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UNIVERSITY OF LISBON  
INTERDISCIPLINARY STUDIES  
ON SUSTAINABLE ENVIRONMENT AND SEAS



Co-funded by the  
Erasmus+ Programme  
of the European Union



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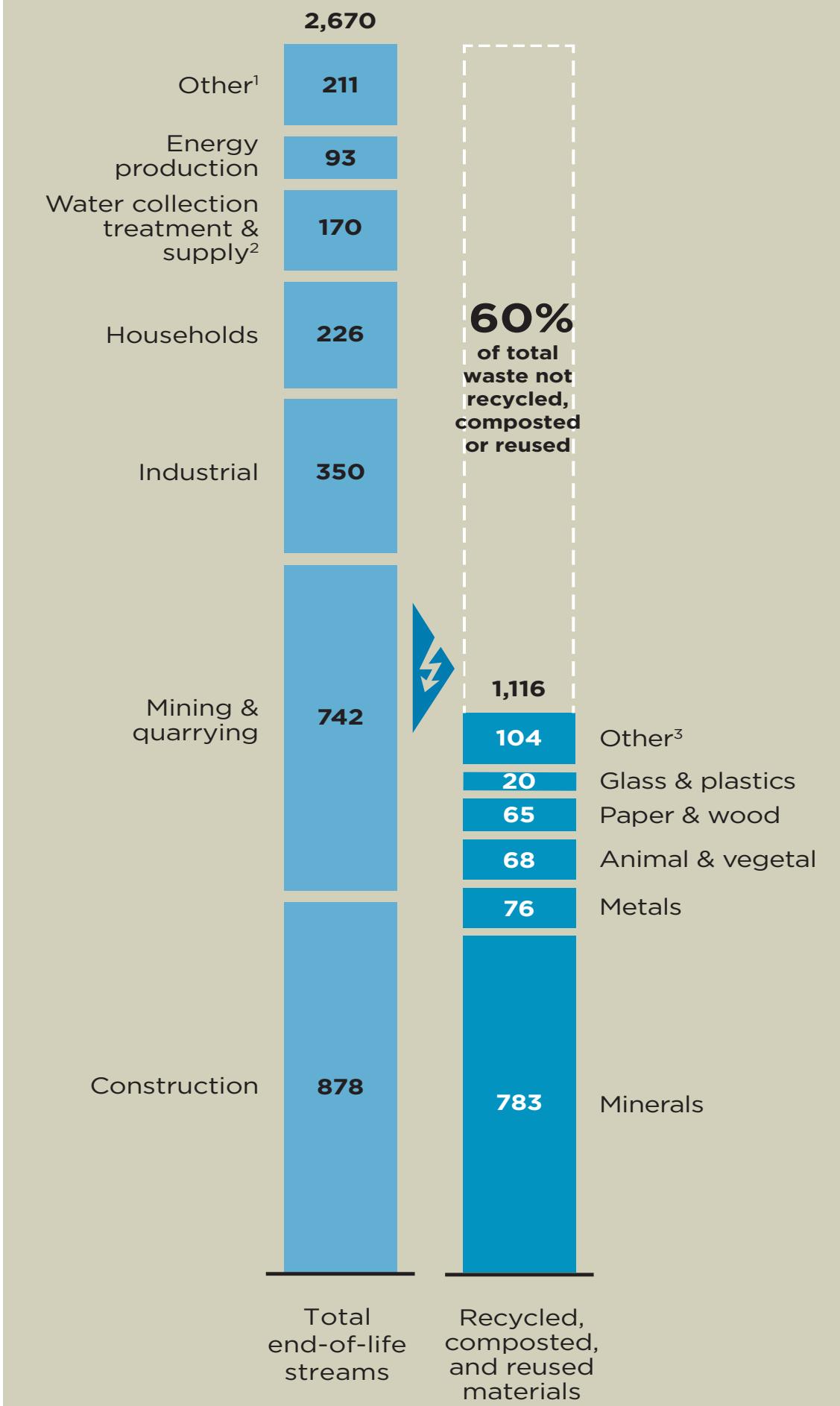


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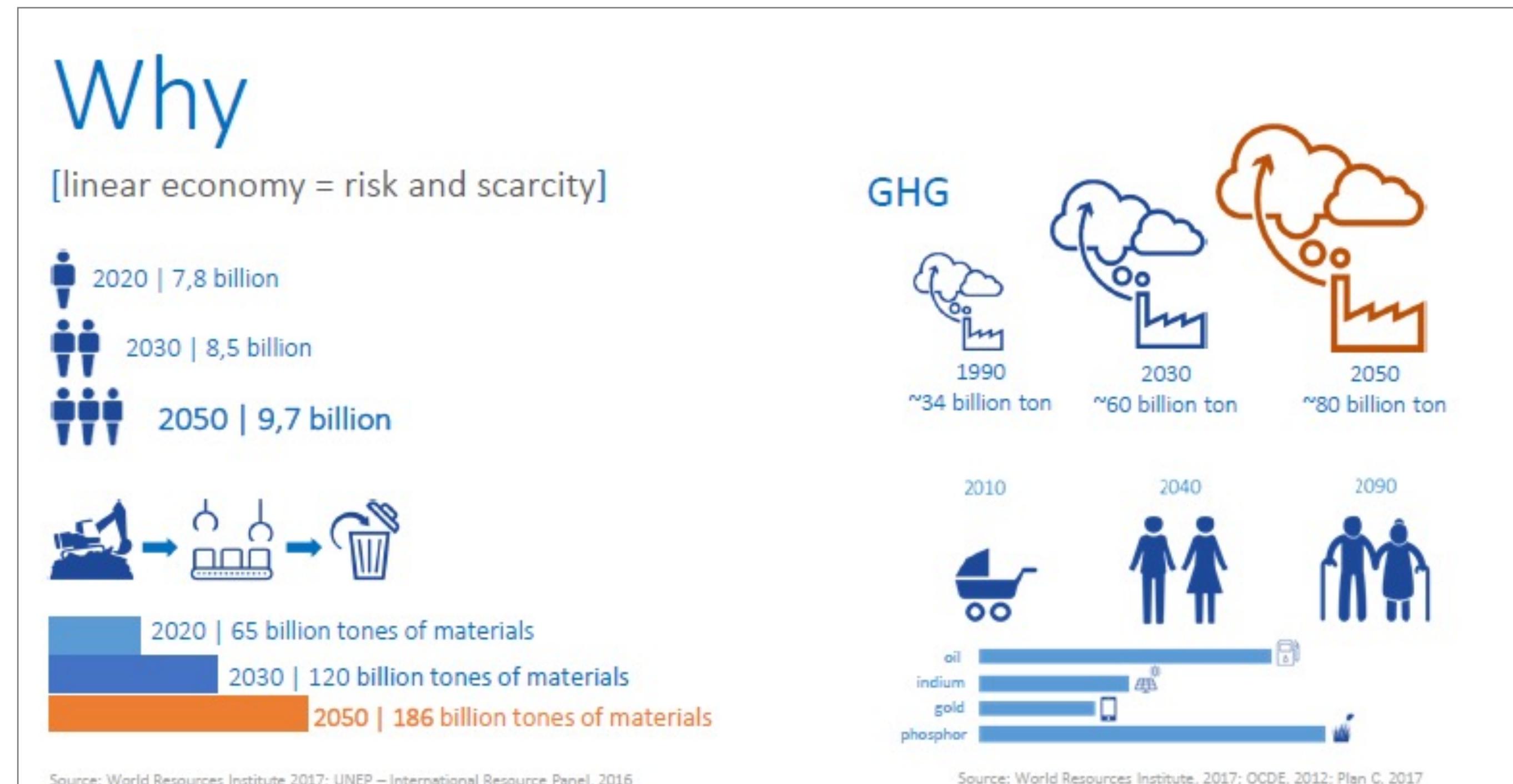
## There are a lot of wasted opportunities in today's economy:

- ~30% of the world's food is either lost or wasted.
- In Lisbon, the average car sits unused 95% of the time, and only 1 in 5 seats are used even when it's in use.
- In Europe, the average office is used only 50-65% of the time, even during office hours.
- 86% of plastic packaging is landfilled, incinerated or leaks into natural systems.
- 8 Mt of plastic enter the ocean every year.
- Each year, USD 80-120 billion plastic packaging material value is lost to the economy.

FIGURE 2  
We are still losing enormous tonnages of material  
Million tonnes, EU27, 2010E



## Our way of doing things is reaching its limits



## Environmental lost

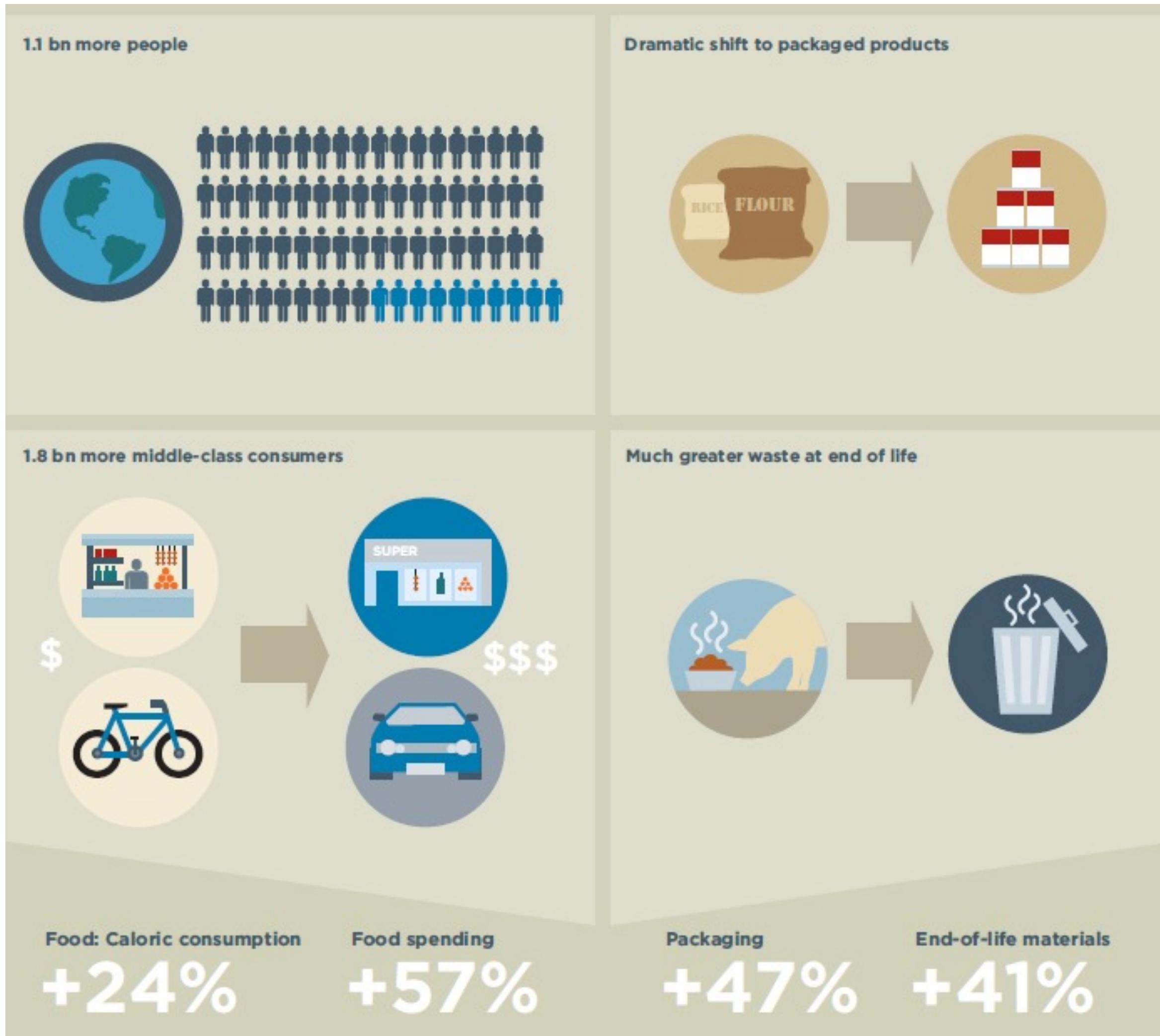
**Global warming:** global temperature already reached 1°C higher levels than pre-industrial time

**Climate change:** Future illustrative pathways suggest a global warming of 3-4 °C by 2100

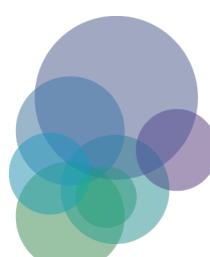
**Loss of biodiversity:** There's been an overall decline in species of 60% over the last 40 years.

**Land degradation:** Soil quality losses are expected to cost USD 40 billion annually.

**Ocean pollution:** An estimated 8 million tonnes of plastic waste enter the oceans every year, a figure predicted to rise to 17.5 million tonnes per annum by 2025.

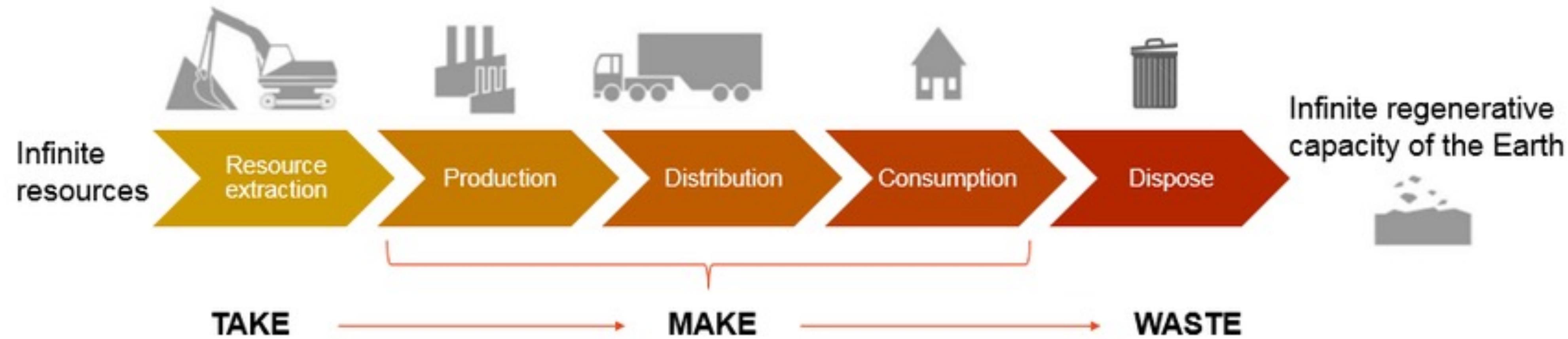


Our way of  
doing  
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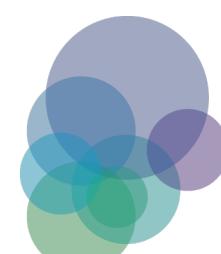
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## The linear economy model: Take, make, dispose, repeat

The source of structural waste is deeply rooted in our current economic system that follows a linear take-make-waste approach:

- We **take** resources from the ground to make products.
- We **make** and use these products.
- When we no longer want them, we throw them away and **waste** them.



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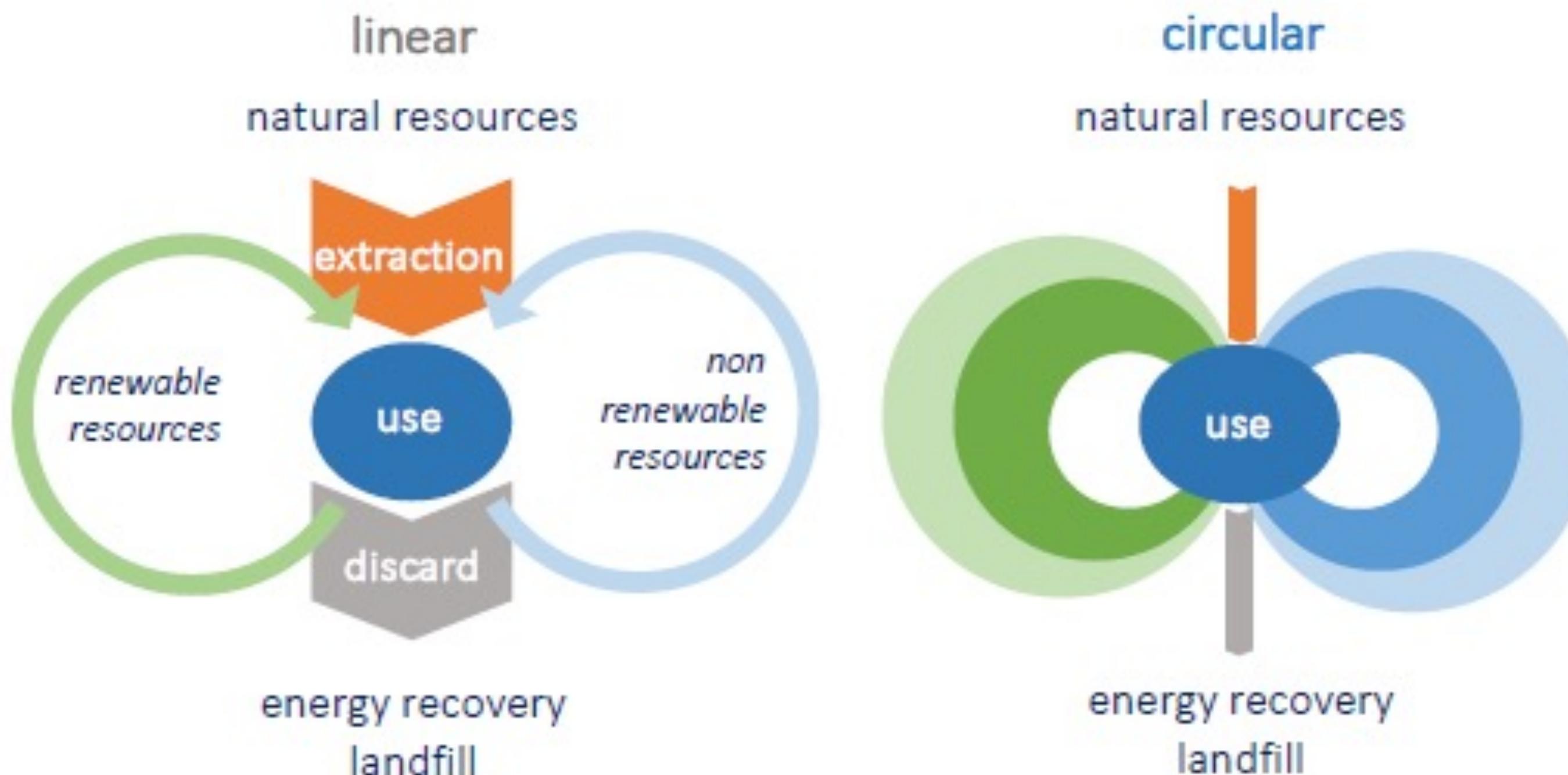
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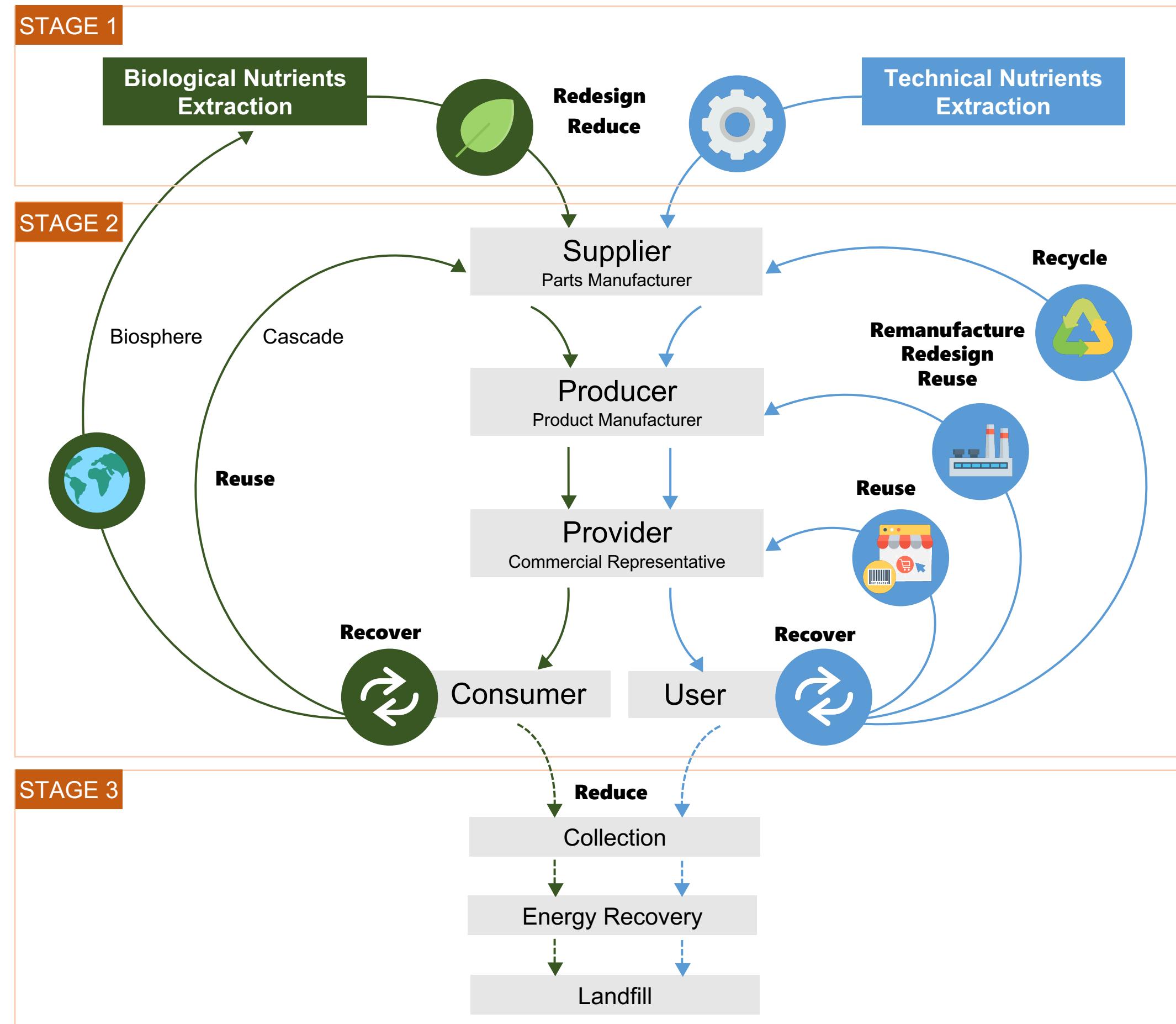
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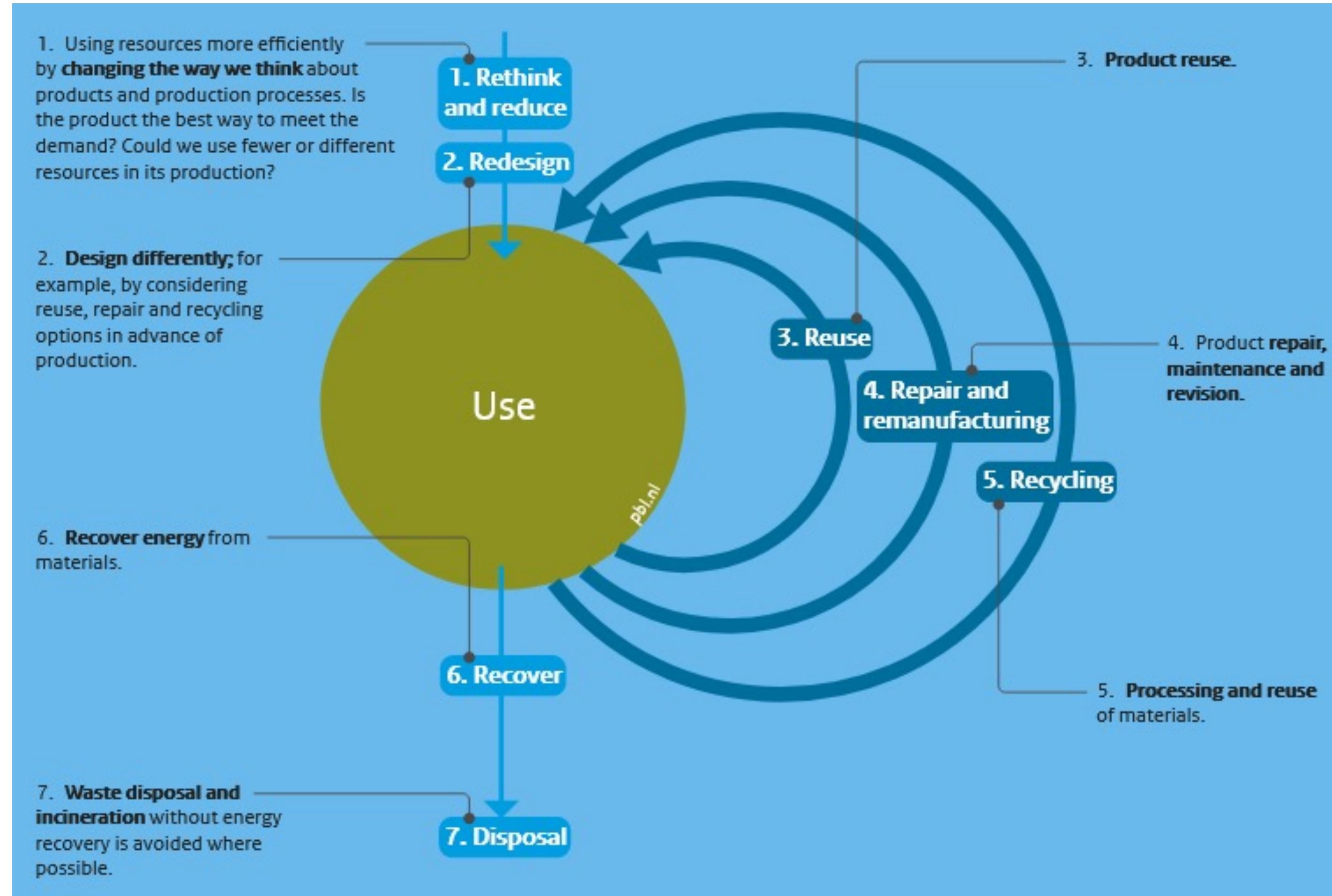
Circular economy envisions a “future where nothing is wasted; a future where every “waste” becomes an asset; a future where all products at the end of their primary use are recovered and either reused, remanufactured or recycled for multiples generations” (Jawahir and Bradley, 2016).



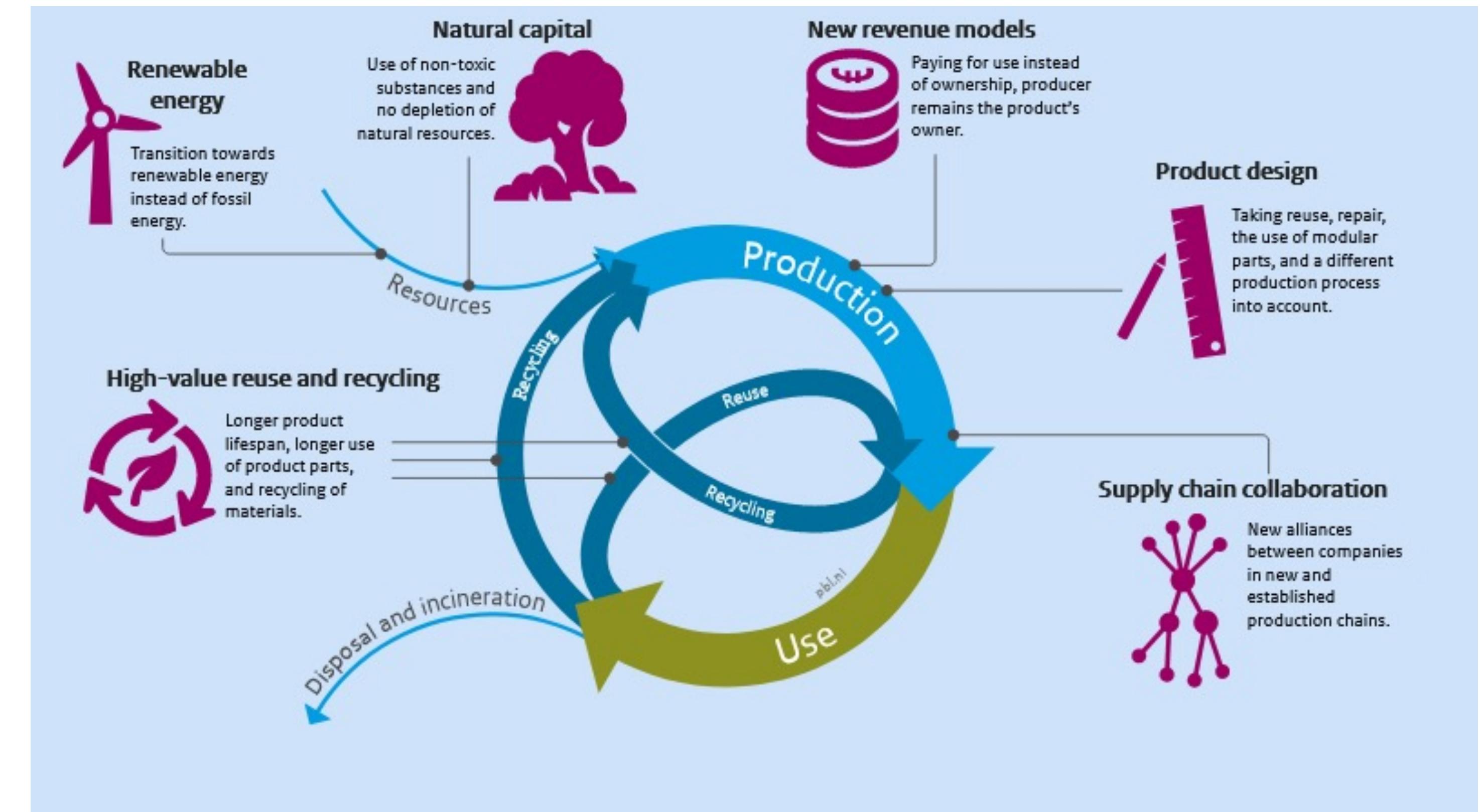
**Preserve and enhance natural capital by controlling finite stocks and balancing renewable resource flows**

**Optimize resource yields by circulating products, components, and materials at the highest utility at all times in both technical and biological cycles**

**Foster system effectiveness by revealing and designing out negative externalities**



## Elements of circular economy



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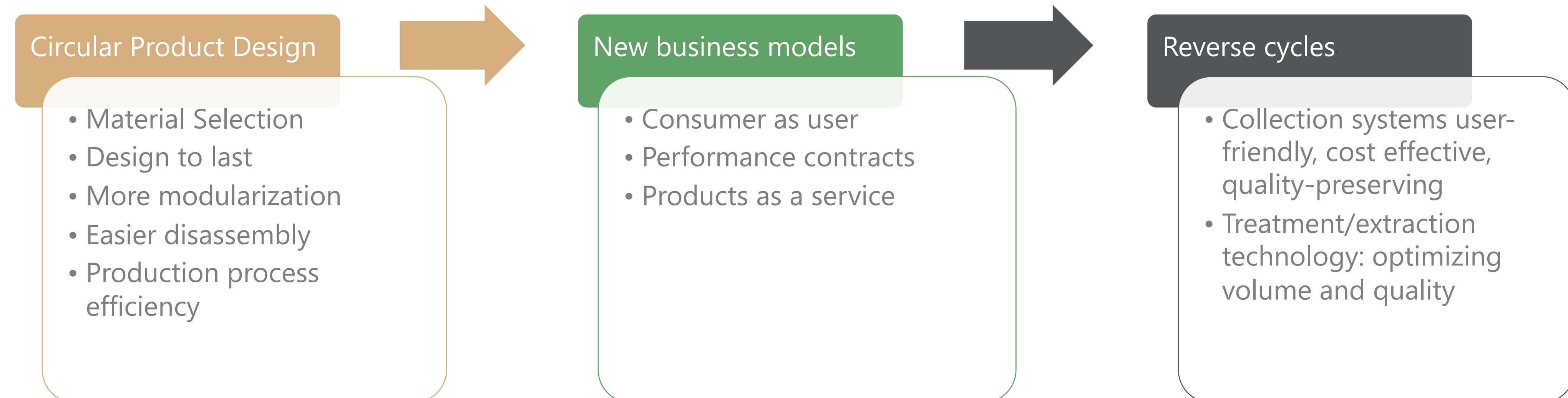
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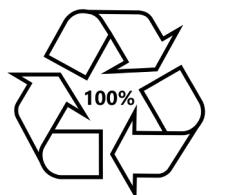


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# Build circularity



# Eco-Design



Recycled content  
Handle and head  
support 100% rPP



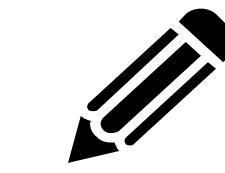
Reduced resources  
consumption – Only  
2g



Handle 100% recyclable  
Decreased mixed plastic  
waste



Reverse Logistic system for  
end of life valorization of  
mixed plastics



Designed for less  
material



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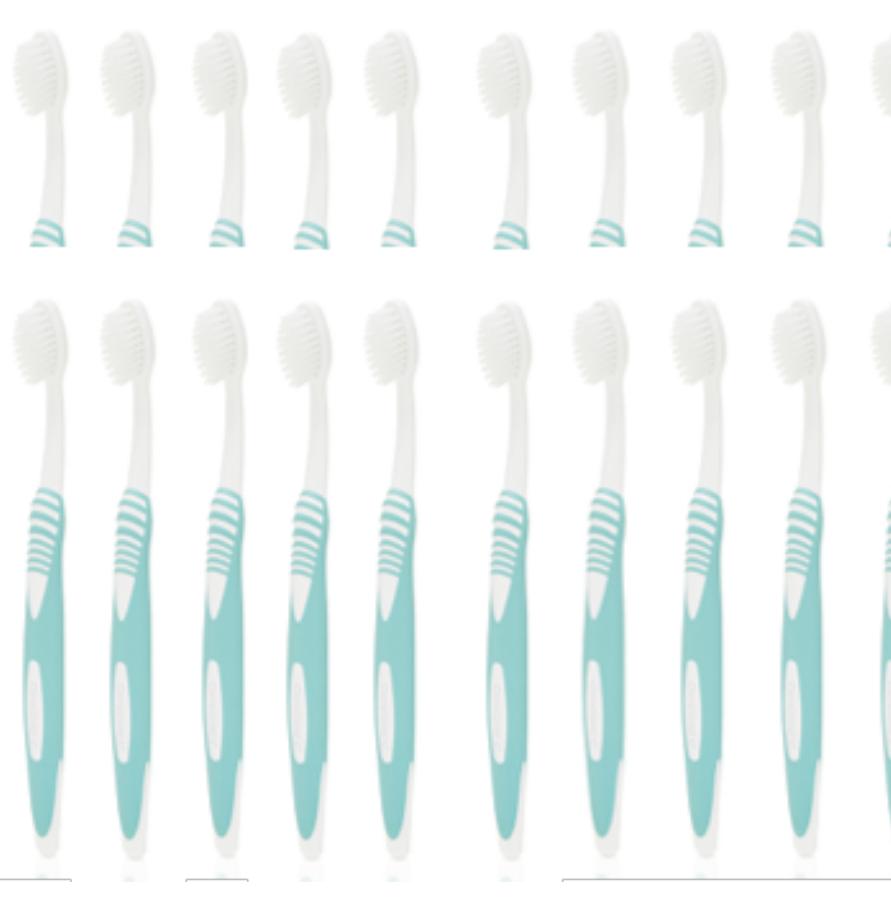
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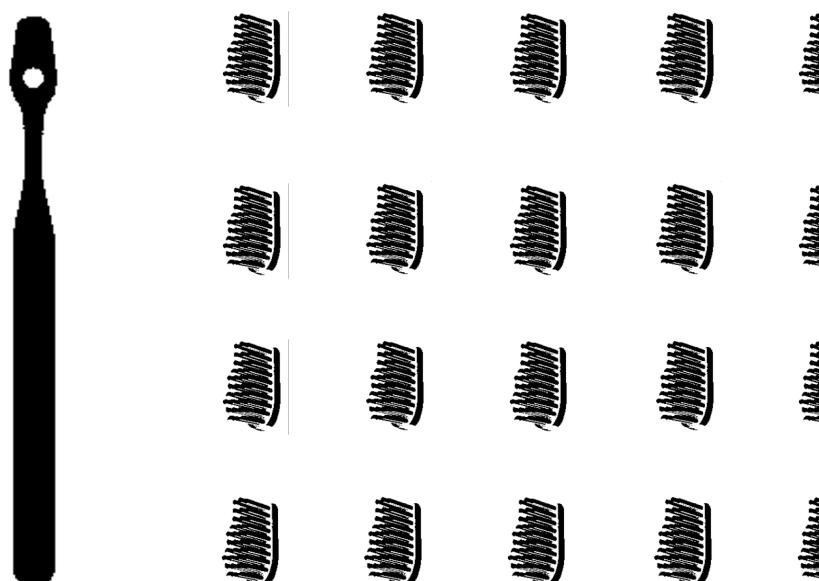


Traditional

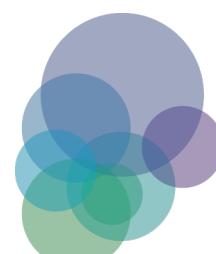


VS

doop



- Less water consumption: 45%
- Less energy demand: 39%
- Less solid waste: 60%
- Lower Global Warming contribution: 41%
- Lower ozone formation contribution: 36%
- Lower terrestrial acidification contribution: 41%



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## Circular economy benefits

- Improved **competitiveness** by creating savings and **reducing raw materials** and energy dependency;
- Improved **security of supply** and control of rising costs;
- Contributing to climate change policy by **reducing greenhouse gas emissions**;
- **Employment** opportunities;
- **Reducing environmental impact** of resource extraction and **waste disposal**;
- Opportunities for **new businesses** going from earning revenue by selling goods to offering services.



The background of the image is an underwater scene. A large green sea turtle is swimming in the foreground, its head and front flippers visible. In the water above it, several plastic bottles and other debris are floating, including a large piece of plastic sheeting. In the background, there are more fish swimming and some icebergs at the surface.

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