SWIM and Horizon 2020 Support Mechanism

Working for a Sustainable Mediterranean, Caring for our Future

Eco-design of food and beverage packaging with Edtool

Presented by:

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SWIM and Horizon 2020 SM

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1. INTRODUCTION

Edtool and its User Guide is part of the work done within the "Sustainability of Products and Services" area.

Coordination:

Xavier Gabarrell, Project Coordinator (UAB)

Tool Development and and User Guide

UAB (Xavier Gabarrell, Pere Llorach, Joan Rieradevall)

inèdit (Ramon Farreny, Markel Cormenzana, Raul Garcia-Lozano, Carles M. Gasol)

Participants:

Province of Bologna (Marino Cavallo, Viviana Melchiorre)

ENEA (Mario Tarantini, Arianna Dominici)

CRO-CPC (Goran Romac, Ivana Ivicic),

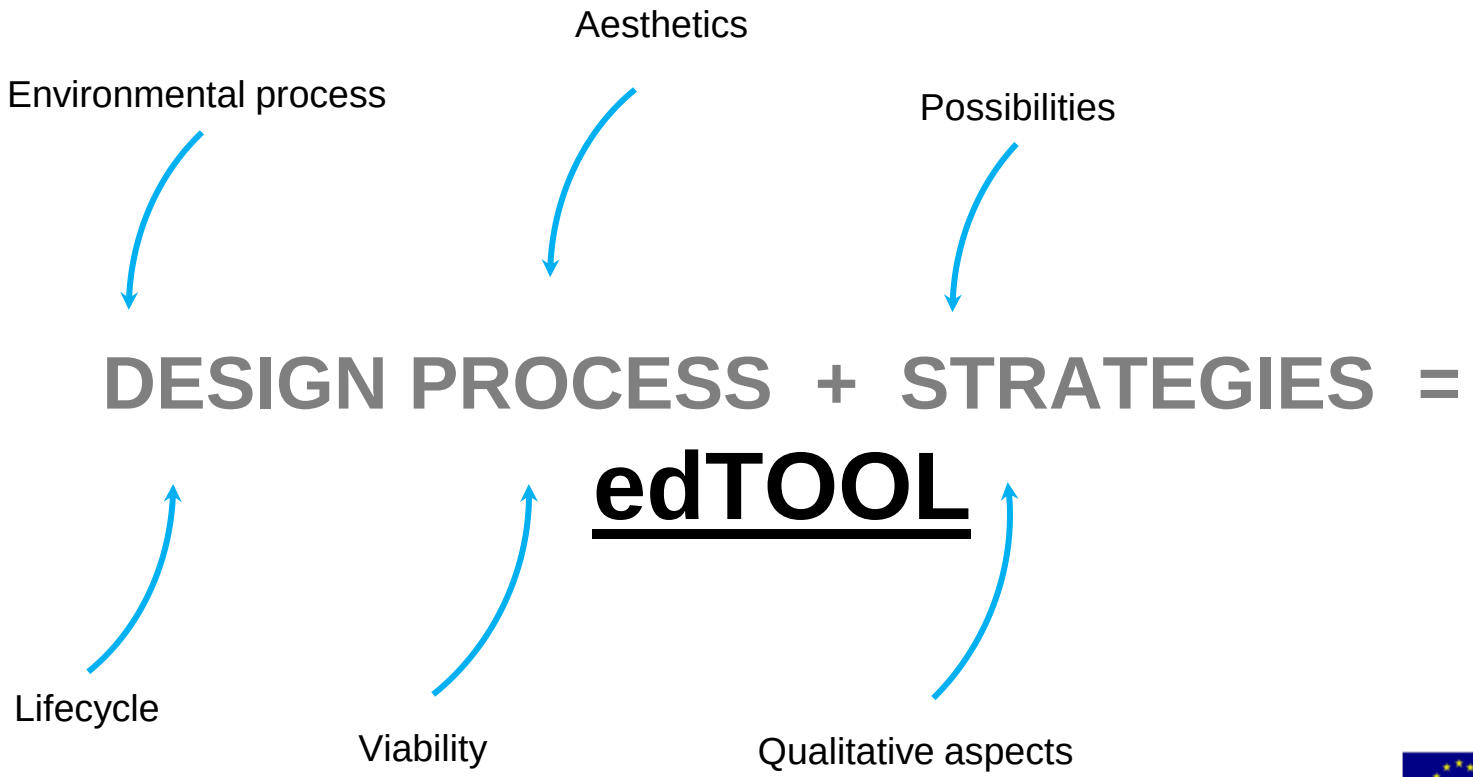
IAT (Anne Furphy, Victor Vázquez, Lorenzo Chacon).

SSSUP (Tiberio Daddi, Maria Rosa de Giacomo)

1. INTRODUCTION

Aim of the Tool

edTOOL aims to improve the sustainability of products and services by implementing ecodesign in companies in a step-by-step intuitive way



1. INTRODUCTION

Edtool characteristics:

- Useful to guide companies through the process of ecodesign implementation.
- Flexible and propositive, with recommendations for the environmental improvement.
- Practical, with real examples from the partners' experience.

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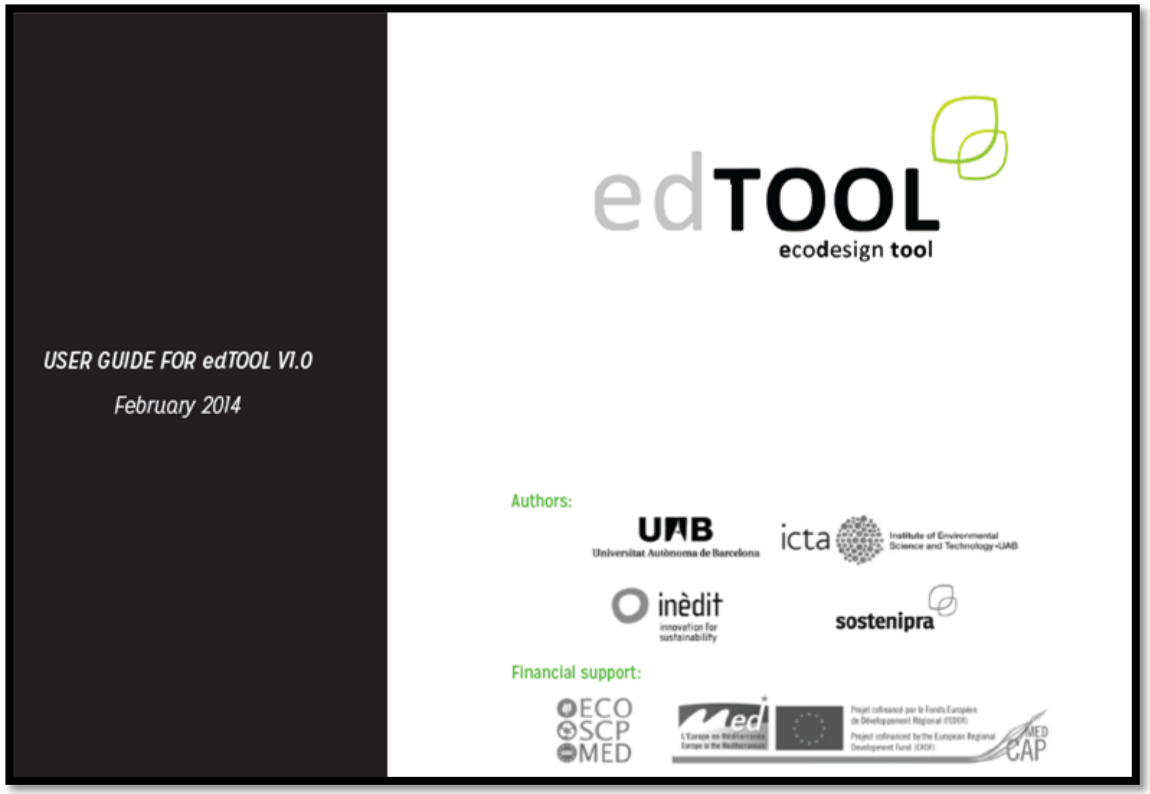
1. INTRODUCTION

Edtool User Guide



1. INTRODUCTION

Edtool User Guide

- It provides detailed descriptions and clarifications on the use of edTOOL.
- In addition, **three practical case studies** are presented within the guide: a Knife, a Wooden Packaging for wine bottles and a Jacket

1. INTRODUCTION

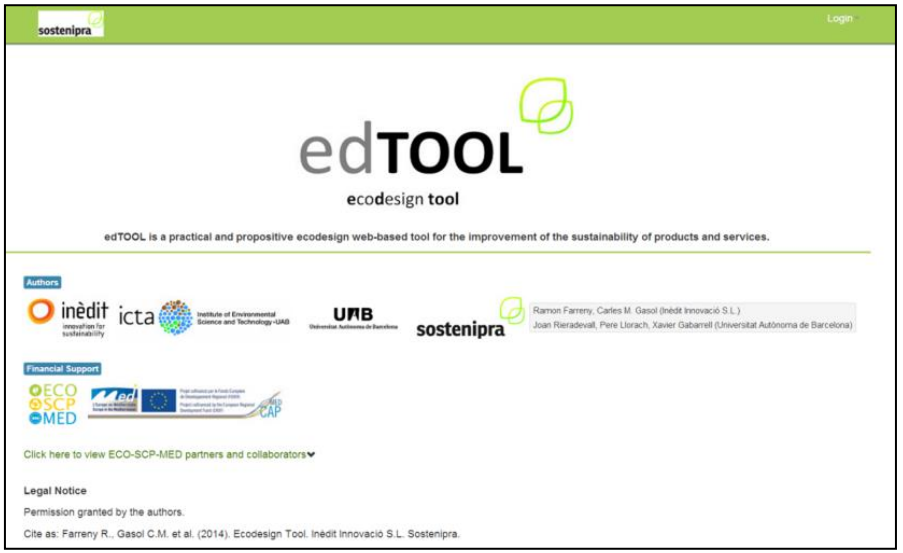
Available online at:

http://edtool.sostenipra.cat

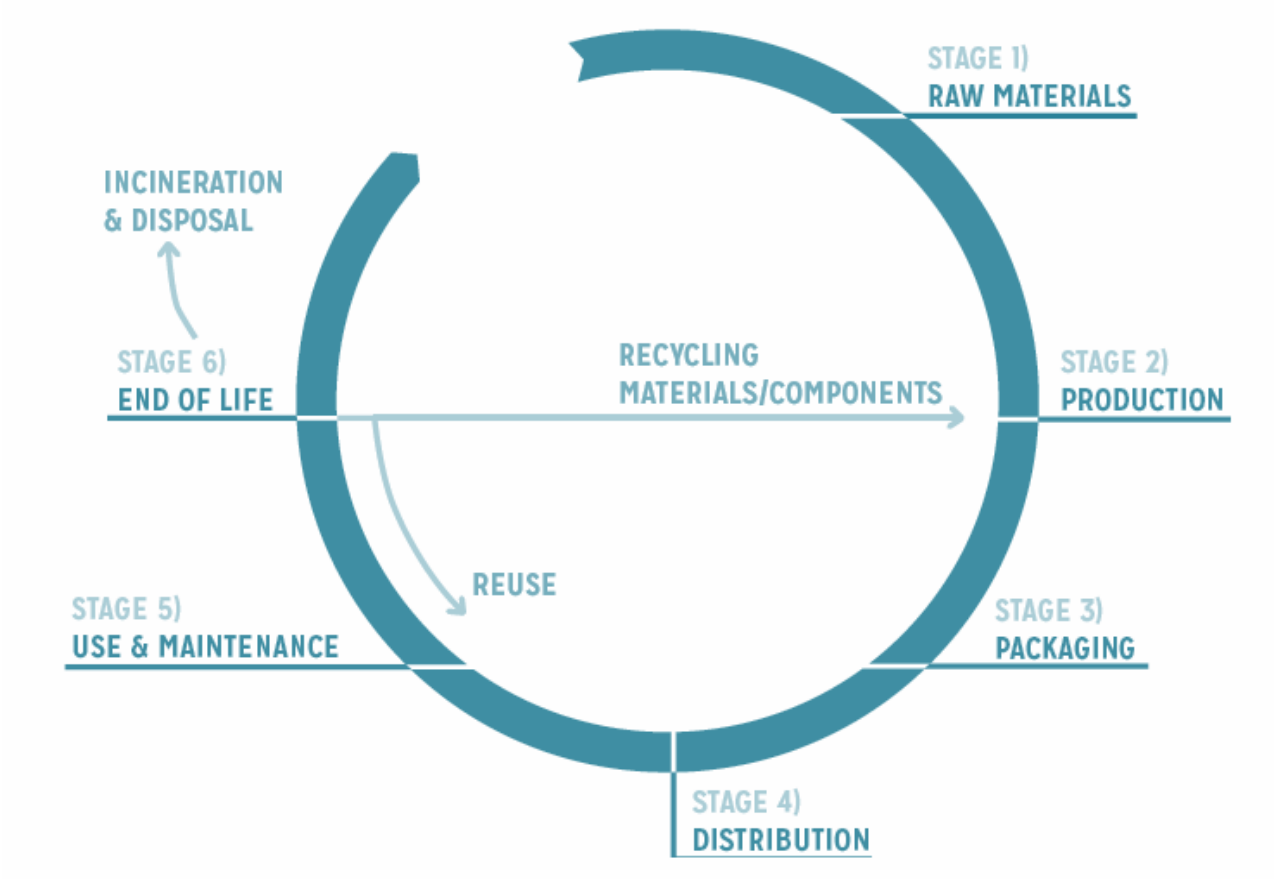
Demo user: edtool@ineditinnova.com

Password: edtool

Several case studies are available for consultation



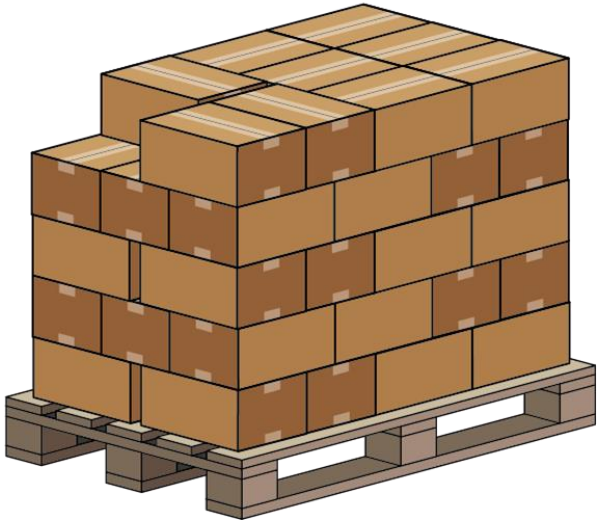
2. PREVIOUS CONSIDERATION



2. PREVIOUS CONSIDERATION

Packaging primary

Packaging secondary



Packaging Tertiary

2. PREVIOUS CONSIDERATION

edTOOL
ecodesign tool

2. PREVIOUS CONSIDERATION

The tool can be use for the ecodesign of products and services, although its implementation is more straightforward for the case of product ecodesign.

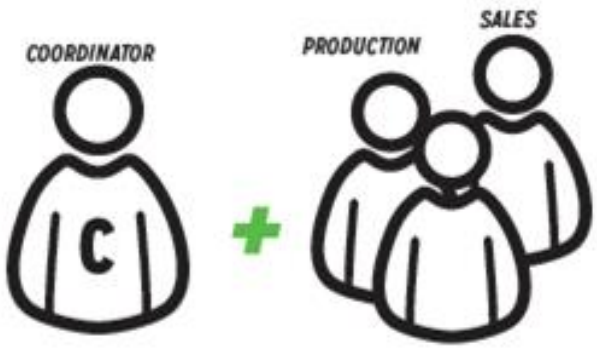
2. PREVIOUS CONSIDERATION

edTOOL considers two types of users for each project:

An ecodesign Project Coordinator and a series of ecodesign Team Members.

The Project Coordinator will be the one in charge of using the web-based tool.

The Team Members will be invited by the Coordinator and will have access to all the information introduced in the tool, but limited edition permits.



2. PREVIOUS CONSIDERATION

Structure

2. PREVIOUS CONSIDERATION

Step 1. Initial Definition

This step will be useful for the Coordinator to define:

the team,
the product/ service to be assessed,
the legal requisites affecting the product/service,
The market environment, and
the environmental assessment criteria to be used in next step.

2. PREVIOUS CONSIDERATION

Example:

- Candy glam ring
  - How many spare parts have this product?

2. PREVIOUS CONSIDERATION

Example:

- Candy glam ring

Quantitatives features

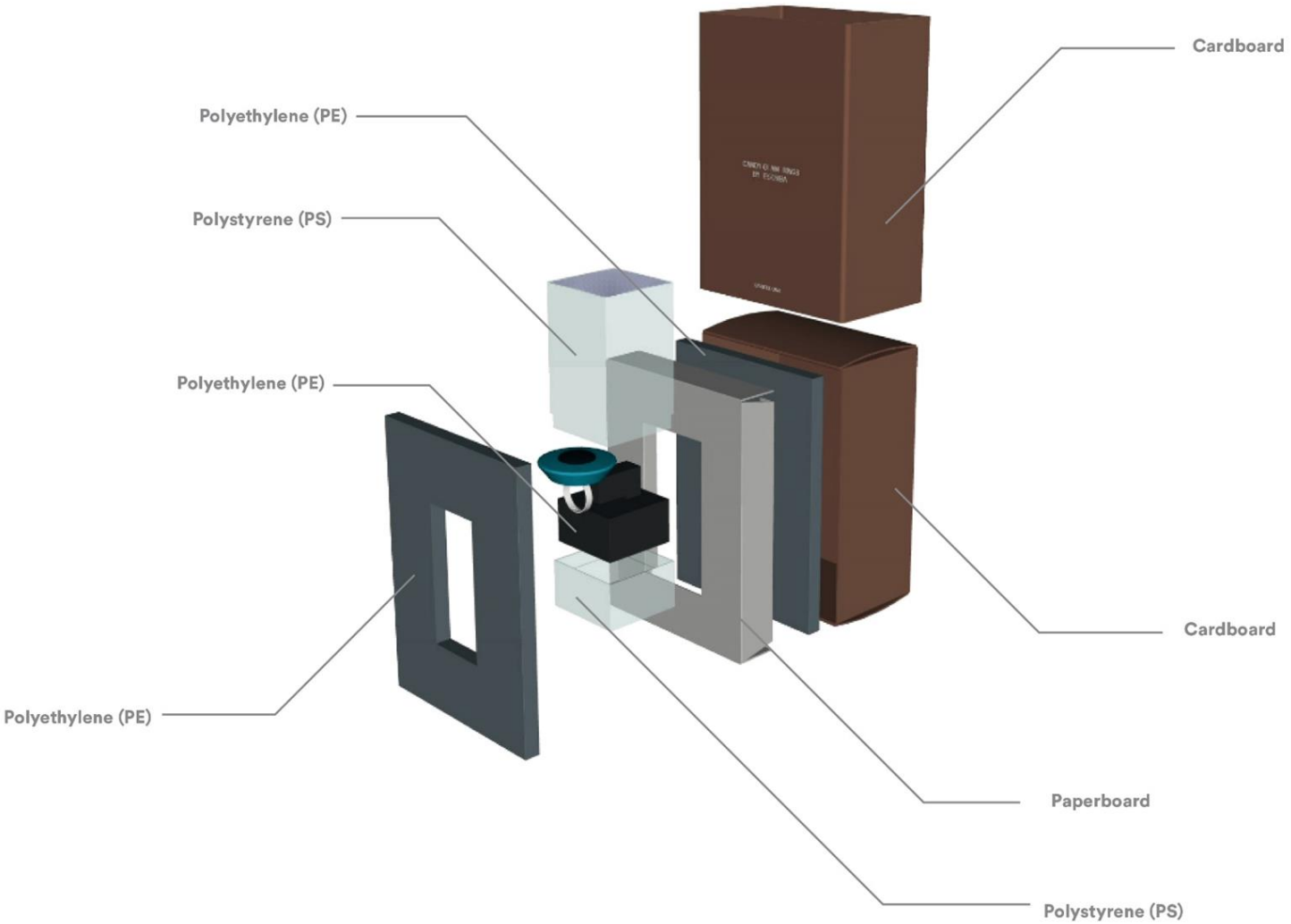
Paperboard, PE expanded, PS, EVA
115 x 70 x 158 mm
1272cm3
118,7g

2. PREVIOUS CONSIDERATION

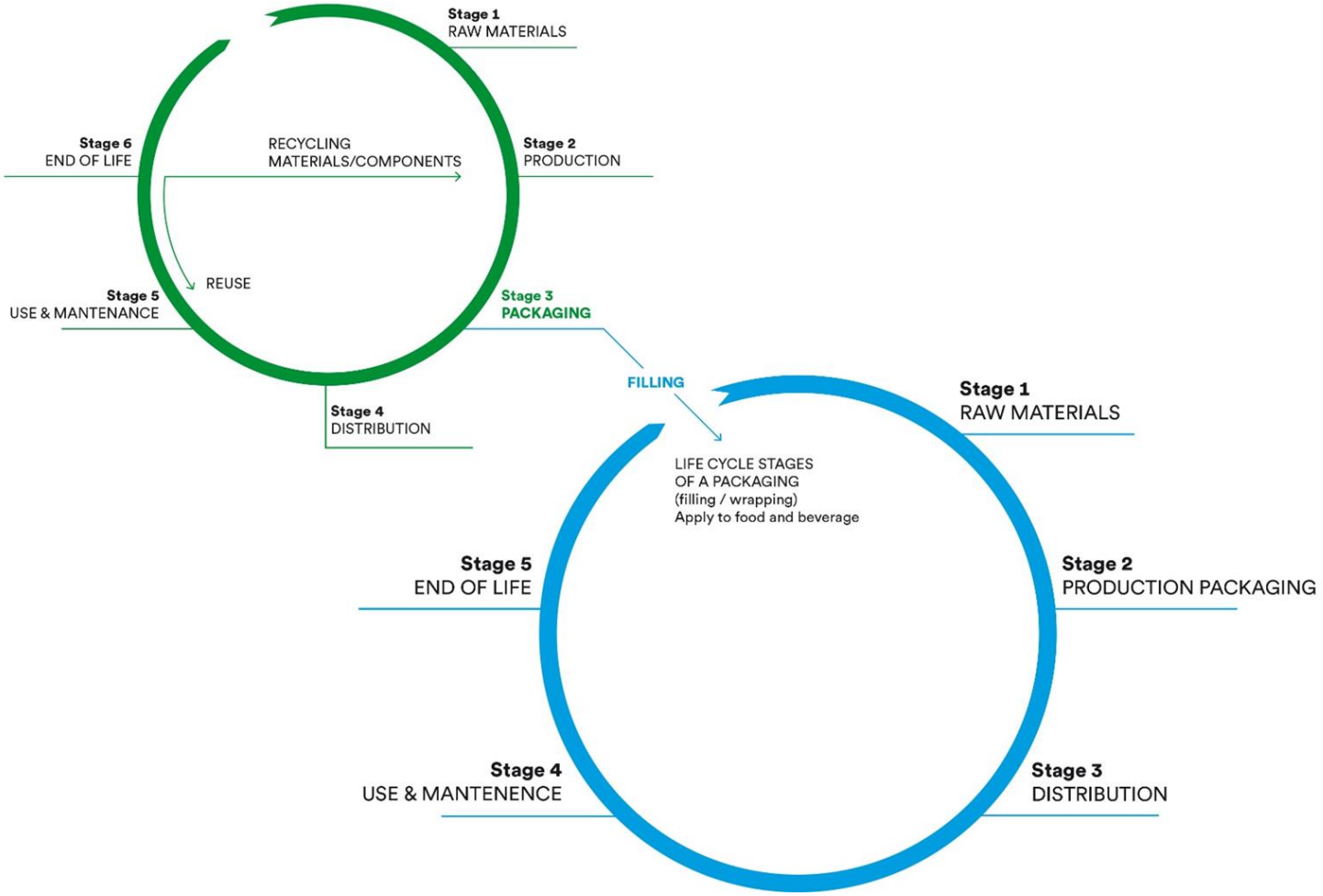
Primary packaging

Secondary packaging

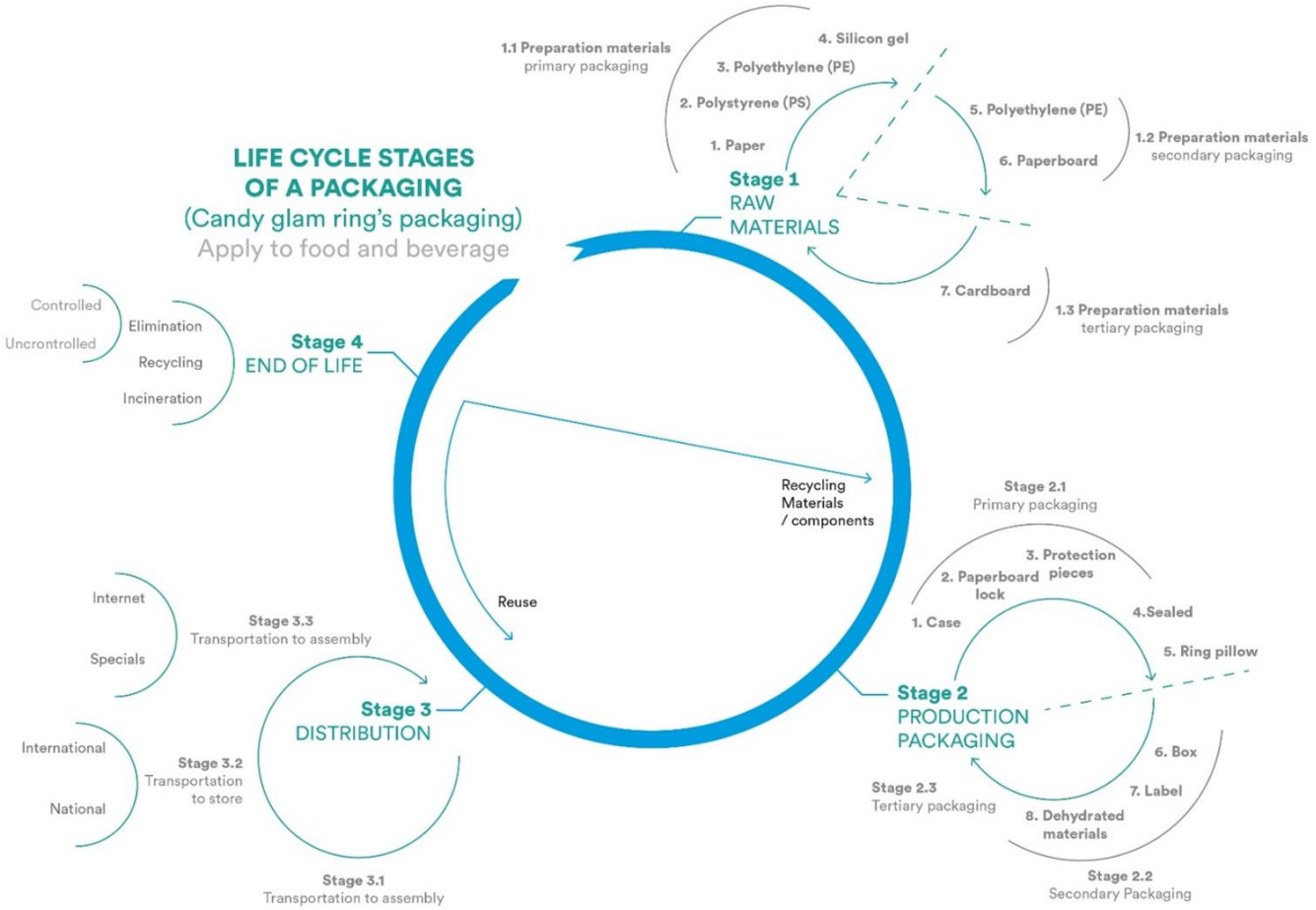
2. PREVIOUS CONSIDERATION



2. PREVIOUS CONSIDERATION



2. PREVIOUS CONSIDERATION



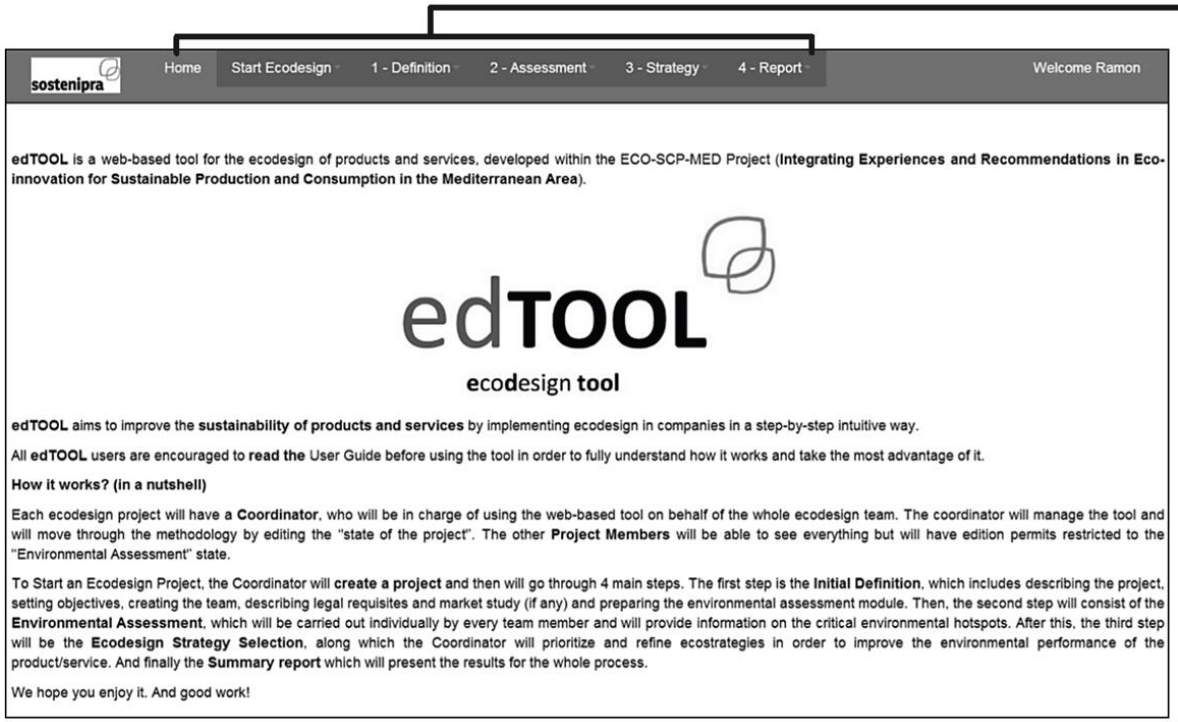
3. INITIAL DEFINITION

FIRST STEP

Registration process

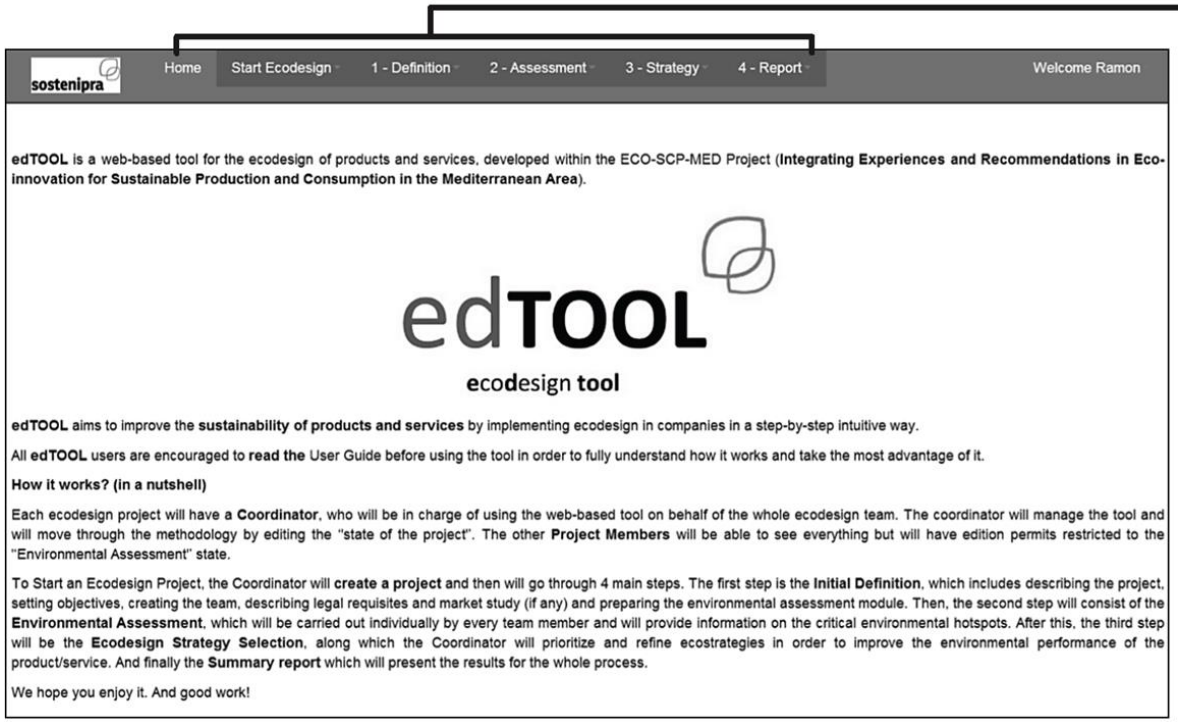
3. INITIAL DEFINITION

HOMEPAGE



3. INITIAL DEFINITION

HOMEPAGE



3. INITIAL DEFINITION

IMPORTANT

Main menu
edTOOL is based on four different states that are controlled by **the Coordinator**:

(1) Initial Definition
(2) Environmental Assessment
(3) Strategy Selection
(4) Summary Report.

The state menu:
Here is where you are in the process

3. INITIAL DEFINITION

START A NEW PROJECT

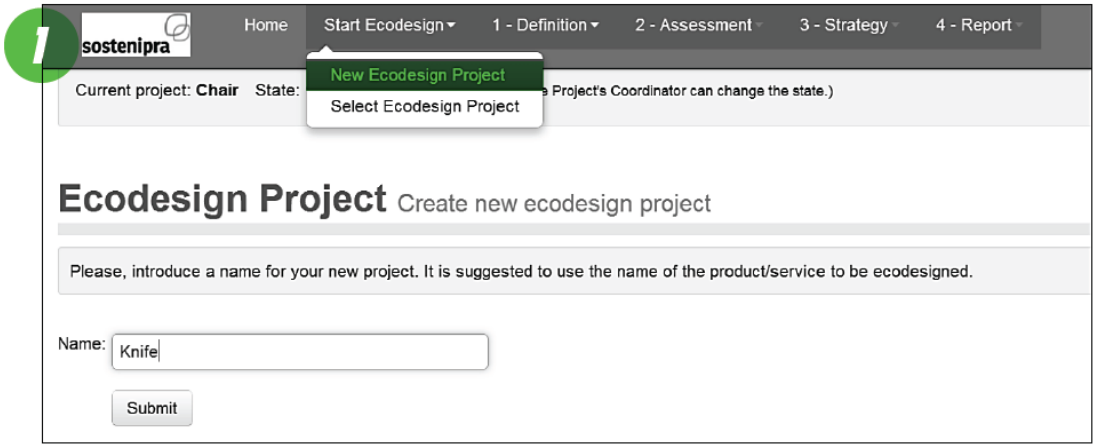
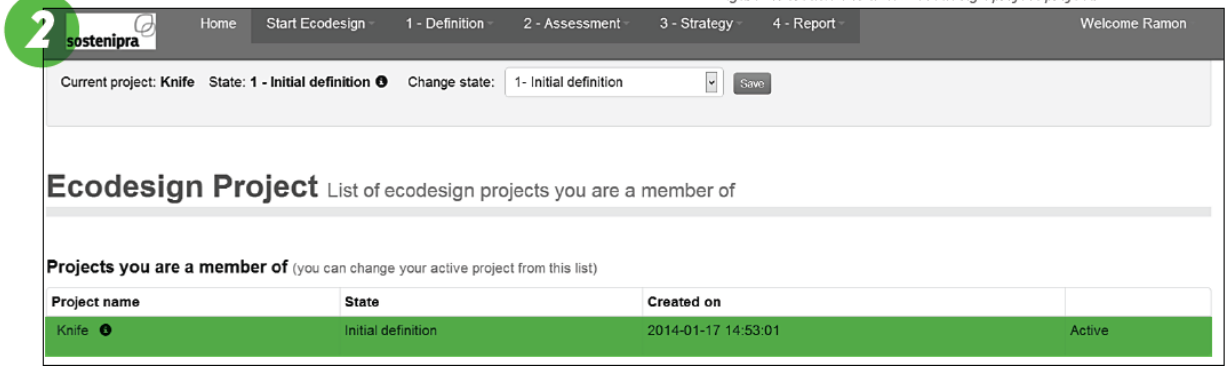


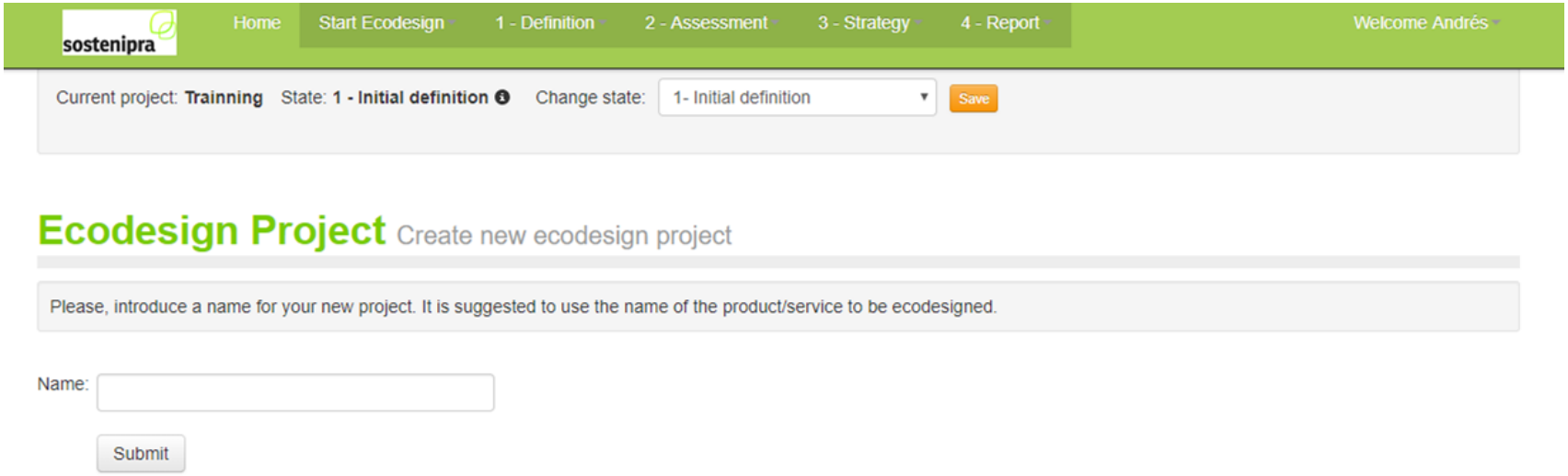
Figure 10. Creation of a new ecodesign project project.



3. INITIAL DEFINITION

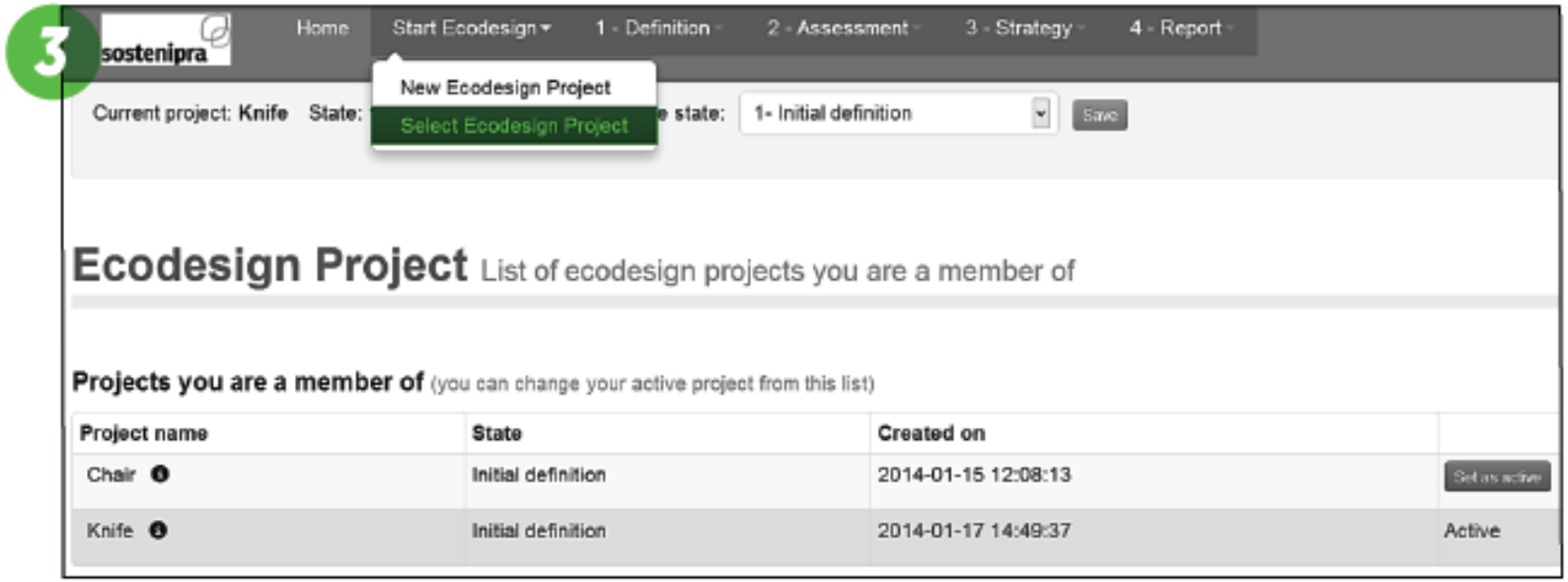
Main Menu
Start ecodesign project > New ecodesign project

State menu
Currect project > State 1.initial definition > **Change State: 1-Initial Definition**



3. INITIAL DEFINITION

If you already have a project

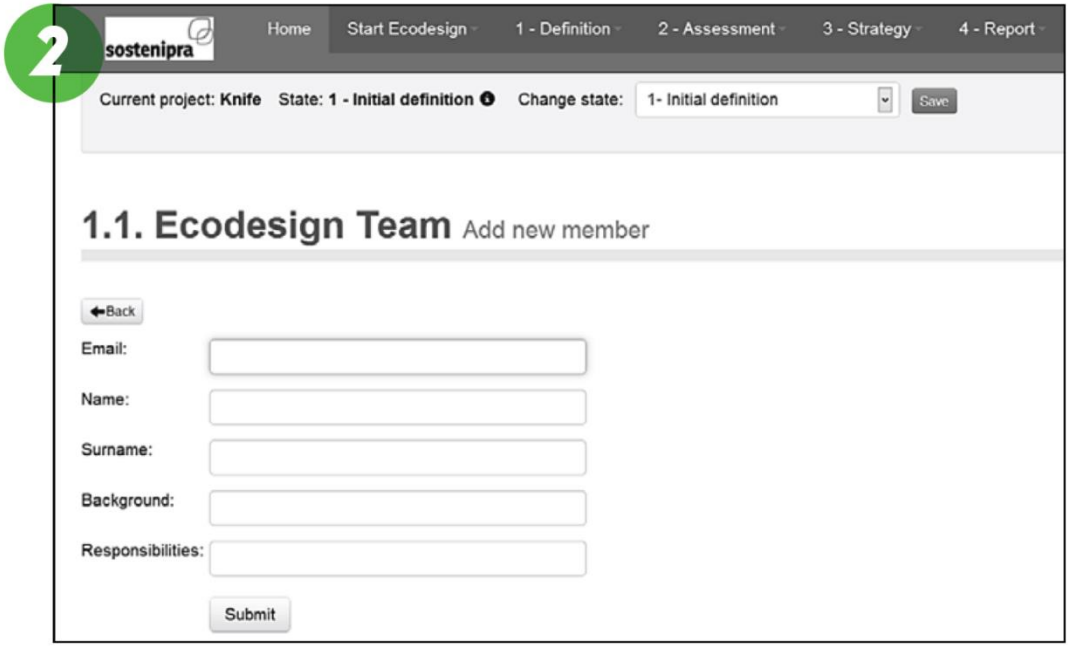


3. INITIAL DEFINITION

ECODESIGN TEAM

•Multidisciplinary team (direction, technicians, engineers, managers, marketing...).

•Generally, the higher participation, the better. **Recommended betwen 5-10 members**



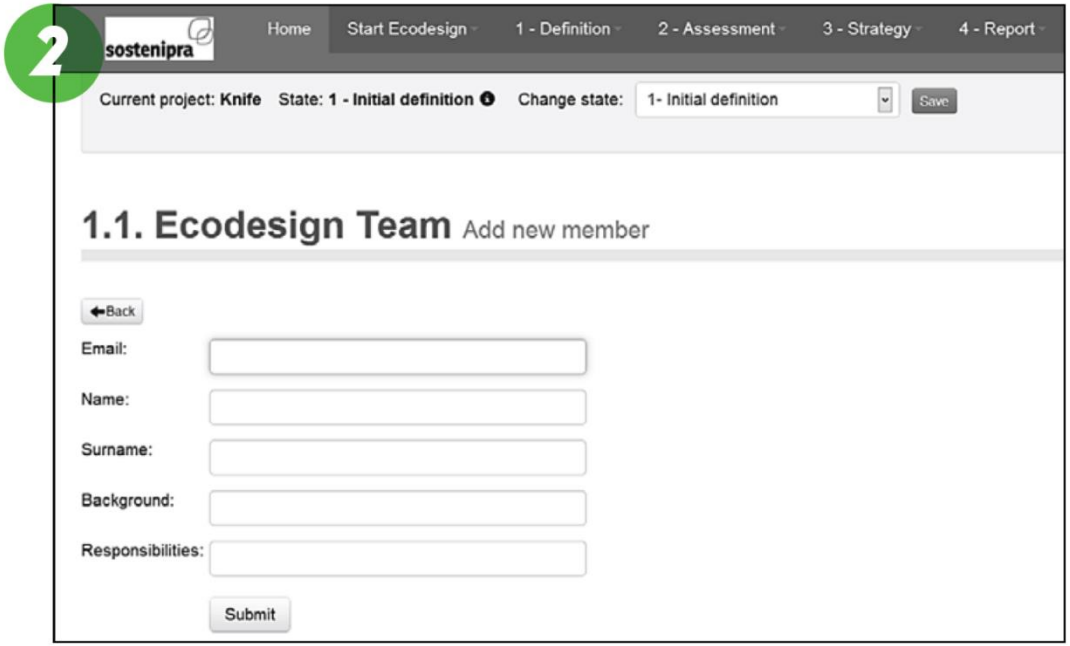
3. INITIAL DEFINITION

Main Menu

1.Definition > 1.1 ecodesign team > **Add membres**

State menu

Currect project > State 1.initial definition > **Change State: 1-Initial Definition**



3. INITIAL DEFINITION

PROJECT DESCRIPTION AND OBJECTIVES

The Coordinator will describe the product/service to be ecodesigned and will indicate what are the general objectives pursued with this project .

1.2. Ecodesign Project Description & Objectives

Please, describe the product/service to be ecodesigned and the objectives that are pursued by using edTOOL.

Name: Knife

Description: The reference Knife presents high durability and ergonomics, and is resistant to high temperatures. It is conceived for professional use.

Objectives: This ecodesign project aims to:
- assess the environmental impact of the reference Knife
- identify environmental improvement strategies
- ecodesign a new Knife

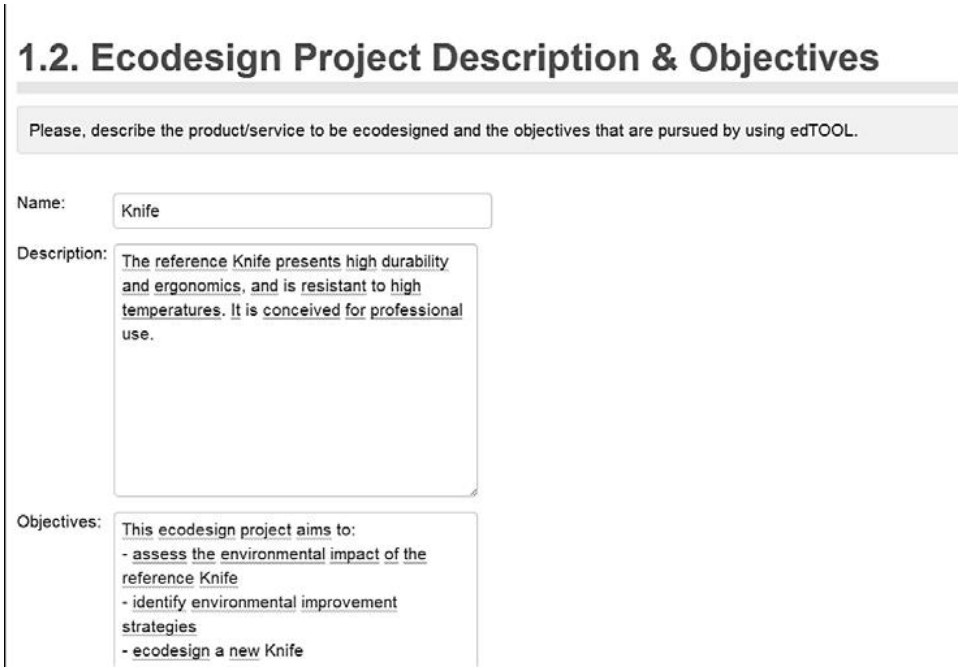
3. INITIAL DEFINITION

Main Menu

1.Definition > 1.2 Descriptions & objectives > **Fill the boxes**

State menu

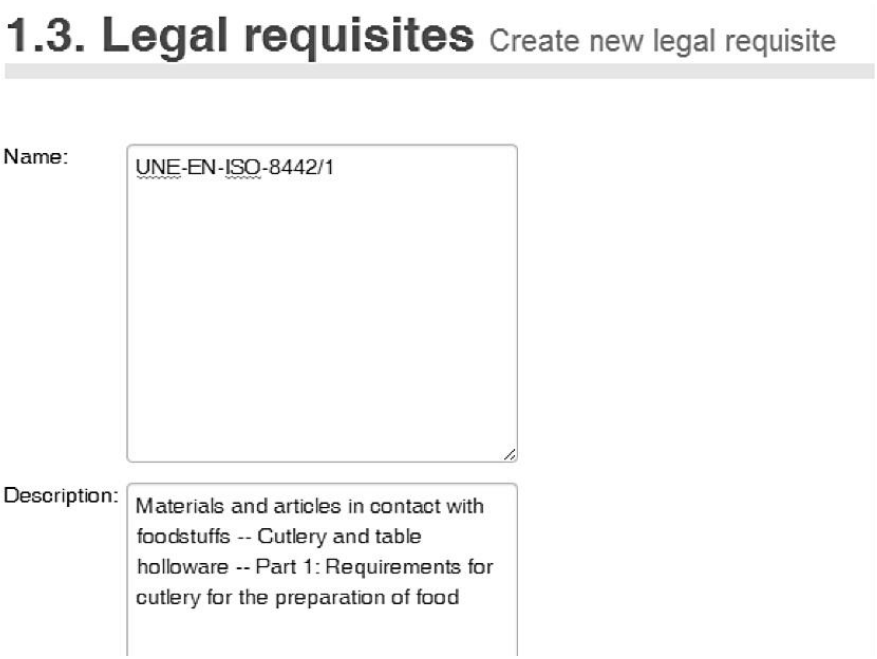
Currect project > State 1.initial definition > **Change State: 1-Initial Definition**



3. INITIAL DEFINITION

LEGAL REQUISITES (Optional Step)

The Coordinator will be able to describe the most important legislation and regulations affecting the product/service, which will need to be considered when thinking of potential strategies and new ecodesigned concepts



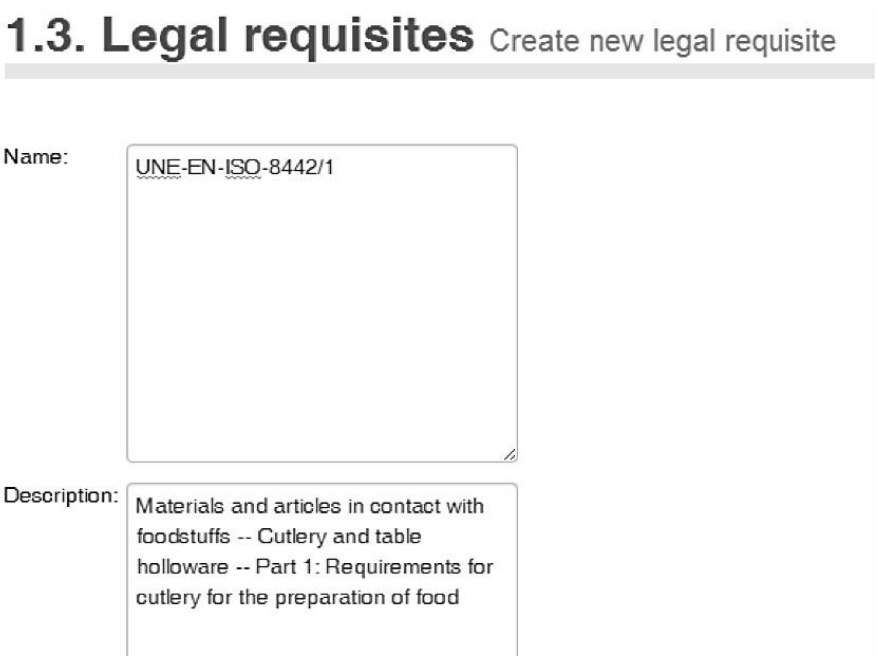
3. INITIAL DEFINITION

Main Menu

1.Definition > 1.3 Legal requisites > Add requisite (**Fill the boxes)**

State menu

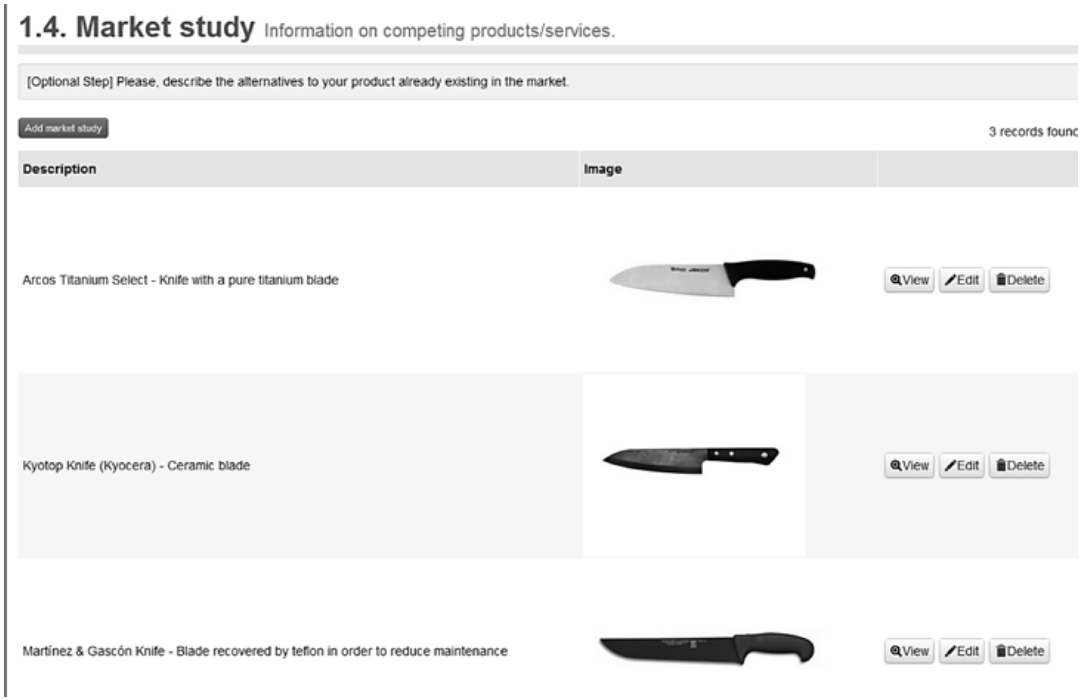
Currect project > State 1.initial definition > **Change State: 1-Initial Definition**



3. INITIAL DEFINITION

MARKET STUDY (Optional Step)

The Coordinator can introduce a descriptionand image of the related products/service existing in the market, result of a Market Study



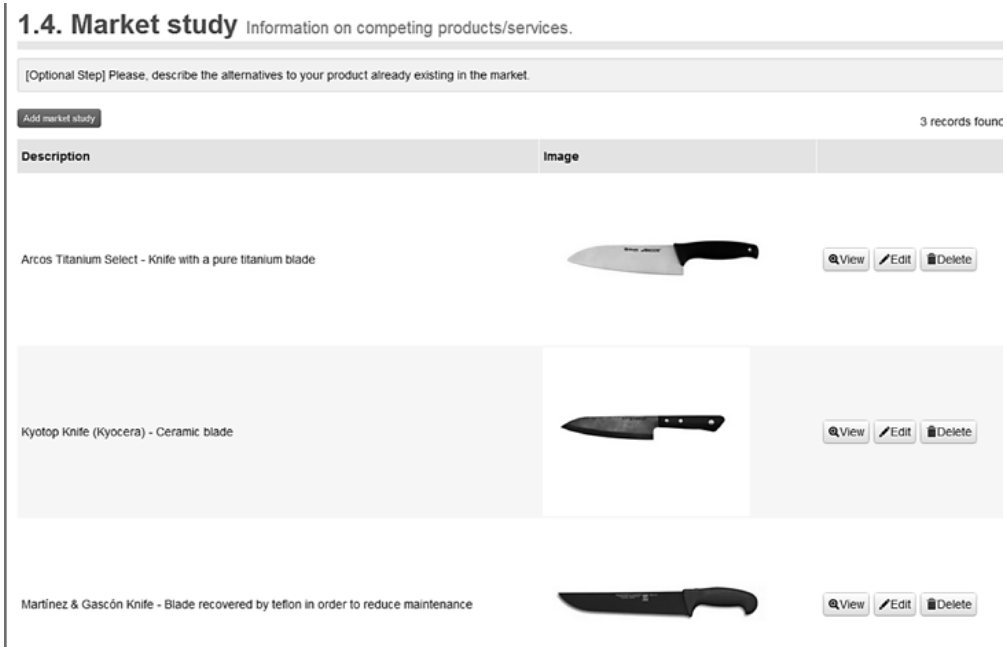
3. INITIAL DEFINITION

Main Menu

1.Definition > 1.4 Market study > Add market study (**Fill the boxes)** > add image

State menu

Currect project > State 1.initial definition > **Change State: 1-Initial Definition**



3. INITIAL DEFINITION

CUSTOMIZE CRITERIA

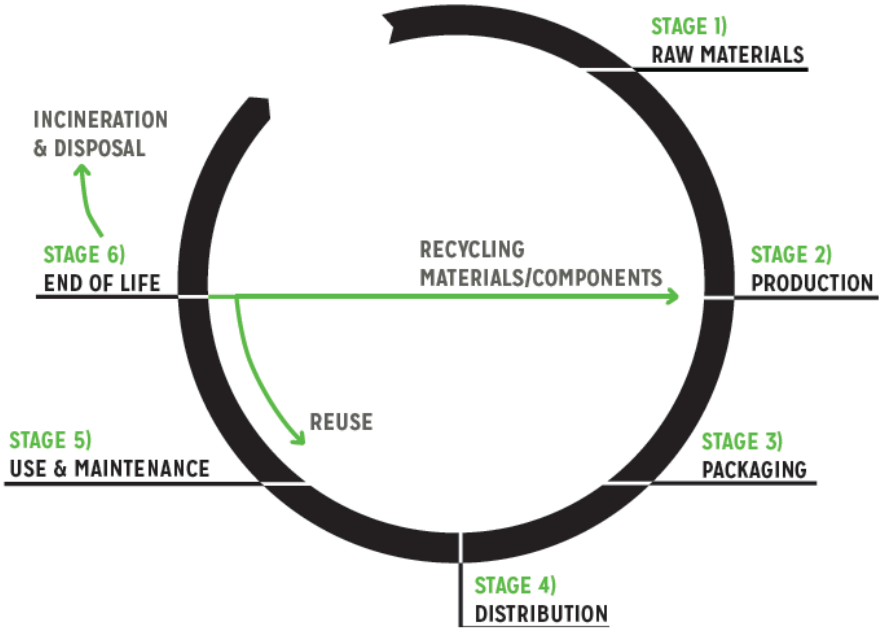
Preparation for the Environmental Assessment that will be performed by means of a **Qualitative Assessment of Life Cycle Criteria.**

This is a qualitative environmental assessment tool based on the study of life cycle stages. In brief, this tool places in a spider web diagram the various life cycle stages and shows a score which is representative of the degree of environmental performance of each stage against several criteria that characterize them.

3. INITIAL DEFINITION

CUSTOMIZE CRITERIA

Preparation for the Environmental Assessment that will be performed by means of a **Qualitative Assessment of Life Cycle Criteria.**



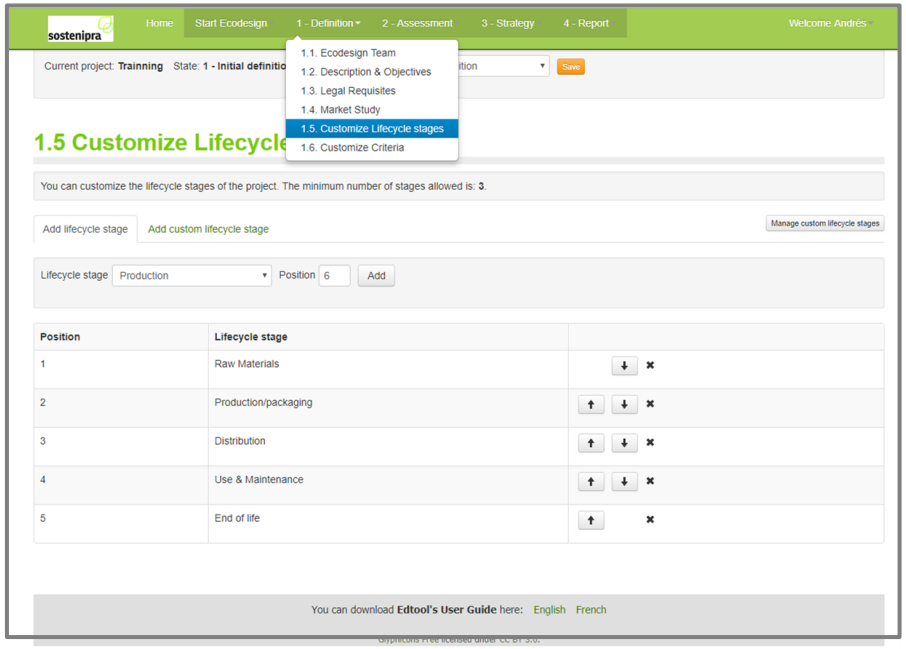
3. INITIAL DEFINITION

Criteria game

3. INITIAL DEFINITION

CUSTOMIZE CRITERIA

The Coordinator can edit the matrix of life cycle criteria (remove, add predefined or new ones)



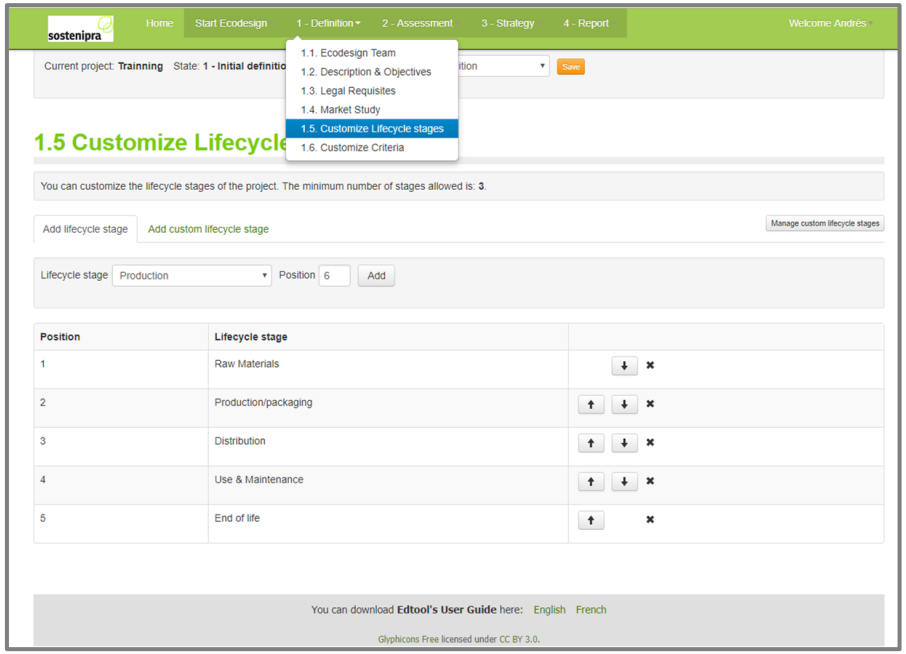
3. INITIAL DEFINITION

Main Menu

1.Definition > 1.5 Customize lifecycle stages > Add lifecycle stages/add custom lifecycle stages

State menu

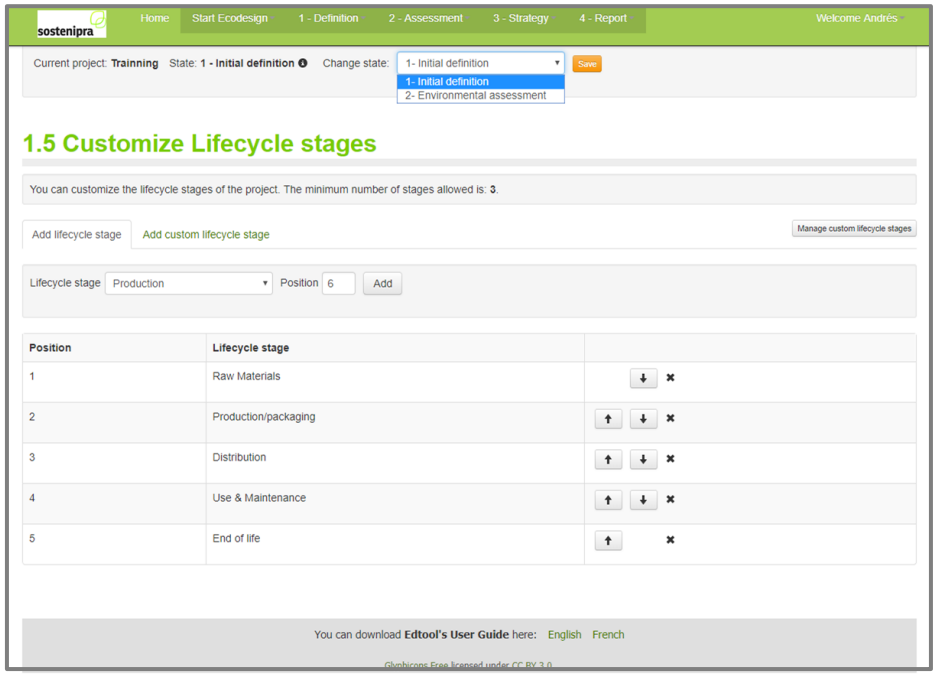
Currect project > State 1.initial definition > **Change State: 1-Initial Definition**



3. INITIAL DEFINITION

CUSTOMIZE CRITERIA

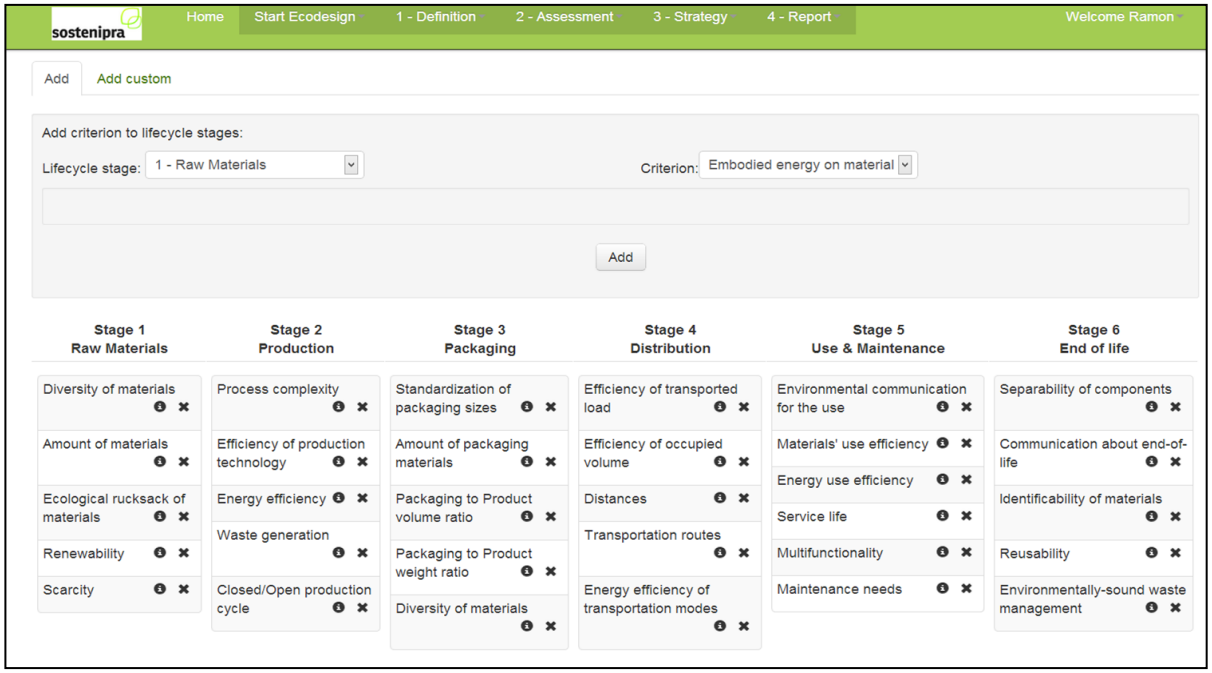
The Coordinator can edit the matrix of life cycle criteria (remove, add predefined or new ones)



3. INITIAL DEFINITION

CUSTOMIZE CRITERIA

The Coordinator can edit the matrix of life cycle criteria (remove, add predefined or new ones)



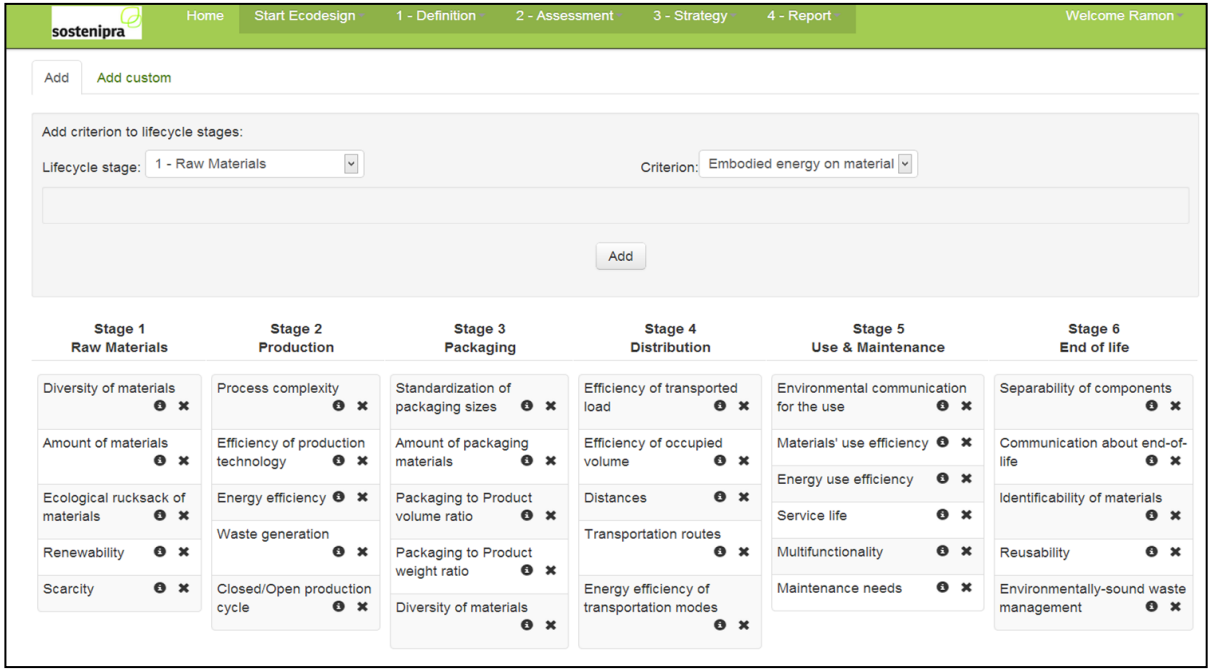
3. INITIAL DEFINITION

Main Menu

1.Definition > 1.6 customize criteria > **select the stages and criterias**

State menu

Currect project > State 1.initial definition > **Change State: 2-environental assessment > save**



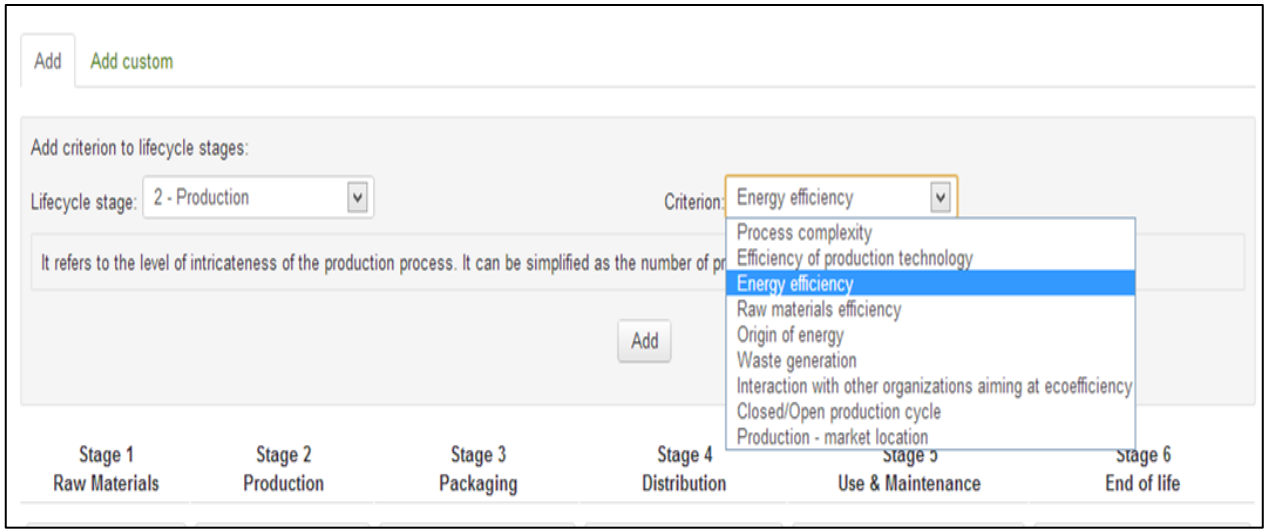
3. INITIAL DEFINITION

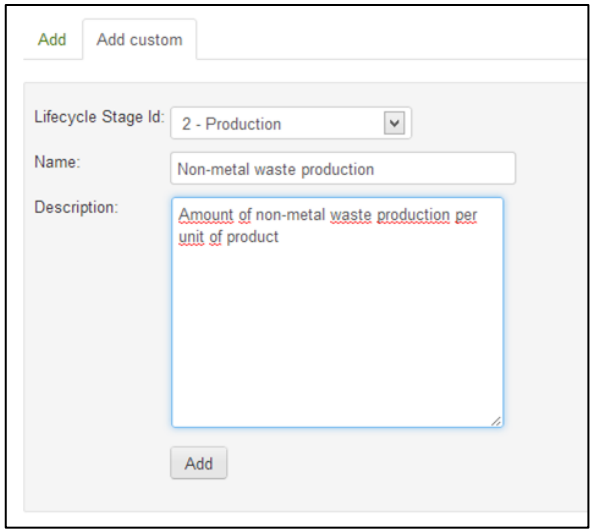
Main Menu

1.Definition > 1.6 customize criteria > **select the stages and criterias**

State menu

Currect project > State 1.initial definition > **Change State: 2-environental assessment > save**





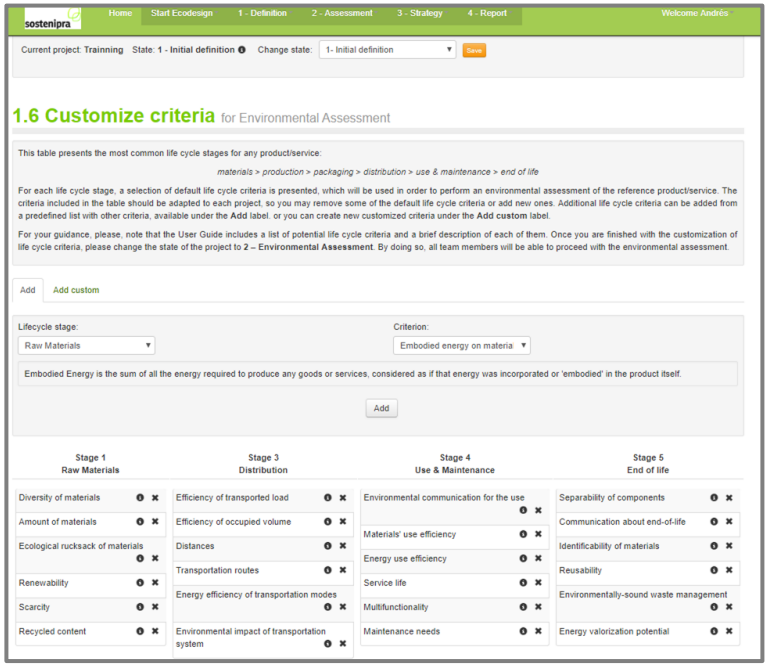
3. INITIAL DEFINITION

Main Menu

1.Definition > 1.6 customize criteria > **select the stages and criterias**

State menu

Currect project > State 1.initial definition > **Change State: 1-Initial Defenition**



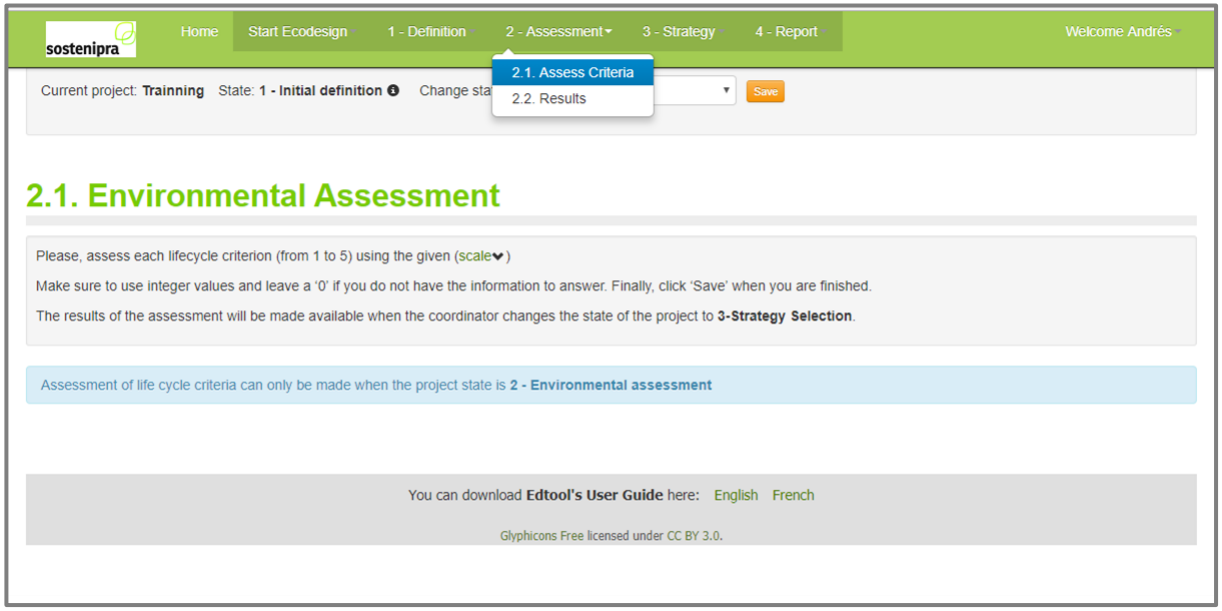
3. INITIAL DEFINITION

Main Menu

2, Assessment > 2.1 Assess criteria > **select the stages and criterias**

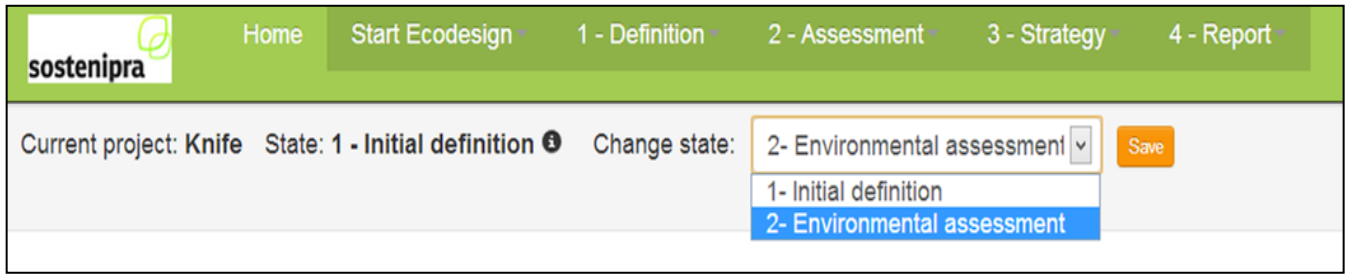
State menu

Currect project > State 1.initial definition > **Change State: 2-Environmental assessment > save**



3. INITIAL DEFINITION

Main Menu
2, Assessment > 2.2 Assess criteria > **select the stages and criterias**
State menu
Currect project > State 1.initial definition > **Change State: 2-Environmental assessment > save**



3. INITIAL DEFINITION

edTOOL includes a database of generic life cycle criteria (See User Guide)

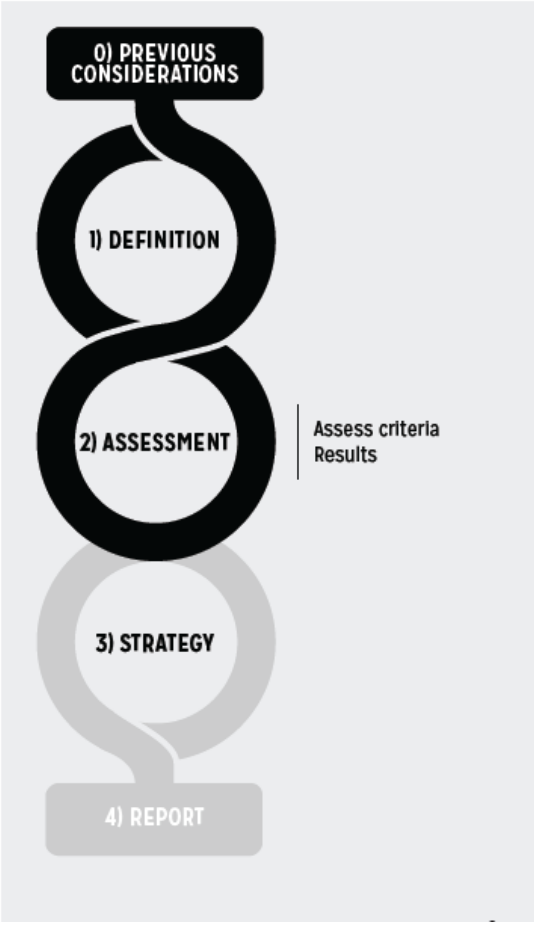
ANNEX B) LIFE CYCLE CRITERIA AND STRATEGIES

List of life cycle criteria

Materials	Diversity of materials	*It can be represented by the number of different typologies of materials involved in the product. In general, less is better.*
	Amount of materials	*It can be represented by the weight of the materials involved in the product. The less material has to be used in a product, the less resources will be consumed in the production process.*
	Ecological rucksack of materials	*An Ecological Rucksack is the total quantity of materials moved from nature to create a product or service, minus the actual weight of the product. That is, ecological rucksacks look at hidden material flows. Ecological rucksacks take a life cycle approach and signify the environmental strain or resource efficiency of the product or service.*
	Embodied energy on materials	*Embodied Energy is the sum of all the energy required to produce any goods or services, considered as if that energy was incorporated or 'embodied' in the product itself.*
	Renewability	*A renewable resource is a natural resource which can replenish with the passage of time, either through biological reproduction or other naturally recurring processes.*
	Durability	*Durability is aimed at extending the lifetime of products thanks to the inherent material properties.*
	Scarcity	*It refers to the lack or the limited existence of resources that are fundamental for the product or service provided. The more scarce, the worse.*
	Recycled content	*The proportion, by mass, of recycled material in a product or packaging. Only pre-consumer and post-consumer materials shall be considered as recycled content.*
	Recovered components	*Recovered materials are products, components or parts of a production or waste stream captured or separated for reuse (without processing, which would be recycling)*
	Reciclability	*Reciclability refers to the ability of a material to be captured and separated from a waste stream for being recycled*
	Biodegradability	*Biodegradability refers to the capability of being decomposed by biological agents, especially bacteria.*
	Origin of materials	*The origin of materials refers to the geographical location from which they are obtained. Local materials are desirable due to shorter distances*
	Toxicity	*Toxicity refers to the degree to which a substance can damage an organism*

LDK CONSULTANTS

4. ASSESSMENT



Step 2. Environmental Assessment

Throughout this step each member of the team will evaluate the previously defined criteria and results will be presented to the coordinator.

4. ASSESSMENT

ASSESS CRITERIA

Each ecodesign team member can assess the criteria, using a scale from 1 to 5

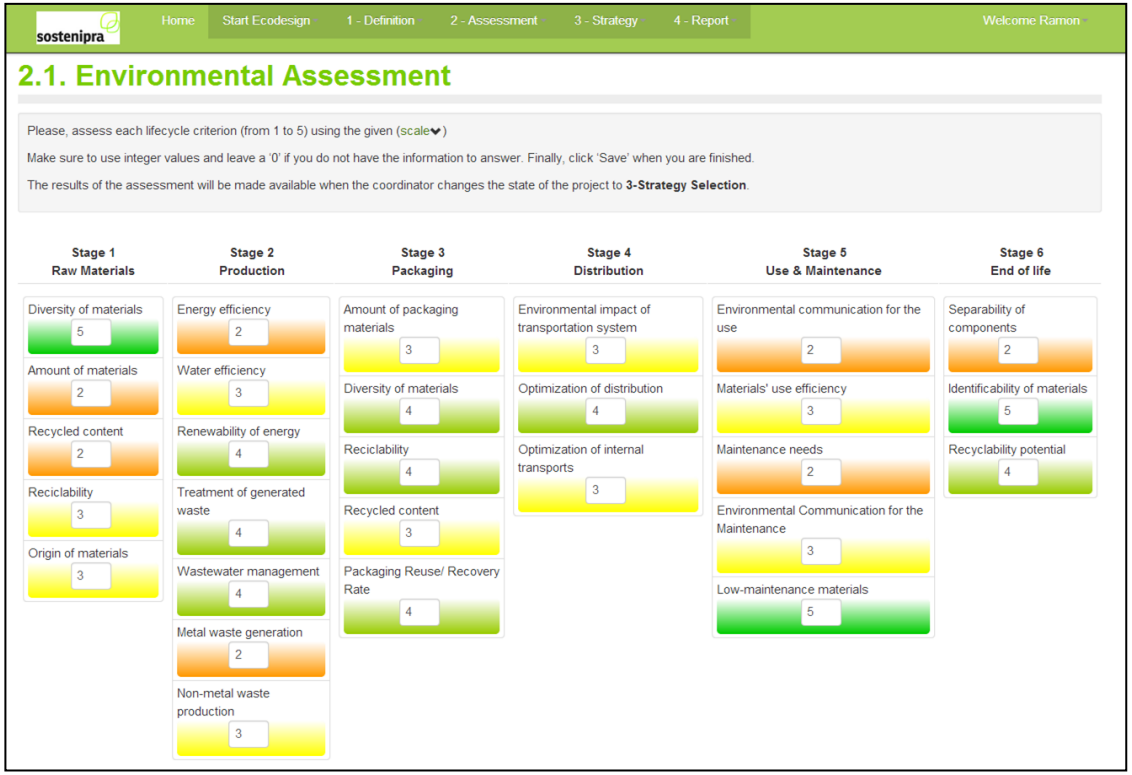
.

1	Enormous room for improvement (0%)
2	Big room for improvement (25%)
3	Some room for improvement (50%)
4	Small room for improvement (75%)
5	No room for improvement (100%)
0	No data available / not applicable

4. ASSESSMENT

ASSESS CRITERIA

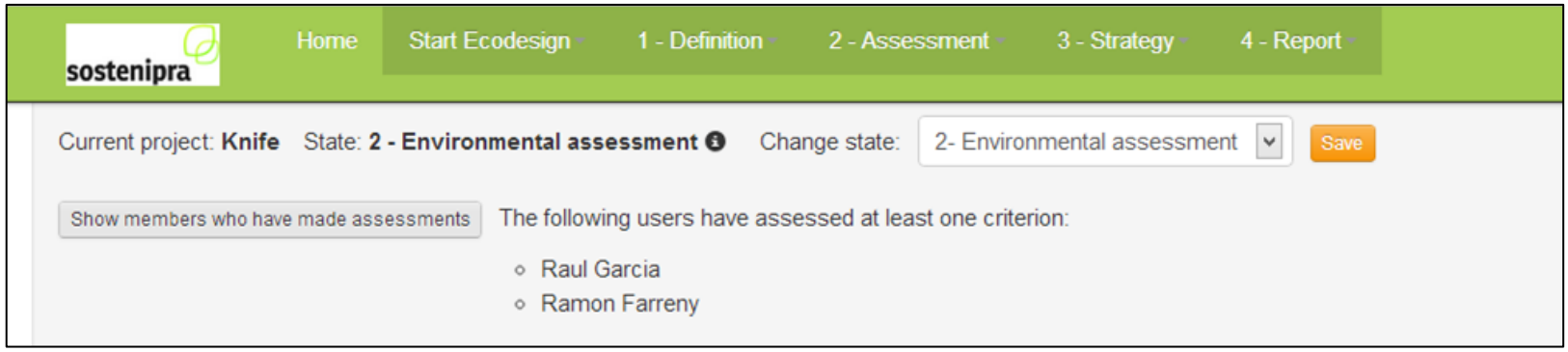
Each ecodesign team member can assess the criteria, using a scale from 1 to 5



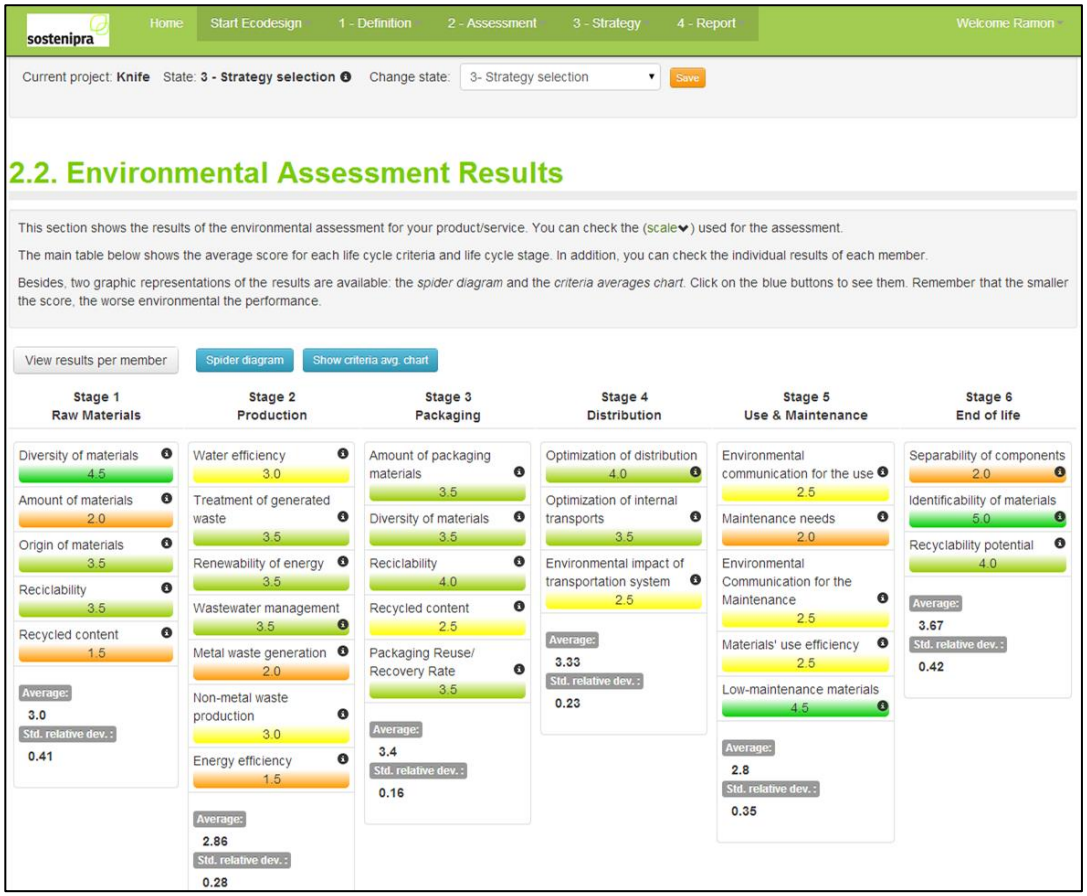
4. ASSESSMENT

ASSESS CRITERIA

The Coordinator is able to see who whas already assessed the criteria.



4. ASSESSMENT



ENVIRONMENTAL ASSESSMENT RESULTS

Averages for criteria and for life cycle stage are obtained.

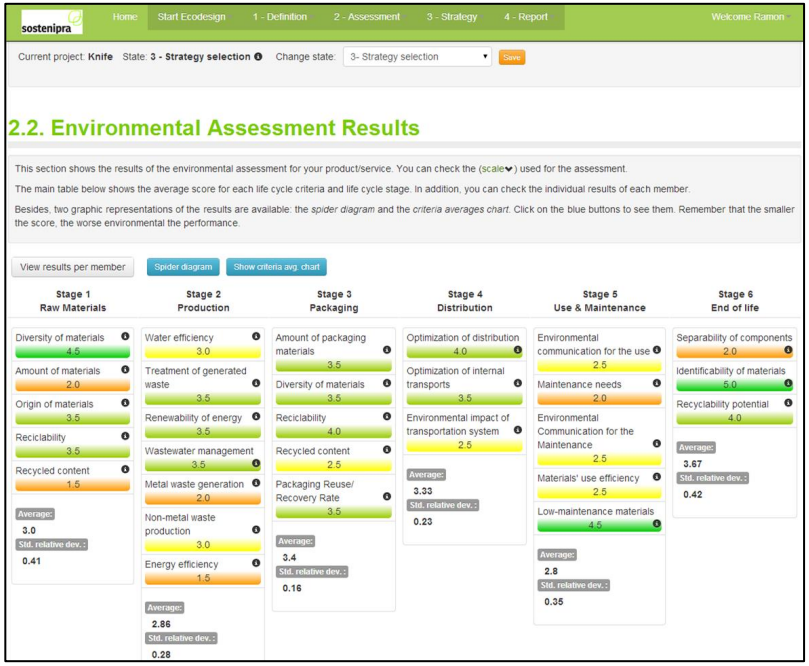
4. ASSESSMENT

Main Menu

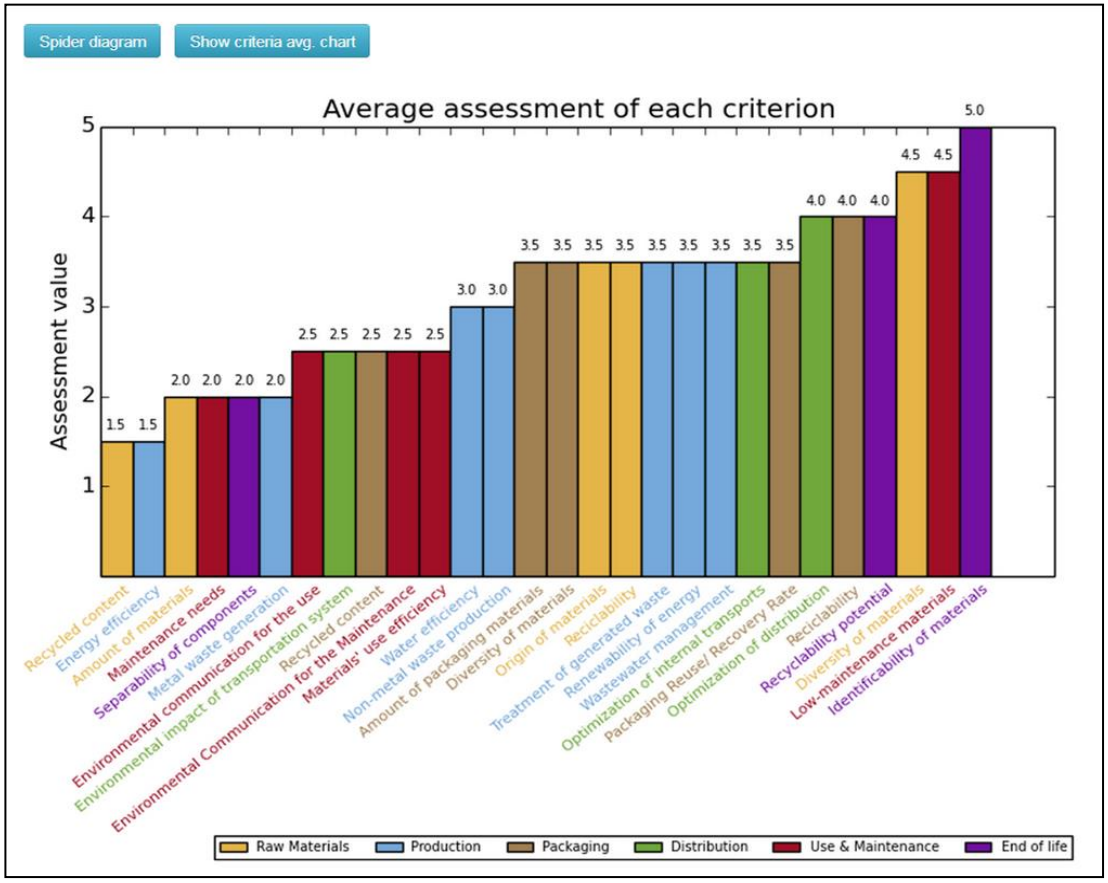
2, Assessment > 2.2 Results >

State menu

Currect project > State 1.initial definition > **Change State: 3-Strategy selection > save**



4. ASSESSMENT



ENVIRONMENTAL ASSESSMENT RESULTS

Bar diagram.

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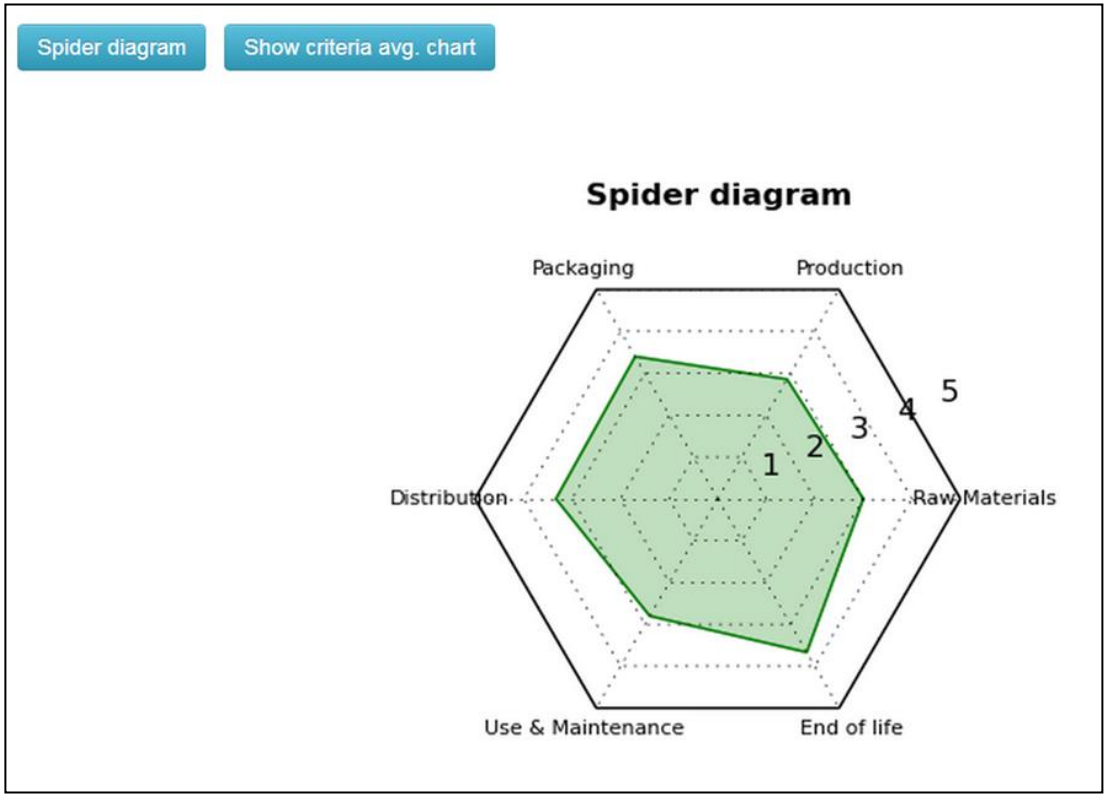
4. ASSESSMENT



ENVIRONMENTAL ASSESSMENT

RESULTS

The main result: Spider diagram.

The environmental assessment results shows where attention should be paid in order to increase the environmental performance of the product/service.

With this information, **edTOOL** suggest a set of environmental improvement strategies.

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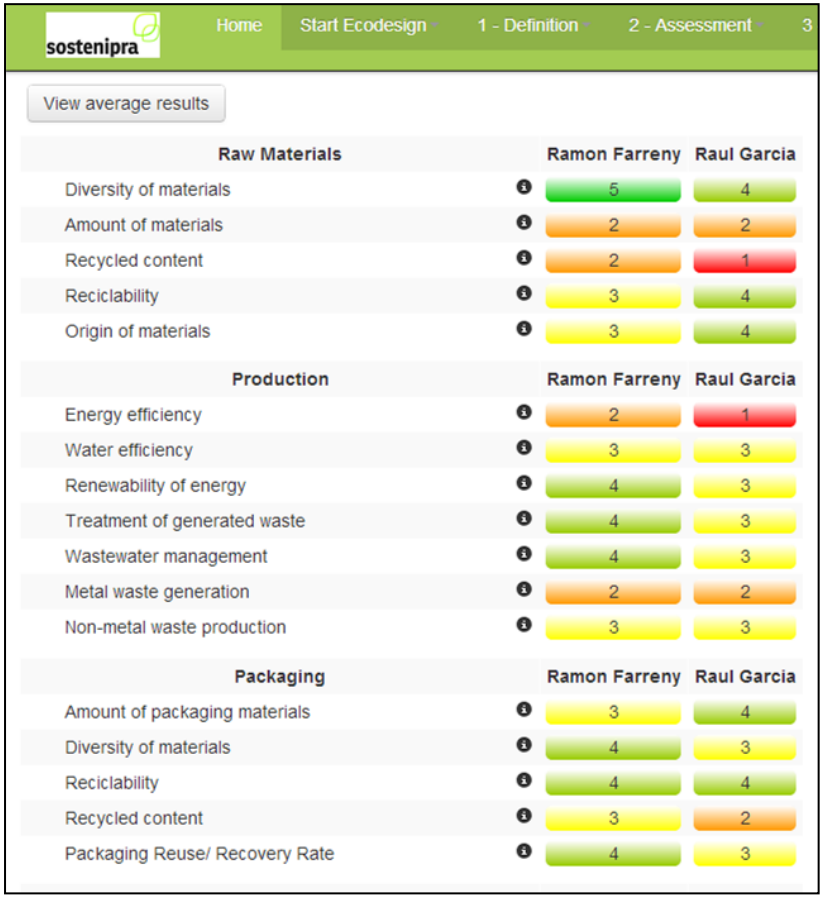
4. ASSESSMENT



Raw Materials	Ramon Farreny	Raul Garcia
Diversity of materials	5	4
Amount of materials	2	2
Recycled content	2	1
Reciclability	3	4
Origin of materials	3	4

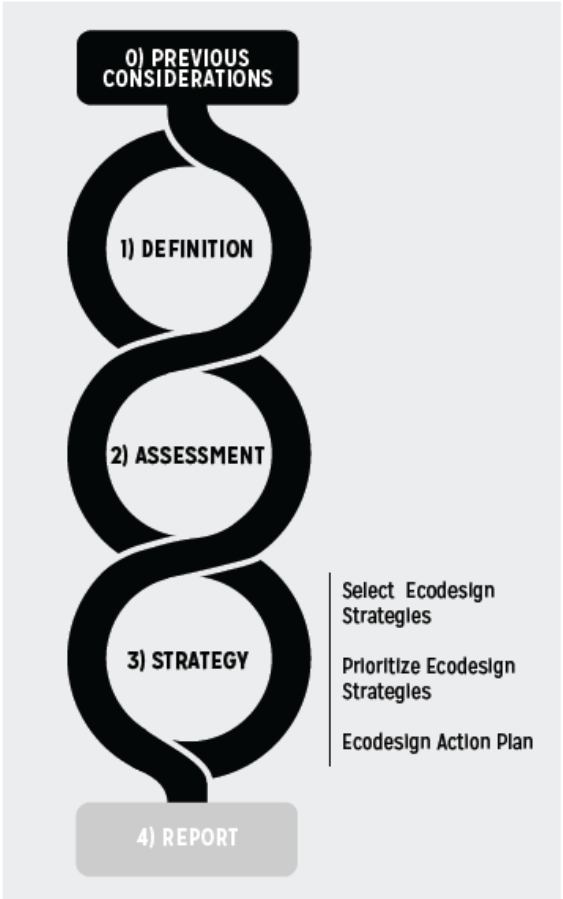
Production	Ramon Farreny	Raul Garcia
Energy efficiency	2	1
Water efficiency	3	3
Renewability of energy	4	3
Treatment of generated waste	4	3
Wastewater management	4	3
Metal waste generation	2	2
Non-metal waste production	3	3

Packaging	Ramon Farreny	Raul Garcia
Amount of packaging materials	3	4
Diversity of materials	4	3
Reciclability	4	4
Recycled content	3	2
Packaging Reuse/ Recovery Rate	4	3

ENVIRONMENTAL ASSESSMENT RESULTS

The individual scores can also be observed by the Coordinator.

4.STRATEGY

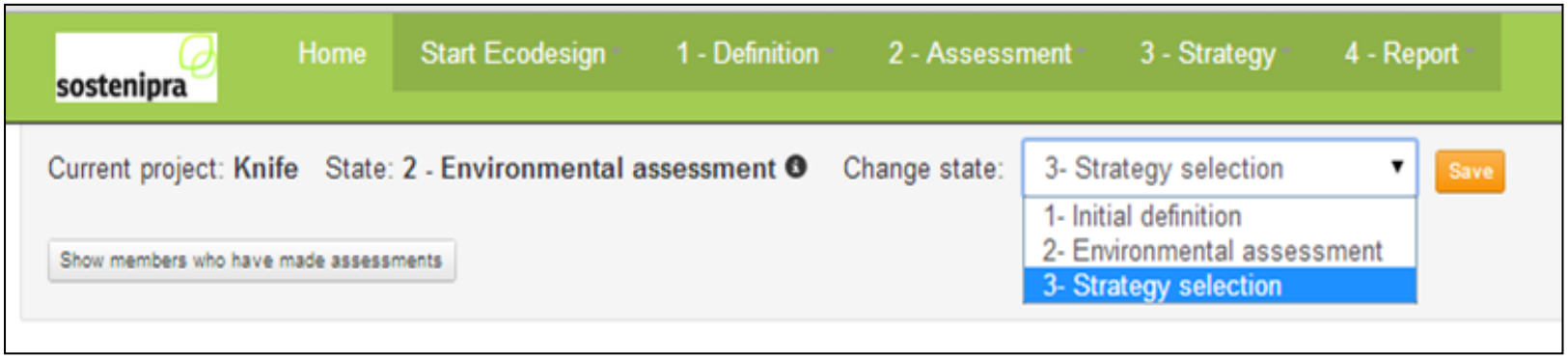


Step 3. Strategy Assessment

Throughout this step the potential ecodesign strategies are selected, prioritized
and materialized into an Action Plan.

4.STRATEGY

In order to process (obtain averages) the whole ecodesign team results, the Coordinator has to move to the next State. This will terminate the ‘criteria edition process’



4.STRATEGY

List of environmental improvement strategies

Materials	Reduce number of different types of material	*In general, a reduced number of different types of materials is desirable, since it simplifies all life cycle stages (e.g. procurement of materials, production processes, management of wastes, etc.). However, this strategy may be difficult to achieve for reasons of function, strength, etc.*
	Reduce material input by design aiming at durability	*This strategy aims to reduce the use of materials to the minimum, always considering the requirements of the product (strenght, durability, service life, etc.).*
	Reduce material input by means of dematerialization	*Dematerialization is the replacement of a physical product with a non-physical product or service, thereby reducing the production, demand and use of physical products; and reducing the end-user's dependence on physical products. In implementing this strategy, several benefits may be achieved: cost-savings in materials, energy, transportation, consumables and the need to manage the eventual disposal and/or recycling of a physical product.*
	Reduce material input by means of a simple principle of functioning	*The reduction of non structural parts and of connecting parts allows to reduce the consumption of resources, as well as to a reduction of assembly and disassembly times.*
	Reduce material input by means of multifunctionality	*The combination of functions into one product reduces the consumption of material per function. Therefore, the consumed resources are used to provide several functions, for which reason the generated impacts could be partially allocated to each of the functions).*
	Use materials and components with lower ecological rucksack	*The consumption of resources for the supply of raw materials and the manufacture of external parts and components has an ecological rucksack, that is aggregated into the product's rucksack. Consequently, efforts should concentrate on minimizing the ecological rucksacks accompanying materials and other external parts and components. This may be realized by clearly defined requirements for the selection of suppliers, for which different assessment methods exist. In most cases indicators will be calculated from life cycle analysis data (LCA), which can be used as a basis for the assessment of the environmental impact of materials. Of course, each of the methods used yields results only within its own bounds. Therefore, knowing these limits and the potential environmental impact not detected by a given method is essential for application in practice.*
	Select suppliers and products under ecolabelling systems or providing environmental information	*Certified and ecolabelled materials are preferrable*
	Select materials of low energy intensity	*Materials with low energy intensity or low embodied energy are preferrable, since they reduce the cumulative energy demand of the offered product/service.*
	Prioritize renewable raw materials	*Renewable raw materials are not of fossil origin but are made, in most cases, from plants. Their use presents benefits, since other limited resources are not used and, in addition, it provides for adequate disposal.*
	Prioritize materials that are abundant in the environment and avoid scarce materials	*The use of materials that are abundant provides for greater opportunities to obtain them and avoids the depletion of other resources that are scarcer.*

edTOOL includes a database of generic environmental improvement strategies that could be applied to ecodesign products and services, which are grouped according to what life cycle stage they correspond to (See User Guide)

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4.STRATEGY

SELECT ECODESIGN STRATEGIES

the Coordinator will need to navigate through the set of suggested strategies and check if the strategies:

- are **appropriate** for the assessed product/service, meaning that it does make sense to implement such strategy in the product/service under study.

- have already been **completed** for the product/service under study, meaning that such strategies have already been applied.

4.STRATEGY

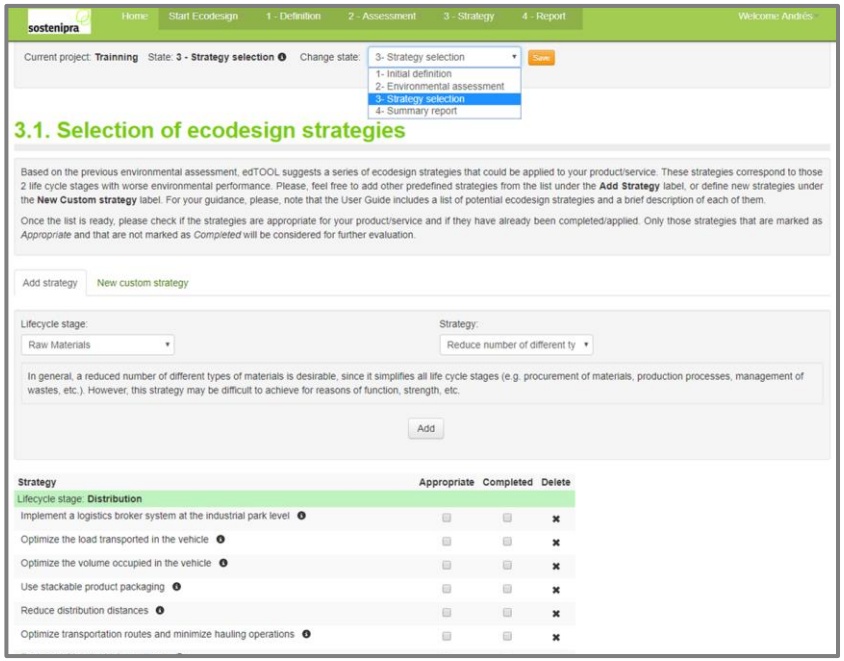
4.STRATEGY

Main Menu

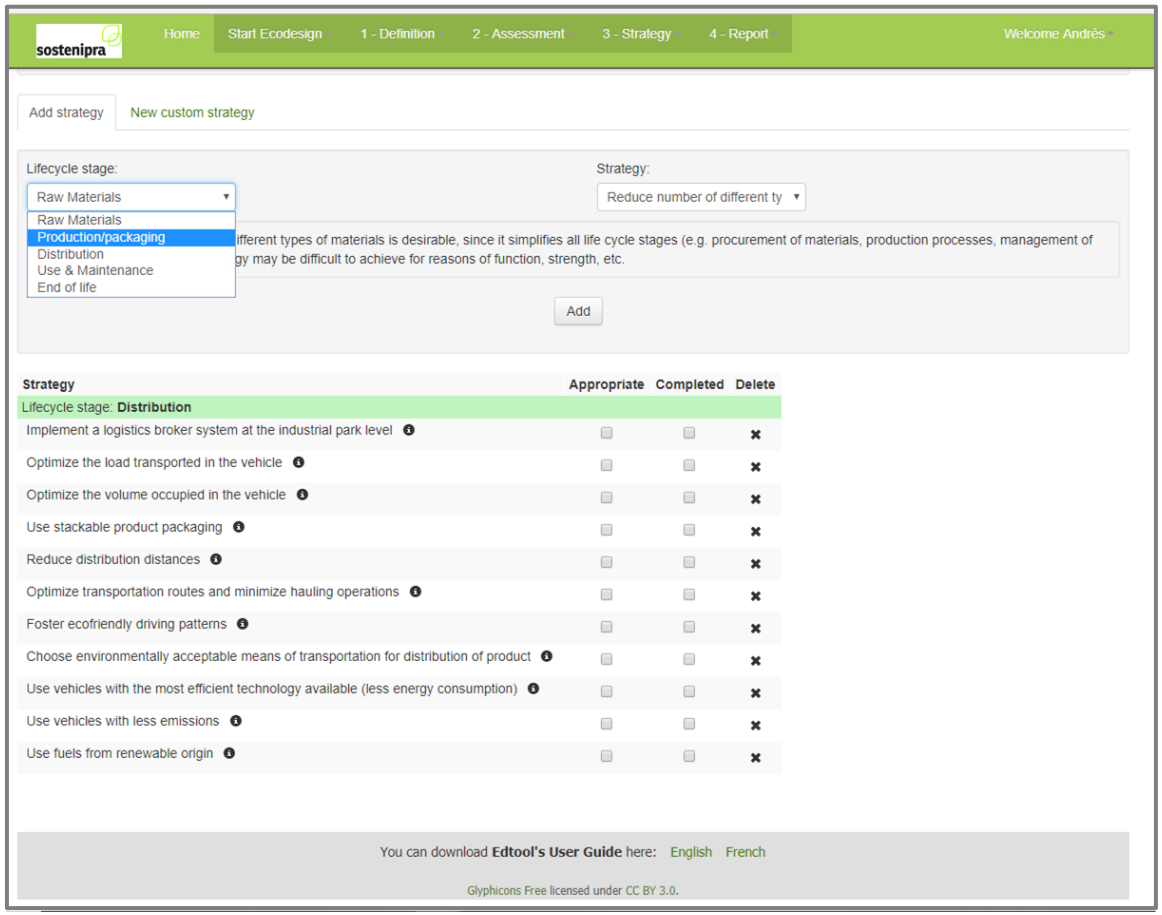
3. Strategy > 3.1 Select ecodesign strategies >

State menu

Currect project > State 1.initial definition > **Change State: 3-Strategy selection > save**



4.STRATEGY



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4.STRATEGY

Strategy	Appropriate	Completed	Delete
Lifecycle stage: **Production**			
Minimize and simplify the production processes	☑	☐	✖
Use low material input, low emission production technologies	☑	☑	✖
Use efficient energy technologies in the production process	☑	☑	✖
Use techniques that optimize energy use	☑	☐	✖
Use water efficient technologies in the production process	☑	☐	✖
Use technologies that optimize raw materials use in the production process	☑	☐	✖
Preferably use renewable energy resources along the production process	☑	☑	✖
Preferably use regionally available energy resources	☑	☑	✖
Use techniques that reduce the generation of waste and emissions	☑	☐	✖
Reduce fraction of rejects in production process	☑	☐	✖
Recycle process materials whenever possible	☑	☐	✖
Search for sinergies and symbioses with neighbouring companies and organizations	☐	☐	✖
Close material cycles in the production process	☐	☐	✖
Recycle and reuse waste for new products/materials	☐	☐	✖
Use parts of identical design for different products	☑	☑	✖
Locate the production plant as close as possible to the market	☐	☐	✖

SELECT ECODESIGN STRATEGIES

the Coordinator will need to navigate through the set of suggested strategies and check if the strategies:

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4.STRATEGY

PRIORITIZE ECODESIGN STRATEGIES

The previous filter reduces the list of environmental improvement strategies to a more manageable set, which is assessed in marketing, economic and technical terms.

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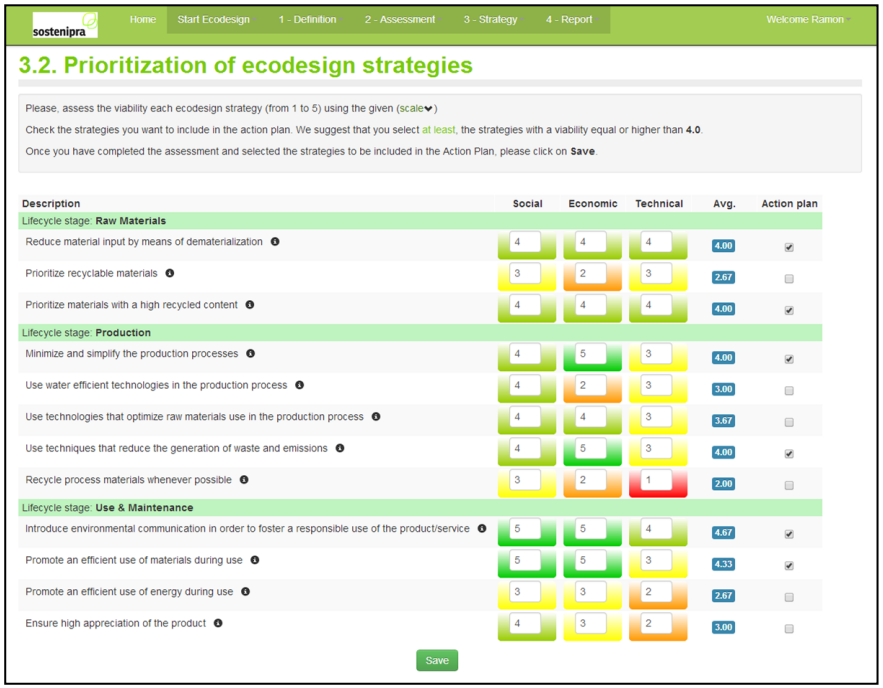


Once assessed, the Coordinator is able to prioritize which strategies will be included in the Action Plan

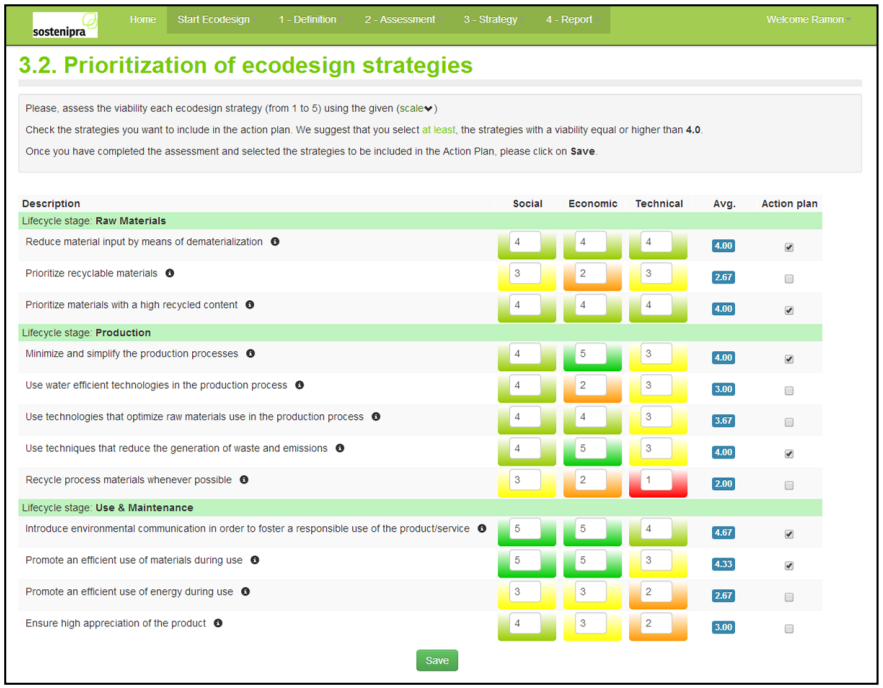
4.STRATEGY

Main Menu

3. Strategy > 3.2 Prioritize ecodesign strategies >

State menu

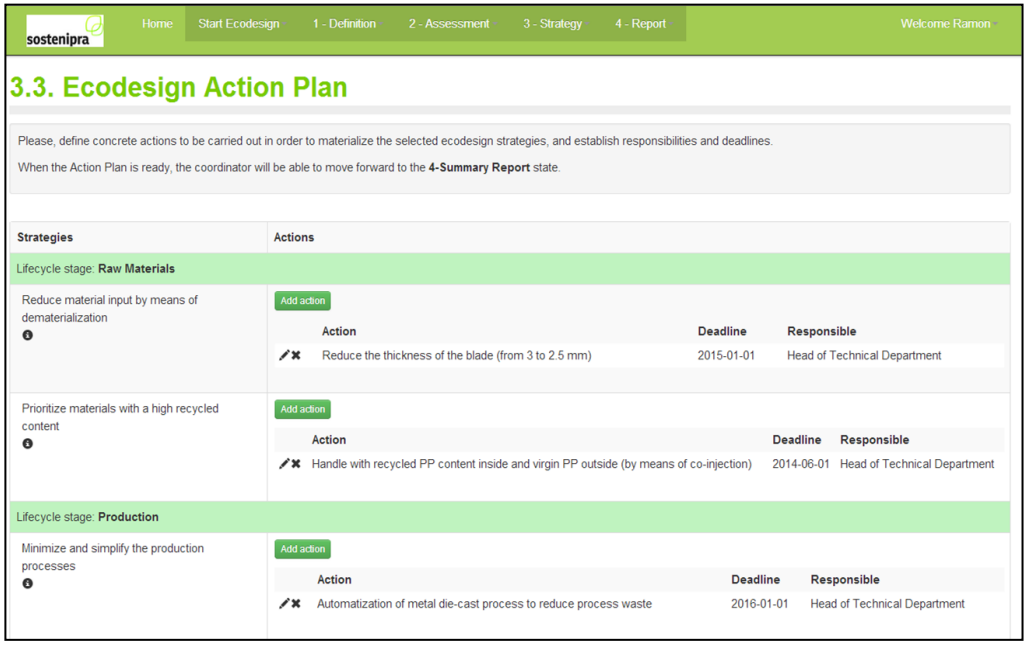
Currect project > State 1.initial definition > **Change State: 3-Strategy selection > save**



4.STRATEGY

ECODESIGN ACTION PLAN (Plus Step)

The team will define concrete actions to be carried out in order to implement the selected ecodesign strategies, establish responsibilities and deadlines. Therefore, for each strategy, the Coordinator will be able to introduce one or more actions



4.STRATEGY

Main Menu
3. Strategy > 3.3 Ecodesign plan >

State menu
Currect project > State 3-Strategy > **Change State: 4-Summary report > save > Observse the summary**

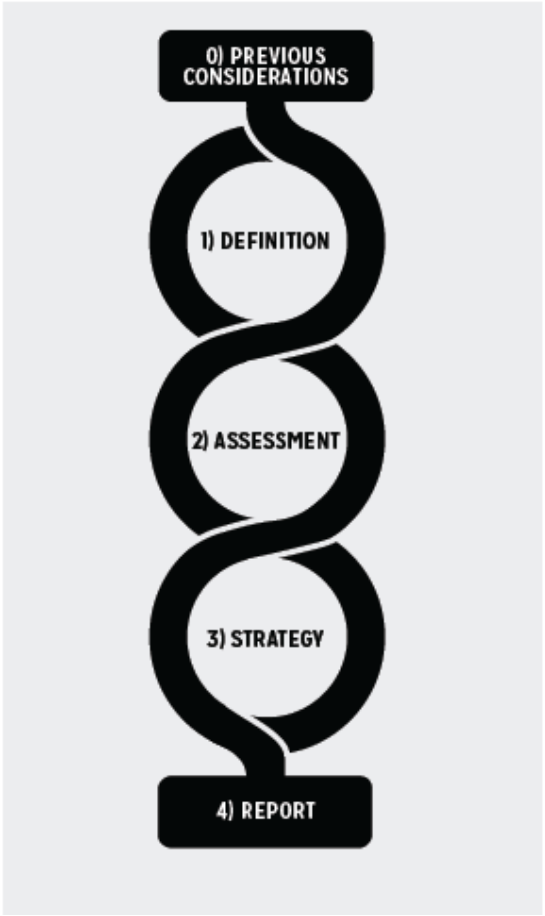
Main Menu
3. Report > 4.12Summary report >

State menu
Currect project > State 3-Report > **Change State: 4-Summary report > save > Observse the summary**

4.STRATEGY


sostenipra
Home
Start Ecodesign
1 - Definition
2 - Assessment
3 - Strategy
4 - Report
Current project: Knife
State: 4 - Summary report
Change state:
4- Summary report
Save
1- Initial definition
2- Environmental assessment
3- Strategy selection
4- Summary report

6.STRATEGY



Step 4. Report

Throughout this step a report is obtained, which summarizes the main results of the ecodesign project.

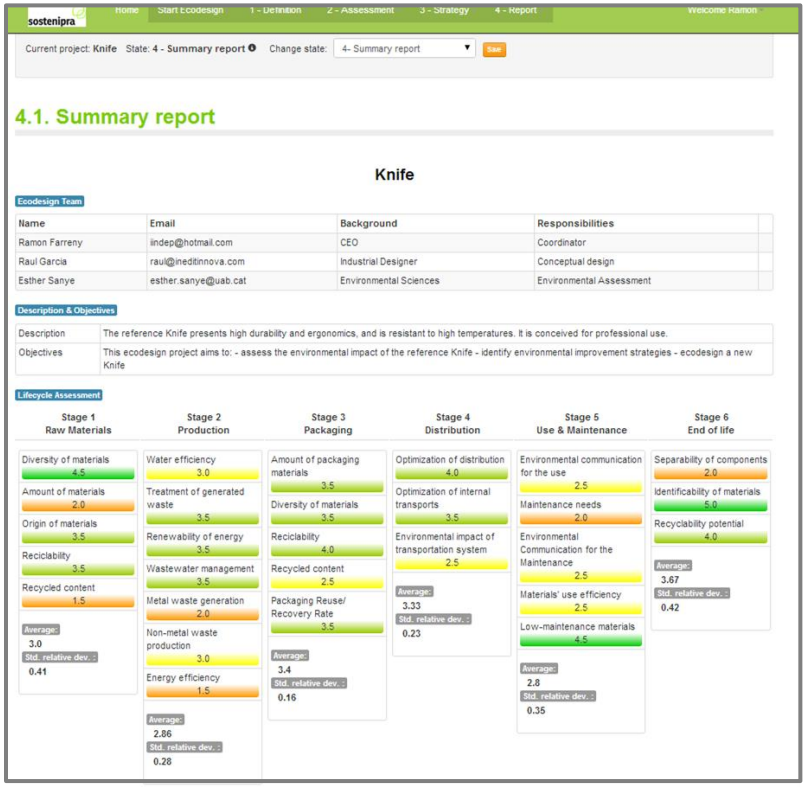
6.STRATEGY

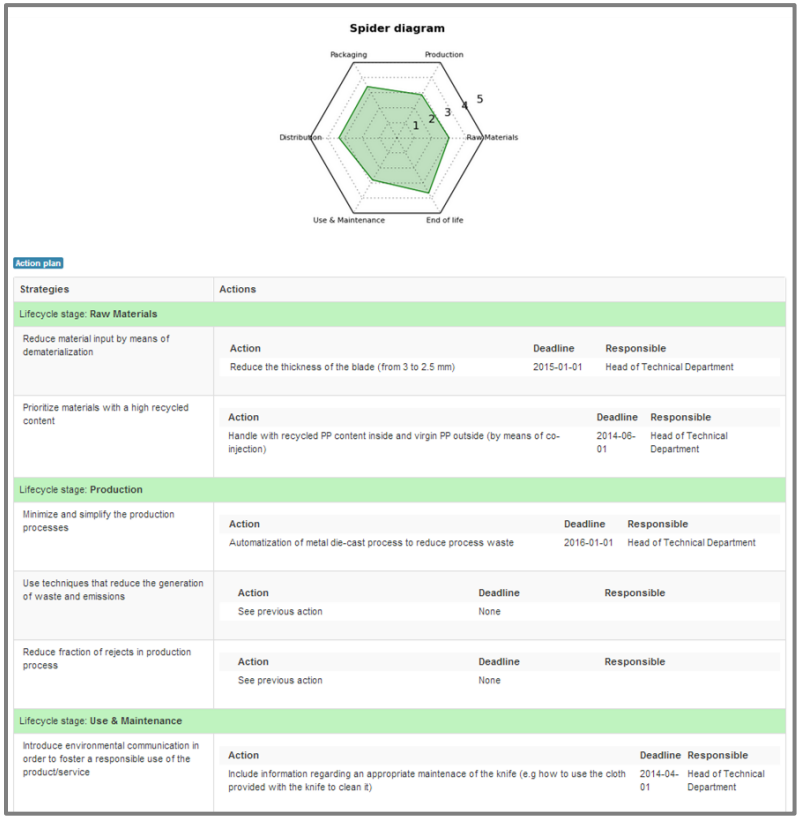
SUMMARY REPORT

The contents of the Summary report are pre-established in order to provide a common means of reporting the results of the implementation of **edTOOL:**

- Ecodesign Team
- Description & Objectives
- Life Cycle Assessment
- Spider diagram
- Action Plan

6.STRATEGY





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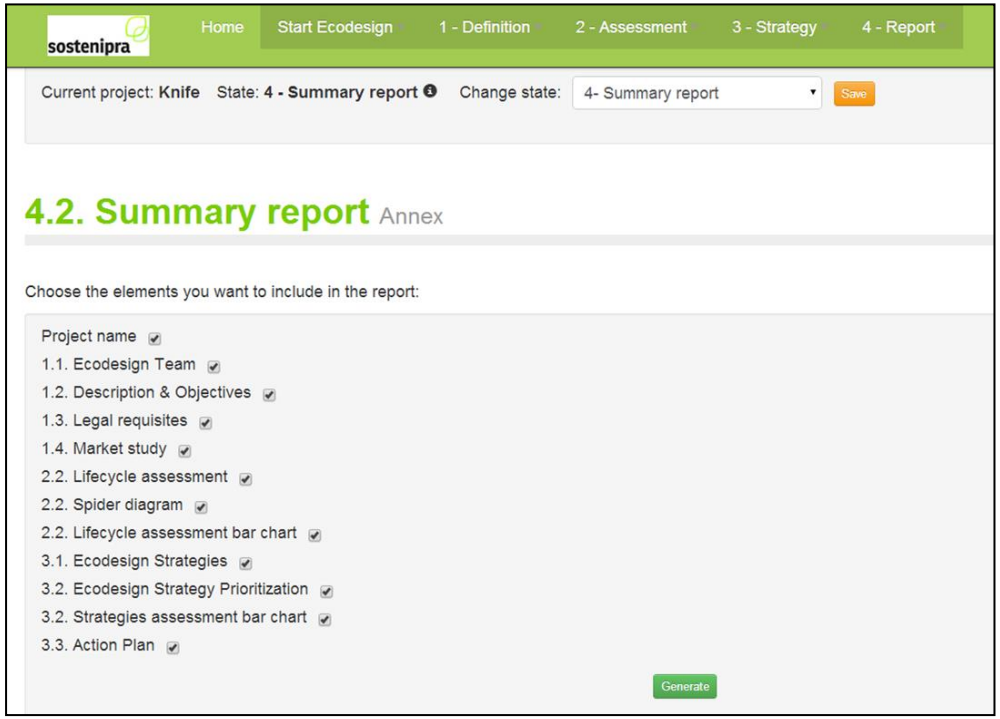
6.STRATEGY

CUSTOMIZED REPORT

ThIS allows the Coordinator to choose what information will be included in the Report:



Ecobriefing

Ecobriefing

Ecobriefing

The ecobriefing aims to identify the environmentally critical aspects and reduce their impact through ecodesign and lifecycle stages.

Concept

Elimination the unnecessary components

Simplify the spare componentes

Materials

Reduction of the amount of materials

Avoid materiales that comes from fossil deposits

Reduction of material diversity

Distribution

Optimization of transport volume

Ecobriefing

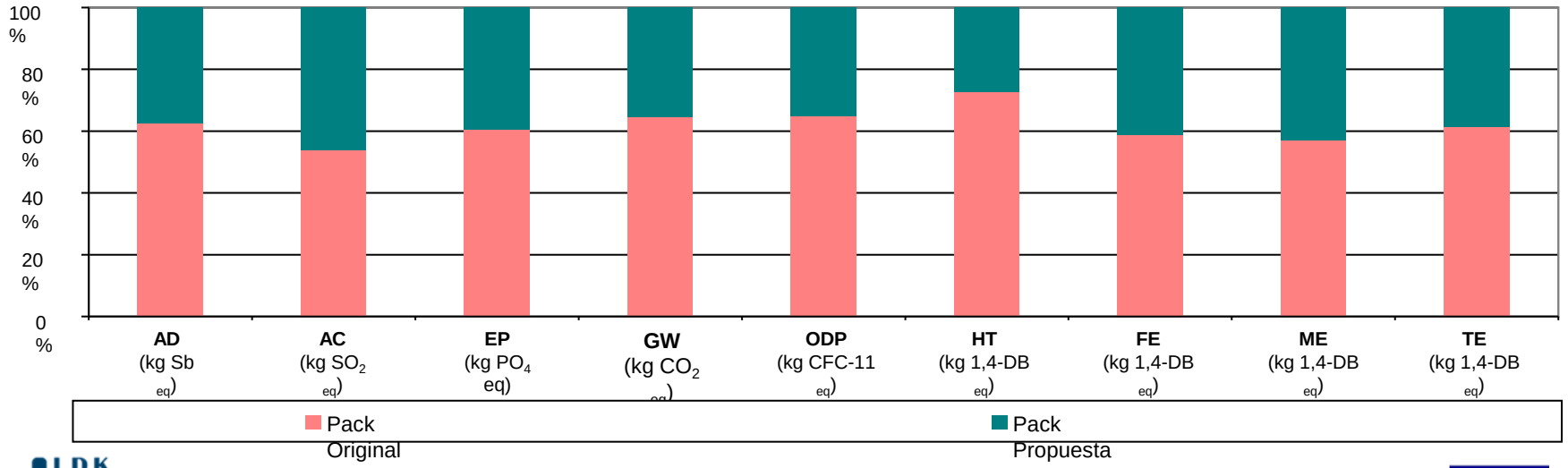
- Re design the case and their internal “locks”.
- New packaging must be consistent with the product.
- Protect the product.
- Improve the product visibility.
- Simplify the packaging assembly and disassembly.
- Avoid drastic changes during the manufacturing.
- Reduce the environmental impact.

Ecobriefing

Aspectos cuantificables	Pack original	Pack propuesta	Porcentaje de mejora
Peso	118,7g	81,77g	↓31%
Volumen	1272cm^3	906cm^3	↓29%
Envase por unidad de transporte	20u.	28u.	↑29%
Tiempo de montaje	31s.	19s.	↓39%
Coste de los materiales	1,34 €	1,04 €	↓10%

Ecobriefing

Aspectos cuantificables	Pack original	Pack propuesta	Porcentaje de mejora
Impacto ambiental	-	-	↓23,5%
Pisada de carbono (CO_2 eq)	217g	121g	↓44%



SWIM-H2020 SM

For further information

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LinkedIn Page

SWIM-H2020 SM LinkedIn

Facebook Page

SWIM-H2020 SM Facebook

SWIM and Horizon 2020 Support Mechanism

Working for a Sustainable Mediterranean, Caring for our Future

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SWIM and Horizon 2020 Support Mechanism

Working for a Sustainable Mediterranean, Caring for our Future

Eco design your own product orservice

Presented by:

Hichem Salem and Anna Ibañez, PM on Green Entrepreneurship at SCP/RAC

SWIM and Horizon 2020 SM

12th December 2018, Barcelona, Spain

This Project is funded by the European Union

Design your own project - First meeting

1. Define your project

Project:

Description:

Aims

2. Team members

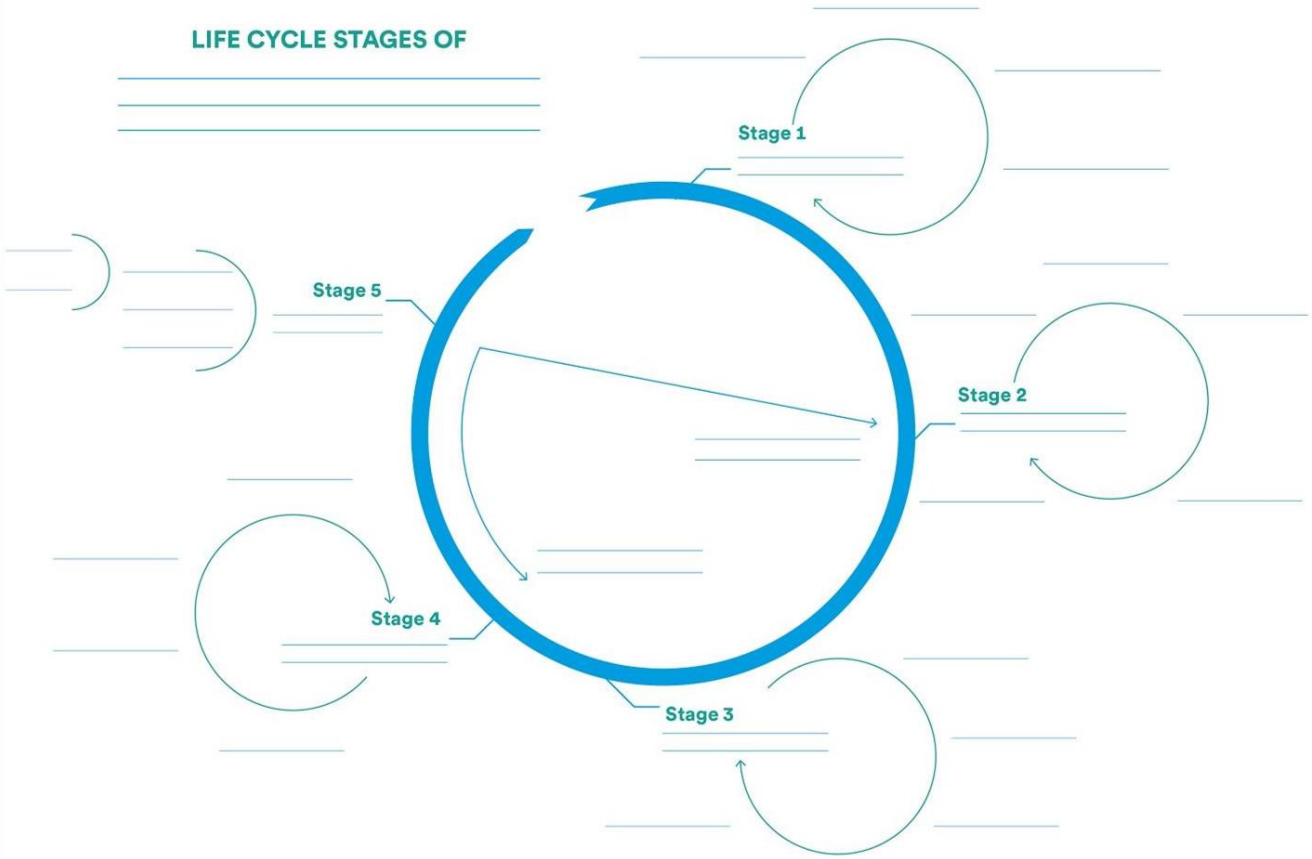
Roles

Persona	Position

LDK CONSULTANTS

Design your own project - Drawing down the life cycle

3. Defining stages



edTOOL summary

Could you draw down the process of the edtool ?

edTOOL Elevator pitch

Currently we find us with _____
User's problem/challenge

That effecting to _____
Target / users

In this context, edTool _____
What is edtool?

Offering you _____
Solutions or benefits for the user

Because only edTool has _____
Support (equipment, technology, knowledge, etc.)

SWIM and Horizon 2020 Support Mechanism

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