

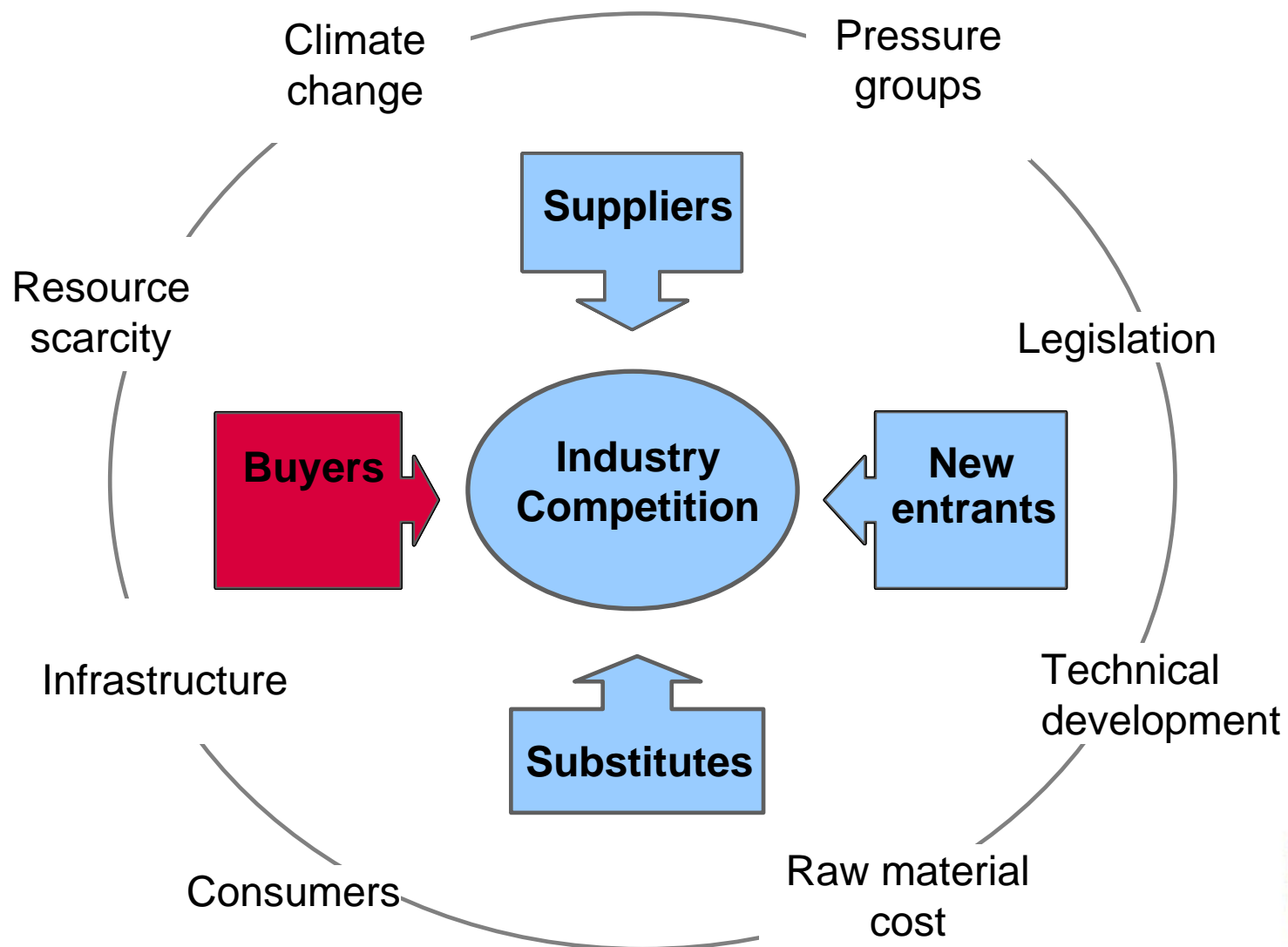
# Design, testing and evaluation of an eco-ideation tool

Part of a 3-Year PhD project sponsored by Unilever (SEAC)

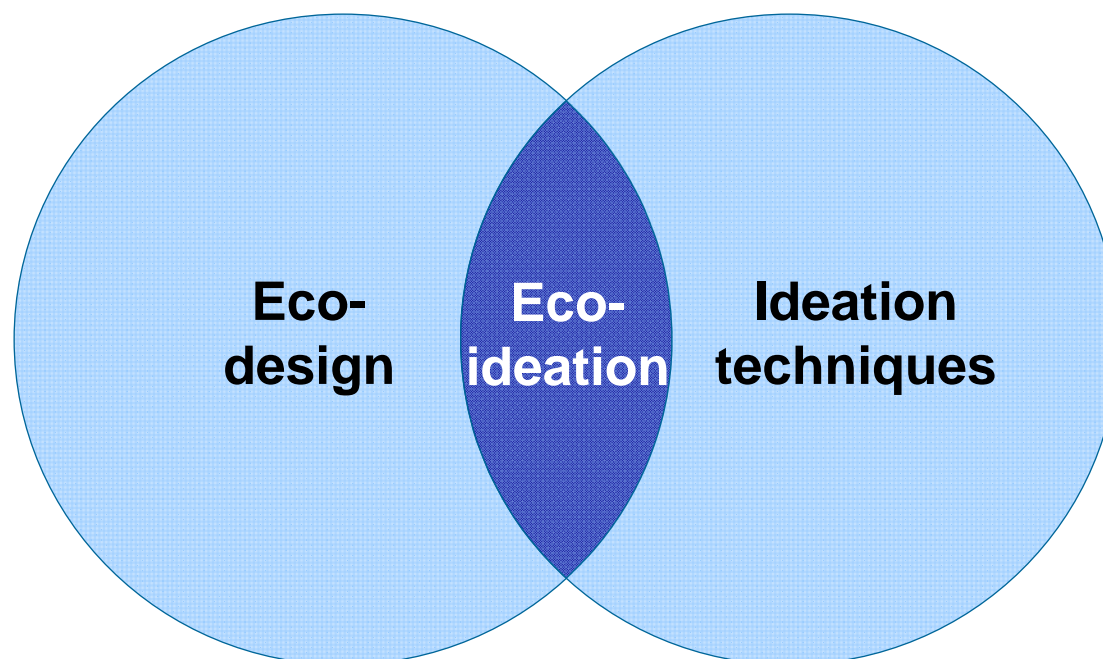
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# Why develop this tool?



# Literature & Gaps

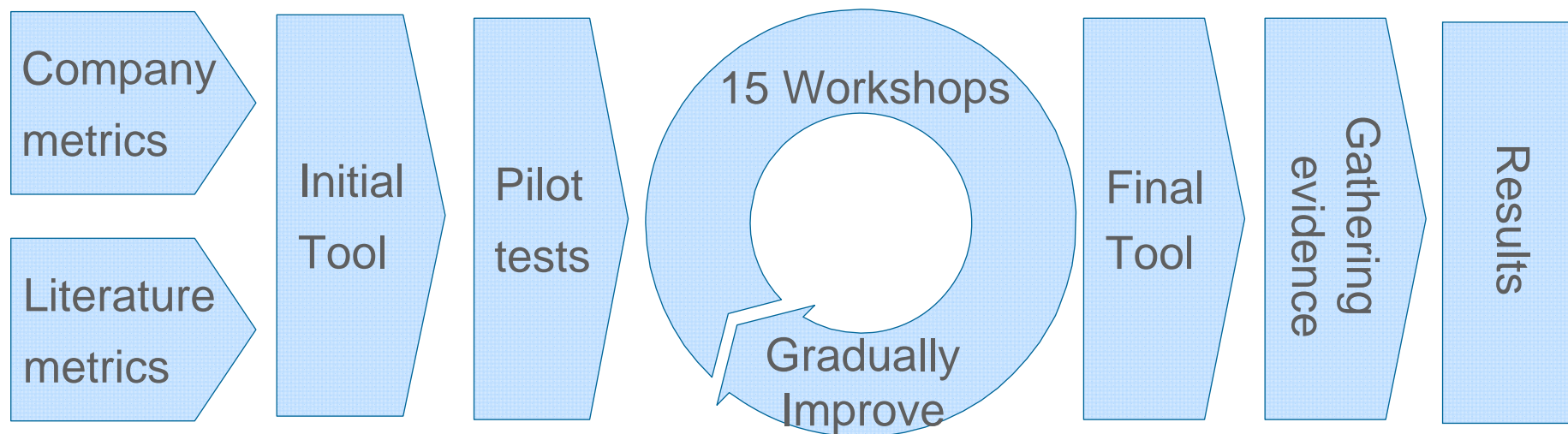


- A way to *generate* low GHG emissions ideas to make stepwise reductions
- Simple & easy for non-environmental experts



# Method

to design, test and evaluate an  
eco-ideation tool



## Metrics from company portfolio

<b>Location</b> <ul style="list-style-type: none"> <li>- Sourcing</li> <li>- Production</li> </ul>	<b>Solution</b> <ul style="list-style-type: none"> <li>- Density</li> <li>- Phase (solid, vapour)</li> </ul>
<b>Pack</b> <ul style="list-style-type: none"> <li>- Stock Keeping Unit</li> <li>- Re-packaging</li> <li>- Pack to ingredient ratio</li> </ul>	<b>Durability</b> <ul style="list-style-type: none"> <li>- Performance over time</li> <li>- Shelf/ stock life</li> <li>- Best by time after opening</li> </ul>
<b>Components</b> <ul style="list-style-type: none"> <li>- Number of materials</li> <li>- Number of components</li> </ul>	<b>Temperature changes</b> <ul style="list-style-type: none"> <li>- Sourcing</li> <li>- Production</li> <li>- Retail</li> <li>- Use</li> </ul>
<b>Dimensions</b> <ul style="list-style-type: none"> <li>- Weight</li> <li>- Volume</li> </ul>	<b>End-of-Life</b> <ul style="list-style-type: none"> <li>- Reusability</li> <li>- Recyclability</li> </ul>



# Metrics from literature

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## Reduced product use

- Alternative ways to provide service
- Shared use
- Integration and extension of functions

## Supply chain wide indicators

- Temperature, Time
- Energy and material reduction
- Weight and volume

## Elimination and reduction

- Eliminate waste from product+ pack
- Eliminate energy consumption
- Eliminating manufacturing use by-products

## Substitution of raw materials

- Substitute, Reduce, Recycle
- Material type, investing in better materials

## Consumption/ use of the product

- Energy required in use phase

## Life-time of the product

- Long technical + aesthetic life-time
- Reusability and recyclability
- Durability, reparability, upgradability, preciousness



# Initial tool development

- What are the main and extra functions?
- What is the lowest carbon way of providing this function?
- Identification of parameters per life cycle phase
  - Each parameter has a **green** (low GHG) and a **red** (high GHG) side
  - Example “Repackaging”:



How often is the product repacked throughout the supply chain?

- Example “Temperature for storage”:



How does the product need to be stored?

- Each question leads to a mini-brainstorm
  - This is expected to reduce the failure rate of non-response
- Two pilot tests to merge questions and improve the parameters
  - This reduced the number of questions from 36 to 15



# Testing the tool: Individual tool sessions

- To test and improve the tool organized 15 individual focused “workshops” for 9 product categories
  - Two sessions with environmental experts to verify parameters
  - Other sessions with product, process, and supply chain experts to further improve the tool
- Max. 1 hour to generate as many and creative low GHG ideas as possible
- Improvements:
  - “This question is not clear, can you rephrase or give examples?” This led to rephrasing questions and including examples in the tool



# Final tool

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- 14 Questions in two categories:

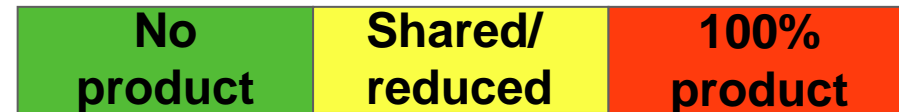
- Product design

- ▶ Delivery of value
- ▶ Product functionality
- ▶ Compacting
- ▶ Components/ Ingredients
- ▶ Durability/ effect/ experience
- ▶ End of life

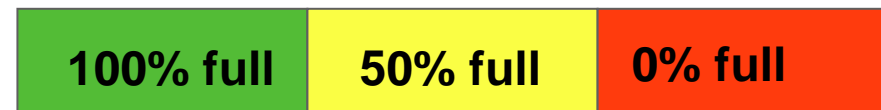
- Processing & supply chain

- ▶ Raw material efficiency
- ▶ Intermediate packaging
- ▶ Distance
- ▶ Load transport
- ▶ Temperature transport
- ▶ Temperature cycles
- ▶ Temperature for storage
- ▶ Storage time

Can value and functions be delivered without a product?



Is the capacity of the mode of transport fully used? Does product and process design enable full loads?



# Measures of tool effectiveness

Individual tool sessions	Group brainstorming sessions
<ul style="list-style-type: none"> <li>■ 17 ideas per individual session</li> </ul>	<ul style="list-style-type: none"> <li>■ 13 ideas per group session</li> </ul>
<p><b>Similarities:</b></p> <p>Reusable packs                      Low water options                      Concentrates</p>	
<p><b>Differences:</b></p>	
<ul style="list-style-type: none"> <li>■ More ideas on radical new product and supply chain design               <ul style="list-style-type: none"> <li>- E.g. 10-in-1 products</li> <li>- E.g. Functionality in durable goods</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>■ More ideas on collaborations and consumer behaviour               <ul style="list-style-type: none"> <li>- E.g. recycling partnerships</li> <li>- E.g. Consumer behaviour change</li> </ul> </li> </ul>



# Evaluation

## Evidence for tool

- Wider range of more radical ideas generated compared to groups
- Time and resource efficient
  - 1 person, 1 hour
- Each question led to a mini-brainstorm
  - Lower failure rates
- Simple, quick and for non-experts

## Potential difficulties

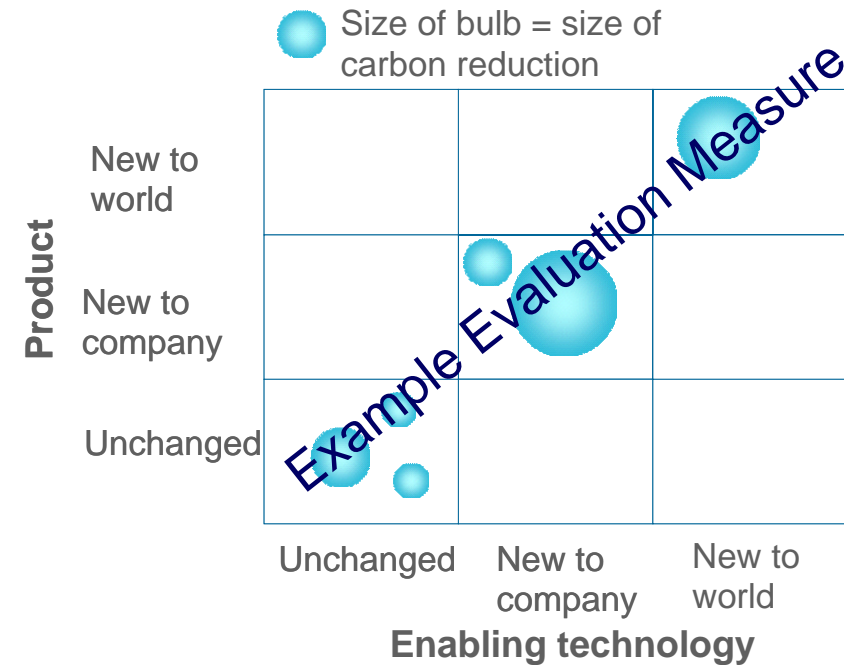
- People may prefer group brainstorming
  - Investigate potential
- Ideas are generated by marketing
  - Do they need or want a tool?
- Diffusion of more radical ideas



## Next steps

### ■ Idea evaluation: pain and gain

- Semi-quantitative measures
- Gain: expected GHG reduction benefit
- Pain: Implementation difficulty



### ■ Implementation potential

- Fit in the company
- Fit in other companies and industries

