ebalanceplus

Manual and tutorial of user's interface

Deliverable D6.2b

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Technical References

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[1] PU = Public

PP = Restricted to other programme participants (including the Commission Services)

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)

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Table of Contents

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1 Introduction

This deliverable contains a user guide for an application to manage electricity demand by residential customers. The user manual has been prepared on the basis of a demo version of the application, which is not yet the final product, and the finished application may differ in terms of functionality.

2 User manual for energy management application

This manual contains important information about the use of the electricity management application. Please read it carefully and keep it for further reference.

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2.1 Description of the main functionalities of the application

Main Functionalities	
Main Menu	**Description**
	The application is designed to help manage electricity consumption. The start screen shows a menu with app mapping. From here the user can reach all functionalities of the application. It presents four modules: - Energy at home In this part of the application, you can monitor in detail the electricity consumption of your household appliances and check the room temperature in your home. - Energy Flexibility This section manages the energy flexibility program. - Electric Vehicle It is a module in which the parameters for charging an electric vehicle are set. - Information This section contains information about the application and educational content about the energy system

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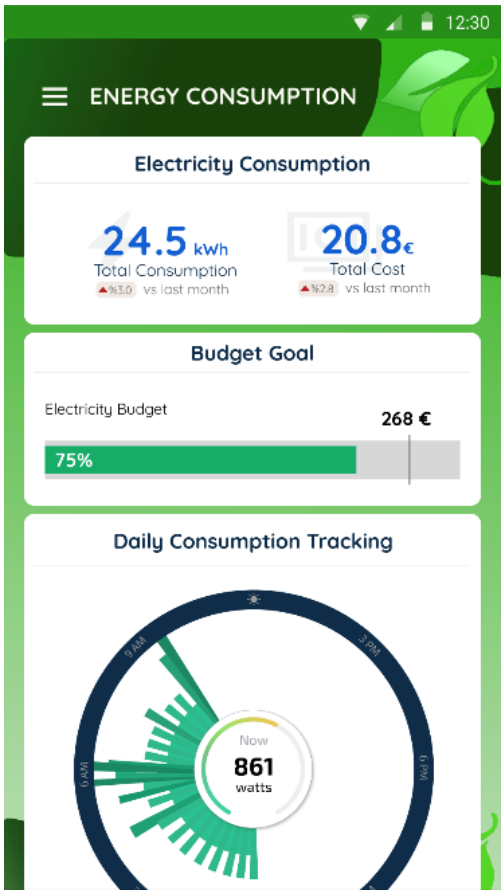
2.2 Application modules

2.2.1 Energy at home

In this section, you can monitor the electricity consumption at home: how much energy is used by each appliance, to what extent the energy budget has been used, and how energy consumption has changed compared to the last month.

This section also provides information on how much energy has been saved, in terms of energy (kWh), amount of money and converted into ecological indicators - impact on CO2 emissions and the equivalent number of saved trees.

Note: The functionality of budget definition will be available in the final version of the application.

Energy at home - Energy Consumption	Description
	**Energy Consumption** The box 'Electricity Consumption' provides information on the amount and cost of energy consumed compared to the previous month. The 'Budget Goal' shows the cost of energy consumed in a given month in relation to a set monthly budget. The graph in the 'Daily Consumption Tracking' box shows the current energy consumption and what the consumption level was during the day, in 15-minute intervals.

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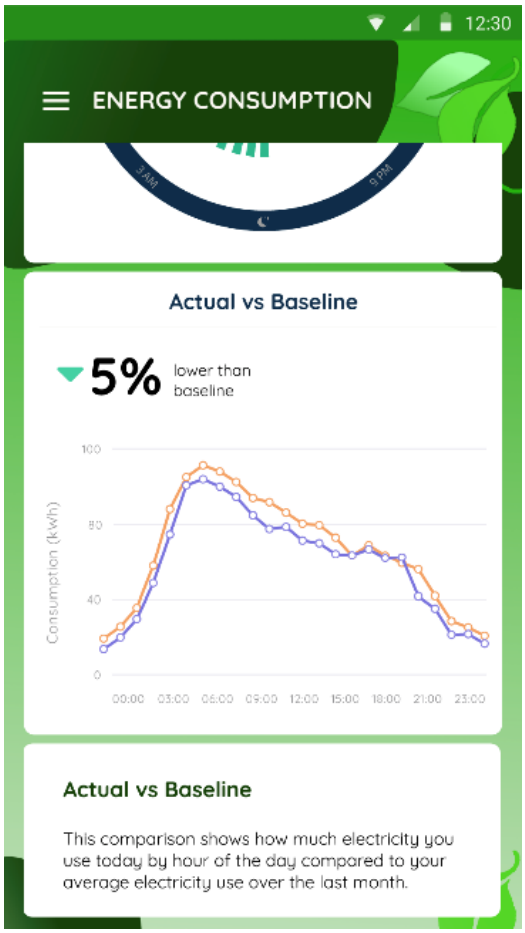
Energy at home - Energy Consumption	Description
	**Energy Consumption** The graph in the 'Actual vs Baseline' field shows the electricity consumption in consecutive hours on the current day, compared to the estimated consumption over the entire time the application is used.

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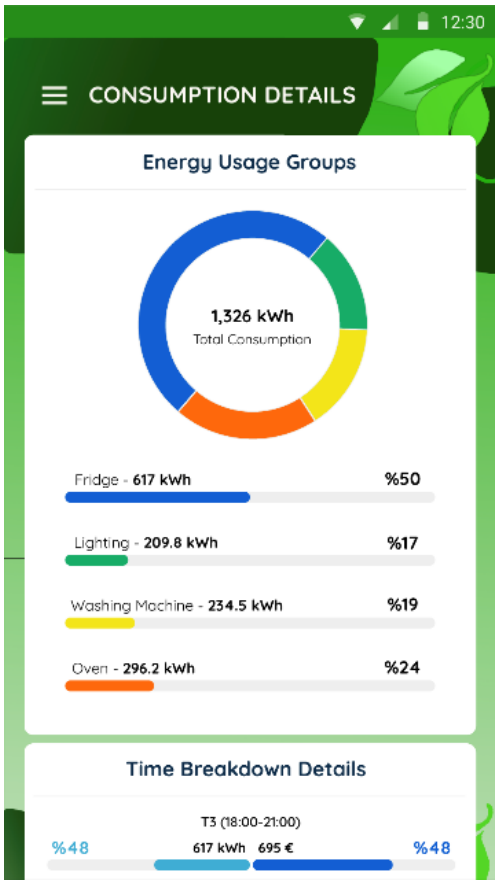
Energy at home - Consumption Details	Description
	**Consumption details** The pie chart shows the share of individual energy appliances in total energy consumption. In the centre of the pie chart there is information on the total energy consumption, and underneath the chart details of the energy consumption of individual appliances are shown.

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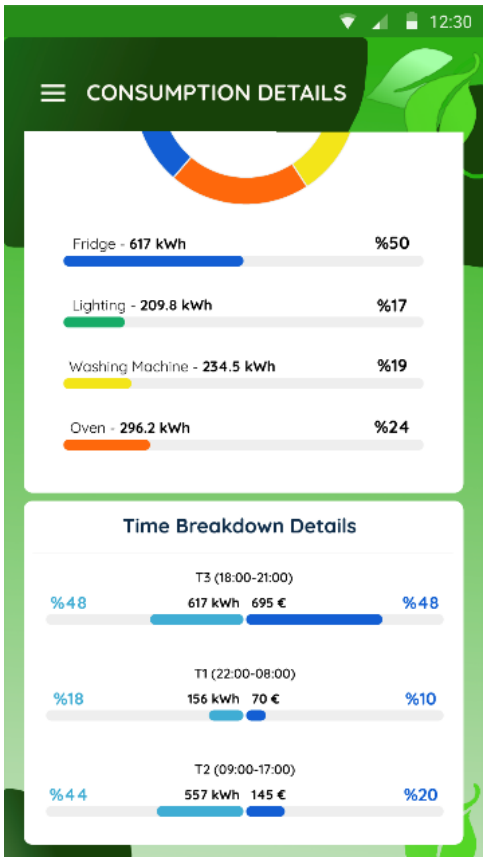
Energy at home - Consumption Details	Description
	**Consumption data (cont.)** In the 'Time Breakdown Details' field, the energy consumption of the individual tariffs is shown, expressed in volume and cost.

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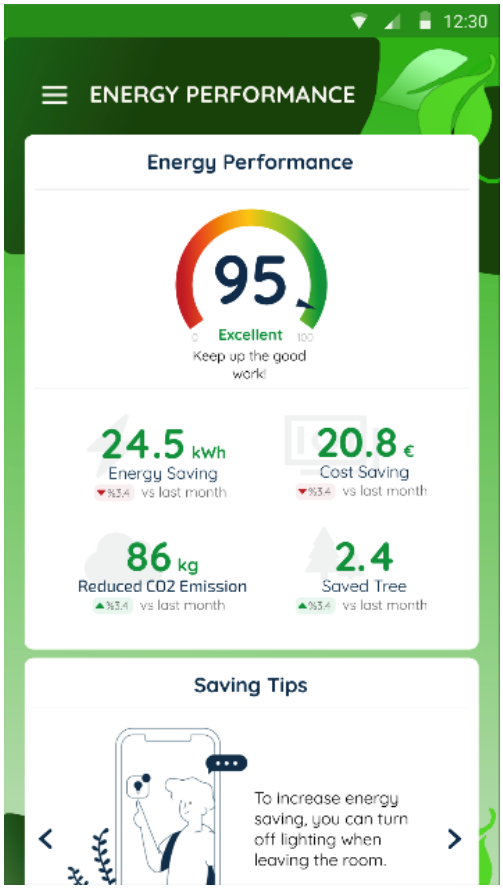
Energy at home - Energy Performance and Thermal Comfort	Description
	**Energy Performance** The top graph shows the energy consumption of the current month compared to the consumption of the previous month. Energy savings are expressed in kWh, amount in euros, amount of CO2 and the equivalent number of trees.

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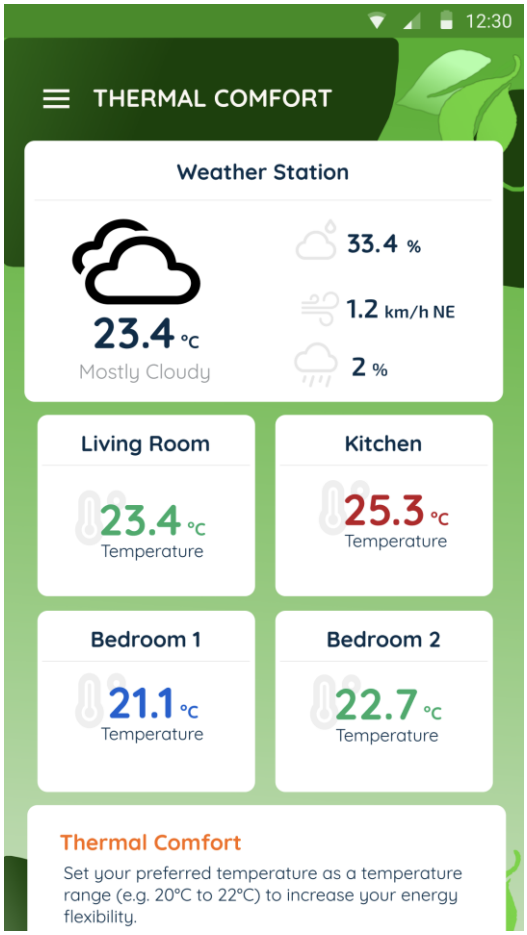
Energy at home - Energy Performance and Thermal Comfort	Description
	**Thermal Comfort** The 'Weather Station' field shows the current weather, and the temperature in each room is shown below.

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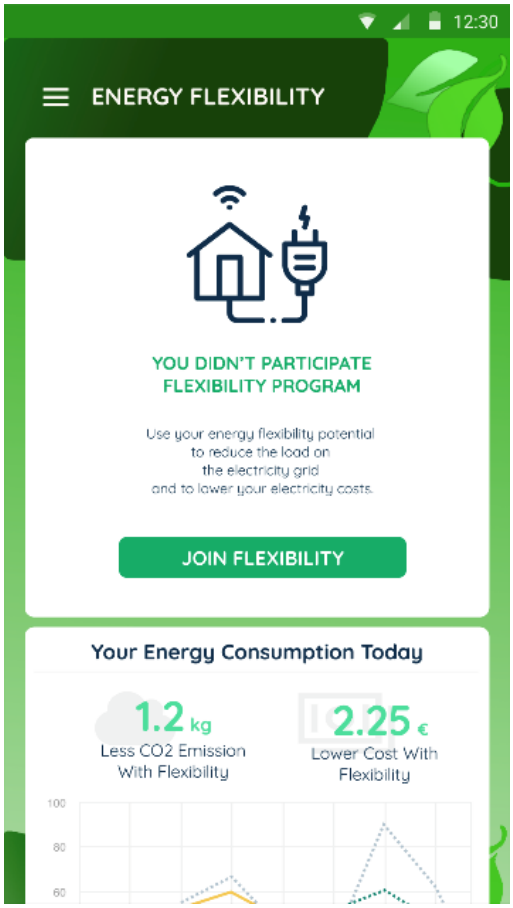
2.2.2 Energy Flexibility

In this module you can manage the flexibility of your energy demand. By initiating the flexibility management program, you can shift part of your energy consumption from peak grid load hours to other times. This reduces your consumption at a high tariff and saves you money (if you use a tariff plan with a variable cost of electricity) and improves the electricity efficiency of the energy supply system.

This module also provides information on the effects of the flexibility scheme: the change in electricity consumption over time and the savings represented in kWh, monetary values and in environmental indicators – impact on CO2 emissions and the equivalent number of saved trees.

Energy Flexibility - Energy Flexibility	Description
	**Energy Flexibility** The top field shows the current status of the user. To join the energy flexibility scheme, press the 'Join flexibility' button. The process of defining the energy flexibility parameters is described in next table.

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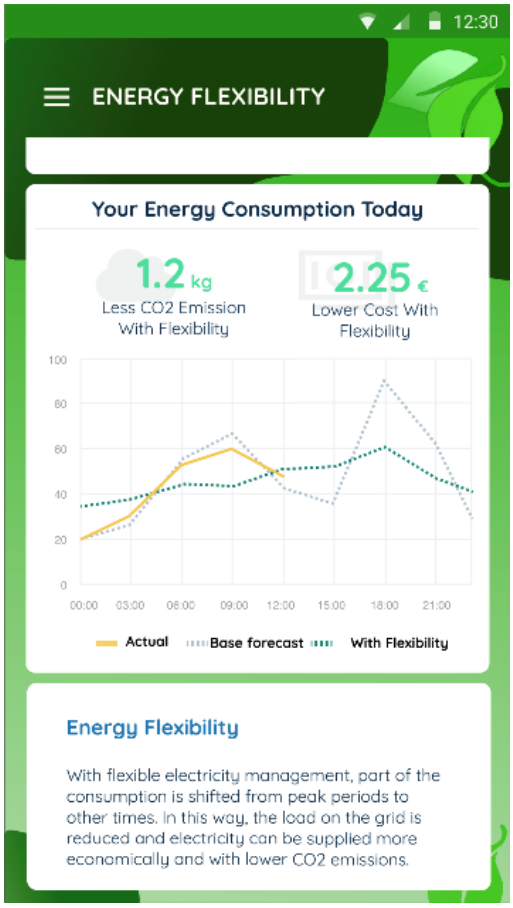

Energy Flexibility (cont.)

The graph shows the current energy consumption (yellow line) against the baseline energy consumption forecast (light green line) and against the energy consumption forecast when using the flexibility scheme (dark green line).

The savings resulting from the use of the Energy Flexibility Scheme are shown above the graph, expressed in kg CO2 and an amount in Euro.

The concept of energy flexibility is described in the box at the bottom.

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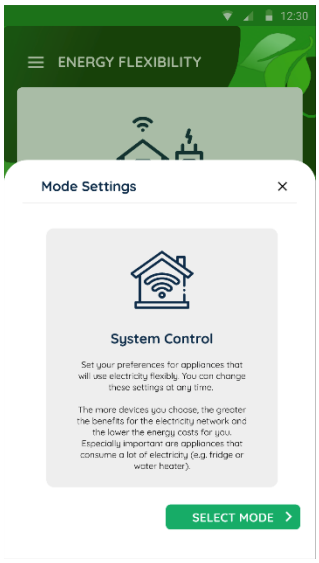
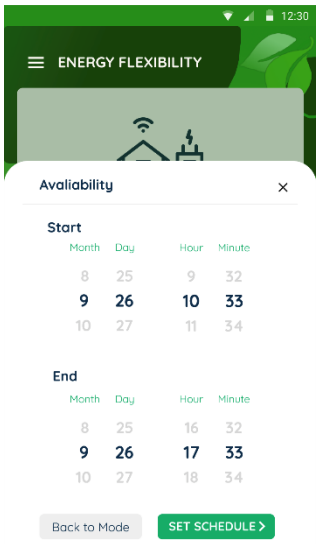
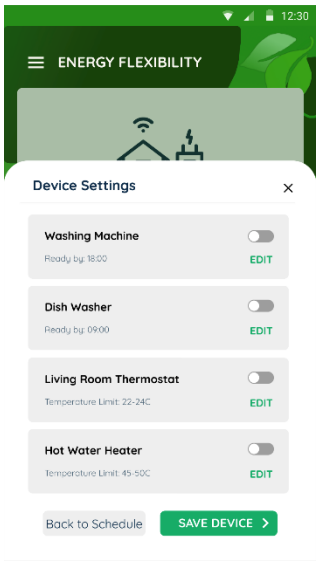
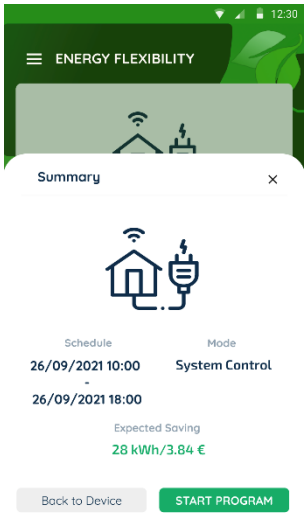
Energy Flexibility - Joining Energy Flexibility Program	Description
 	**Joining Energy Flexibility Program** When the 'Join Flexibility' button is pressed, a box appears describing the control options for energy consumption to enhance demand flexibility. When the 'Select Mode' button is selected, a date range field appears in which the start and end of the energy flexibility scheme is specified. Confirm the selected dates with the 'Set Schedule' button.
 	**Joining Energy Flexibility Program (cont.)** In the next field, the devices to be included in the energy flexibility scheme are selected and their preferred operating parameters specified. The energy flexibility summary screen shows the selected parameters: the date range in which the scheme operates, the selected operation mode, the projected benefits expressed in kWh and the amount in Euros.

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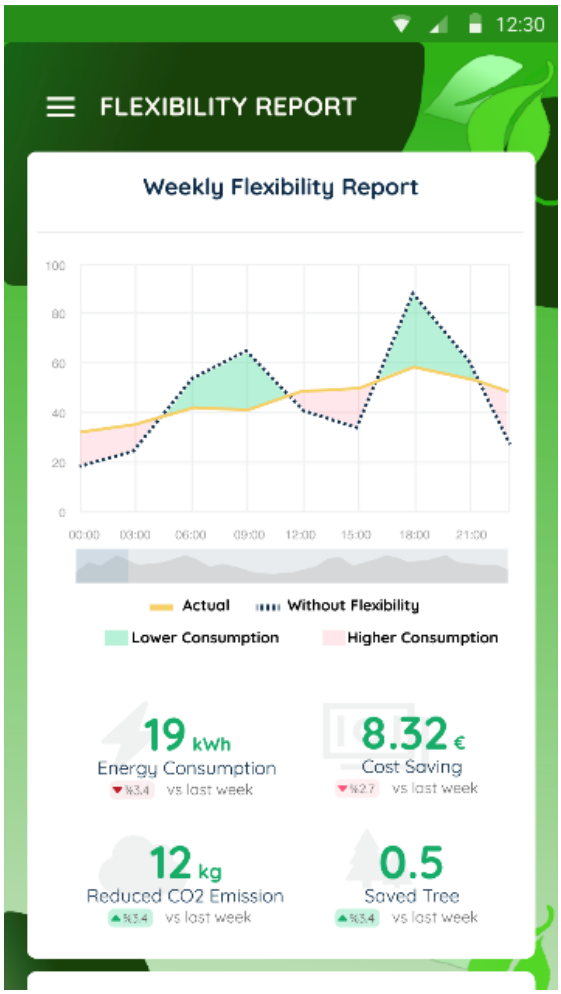
Energy Flexibility - Flexibility Report	Description
	**Energy Flexibility – Weekly Flexibility Report** The graph shows in which periods the energy consumption due to the flexibility scheme was higher than the baseline (light red areas) and in which periods it was lower (light green areas). Typically, the energy flexibility scheme shifts energy consumption from periods of peak energy demand to other periods. Therefore, the level of energy consumption when using an energy flexibility scheme has less variability. The actual weekly benefits of using the energy flexibility scheme are shown below the graph and expressed in kWh, cost savings, kg CO2, and number of equivalent trees.

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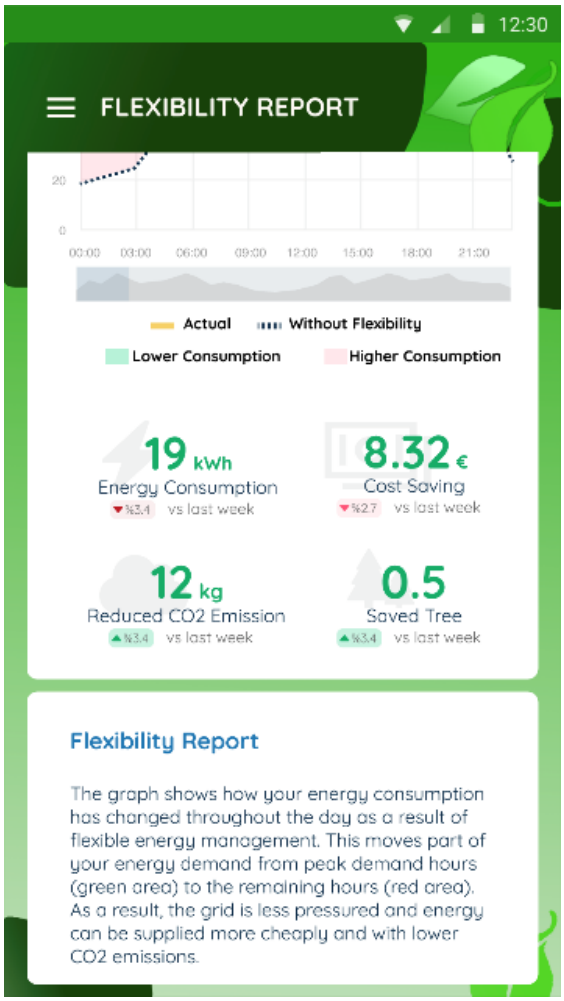
Energy Flexibility - Flexibility Report	Description
	**Energy Flexibility (cont.)** At the bottom of the page, you may find a brief description of the information presented in the 'Weekly Flexibility Report'.

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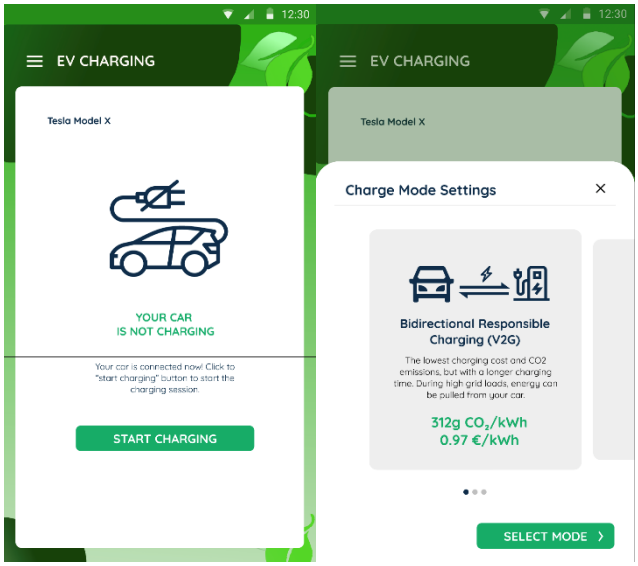
2.2.3 Electric Vehicle

In this section, the user sets the car charging parameters and monitors the charging process. Car charging reports and charging history are presented.

Electric Vehicle - EV Charging	Description
	**EV Charging** To start charging, press 'Start Charging'. Next, choose one of the three charging modes (the emissions and cost of each charging mode are shown under the description of each mode): - Bidirectional Responsible Charging (V2G). This mode has the lowest electricity cost but takes longer to charge. At times of high grid load, the grid may temporarily balance itself by drawing energy from the car battery. - Unidirectional Optimised Charging. In this mode, charging takes place at a standard rate, but is optimised for the current load on the power network; at times of high load, the charging rate is lower. The cost and time of charging is average. - Continuous Charging. The fastest, but also the costliest and emission-intensive charging mode. Charging takes place continuously, regardless of the situation on the power grid. Once you have selected your preferred charging mode, press the 'Select mode' button.

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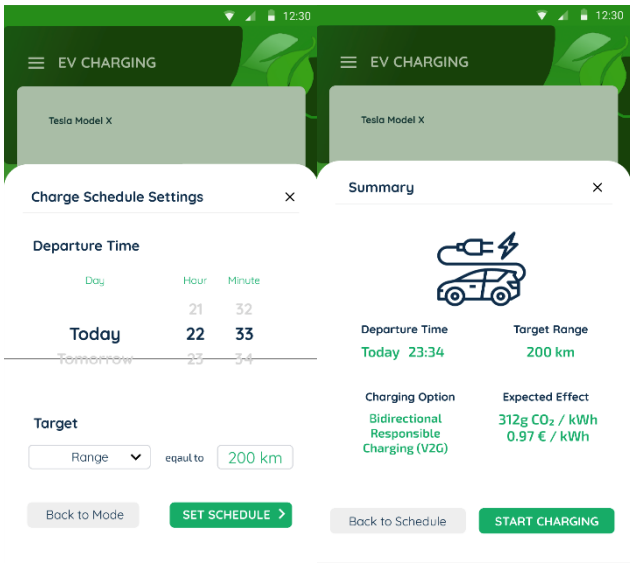
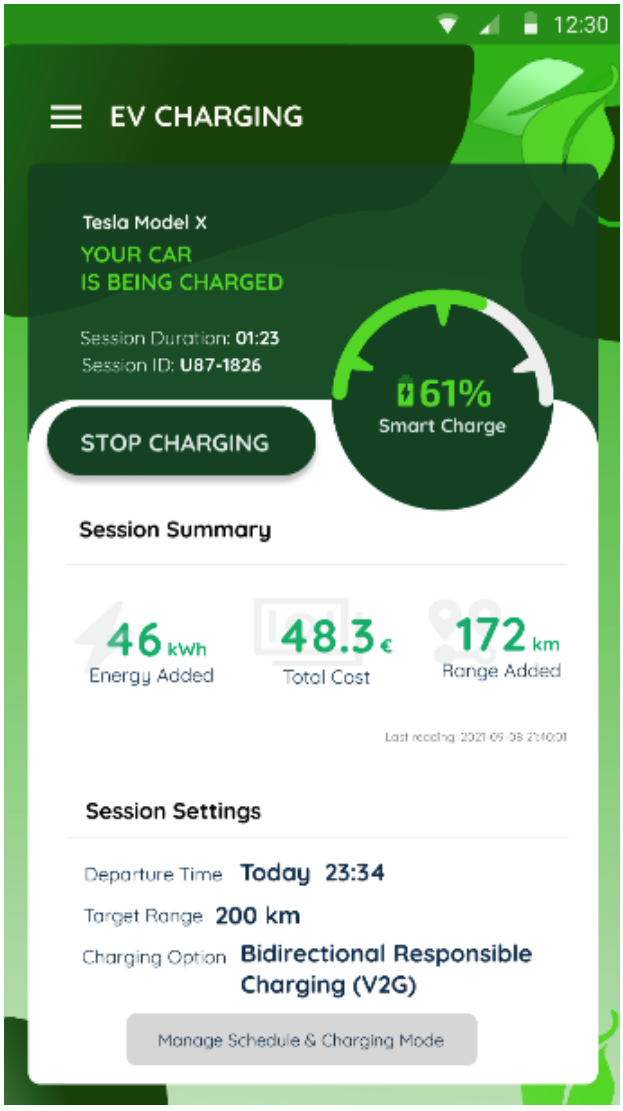
Electric Vehicle - EV Charging	Description
	**EV Charging (cont.)** In next field, you may specify the time you want to leave the charging station and the range of the vehicle you need after charging is completed. Once you have selected the appropriate values, press 'Set Schedule'. The summary shows your choices: the time of departure from the charging station, the expected range of the vehicle after charging, the charging mode and the estimated cost and emissions of charging. If everything is correct, press 'Start Charging'.
	**EV Charging (cont.)** During charging operation, information on the current status of the car being charged is displayed: charging time, % battery charge, amount of energy input, its cost, and the car's range achieved. The user-selected charging parameters are also displayed. To stop charging, press 'Stop Charging'.

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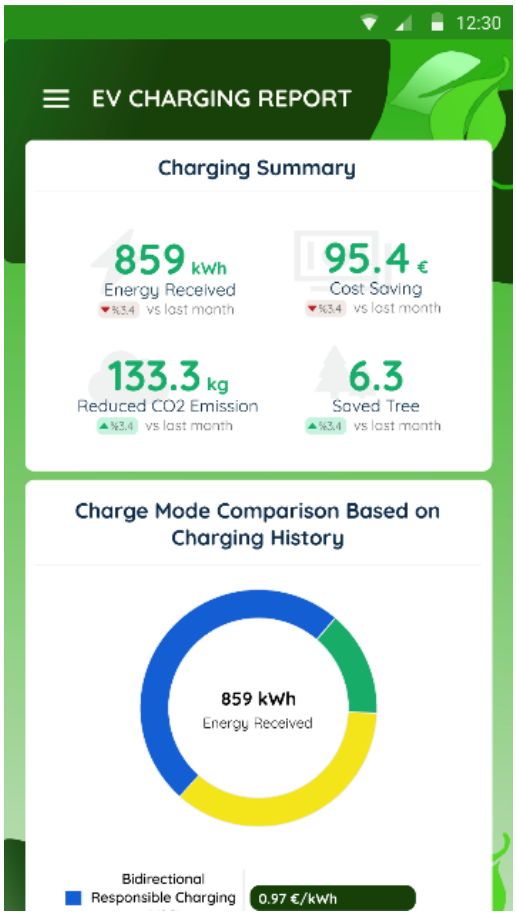
Electric Vehicle - Charging Report	Description
	**EV Charging Report** The 'Charging Summary' field shows the amount of energy input, the savings resulting from the selection of the flexible charging mode (when a mode other than continuous charging is selected), the amount of CO2 emissions avoided, and the amount of equivalent trees saved.

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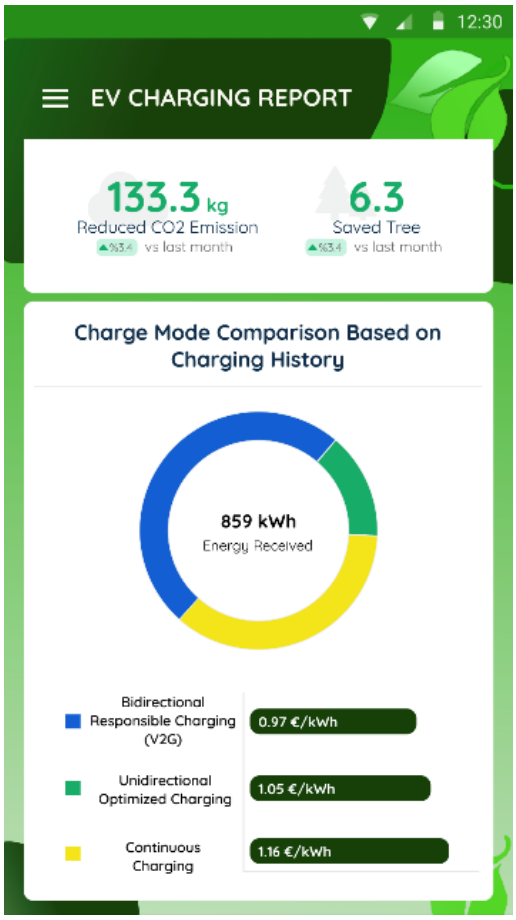
Electric Vehicle - Charging Report	Description
	**EV Charging Report (cont.)** The 'Charge Mode Comparison Based on Charging History' graph shows the amount of energy consumed per charging mode. The total energy consumed is shown in the centre of the pie chart, with detailed information on the cost per kWh and the amount of energy consumed in each mode shown below the pie chart.

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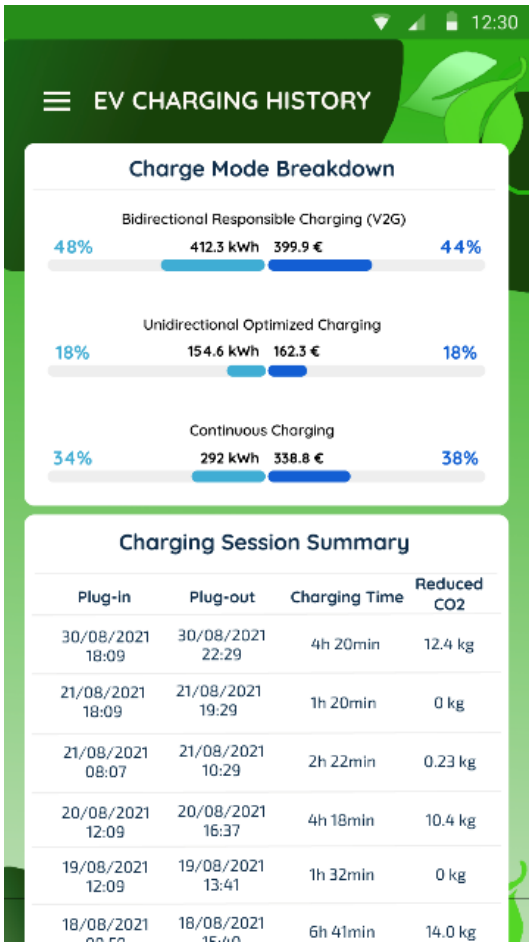
Electric Vehicle - Charging History	Description
	**EV Charging History** The 'Charge Mode Breakdown' field shows the amount and total cost of energy consumed by the different charging modes of the car. In the field 'Charging Session Summary', the car charging history is shown in a table.

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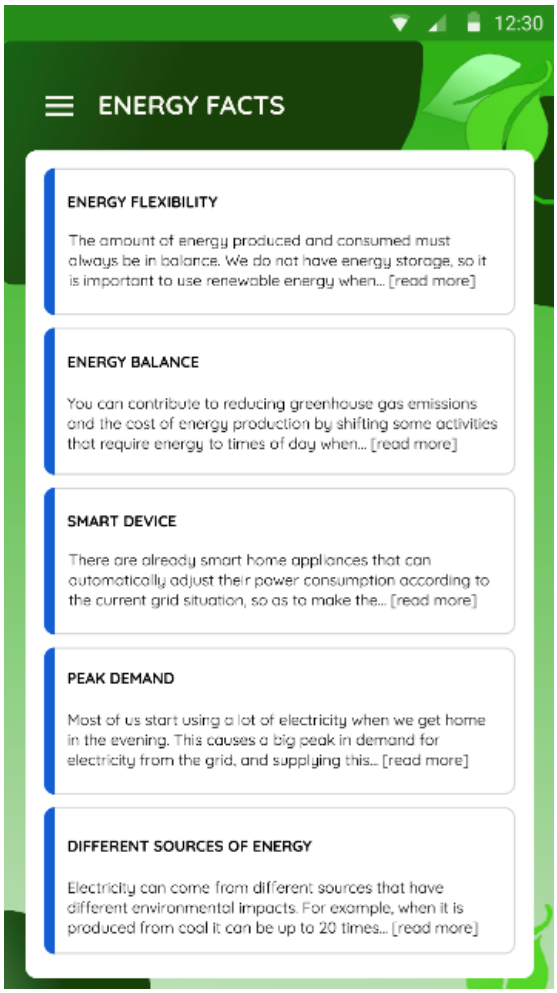
2.2.4 Information

Information - Energy Facts and Notifications	Description
	**Energy Facts** This part of the application contains useful information about how the energy system works and how energy production and consumption levels are balanced in the energy network.

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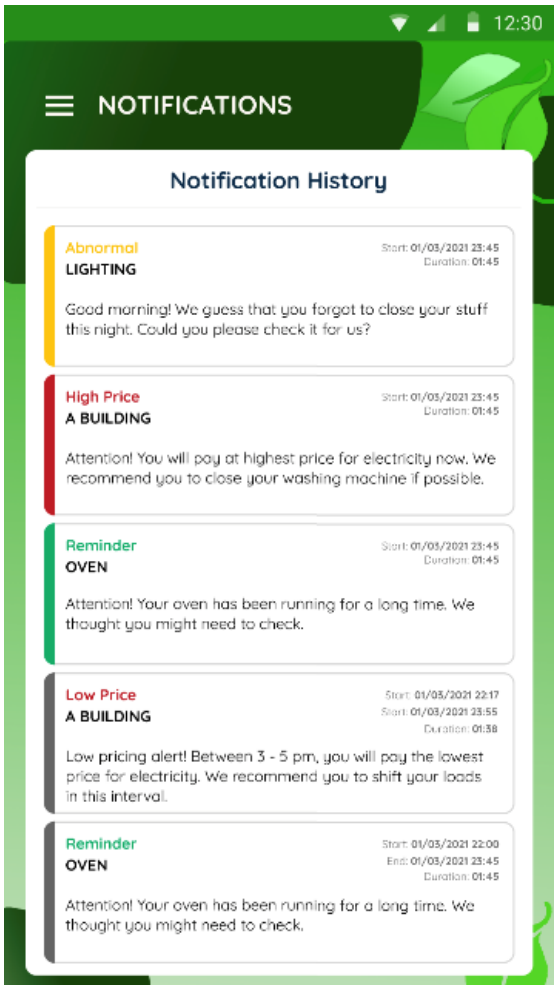
Information - Energy Facts and Notifications	Description
	**Notifications** This section contains system notifications, informing about abnormal operation of electrical appliances or providing tips on how to save energy and reduce its cost.

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