Round Table
Eco:Design
of Plastics Packaging

Guidelines of the Round Table „Eco Design of Plastic Packaging“

Practical Example „Yoghurt Pot “

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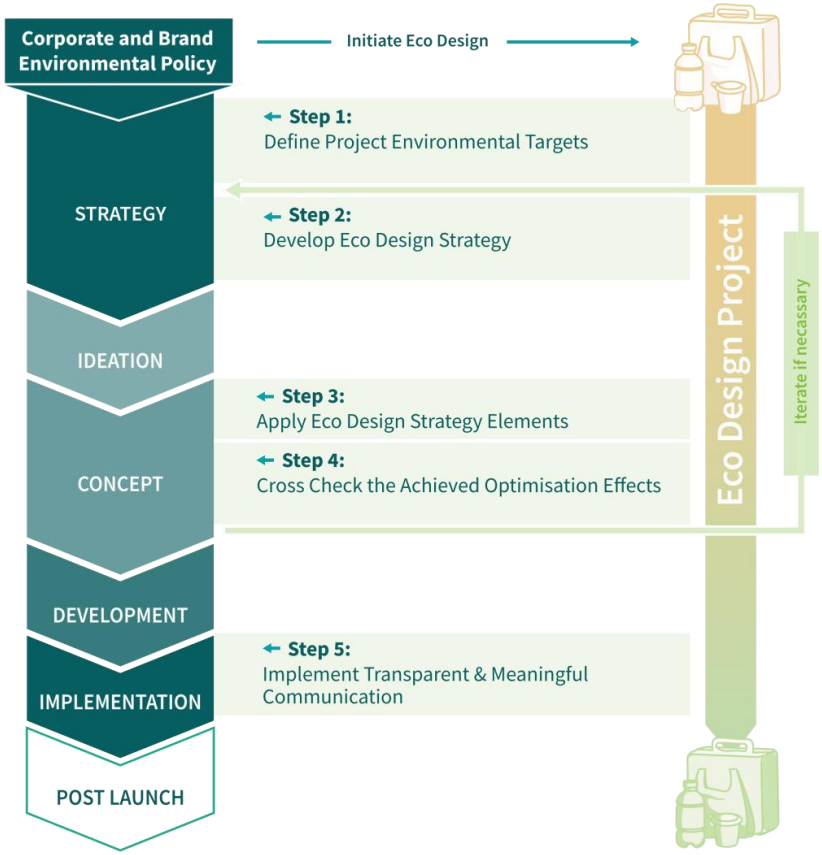
Practical Example „Yoghurt Pot“



Situation: An existing K3-Pot (3 Component-Pot) with the following specifications is to be (eco-) re-designed

- Yoghurt Pot 500ml, K3-System
- **Lid**: Aluminiumfoil, 30µm, weight 0,8g
- **Pot**: PS-thermoformed pot, 6,4g unprinted
- **Paper sleeve**: White lined chipboard ~240g/m^2. Weight 7,8g

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 goals: Climate protection, recyclability, weight (logistics-relevant, waste-reducing)*
Can specific environmental messages and environmental goals be derived from the **brand** message (of the packaged good)?	*Brand message:* ○ *Climate protection and recycling go hand in hand with the brand message (ecologically „good“)*
Have relevant environmental goals been selected for this packaging design **project**?	***Yes.*** ○ *Reduction of GHG emissions (contribution to climate protection)* ○ *Recyclability,* ○ *Weight reduction.*
Has the type and order of priority of the environmental goals been established?	***Priorities****:* 1. *Weight (because also economically relevant) (understood here as: total weight of the pot)* 2. *Recyclability* 3. *Climate protection (easy to communicate)*

Step 2: Developing the Eco Design strategy

Question	Documentation of Results
Have “suitable” Eco Design **strategy elements** been selected?	*Selected Eco Design strategy elements:* • *Design for Optimised Ressource Use* • *Design for Recycling*
Has **design leeway** for the project been established?	*Design leeway and requirements:* • *Cost-neutral / no additional costs* • *Single use plastic packaging; no investments in new bottling plants are possible* • *Pot type is variable: In addition to the K3 pot, an all-plastic pot can also be chosen.* • *Pot has to be white* • *Besides that no basic specifications for the choice of material, but processing options of the existing machines / systems must be observed*
Are all environmental goals measurable? (Have all environmental goals been made measurable?)	*Reference case for optimisation goals: K3-Pot, see above* *Minimum requirements:* ○ *Weight: -5%* ○ *Climate protection: 5% GHG Reduction* *Optimisation goals:* ○ *Weight: -10%* ○ *Recyclability: according to RecyClass (C)* ○ *Climate protection: 10% GHG Reduction*

Round Table Eco:Design of Plastics Packaging

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

Chosen Strategy Elements

APPROACHES

- Compatibility with existing recycling infrastructure

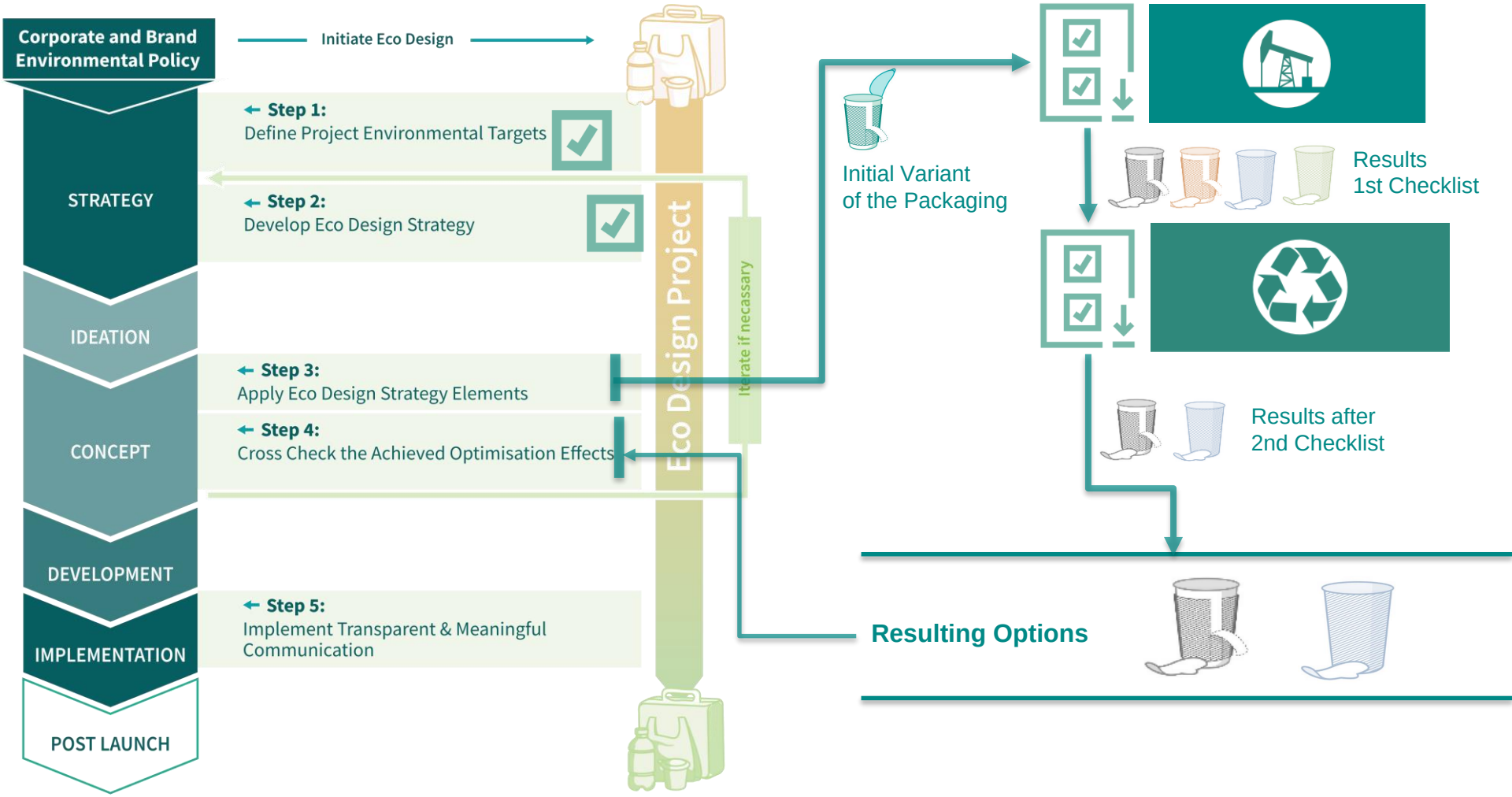
Design for **RECYCLING**

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**. The checklists have been applied for all selected strategy elements. See checklists for detailed documentation.*
What selection or modification of the packaging options results from this? **Note:** In this example it is assumed that the various packaging options can be filled / processed by the existing systems (without new investments). (see definition of design leeway)	*<u>Checklist Optimised Ressource Use</u>* • *K3 pot made from chalk plastic: PP with CaCO3,* • *K3 pot made from PP* • *PS all-plastic pot* • *PP all-plastic pot* • *Chalk plastic pot* • *In each case: As cylindrical as possible, minimally arched bottom* • *For K3: Sleeve made from wood pulp / virgin fibres* *<u>Checklist Design for Recycling</u>* • *K3 pot with internal pot made from PP* • *Allplastic pot made from PP* • *Explicit information text for proper (separate) disposal of pot and sleeve*
What difficulties became apparent?	*The use of chalk plastic (as a result of the „Optimised Resource Use“ checklist) is currently preventing recycling. Chalk plastic variants and PS are eliminated in the element „Design for Recycling“. Regarding the sleeve the assessment of recyclability depends on whether it is assumed that the sleeve is correctly separated by the consumer.*
Are there any conflicting goals that arise from optimising the other strategy elements reviewed?	

Step 3: Packaging Options

- K3 Pot with inner PP-Pot

- All-Plastic PP-Pot

Step 4: Cross checking the optimisation effects achieved and solution of conflicting issues

Question	Documentation of Results
Have the 'optimised' packaging alternatives (results of step 3) been evaluated in terms of their environmental impacts?	***Yes,*** *an assessment of GHG emissions and recyclability (according to RecyClass) has been made. See the following documentation. It also lists the options (in gray) that have been eliminated by applying the strategy element "Design for Recycling".*

	Prio 1 **Weight [g]**	***Prio 2*** **Recyclability [Class after RecyClass)**	***Prio 3*** **GHG Emissions [g CO2e per pot]**
Initial variant: K3, PS	15,1	F	33,5
Minimum requirements	14,3	F	31,8
Optimisation target	13,5	C	30,2
Option **K3, PP**	**12,8**	**C / F**	22,9
Option **PP**	**10,2**	**C**	20,4
Option **K3, Chalk**	13,8	F	17,3
Option **PS**	12	F	40,8
Option **Chalk**	13,5	F	14,9

Step 4: Cross checking the optimisation effects achieved and solution of conflicting issues

Question	Documentation of Results
Is there one or several permissible options?	***Yes,*** *both options meet the minimum requirements.*
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****".*

Step 3: Application of the Eco Design Strategy

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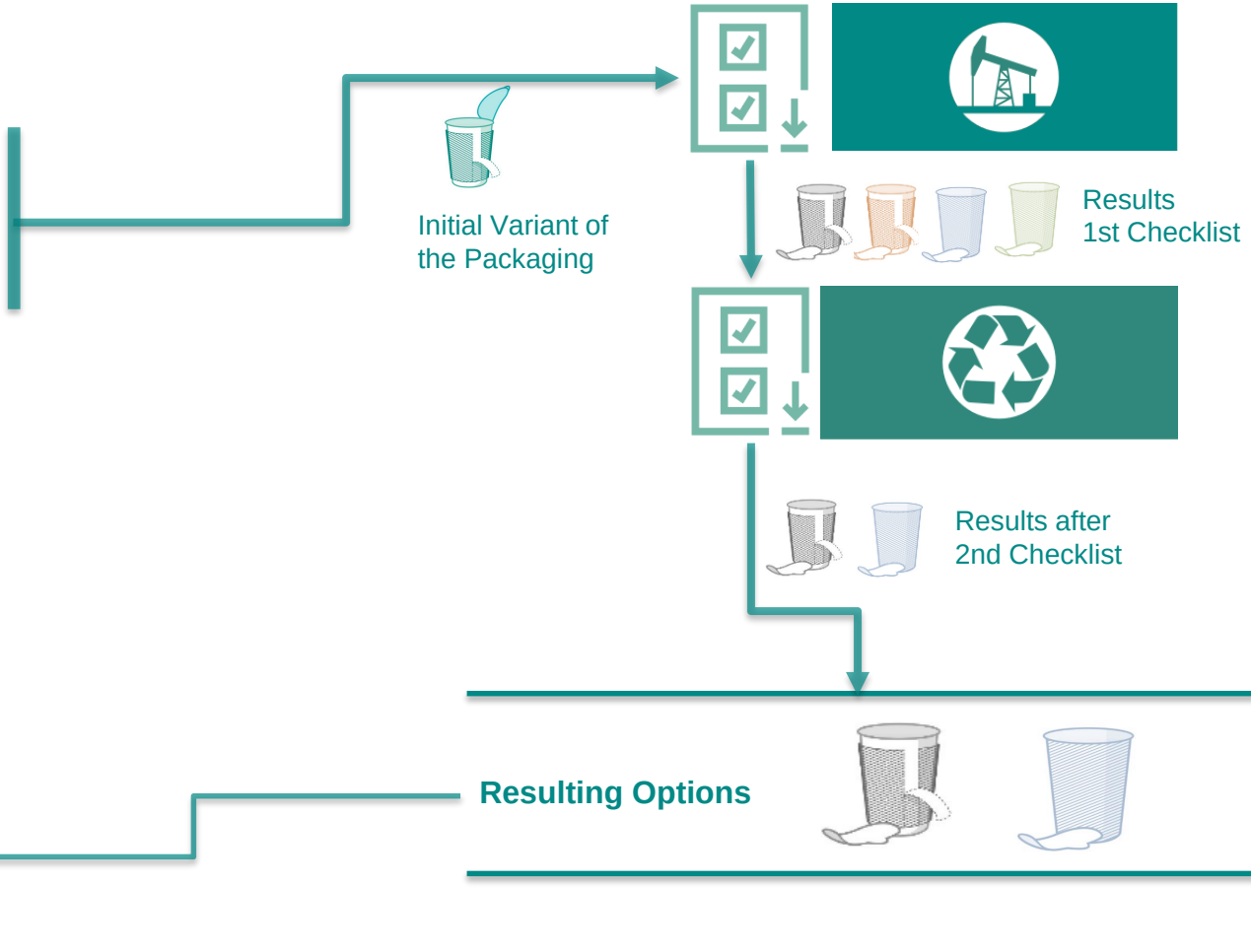
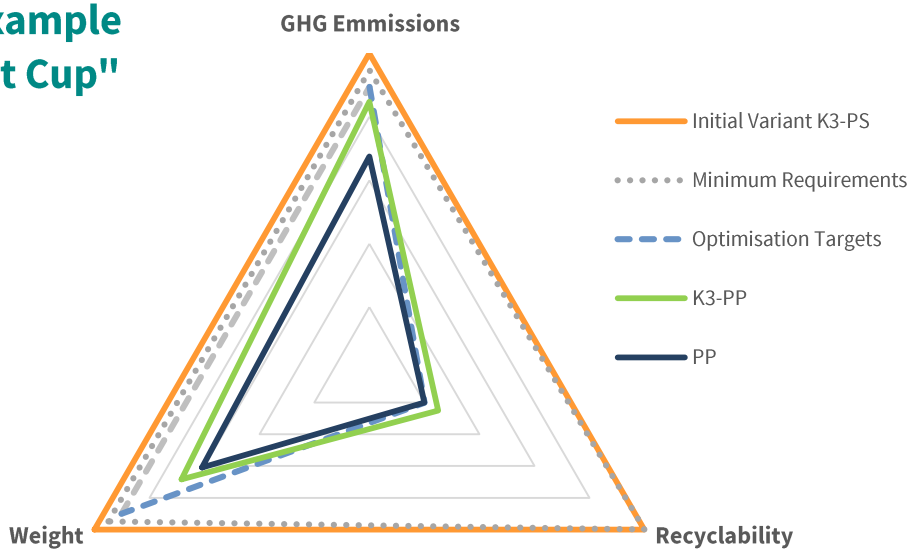


Checklist: „Dealing with Conflictig Issues“

Checklist: Dealing with Conflicting Issues

Question	Documentation of Results
Were the results of the evaluation of the relevant packaging options visualized in a suitable form?	***Yes.*** *See the following visualization.*

Practical Example
"K3 Yoghurt Cup"



Explanation: The further inside of the diagram the line lies, the better the result in the target category

Checklist: Dealing with Conflicting Issues

Question	Documentation of Results
Were the results of the evaluation of the relevant packaging options visualized in a suitable form?	***Yes.*** *See the following visualization.*

	Prio 1 **Weight [g]**	***Prio 2*** **Recyclability [Class after RecyClass]**	***Prio 3*** **GHG Emissions [g CO2e per pot]**
Initial variant: K3, PS	15,1	F	33,5
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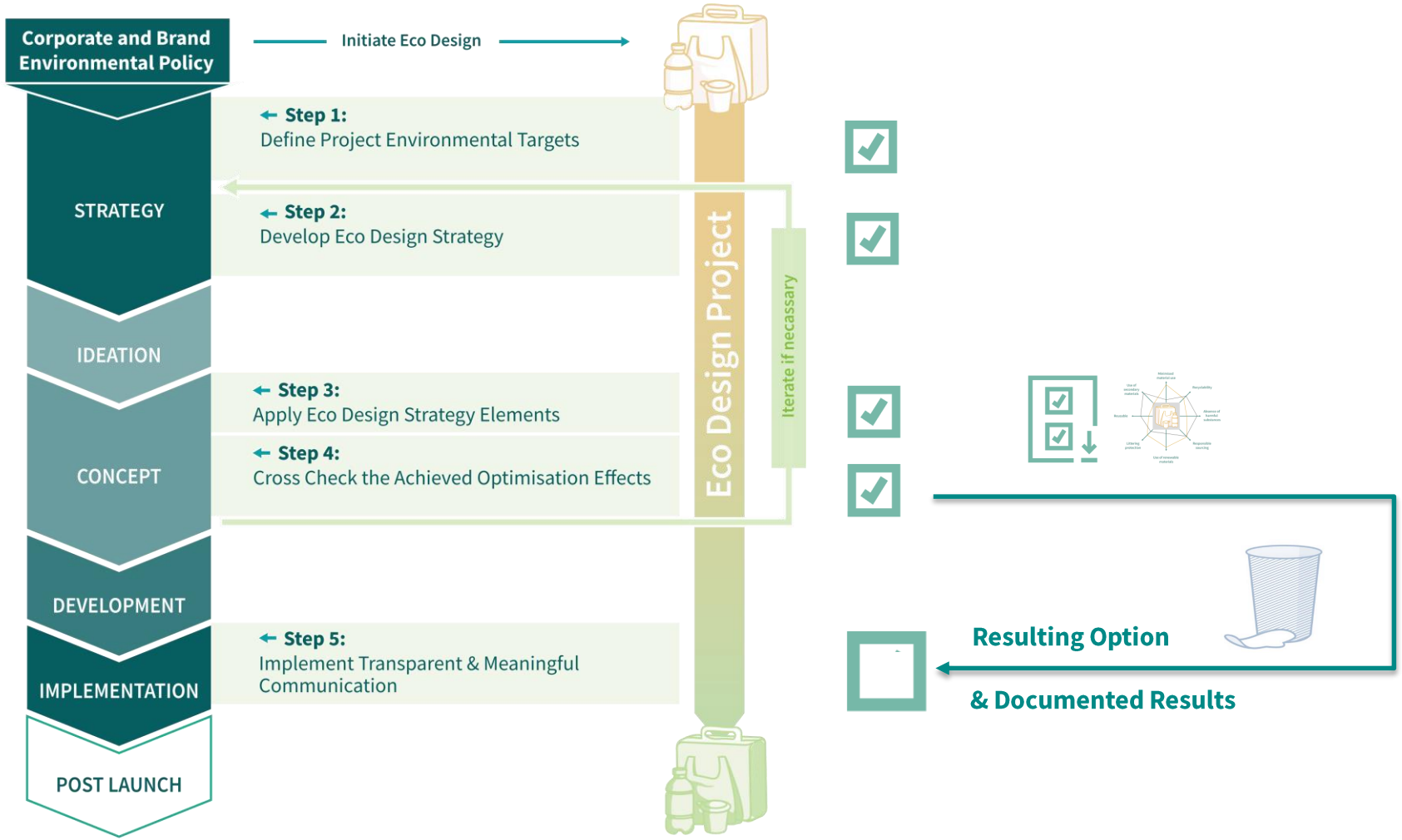
Checklist: Dealing with Conflicting Issues

Question	Documentation of Results
Is there a packaging option that performs best in the highest priority category(s)?	***Yes.*** *The PP all-plastic pot performs best.*
Are the results of this option in the other categories "sufficient"?	***Yes.*** *In the other categories it performs best as well. Therefore the* ***PP all-plastic pot*** *is chosen as the* ***resulting option.***

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?	Message (e.g.): *The packaging is recyclable 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 done in this example)*
Have aspects been selected and processed that are needed to respond to (any) critical queries?	*At this point, the documentation of the completed project is considered sufficient.*