%	10.15%	28.63%	0.026029	21.08%
OPTIONS IMPORTANCE	26.21%	25.46%	14.43%	33.90%		

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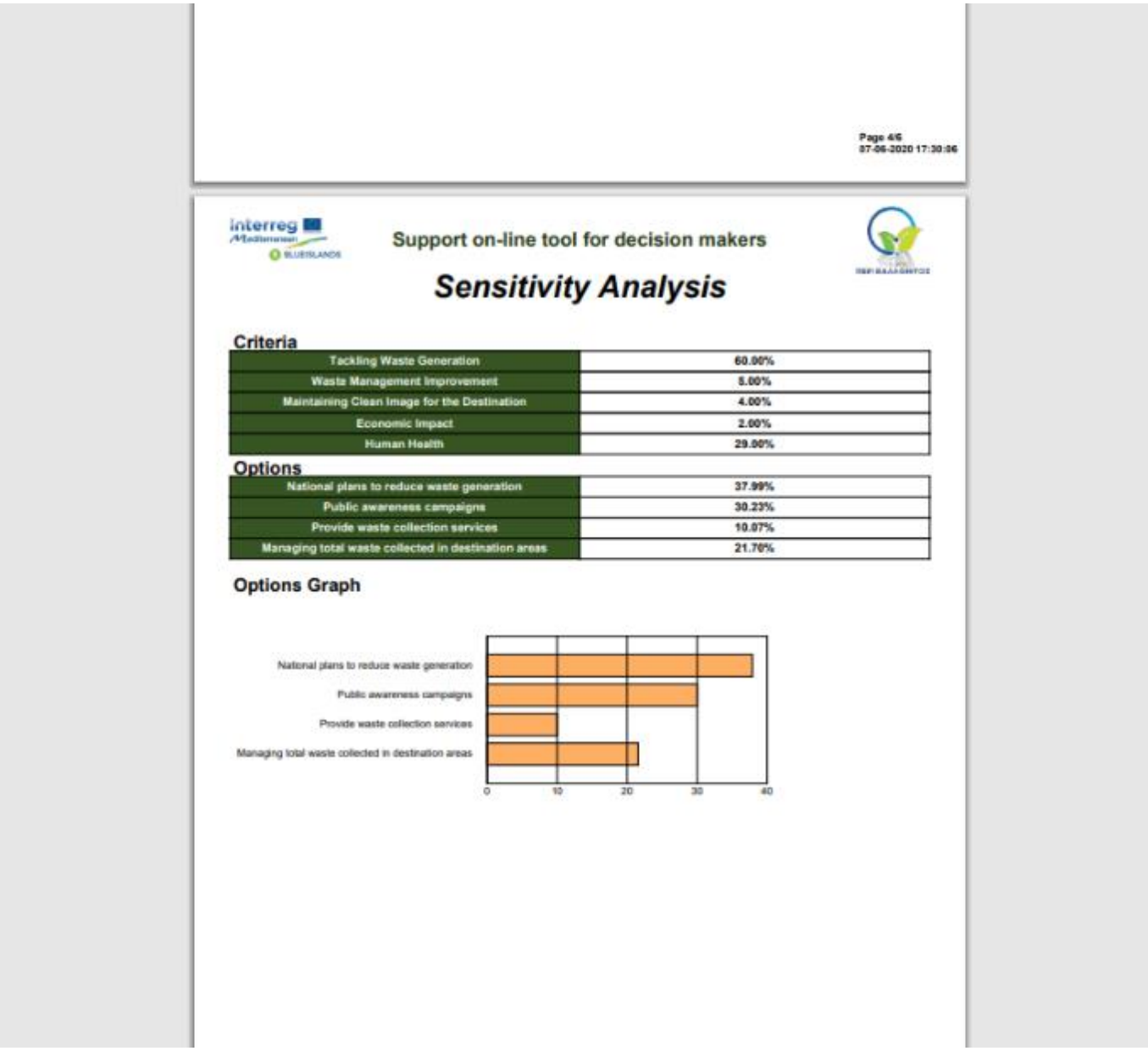
Figure 15: Report page

Figure 16: Report page



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Support on-line tool for decision makers

Sensitivity Analysis

Criteria

Tackling Waste Generation	60.00%
Waste Management Improvement	5.00%
Maintaining Clean Image for the Destination	4.00%
Economic Impact	2.00%
Human Health	29.00%

Options

National plans to reduce waste generation	37.99%
Public awareness campaigns	30.23%
Provide waste collection services	10.07%
Managing total waste collected in destination areas	21.70%

Options Graph

Figure 17: Report page

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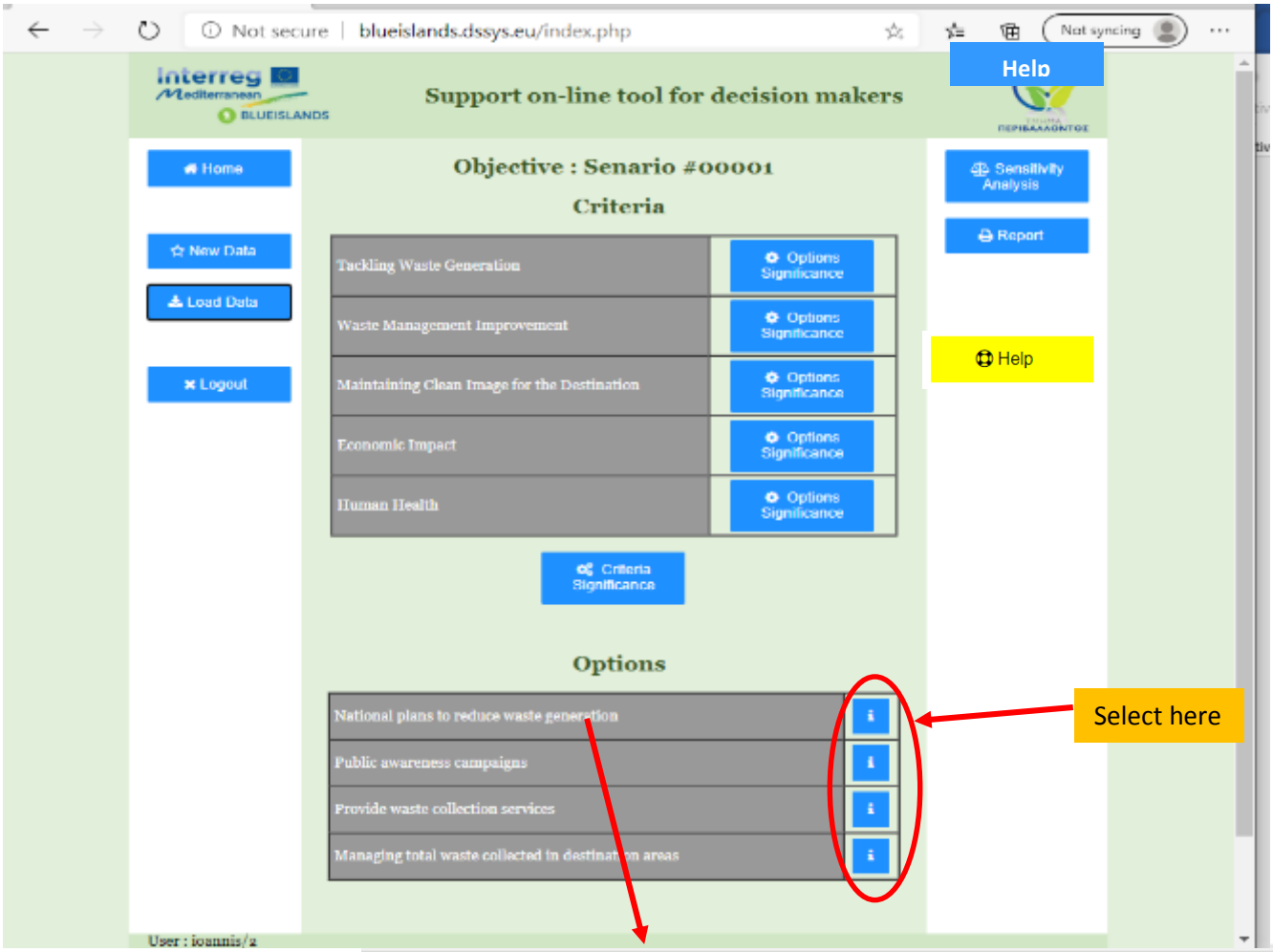
9. Step 8: Action Plans

In the home screen, for every selected Option a number of action plans are included (in the Options Section) (**Figure 18**). For every Action Plan a short description of practical implementing steps is also included.



NATIONAL ACTIONS PLANS TO REDUCE WASTE GENERATION	
a/a	Description
1	National plans to reduce use of plastic Bags
2	National plans to reduce use of plastic food packaging and cutlery
3	National plans to reduce use of one-use beverage cups etc.
4	Support local pilot projects phasing out, replacing, and reducing single-use plastic bags. Strive for voluntary agreements with retailers and supermarkets to set an objective of reduction of plastic bags consumption.
5	Establish deposit refund systems for bottles, containers and cans (glass, plastics, aluminum)
6	Encourage refill systems and recycling, e.g. bulk and refill/reusable container for dry food and cleaning products, when applicable.
7	Policy initiatives on a transition to circular economy (in line to EU action plan for the circular economy)
8	Establish ashtrays in public areas such as beaches and outside restaurants, bars, public buildings (inland and along the coasts, ferries).
9	Encourage biowastestream separate collection
10	Promote Green Procurement at public and private sector
11	Promote Sustainable Consumption and production patterns
12	Promotion of food donations (e.g. via Local Authorities in cooperation with NGOs)
13	Promotion the repair and reuse of products at their end of life
14	Implementation of Environmental Management System under EMAS in relation to beach operations (Municipal level)

Figure 18: Action Plans

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Select here

(Ref. Assessment of impacts of options to reduce the use of single-use plastic carrier bags - FINAL REPORT - EU DG Environment - 12 September 2011 - BIO Intelligence Service)

A. Voluntary agreement of the whole retail sector not to provide single-use plastic carrier bags

The whole retail sector would agree to stop selling or giving away single-use plastic carrier bags. This option would therefore cover all kind of retailers - small shops, non-food retailers including clothing and footwear, cosmetics, electronic goods, etc. Sufficient implementation period should be foreseen to give time to raise awareness among consumers, source alternatives and run down existing stocks.

A voluntary agreement between all retailers appears difficult to implement in practice. This is due to the large number of small shops and the fact that retailers have already taken different approaches to the issue of plastic carrier bags, with varying levels of success. In addition, in many Member States the share of single-use plastic carrier bags distributed by large retailers such as supermarkets represents 70% or more of the total. A voluntary agreement that would encompass all retailers is deemed difficult to achieve, as it would not be possible to engage all retailers nor to monitor such an agreement.

B. Take measures to ensure that plastic carrier bags are not provided for free to end users

Implemenation of pricing measures for plastic carrier bags. The free provision of plastic carrier bags to customers would no longer be allowed. The pricing measure should be designed carefully to achieve the objective of reduced waste generation in an optimal way. For example, the levy should not be so high that fiscal revenues are insufficient to cover administration costs. The collected funds should be used to enhance the environmental benefit by ringfencing funds for littar clean-up activities, recycling and other environmental projects.

C. Setting up national prevention targers for single - use plastic carrier bags

Adopt a national target in line with the national context: population, projected GDP growth, the degree to which the country has already reduced use of single-use plastic carrier bags and other national circumstances. The method of setting differentiated targets could be based, for example, on that of the Renewables Directive. he measure could then be integrated into the National Waste Prevention Programmes. According to Article 29 of the WFD, Member States should determine appropriate specific qualitative or quantitative benchmarks for waste prevention measures adopted in order to monitor and assess the progress of the measures and may determine specific qualitative or quantitative targets and indicators.

D. Policy Option Impacts

Reduction in litter
Implementation Cost
Collection Cost
Administrative Burden

RETURN

Figure 19: Action Plans

10. Step 9: Logout from the STDM Tool

The user can logout from the STDM Tool by clicking in the ***Logout*** button.

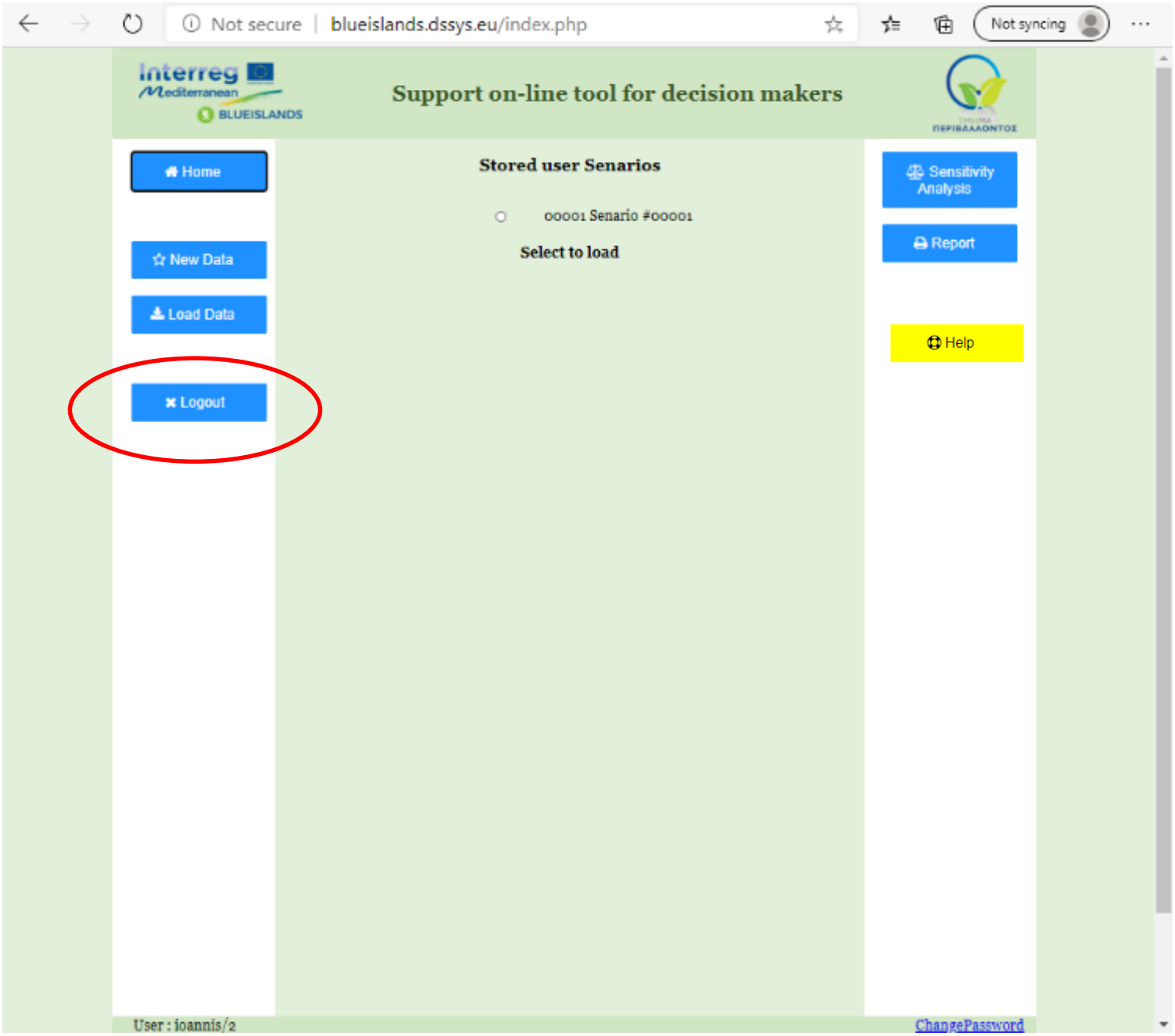

Figure 20: STDM Tool Logout

11. Step 9: Stored User Scenarios

New scenarios can be studied by clicking the **New data** button. The new scenario name is presented in the **Home** window under the title **Stored user Scenarios.**

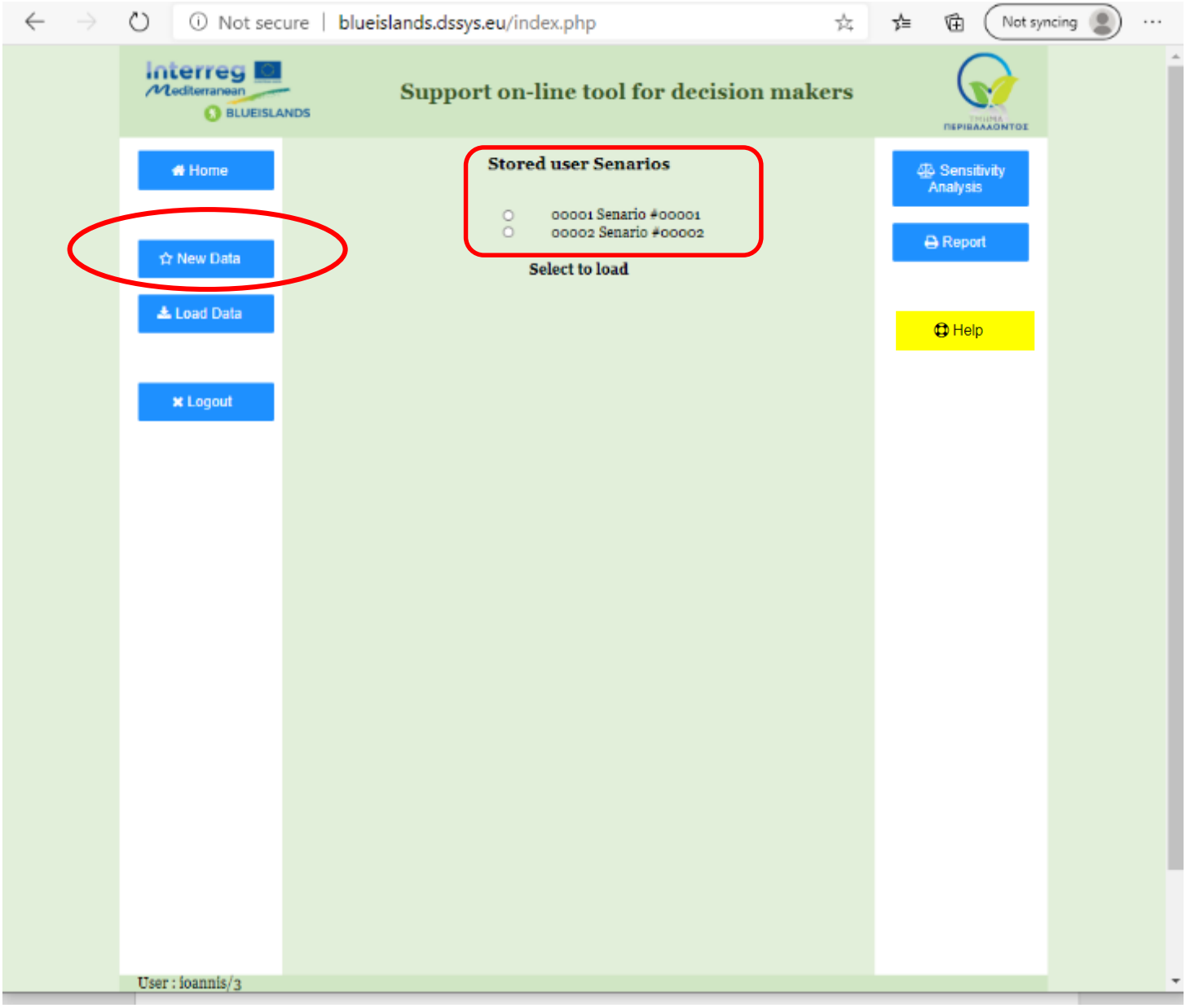

Figure 21: Load stored data

12. Online Help

On line help (this User Guide) is available by clicking the **Help** button.

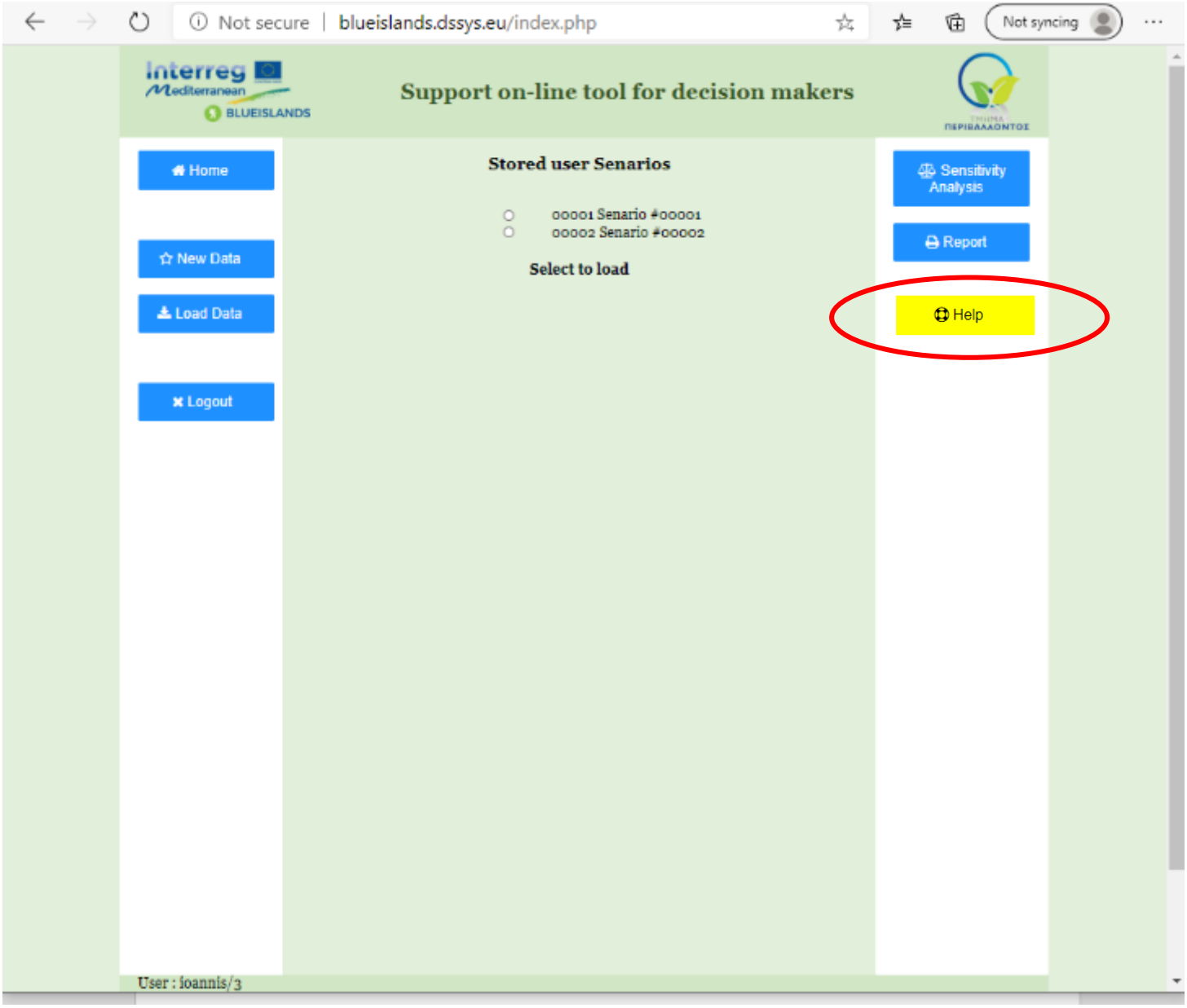

Figure 22: Online Help