Land-use Planner

An interactive economic tool to support responsible land-use planning

Step 4

Results of the planning process

EUREDD Facility

EFI

4

Results

4.1. Introduction to the results

This last stage of the Land-use Planner allows you to visualise the expected economic, social and environmental effects of each scenario. The range of results indicators available will allow you to ascertain the impact of your scenarios from different points of view.

For example, is the scenario that appears to be the most profitable also attractive from the perspective of employment and food security? Which stakeholder group obtains the most important benefits with this scenario? Is this scenario the most attractive from all points of view compared to the other scenarios? And if we change the settings, such as the price of an important agricultural product, would this scenario still be the desired option for this area? Finally, would it not be preferable to adjust your planning priorities and see the extent to which the best of each scenario could be combined?

These are the types of questions that may arise from reading and interpreting these results. We advise you to start a discussion with the stakeholders. This discussion may lead to the preceding stages of the Land-use Planner being repeated several times. This will allow you to refine the scenarios or perhaps even change certain data entered at the previous stages.

The facilitator's role

The discussion is moderated by a facilitator during a consultation, which may take place at various stages of the area's management process.

This could be a preliminary technical meeting or a workshop validating the implementation of a schedule/management plan for an area.

While reflecting on the results, the settings may be adjusted to refine the analyses and achieve the sufficient level of detail for potentially making an informed decision.

Warning

The results that appear are based on simple and reproducible calculations (based on the downloadable data sheet, see bottom of page 62). For the most part, the results simply aggregate the entered data in different ways. The only weighing carried out is that linked to the discount rate chosen by the user (see below on the discount rate). The Land-use Planner does not use a sophisticated economic model. The quality of the results always reflects the quality of the data used. At any time, you can adjust the data and settings and recalculate the results.

The non-adjustable calculation hypotheses, aiming to limit the tool's complexity, are detailed in the 'Methods' document, which can be downloaded through the final 'Results' stage of the Land-use Planner. The 'Methods' document is available so that you can more fully understand and master the indicators used in the Land-use Planner's calculations. The calculation hypotheses are also shown in the help notifications at each step (see explanation on page 3). For example, you may not modify the duration of 20 years for the natural regeneration into forest of fallow land that is not replanted.

Land-use Planner & Sustainable Development Goals

By helping to reduce deforestation, the Land-use Planner contributes to Goal 15 of protecting, restoring and promoting sustainable use of terrestrial ecosystems, sustainably managing forests, combating desertification, halting and reversing land degradation, and halting biodiversity loss. It is particularly relevant to our efforts to achieve target 15.2, which aims, by 2020, to promote the sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.

The Land-use Planner enables to make land-use choices that have the greatest carbon sequestration potential. In doing so, the tool also contributes to Goal 13, which consists in taking urgent action to

combat climate change and its impacts. The Land-use Planner also takes into account food security, in accordance with Goal 2 of ending hunger, achieving food security, improving nutrition and promoting sustainable agriculture.

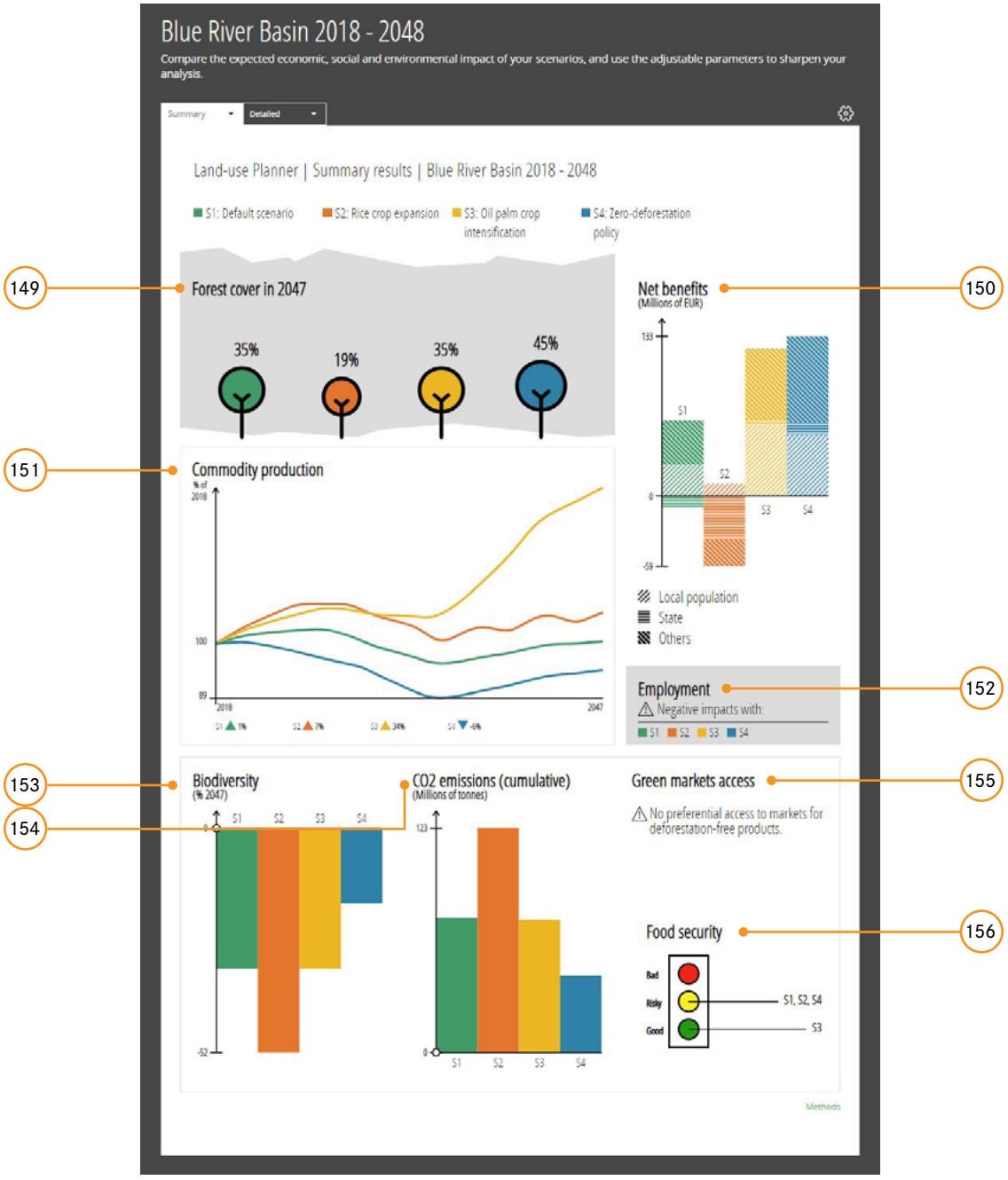
In addition, by providing the necessary information to sustainably produce basic commodities, the tool also enables progress towards Goal 12 of ensuring sustainable consumption and production patterns, in particular target 12.2 that aims to achieve the sustainable management and efficient use of natural resources by 2030.

4.2. Results summary

The first results page shows a summary that includes all the scenarios so that you can compare them.

Each scenario is specifically represented by a colour.

This overview shows the comparison of the scenarios' general trends.



Multi-scenario results page indicators

149. Forest cover

The percentage of the area covered by forest at the end of the study period. In our example, the crop expansion scenario is clearly distinguished from that of the zero-deforestation policy.

150. Net benefits

The sum of the net annual benefits (annual benefits - annual costs) of each scenario at present value (depending on the chosen discount rate), divided between three categories of actors. These actors are the State, the local population and 'others' (often private sector economic operators). This includes all agricultural, livestock and forest yields (including the value attributed to carbon, see below), labour costs (family and wage-earning), and crosscutting implementation costs.

151. Commodity production

The variation in production by value of agricultural produce. This only applies to annual and perennial crops and livestock.

In our example, the intensification of oil palm crop scenario will ensure the greatest evolution in commodity production, contrary to the zero-deforestation scenario.

152. Employment

The list of scenarios that destroy family and/or wage-earning employment, and/or that reduce the productivity of family labour. One job = 230 annual work days.

Details of the traffic light system:

Green: net creation of wage-earning and family work, with an increase in the productivity of family work.

Red: net loss of these two types of employment; or if only family work increases but its productivity decreases (accrued arduousness).

Yellow: all other situations.

153. Biodiversity

The variation in the total level of biodiversity over the considered period. Biodiversity levels of all land uses are aggregated as a proportion of their respective extents.

154. CO2 emissions

Emissions of CO2 equivalents emitted from the land uses and land-use changes, accumulated over the considered period in each scenario.

155. Green markets access

The list of scenarios that manage to reduce deforestation and stabilise forest cover and biodiversity at a minimum of 80% of their initial levels, in the year where this stabilisation is achieved. It is from this year onwards that a bonus could be applied to the price of certain agricultural products with a sensitive reputation (see 'Settings' on the 'Results' page, page 71)

156. Food security

Classification of the scenarios according to a traffic light system.

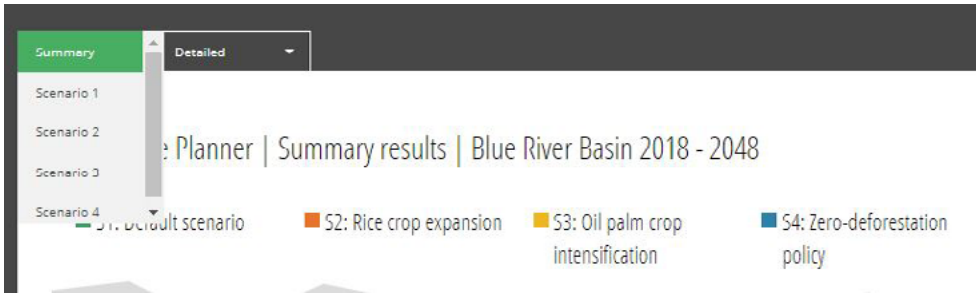
Green: increase in production of crops indicated as important for food security, in calories per inhabitant.

Yellow: total increase but reduction per inhabitant.

Red: reduction in total quantity and amount per inhabitant.

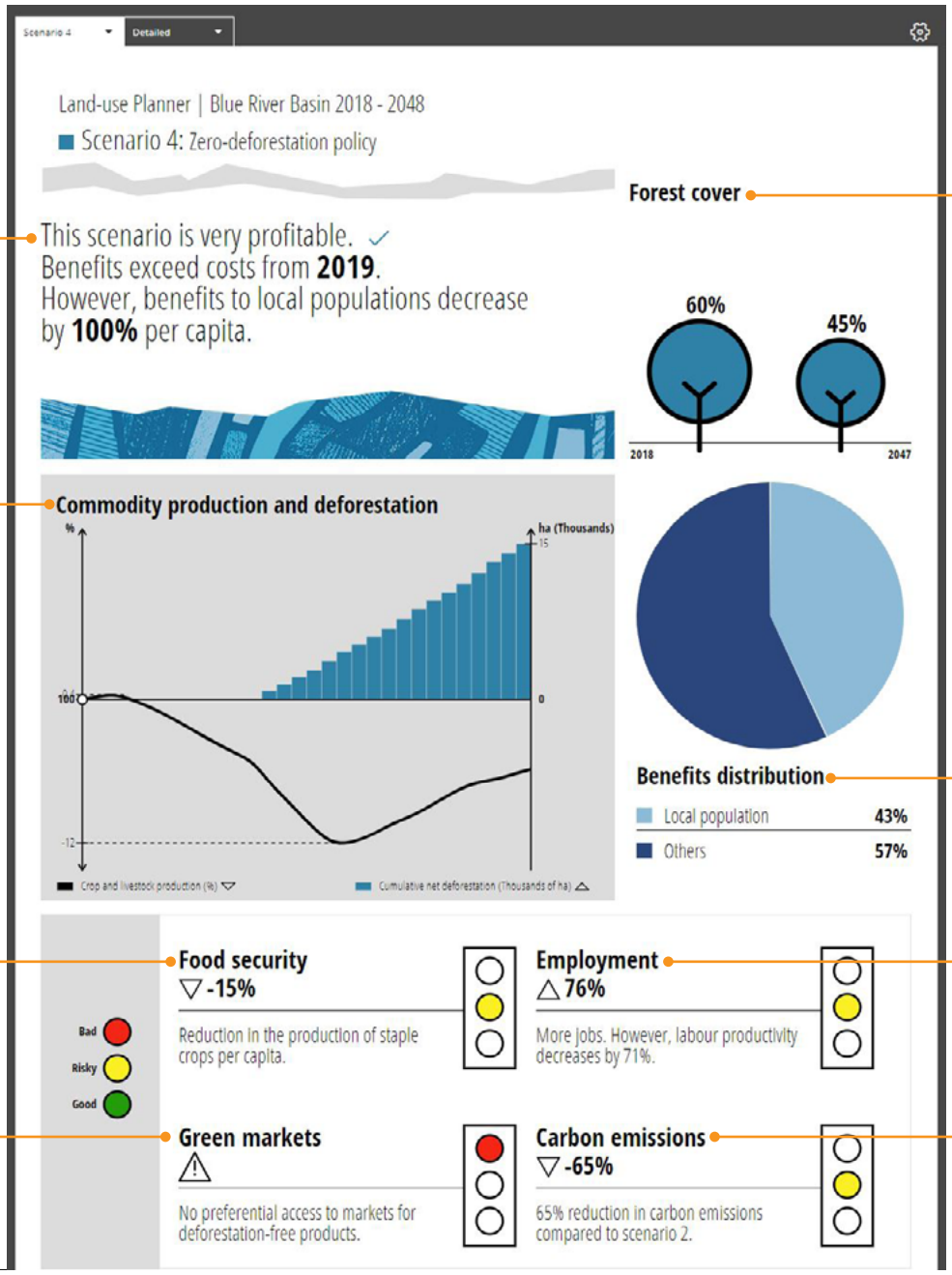
4.3. Results by scenario

The per scenario summaries allow a more extensive examination of each scenario.



By clicking 'Summary', a drop-down menu will appear and allow you to select the scenario whose summary you wish to see.

For example, here we chose to examine the summary of the fourth scenario with its zero-deforestation policy in our study of the Blue River Basin.



157. Economic viability

Only the scenarios where the total costs exceed the total benefits (non-discounted values) are classified as not viable. The scenarios that manage to trigger net benefits with a discount rate of 10% are considered very viable.

158. Forest cover

The percentage of the area covered by forest at the beginning and end of the studied period.

159. Commodity production and deforestation

The production index by value of agricultural produce. This only applies to annual and perennial crops and livestock.

160. Benefits distribution

The distribution of the total benefits (annual benefits - annual costs) between three categories of potential actors at present value, depending on the chosen discount rate.

161. Food security

The variation in per inhabitant production of crops indicated as important for food security. Traffic light system (see explanation above).

162. Employment

The variation in total employment, both family and wage-earning. Traffic light system.

Green: net creation of wage-earning and family work, with an increase in the productivity of family work.

Red: net loss of these two types of employment; or if only family work increases but its productivity lowers (accrued arduousness).

Yellow: all other situations.

163. Green markets

Traffic light system.

Green: scenarios that manage to halt net deforestation and stabilise forest cover and biodiversity at a minimum of 80% of their initial levels. The year where this achievement is expected.

Yellow: deforestation halted but loss of over 20% of the initial levels of forest cover and/or biodiversity.

Red: no halting of net deforestation.

164. CO2 equivalent emissions

Traffic light system.

Green: scenario that is neutral or positive in carbon, with CO2 sequestration that surpasses emissions.

Yellow: net CO2 emissions, but there is a scenario with greater CO2 emissions.

Red: scenario with the highest emissions.

4.4. Detailed results

From the general results page, the tab ‘Detailed’ shows you the details of the results.

By double clicking 'Detailed', three, three graphs show the results per theme: economy, environment and social.

For each theme, you can view detailed results in order to obtain a more granular view of the advantages and disadvantages of each scenario.

By looking at the key, which refers to each scenario, we can see the comparative advantages of each scenario for various indicators, divided into three columns.

You can examine the various results of your scenarios according to various economic and agricultural yield indicators. To do so, click ‘Next’ to view results based on the indicators below. The results are those expected at the last year of the study period.

In our example, and below, this is the year 2048. Our example has the year 2018 as base year.

- Agricultural yield in 2048 (as a percentage compared to the base year, 2018)
- Crop yield in 2048 (as a percentage compared to the base year, 2018)
- Livestock in 2048 (as a percentage compared to the base year, 2018)
- Change in labour productivity (as a percentage compared to the base year, 2018)
- Gross benefits in 2048 (as a percentage compared to the base year, 2018)
- Net benefits in 2048 (as a percentage compared to the base year, 2018)
- Net benefits for the State (in the chosen currency, in EUR in our example)
- Net benefits for the local population (in the chosen currency, in EUR in our example)
- Net Present Value (NPV) (in the chosen currency, in EUR in our example)
- NPV for the local population (in the chosen currency, in EUR in our example)
- Total costs - discounted (in the chosen currency, in EUR in our example)

You can also examine the various results of your scenarios according to various environmental indicators. To do so, click ‘Next’ to view the results based on the indicators below. The results are those expected at the last year of the study period.

In our example, and below, this is the year 2048.

- Forest land in 2048 (in thousands of hectares)
- Forest cover in 2048 (as a percentage compared to the base year, 2018)
- Deforestation rate (annual percentage)
- Accumulated emissions (in millions of tonnes of CO2 equivalent)
- Accumulated emissions REDD+ (millions of tonnes of CO2)
- Biodiversity in 2048 (as a percentage compared to the base year, 2018)

Lastly, you can also examine the various results of your scenarios according to various social indicators. To do so, click ‘Next’ to view the results based on the indicators below. The results are those expected at the last year of the study period.

In our example, and below, this is the year 2048. Our example has the year 2018 as base year.

- Total employment in 2048 (as a percentage compared to the base year, 2018)
- Population in 2048 (in thousands of people)
- Food security in 2048 (as a percentage compared to the base year, 2018)
- Local net benefits in 2048 per person (as a percentage compared to the base year, 2018)
- Labour productivity in 2048 (as a percentage compared to the base year, 2018)
- Land-use jobs in 2048 (per 1000 inhabitants)

By browsing these indicators, thematic comparisons enable you to evaluate the most advantageous or least favourable scenarios based on social, economic and environmental aspects.

Finally, you can consult the detailed results per theme. To do so, click the arrow to the right of ‘Detailed’. A drop-down menu appears. You can choose among the following themes: economy, environment or social.

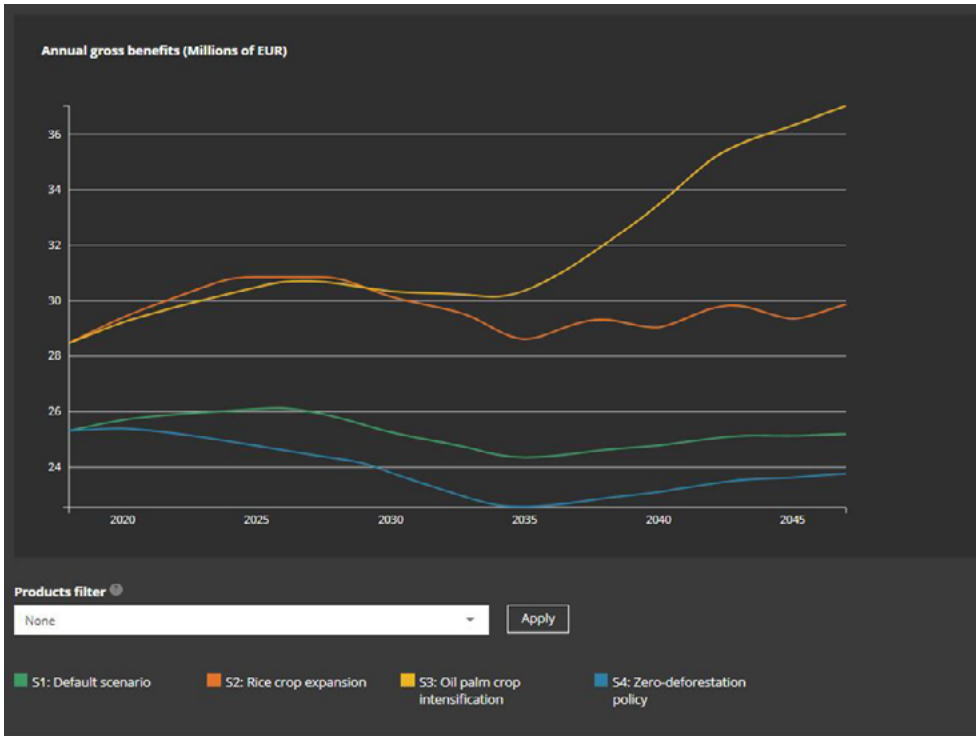
Summary of the economy section

If you click on the ‘Economy’ theme in the drop-down menu, a new window opens. This window allows you to view several graphs representing a comparison of your scenarios according to the various elements mentioned below. To view the various graphs, click ‘Next’.

The elements shown

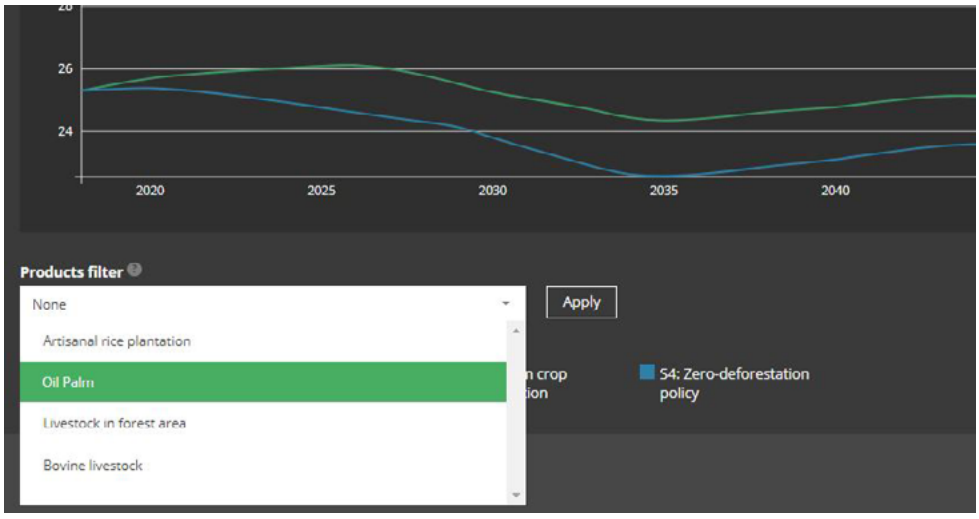
- Annual production excluding livestock (in thousands of tonnes)
- Livestock (in thousands of heads)
- Total agricultural production (in the chosen currency, in EUR in our example)
- Agricultural land (in thousands of hectares)

- Annual gross benefits (in the chosen currency, in EUR in our example)
- Annual gross benefits (as a percentage compared to the base year, 2018)
- Annual net benefits (as a percentage compared to the base year, 2018)
- Annual net benefits for the State (in the chosen currency, in EUR in our example)
- Annual net benefits for the local population (in the chosen currency, in EUR in our example)
- Annual net benefits (in the chosen currency, in EUR in our example)
- Costs (in the chosen currency, in EUR in our example)



By browsing each of these indicators, the discussion group can delve even further into details. The results present an evolution of each indicator over time.

Again, by browsing these indicators, thematic comparisons enable you to evaluate the most advantageous or least favourable scenarios based on social, economic and environmental aspects.



Using filters

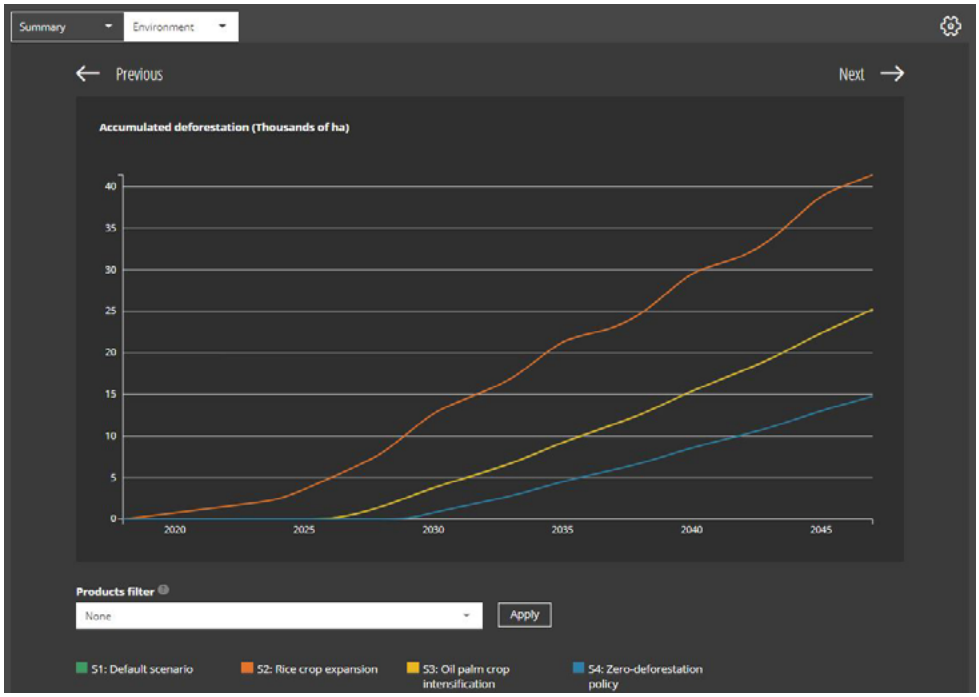
For the ‘Environment’, ‘Economy’ and ‘Social’ sections, and for each of the corresponding indicators, you have the option of applying a filter.

The filter allows you to display results specific to the product(s) considered. Economic results by product take into account the costs and benefits of the related land use(s), as well as the related portions of the crosscutting costs and benefits.

However, carbon costs and benefits are no longer taken into account when this product filter is used, as it is not possible to systematically attribute gains or losses of carbon to specific products.

Summary of the environment section

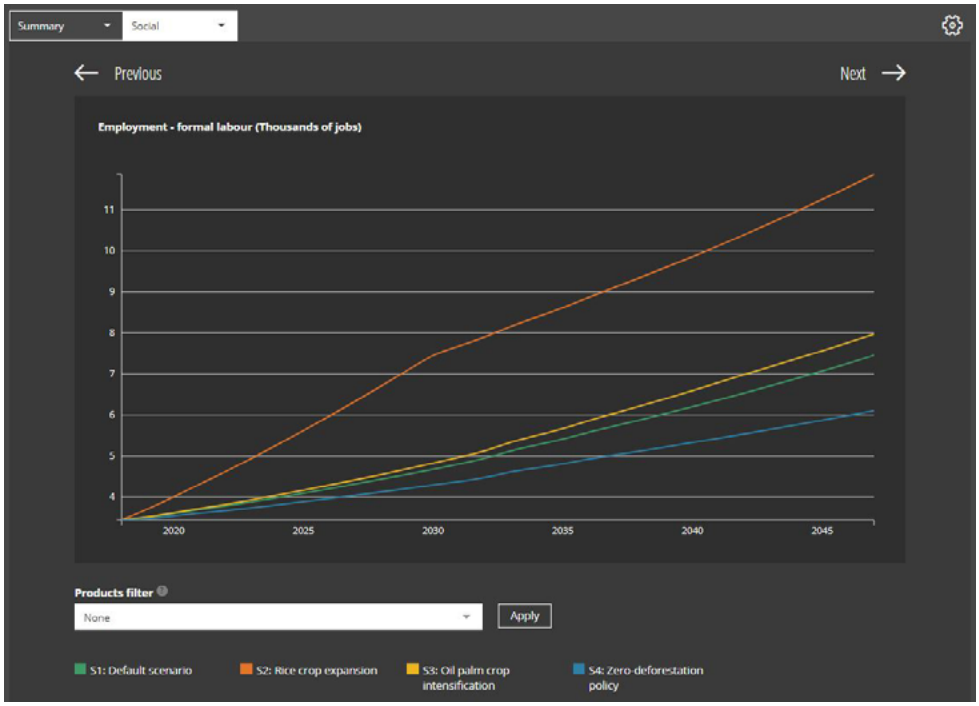
If you click on the ‘Environment’ theme in the drop-down menu, a new window opens. This window allows you to view several graphs representing a comparison of your scenarios according to the various elements mentioned below. To view the various graphs, click ‘Next’.



- Accumulated deforestation (in thousands of hectares)
- Deforestation rate (percentage)
- Carbon stocks (in millions of tonnes of carbon)
- Total emissions (in millions of tonnes of CO2 equivalents)
- Emissions from deforestation and degradation (REDD+) (in millions of tonnes of CO2)
- Biodiversity (as a percentage compared to the first year studied, 2018 in our example)

Summary of the social section

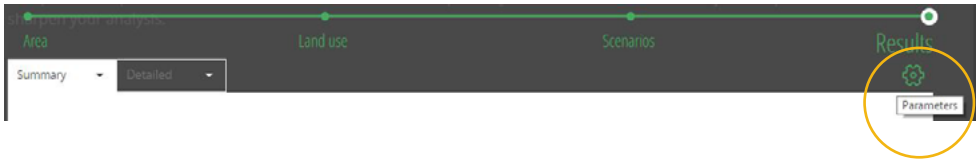
If you click on the ‘Social’ theme in the drop-down menu, a new window opens. This window allows you to view several graphs representing a comparison of your scenarios according to the various elements mentioned below. To view the various graphs, click ‘Next’.

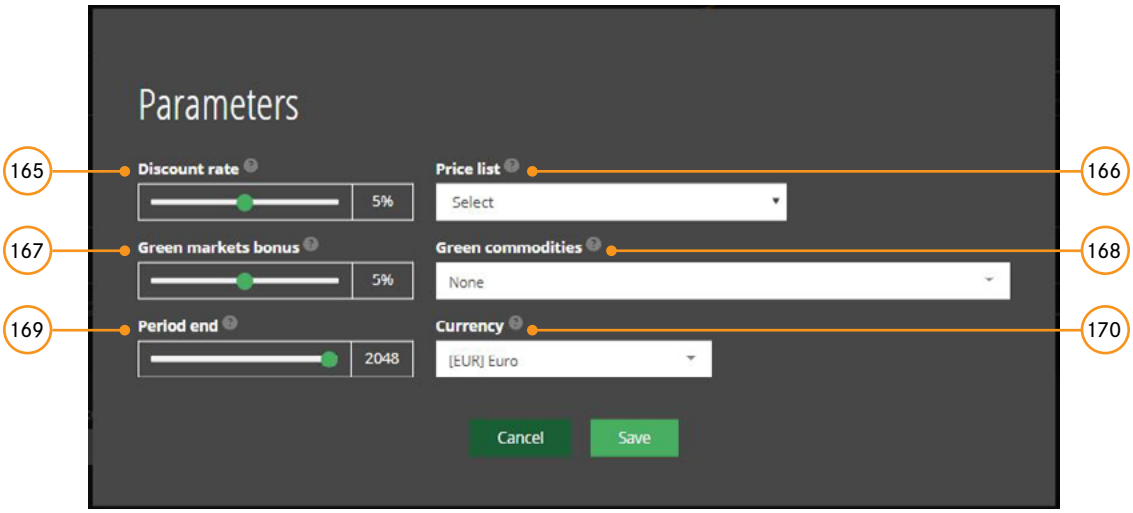


- Food security crops (in thousands of calories/person)
- Net benefits per person - local population (in the chosen currency, in thousands of EUR/year in our example)
- Agricultural land per capita (in hectares/person)
- Employment – family labour (in thousands of jobs)
- Employment – formal labour (in thousands of jobs)
- Total employment (in thousands of jobs)
- Average labour productivity (in the chosen/used currency, in EUR/job in our example)
- Land-use jobs (per 1000 inhabitants)

Parameters

At the top-right of the window, above the graph detailing the results depending on the section, you can click the ‘parameters’ icon to adjust the parameters applied by default by the Land-use Planner to the variables below.





165. Discount rate

This is the interest rate used to bring future benefits and costs into the present. The higher the discount rate, the less long-term impacts matter compared to short-term impacts.

166. Price list

Choose the product or service for which you wish to see or modify the price.

167. Green markets bonus

'Green' products, in particular deforestation-free commodities, could have better access to some markets in the future. Estimate a possible economic advantage as a percentage of the market price. This bonus will apply only in the scenario(s) that conserve at least 80% of the initial biodiversity in your area and will only be taken into account from the year that marks the end of deforestation.

168. Green commodities

Based on the green markets, choose the product(s) that could benefit from a better market access in the study period due to the fact that they originate from sustainably managed land, without deforestation. You may select only the commodities for which markets are sensitive to these issues (for instance, palm oil). Try to anticipate possible market evolutions over the whole period considered.

169. Period end

By default, the Land-use Planner calculates results for the study period. You may reduce or extend the selected time period.

170. Currency

You can change the currency chosen in chapter 2 to view results in another currency.

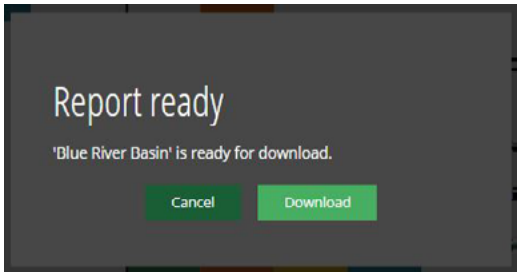
4.5. Download the results

The results are also available in the form of downloadable files. To generate these files, click ‘Report’.

Report

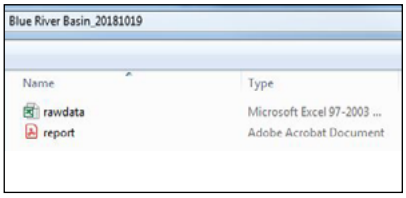
Generating the report may take close to a minute.

Two file types are generated as outputs.



Click ‘Download’ and then unzip the downloaded file.

The results consist of two files:



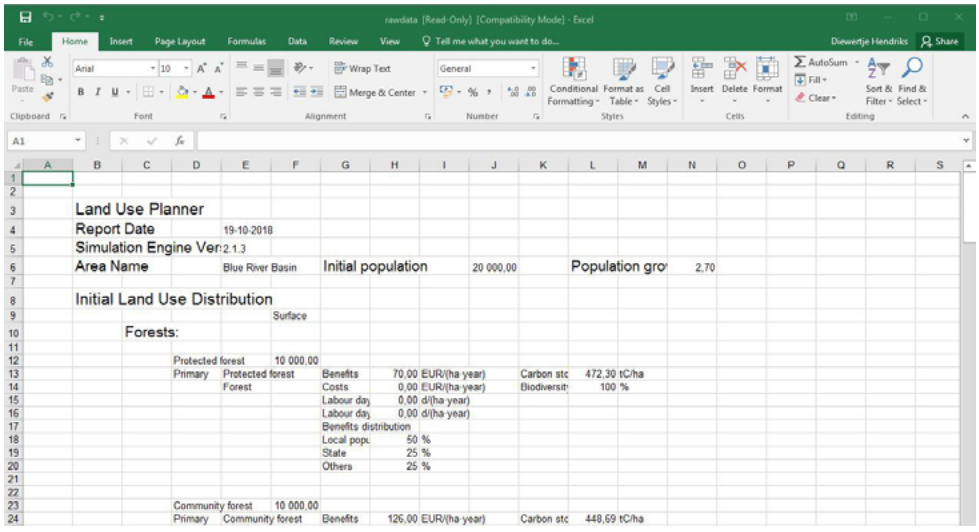
Rawdata

The raw file format is produced based on the data entered during the first stages of the Land-use Planner.

This file allows you to understand how the results are generated.

The first spreadsheet shows the data that you entered during stages 1 and 2.

The following sheets show the results for each of the generated scenarios.



The first tab includes the values entered during the 'Area' and 'Land use' stages. The initial distribution of land uses shows the values of each of the defined uses.

The following tabs show the values generated in the scenarios, for each year. The generated results can be verified based on this data.

PDF report

Finally, a synthesis report in PDF format is generated. Less detailed, this report allows you to present compiled results to decision makers, without them needing to delve into the details of the calculations.

Reminder:

At any time while working on your project, you can save a .lup work file to safeguard the work carried out up to that point.

- Click Export data to save the current work file.
- You can restart with an empty project by clicking Clear project data
- Click Upload project and select the previously saved work file to resume the study at the point at which it was saved (Export data).

About the EU REDD Facility

The EU REDD Facility supports countries in improving land-use governance as part of their efforts to slow, halt and reverse deforestation. It also supports the overall EU effort to reduce its contribution to deforestation in developing countries. The Facility focuses on countries that are engaged in REDD+, an international mechanism that incentivises developing countries to reduce greenhouse gas emissions from their forest and land-use sectors. The Facility is hosted by the European Forest Institute and was established in 2010.

EU REDD Facility

Disclaimer

This manual has been produced with the assistance of the European Union and the Governments of France, Germany, the Netherlands, Ireland, Spain and the United Kingdom. The contents of this manual are the sole responsibility of the EU REDD Facility and can under no circumstances be regarded as reflecting the position of funding organisations.

© EU REDD Facility, 2019

EFI