Project no. 518128

EFORWOOD

Tools for Sustainability Impact Assessment

Instrument: IP

Thematic Priority: 6.3 Global Change and Ecosystems

Deliverable D6.2.3
Agreed specification for the online demonstration version of ToSIA – WebToSIA - Update

Due date of deliverable: Month 19
Actual submission date: Month 40
Revision submission date: Month 52

Start date of project: 01.11.2005
Duration: 4 years

Organisation name of lead contractor for this deliverable: European Forest Institute (EFI)

Final version

Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)		
Dissemination Level		
PU	Public	
PP	Restricted to other programme participants (including the Commission Services)	X
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Deliverable D6.2.3

Agreed specification for the online demonstration version of ToSIA - WebToSIA

AUTHORS:
Sergey Zudin
Tommi Suominen

European Forest Institute, EFI, Joensuu, Finland

Abstract : This document provides the specification for WebToSIA - the online demonstration of the full ToSIA. The main purpose of WebToSIA is to give potential users an understanding of how the full tool might be used, based on presentation of a set of pre-designed example runs using simplified scenarios. WebToSIA will give users insight into how the comprehensive ToSIA tool works, and allow understanding of its potential applications as well as its strengths and limitations. WebToSIA will be comprised of the following components: (1) WebToSIA entry web page; (2) Support content – explaining what ToSIA is and providing a user guide; (3) Examples of simple forest-wood chains (FWCs) for demonstration purposes include the topology and all required (realistic) data; (4) Predefined results of ToSIA runs for these FWCs; (5) An online database to keep predefined FWCs, scenarios and results of ToSIA calculations; (6) As resources allow, parts of ToSIA may also be converted to actually run within the WebToSIA enabling a more lively and interactive demonstration.

Keywords : ToSIA, WebToSIA, sustainability impact assessment, demonstration, extension

Table of Contents

1. Introduction

The requirements and their proposed solutions presented in this document are based on the project requirements. Therefore we quote the relevant sections from the Description of Work (DoW):

"Different versions of ToSIA will be developed, in ToSIA+E an integrated impact assessment of the sustainability of the FWC in terms of Cost-Benefit Analysis and Multi-criteria Analysis will be possible. In the former, indicators are converted to commensurable monetary values as far as appropriate. In the latter multi-criteria decision-making approaches and the valuation of the indicators, stakeholders' views will be taken into account"

"The ToSIA-FWC (or just ToSIA) describing production processes within FWCs and, attaches quantitative indicator values to processes and derives the aggregated values for sustainability indicators. ToSIA+E includes components to evaluate optional chains and their trade-offs for various stakeholders. ToSIA-U is a simplified, user-friendly version of the ToSIA software tool intended for industry, stakeholders and policy makers, enabling the user to discover the impacts of (expected or user defined) changes in the chains or processes on the sustainability indicator values. ToSIA will be developed in open source technology. It is intended, that the user will be able to test the overall sustainability impacts of thresholds set to process volumes or indicator values, impacts of policy options, or impacts of different weights given to the sustainability indicators."

"ToSIA will be developed as a dynamic FWC pathway analysis model in open source technology, using a consistent and harmonized framework from the forest to the end-of-life of final products."

"A user-friendly, web-based version, ToSIA-U, will also be developed, including a menu-surface and context-help allowing fast learning and application of the tool. A demonstration package of ToSIA-U with selected case study data and policy scenarios will be made available on the internet and it will also be used and disseminated in stakeholder training courses."

Based on the above description the task of Module 6 (WP 6.2), in cooperation with Module 1 (WP 1.4), is to implement a web-based demonstration version (in the DoW ToSIA-U, further in this document referred to as 'WebToSIA') of the full ToSIA tool (further referred to as ToSIA). The development of ToSIA has been implemented somewhat differently as was defined in the original DoW due to a better understanding of the tool within the overall concept of the project. There is now only one version of the ToSIA tool, no specialized variants were developed, as all features were implemented into one ToSIA. It is however possible to use the same ToSIA version at different levels of detail. There also is no separate ToSIA-E version for evaluation, as result

evaluation/assessment methodologies were incorporated into one ToSIA, allowing the user the choice to apply them or not.

The one thing that ToSIA does need as a prerequisite is a complete input data set. The data sets provided with the ToSIA are rather complex and not suitable for demonstration purposes. Further, their loading time is, at least currently, too long for illustration purposes. In view of this background it becomes obvious that the requirement to have a version of ToSIA especially designed for a clear and concise presentation of the ToSIA methodology and approach to the unfamiliar or prospective user is necessary. This leads to two main applications for a WebToSIA:

1) to act as "marketing material" for the ToSIA approach and thus raise awareness and interest of prospective new users. It is the intention of the EFORWOOD project that ToSIA will become a widely adopted cross-sectoral method and tool. In order to achieve its widespread acceptance new users will need to be able to easily grasp the ToSIA concept and become convinced of its applicability for their specific needs.
2) to be a user guide of sorts. In ToSIA the user is offered context-help, and a wealth of meta-information. However, as the data collection process can be a time-consuming and costly task, the user should have the option to familiarize with ToSIA and plan the result analysis prior to undertaking extensive data collection. To implement such a 'test phase' User Induction–type material is required and a task which WebToSIA can aptly be designed to accommodate.

In conclusion, the main purpose of WebToSIA is to give users an understanding of what is the potential of the full tool, based on presenting a set of pre-designed example runs using simplified scenarios. WebToSIA will give users insight on how the comprehensive ToSIA tool works, allow understanding its potential applications and explaining its strengths and limitations. WebToSIA will be realized as an internet application thus utilizing a familiar and easy-to-access internet browser -environment.

The implementation of WebToSIA is divided as follows:
- The development of an on-line database to store the calculation results of the full ToSIA tool and other related metadata. (Naturally the data must first be produced using ToSIA.)
- Building a web-based user interface, which will mimic the ToSIA Graphical User Interface (GUI) look-and-feel to the extent that is possible.
- Setting up the development environment, where the application can be developed and tested.
- To install the tool on the production server and ensure its capacity to be able to run the production version of WebToSIA.

2. Requirements

Requirements for WebToSIA:
- **web-based**: means an application that is accessed via web over a network such as the Internet or an intranet. http://en.wikipedia.org/wiki/Web_application
- **user-friendly**: means the application has an intuitive, easy to use Graphical User Interface (GUI) to access all its functionality. Also a built-in help system should be provided for the end-user. Essential requirement is that the application produces the expected output very quickly. This accounts in particular for web-based applications. Different visualization features (charts, maps, graphical representations of objects, animations…) should be considered to support user-friendliness and better understanding.
- **simplified version of the ToSIA tool**: means that WebToSIA should perform (simulate) the basic features of ToSIA: loading FWC's, selection of scenarios, calculating FWC's and performing the analysis of results with Cost-Benefit Analysis or Multi-criteria Analysis. This will be performed based on a limited number of simplified FWC's and scenarios and corresponding data. In order to give the users an understanding of what the ToSIA tool can do, WebToSIA will need to provide the user with necessary background information describing the capacities and functionalities of ToSIA including the aims, theoretical background and the selected approach of implementation. WebToSIA will need to have a GUI very similar to that of the ToSIA
- **open source:** as ToSIA is being developed using open source technology, the WebToSIA will also follow suit.

3. The proposed solution

To meet the requirements, the WebToSIA will be implemented as a Web application, which is written in the Java programming language. This will allow the user interface and functionality to be almost directly adopted from that of ToSIA. The development version will be run on a server hosted at EFI. The final version of the application will be hosted on the EFORWOOD portal at: http://www.eforwood.org/

The proposed structure of WebToSIA:

1. **ENTRY_POINT**: HTML page/pages welcoming the user and describing the main concepts of ToSIA and EFORWOOD project. The WebToSIA is accessed through the EFORWOOD portal.
2. **SUPPORT_CONTENT:** a collection of HTML pages describing ToSIA, explaining the approach and theoretical background, technical solutions. It aims to answer Frequently Asked Questions (FAQ) from potential users such as "can I use ToSIA for my project X?", "how do I

3

import data from my model Y, to support a ToSIA run?". The support content explains and clarifies the way that ToSIA operates and makes the method easier to adopt. By doing this the user will be able to build a basic understanding of the ToSIA and its various features and the outputs in terms of numerical and graphical results. It also explains how to use the databases supporting ToSIA. WebToSIA will also present real application examples from calculations made using ToSIA. Essentially the SUPPORT_CONTENT combines marketing the approach with a user guide.

3. **SAMPLE_CHAINS**: Definition of simple (forest wood) chains for demonstration purposes include the topology and all required (realistic) data

4. **SAMPLE_CHAIN_RESULTS**: ToSIA will be used to run the sample (forest wood) chains, and the output XML-results will be used as the static set of results offered by the WEB_TOSIA.

5. **WEB_TOSIA:** (WebToSIA): As resources allow, some key parts of ToSIA will be ported as a web-based Java Applet that will be running using the above mentioned data and within the context of the SUPPORT_CONTENT. The purpose is to simulate the functioning and features of ToSIA and have a similar GUI.

6. **(TOSIAU_DB):** An online database to keep predefined FWC's, scenarios and results of ToSIA calculations. The purpose of this is to provide the necessary data for the SUPPORT_CONTENT. This functionality is optional.
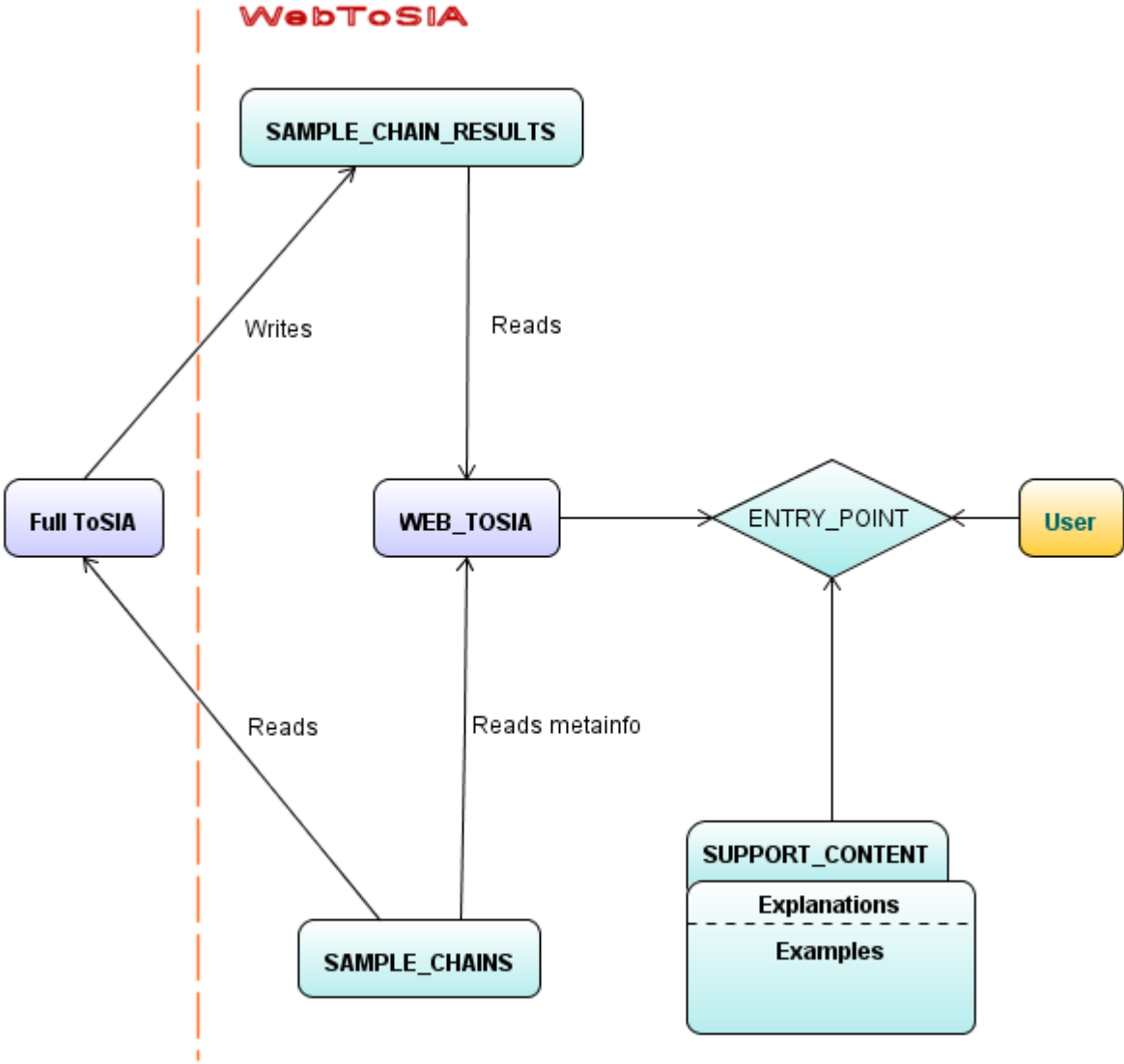
Figure 1. Components of the WebToSIA structure.

## 4. Selection of functionality from ToSIA to be included in WebToSIA

The task that is still to be defined is how exactly to reduce the complexity and size of the application. Reducing the amount of indicators for WebToSIA, can be handled within the work of specifying the SAMPLE_CHAINS. CBA/MCA will likely be illustrated using preset parameters and preference values. In the following, those features from the ToSIA which are planned to be included in the WebToSIA –version are briefly presented. Many of the features are still under development, so the following figures may not correspond with the final implementation and serve explanatory purposes only.
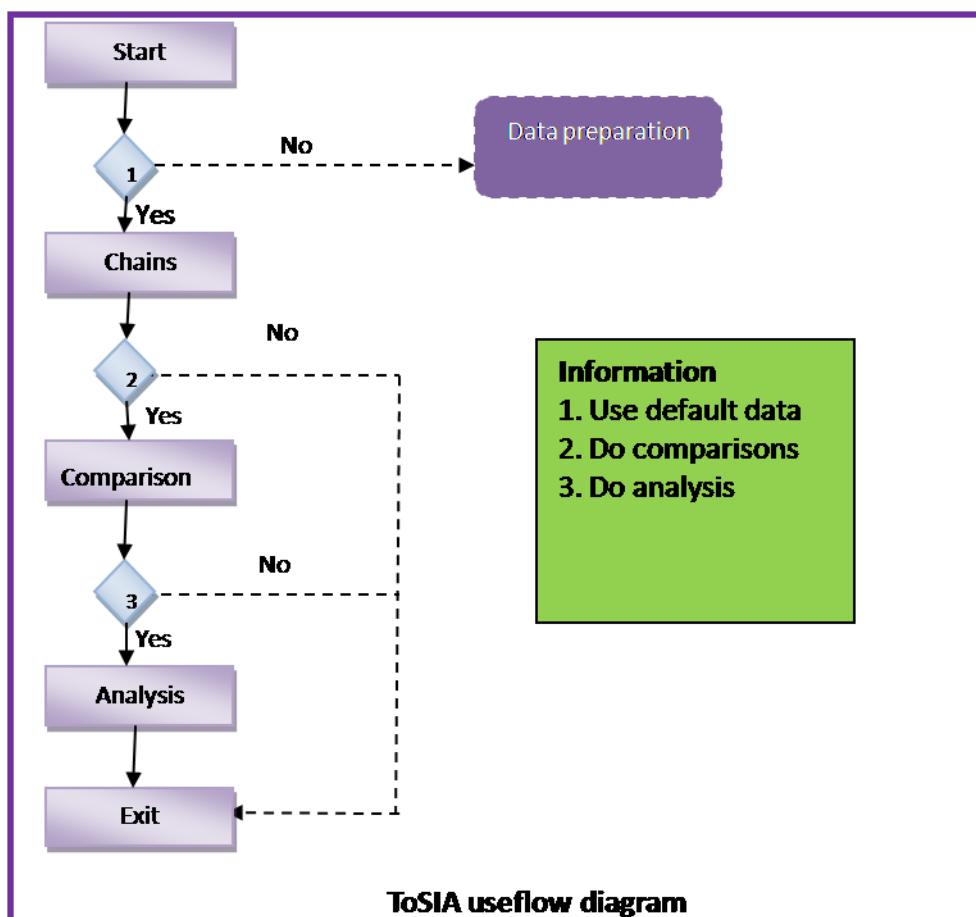
Figure 2. This figure represents the basic flow of the use of the ToSIA application. WebToSIA will focus on the "Chains" and "Comparison" –portions. From within the Analysis we will concentrate on either the CBA or MCA component –in this presentation MCA will be shown as an example.
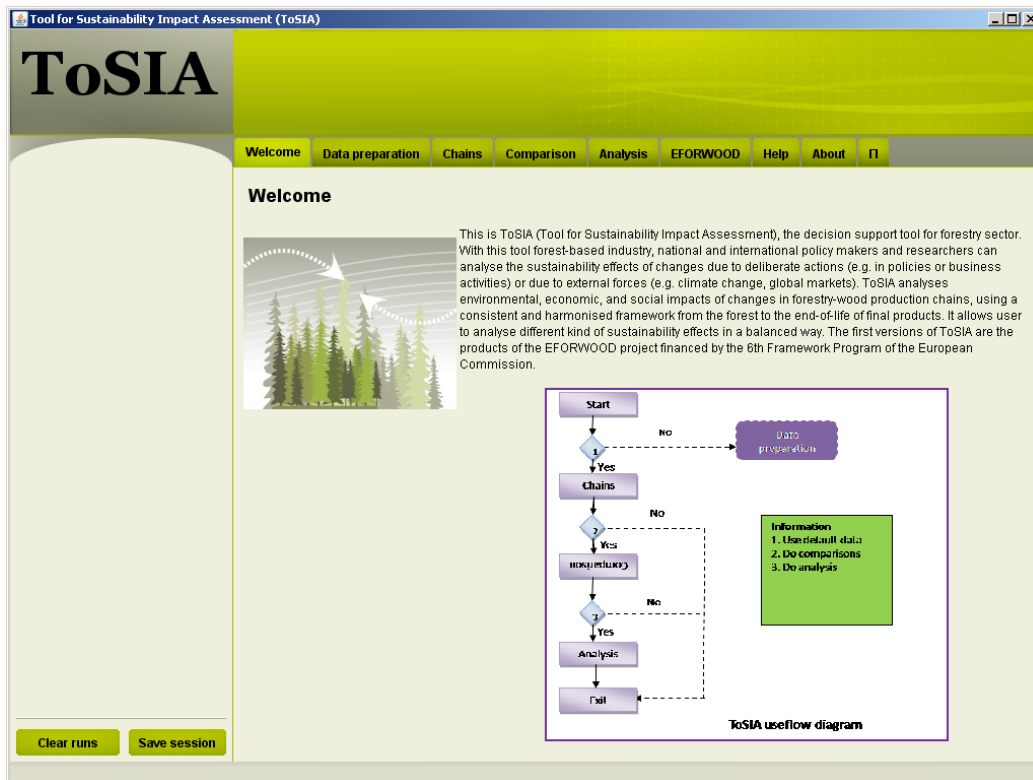
Figure 3. The first screen of ToSIA, from here the user can proceed to the desired functionality by clicking the appropriate tab. There is an inherent sequence to the functionality, and in many cases the user will have to follow the order of the tabs, although some may be skipped.
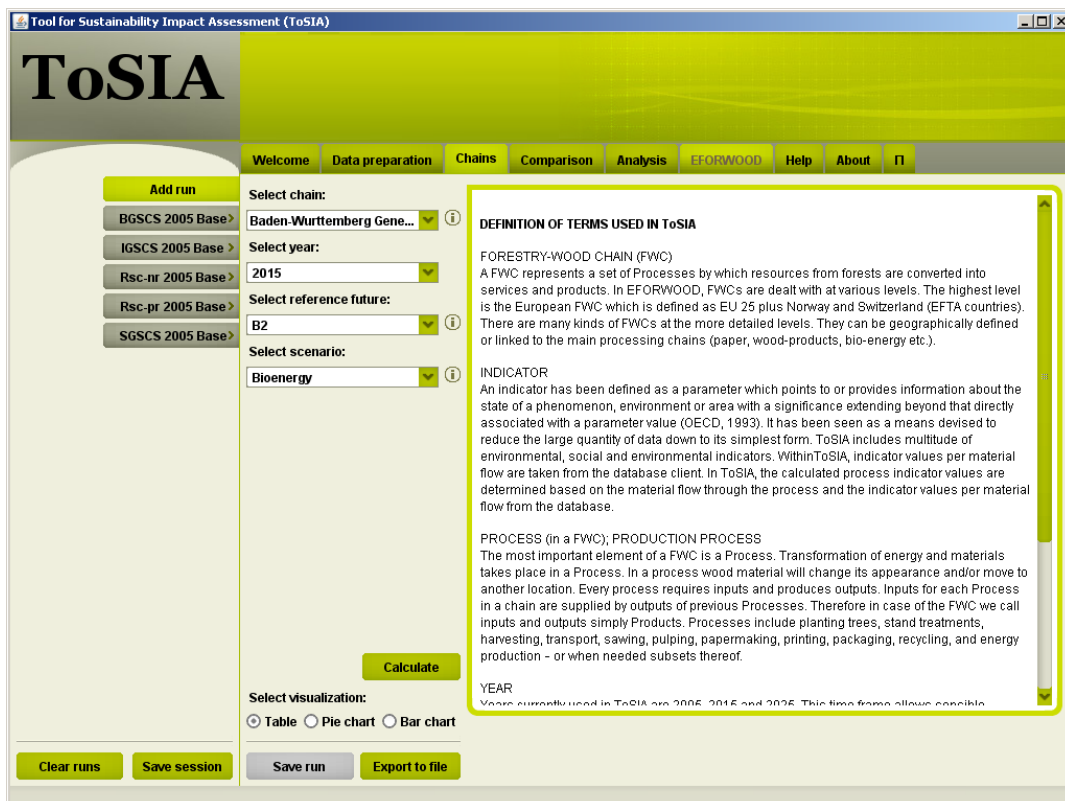
Figure 4. In this screen the user can select the Chain and enter parameters to define the case which is of interest to analyze. Selected runs can be saved, and are shown on the left side of the screen.
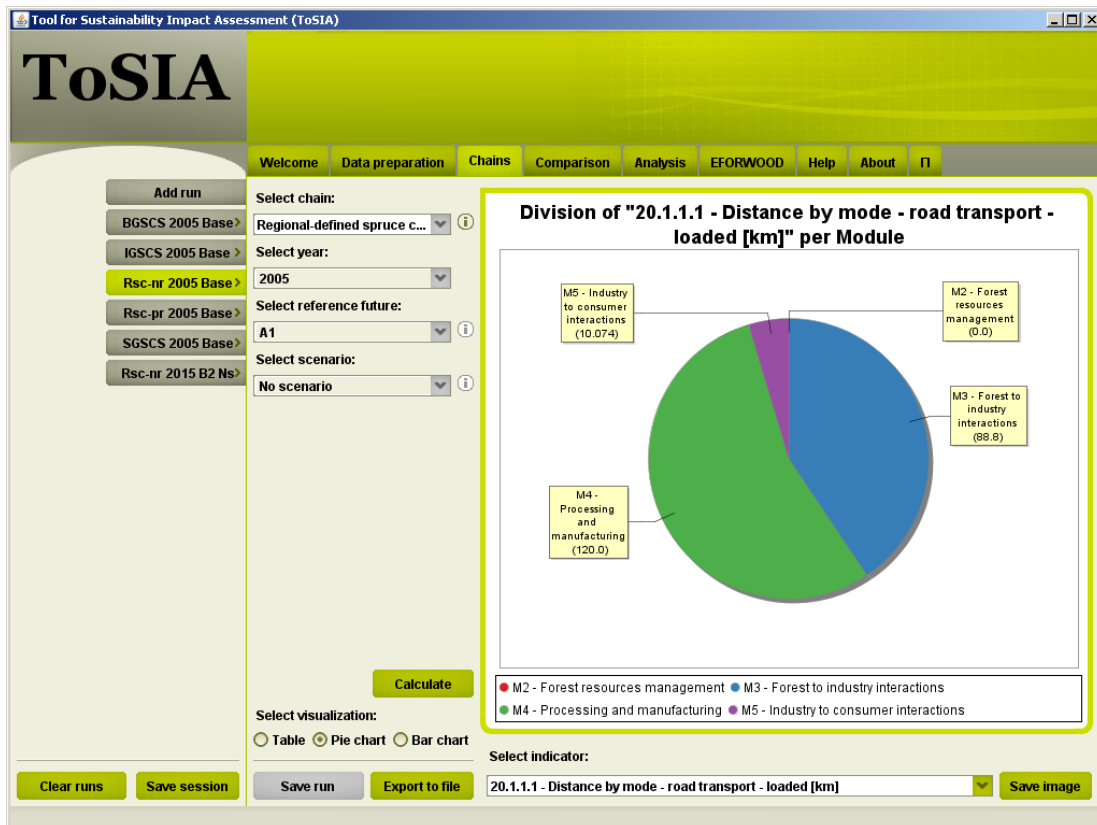
Figure 5. The results of an analysis can be displayed using different graphical visualizations or just as tables.

Figure 6. Multiple runs can be compared side-by-side using a table or graphic display where visualization suitable. Visual display can be performed e.g. as pie charts.
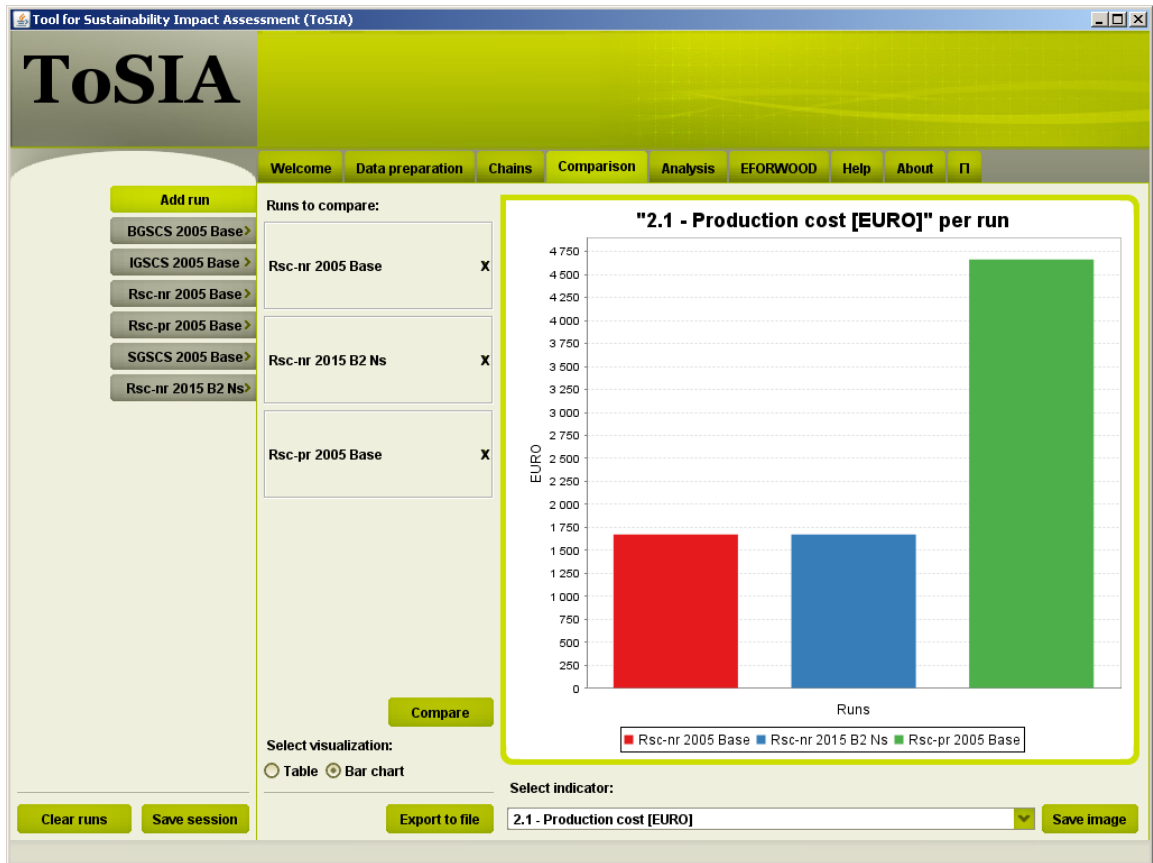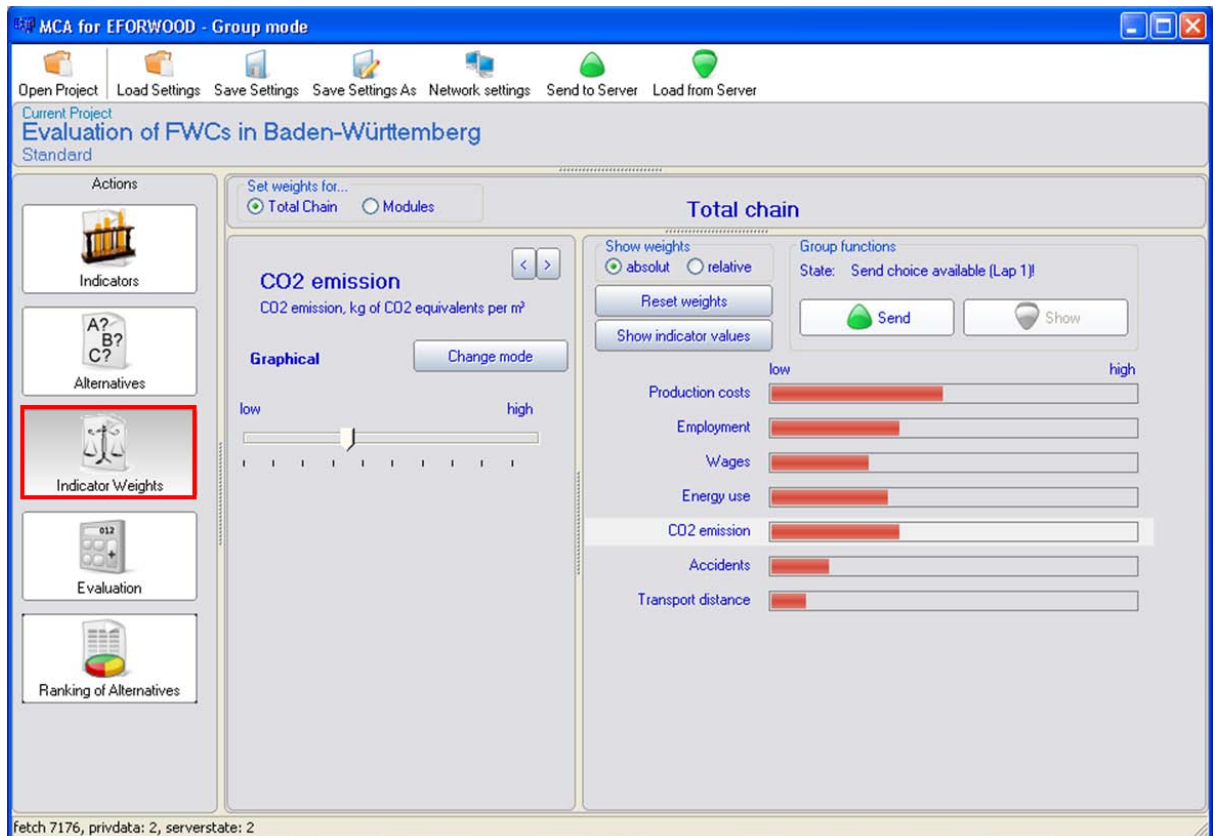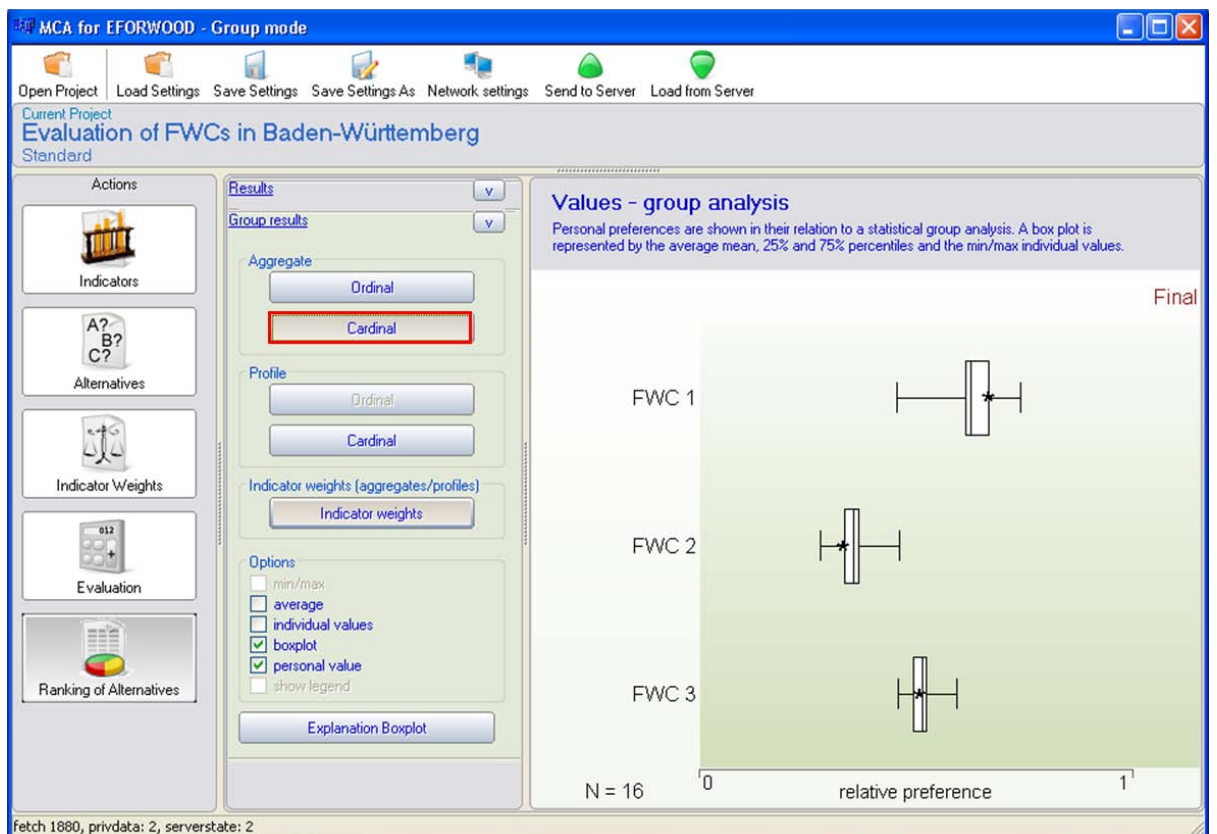
Figure 7. Bar graphs are exemplified for the use of comparing different runs.

Figure 8. An example of an analysis function, allowing ranking of different indicators. The indicators are assigned relative preferences in preparation for performing a Multi-Criteria Assessment (MCA).

Figure 9. Preference ranking of three different alternative chains using MCA.