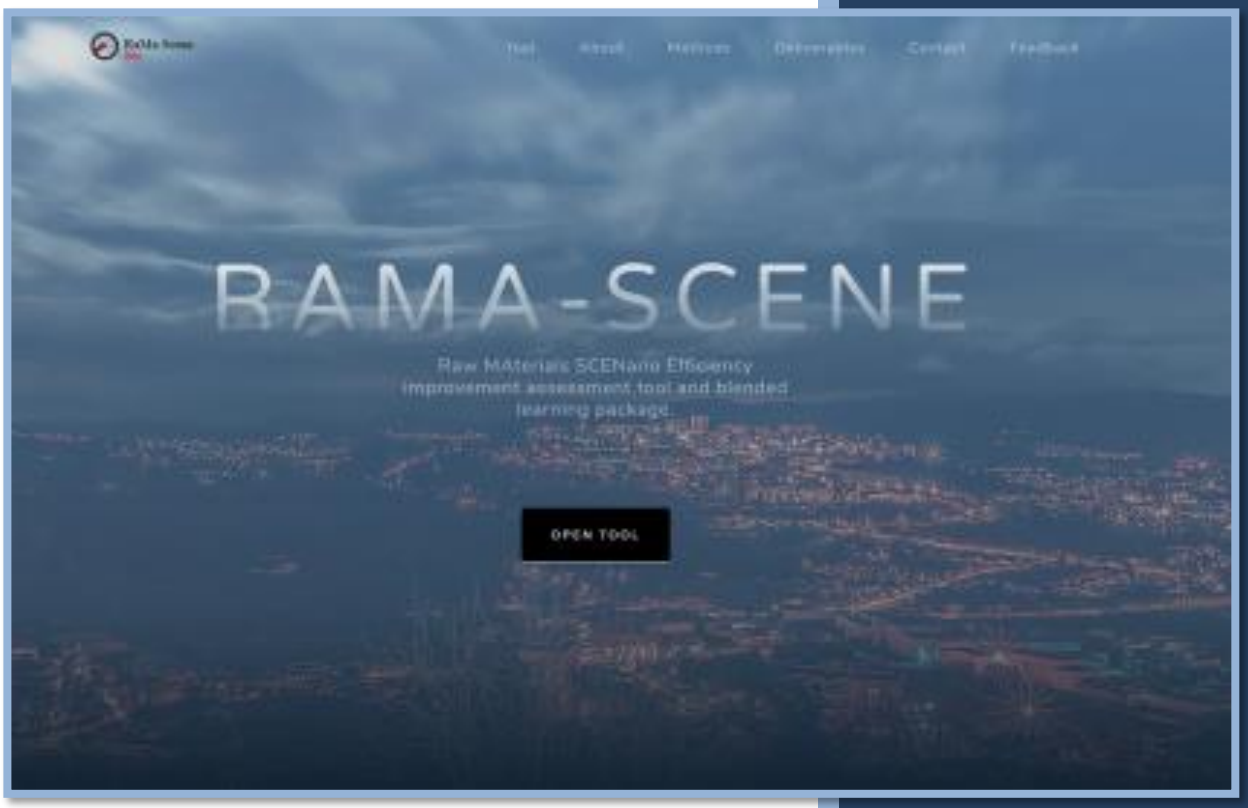
RawMaterials
Connecting matters

2019

RaMa-SCENE platform user guide



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1. Intro

Global environmental and resource challenges originating from our economies ask for new ways of managing the production and consumption of resources. The implementation of new paradigms, for instance the circular economy, requires decision makers at multiple levels to make complex decisions. These complex decisions should be guided in depth by insightful analyses and the modelling of scenarios. The web-platform RaMa-SCENE is a powerful tool to approach this complexity. The main goal of this web-platform is to provide sustainability practitioners, students and decision makers with an accessible way to analyse the global economy through environmental-socio-economic indicators and create sustainability scenarios.

Please visit app.ramascene.eu to use the web-platform or make use of the additional available educational material.

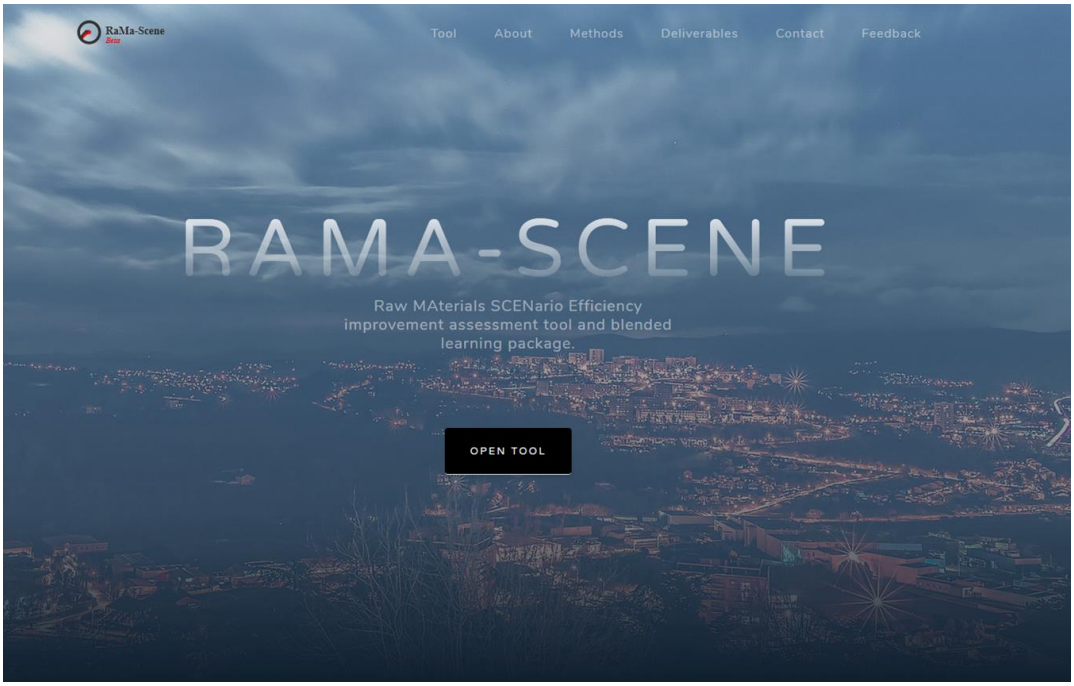


Figure 1:RaMa-SCENE landing page

2. At a glance

The landing page offers multiple options:

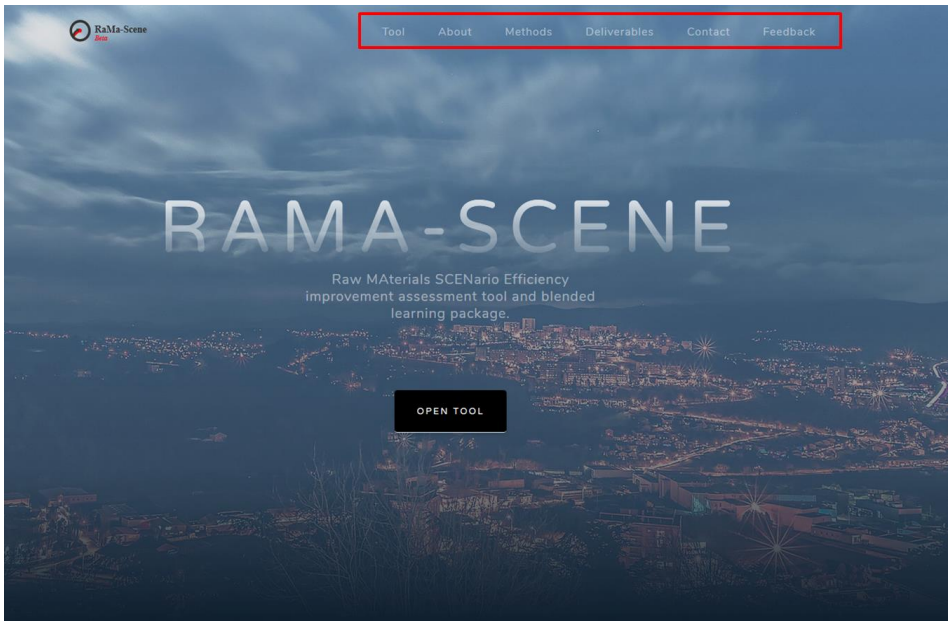


Figure 2: RaMa-SCENE toolbar on browser

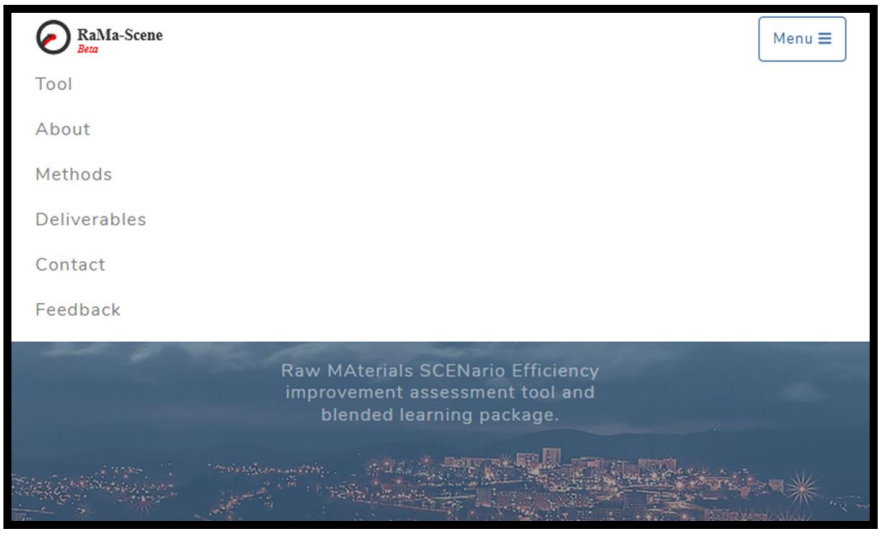


Figure 3: Website toolbar on mobile

- **Tool:** Access to the use of the analytical platform.
- **About:** General information about the project RaMa-Scene.
- **Methods:** Description of the outstanding methods, data and features of the web-platform.
- **Deliverables:** Access to the deliverables of the project RaMa-Scene.
- **Contact:** Contact details of the RaMa-Scene consortium.
- **Feedback:** Feedback form to report bugs, suggestions or any other feedback concerning the use of the platform.

3. Tool interface

There are two ways to open the tool: click either on “Open Tool” button in the centre of the landing page or on the “Tool” button on the navigation bar.

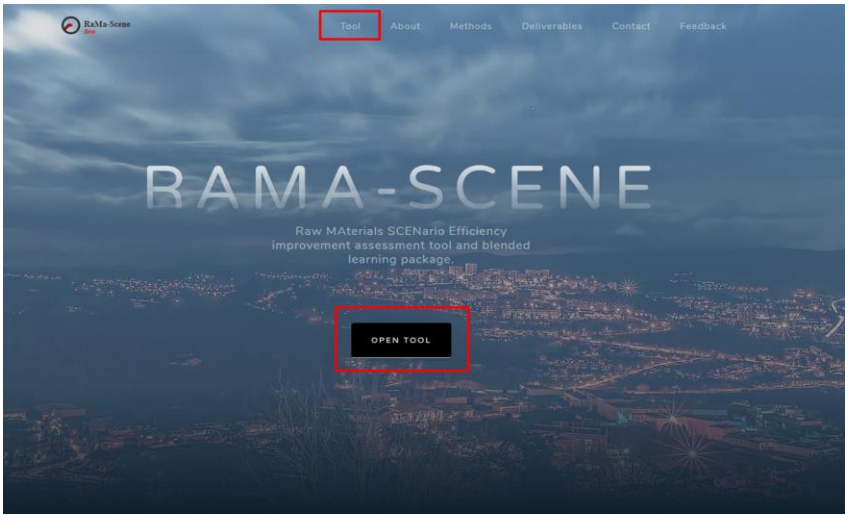


Figure 4: Opening the tool from the landing page

3.1. Interface

The tool starts with an interface, which is a compound of six panels, and it offers a pre-loaded tree map visualization:

- **Selection menu:** Allows the creation of different types of analyses
- **Scenario modelling menu:** Enables specifying settings to create scenarios
- **Analysis queue:** Keeps all the analyses that the user has performed and allows to use multiple other functionalities
- **Resource section:** Additional tools and information that can be useful to increase the depth of the analyses
- **Partners section:** Logos of the consortium members

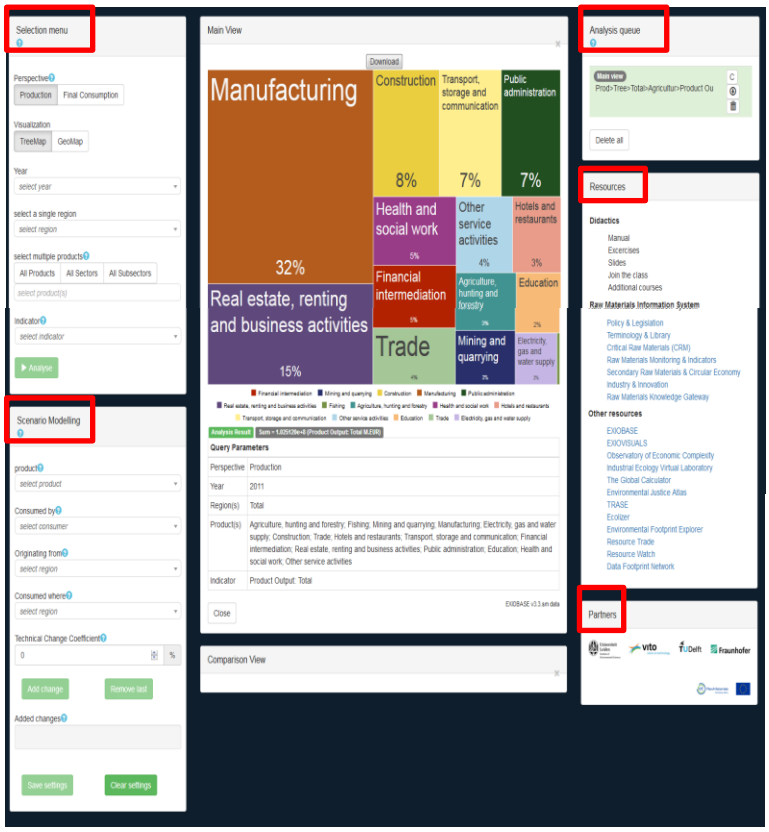


Figure 5: Platform interface’ side panels

- **Main view and Comparison view:** Show the visualizations of the analyses

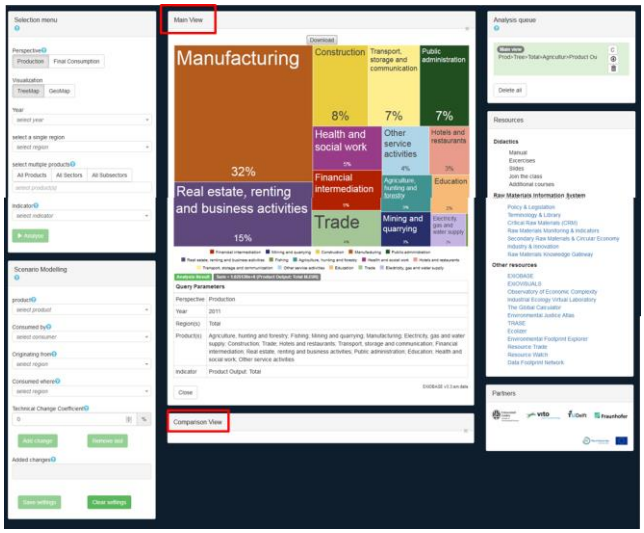


Figure 6: Interface' views

HELP button: Offers a quick refresh of the meaning of a specific element in the interface. By clicking on the question mark in the pale blue dots next to important elements, a text box explaining the features opens up.

Figure 7: Help buttons

4. Selection menu (analysis settings)

The selection menu allows you to calculate analytical results from the database and it offers multiple choices:

- Perspective buttons
  - the **production** perspective selects data concerning the impact of a specific manufacturing activity
  - the final **consumption perspective** selects the cumulative impacts along the supply chain of a specific product consumed by final demand
- Visualization buttons (fig 9 and 10)
  - Through **tree-map**, one can analyse the impacts of one or multiple products in a specific region or the total aggregation of regions.
  - Through **geo-map**, one can visualize the geographic distribution of impacts of a specific product or of the total aggregation of products.

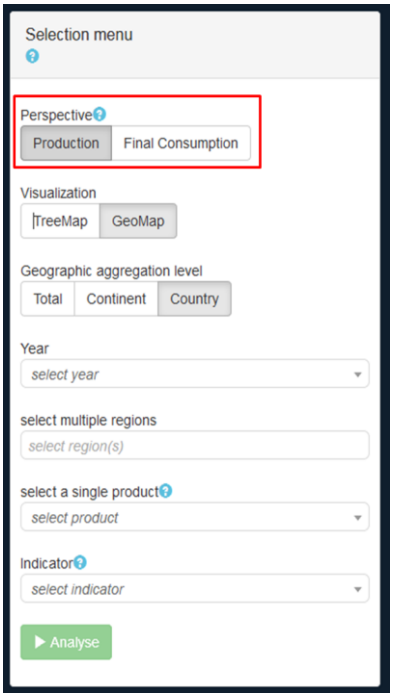


Figure 8: Selection menu and perspective buttons

The selection menu is adapted to the selected type of visualization to enable sensible subset settings only.

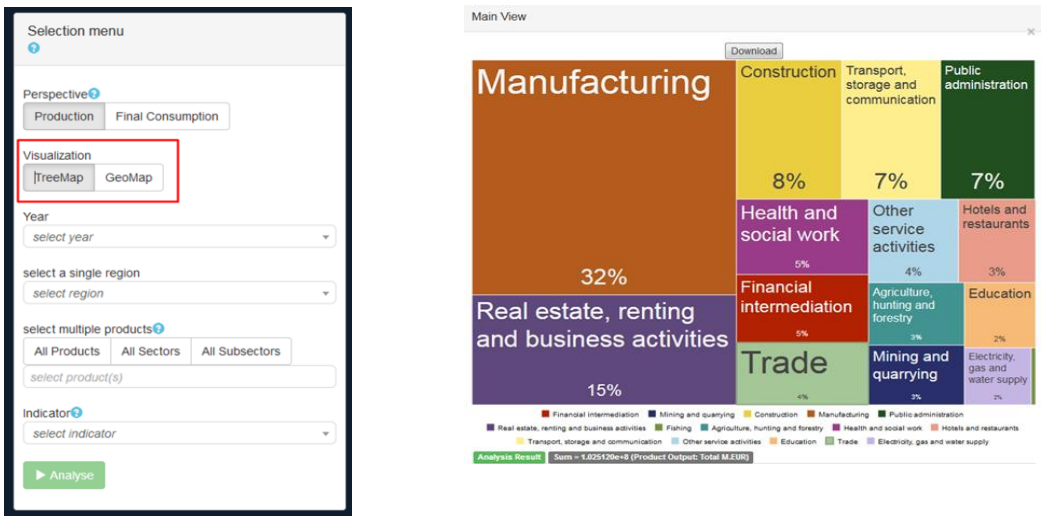


Figure 9:Tree-map settings and visualisation

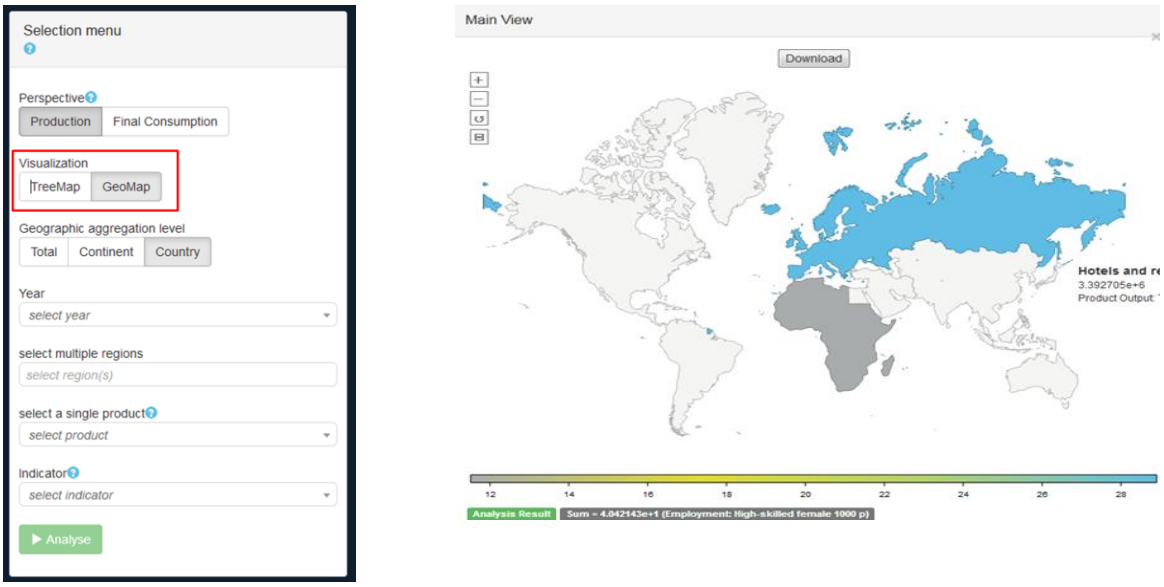


Figure 10: Geo-map settings and visualisation

a) The tree-map visualization mode

In the tree-map visualization mode, the following settings need to be specified:

- **Year:** Drop down the menu for the selection of one year from 1995 until 2011.
- **Select a single region** (fig 11)**:** possible spatial levels range from one country, over different aggregation of countries (e.g. Europe), to total.

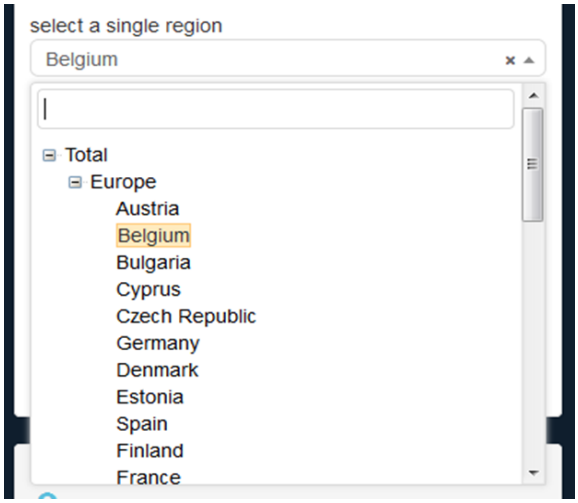


Figure 11: Dropdown menu for region selection

- **Select multiple products** (fig 12): one or multiple products can be selected for the analysis. Products can be selected via manual input of the name of a specific product or by a smart search of certain product's categories: The three buttons "**All Products**", "**All Sectors**" and "**All Subsectors**" enable a quicker selection of all products or their different aggregations.

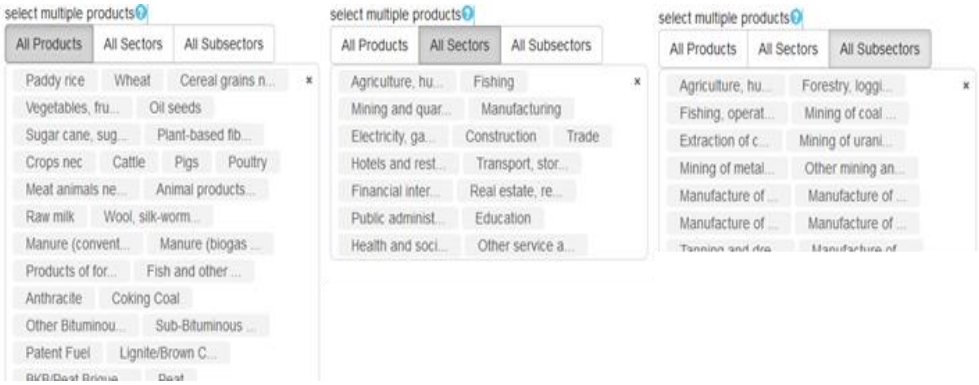


Figure 12: Product and sector selection

b) The geo-map visualization mode

In the geo-map visualization mode, the following settings need to be specified:

- **Geographic aggregation level:** The spatial level "Total", "Continent" or "Country" are available. Continent stands for five eligible macro-regions and it allows to group or ungroup countries and regions.
- **Year:** Drop down menu for the selection of one year from 1995 until 2011
- **Select multiple regions:** Select the desired regions.
  The drop down menu facilitates only settings in accordance to the geographic aggregation level, which is prior defined.

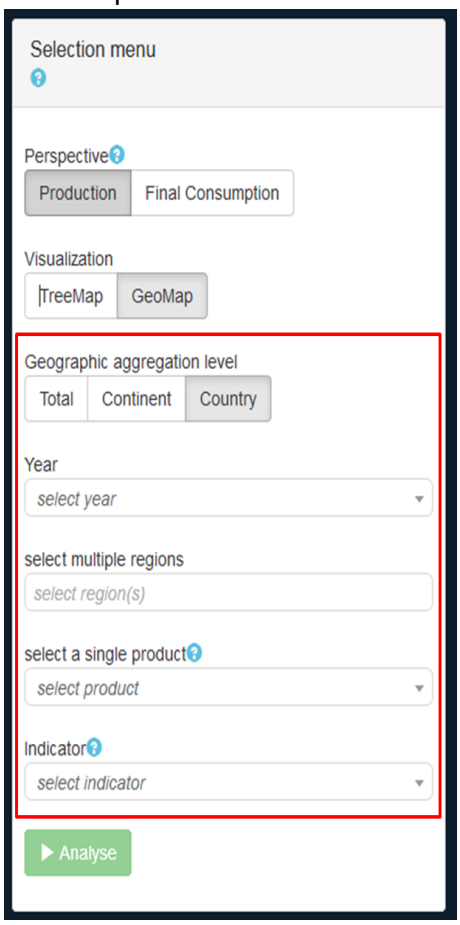


Figure 13: Geo-map menu

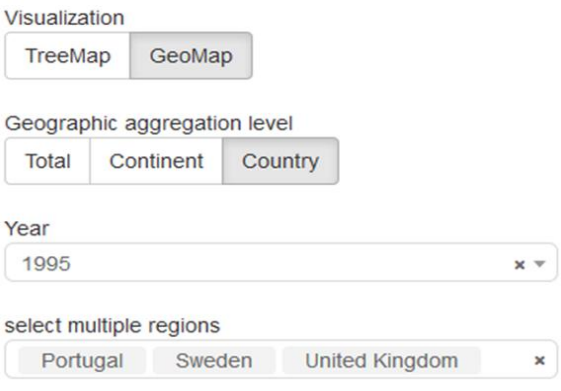


Figure 14: Multi-regional selection

- **Select a single product:** The selection of only one branch of the dropdown menu is possible. Different aggregation levels are possible: From specific product to overall industry. The Product can be selected by typing the name of a specific product or via the dropdown menu.

c) Indicators

Multiple environmental-socio-economic indicators are available. The five general categories described below, can be expanded to an extensive breakdown via the plus and minus buttons in the dropdown menu, thereby specifying the subgroups:

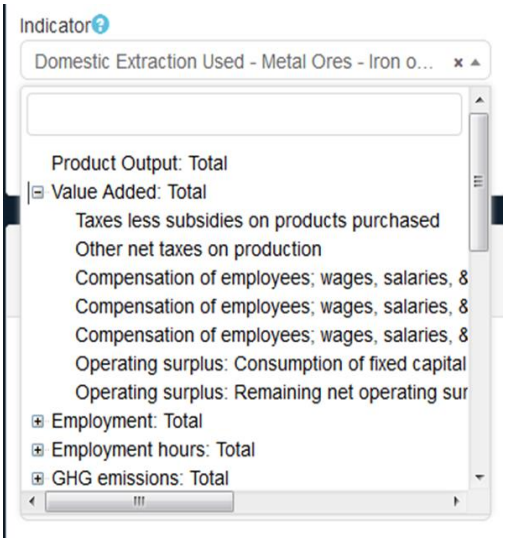


Figure 15: Indicators dropdown menu

- Product output (Unit M.EUR) - Total sum of all intra-industry and final consumption transactions
- Value Added (Unit M.EUR) - Difference between the total costs for industry inputs and the total revenues of an industry. Industry value added is industry's contribution to Gross Domestic Product (GDP) and Total value added is total GDP.
- Employment (Unit 1000p) - People occupied in paid work.
- Employment hours (Unit M.Hr) - People occupied in paid work.
- GHG emissions - GHG emissions: Total, PFC and HFC are characterised to GWP100 (Unit kg CO2-eq) others indicators are not characterised (Unit kg)
- Domestic Extraction Used (Unit kt) – "*The annual flows of raw materials extracted or harvested from the environment and that physically enter the economic system for further processing or direct consumption (they are used by the economy as material factor inputs)*" (EUROSTAT)
- Domestic Extraction Used - Metal Ores (Unit kt) – *"Metal ores are mineral aggregates containing metals. Most metal ores are polymetallic, i.e. the metal ore contains more than one metal. The different metals are separated during the production process.[...] Metals are essential for a wide range of industries like mechanical engineering, transport, aerospace, construction, packaging, electricity and energy, consumer electronics, medical devices, etc."*(EUROSTAT)
- Domestic Extraction Used - Non-Metallic Minerals (Unit kt) – *"Minerals are essential raw materials for modern society, contributing significantly to its social and technological progress. They are used for the production of infrastructure such as roads, homes, schools and hospitals, and in many industrial and consumer products such as cars, computers, medicines, and household appliances."*(EUROSTAT)
- Vulnerable employment (Unit 1000p) – *"Own-account workers and contributing family workers have a likelihood of having [in]formal work arrangements, and are therefore more likely to lack elements associated with decent employment, such as adequate social security and a voice at work. Therefore, the two statuses are summed to create a classification of 'vulnerable employment', while wage and salaried workers together with employers constitute 'non-vulnerable employment'. (ILO)"*

4.1. Analyse

After the specification of all relevant settings in either the tree- or geo-map perspective the analysis can get started. By clicking on the green **Analyse** button at the bottom of the selection menu, the process gets started. The new analysis appears in the top-right menu called **analysis queue**. Unless all necessary setting are set, the Analyse button will not be active.

The entry is grey as long as the request is still processing, the analysis is ready when the entry turns light green.

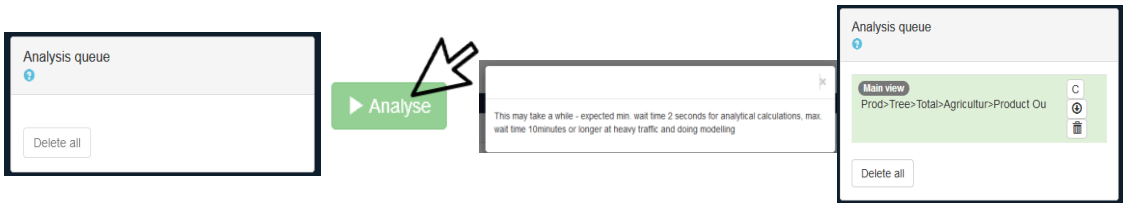


Figure 16: Entry colors in the analysis queue panel

Once it turns green, several options are available and presented by four symbols:

- **Eye:** View
- **C:** Compare
- **Arrow:** Download
- **Bin:** Delete

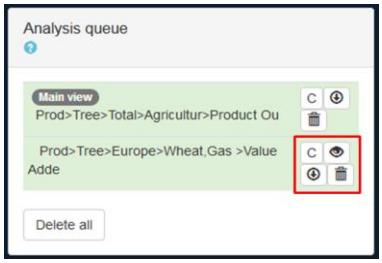


Figure 17: Options' (features) symbols

- The results will be visualized in the centre panel "Main **view**" after either clicking on the eye symbol or clicking on the whole result box in the analysis queue. A grey textbox identifies the entry that is currently presented there. An additional clue is a missing eye symbol: If no eye button is available for one box, then the results are already on display in the main view panel.

- The C button displays values in the "**comparison** view" panel at the bottom of the centre. A grey textbox identifies the entry that is currently presented. An additional clue is a missing C symbol: If no C button is available for one box, then the results are already on display in the main view panel.

- The arrow button enables to download the raw results in CSV format, for further analysis on other application or devices.

- To delete the entry one can use either the bin button or the button "**delete** all" to delete all entries.

The visualization presented in the main panel or comparison view can be downloaded by clicking on the download button in the respective panel. The panel can be closed via the button close.

5. Scenario Modelling

The scenario-modelling menu allows the modification of the database and the creation of alternative versions of the economy that simulate policy and technological implementations. Through this menu, users are able to specify the coordinates of the IO elements that they wish to modify and the magnitude of the change for these intersected values.

5.1. Settings

The following settings need to be specified as following:

- **Product:** This represents the supply of a product or service to other industries or final consumers.
- **Consumed by:** This setting defines whether the respective product is consumed by other industrial activities or by final consumers. The dropdown menu offers therefore the option of final demand and a list of all the product categories of exiobase. We differentiate them by Y (final demand) and S (production activities). Analog to the IO analysis, "product" and "consumed by" correspond respectively to row wise elements and the column wise IO elements.
- **Originating from:** Specifies from which country the supply of the product comes.
- **Consumed where:** Specifies in which country the product
- **Technical Change Coefficient:** Specifies the magnitude of the change by which the intersected values are modified. Both negative and positive relative values are applicable. A negative value defines the reduction of the values from the baseline data while a positive one defines an increase.

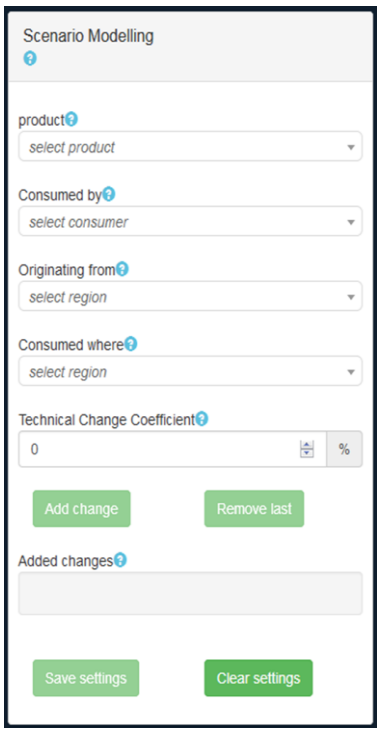
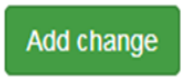
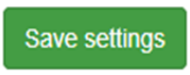


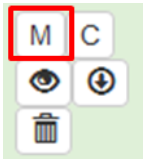
Figure 18: Scenario modelling menu



Once all these settings are set one can **add the change** by clicking on the button and the new scenario will appear as a grey textbox.
This can be done iteratively until the scenario settings are satisfactory. A wrong addition can be removed through the "**Remove** last" button.



After saving the settings in the scenario-modelling menu, a scenario-modelling button becomes visible for every entry in the analysis queue.



Additionally in the analysis queue panel, the appearance of a blue textbox indicates that modelling is ready to be applied.

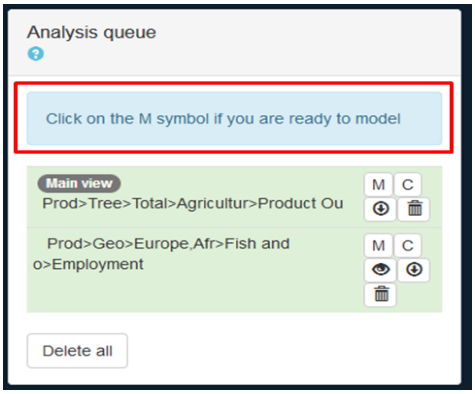


Figure 19: Modelling prompt message

d) Comparison of data

The tool enables the user to compare the results from the original data and those from the entered scenario.
By clicking on the comparison button in the entry of interest in the analysis queue the data from the original setting are visualized in the comparison view. A subsequent click on the modelling button launches the modelling and leads to a display of the results from the scenario modelling in the main view.
To download the results, all the saved settings of the analysis and scenarios are kept together with the results.
The same parameters under the visualization can be seen in the main and comparison views. To clear the visualization one needs to click on the x at the top right corner of the main and comparison view.

6. Resources

If further information for the analysis is needed, the resources menu offers additional platforms and information. From all the information gathered in the EU Raw Materials information systems to other websites that allows gathering insights on environmental justice, economic complexity and so forth.

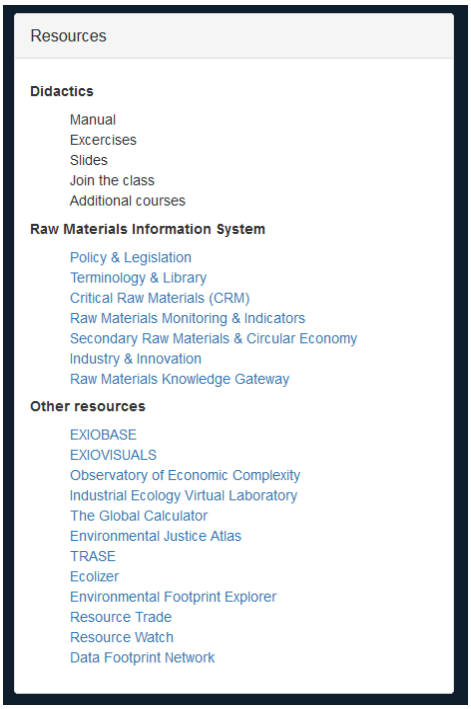


Figure 20: Resources menu