Socio-economic importance of biomaterials in the transition to the circular economy model

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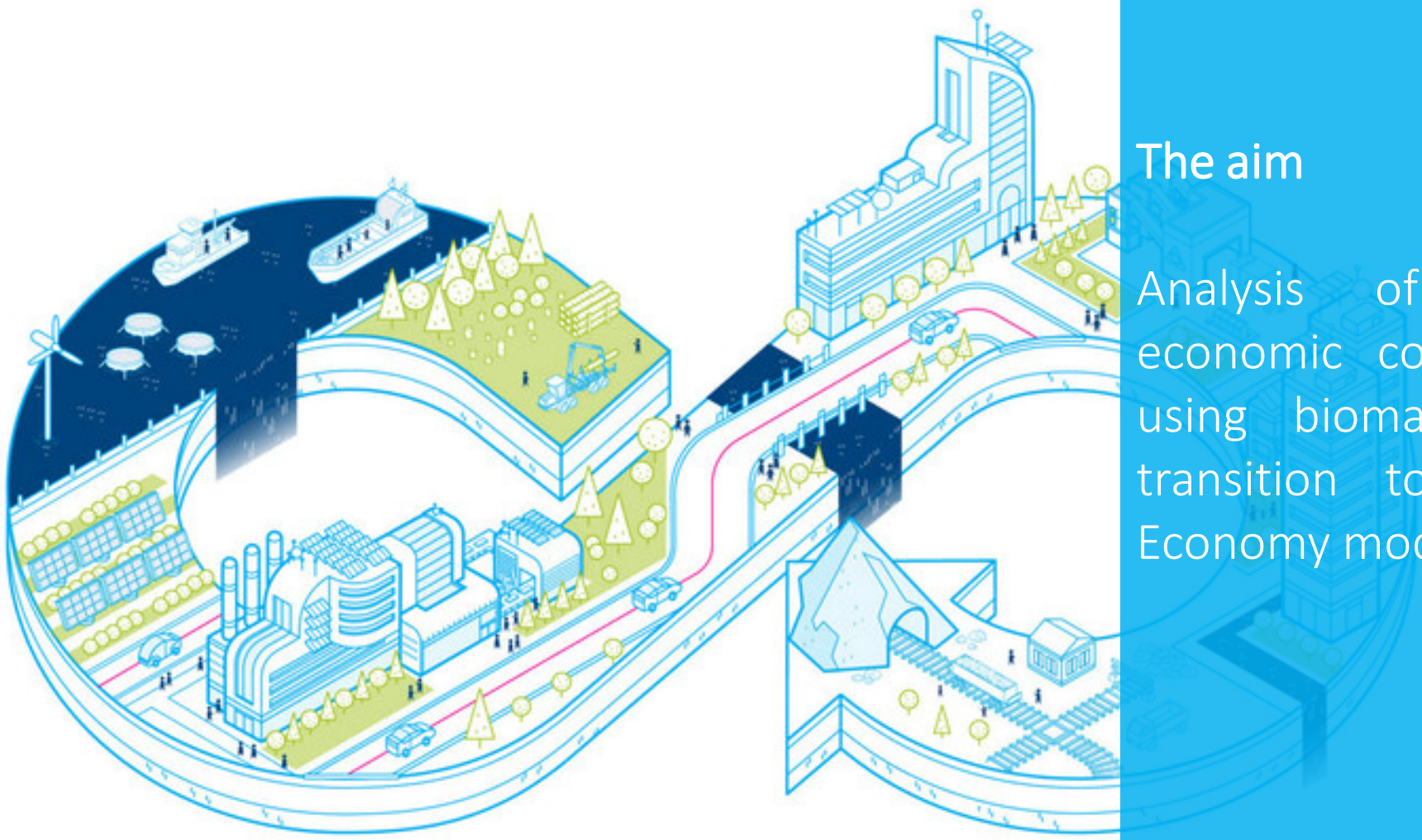

The aim

Analysis of the socio-economic consequences of using biomaterials in the transition to the Circular Economy model.

Problems

Production, recycling and incineration of plastic wastes

400 million tons of CO_2

By 2050 could rise to 12,000 million tonnes.

Problems

The growing demand for cheap and durable plastics.

Recycling technologies mainly focus on **energy recovery** or mechanical treatment.

Landfilling and non-recovery have led to serious waste management problems

Problems

By 2050 polymer production will reach 33 billion tonnes.

Traditional plastics are resistant to biodegrade in nature

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Build up of wastes in the environment

Solution

A possible alternative to conventional and petroleum-based materials are nature derived polymers

Biodegradability and biocompatibility

Diverse physicochemical properties

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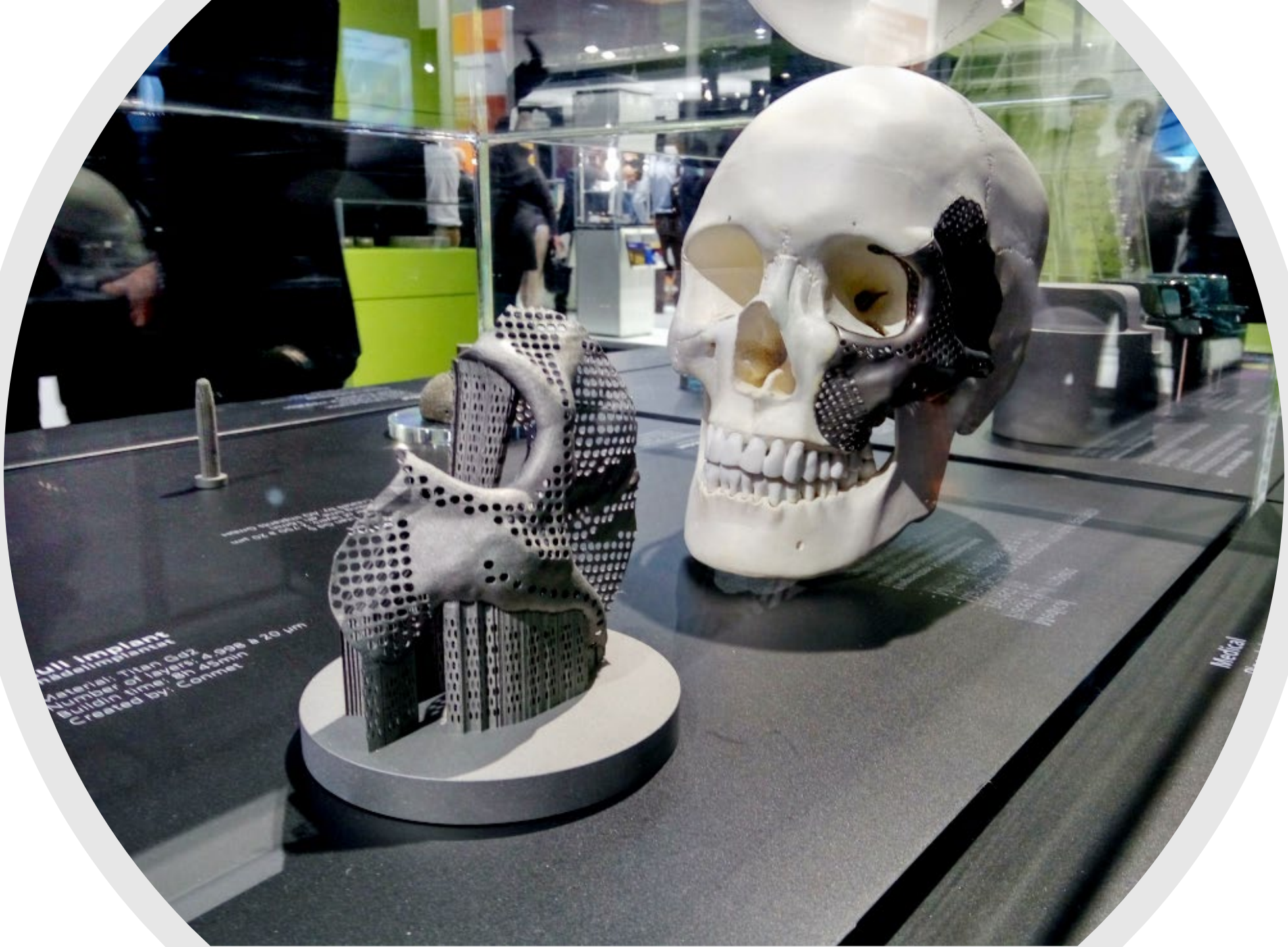
completely new applications

Examples of plastic like biopolymers:

PLA – polylactide

PHA - polyhydroxyalkanoates


Material: Titan Grd
Number of layers: 4 998 à 20 µm
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Conclusions

Biodegradable biopolymers:

an opportunity to replace synthetic polymers,

Production from renewable resources (e.g. starch, cellulose) and inside living organisms.

Production via biotechnological processes (PLA,PHAs), e.g. with the use of natural strains or genetically modified organisms.

Major limitation costs of these materials (e.g. PHAs) - 4 times higher than the production costs of traditional synthetic polymers.

The global production capacity of biopolymers is to increase by 24% by 2023.

Thank you for attention