



UNIVERSITY OF LISBON
INTERDISCIPLINARY STUDIES
ON SUSTAINABLE ENVIRONMENT AND SEAS



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University Network for Innovation,
Technology and Engineering



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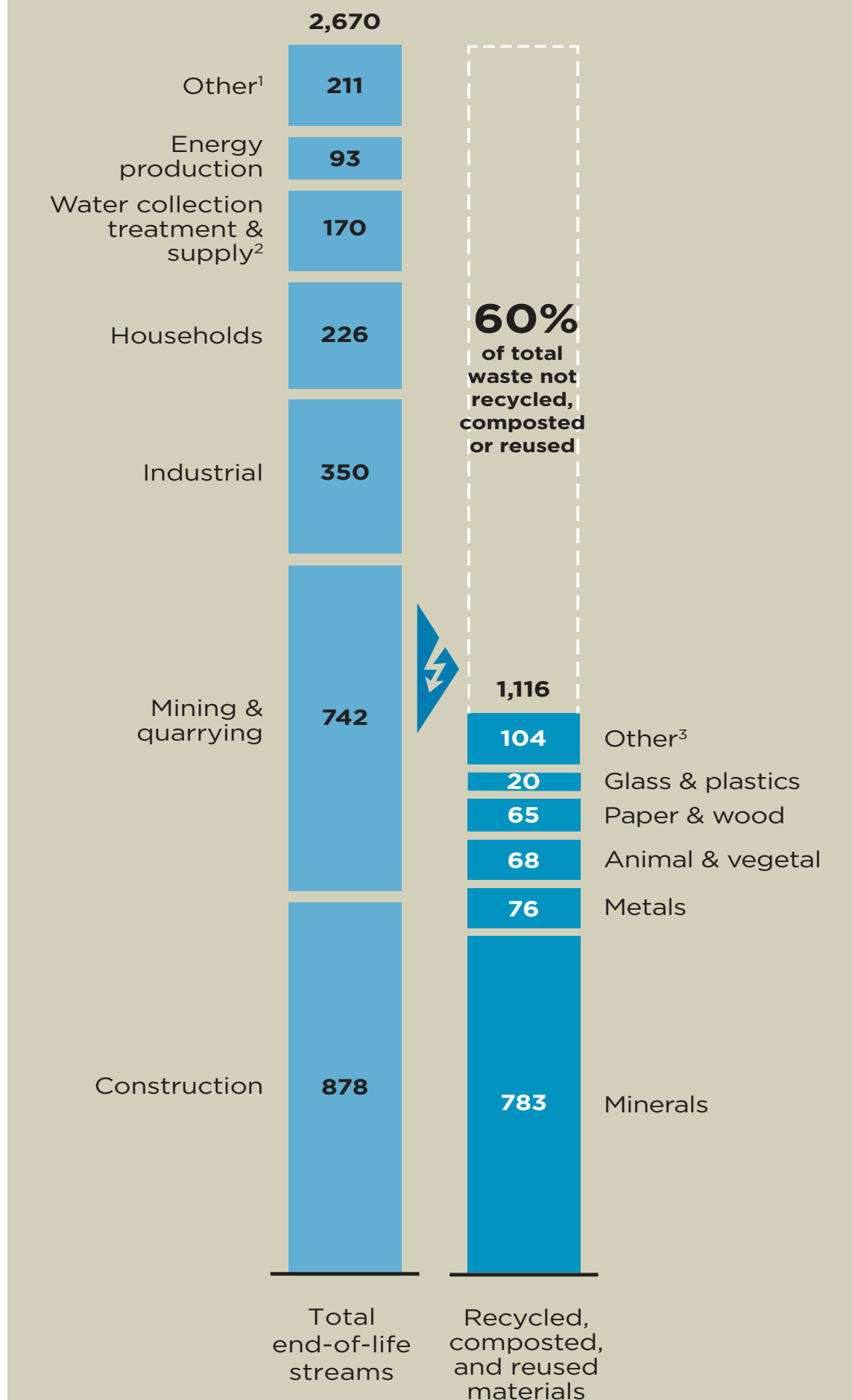
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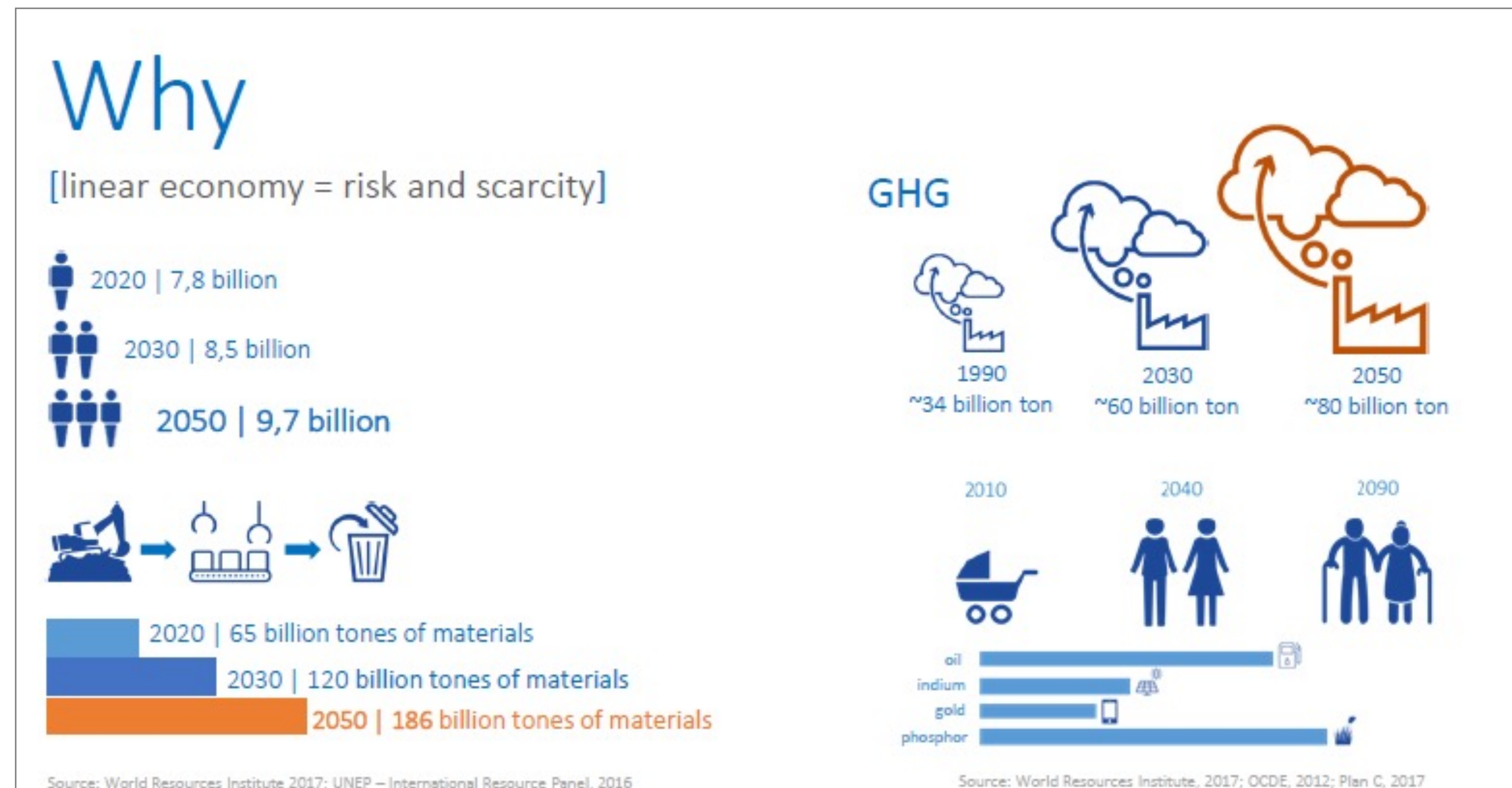
There are a lot of wasted opportunities in today's economy:

- ~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

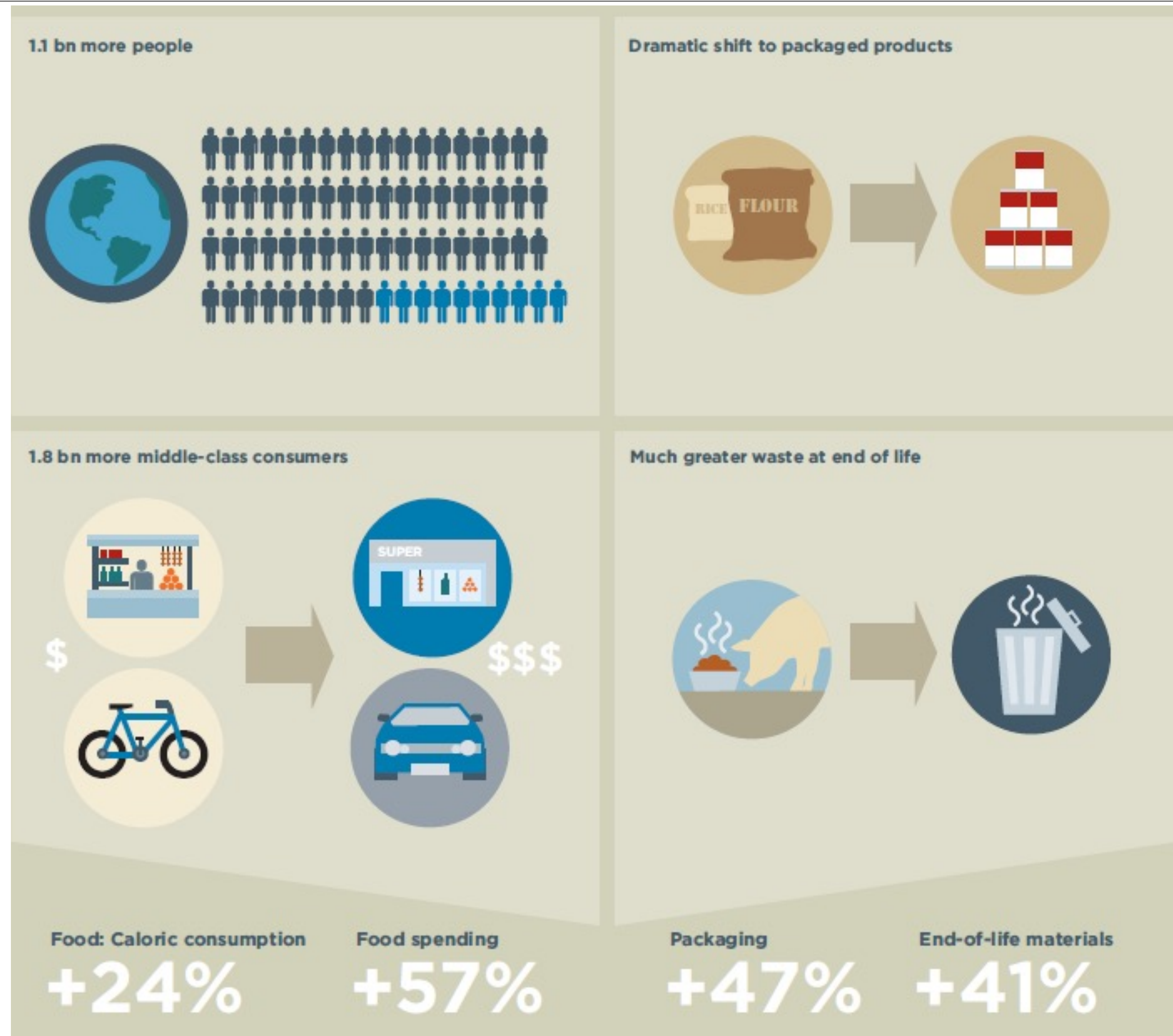
Global warming: global temperature already reached 1°C higher levels than pre-industrial time

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

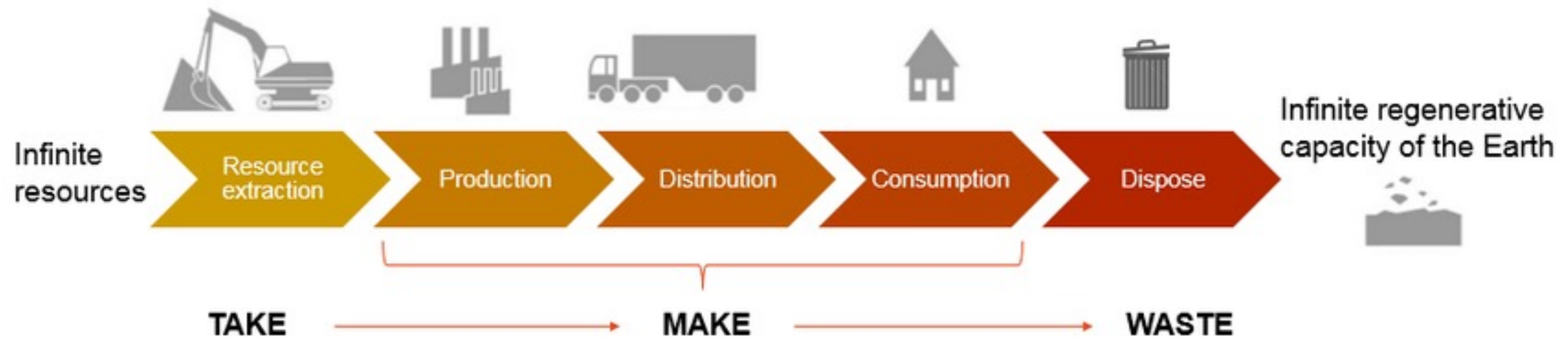
Loss of biodiversity: There's been an overall decline in species of 60% over the last 40 years.

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 things is reaching its limits



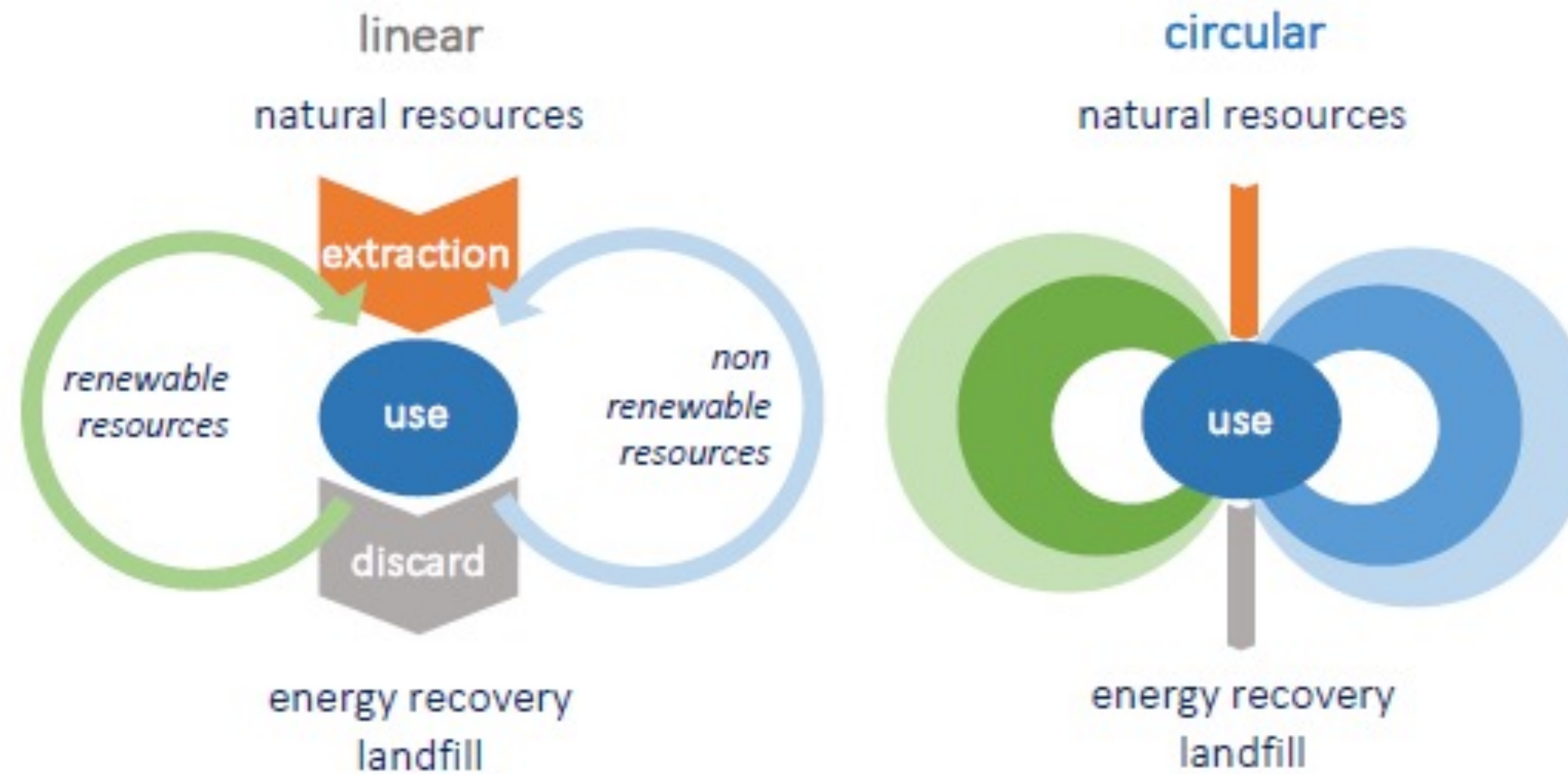
The linear economy model: Take, make, dispose, repeat

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

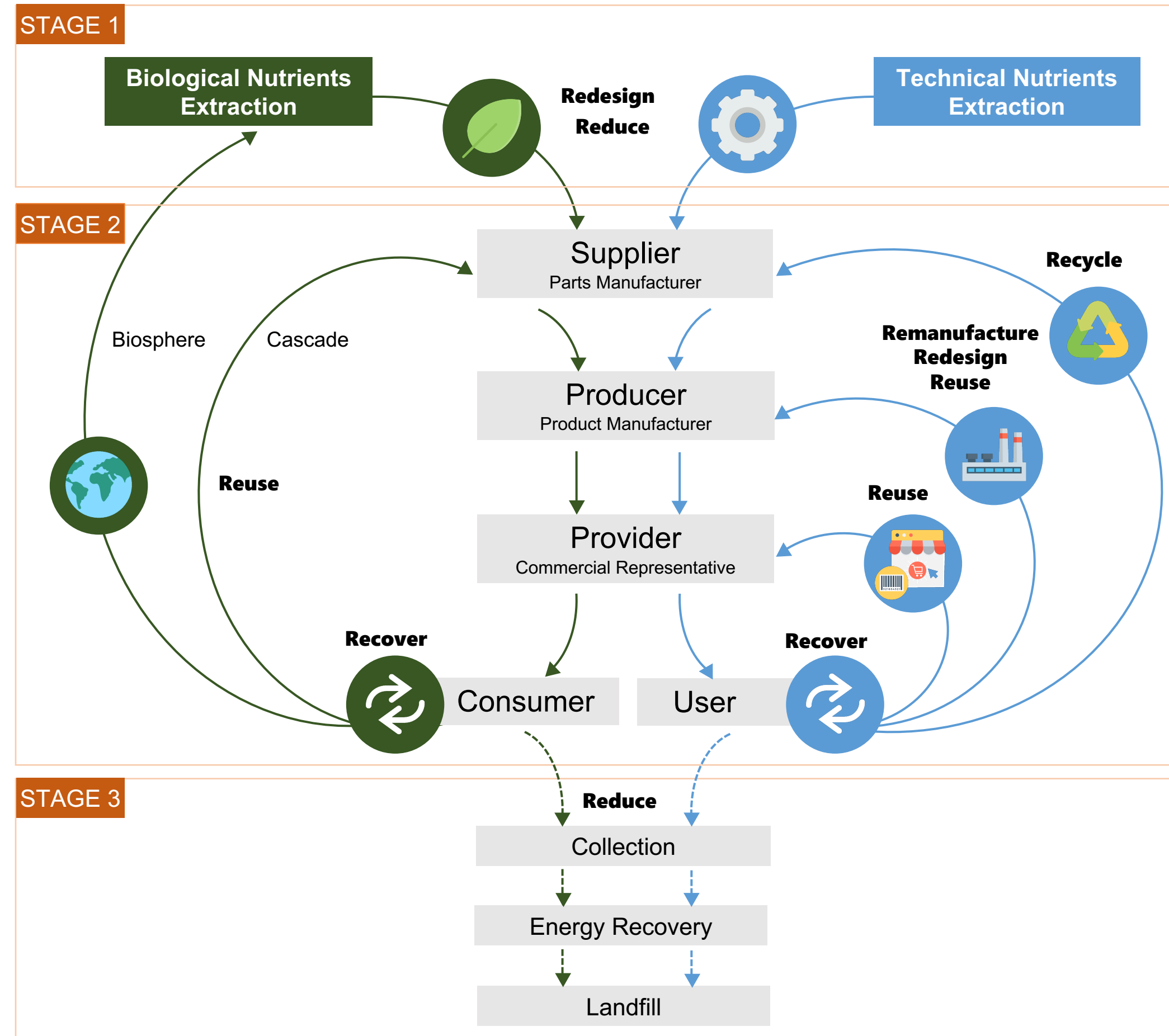
We **take** resources from the ground to make products.

We **make** and use these products.

When we no longer want them, we throw them away and **waste** them.



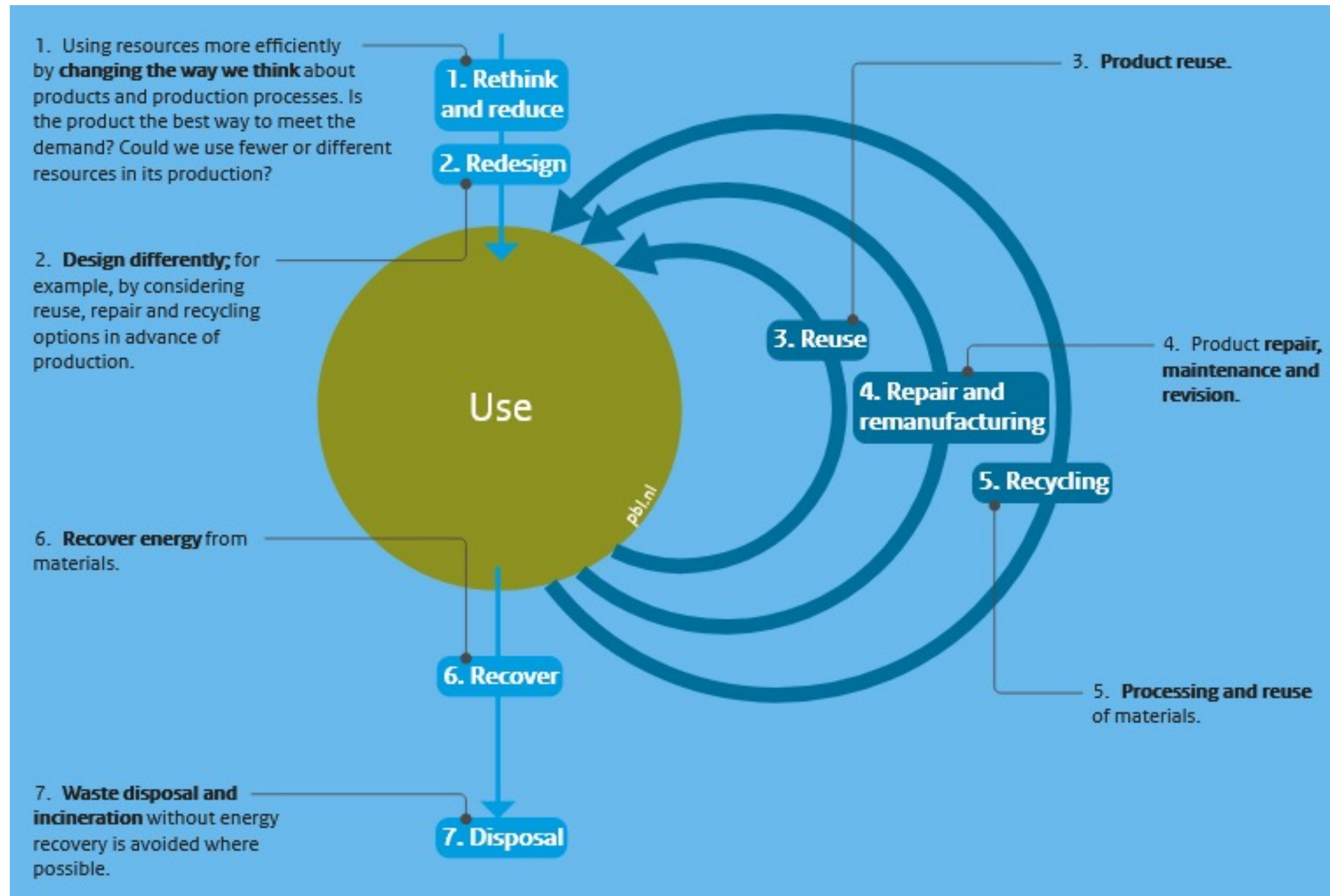
Circular economy envisions a “future where nothing is wasted; a future where every “waste” becomes an asset; a future where all products at the end of their primary use are recovered and either reused, remanufactured or recycled for multiples generations” (Jawahir and Bradley, 2016).



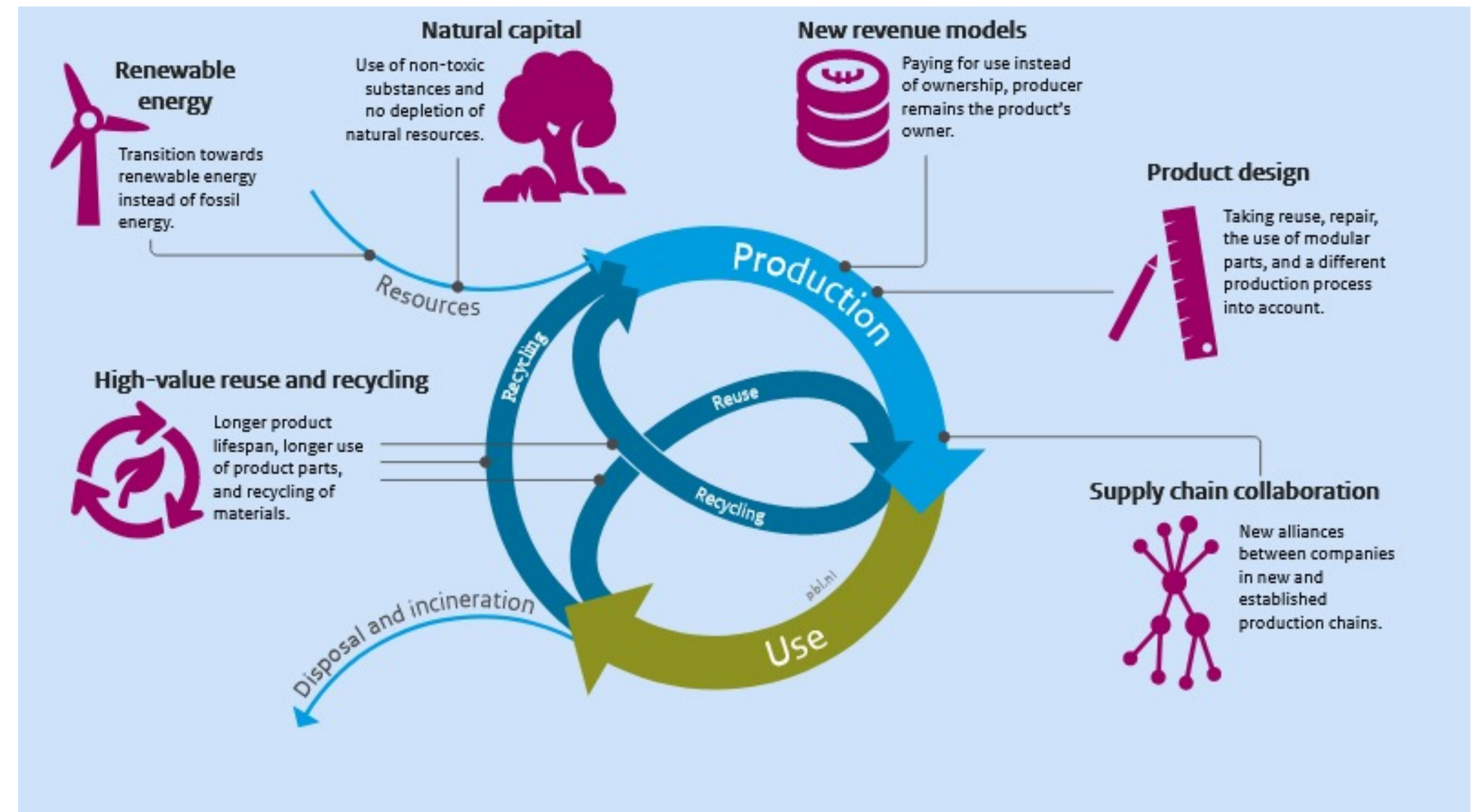
Preserve and enhance natural capital by controlling finite stocks and balancing renewable resource flows

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

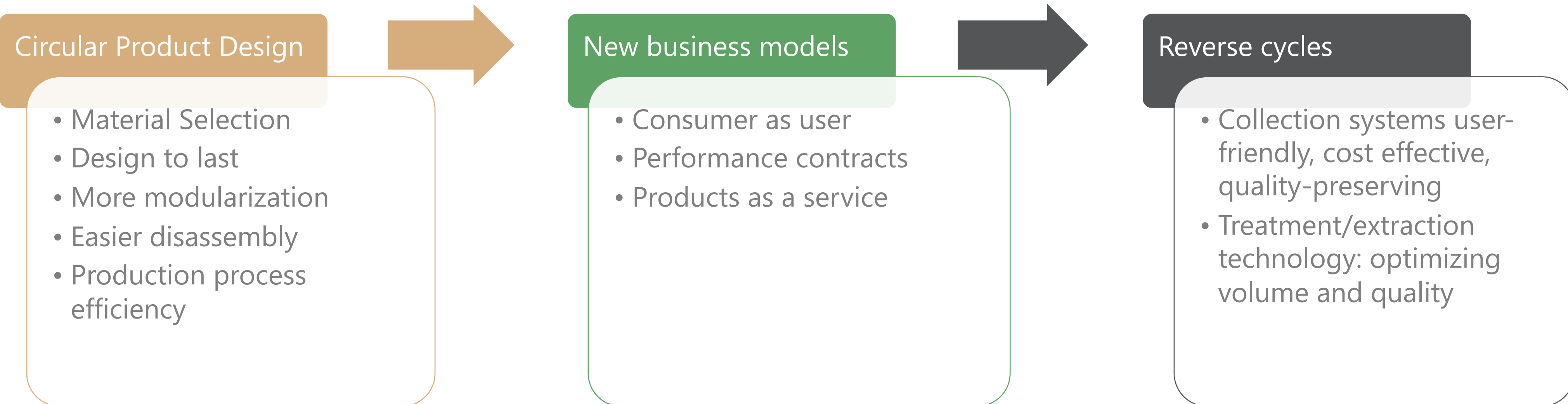
Foster system effectiveness by revealing and designing out negative externalities



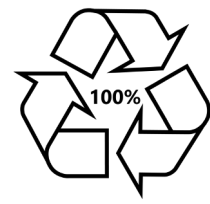
Elements of circular economy



Build circularity



Eco-Design



Recycled content
Handle and head
support 100% rPP



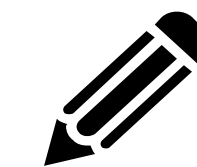
Reduced resources
consumption – Only
2g



Handle Reuse for
many years- Durability



Reverse Logistic system for
end of life valorization of
mixed plastics



Designed for less
material



Handle 100% recyclable
Decreased mixed plastic
waste

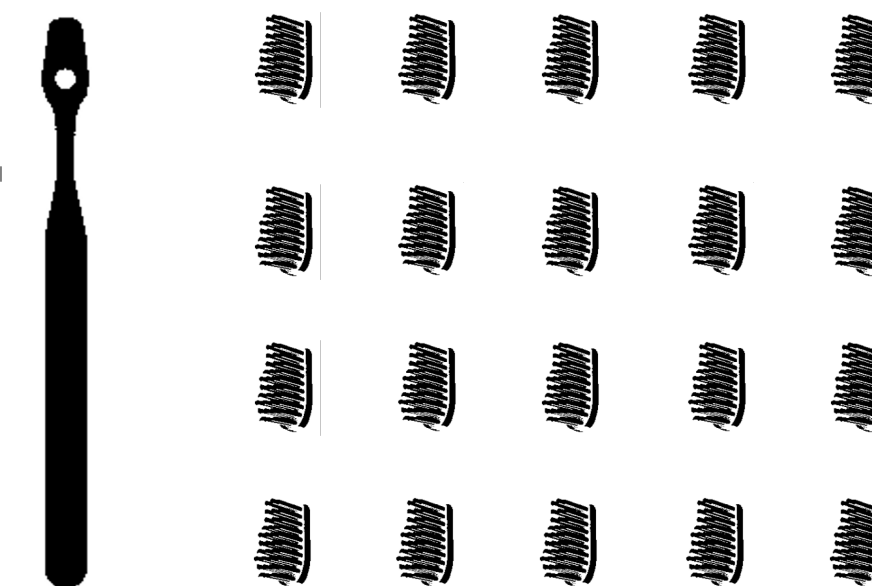


Traditional



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%

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.



An underwater scene with a sea turtle swimming towards the left. The water is filled with various types of plastic pollution, including bags, bottles, and debris. The scene is dimly lit, with a blue-green tint. The turtle is in the foreground, and the pollution is scattered throughout the water column and on the sandy bottom.

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