Duurzame Polder Decision Support System (DSS) for Stalemate Resolution - User Manual

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This document describes the decision process of identifying and resolving stalemates with the use of the developed decision support system. The main model features will be described, as well as the steps to be taken with them.

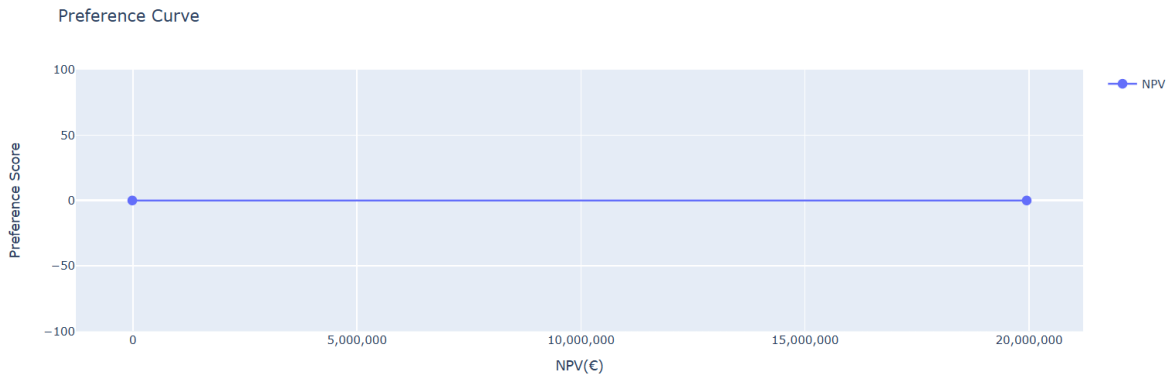
1. "Preference & Weights" Tab – Establishing Project Goals

Preference Curves

The decision process starts with the decision-makers outlining their goals for the project as preference curves. This includes the following steps:

1. *Select the decision-maker you represent in the project from the dropdown at the top of the page.*
2. *(Optional) Load a previously saved set of curves to adjust them or add onto them.*
3. *Select the objective for which you want to enter your goals or preferences from the dropdown.*

At this point you will see the following plot:



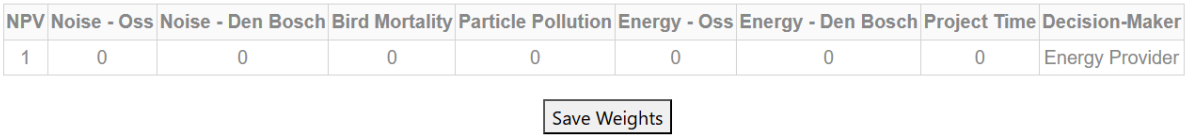
This is your starting plot. The two points are the minimum (left) and maximum (right) achievable values for the objective that you selected. You can hover your mouse over the points to see the exact objective values of each point.

4. *The first step of creating a new preference curve (or after resetting it) is to state your preference for the minimum and maximum points. This can be done by entering the preference score you associate with the points into the text boxes and then pressing the "Set Endpoints" button. The curve will adjust to the point values you enter. You have to do this only once.*

5. *After setting the preferences for the end points, you can enter other points of preference that you view as important to accomplishing your set of goals for the project. To do this, enter the objective value and the preference values of the point into the corresponding boxes and press "Set Point". The curve will adjust to the points you enter. You can enter as many points as you see fit here.*
6. *After your preference curve is complete press the "Save" button. This will prepare the curve for being saved to a file and ensure that you can switch between objectives without losing the curve. You can now switch to a different objective to create another preference curve. You can create preference curves for as many objectives as you see fit.*
7. *After you have created and saved all the preference curves that represent your goals for the project, you can write these to a file that will be saved on the server. You can then load this file at the top of the page to make changes to it at any point, even after closing the web app. You can do this by entering the name for the file and pressing the "Write" button.* ***Important****: once you are sure the entered preference curves represent you goals for the project, you can write them to a file called "final". This ensures they will be used in generating the group optimal design variant.*

Weights

After the preference curves have been defined and saved, the next step is to enter the weight distribution among objectives.



NPV	Noise - Oss	Noise - Den Bosch	Bird Mortality	Particle Pollution	Energy - Oss	Energy - Den Bosch	Project Time	Decision-Maker
1	0	0	0	0	0	0	0	Energy Provider

Save Weights

You have 1 point that you can distribute among the objectives you created the preference curves for. You can do this by entering decimal numbers between 1 and 0 directly into the cells of the table. Please use the dot as the decimal separator (e.g. 0.1). After entering the value into the table, you can press TAB on your keyboard.

> ***Important:*** *Make sure that you only enter weights for objectives that you defined preference curves for. Otherwise, this will cause a model error!*

> ***Important:*** *Make sure the sum of the points you enter into the table is exactly 1. Otherwise, this will cause a model error!*

After all the values were entered, press the button below the table to save the weights. The saved weights are not associated with preference files on the server, so if you decide to remove or add preference curves, ensure that this is reflected in the weights table.

2. "Overview" Tab – Open Information

The overview tab will show all the preference curves and weight distributions entered by all decision-makers. To ensure the displayed information is up to date you can press the associated "Refresh" buttons.

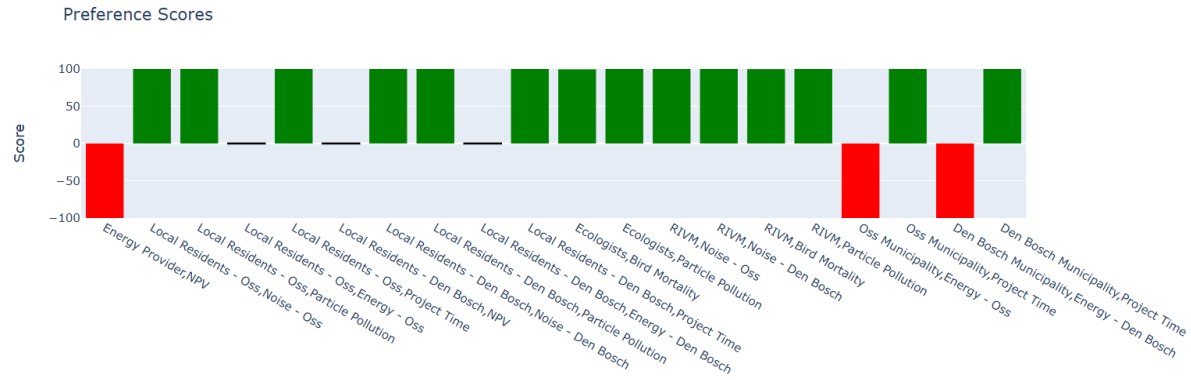
Feel free to use the information available in the Overview as you see fit. One of the core principles of Open Desing is open information, so do not hesitate to ask your fellow decision-makers questions you have with regards to their positions or weights.

3. “Dashboard” Tab – Generating the Group Optimal Design, Identifying the Stalemate

Group Optimal Design

This tab allows the decision-makers to run the underlying Preferendus model to generate the group optimal design based on the stated decision-maker goals. In the decision-making process this tab should be accessed by the model operator and displayed on the conference screen. This is because the underlying calculation is quite costly and having only one instance of it running will ensure smooth functioning of the rest of the model.

Pressing the “Run” button will initiate the Preferendus and after some time the group optimal design variant will be displayed. There will be two types of graphs displayed along with the results. The first is a bar chart showing the preference score of each objective involved in the decision process.



The second is a set of all preference curves similar to the one in the “Overview” tab with the group optimal solution plotted onto them.

Identifying the Stalemate

In this DSS the following definition of a stalemate is used:

If the group optimal design variant shows negative preference for at least one objective, then a stalemate is present.

From the point a stalemate is identified, the decision-makers are presented with the results of the Preference Resolution Mechanism. It is now up to the decision-makers to start a discussion to see if the stalemate can be overcome or a change in project configuration is required.