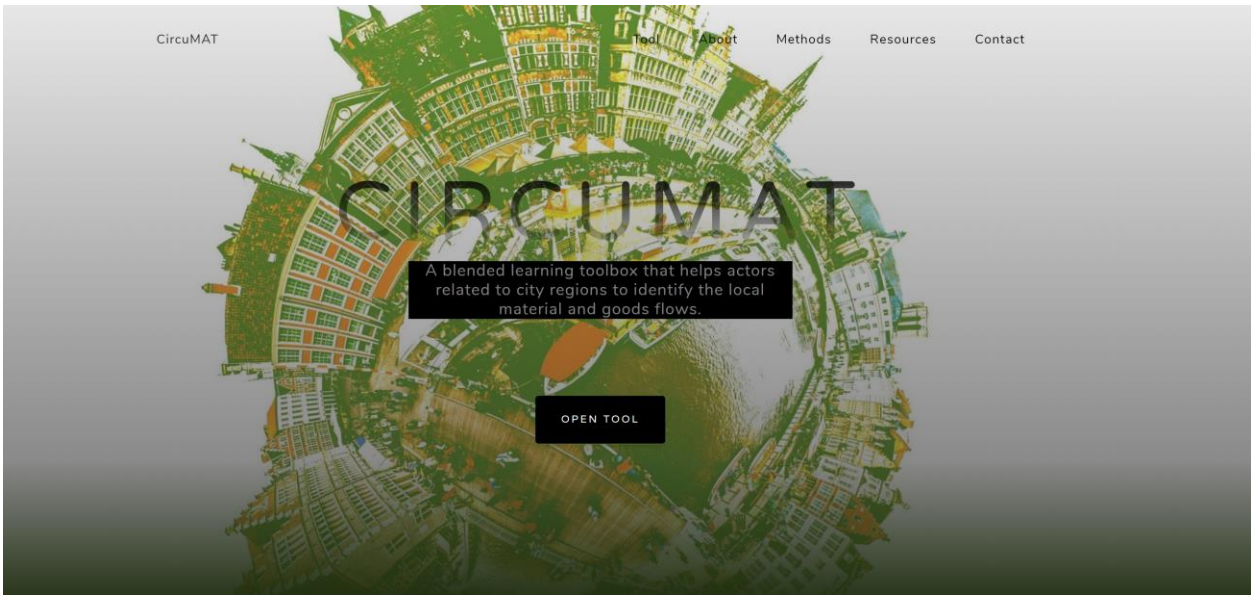
CIRCUMAT PLATFORM (REAT) USER GUIDE



Contents

Introduction

There are ambitious aims in terms of sustainability. If we ask people what they think about the topic of the year (or even the upcoming years), the circular economy concept pops out. Circular economy aims to minimize waste and to make the most of our resources. It is a great and novel concept but at the same time also a very broad concept.

This broadness of the circular economy concept can be a challenge for practitioners: it can be difficult to capture the essence and come up policies. So, it not uncommon that practitioners suffer from either the lack of the data or the lack of a framework for circularity. Especially for the regional authorities the analysis becomes challenging since available environmental data or research can be found mostly at the national level.

Thus, there should be a link between the regional practitioners and the relevant data and framework for the circular economy.

So CIRCUMAT project exactly dives into this problem and for both the data and the framework side it offers solutions.

In brief, our research outcomes are twofold. First, we create more awareness of the data already available for the regional authorities (the related links can be found in the resources section), and we provide a tool (REAT) for regional circularity analysis that can assist the regional practitioners in their decision and policy making.

Landing page

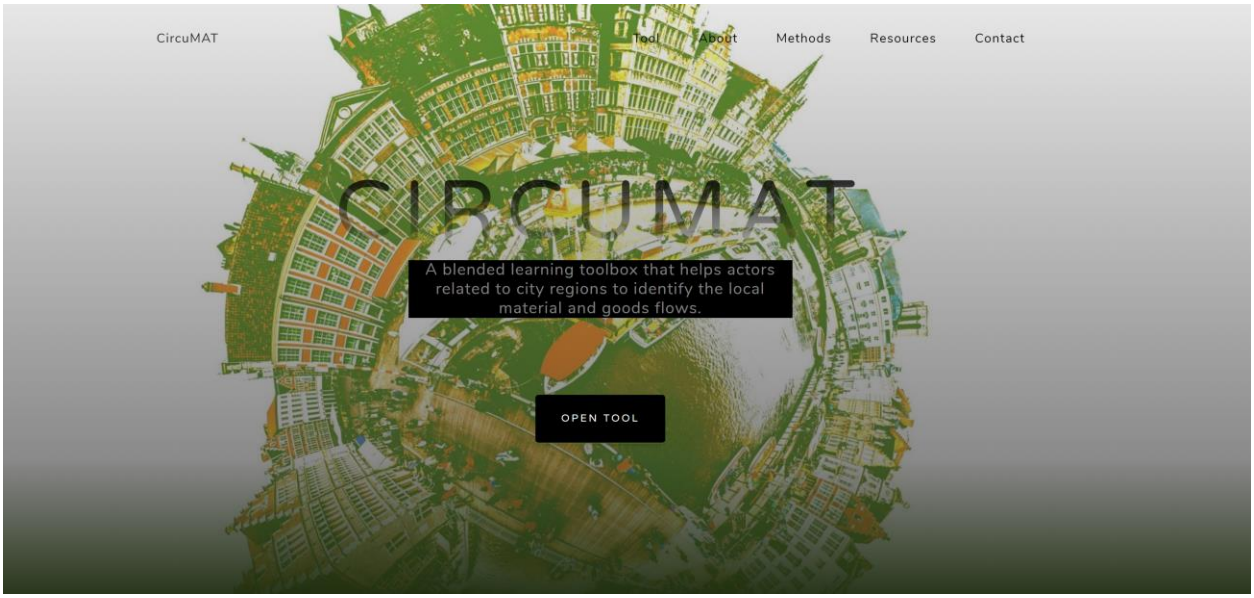


Figure 1. CIRCUMAT landing page

• **Tool:** Access to the use of the analytical platform (REAT). 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.
• **About:** General information about the project.
• **Methods:** Description of the outstanding methods, data and features of the webplatform.
• **Resources:** The list of online tools and databases available for the circular economy and the data for the CIRCUMAT project
• **Feedback:** Feedback form to report bugs, suggestions or any other feedback concerning the use of the platform.

Interface

The tool starts with an interface, which is a compound of 6 panels, and it offers a pre-loaded visualization:

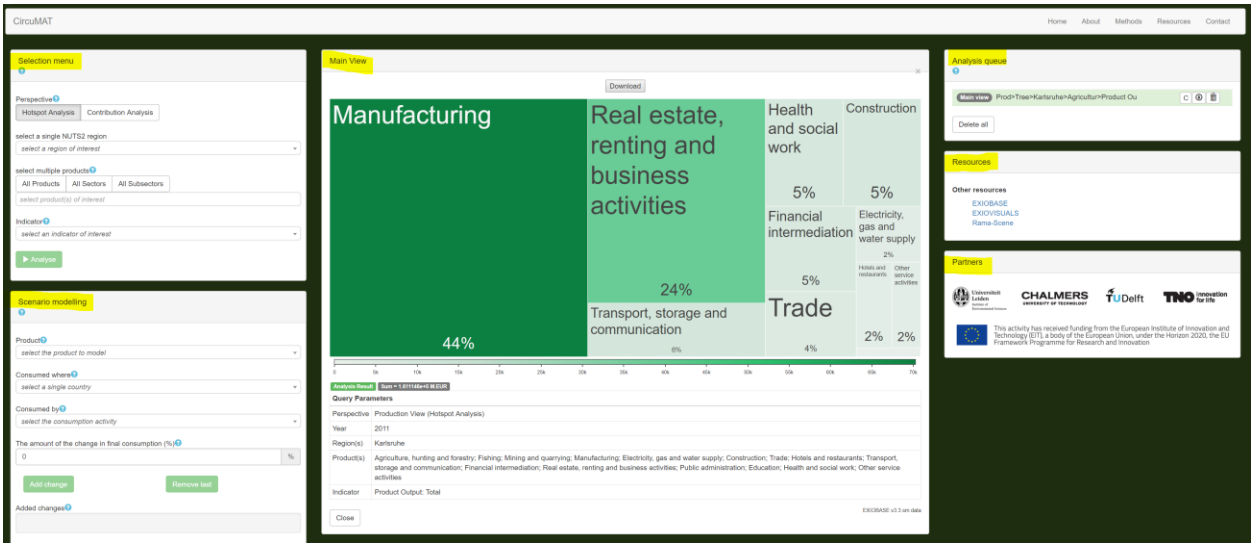


Figure 2. Platform interface

• **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 & databases lists and related data that can be useful to

increase the depth of the analyses

- **Partners section:** Logos of the consortium members
- **Main view and Comparison view:** Show the visualizations of the analyses

- **Help buttons:** Offer 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

Selection menu

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

- Perspective buttons

o the **Production View (Hotspot Analysis)** perspective selects data concerning the impact of a specific manufacturing activity

o the **Consumption View (Contribution analysis)** selects the cumulative impacts along the supply chain of a specific product consumed

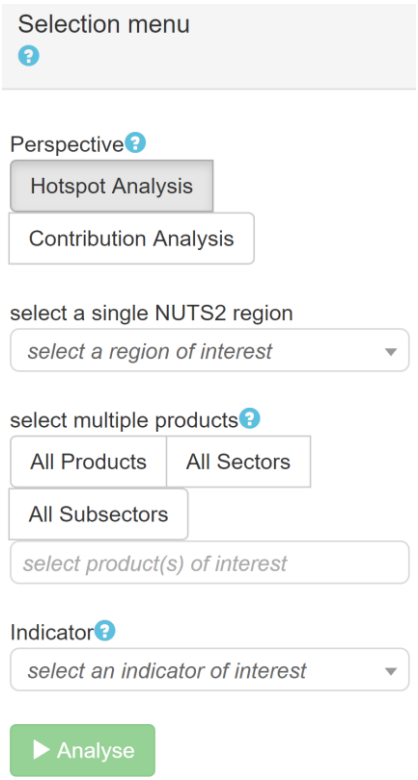


Figure 3. Selection menu

o **Select a single region:** selecting a NUTS 2 level region in the EU countries

o **Select multiple products** : 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.

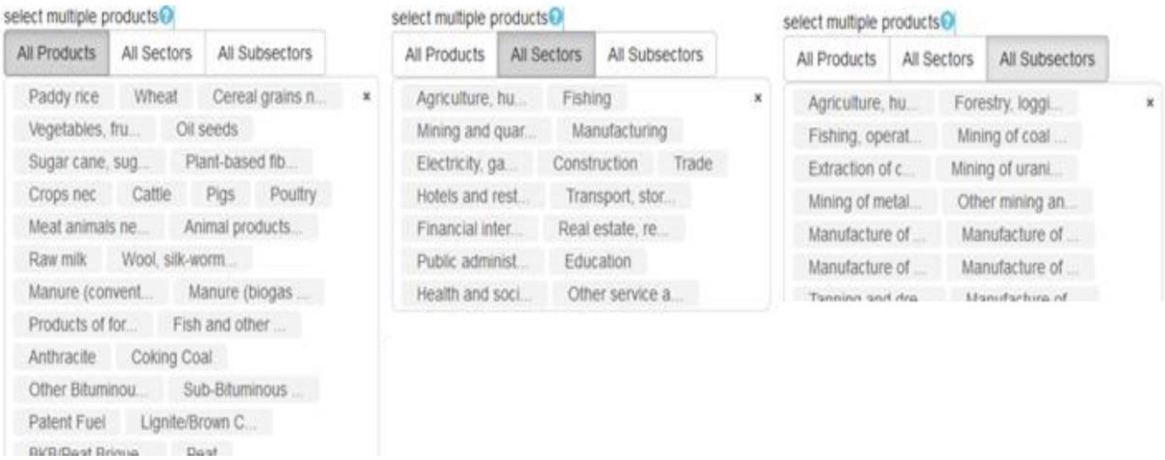


Figure 4. Product and sector selection

o **Indicators:** Multiple environmental-socio-economic indicators are available.

- 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.
- Employment (Unit 1000p) - 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)

Through **main view**, one can see the impacts of one or multiple products in a specific region.

Analyzing

After the specification of all relevant settings 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 is set, the Analyse button will not be active.

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

Figure 5. Analysis queue panel

Once the entry turns green, several options are available:

- **Eye:** View

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 textbox identifies the entry that is currently presented there. If no eye button is available for one box, then the results are already on display in the main view panel.

- **C:** Compare

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. If no C button is available for one box, then the results are already on display in the main view panel.

• **Arrow:** Download

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

• **Bin:** Delete

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

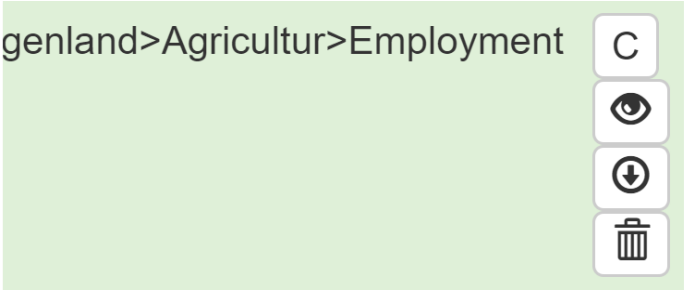


Figure 6. Options' symbols

Scenario Modelling

The scenario-modelling menu allows the modification of the database and the creation of alternative versions of the economy.

Through this menu, users can specify the coordinates of the IO elements (in final demand vector) that they wish to modify and the magnitude of the change.

The following settings need to be specified:

• **Product:** This represents the supply of a product or service to final consumers.
• **Consumed by:** Final Consumption activity in which the product is being consumed. In the IO tables it is represented by a column item in the final demand vector.
• **Consumed where:** Specifies in which country the product is consumed.
• **The amount of the change in final consumption (%):** Specifies the magnitude of the change. 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.

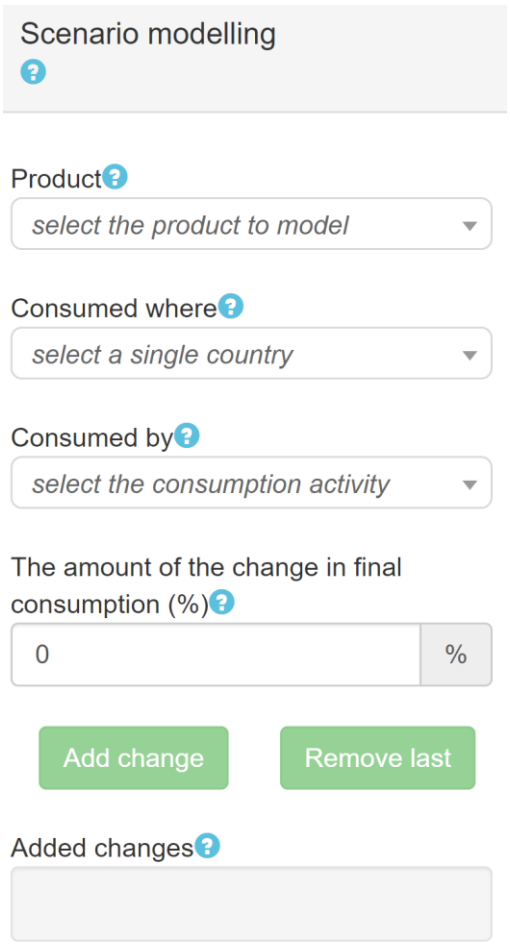


Figure 7. Scenario modelling menu

Once all the 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.

Figure 8. Scenario-modelling button

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

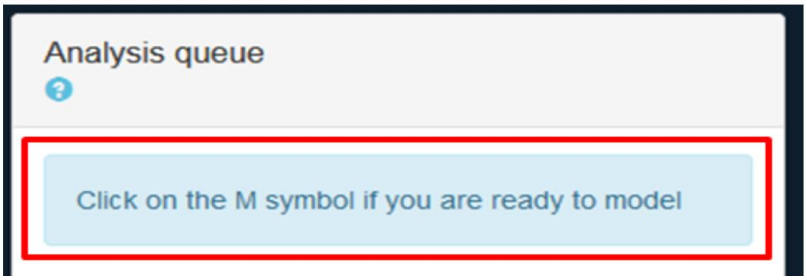


Figure 9. Modelling prompt message

Resources

Resources button includes the lists of related online tools and databases to circular economy that can be useful for the users. Furthermore, it includes the link where the users can download the data used in the CIRCUMAT. The users are encouraged to read the CIRCUMAT summary document in order to gain more insight about the project and the analytical tool.