Basic concepts on Ecodesign

UNIT 5: Principles/strategies of Ecodesign.

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Unit objectives

- Knowing the key strategies of Ecodesign framework.
- Implement the acquired knowledge through several successful examples.

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5.1. Introduction.

We understand “strategies” as those actions aimed to prevent , reduce and/or minimize the environmental impact of a product.

These are actions which must be considered in the organization when it is intended to:

- Obtain a suitable reduction of resource consumptions associated with the production.
  - Raw materials, energy sources, water, …
- Achieve the desired minimization of waste generation.

Specialized literature talk about eight “main” strategies.

All of them have a direct correspondence with the Product Life-Cycle.

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5.2. The eight strategies of Ecodesign.

The eight strategies of Ecodesign

- Strategy 0: New concept
- Strategy 1: Use of low impact materials
- Strategy 2: Reduction of materials
- Strategy 3: Optimization of production
- Strategy 4: Optimization of distribution system
- Strategy 5: Reduction in environmental impact of use
- Strategy 6: Optimization of life-time
- Strategy 7: Optimization of End-of-life

THE STRATEGIES SEEK TO PREVENT, REDUCE AND MINIMIZE THE ENVIRONMENTAL IMPACT.

They are actions to:

- Reduce resource consumption
- Minimize waste generation

The 8 strategies have a direct correspondence with the product life-cycle

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- Each product has differentiating connotations, that is, there aren't two identical products,
- The premise, therefore, is to understand that each product is different and exhibits particular needs.
- The strategies to be applied will be selected according to the nature of the product.

Taking into account the close relationship that they present with the stages of the Life Cycle, special attention should be given to:

- Avoid shifting environmental impact from one stage to another when implementing strategies.

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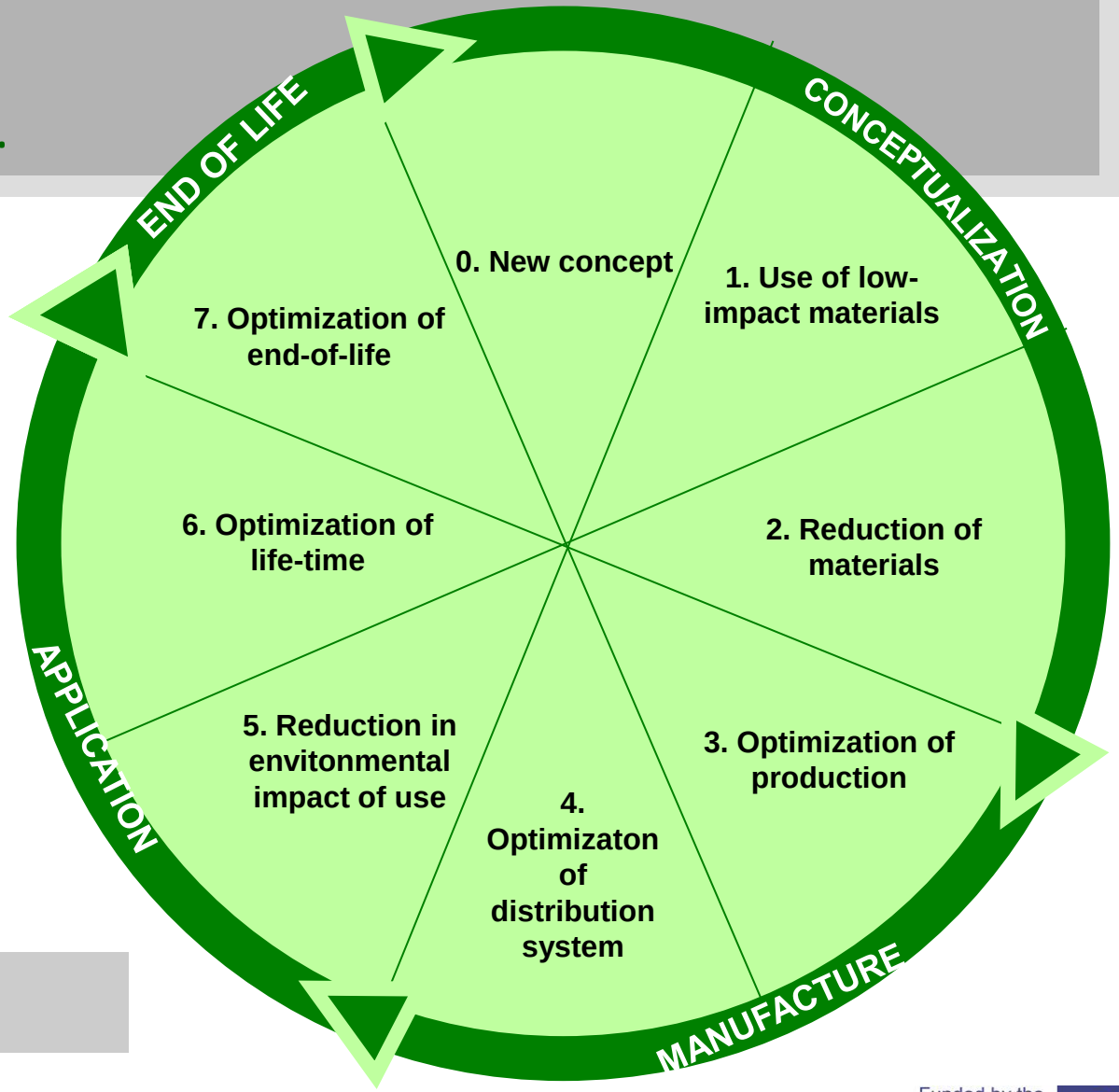
The Lifecycle Design Strategies (LiDS) Wheel enables separate the implementation methodology in 4 differentiated levels:

- Conceptualization
- Manufacture
- Application
- End-of-life



Each of them provides different Ecodesign strategies

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5.2.1 Strategy 0. ***New Concept***

Strategy 0. New Concept

- Framed within the phase of "conceptualization“
- Reflect on the amount of resources consumed by the Product System
- Reflect on the role it plays.

Sub-strategies:

- Dematerialization
- Multifunctionality
- Product sharing
- Service rather than product

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*5.2.1 Strategy **0. New concept***

Strategy: 0. New Concept

Sub-strategies

- Dematerialization: *Reduction of the quantity of matter necessary in fulfilling the function of the product*
- Multifunctionality: *Enhancing functionalities as a product*
  - *Example: multifunctional rack* (Baíta Design)
- Product sharing: *Maximising the use of product*
- Service rather tan product: *when the need generated is satisfied through a service, rather than use of a product*

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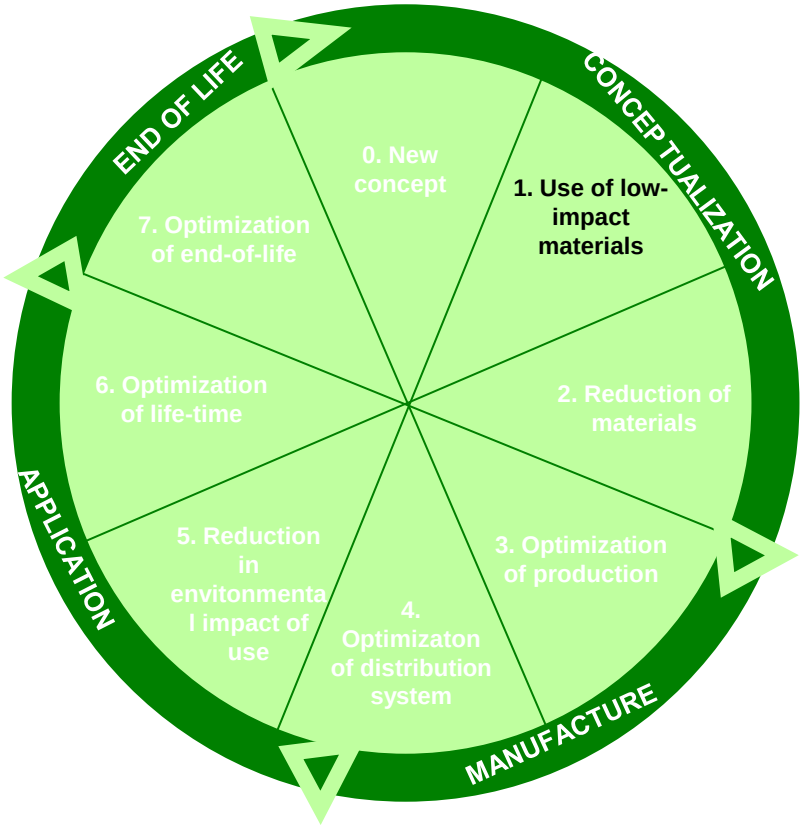
*5.2.2 Strategy 1. **Use of low-impact materials***

*Strategy: **1**. Use of low-impact materials*

- Avoiding raw materials/ compounds which affect the ozone layer.
- Avoiding very energy-intensive raw materials/ compounds (ex. aluminium)
- Alternative surface finishes with lower impact.
- Alternative resources to the use of scarce raw materials.

Sub-strategies:

- Materials derived from natural sources.
- Recyclable materials or high recycled content.
- Materials free of dangerous substances.
- Materials produced by ecological processes.
- The minimum possible number of different materials.
- Materials from local suppliers



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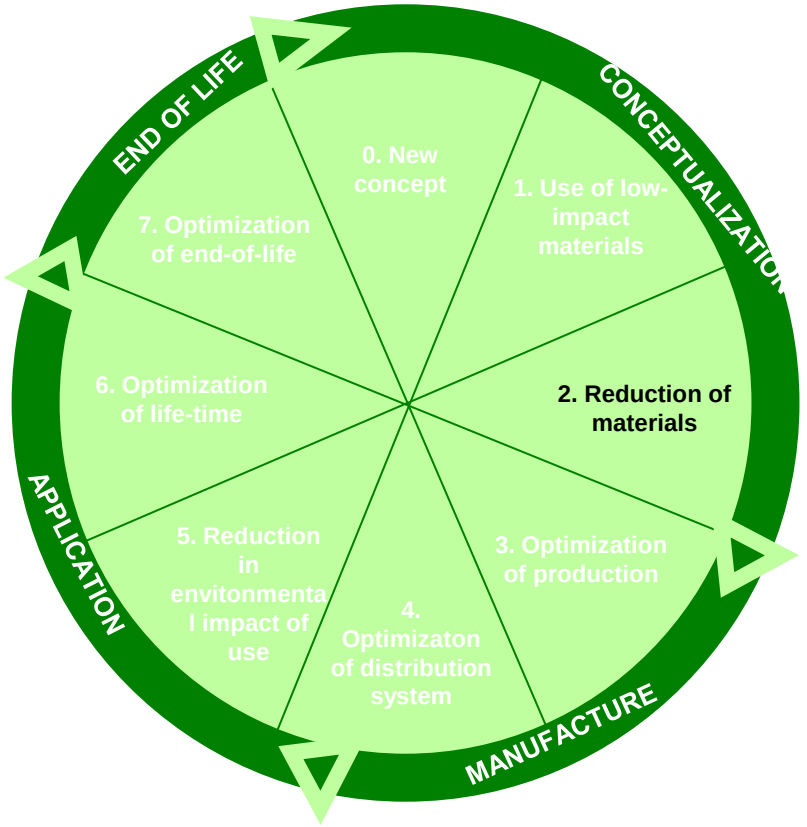
*5.2.3 Strategy **2. Reduction of materials***

Strategy: **2. Reduction of materials**

- Optimizing the amount of components/materials used to manufacture the product

Examples
- Weight reduction
- Volume reduction
- Use of stacking systems



Sub-strategies:

- Reduce (or eliminate) components that "do not add value"
  - analyze functional, aesthetic or constructive aspects
- Optimize the amount of material used
  - without compromising technical / commercial viability

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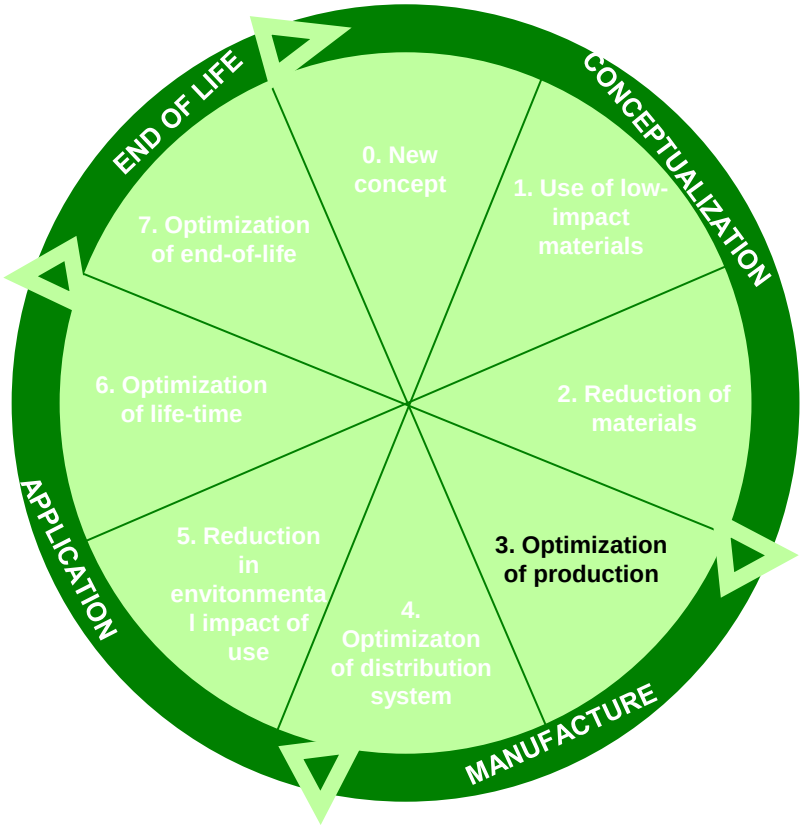
*5.2.4 Strategy **3. Optimization of production***

Strategy: **3. Optimization of production**

- Reducing the impact of the manufacturing processes required to obtain the product

Examples
- Avoid extra cutting processes
- Avoid excessive machining
- Use computerized processes "CNC"



Sub-strategies:

- Reduce the number of productive processes
- Use alternative production techniques / methods (cleaner, more economical, less waste, ...)
- Minimizing energy consumption (use of renewable energy)
- Reducing waste. Increasing your recycling / reuse

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*5.2.5 Strategy **4. Optimization of distribution system***

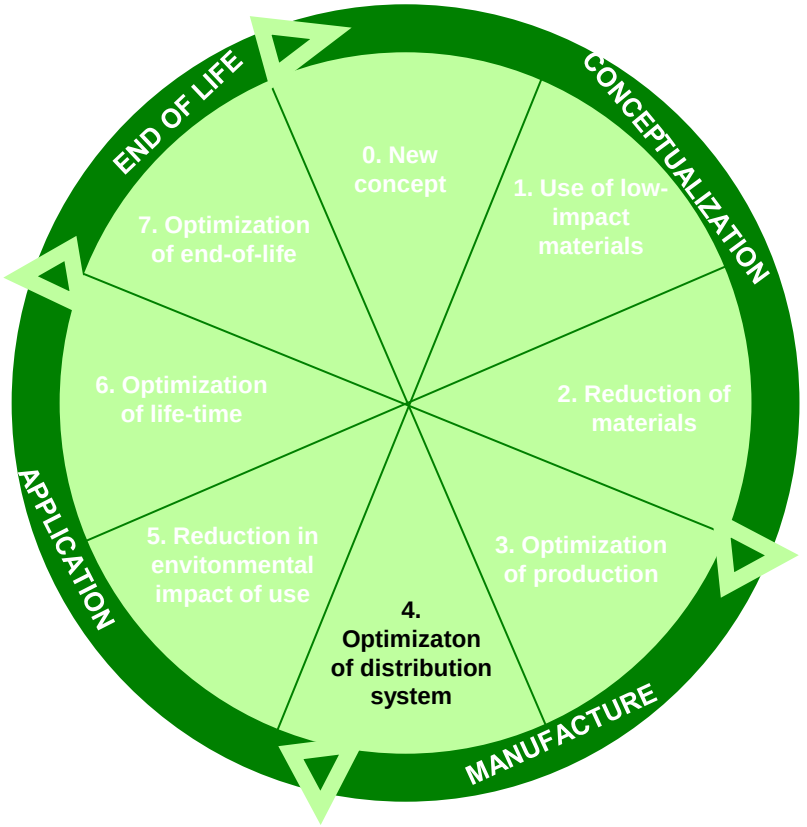
Strategy: **4. Optimization of distribution system**

- Reducing the impact caused by transport and packaging used

Examples
- Unassembled material shipment
- Optimization of transport (routes, loads, ...)
- Use of reusable containers

Sub-strategies:

- Minimize the amount of packaging material used
- Use of packaging material/protection of lower impact
- Reduction of product weight
- Optimizing the volume in storage
- Use of low impact vehicles/fuel (hybrids, electric, ...)



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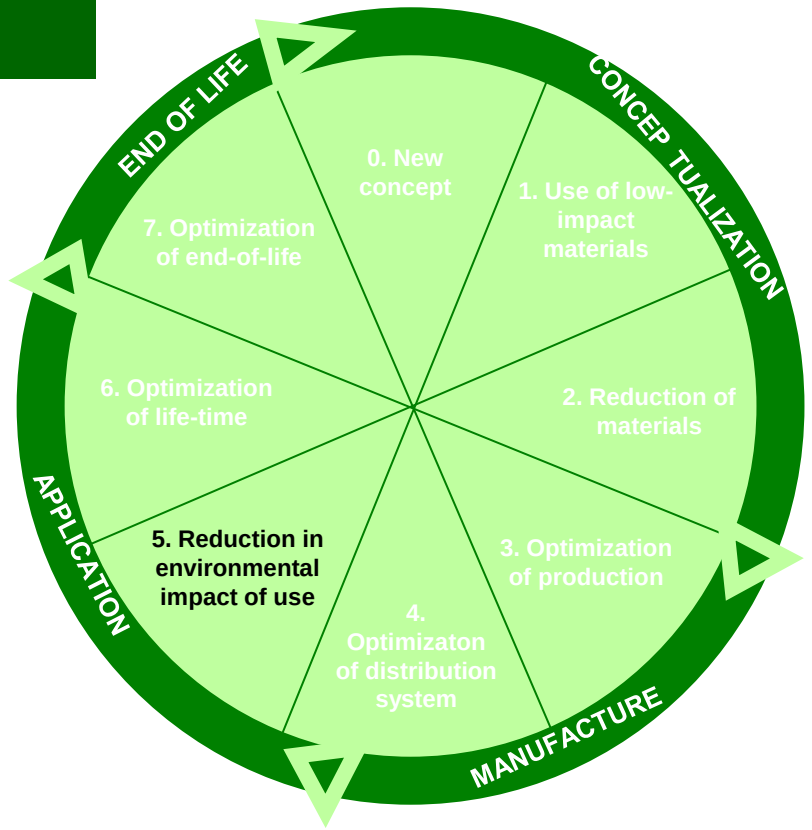
*5.2.6 Strategy **5. Reduction in environmental impact of use***

Strategy: **5. Reduction in environmental impact of use**

- Reducing the impact caused by the use or maintenance of the product

Examples

- Urban solar furniture



Sub-strategies:

- Reducing the required maintenance (operations, resources, ...)
- Maintenance based on low-impact products
- Reduction of energy consumption (and others) in use

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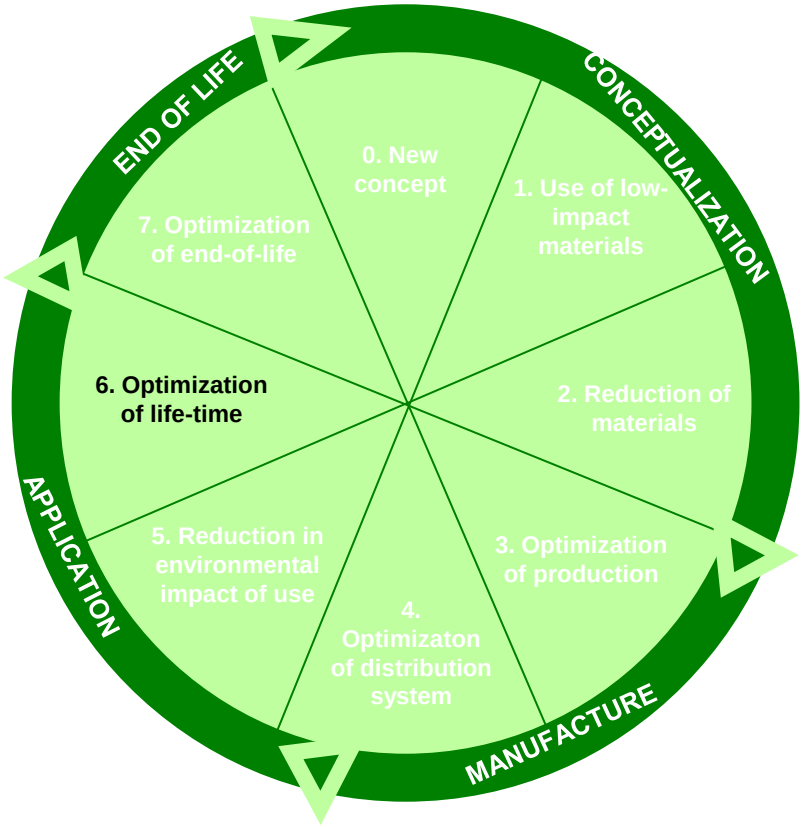
*5.2.7 Strategy **6. Optimization of life-time***

Strategy: **6. Optimization of life-time**

- Increasing the relationship between the durability of the product and its function

Examples

- Existing regulations on durability



Sub-strategies:

- Increased life-time
  - increase in the time during which a product performs its function
  - testing to ensure durability

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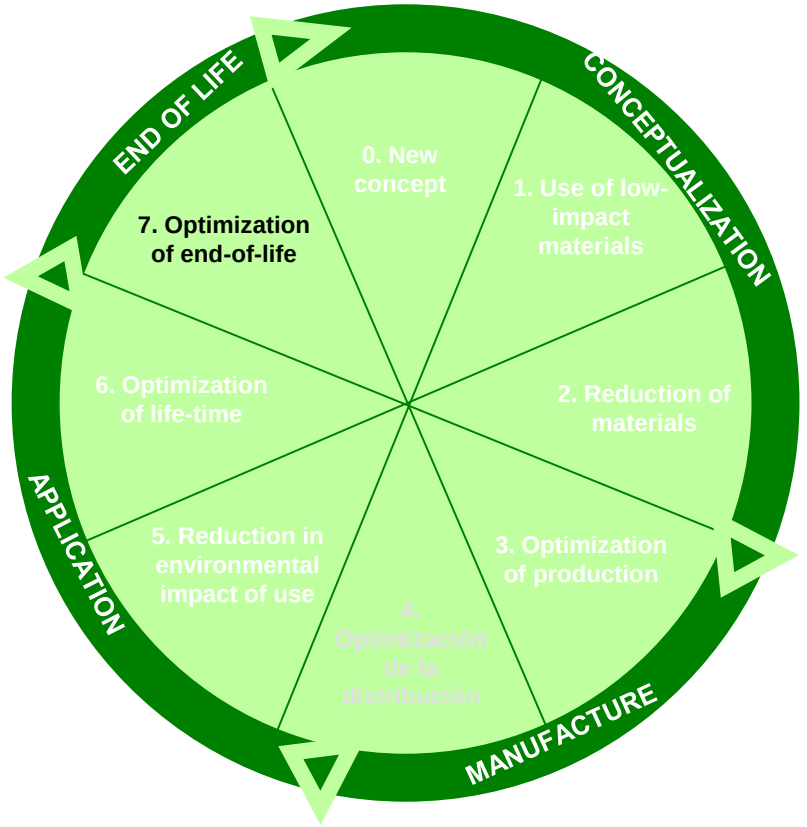
*5.2.8 Strategy **7. Optimization of end-of-life***

Strategy: **7. Optimization of end-of-life**

- Impact reduction the management of the product as waste

Examples

- Removable products in minutes
- Disassembly and separation instructions
- Manual of product management as waste



Sub-strategies:

- Simplicity in the disassembly and separation of pieces (for better management)
- Recycling of materials / components used
- Reuse of components
- Energy recovery (waste as an energy source, ...)

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Thanks

Basic concept of Ecodesign

UNIT 5: PRINCIPLES/STRATEGIES OF Ecodesign

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