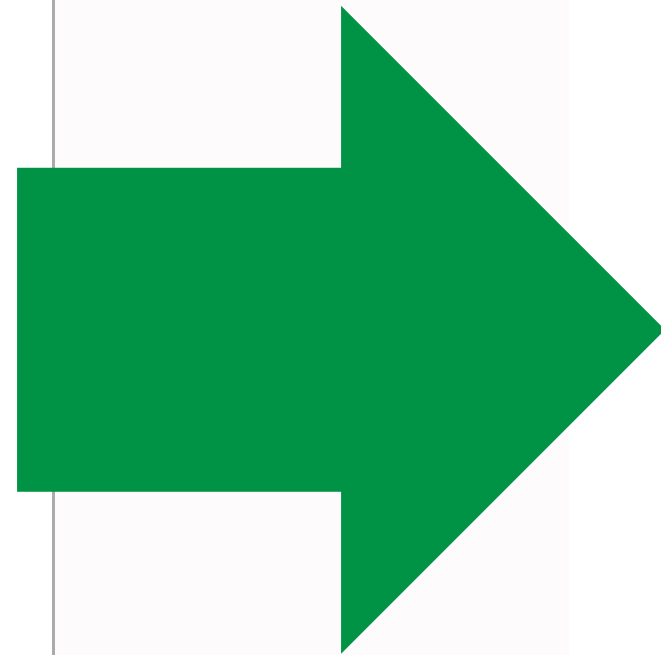




17%

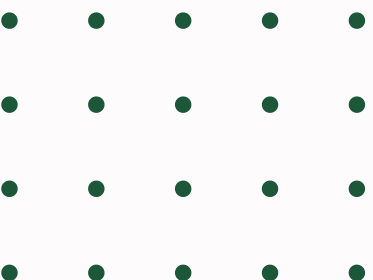


92%

Aalto University

DESIGN FOR ENVIRONMENT

Group 7
3.10.2023

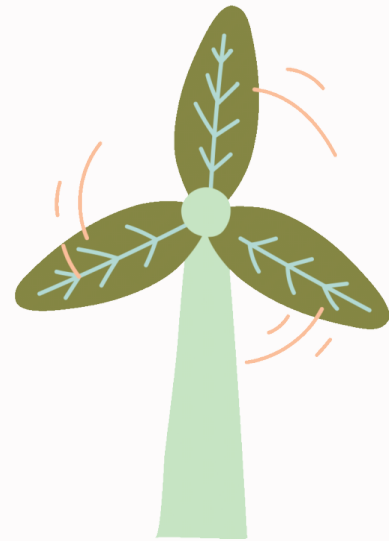


What is design for Environment (DFE)?

Practical method to minimize environmental impacts.

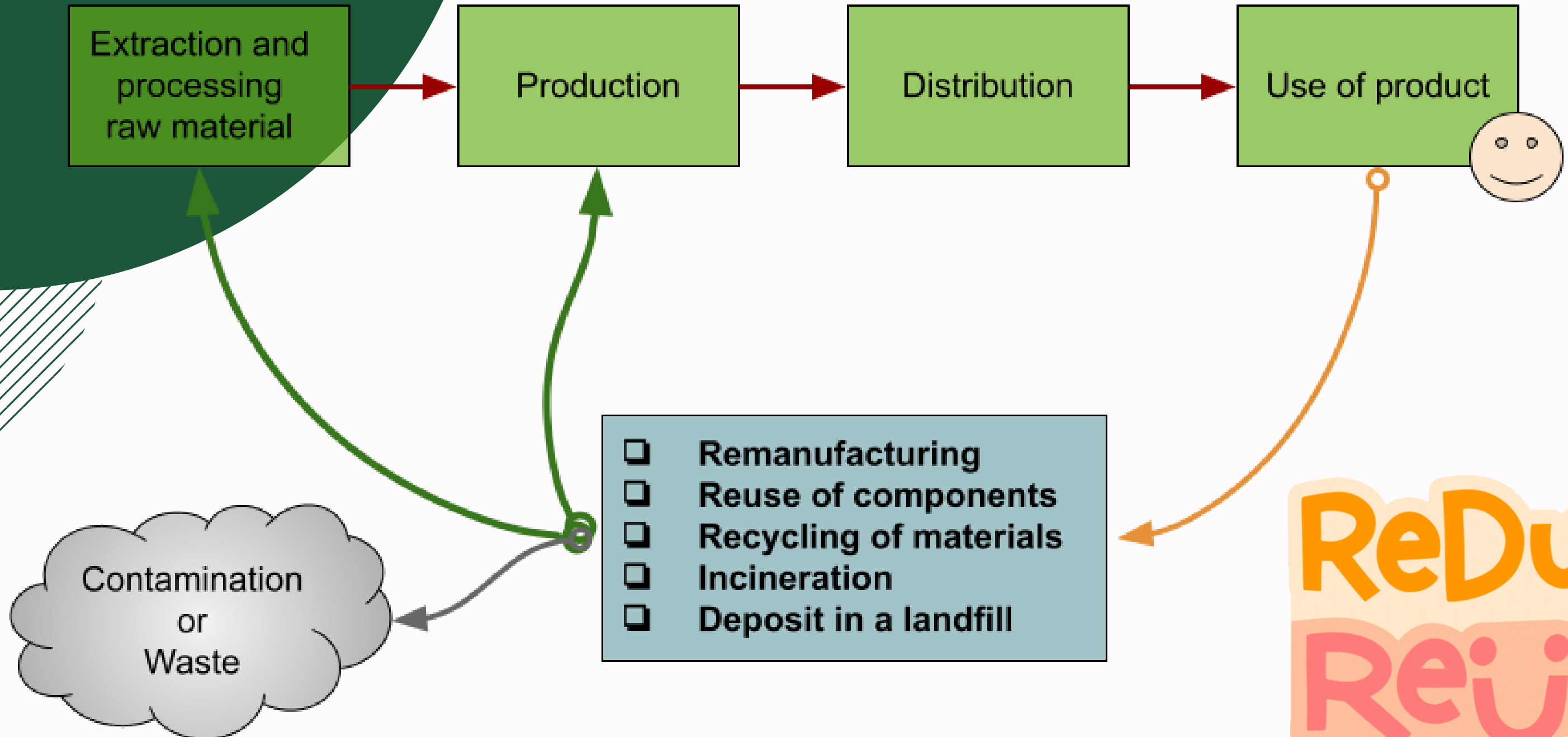
Reduce:

- Energy
- Materials

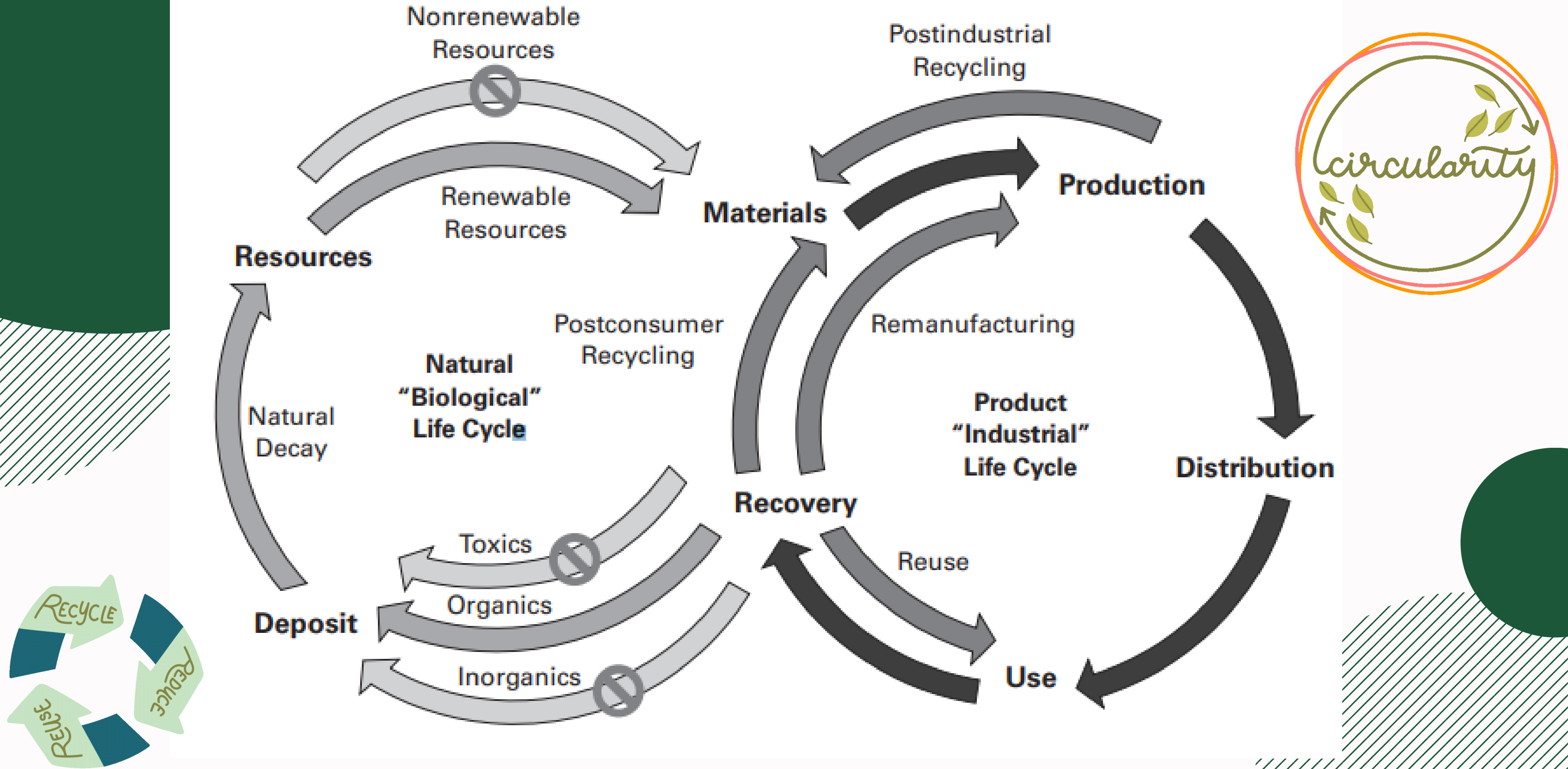


Do the environmental choices in the beginning of the process.





ReDuCE
Reuise
ReCYCLE





Why is Design for Environment (DFE) important?



Design for Environment (DFE) is important for several reasons, as it encompasses a set of principles and practices aimed at minimizing the environmental impact of products and systems throughout their entire lifecycle. Here are some key reasons why DFE is important:



1. **Environmental Conservation:** DFE focuses on reducing the environmental footprint of products and processes. By considering the environment during the design phase, it can help conserve natural resources, reduce pollution, and minimize habitat destruction.
2. **Resource Efficiency:** DFE promotes the efficient use of materials and resources. This can lead to cost savings, as well as a reduced need for raw materials, energy, and water, which are essential for sustainable development.
3. **Regulatory Compliance:** Many countries and regions have implemented environmental regulations and standards. DFE helps organizations comply with these regulations by proactively addressing environmental concerns in their designs, thereby avoiding potential legal and financial penalties.
4. **Market Competitiveness:** Consumers and businesses increasingly prefer environmentally friendly products and services. Companies that incorporate DFE principles into their products can gain a competitive edge by meeting customer demands for sustainable options.
5. **Cost Savings:** DFE can lead to cost savings in various ways. For example, designing products with fewer components can reduce manufacturing and assembly costs. Additionally, using fewer materials and energy during production can lower operational expenses.
6. **Extended Product Lifespan:** DFE encourages the design of durable and repairable products, which can extend their lifespan. This reduces the frequency with which consumers need to replace products, thereby reducing waste.
7. **Brand Reputation:** Companies that demonstrate a commitment to environmental stewardship through DFE can enhance their brand reputation. A positive environmental image can attract environmentally conscious customers and investors.
8. **Innovation:** DFE often requires innovative thinking and problem-solving. It encourages designers and engineers to find creative solutions to reduce environmental impacts, which can lead to technological advancements and new product opportunities.
9. **Risk Reduction:** DFE helps identify and mitigate environmental risks associated with a product's lifecycle. Addressing these risks early can prevent costly problems and liabilities.

Regenerate



Why is DFE important?

Reduced Environmental Impact



Regulatory Compliance



Resource Efficiency



Customer appeal



Our problem



NO TO PLASTIC



Redesign using DFE process!



Possible Impacts!

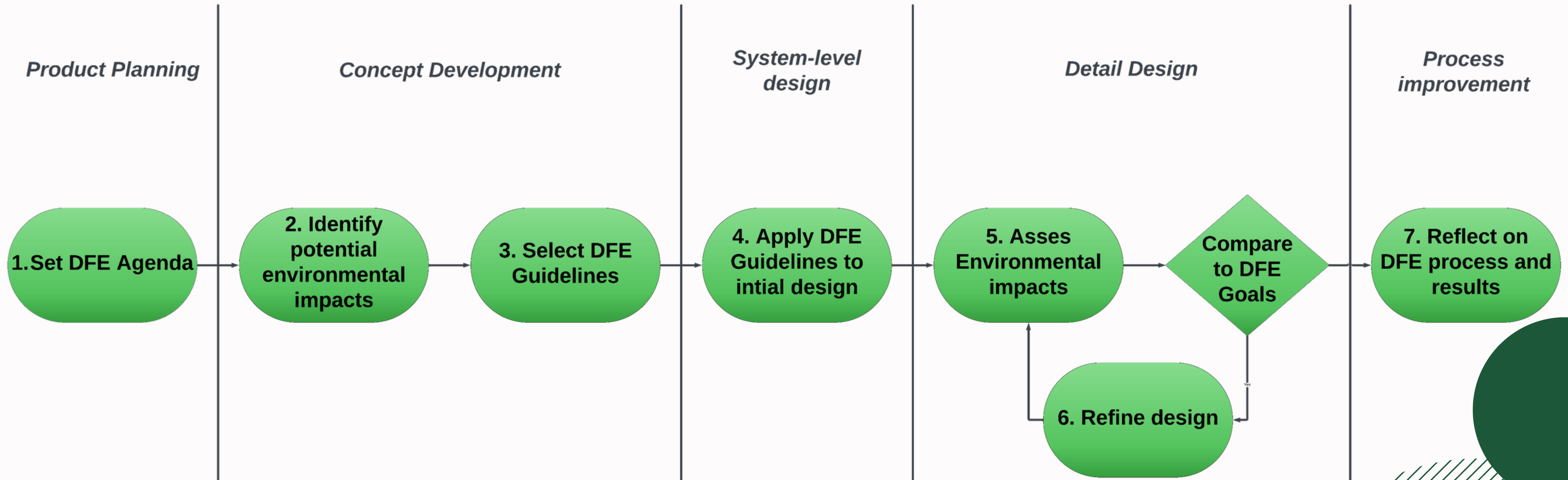
What could be the possible environmental impacts of a plastic water bottle?

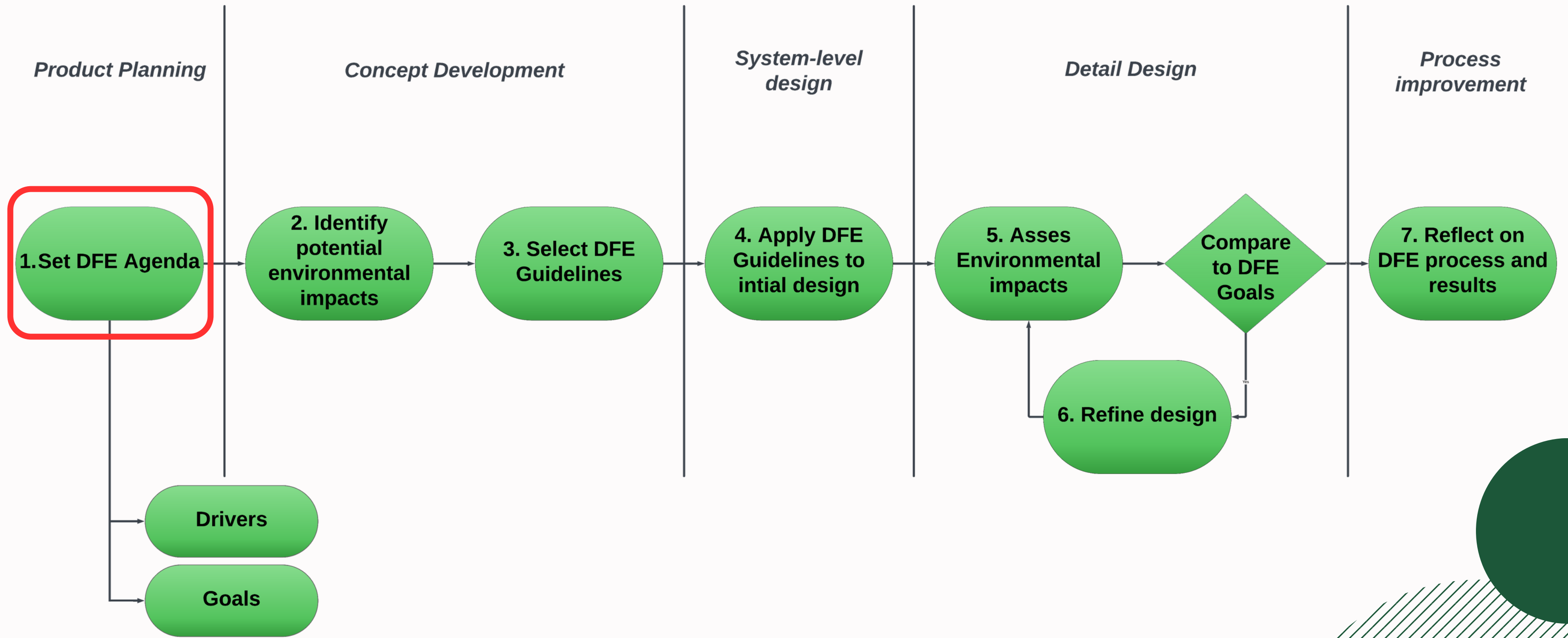


Join at
slido.com
#4046 156

Environmental Impacts







Set DFE Agenda

Drivers

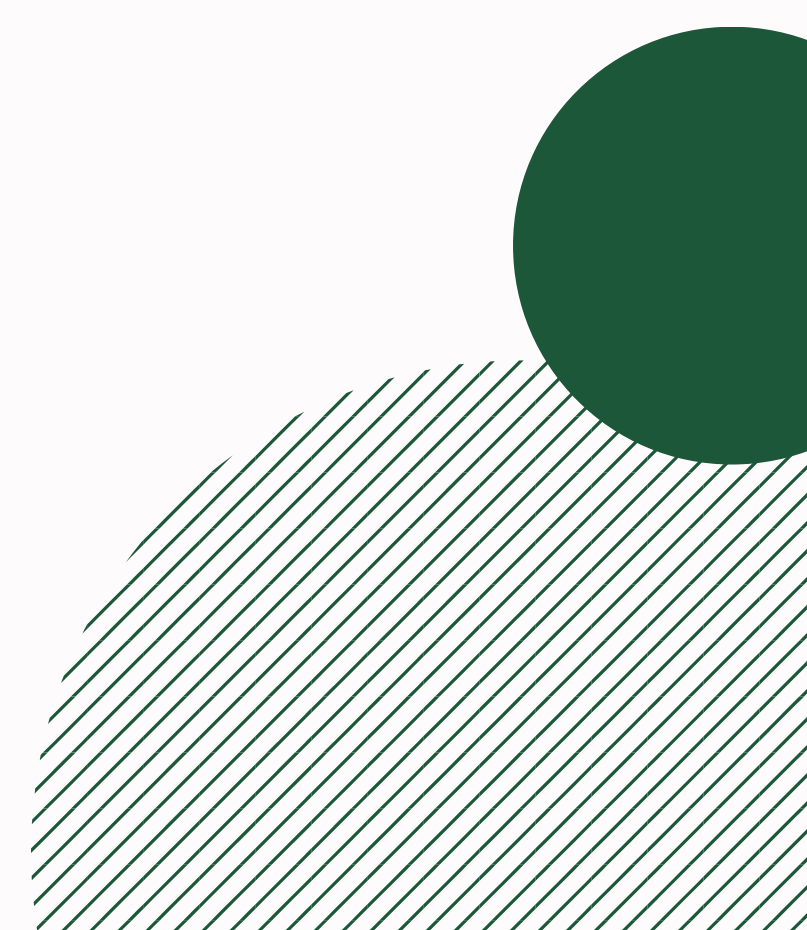
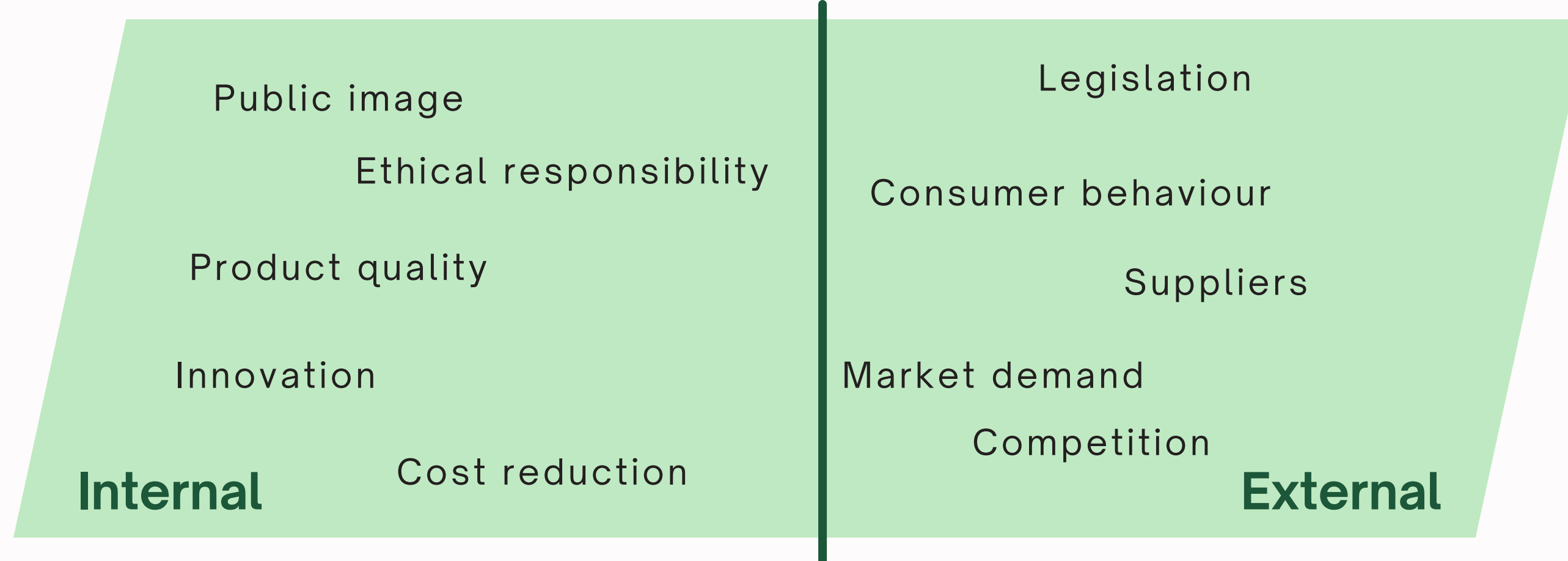


Incentive? Why implement DFE?

DFE takes time, effort and money

Internal and external drivers

Within organization vs. outside pressure



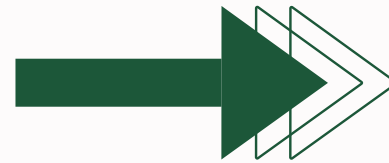


Set DFE Agenda
Goals



Long-term goals

General goals,
across all products



Project-specific goals

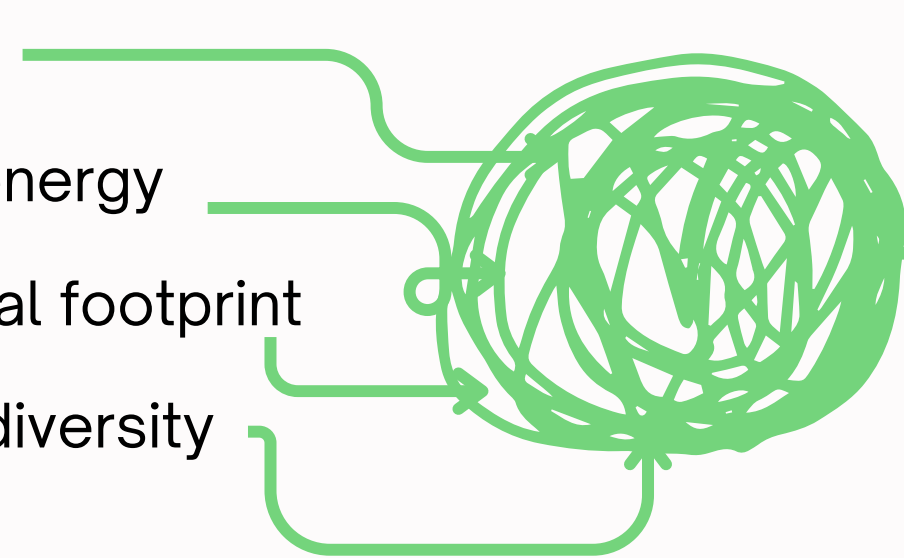
For each life-cycle stage

Zero waste

100% green energy

Carbon-neutral footprint

Preserve biodiversity



Materials

Production

Distribution

Usage

Recovery



Water Bottle: Drivers & Goals



Internal Drivers



Product quality

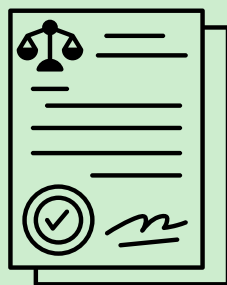


Cost reduction



Company image

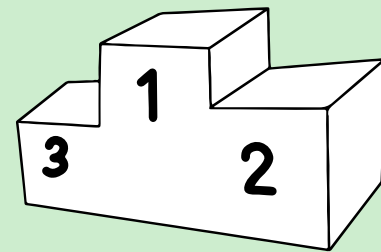
External drivers



Legislation



Market demand



Competition

General Goals



Carbon-neutral
footprint



100 % green
energy

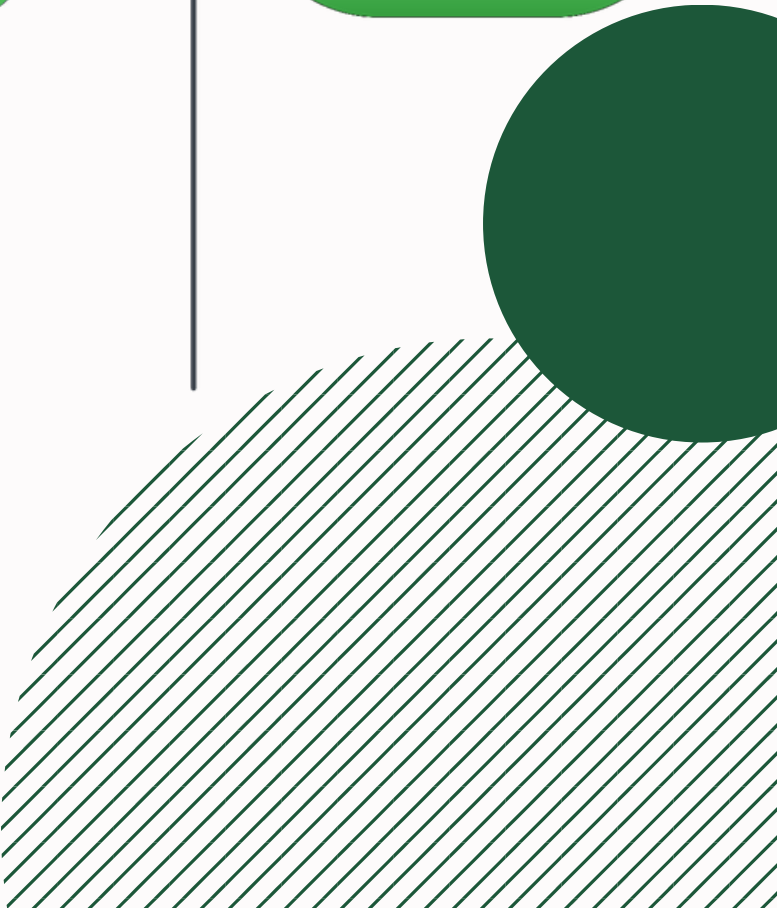
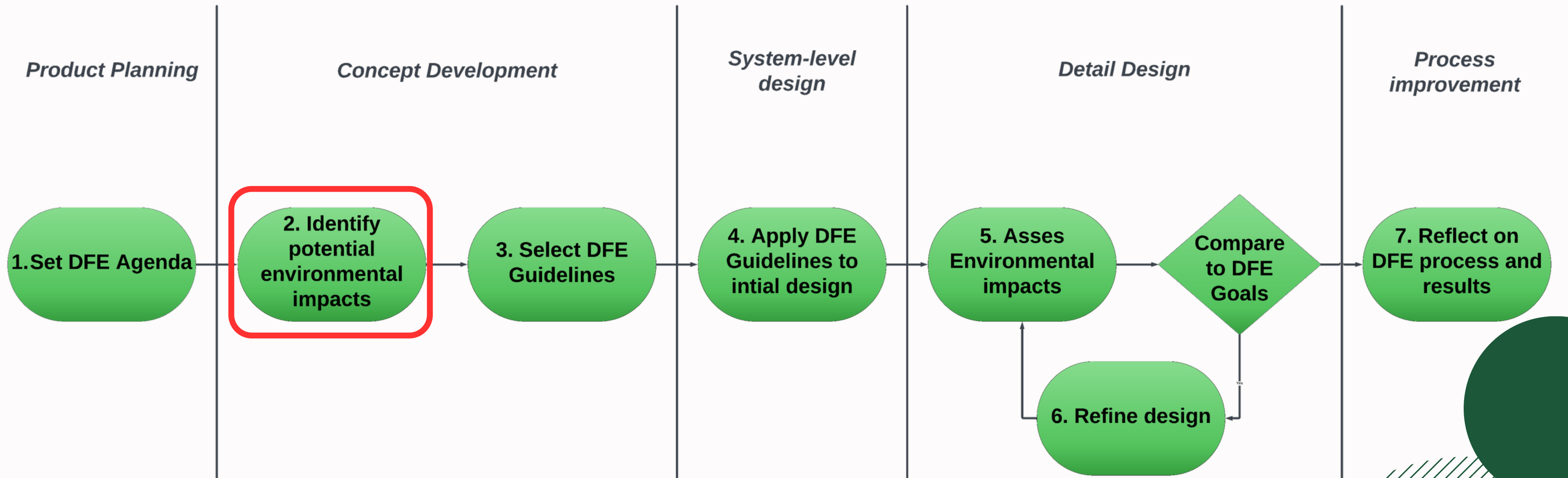


100 % recycled
material



Project Goals

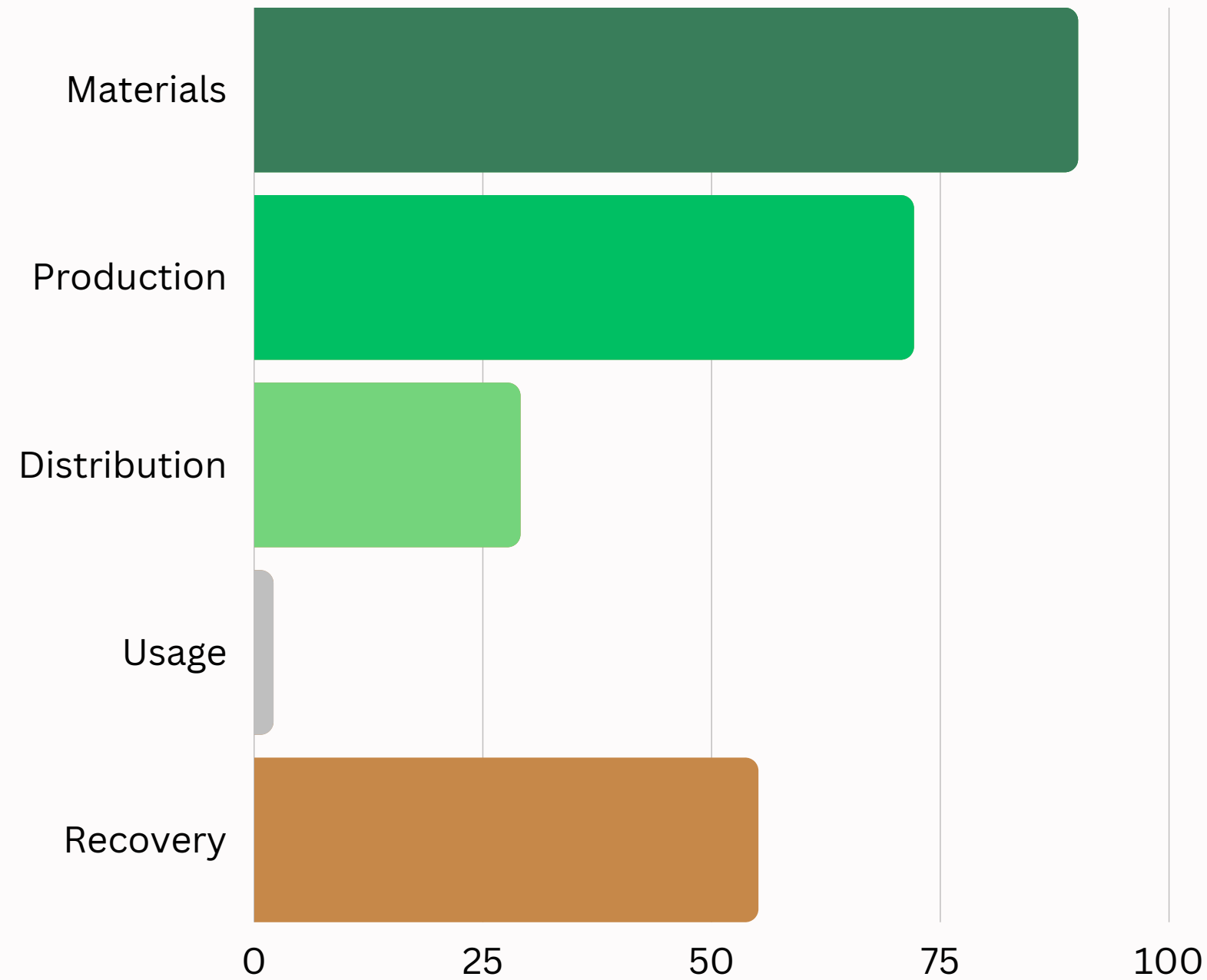
- Reduce use of raw/virgin material
- Minimal, efficient production processes
- Eliminate packaging
- Long product life
- Easy separation of different materials

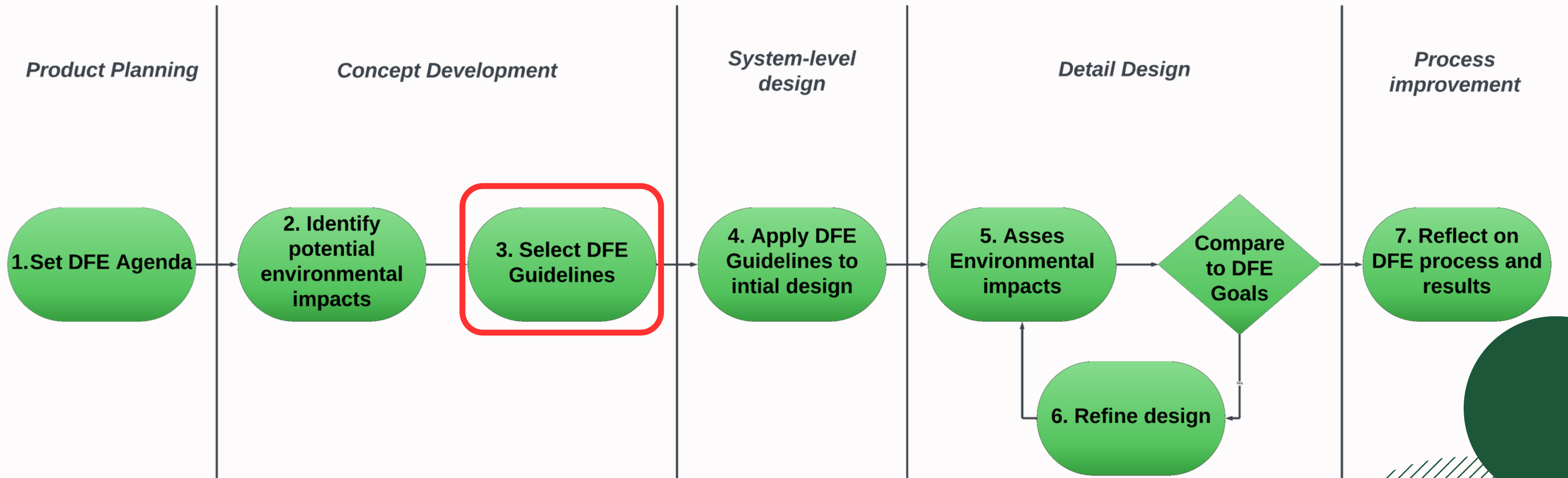


Identify Environmental Impacts

Consider and estimate without
specific data

Helps to focus on key areas of
impact

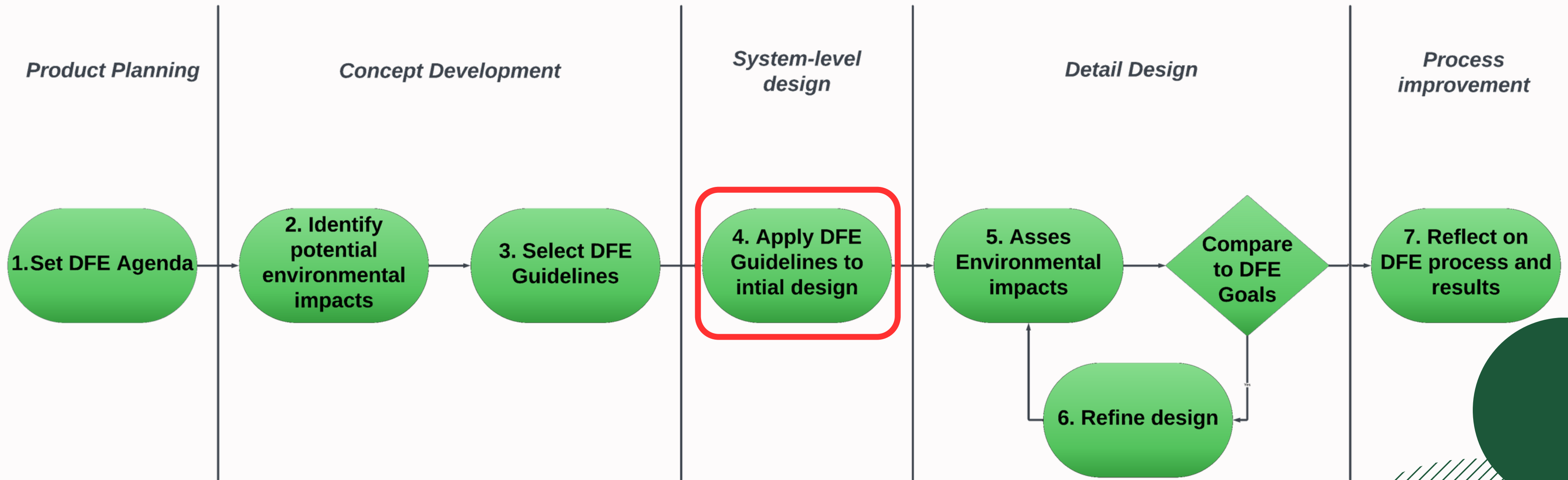




Key Considerations

- Material Selection and Sourcing:
Renewables/ recyclables/
nonhazardous
- Optimization of Production line
- Packaging & Distribution
- Re-Usable - to reduce adding to
landfill
- Ease of Use - Water-level
dimensions/ easy to clean





Step 4: Applying DFE Guidelines



Goal: to reduce environmental impact in product design and production.
Apply guidelines to enhance sustainability in product design

Single use	Re-Usable
Material Efficiency	Material Durability
Minimized Packaging	Modularity and Repairability
	Efficient Manufacturing
	Recyclability at End-of-Life



Applications

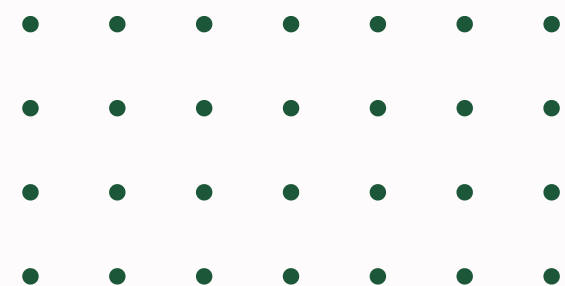
- Design to meet selected guidelines
- Durability and Longevity: designed to withstand wear and tear, and reduce waste over time.
- Energy-efficient manufacturing techniques
- Repairability, to minimize discarding the bottle
- Recyclability, Local sourcing
- End-of-Life Considerations

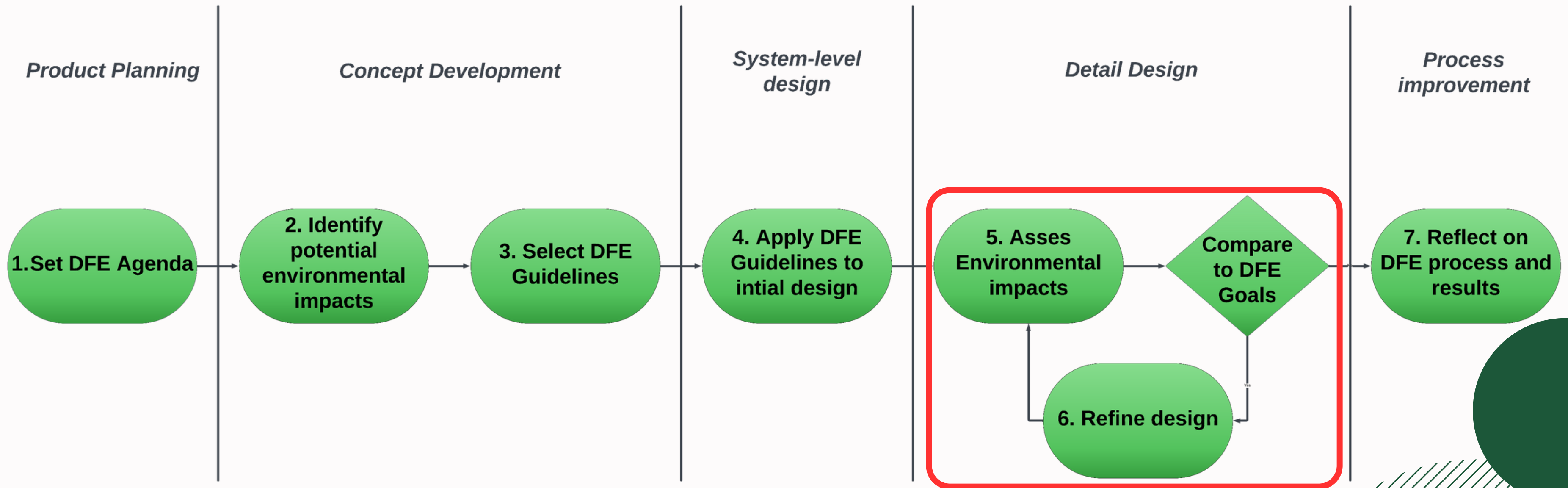
Benefits

- Reduced environmental impact.
- Improved functionality and durability.
- Enhanced sustainability.

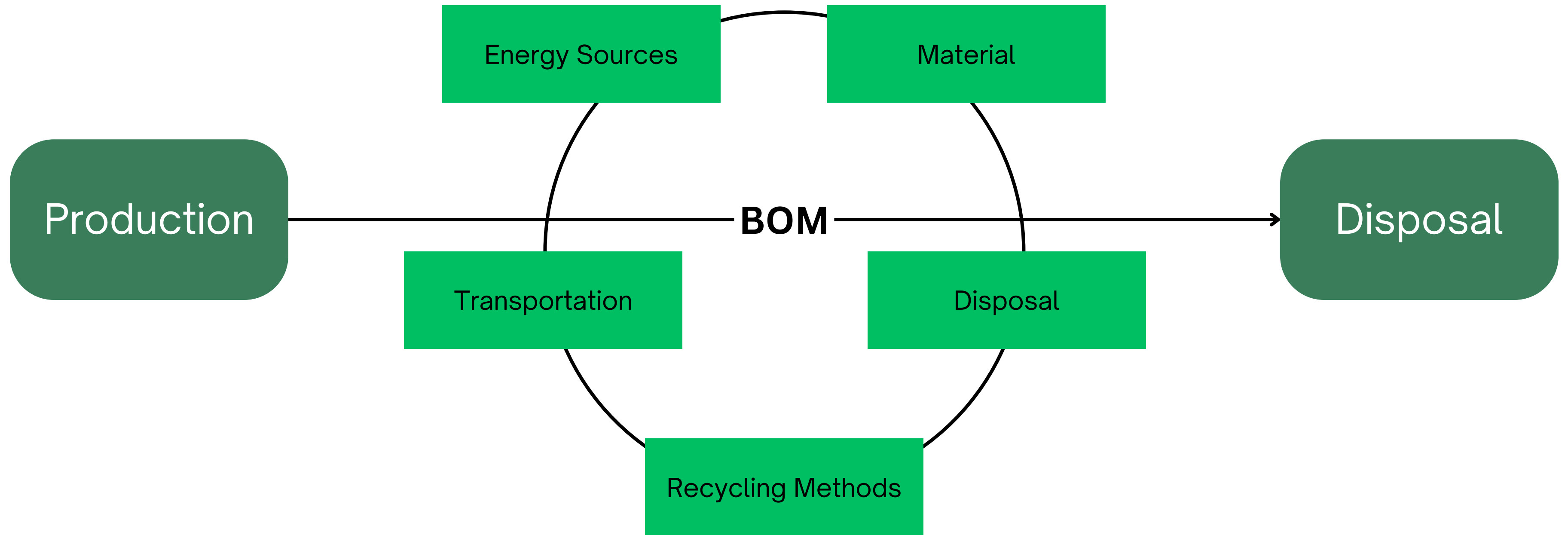
Trade-offs

- We can't create the best product for the cheapest price





Step 5: Assess the Environmental Impacts



Step 6: Refine Design



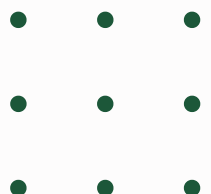
Recycled
Material

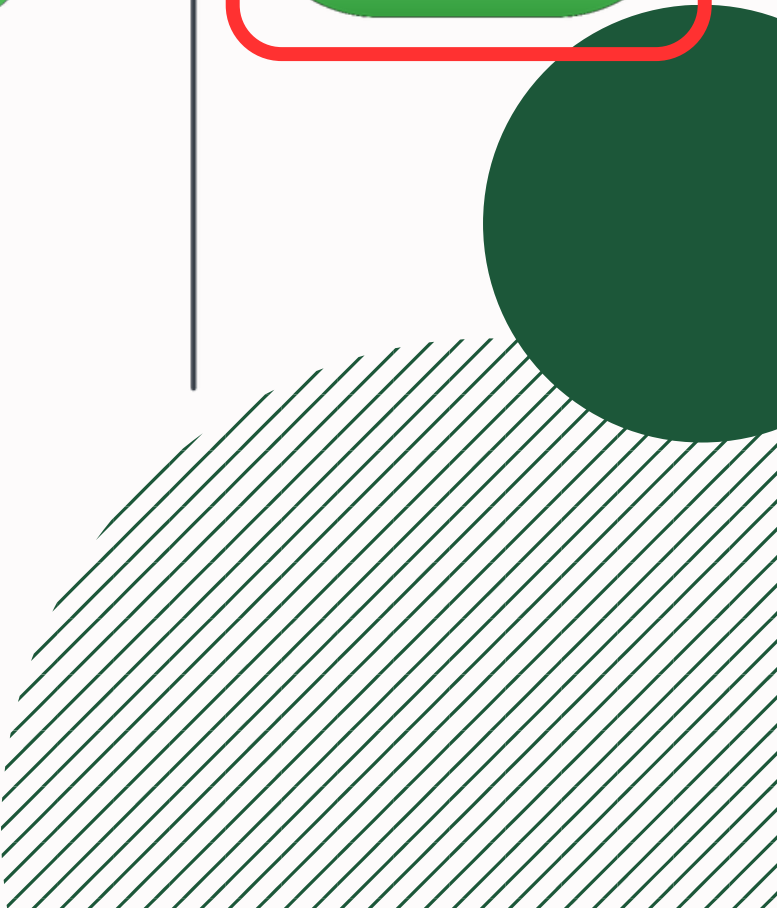
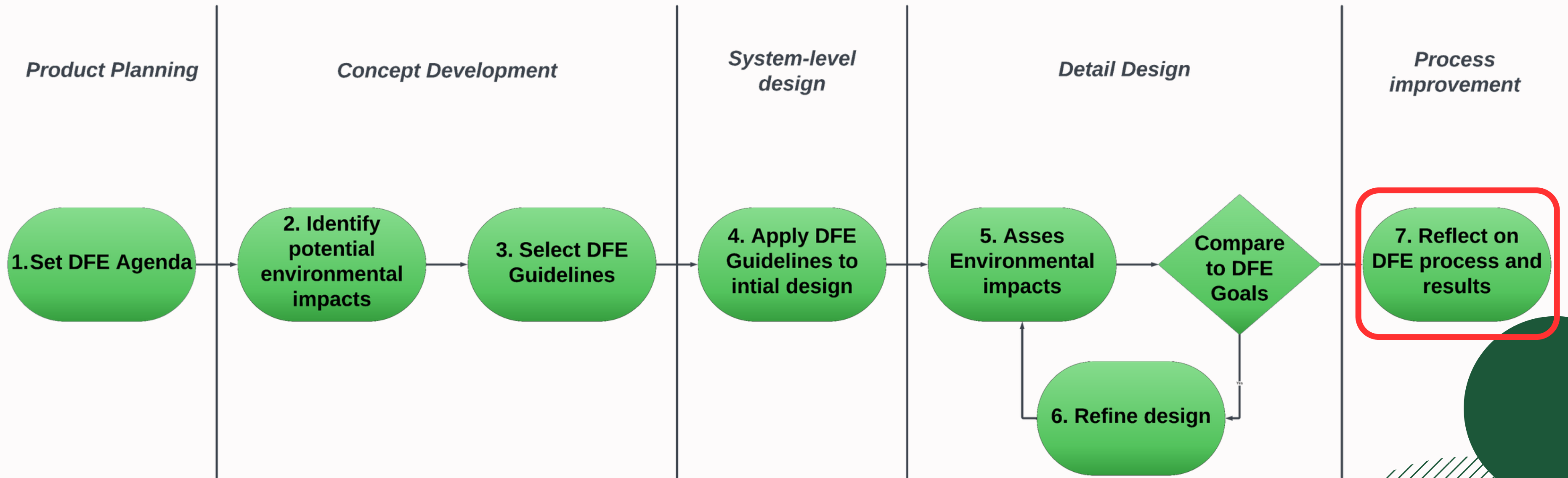


Long Product
Life



Carbon
Neutral
Footprint





7. Reflection on DFE Process and Results



What is a Returnable?
SMART Cup Technology
Circular Returnable Cup
Calculator
Find out more
Made from 14
single-use water bottles

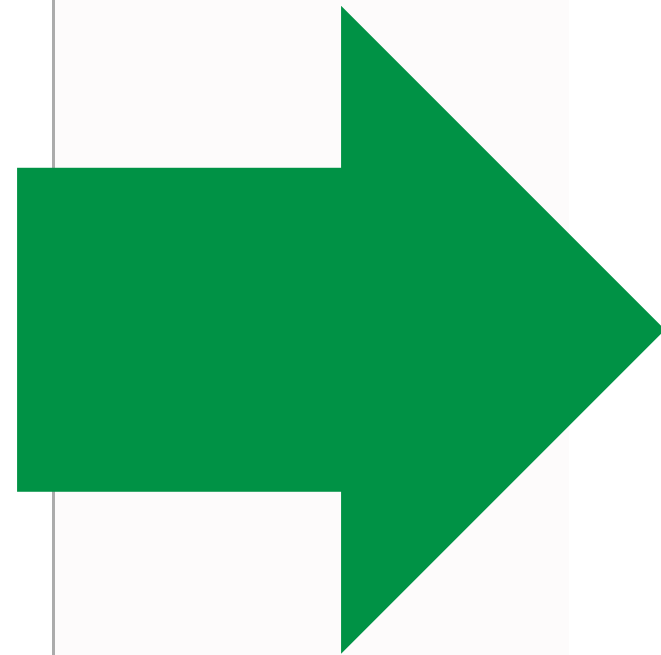
360° drinking
One hand, one click opening

 Designed for
Circularity

made from
92%



17%



92%

THANK
YOU

