KU LEUVEN

MATERIALS ENGINEERING

Composite Materials Group

Research on Bio-based Composites @ MateriNex launch

18 June 2024, Antwerp, Belgium

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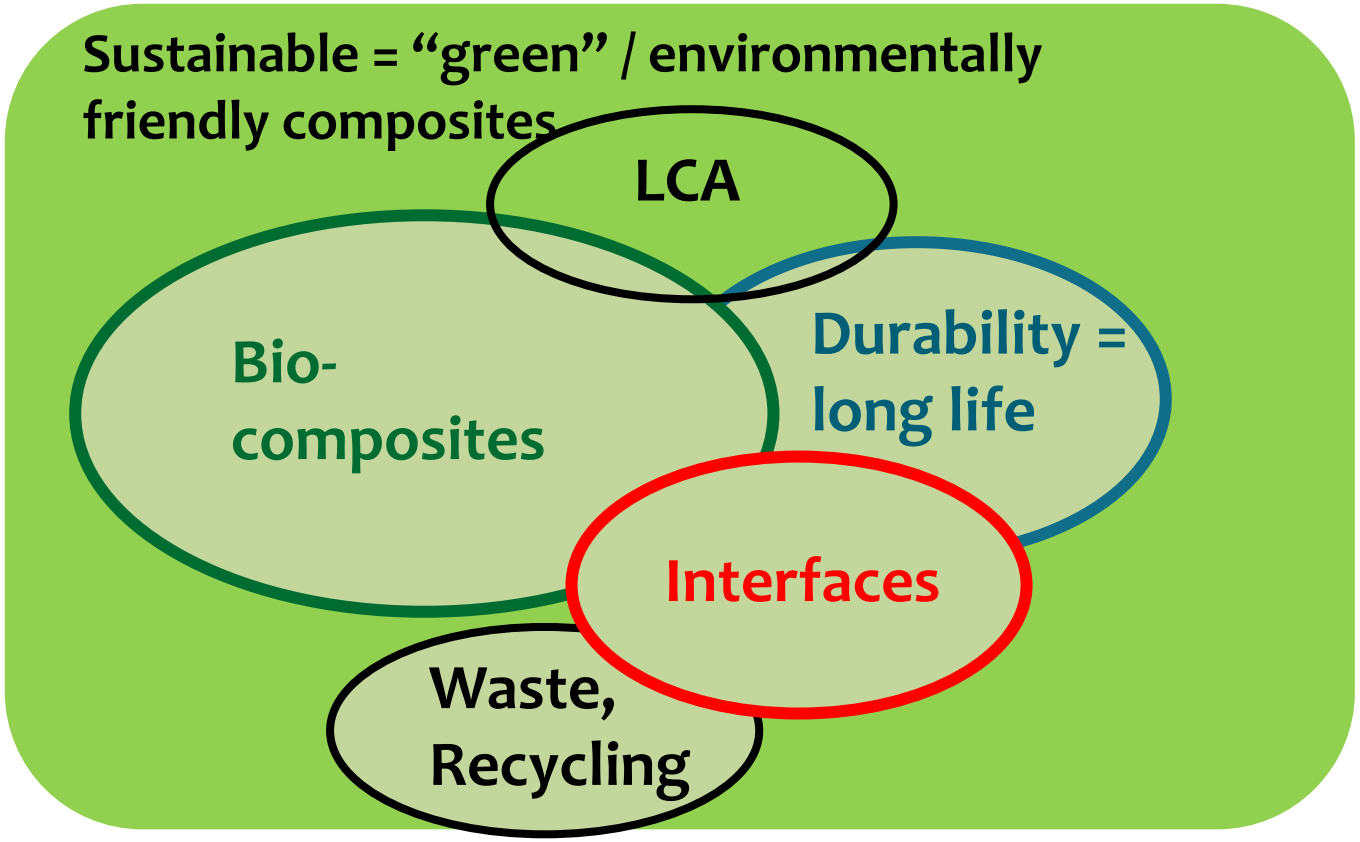
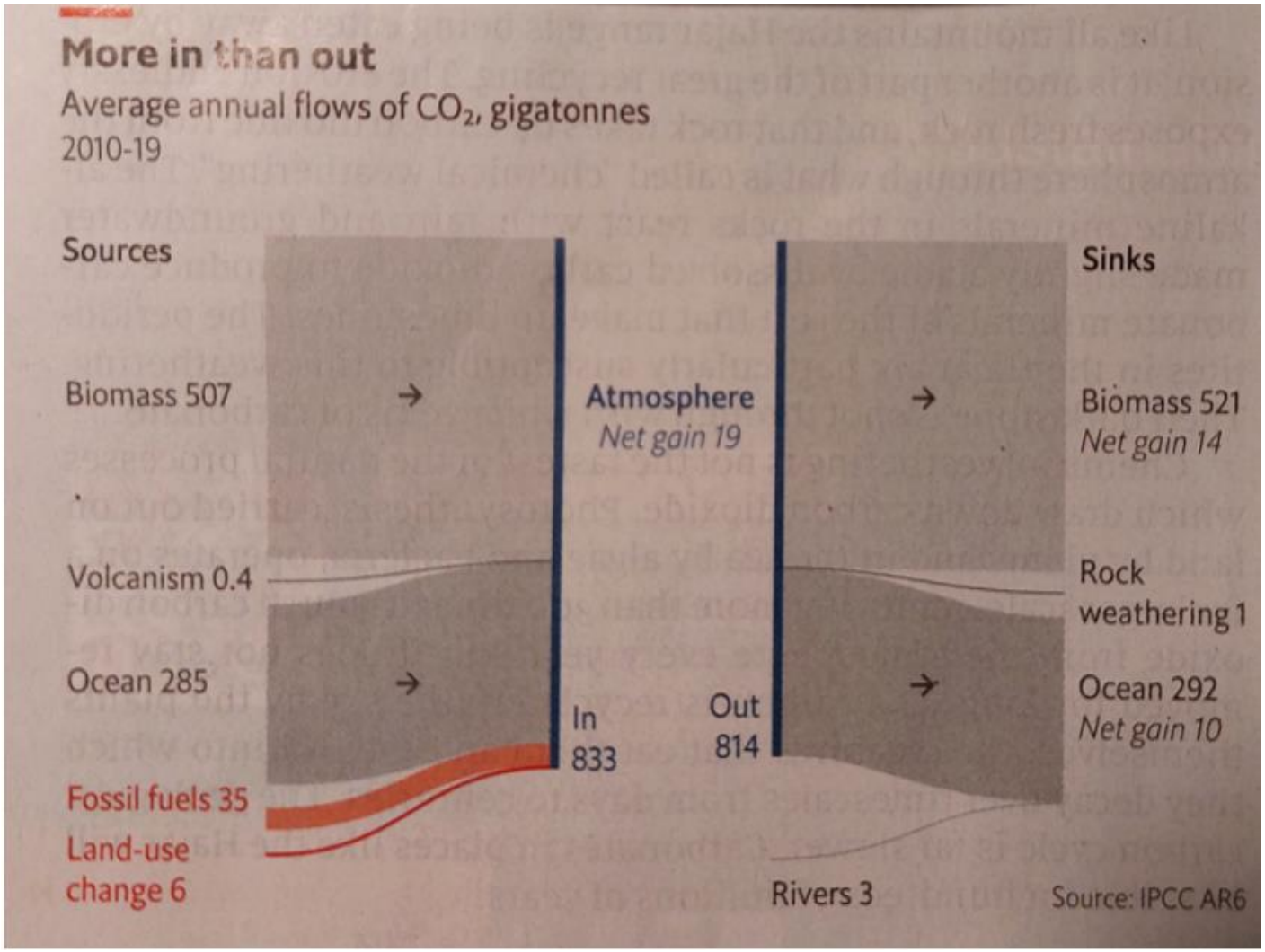
- *Department of Materials Engineering*

KU Leuven, Belgium

Bio-based and Sustainable Composites



The case for the bio-based economy & bio-based materials



The Economist, Nov 2023

* We dump about 40 Gtons of CO2 every year in the atmosphere

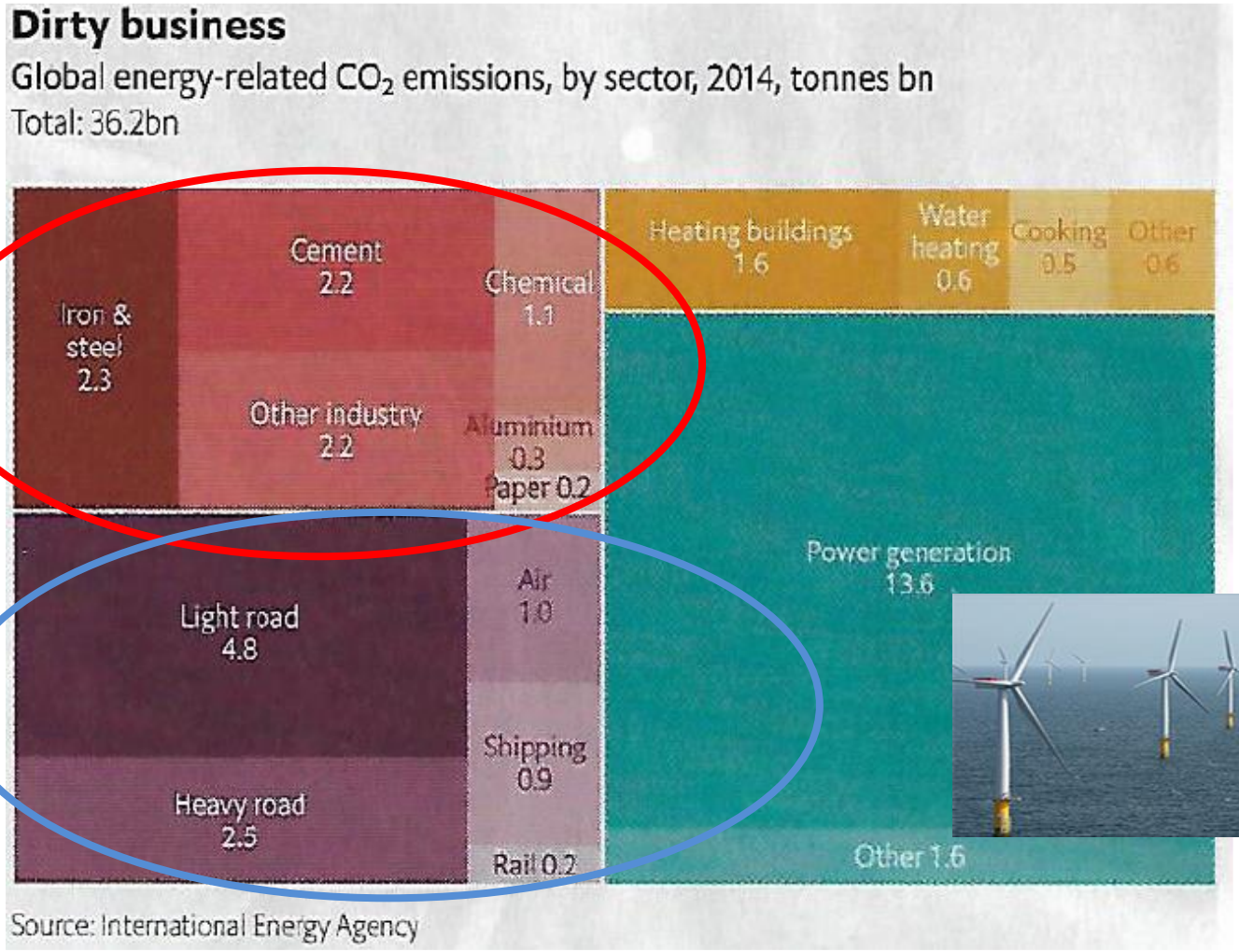
* But Biosphere recycles more than 10 times more

* So if we divert some of the latter, e.g. into bio-materials, we can make a positive impact

Impact on global warming mitigation and the role of (bio-) composites

Need for Low-Carbon footprint Materials

Less energy usage from light-weight



The Economist, Dec 2018

Natural fibre composites: low density and low-Carbon footprint

The case for bio-composites in civil engineering

Sustainable material utilisation;
Life cycle energy consumption of different products
(according to Ashby)

Need

Light-weight:

Carbon or natural fibres

Need low embedded energy:

Natural fibres !

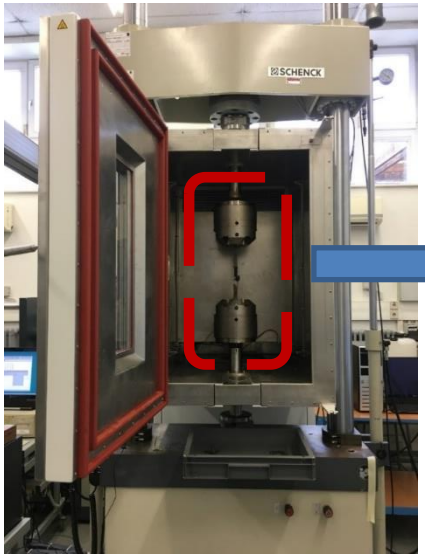
Example offered expertise

Cyclic moisture & mechanical loading:

Hygrothermal fatigue and creep

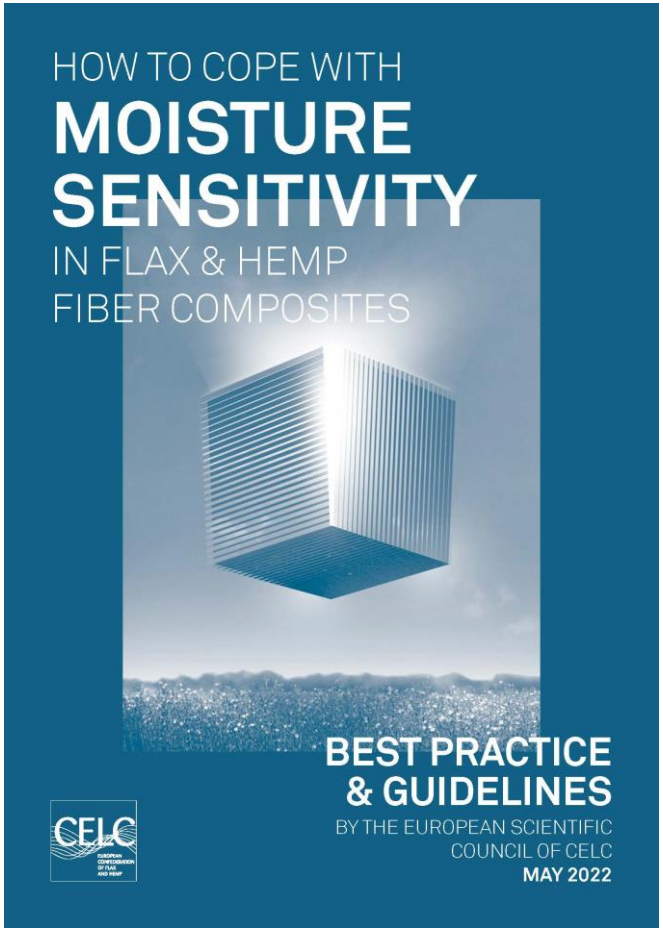
Guaranteeing bridge lifetime 50 years

* Fibre treatments and coatings



From the present to the future

KU Leuven & Alliance for flax and hemp: Industry recommendations



Project coordination:

From Sept 2024 SSUCHY-Next Innovation Action in Circular Biobased Europe program

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DEVELOPING ADVANCED BIO-BASED COMPOSITES

Circular Bio-based Europe Joint Undertaking

Development of hemp fibre supply chain + 3 **bio-based resins** for 95% bio-based composites!

Seeking new collaborations for the future in bio-based building & construction!