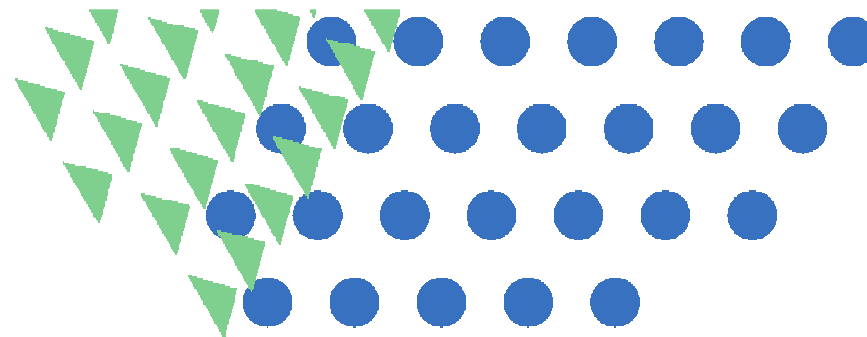




TESPI - Tool for Environmentally Sound Product Innovation

Sara Cortesi

ENEA - Life Cycle Assessment and Eco-design Laboratory
Bologna, Italy



Transnational Workshop on Promotion of
Resource Efficiency in SMEs
Berlin, 8th April 2014



**CENTRAL
EUROPE**
COOPERATING FOR SUCCESS.



EUROPEAN UNION
EUROPEAN REGIONAL
DEVELOPMENT FUND

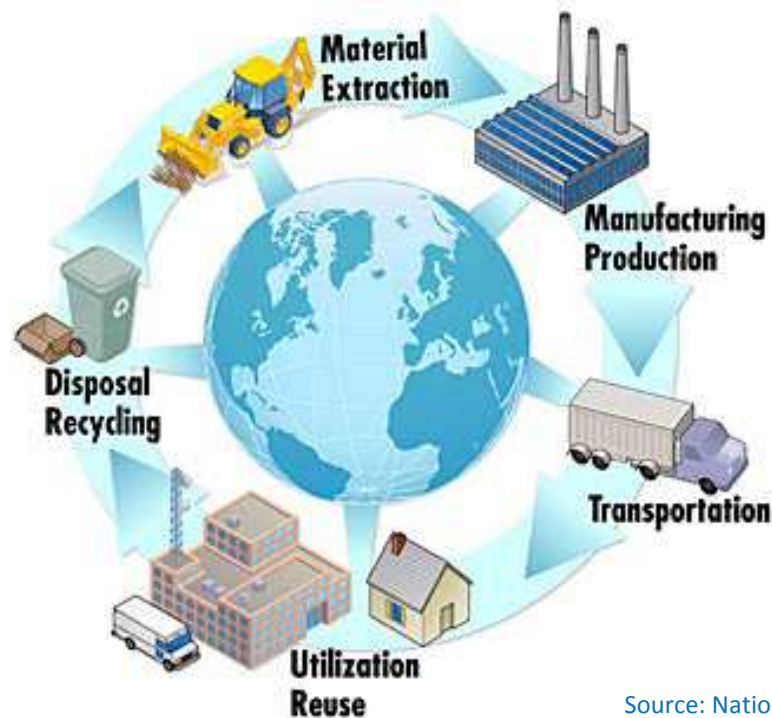
PRESOURCE Eco-design: definition and goal

To eco-design means to **integrate environmental aspects** into product design **along with** functional, aesthetic, economic,... aspects (see ISO 14062:2002 as a reference).

The main goal of eco-design is to reduce the environmental impacts (inputs and outputs) of the **life cycle** of the product in relation to the fulfillment of a specific **function/need**.

PRESOURCE Eco-design: life cycle approach

Consider all the **processes and activities, inputs and outputs** related to the life cycle of the product:



Source: National Institute of Standards and Technology

PRESOURCE Eco-design: functional approach

Focus on the function, not on the product: instead of designing a product (e.g. a washing machine)...



Model A



Model B



Model C

...

PRESOURCE Eco-design: functional approach

... design a **way to fulfill a function/need** (e.g. having clean clothes).



Washing
machine



Laundry
service



Self-service
laundry



Disposable
clothes

PRESOURCE Tespi: introduction



The screenshot shows the Tespi login interface. At the top, the 'tespi' logo is displayed with a stylized orange 't' and a brushstroke. Below the logo is the text 'Tool for Environmentally Sound Product Innovation'. To the right, there are language selection links: Deutsch, Ελληνικά, English, Español, and Italiano. A grey message box states: 'Either your work session has timed out, or you have not logged in yet. Please insert your username and password to access TESPI. To obtain a username and password please subscribe below. Click here if you have forgotten your log in information'. Below this is a login form with fields for 'User Name:' and 'Password:', and a 'Login' button. At the bottom of the form, there is a link 'Already subscribed in other ECOSMEs tools' and a 'Subscribe' button. The footer includes the text 'best viewed in 1024x768', a red message 'Unblock popup for this web site', and the 'ecosmes' logo.

tespi
Tool for Environmentally Sound Product Innovation

Deutsch
Ελληνικά
English
Español
Italiano

Either your work session has timed out, or you have not logged in yet. Please insert your username and password to access TESPI.
To obtain a username and password please subscribe below
Click here if you have forgotten your log in information

User Name:
Password:
Login

Already subscribed in other ECOSMEs tools
Subscribe

best viewed in 1024x768
Unblock popup for this web site
ecosmes

Tespi - Login

Tespi is available for free at **www.ecosmes.net**
(registration required).

PRESOURCE Tespi: goal

The main goal of the tool is to **support** SMEs in **the first stages of product re/design**, taking into account product life cycle, customers' needs and competitors' products.



PRESOURCE Tespi: structure

The tool is structured in **two parts**:

- 1. quality analysis** (based on Quality Function Deployment);
- 2. environmental check** (with a life cycle approach).



PRESOURCE Tespi: quality analysis

With quality analysis, the users identify the **customers' needs** and requirements, assess **their relevance** and **compare their own product with the competitors' one**.



PRESOURCE Tespi: quality analysis

The screenshot shows the 'New study > Study card' page of the Tespi application. The header includes the 'tespi' logo, the tagline 'Tool for Environmentally Sound Product Innovation', a 'Logout' link, and the date 'Friday April 4 2014'. The main form contains several input fields: 'Study title*', 'Study purpose*', 'Product name*', 'Product description*', and 'Customer description*'. A red dashed box highlights the 'Study purpose*', 'Product name*', and 'Product description*' fields, with the text 'Information about the product to be analysed' centered inside. Below these fields is a yellow instruction bar: 'Identify the main products (4 max.) of your competitors and select the reference competitor's product for this study.' This is followed by a table with three columns: 'Competitor's product', 'Description of the competitor's product', and 'Reference competitor'. The 'Reference competitor' column contains four radio buttons. A second red dashed box highlights the first two columns of the table, with the text 'Information about the competitor's product' centered inside. On the right side of the form, there is a vertical label 'Tespi - Description card'.

tespi
Tool for Environmentally Sound Product Innovation
Logout
Friday April 4 2014
New study > Study card

Study title*

Study purpose*

Product name*

Product description*

Customer description*

Information about the product to be analysed

Identify the main products (4 max.) of your competitors and select the reference competitor's product for this study.

Competitor's product	Description of the competitor's product	Reference competitor
		☐
		☐
		☐
		☐

Information about the competitor's product

Tespi - Description card

PRESOURCE Tespi: quality analysis

The main parts that make up the product (packaging included) have to be identified:

tespi
Tool for Environmentally Sound Product Innovation
Logout
Resume study/variant > Study/variant selection > Parts
Friday April 4 2014
Analysis of the "Example" product

Insert parts
Identify the main parts that make up your product.

Code	Name	Code	Name
1903	Part 1	1904	Part 2
1905	Part 3	1906	Packaging

Insert a new part or modify a part by clicking its code.

Code	Name	Description and function	
1906	Packaging	...	Delete
Comment			

Save Save and add another Go on Suspend

Tespi - Product breakdown

PRESOURCE Tespi: quality analysis

The customer's needs have to be defined and ranked from 1 (the least important) to 5 (the most important):

The screenshot shows the Tespi web application interface. At the top, the logo 'tespi' is displayed next to the text 'Tool for Environmentally Sound Product Innovation'. The user is logged in as 'Resume study/variant > Study/variant selection > Needs' on Friday April 4 2014. The main section is titled 'Analysis of the "Example" product' and contains a table for inserting needs. The table has columns for Code, Name, and Weight. Below the table, there is a section for inserting or modifying a need, with fields for Code, Name, Weight (a radio button selection from 1 to 5), and Description and function. A comment field is also present. At the bottom, there are buttons for 'Save', 'Save and add another', 'Go on', and 'Suspend'.

Code	Name	Weight
1636	Need 1	1
1638	Need 3	5
1640	Need 5	4

Code	Name	Weight
1637	Need 2	3
1639	Need 4	2

Insert a need or modify a need by clicking its code.

Code	Name	Weight	Description and function
		☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	

Comment

Save Save and add another Go on Suspend

Tespi - Customer's needs

PRESOURCE Tespi: quality analysis

The product **ability to fulfill each need, in comparison with the competitor's product**, has to be evaluated:

The screenshot shows the Tespi web application interface. At the top, the logo 'tespi' is displayed next to the tagline 'Tool for Environmentally Sound Product Innovation'. Below this, a breadcrumb trail reads 'Resume study/variant > Study/variant selection > Needs > Comparison with the competitor'. The date 'Friday April 4 2014' is shown in the top right corner. A navigation bar contains a home icon, the text 'Analysis of the "Example" product', and a help icon. The main content area is a table for comparing a product against five needs. The table has columns for 'Code', 'Name', 'Description and function', and 'Weight'. Each row corresponds to a need and includes radio buttons for evaluation: 'Much better', 'Better', 'Equal', 'Worse', and 'Much worse'. A 'Comment' text box is provided for each need. At the bottom of the table are 'Save', 'Go on', and 'Suspend' buttons.

Code	Name	Description and function	Weight
1636	Need 1	☐ Much better ☐ Better ☒ Equal ☐ Worse ☐ Much worse	1
Comment			
1637	Need 2	☐ Much better ☒ Better ☐ Equal ☐ Worse ☐ Much worse	3
Comment			
1638	Need 3	☐ Much better ☐ Better ☐ Equal ☒ Worse ☐ Much worse	5
Comment			
1639	Need 4	☒ Much better ☐ Better ☐ Equal ☐ Worse ☐ Much worse	2
Comment			
1640	Need 5	☐ Much better ☐ Better ☐ Equal ☐ Worse ☒ Much worse	4
Comment			

Save Go on Suspend

Tespi - Fulfilment of needs: comparison with the competitor

The contribution of each part towards delivering customer satisfaction has to be estimated (S, M, L):

The screenshot shows the 'tespi' web application interface. The header includes the 'tespi' logo, the title 'Tool for Environmentally Sound Product Innovation', a 'Logout' link, and the date 'Friday April 4 2014'. The breadcrumb trail is 'Resume study/variant > Study/variant selection > Needs > Parts contribution'. The main content area is titled 'Analysis of the "Example" product' and displays a table for 'Need 1' with the instruction 'Make an estimate about the contribution of each part to the satisfaction of each need.'.

Code	Name	Description and function
1903	Part 1	...
Contribution		
☒ Small ☐ Medium ☐ Large		
Comment		
1904	Part 2	...
Contribution		
☐ Small ☐ Medium ☒ Large		
Comment		
1905	Part 3	...
Contribution		
☐ Small ☒ Medium ☐ Large		
Comment		
1906	Packaging	...
Contribution		
☐ Small ☐ Medium ☒ Large		
Comment		

At the bottom of the form are three buttons: 'Save', 'Go on', and 'Suspend'.

Tespi - Fulfilment of needs: contribution of each part of the product

PRESOURCE Tespi: structure

The tool is structured in **two parts**:

1. **quality analysis** (based on Quality Function Deployment);
2. **environmental check** (with a life cycle approach).



PRESOURCE Tespi: environmental check

With environmental check, **the environmental performance** of the product is assessed, going **through a checklist of environmental aspects.**



PRESOURCE Tespi: environmental check

For each of the **5 phases** of the life cycle, **different aspects** are investigated **at different levels of detail**:

The screenshot displays the Tespi web application interface for environmental assessment. The title bar reads 'tespi Tool for Environmental Sound Product Innovation'. The breadcrumb trail indicates the current path: 'Modify study/variant > Study/variant selection > Environmental topics > Product evaluation'. The main heading is 'Analysis of the "Example" product'. Below this, the 'Pre-manufacture' phase is selected, with a instruction: 'Here you will consider the material inputs into the manufacturing plant to produce the product being studied. Select the statement that suits your product best.' The interface contains a table with evaluation criteria, each with a 'Name' column and an 'Evaluation' column containing radio button options. A 'Comment' field is provided for each criterion. At the bottom, there are 'Save', 'Go on', and 'Suspend' buttons.

Name	Evaluation
Material quantity	☐ This issue is not relevant for the product ☒ The size (weight/volume) of the product has already been minimized in accordance with its function ☐ The product size (weight/volume) can be reduced
Use of recycled materials	☐ This issue is not relevant for the product ☐ The percentage of recycled materials is >70% ☒ The percentage of recycled materials is <70% Modify parts contribution
Use of renewable and sufficiently available materials	☒ This issue is not relevant for the product ☐ All reasonable alternatives from renewable material have been applied/no scarce materials have been used ☐ The use of scarce/nonrenewable material was not widely reduced
Use of harmful materials	☐ The product does not contain harmful substances ☒ The content of harmful substances has already been minimised ☐ Other

*: Relevant.

Save Go on Suspend

Tespi - Five checklists, one for each phase of the life cycle

PRESOURCE Tespi: environmental check

- **Pre-manufacture:** material quantity and quality (recycled content, renewability, toxicity)
- **Manufacture:** energy and water consumption, emissions and waste production
- **Distribution:** type of vehicle and logistics, packaging
- **Use:** reliability and durability, maintenance and cleaning, use of energy and auxiliary materials
- **End-of-life:** reuse, recycle, incineration, landfill



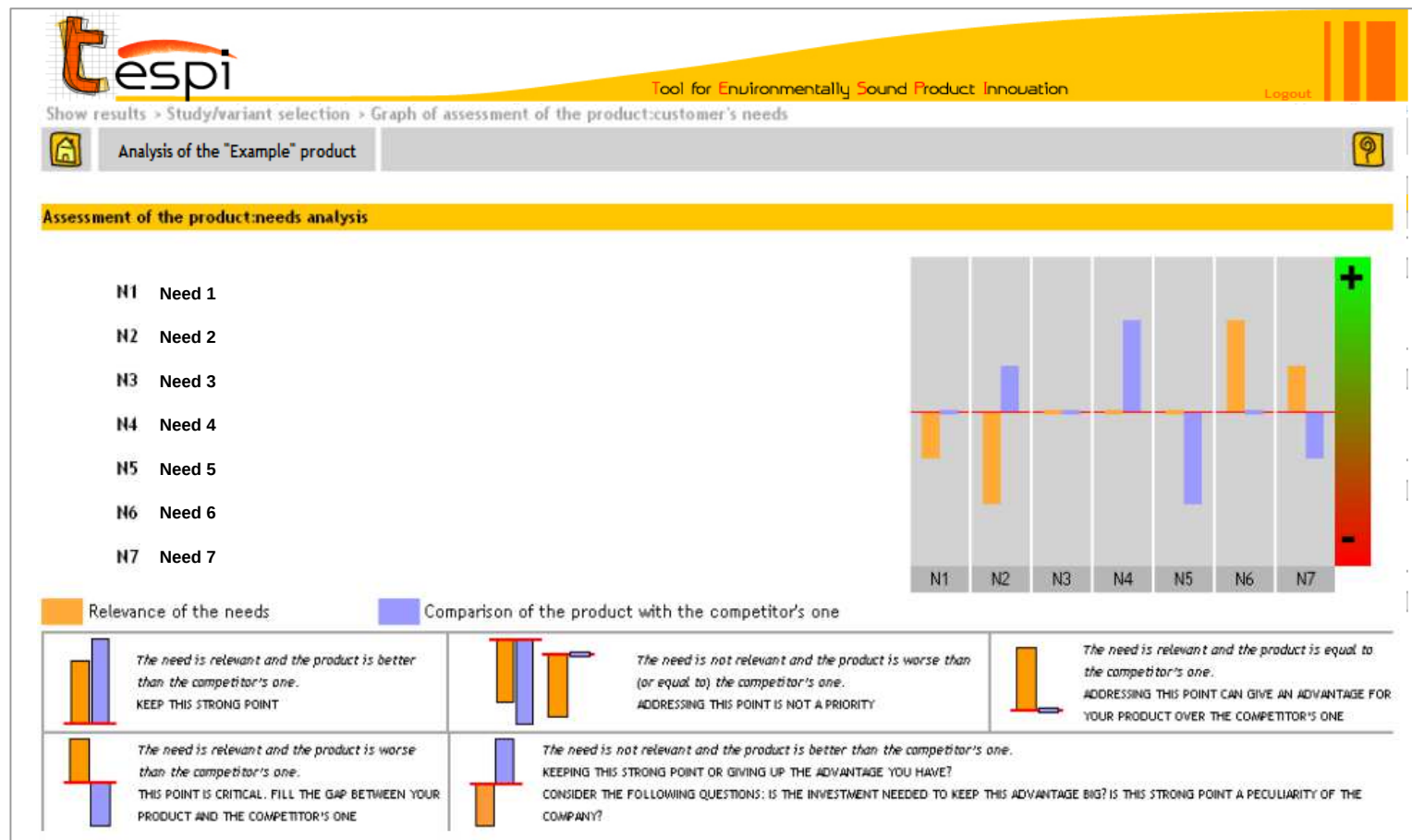
PRESOURCE Tespi: results

The results are presented in **4 graphs** that identify:

- which **needs** are the most relevant and how good the product is at satisfying each need, in comparison with the reference competitor;
- which **eco-design strategies** are the most relevant for the product;
- which **parts** present the most critical aspects concerning quality and the environment;
- which **needs and environmental** aspects require improvement efforts **for each part**.

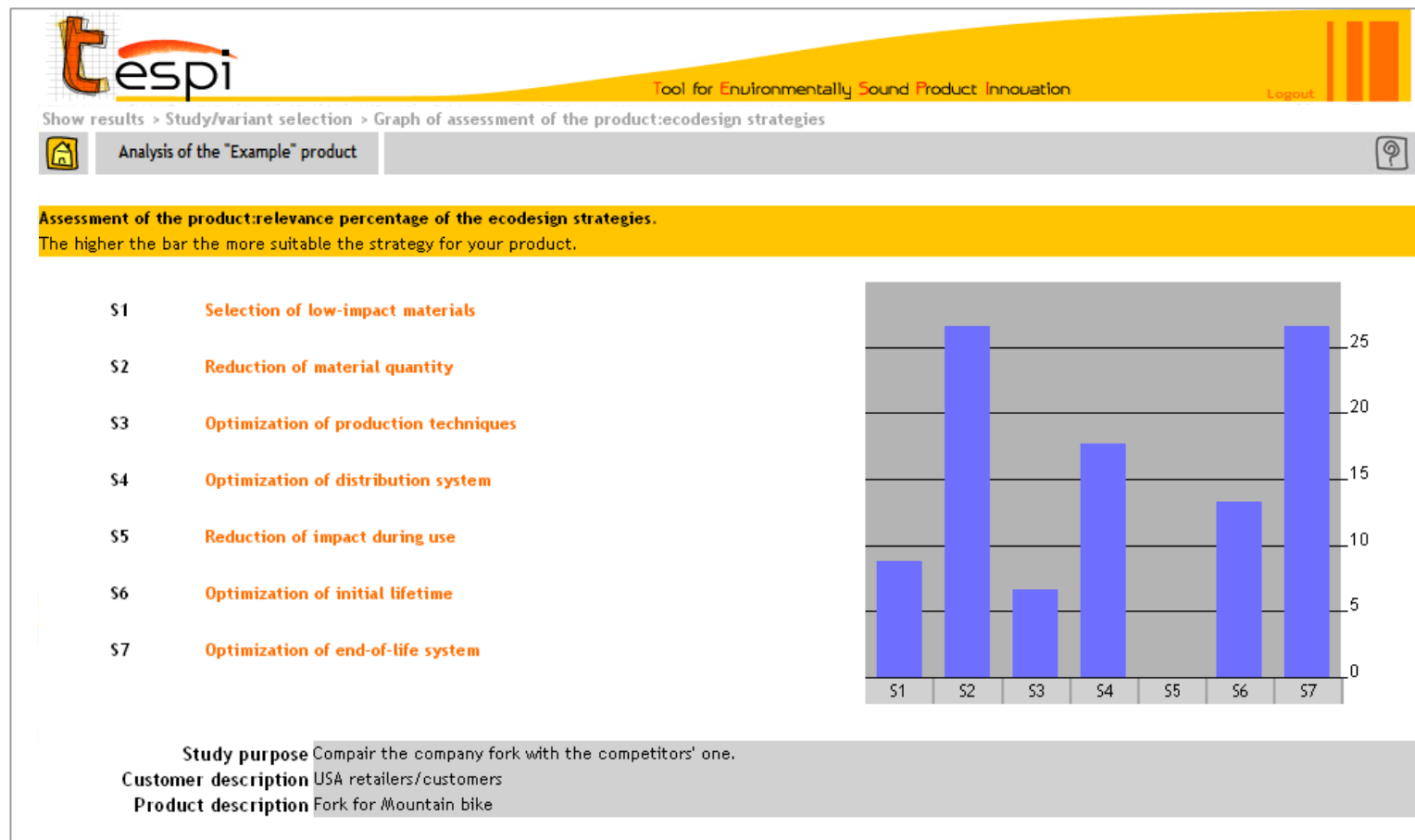


PRESOURCE Tespi results: needs analysis



Tespi - Needs analysis

PRESOURCE Tespi results: eco-design strategies



Tespi - List of priority of the eco-design strategies

PRESOURCE Tespi: facts and figures

- About 100,000 different visitors/year access www.ecosmes.net, the web portal where TESPI can be found; **registered users of TESPI are about 850.**
- It's been used by ENEA in **consultancy projects with many Italian companies**, such as ELICA (cooker hoods), MARIANI (school furniture), LUCIFERO (lighting products), and, most recently, with small/medium companies in the fixtures and professional cooking appliances sectors.

PRESOURCE Tespi: lessons learnt so far

- **The guide of an environmental/eco-design expert** when using the tool is strongly recommended.
- Sometimes **questions are as important** as answers.
- **The composition of the working group** (e.g. functions, hierarchy, attitude) can affect the results.
- Tespi can be used to help different “actors” inside the company **start communicating**.
- The use of **Tespi along with Life Cycle Assessment** can be profitable.

Thank you!

Sara Cortesi

ENEA - Life Cycle Assessment and Eco-design Lab.
Bologna, Italy

Phone 00 39 (0)51 6098601

sara.cortesi@enea.it

www.lecop.enea.it



**CENTRAL
EUROPE**
COOPERATING FOR SUCCESS.



EUROPEAN UNION
EUROPEAN REGIONAL
DEVELOPMENT FUND