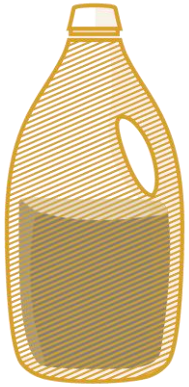
Round Table Eco:Design of Plastics Packaging

Guideline of the Round Table „Eco Design for Plastic Packaging“

Practical Example „Detergents“



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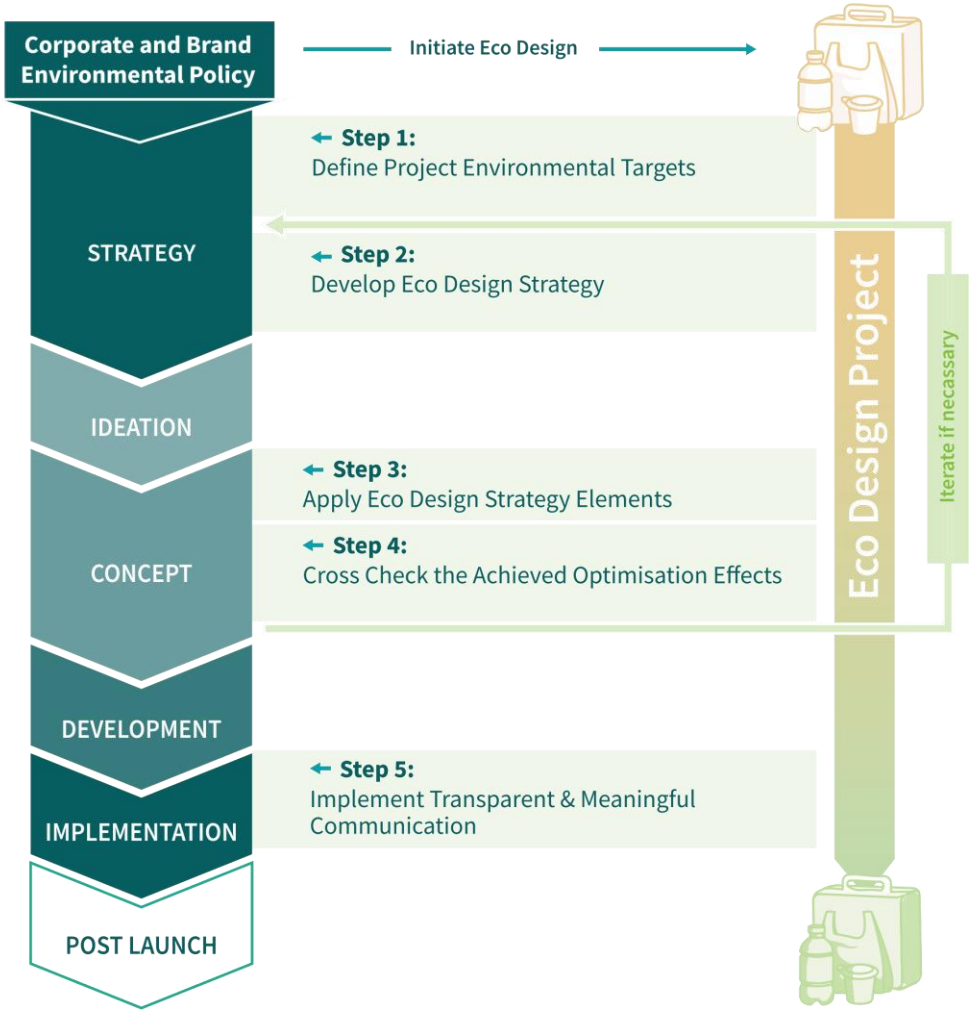
Practical Example „Detergents“



Situation: An existing packaging for 1000ml laundry detergent is to be redesigned. Negative environmental impacts should be minimised.

One found out that over-dosing of the product often takes place while using the existing packaging design.

Initial packaging:

- HDPE bottle, weight 60g, volume 1000ml
- Cap: PP, weight 8g

Step 1: Defining environmental goals for the packaging design project

Question	Documentation of Results
Does the environmental strategy of the **company** include clearly formulated environmental goals?	*Yes. Environmental targets: Protection of natural resources, climate protection*
Can specific environmental messages and environmental goals be derived from the **brand message** (of the packaged good)?	*No.*
Have relevant environmental goals been selected for this packaging design **project**?	*Yes.* • *Protection of natural resources* • *Climate protection* • *Waterconsumption*
Has the type and order of priority of the environmental goals been established?	***Yes*** ***Priorities**:* 1. *Protection of natural resources* 2. *Climate protection* 3. *Water consumption*

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Step 2: Developing the Eco Design strategy

Question	Documentation of Results
Have "suitable" Eco Design strategy elements been selected?	*Yes* *Selected Eco Design strategy elements:* ○ *Design for Environmentally Sound Use* ○ *Design for Optimised Resource Use* ○ *Design for Sustainable Sourcing*
Has design leeway for the project been established?	*Yes* *Requirements:* ○ *Minor geometric changes are allowed; the basic shape oft he bottle should not be changed due to marketing aspects.* ○ *Dosage of the product has to be improved* ○ *No fundamental changes possible regarding the logistics system..*
Are all environmental goals measurable? (Have all environmental goals been made measurable?)	*Reference case for optimisation goals: Initial packaging as specified above* *Measurable values for the selected target categories are:* • *Resource Use: Abiotic Depletion, mineral, fossil and cumulative energy demand* • *Climate protection: Global Warming Potential (GWP)* • *Water consumption: Water Resource Depletion (WRD)* *Minimum requirements:* ○ *Each category minus 5%* *Optimisation targets:* ○ *Each category minus 10%*

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STRATEGY ELEMENTS

APPROACHES

- Re-use solutions
- Material reduction
- Use of recycled material
- Use of bio-based material

Design for **OPTIMISED RESOURCE USE**

Design for **SUSTAINABLE SOURCING**

APPROACHES

- Sourcing from responsible suppliers
- Bio-based material from sustainable production

selected strategy elements

APPROACHES

- Compatibility with existing recycling infrastructure

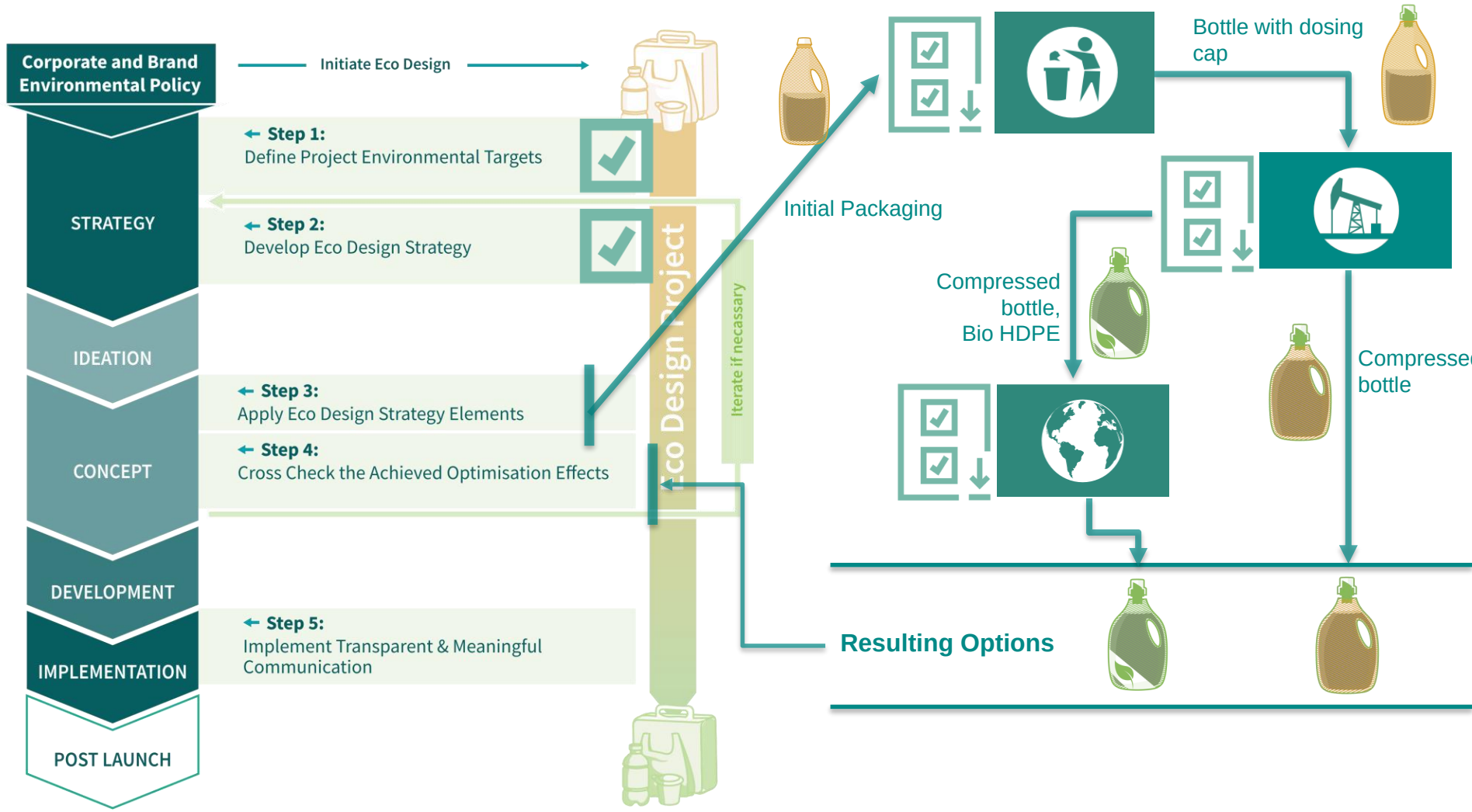
Design for **RECYCLING**

Design for **ENVIRONMENTALLY SOUND USE**

APPROACHES

- Avoidance of littering
- Easy portioning and complete emptying
- Safe re-closure
- Minimisation of chemical risks

Step 3: Applying Eco Design strategy elements

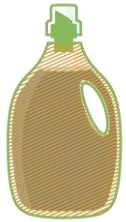


Step 3: Applying Eco Design strategy elements

Question	Documentation of Results
Was the checklist for the relevant strategy element used?	***Yes**. Checklists were applied for all strategy elements. See documentation for the respective checklists.*
What selection or modification of the packaging options results from this?	*a) Compressed HDPE bottle (with dosing cap)* *b) Compressed HDPE bottle (with dosing cap) made of 75% biobased HDPE, which is evaluated regarding sustainable sourcing.*
What difficulties became apparent?	*There have been no difficulties and no conflicts between the strategic elements*
Are there any conflicting goals that arise from optimising the other strategy elements reviewed?	

Step 3: Packaging Options

- Compressed HDPE bottle (50g) with dosing cap (PP, 20g)



- Compressed HDPE bottle (50g) with dosing cap (PP, 20g) made of 75% biobased HDPE, which is evaluated regarding sustainable sourcing.

The newly implemented (within the strategy element Environmentally Sound Use) dosing cap eliminates the previously "usual" overdosage of approx. 15% per wash cycle and thus - despite the higher weight - minimizes the environmental impact

Due to the compression we additionally save material at the same volume .

Step 4: Cross checking the optimisation effects achieved

Question	Documentation of Results
Have the 'optimised' packaging alternatives (results of step 3) been evaluated in terms of their environmental impacts?	***Yes***. *See following documentation.*

Option		Climate Contribution	Land Use	Water Consumption	Resource Use	CED
Initial Option (HDPE bottle, 60g, without dosing cap)		3,1	1,4	0,0038	1,54E-02	289
Minimum requirements		2,945	1,33	0,0036	0,01463	275
Optimisation targets		2,79	1,26	0,0034	0,01386	260
Compressed HDPE bottle (50g) with dosing cap (20g)		0,12	7,07E-02	7,46E-04	1,38E-02	4,4
Compressed Bio HDPE bottle (50g) with dosing cap (20g)		0,12	0,39	8,96E-04	1,38E-02	2,1

Step 4: Cross checking the optimisation effects achieved

Question	Documentation of Results
Is there one or several permissible options?	***Yes**, both resulting options are permissible.*
1) Does one or do several resulting options meet the previously established optimisation goals?	***Yes**. See documentation of results.*
2) Was the checklist "*Dealing with Conflicting Issues*" used and a possible solution opted for?	***Yes**; see following **Note „Checklist Dealing with Conflicting Issues"**.*

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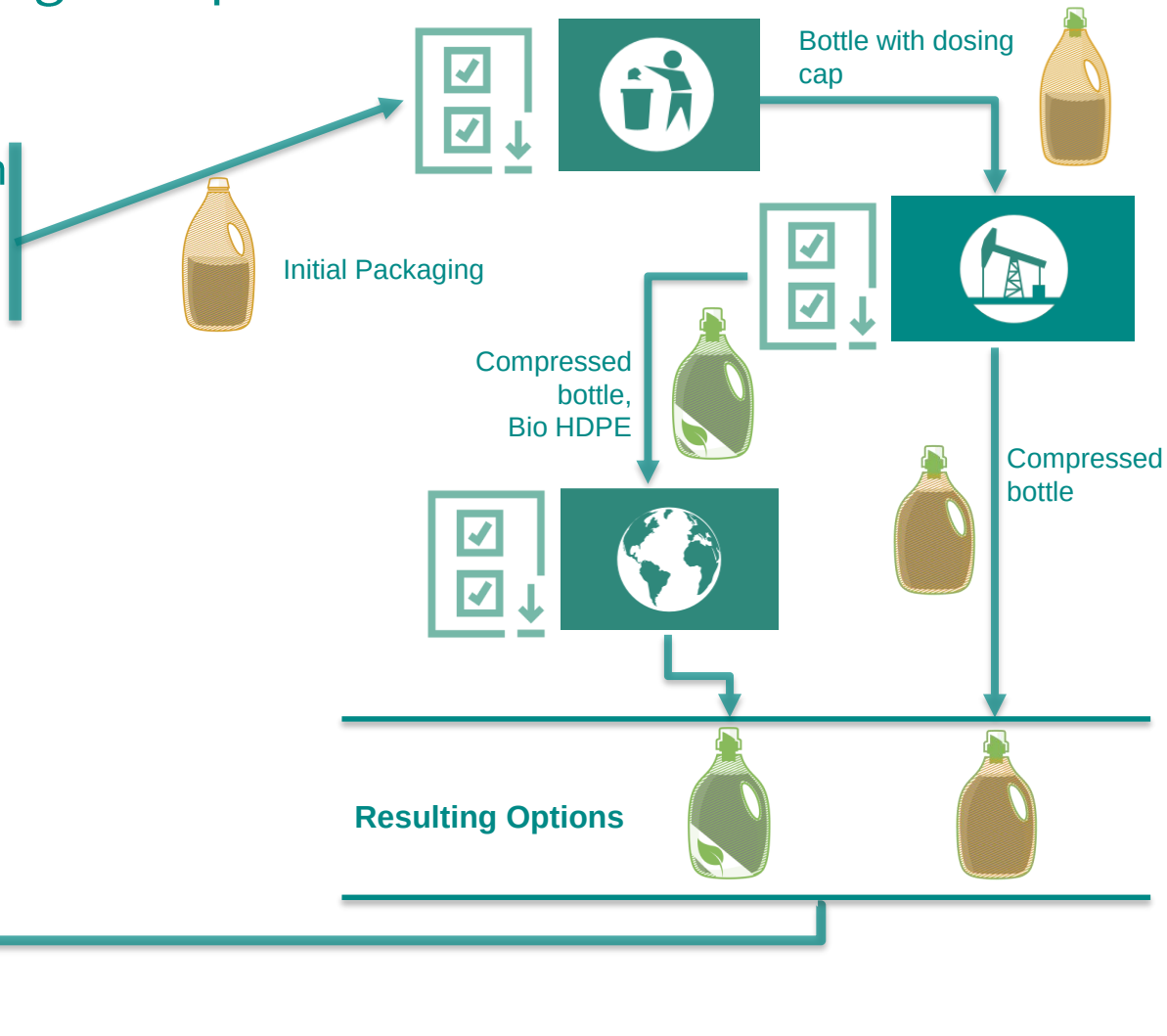
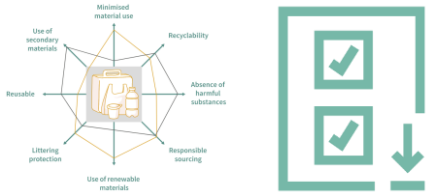
Step 4: Cross checking the optimisation effects achieved

Step 3: Applying Eco Design strategy elements

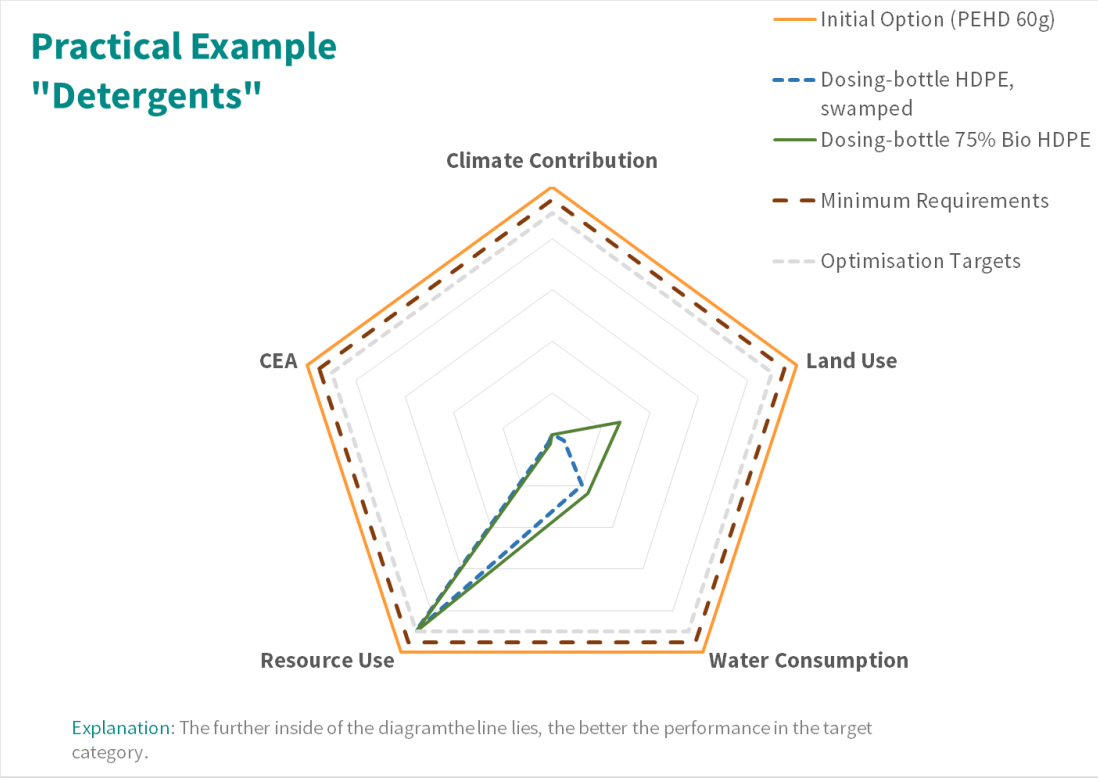




Checklist: „Dealing with Conflicting Issues“

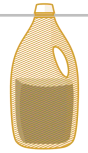
Checklist: Dealing with Conflicting Issues

Question	Documentation of Results
Have the results of the assessment been visualized in an appropriate form?	**Yes.** See following visualisation



Checklist: Dealing with Conflicting Issues

Question	Documentation of Results
Have the results of the assessment been visualized in an appropriate form?	**Yes.** See following visualisation

Option		Climate contribution	Land use	Water consumption	Resource Use	CEA
Initial Packaging (HDPE bottle, 60g, without dosing cap)		3,1	1,4	0,0038	1,54E-02	289
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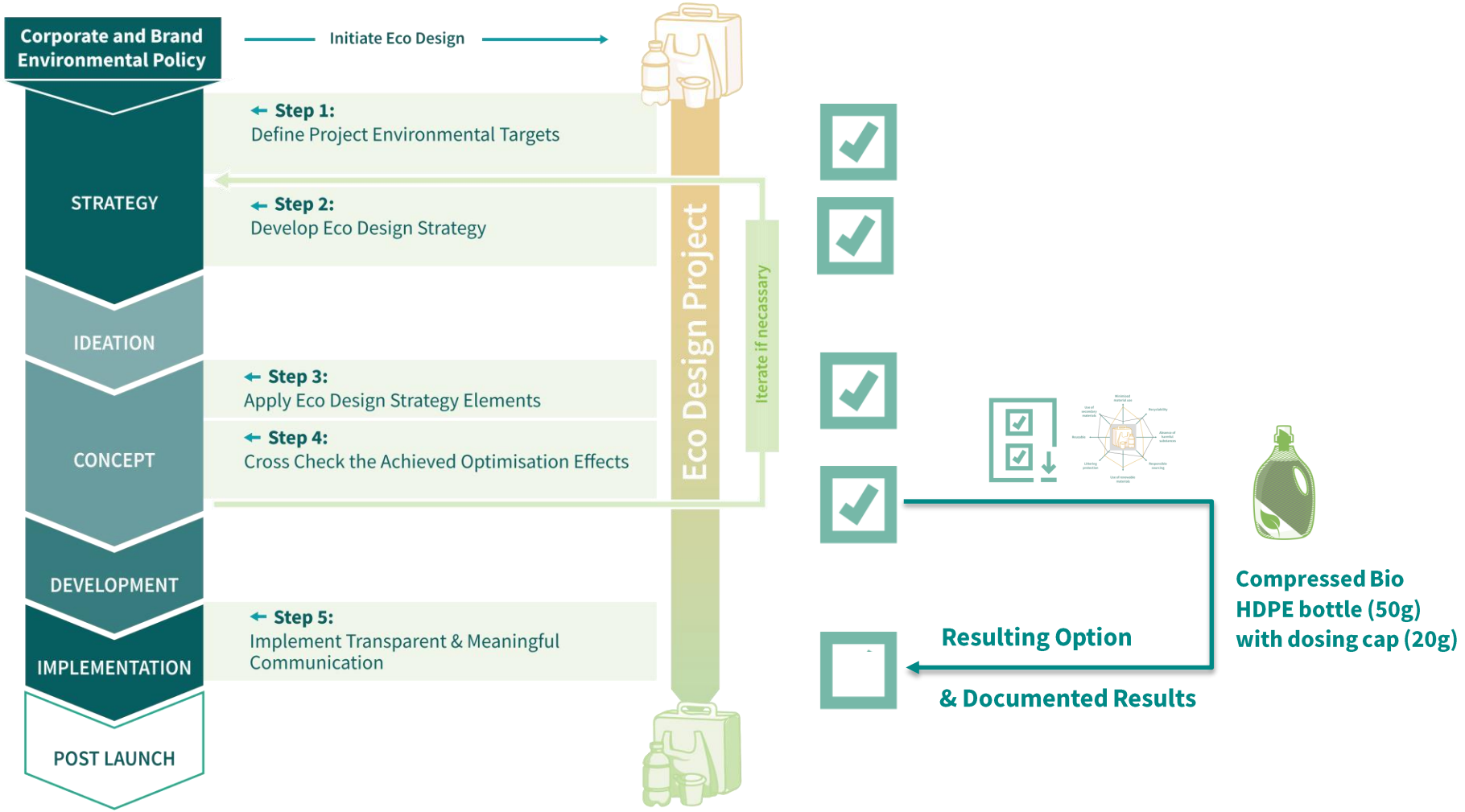
Checklist: Dealing with Conflicting Issues

Question	Documentation of Results
Is there a packaging variant that performs best in the highest priority category (s)?	*Resource Use was evaluated with highest priority. Here two categories were created: Abiotic Ressource Depletion (Resource Use in table) and CED. For „Abiotic Ressource Depletion“ both options perform almost equally, for CED the biobased option is slightly better. Compared to the initial option, both alternatives perform significantly better.*
Is the performance of this packaging solution in the other categories “sufficient”?	***Yes**. The performance in the other categories is considered sufficient. Although there are higher impacts on land use and water consumption compared to the option without bio-based HDPE. However, taking into account the improvement achieved in comparison to the initial option, this result is considered sufficient.*

Back to the Management Checklist



Step 5: Using transparent and effective communication

Question	Documentation of Results
Have aspects been selected and processed that can/should be used as part of proactive communication with the end customer?	*E.g.: „This packaging protects natural resources and makes a significant contribution to climate protection!“*
Is the preparation and external communication of the improved environmental properties in line with communication standards?	*(not relevant for this specific case)*
Have aspects been selected and processed that are needed to respond to (any) critical queries?	*At this point, the documentation of the project is considered sufficient.*