



Urban Performance:

User Manual

Urban Performance is a Geoportal extension which simplifies the process of urban growth scenario development. In simple terms, a scenario is a combination of spatial layers and numeric assumptions that describe possible conditions for a city.

Scenarios can be used to compare public policy implementation, such the construction of new transit lines, parks or other urban services. Urban Performance generates a range of indicators, which can be used to compare scenarios. Using Urban Performance is straightforward:

1. Log in to the Geoportal.
2. Select Urban Performance from the Geoportal's Tools menu icon in the top right corner.
3. Choose a study area.
4. Click on "Scenarios", select which scenario-results to display and click "Calculate".

In the results panel, you will find the results for up to 4 selected scenarios in tabular or graphical format.

Now, let's have a more detailed look at each step and describe all required inputs. In the example above we have considered that data is already available at the Geoportal, and that someone has set up Urban Performance before. In the following section we will describe how to set it up from scratch. First, note that to use Urban Performance you will need:

Study area: A Geoportal layer which describes the study area for your analysis. Frequently this a state, a municipality or a metropolitan area boundary. You can select any name for this layer, as long as it contains the string "study area".

Layers: A set of Geoportal layers with data to be analyzed. Layers must have at least two attributes, one with the MMU (minimum mapping unit) identifier and one with the numeric values which will be processed.

Assumptions: A set of numeric values which describe expected conditions, such as carbon emission factors and infrastructure costs.

Please note that depending on the indicators selected, Urban Performance will request specific layers and assumptions. Before using the tool we strongly recommend to explore which indicators are available and to identify which inputs will be required (See Section 1.1 of this manual).

If layers described in Section 1.1 are not yet available in the Geoportal, upload them. Please note that you do not need to upload all layers described in Section 1.1, but only those layers that are required for your selected indicators.

Once that you have all required layers in the Geoportal, follow these steps:

1. Log in to the Geoportal.
2. Select Urban Performance from the Geoportal's Tools menu icon in the top right corner.
3. On “Create a new scenario”, type a name for the scenario and select a study area and choose which indicators should be included in the analysis.

4. Click on “Create”.

5. Depending on the indicators that you have selected, the tool will request specific data inputs. The main goal in this step is to match the attribute-names in the data sources with the Urban Performance requirements.

6. Click on “Scenarios”, select which scenario-results to display and click “Calculate”.

In the results panel, you will find the results for up to 4 selected scenarios in tabular or graphical format.

Dealing with messy data

You might need to use the “Clean data” icon at the mid-right of the Geoportal screen to perform basic cleanup operations to the Layer before importing to Urban Performance.

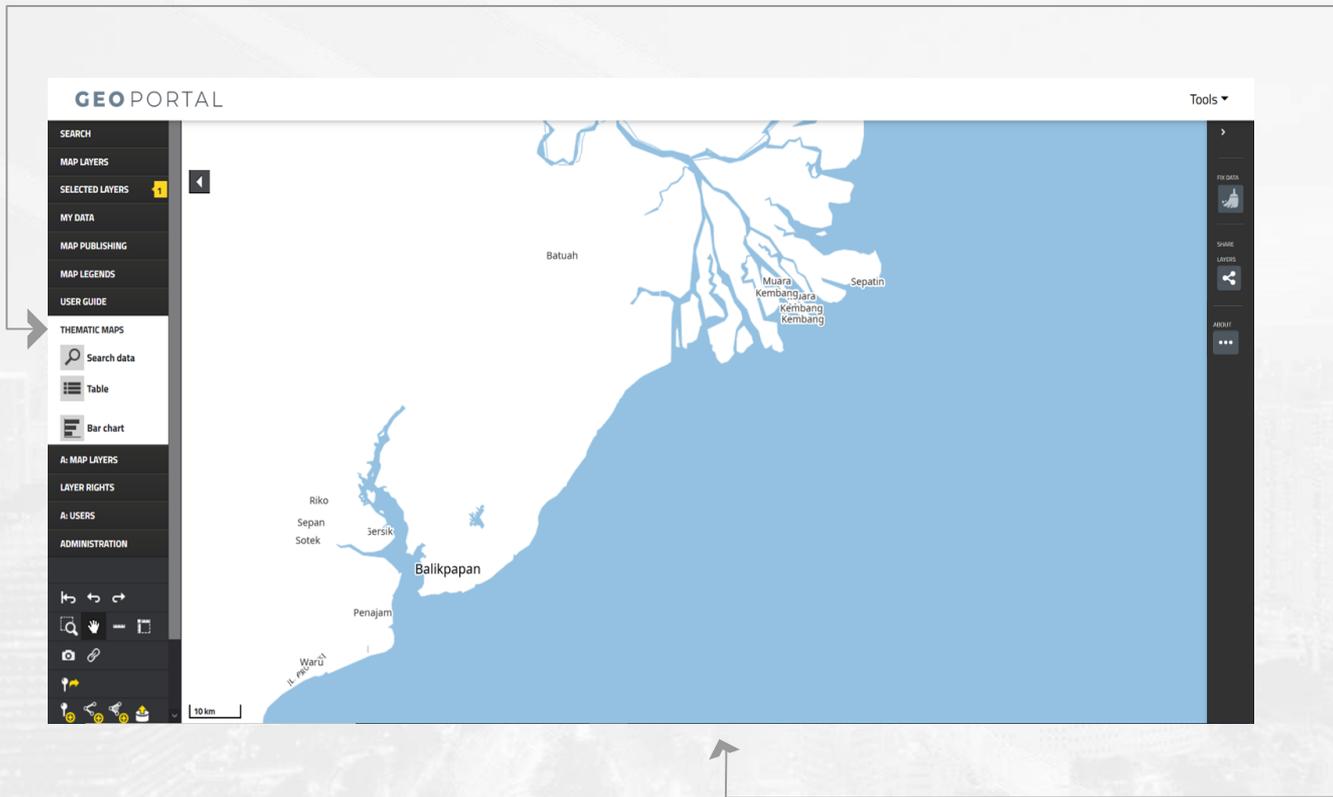


Geoportal at a glance	3
Home screen	4
UPT Roles	5
Layer management	7
Data frame	11
Accessing Urban Performance	13
Using Urban Performance	14
Urban Performance	15
Advanced options	16
Creating scenarios	34
Managing data	37
Calculating scenarios	40
Buffers	41
Results	42

An aerial view of a city skyline with various skyscrapers and buildings. Overlaid on the image are several large, semi-transparent geometric shapes, including a large 'X' and various polygons, in shades of light gray. The text 'Geoportal at a glance' is centered on the right side of the image.

Geoportal

at a glance



The Geoportal is composed of two main elements: a panel in the left, where users can select existing layers or upload their own data into the Geoportal, and a data frame.

1. The left panel is where users can select the preloaded layers or upload new ones. There will be information uploaded in advance or users can upload their own data sets.
2. In the data frame users can visualize spatial information. The selected layers will be displayed in the data frame area.

UPTUser

UPTAdmin

The geoportal has specific roles that grants users access to the UPT. If a user doesn't have any of these roles, they will not be able to use the UPT.

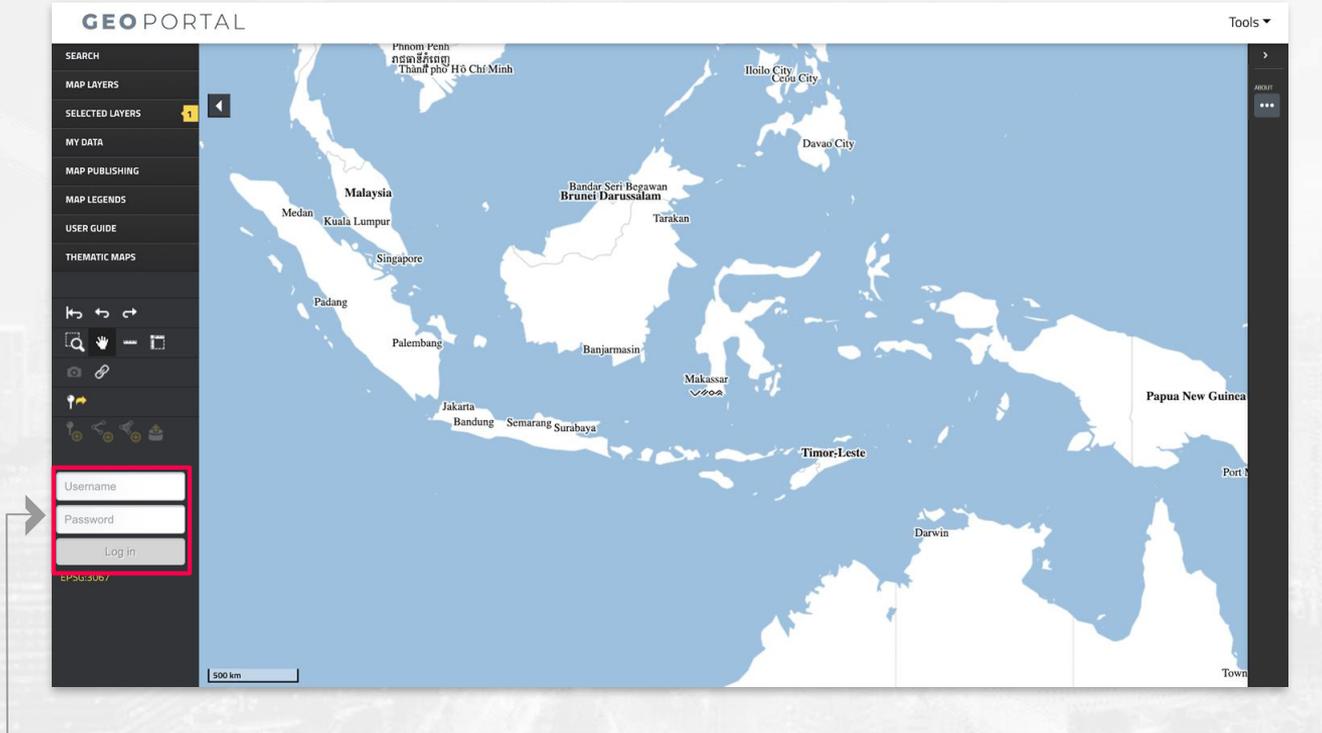
1. **UPT** stands for Urban Planning Tools, and refers to **Urban Hotspots** and **Urban Performance**.

2. **UPTUser**: A user who will handle evaluations and calculations in the UPT.

3. **UPTAdmin**: A user who can handle not only the evaluations and calculations, but can also manage certain data that will be shown to other users, thus has access to more modules.

Any modules that require this role will be marked as **UPTAdmin only** in this document. These modules will also not be visible to users who only have the **UPTUser** role.

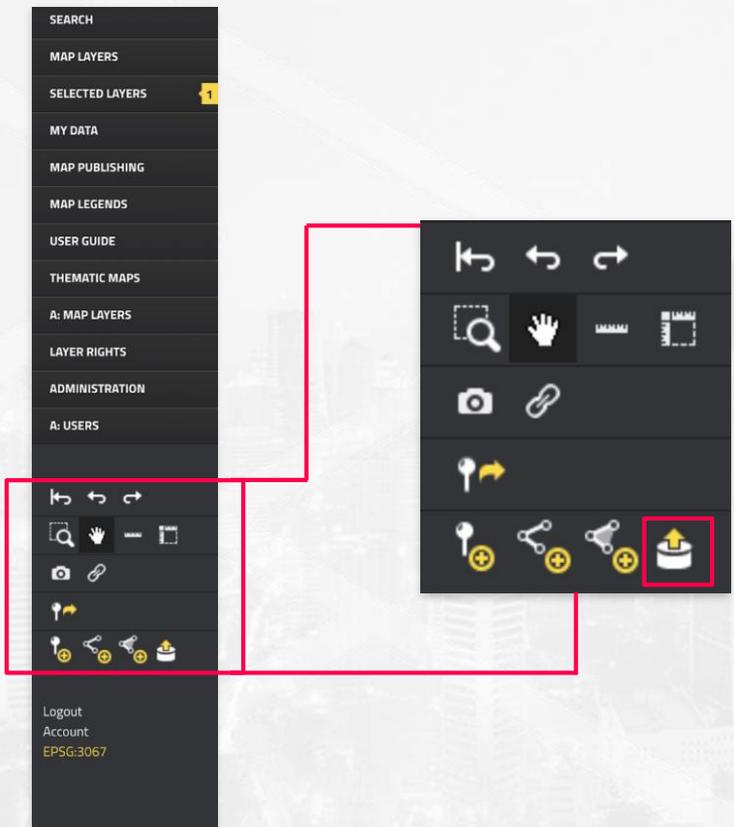
Log in to have access to layer management functionalities.



4. Upon first accessing the Geoportal, log in using any of the following credentials:

For a user with the **UPTUser** role:
 Username: demouser
 Password: test2020

For a user with the **UPTAdmin** role:
 Username: demoadmin
 Password: test2020



Uploading a new layer as a shapefile.

1. Once logged in, click on the import datasets icon found on the left panel.

BOX #1: LAYER FILE FORMAT

To upload layers, users must use a zipped shapefile (.shp, .shx, .dbf, and .prj).

Dataset Import ✕

Upload a dataset from your computer as a zipped file which contains all required files from one of the following file formats: i

- Shapefile (.shp, .shx, .dbf and .prj, optionally .cpg)

The zipped file can contain only one dataset and it can be at most 99 Mb.

Drag a file here or select by browsing.

Map layer name

Description

Data source

Style definitions

Import

Uploading a new layer as a shapefile.

2. On the new window, users can either **drag their .zip file from their filesystem to the indicated area**, or click on 'select by browsing' to manually look for the file.

3. Once the file has been uploaded, users must **assign a name and a description to the layer**. Adding a data source is optional to the process.

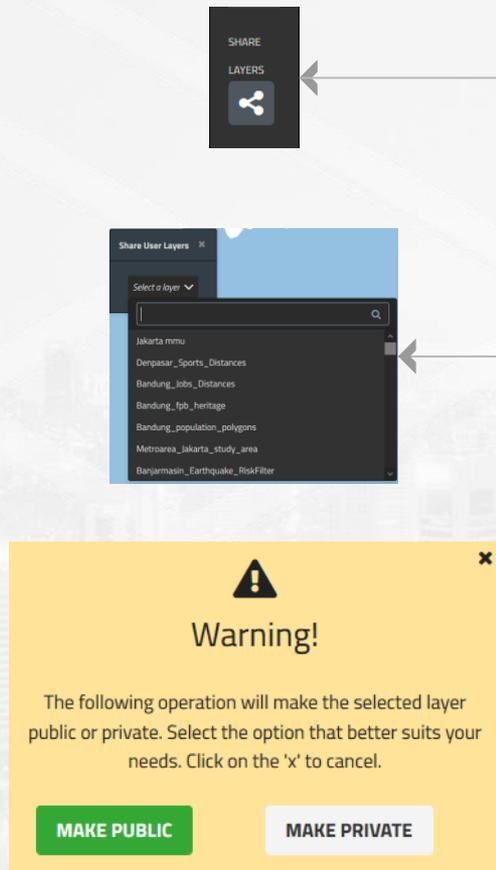
4. Depending on the type of geometry of the new layer, users can **customize the style and color of the layer and markers** with the style definition buttons.

5. Once done, just click on the **import button**.

Recommendations: Before a shapefile is uploaded, it is highly recommended that the user makes sure the layer:

- Does not have **z-coordinates** in its data.
- Has a **projection** property for the whole layer and not one for **each feature** that forms it.

For more information about the input layers please consult the **"Inputs" section of the Urban Performance Technical Report**.



Any user can share layers so that other UPT users may use them as their own in the tools.

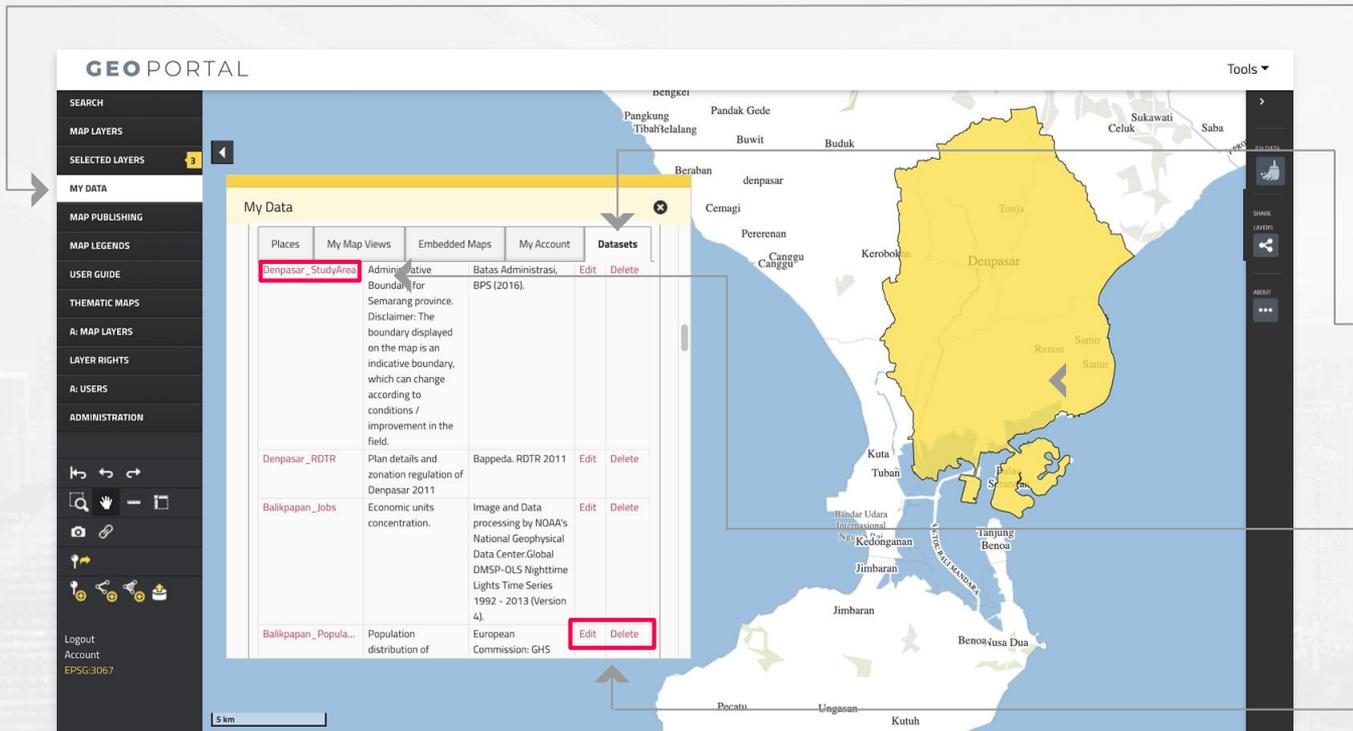
- **6. Click** on the **Share Layers** button to activate the module located on the left sidebar.
 - **7.** Select a layer from the list.
 - **8.** A prompt will ask whether you wish to make the layer **public** or **private**.
 - **Public** allows other UPT users to view and use the layer in the tools.
 - **Private** only allows the current user to view and use the layer in the tools.
- Simply click on the one that better suits your needs, or click on the 'x' to cancel the process.

Important: Shared layers only work in the UPT, not in the Geoportal itself.



UPT roles only: Fixing layers.

9. After logging in, the left panel will display a **brush icon**. Clicking on the icon will fix the layers in the geoportal by removing the individual **projection** property of features. This is because the **projection** property is only expected to be applied to the whole layer, and not to every single feature that forms it. It will also remove the **z-coordinates** in the data, as **Urban Hotspots** expects coordinates for 2 dimensions, not 3; sending **z-coordinates** would therefore make the calculations fail.



Visualize spatial layers on the data frame.

1. To visualize a layer recently loaded to the system or loaded in advance, first select "MY DATA" from the left panel.

2. Then, on the yellow window select "Datasets" from the top panel.

There, users will find their new layers or the ones loaded in advance.

3. Select the layer (s) you want to visualize in the data frame.

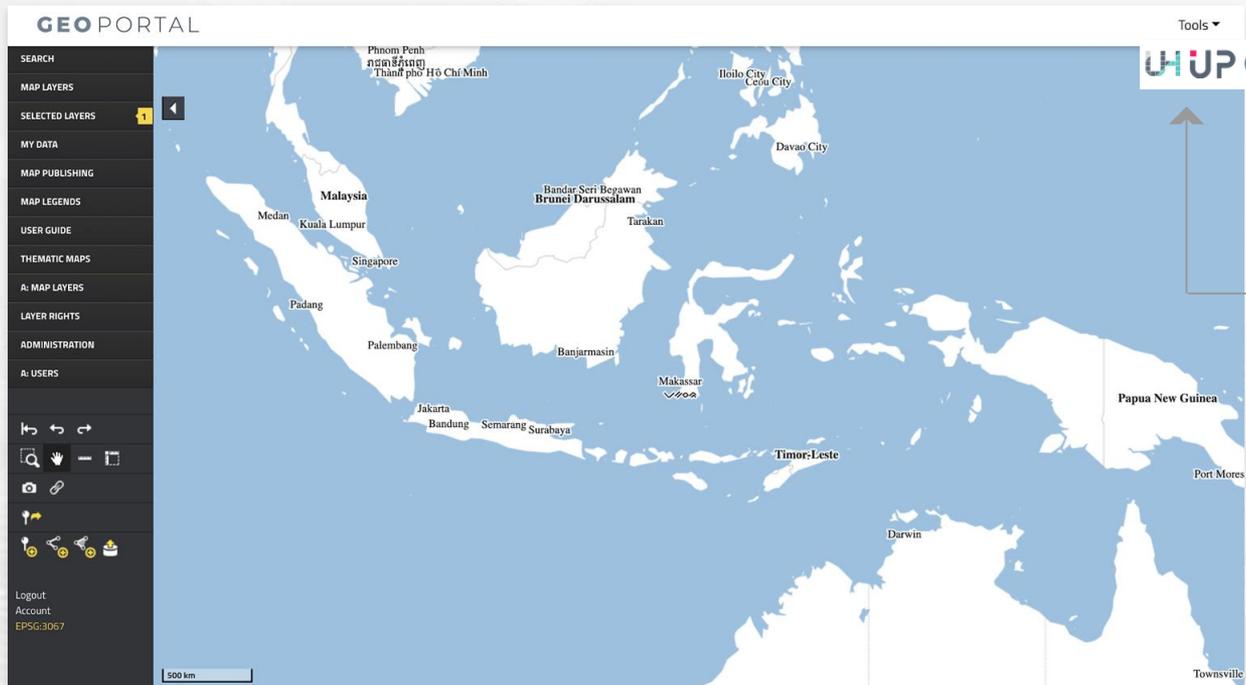
In this example, the administrative boundaries of the city of Denpasar was selected.

4. Users can also edit the details about a layer or delete a layer.

The screenshot shows a web application interface with a dark sidebar on the left containing navigation options like 'SEARCH', 'MAP LAYERS', 'SELECTED LAYERS', 'MY DATA', 'MAP PUBLISHING', 'MAP LEGENDS', 'USER GUIDE', 'THEMATIC MAPS', 'A: MAP LAYERS', 'LAYER RIGHTS', 'A: USERS', and 'ADMINISTRATION'. The main area displays a map of Denpasar, Indonesia, with a yellow overlay representing the 'Denpasar_StudyArea'. Above the map is a 'Selected Layers' panel. This panel lists two layers: 'Denpasar_StudyArea' and 'Bandung_Transit_Stations'. The 'Denpasar_StudyArea' layer has a red box around its opacity slider, which is currently set to 37%. Below the map, various geographical labels are visible, including 'Bengkell', 'Pangkung', 'Tibahkelalang', 'Pindak Gede', 'Budak', 'Sukawati', 'Celuk', 'Saba', 'Medahayutis', 'Keramas', 'Beraban', 'denpasar', 'Cemagi', 'Pererenan', 'Canggu', 'Kerobokan', 'Denpasar', 'Santor', 'Remon', 'Santor', 'Kuta', 'Tuban', 'Palau Serangan', 'Bantar Udan', 'Kodoganan', 'Tanjung Benoa', 'Jimbaran', and 'Benoa Dua'.

Change the opacity or remove a layer from the data frame.

5. Once a layer has been selected, users can **choose the opacity level, hide or delete a layer** from the data frame by selecting "SELECTED LAYERS" from the left panel.
6. Then, **adjust the opacity level** with the slider or % input.
7. **To delete a layer** from the data frame click on the corresponding **X** icon of the desired layer (s).



Accessing the Urban Performance tool is fast and easy: it is located along with other Geoportal's tools in the upper right corner.

1. Click on the Tools menu. A pop down menu will be displayed with the Geoportal's tools.
2. Click on the Urban Performance icon (UP) to access the tool.

An aerial view of a city skyline, likely Dubai, with numerous skyscrapers and a prominent road network. A large, semi-transparent red line graphic is overlaid on the image, forming a stylized 'X' or 'Z' shape that frames the text. The text is positioned in the upper right quadrant of the image.

Using **Urban Performance**



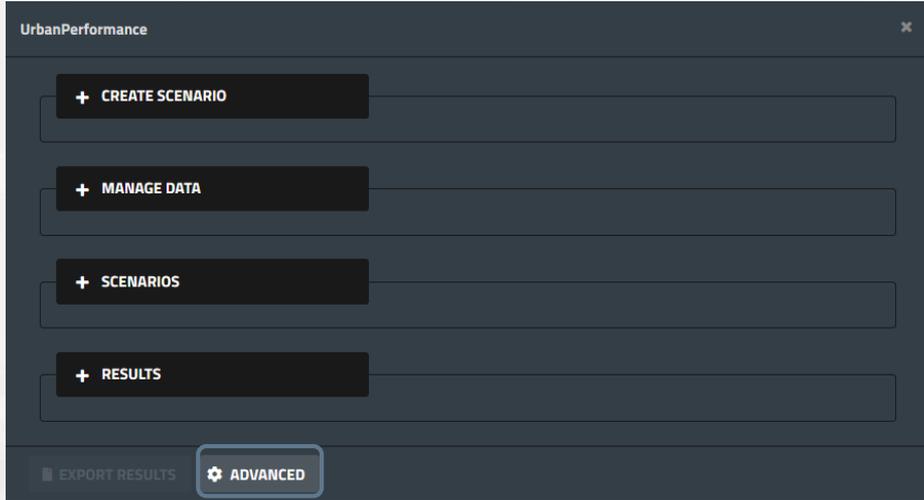
Urban Performance

The Urban Performance tool supports the evaluation of RDTRs and assess outcomes in a range of indicators, including the United Nations Sustainable Development Goals (SDGs).

With the tool, decision-makers and practitioners can perform quick assessments to support urban planning decisions based on evidence.

The set of indicators include proximity of urban services, water and energy supply, among others.





More advanced options focus on creating, editing, and deleting data used in Urban Performance.

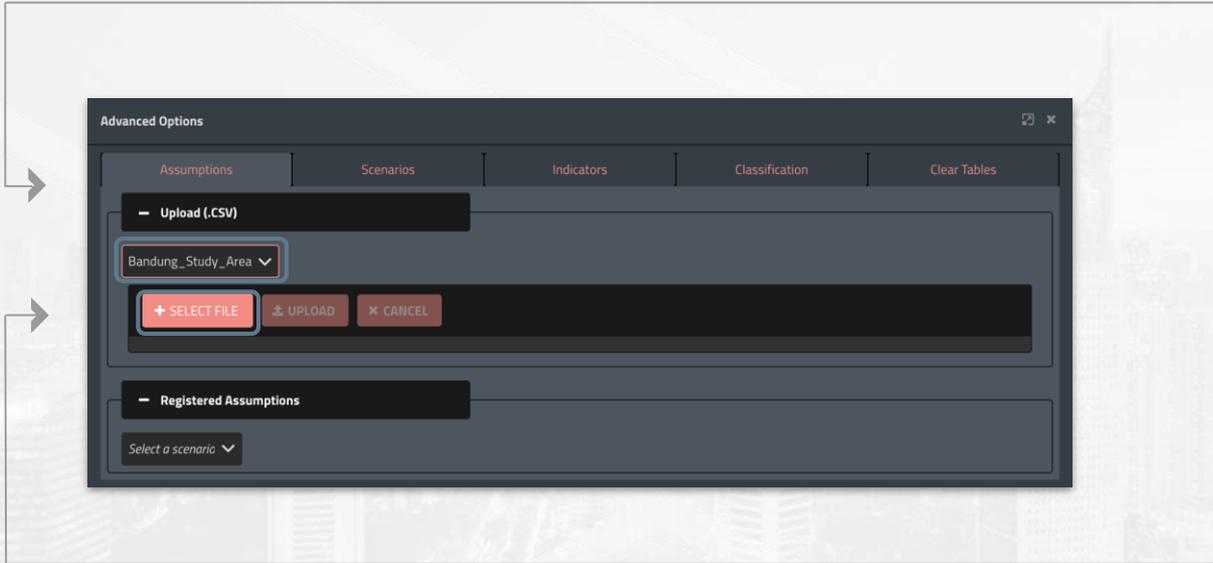
1. To access the module, **click on the Advanced button** on Urban Performance's footer section.

The **Advanced Options** module consists of several sections, which handle their own sets of data to be used by **Urban Performance**. Each of these can be accessed by clicking on their respective **tab**.

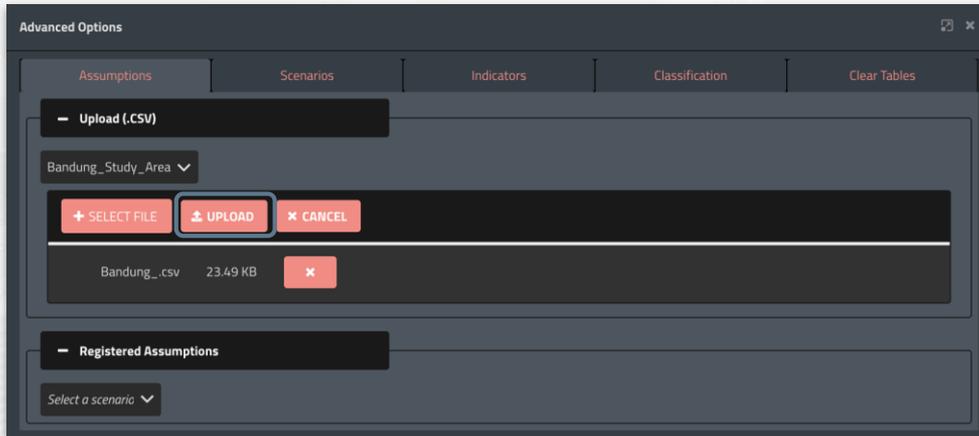
The Assumptions sections allows you to upload the numeric data needed for the calculation of indicators.

1. Select the study area of which you wish to manage assumptions
2. Select the **.CSV** assumptions file on your device for the study area.

For more information about the data that is required for the assumptions table, please **consult “Annex B Assumptions” of the Urban Performance Technical Report.**



The Assumptions sections allows you to upload the numeric data needed for the calculation of indicators.

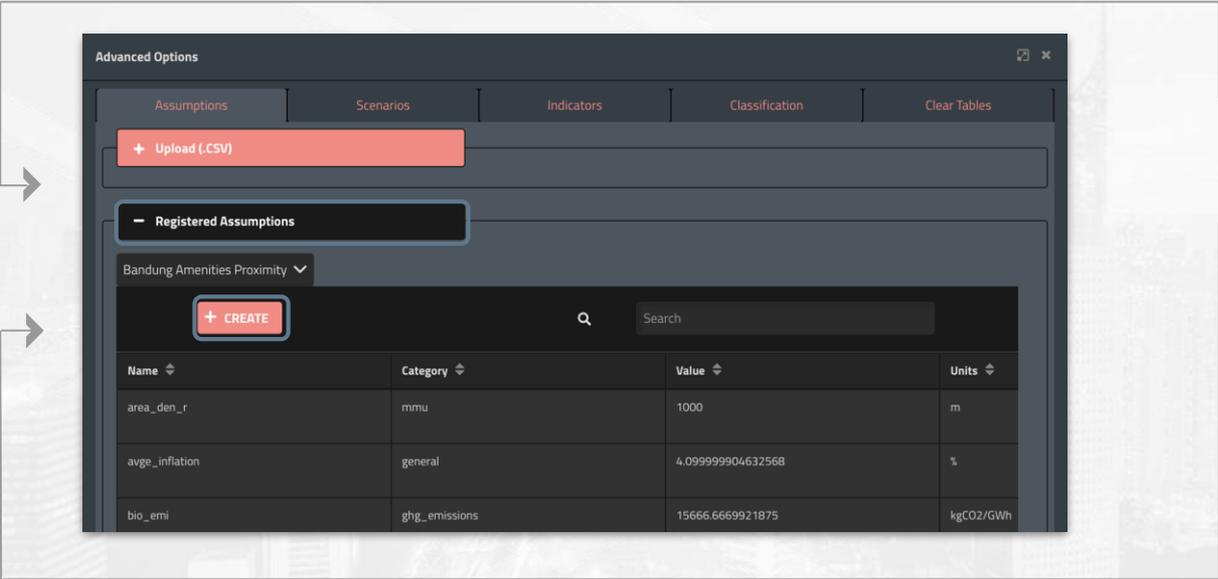


3. Upload or cancel the .csv assumptions file for the study area.

The Assumptions sections allows you to upload the numeric data needed for the calculation of indicators.

4. In the Registered Assumptions tab, you are able to visualize all the assumptions loaded for a scenario.

5. To create a new assumption, click on Create.

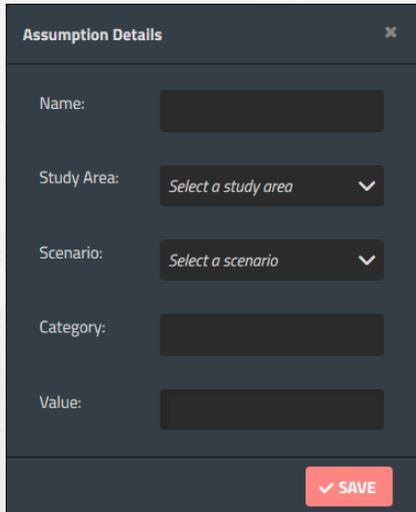


The Assumptions sections allows you to upload the numeric data needed for the calculation of indicators.

6. Fill the information needed for the assumption such as name, study area, scenario, category, and assign a value to it.

7. You are also able to edit registered assumptions. Click on the assumption to change its name, category, or value.

For more information about the data that is required for the assumptions table, please **consult “Annex B Assumptions” of the Urban Performance Technical Report.**



Assumption Details

Name:

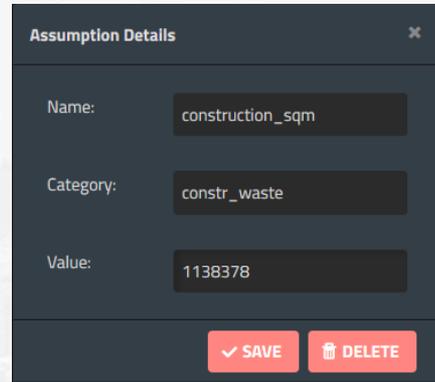
Study Area: *Select a study area* ▼

Scenario: *Select a scenario* ▼

Category:

Value:

✓ SAVE



Assumption Details

Name:

Category:

Value:

✓ SAVE

The Scenarios section lets you edit and delete created scenarios.

Advanced Options

Assumptions Scenarios Indicators Classification Clear Tables

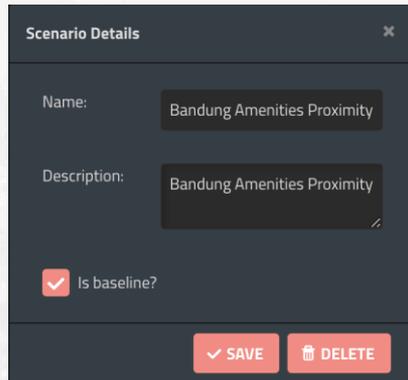
Search

Name	Description	Is baseline?
Balikipaan Amenities Proximity	Balikipaan Amenities Proximity	1
Bandung Amenities Proximity	Bandung Amenities Proximity	1
Banjarmasin Amenities Proximity	Banjarmasin Amenities Proximity	1
Balikipaan_prueba	Balikipaan_prueba	1

There are 4 scenarios

1. Use the search bar or the filters to look for a specific scenario.
2. Click on the scenario you wish to edit.

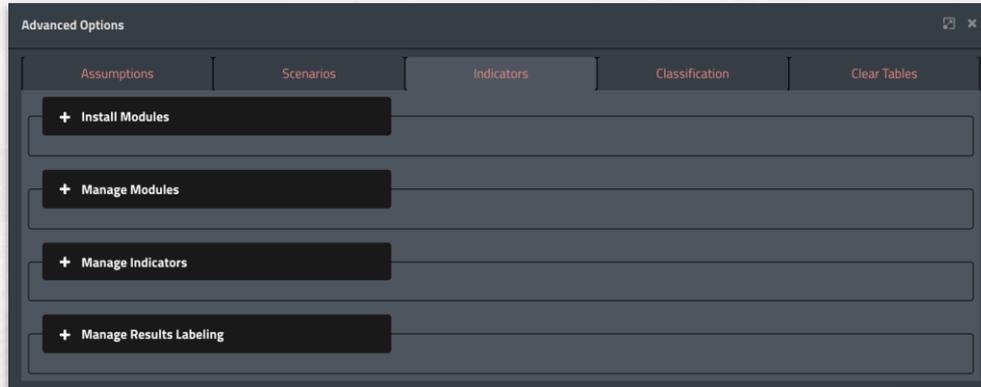
The Scenarios section lets you edit and delete created scenarios.



A dark-themed pop-up window titled "Scenario Details" with a close button (X) in the top right corner. It contains two text input fields: "Name:" and "Description:", both containing the text "Bandung Amenities Proximity". Below the fields is a checked checkbox labeled "Is baseline?". At the bottom are two buttons: "SAVE" with a checkmark icon and "DELETE" with a trash can icon.

3. Then, edit the scenario's name, description, baseline characteristic, or delete it through the pop up window.

The Indicators section allows you to install and manage modules, indicators, and results.



Click on Install Modules if you wish to upload and install new calculation methods.

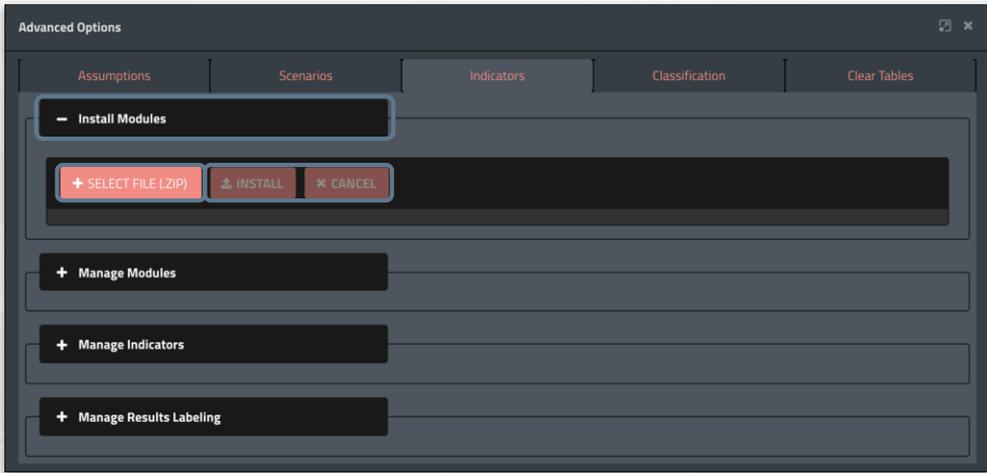
Select Manage Modules if you wish to edit the label and description of an existing module.

In the Manage Indicators section, you are able to create and rename existing indicators.

In Manage Results Labelling, you are able to create different labels or names for the indicators.

The **Install Modules** tab allows you to upload and install new calculation methods for Urban Performance.

1. Click on the **SELECT FILE (ZIP)** button to look for the module or calculation file.
2. Once the file has been loaded, click on the **INSTALL** button. You are also able to unselect the loaded file by clicking the **CANCEL** button.



BOX #1: CALCULUS MODULES FORMAT

The tool will only accept **.ZIP** files. For more information about Modules and how they're composed, please visit the **UPT-Calulus-Modules** repository in **GitHub**.

Advanced Options

Assumptions | Scenarios | **Indicators** | Classification | Clear Tables

+ Install Modules

- **Manage Modules**

Search

Name	Label	Description
GeneralCalculus	GeneralCalculus	This module performs the calculation or updating of the following values: the area of the footprint polygons, the total population of the scenario, the area of the mmu, the number of housing units in the scenario, the number of vacant housing units in the scenario, the area increment inside of the vacant base footprint, the vacant housing units rate, the population settled inside of the base footprint, the population outside of the base footprint, the population area density, pop_density_avg
Buffers	Buffers	This module performs the calculation or updating of the following values: amenities.buffer, transit.buffer, roads.buffer, risk.buffer
AmenityProximity	AmenityProximity	

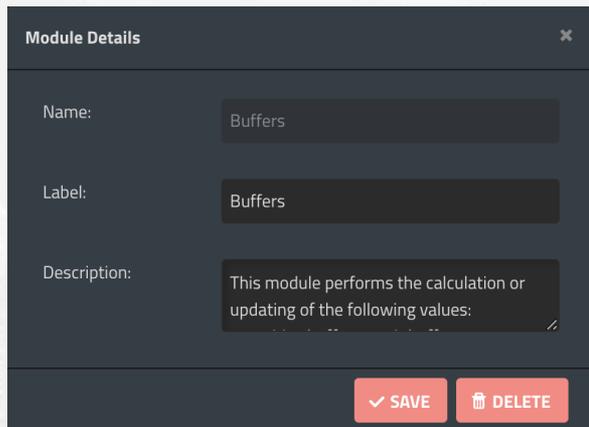
There are 3 modules

+ Manage Indicators

+ Manage Results Labeling

The Manage Modules tab allows you to edit the label and description of an existing module.

- 3. Use the search bar or the filters to look for a specific module.
- 4. Click on the module you wish to edit.



Module Details

Name: Buffers

Label: Buffers

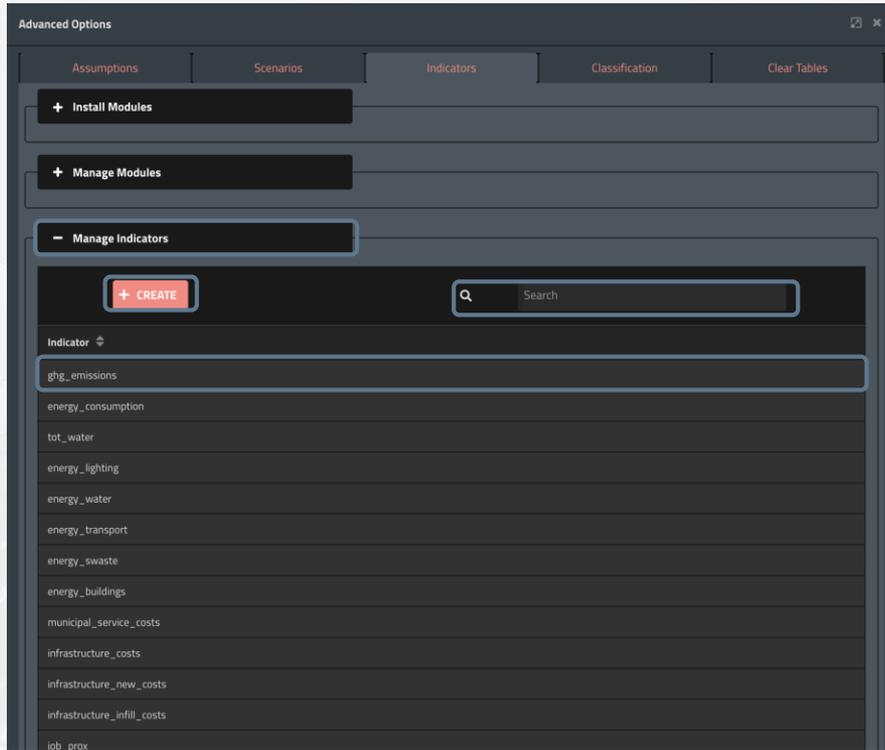
Description: This module performs the calculation or updating of the following values:

✓ SAVE DELETE

The Manage Modules tab allows you to edit the label and description of an existing module.

5. Then, you are able to change the label and description of the module. Click on Save to keep the changes made or Delete to leave them unchanged.

The Manage Indicators tab allows you to create and edit the name of any indicator.

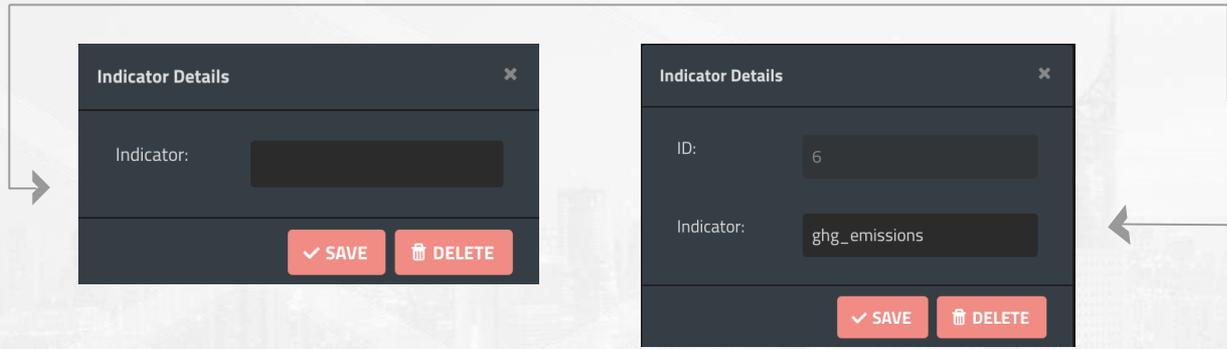


6. Use the search bar or the filters to look for a specific indicator.

7. Click on the indicator you wish to edit.

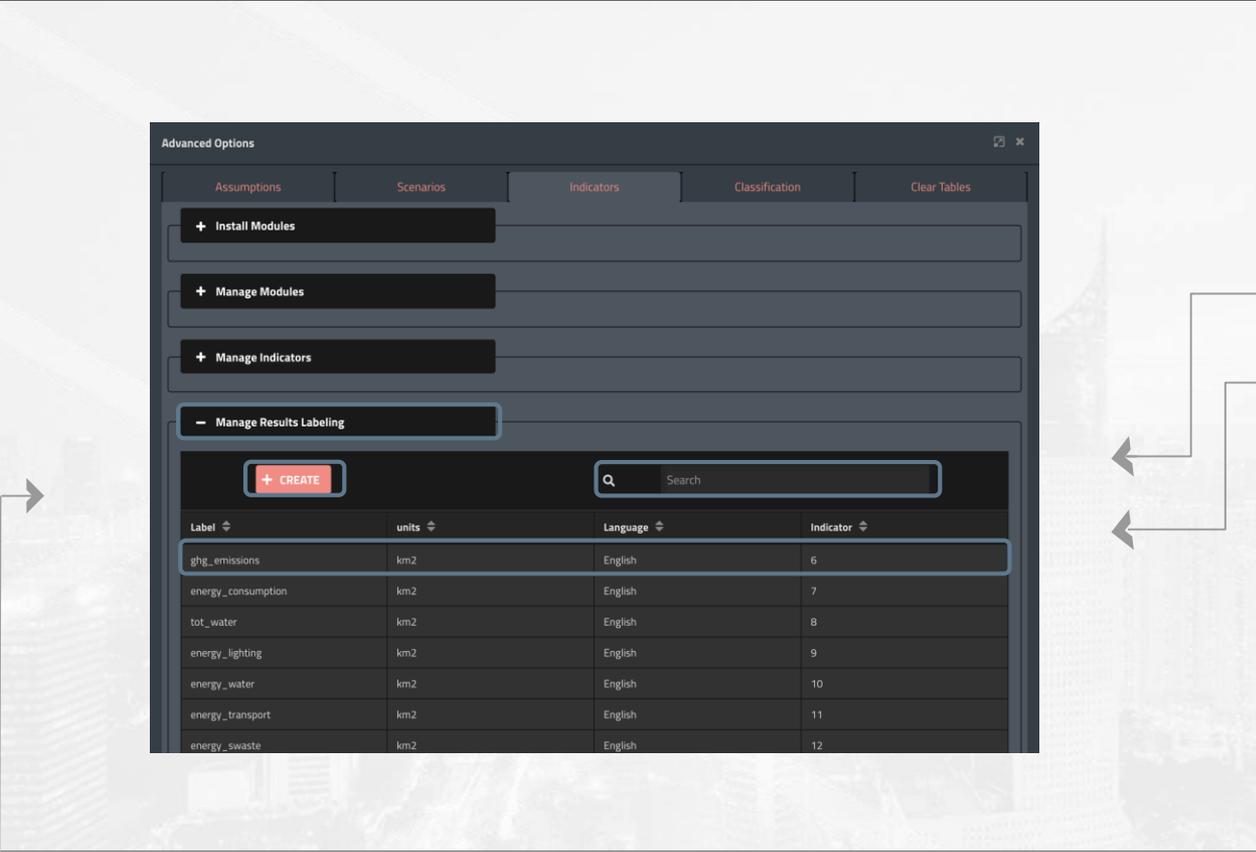
8. Use the Create button to add a new indicator.

The Manage Indicators tab allows you to create and edit the name of any indicator.



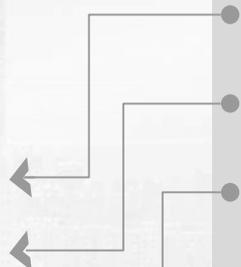
9. If you are creating a new indicator, the following window will appear. Name your new indicator and click on Save to apply changes.

10. If you are editing an indicator, change its current name, click on Save to apply changes, or on Delete to erase the indicator.

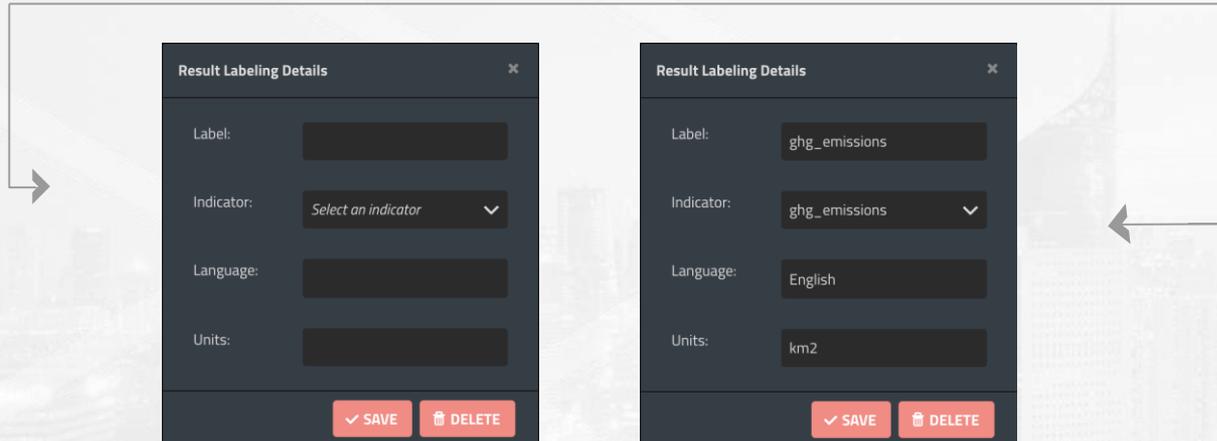


The Manage Results Labeling tab allows you personalize the name of the indicators displayed in the Results section.

- 11. Use the search bar or the filters to look for a specific indicator.
- 12. Click on the indicator you wish to edit its label.
- 13. Use the Create button to add a new label.



The Manage Results Labeling tab allows you personalize the name of the indicators displayed in the Results section.



14. If you are creating a new label for an indicator, the following window will appear. Select the indicator, its new label name, the language its in and its corresponding units. Click on Save to apply changes.

15. If you are editing the label for an indicator, change its current name, language or units. Click on Save to apply changes, or on Delete to erase the label.

Advanced Options

Assumptions Scenarios Indicators **Classification** Clear Tables

+ CREATE Search

Name	Category	F-class
high_school	amenities	high_school
health	amenities	health
public_space	amenities	public_space
public_service	amenities	public_service
elementary_school	amenities	elementary_school
study_area	footprint	study_area
jobs	jobs_info	jobs
population	mmu_info	population
area	mmu_info	area
earthquake	risk	earthquake
drought	risk	drought
primary_road	roads	primary_road
pedestrian_road	roads	pedestrian_road
secondary_road	roads	secondary_road
tertiary_road	roads	tertiary_road

The Classification tabs translates the labels in the Assumptions file to the label needed by Urban Performance.

The Name column contains the labels of the Geoportal shapes needed by Urban Performance to perform calculations.

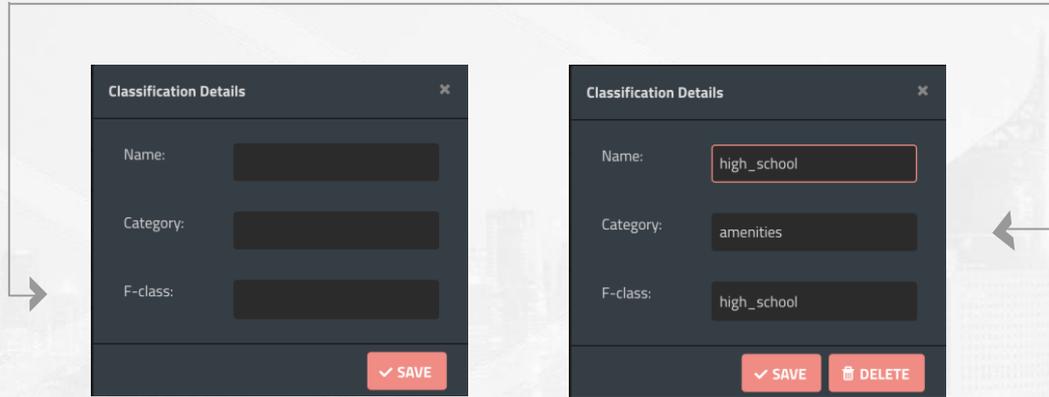
The Category column represents the different categories of Urban Performance tables.

The F-class column is generated based on the Assumptions file. It contains the labels inside the Name column of the Assumptions .csv file.

In order for Urban Performance to work, the labels in the Assumptions file (F-Class) must match those those needed by the Urban Performance tool (Name).

As the labels in Assumption files may vary due to different languages, specialized terms and context, you are able to edit and match them with the labels in the Name column in order for the tool to perform calculations.

For more information about the classifications table and its role in UP's evaluations, please consult **"Annex D Classifications"** of the **Urban Performance Technical Report**.

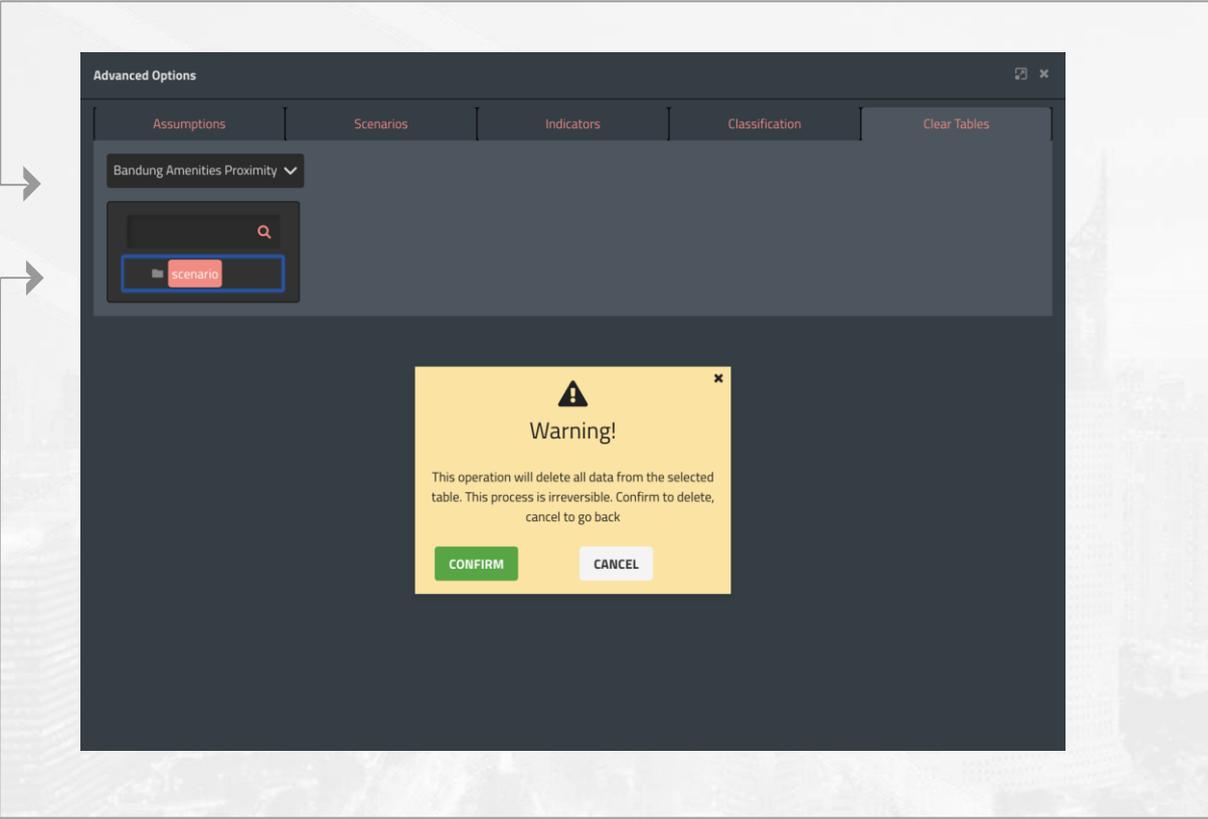


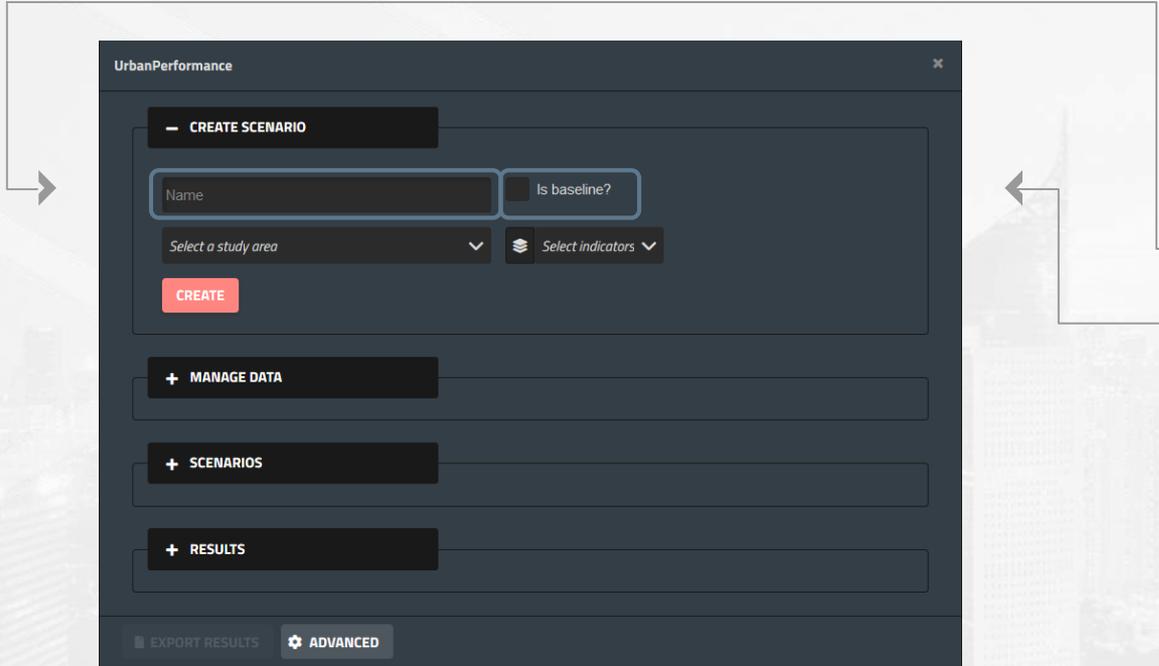
The Classification tabs translates the labels in the Assumptions file to the label needed by Urban Performance.

1. If you want to create a new Classification, fill the Name and Category fields with the labels of the corresponding Geoportal shape and table. Fill the F-class field with its corresponding label of the Assumptions .csv file.
2. Click on any existing Classification to edit it. You are able to change the label in the F-Class field to match the one in the Name field.

The Clear Tables module allows to erase Urban Performance tables.

1. Select the Scenario of the table you wish to erase.
2. Select the table.
3. Click on Confirm to erase the table from Urban Performance or Cancel to leave without changes.

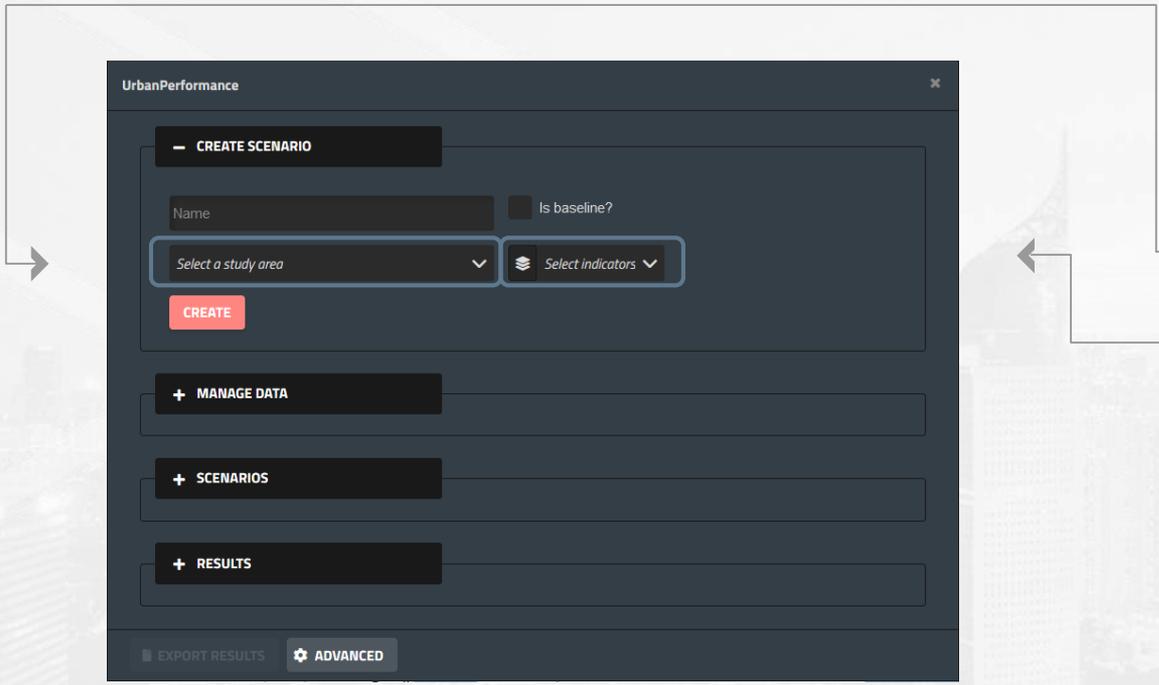




Create a scenario according to the indicators you wish to analyze.

- 1. Start by **naming your scenario**.
- 2. **Click on the checkbox** if the scenario to be created will use **baseline** data. If it doesn't, leave the box unchecked.

It is important to note that it can only be one baseline scenario per study area. On the contrary, Urban Performance will not perform the calculations correctly.

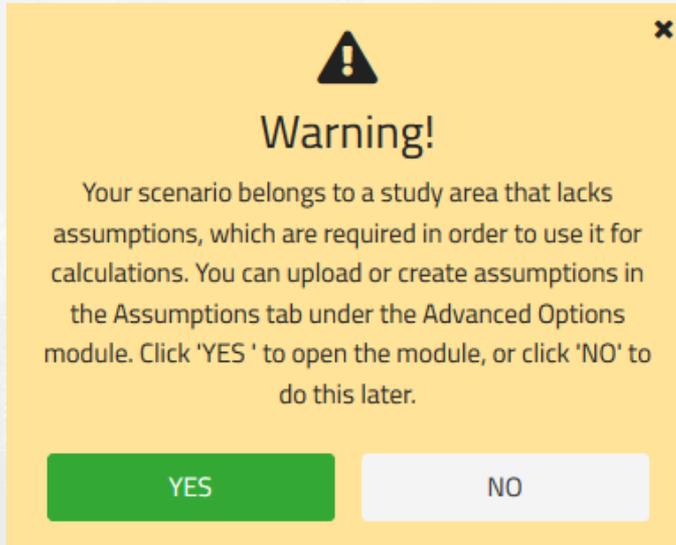


Create a scenario according to the indicators you wish to analyze.

3. Select the study area. You can use the search bar to quickly find the area of interest.

4. Select the indicators you wish to analyze from the dropdown menu. Remember you can analyze as many as you wish.

5. Click on Create.



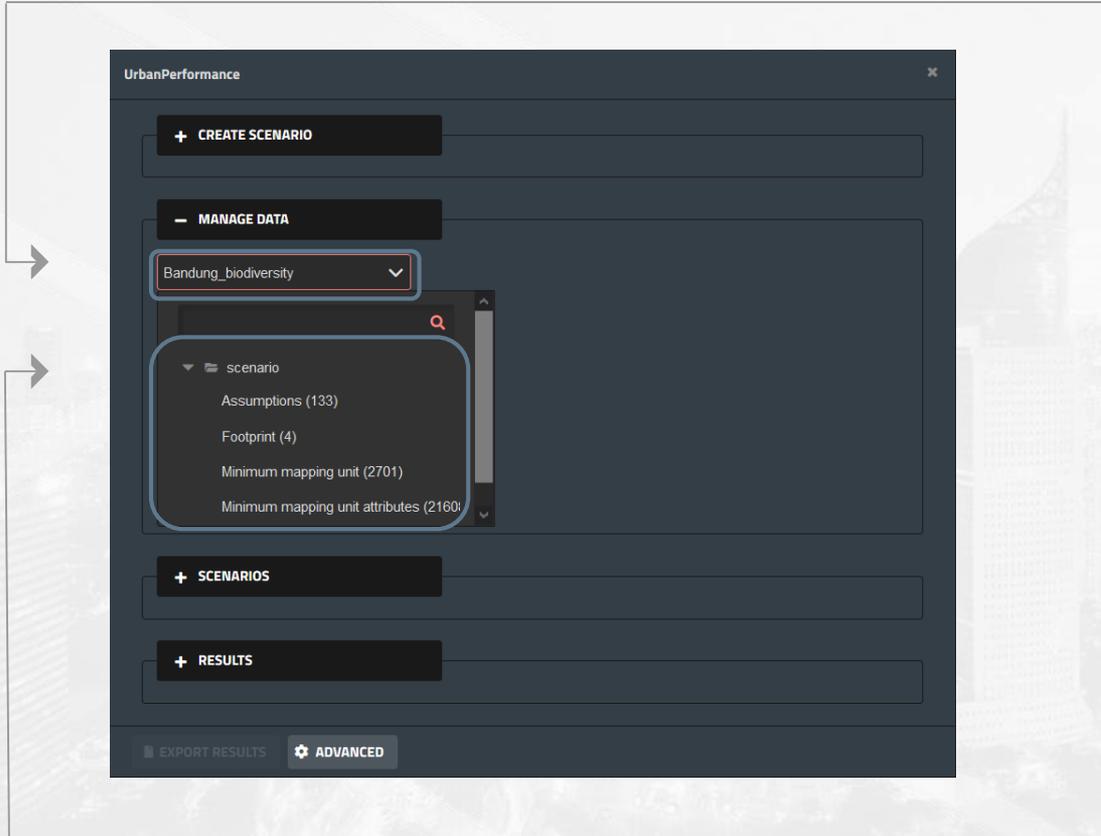
Warning!

Your scenario belongs to a study area that lacks assumptions, which are required in order to use it for calculations. You can upload or create assumptions in the Assumptions tab under the Advanced Options module. Click 'YES' to open the module, or click 'NO' to do this later.

YES **NO**

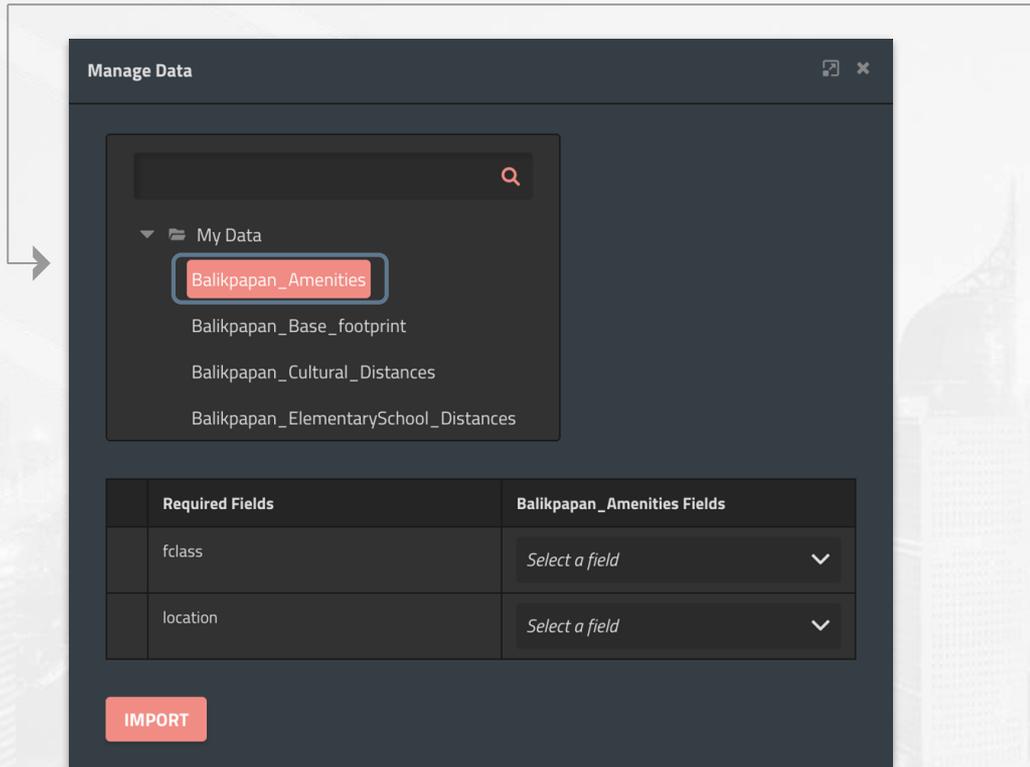
Assumptions are required to evaluate scenarios, and the system will prompt the user for further action if needed.

- If the study area assigned to the new scenario does not have assumptions, the system will prompt the user to upload/create them. The instructions for this process can be found in slides 14-17.
- **Though the user may choose to skip this step for now, assumptions for the study area are required for the evaluation.**



In the Manage Data section, you will manage the information needed by the tool in order to perform calculations.

1. Select the scenario to manage. You are able to use the dropdown menu or perform a quick search.
2. A list of tables to be filled will appear. Click on the name of the table you wish to fill with its corresponding Geoportal layer and repeat the process for each one.



Fill the tool's tables with Geoportal layers.

3. Select the Geoportal layer that corresponds to the selected table. You can use the search bar for a more agile process.

Manage Data

My Data

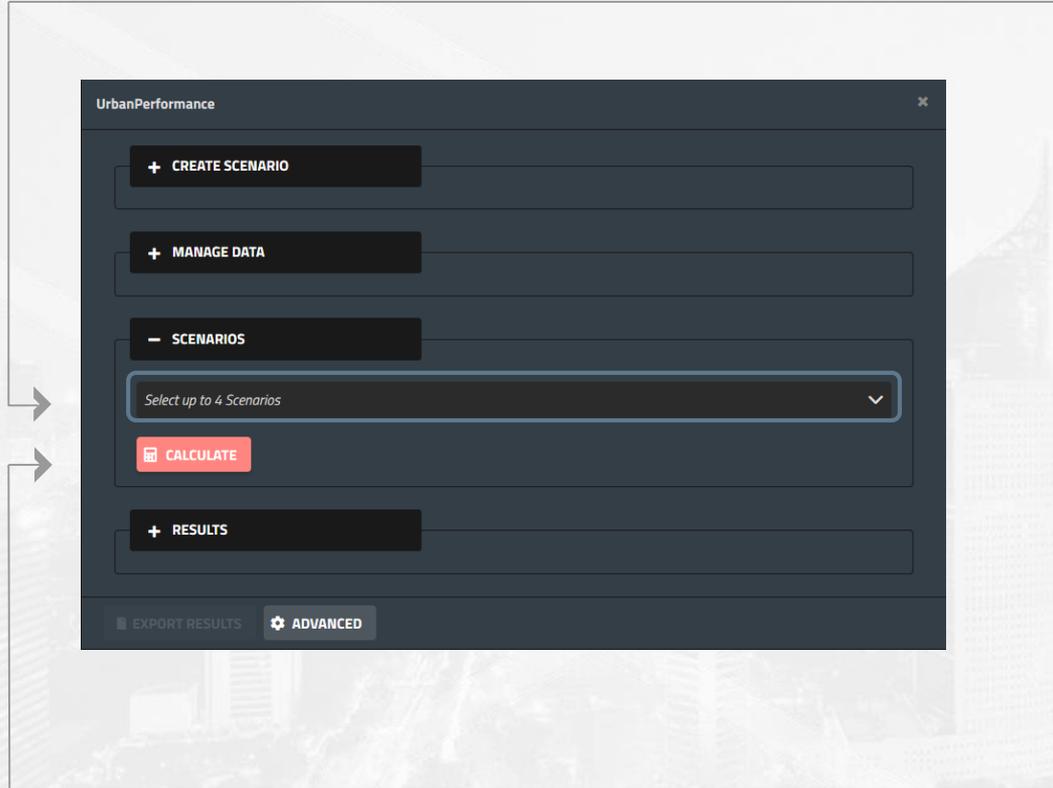
- Balikpapan_Amenities
- Balikpapan_Base_footprint
- Balikpapan_Cultural_Distances
- Balikpapan_ElementarySchool_Distances

Required Fields	Balikpapan_Amenities Fields
fclass	fclass
location	geometry

IMPORT

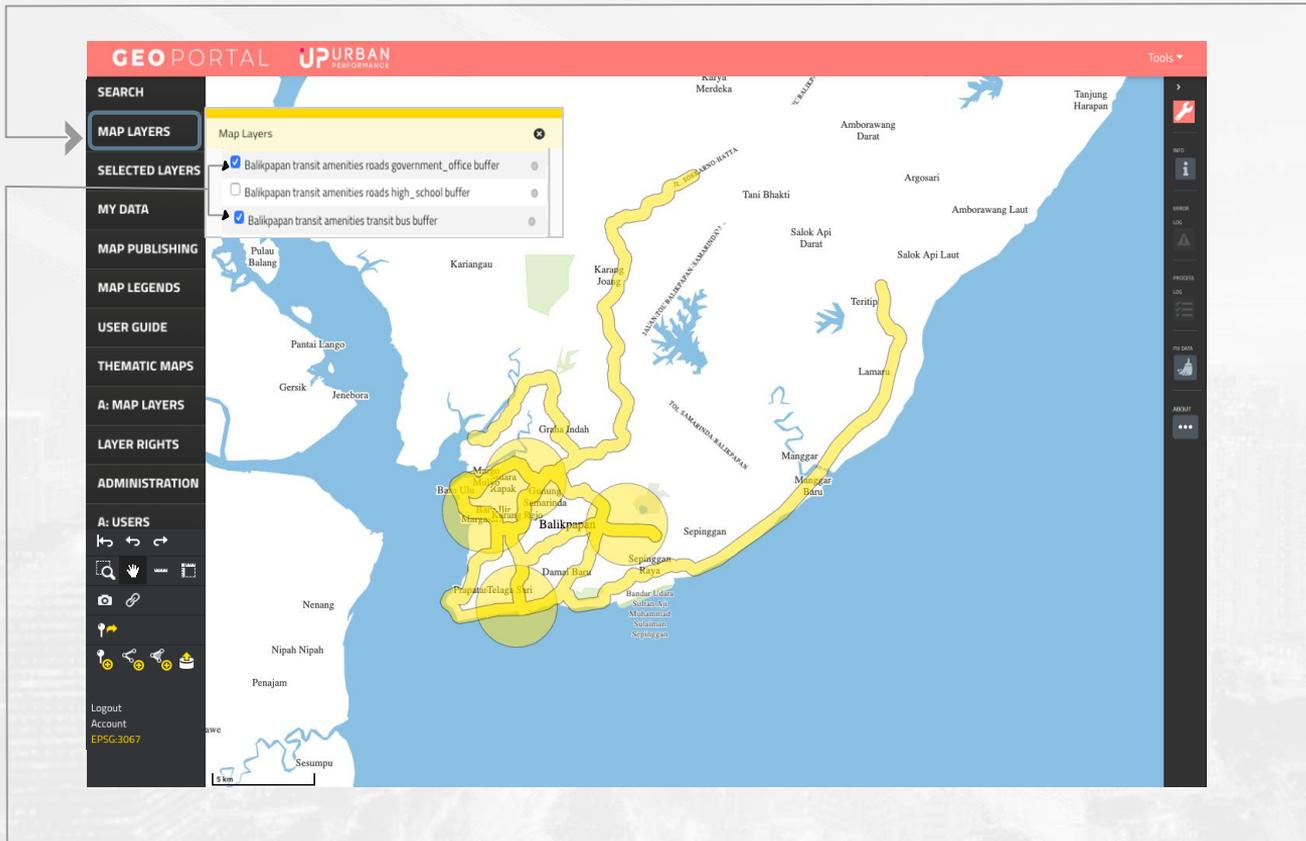
Fill the tool's tables with Geoportal layers.

4. Match the required fields with the corresponding data field in the layer.



Select the scenarios you wish to assess.

1. **Select the scenario** you wish to **calculate**. Remember you can select up to 4 scenarios to calculate and compare.
2. **Click on Calculate**.



Automatic generation of buffers.

After the scenario calculation process has been completed, spatial information layers with the **public spaces coverage buffers** of the selected indicators will be automatically stored in the Geoportal.

1. Users can **consult the buffers** by clicking on the "MAP LAYERS" button on the left panel of the Geoportal.

2.- Then, users can select the buffers they want to **be displayed in the Geoportal** by clicking in the Checkbox corresponding to the desired layer.

UrbanPerformance

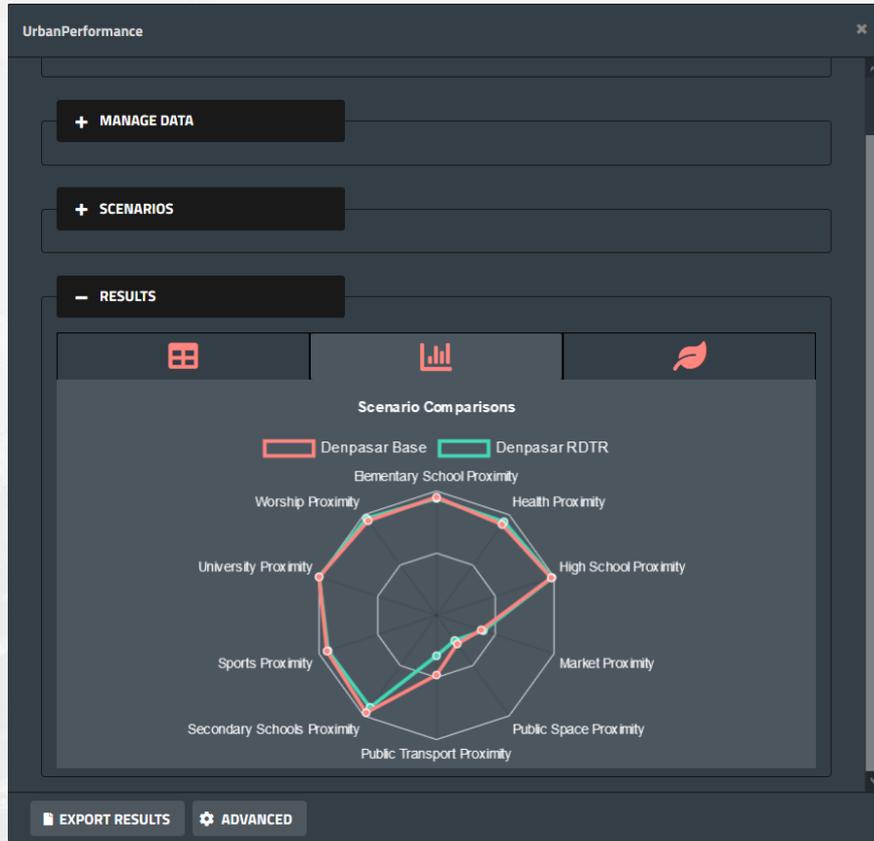
RESULTS

	Denpasar Base	Denpasar RDTR
Population close to market Inhabitants	300017	348080
Population close to sports Inhabitants	735502	806985
Population close to health Inhabitants	711926	813224
Population close to secondary school Inhabitants	764310	801142
Population close to university Inhabitants	788589	874404
Population close to high school Inhabitants	769948	860265
Population close to elementary school Inhabitants	749931	822166
Population close to worship Inhabitants	742072	843428

EXPORT RESULTS ADVANCED

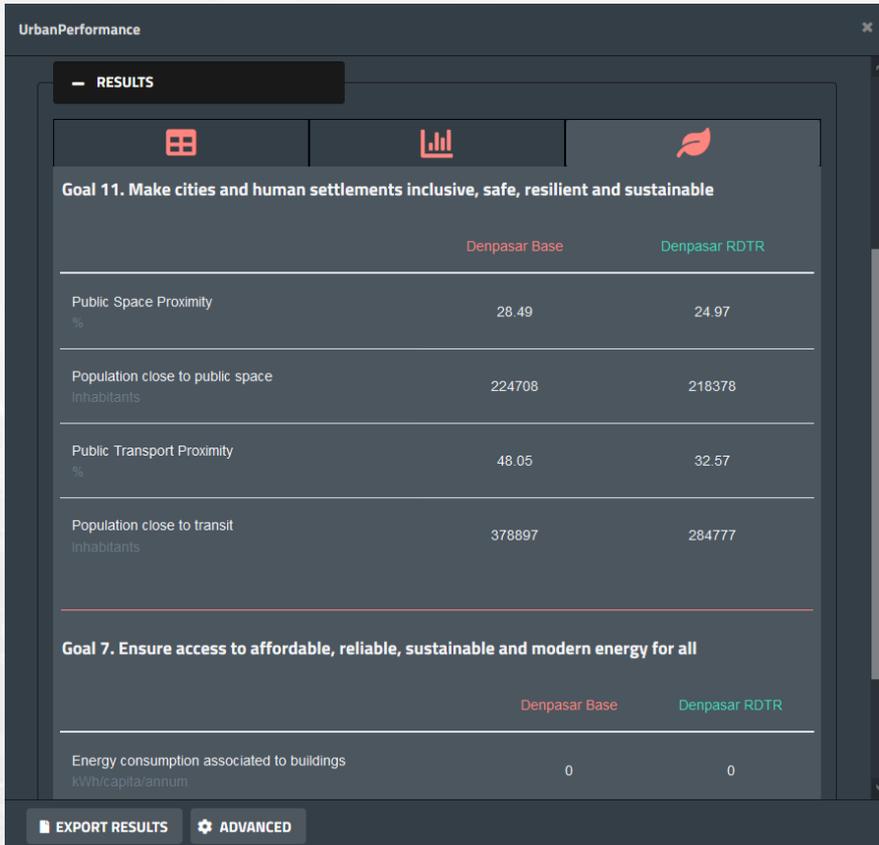
Visualize Urban Performance's results through indicator tables, radar charts, and analyze their contribution to the SDGs.

1. Click on the Table icon to visualize numeric results for each indicator and its corresponding units. You are able to compare results for each Scenario selected.



Visualize Urban Performance's results through indicator tables, radar charts, and analyze their contribution to the SDGs.

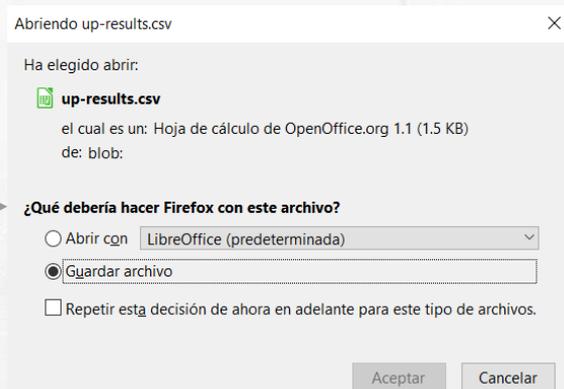
2. Click on the Graph icon to visualize results in a radar chart. You are able to compare different Scenarios by indicator.



Visualize Urban Performance's results through indicator tables, radar charts, and analyze their contribution to the SDGs.

3. Click on the Leaf icon to visualize results as they contribute to SDGs. You are able to compare different Scenarios by indicator.

	Despazar Base	Despazar RDTR
Population close to market inhabitants	300017	348080
Population close to sports inhabitants	735502	806985
Population close to health inhabitants	711926	813224
Population close to secondary school inhabitants	764310	801142
Population close to university inhabitants	788589	874404
Population close to high school inhabitants	769948	860265
Population close to elementary school inhabitants	749931	822166
Population close to worship inhabitants	742072	843428



Visualize Urban Performance's results through indicator tables, radar charts, and analyze their contribution to the SDGs.

4. Results can be exported in a .CSV file. To do so, click on the **Export results** button.

5. A prompt will allow you to save the file to your computer or directly open it with your preferred software.



User Manual

We acknowledge the invaluable support of the World Bank's Trust Fund for Statistical Capacity Building (TFSCB) in the making of this project. The latest version of Urban Performance was developed at City Planning Labs and is maintained by CAPSUS, UPTech and a community of developers. Urban Performance is open source and its source code can be found at GitHub: <https://github.com/UPTechMX>
Visit our webpage to learn more about the project <https://www.urbanperformance.in>