



ABCSalt SUMMER SCHOOL 2019

Life cycle assessment for alternative fuels Data collection and scope

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ABC-Salt Summer School 2019
Birmingham, 13.08.2019

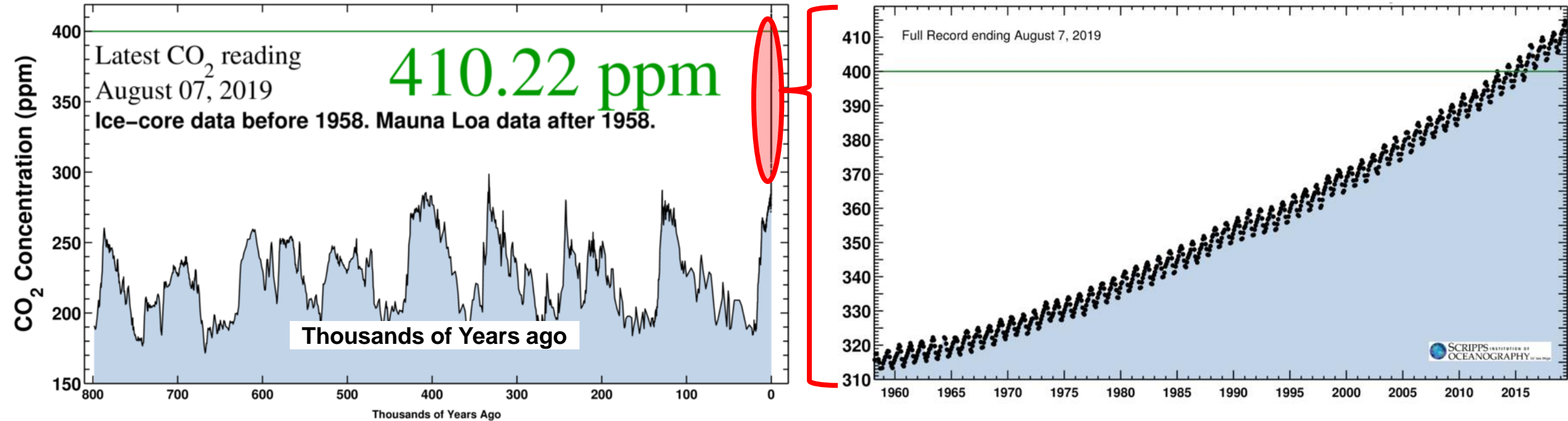


Knowledge for Tomorrow



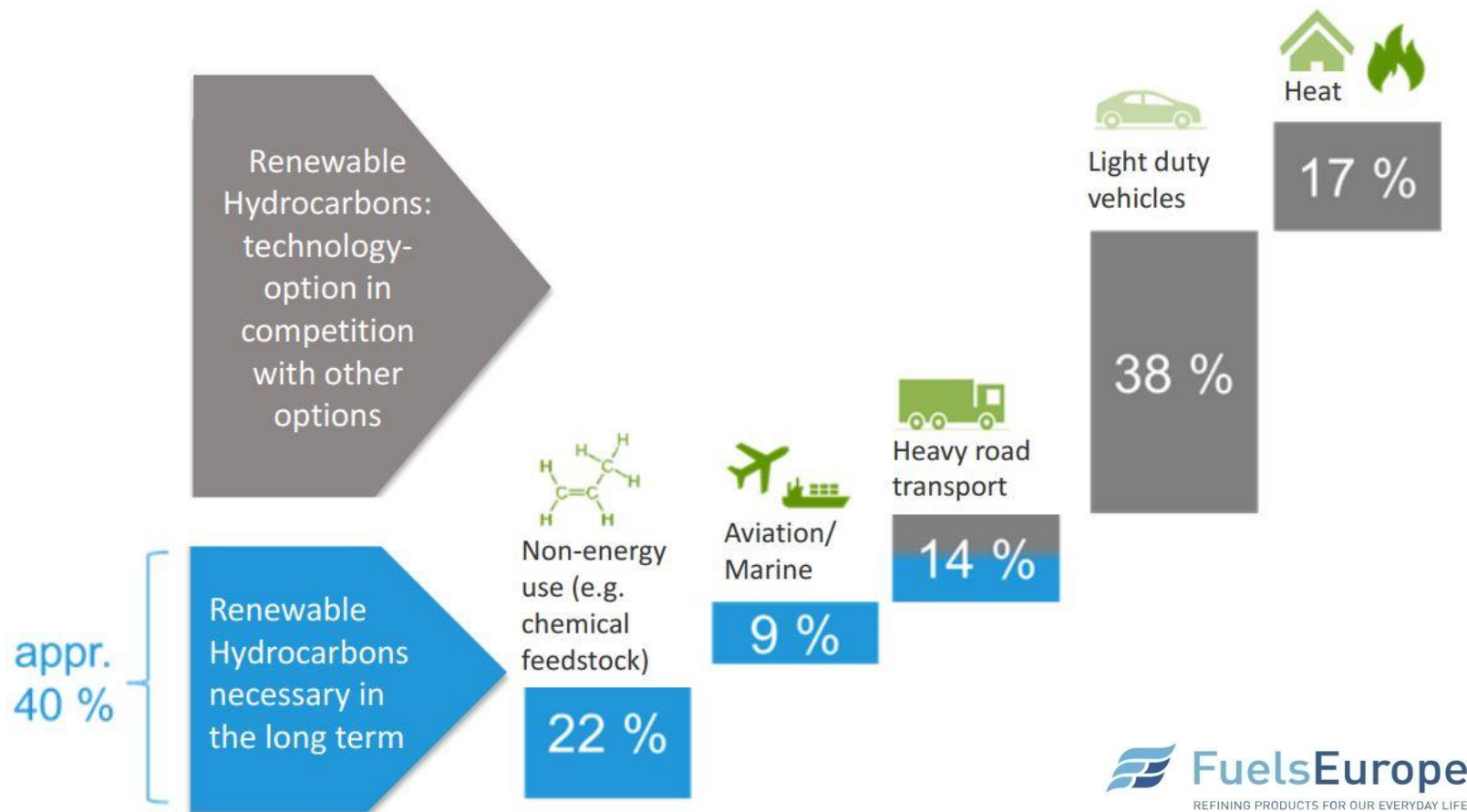
Climate Change – Driver for bioenergy?

- Historic natural fluctuation between 180 and 280 ppm CO₂ concentration
- undeniable break-out since 1960's
- No visible impact of renewables introduction since 2000's



Beyond electricity – Oil replacement will be challenging

- From current use of oil products (Germany, 2016) – at least 40 % will be required in the long-term



Framework of the life cycle assessment – Horizon 2020 projects

COMSYN

**NEXT GENERATION
BIO-FUEL TECHNOLOGY**

COMSYN aims to bring the biofuel production costs down with intensified process technologies



COMSYN project has received funding from the EU's Horizon 2020 research and innovation programme under grant agreement No 727476



Flexible combined power, heat and renewable energy production

More details about Biomass-to-Fuel processes by Dr. R.-U. Dietrich: „Biorefineries concepts and design” (Wednesday, 10:45am)



FlexCHX project has received funding from the EU's Horizon 2020 research and innovation Programme under Grant Agreement No 763919.



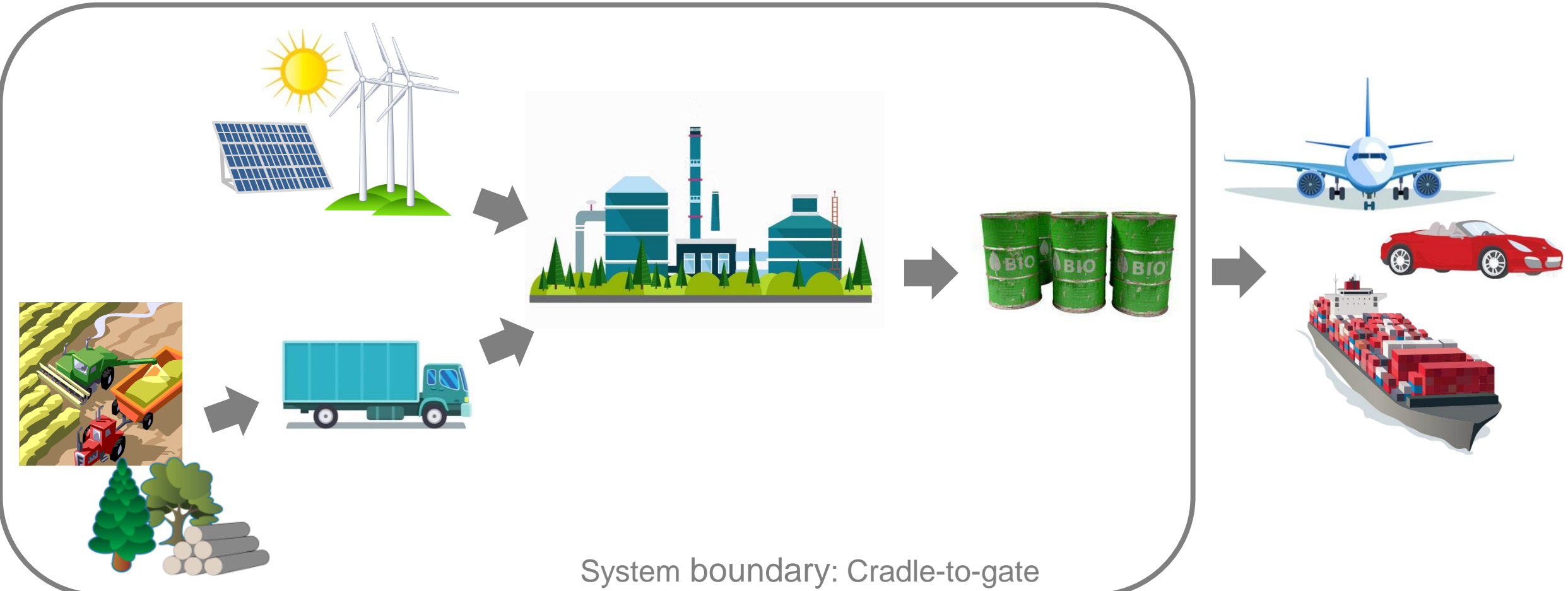
ABC-Salt aims to bring the biomass in a molten environment with subsequent distillate production



ABC-Salt project has received funding from the EU's Horizon 2020 research and innovation Programme under Grant Agreement No 764089



Life cycle assessment – Scope



System boundary: Cradle-to-gate

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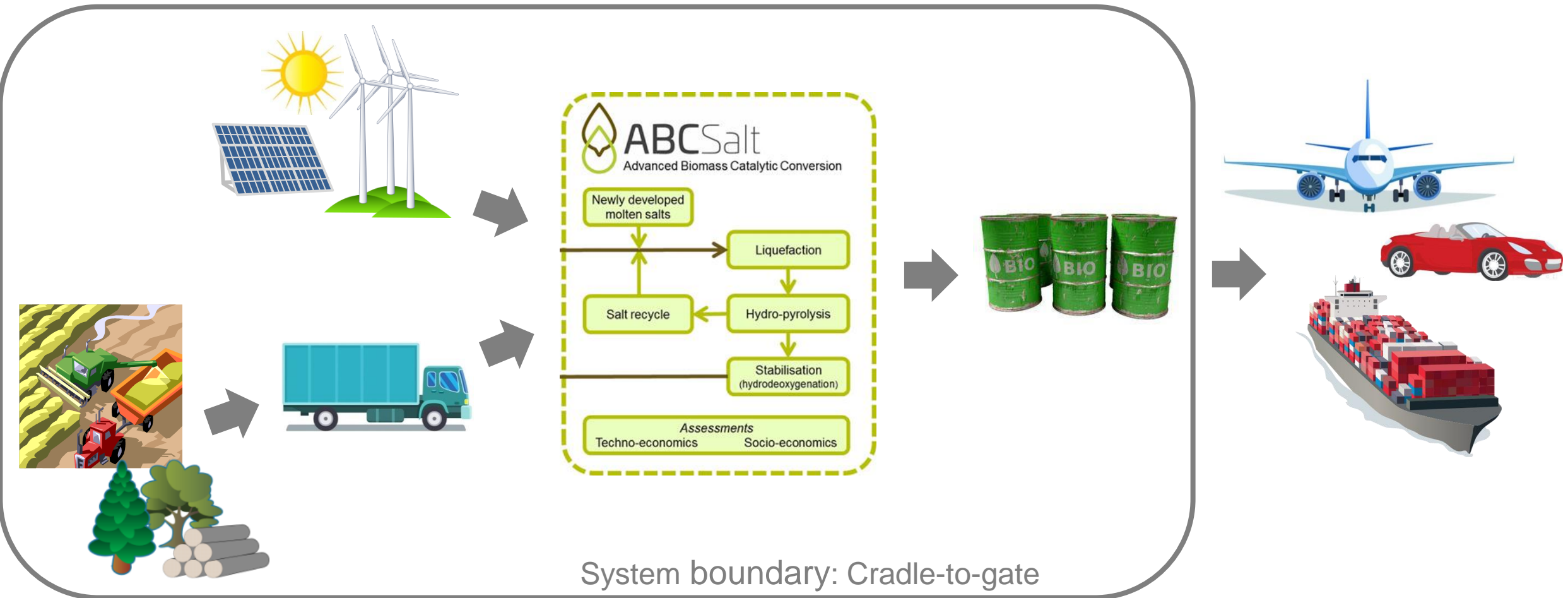
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Truck, Car, Airplane, Sun: <https://classroomclipart.com/clipart/Clipart.htm>

Wind turbine: http://clipartbarn.com/wind-turbine-clipart_15864/



Life cycle assessment – Scope



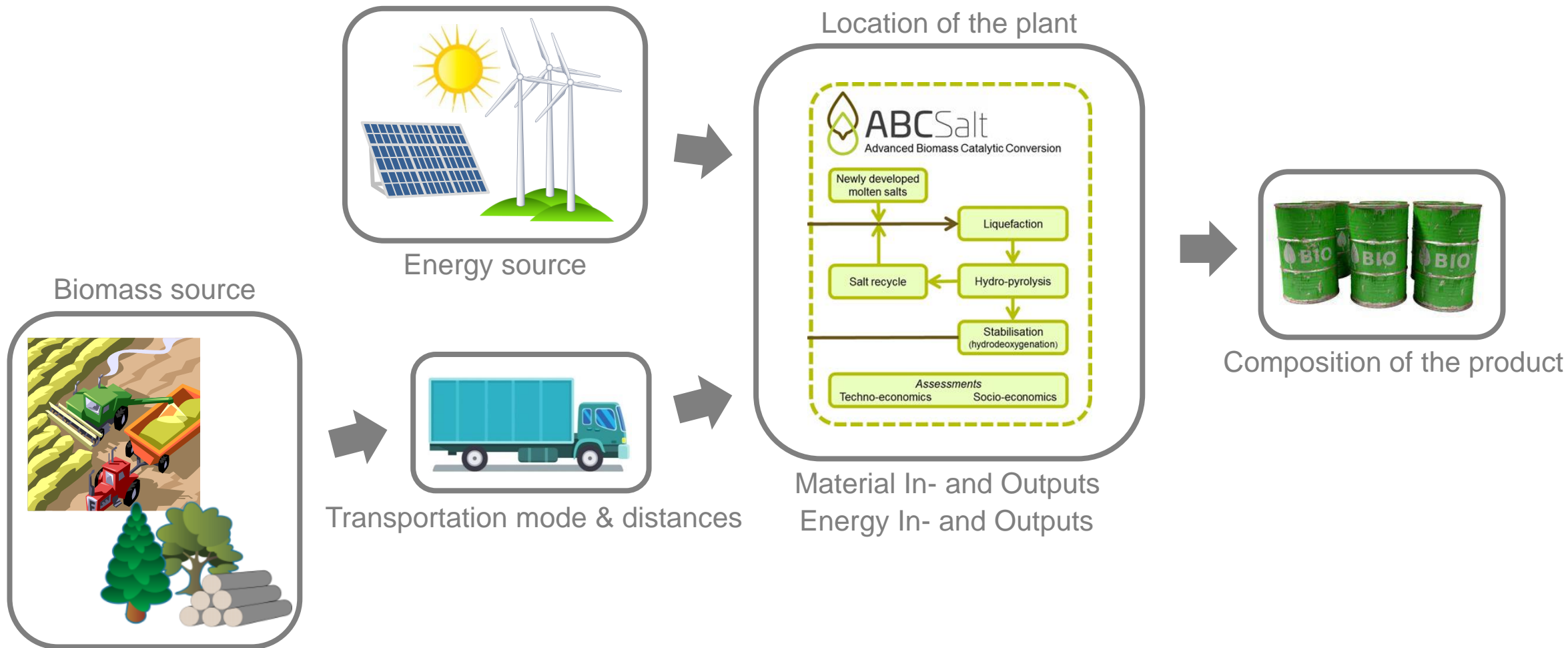
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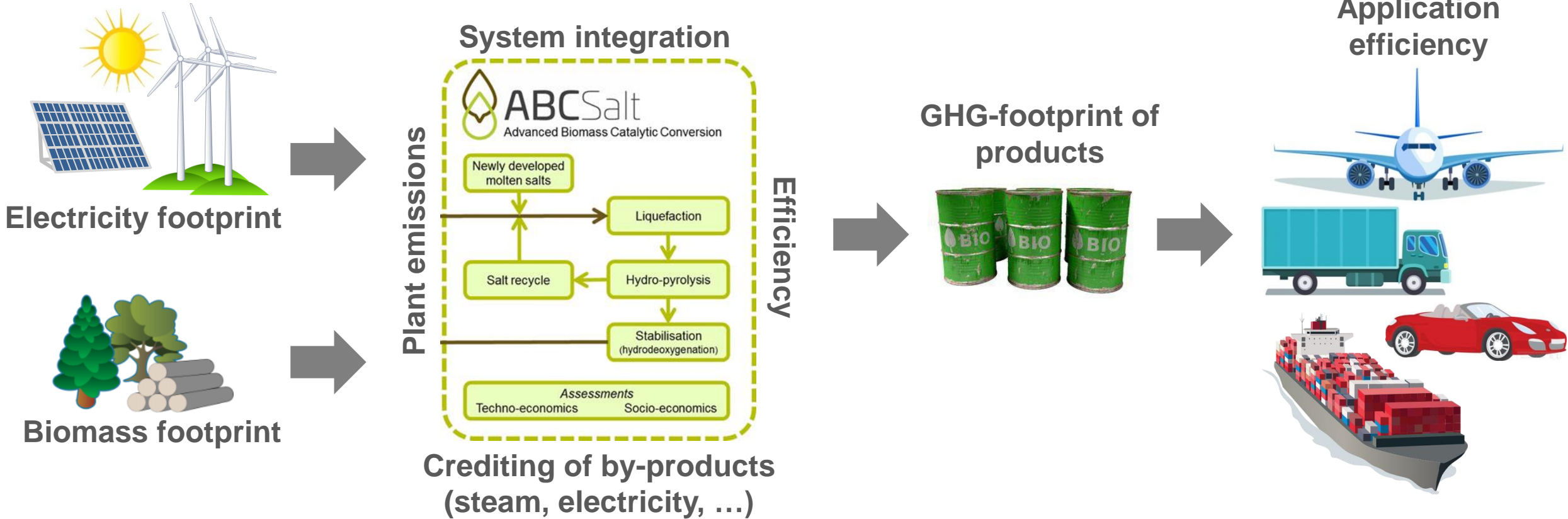
Life cycle assessment – Data collection



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GHG abatement costs



$$\text{GHG abatement costs} \left[\frac{\text{€}}{\text{t}_{\text{CO}_2\text{eq.}}} \right] = \frac{\text{Difference in production costs}}{\text{GHG abatement}}$$

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Future work

- **Workshop: LCA on upscaled algae production systems – challenges of data gaps and modeling**
- **Decision on suitable LCA software (M18)**
- **LCA Methodology development (M18 – M36)**
- **Decision on LCA Methodology (M36)**
- **Task 2.4 LCA for the proposed process concept (M37-M48) (DLR, AU, NMBU, Innventia)**
 - **Data collection from project partners**
 - **D2.9: Life cycle analysis report based on optimised, validated process concept (DLR)
First Draft M45**





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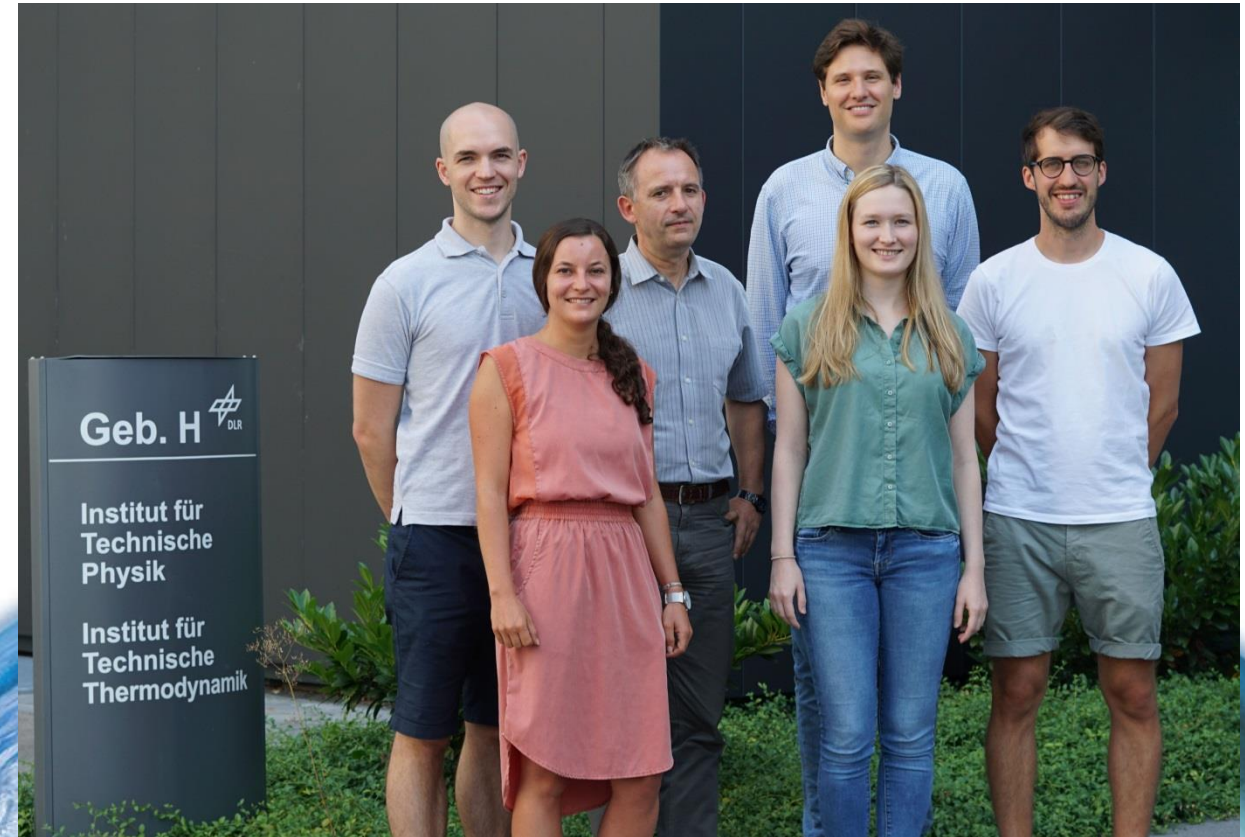
Thank you for your attention!

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