COMPOSITES UNITED

GERMANY'S INDUSTRIAL STRATEGIES FOR LIGHTWEIGHTING AND A CLEAN ENERGY FUTURE

DR. GUNNAR MERZ, CEO

AGENDA

COMPOSITES UNITED

- Introduction to Composites United
- Composites United’s role in the German government’s strategy process
- Germany’s lightweight construction strategy and energy transition goals
- COVID-19’s influence on the composites industry and growth opportunities
- Wind energy project that showcase the practical link between lightweight construction, renewable energy production and climate protection

SEPTEMBER 2019

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CARBON COMPOSITES

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CFK VALLEY™

Creation of one of the world's largest networks for fiber based lightweight design

KEY FACTS

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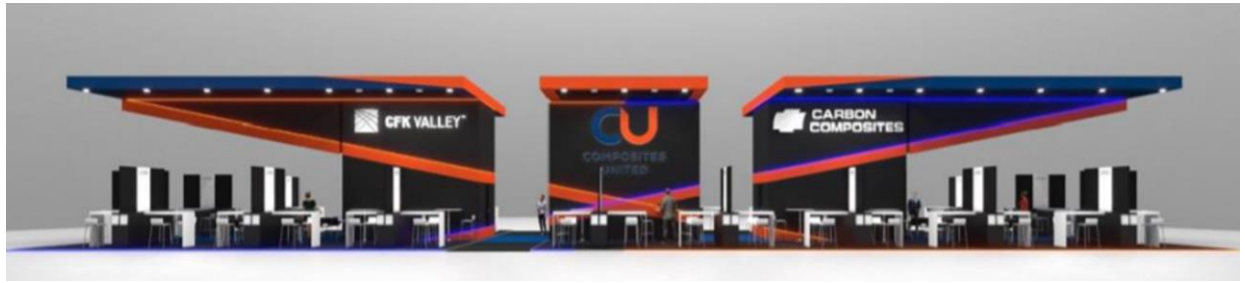
- What?
  - One of the world‘s largest competence clusters of fiber-based lightweight technology connecting more than 380 national and international members
- Where?
  - Locations in Germany (Berlin, Stade, Augsburg, Stuttgart, Kaiserslautern and Dresden) & International representatives
- Main Activities?
  - Networking (Joint Booths at JEC World, Presence at Hannover Messe, K-Messe Düsseldorf, etc.)



The largest booth at JEC World 2021:
Composites United Common 450 sqm booth
(a few resiudual places are still available!)

  - Events
    - Digital Web Seminars every Wednesday for state-of-the-art technology presentation and member’s innovation presentation
    - Lightweight Convention LightCon with Deutsche Messe AG in Hannover starting in 2021
  - Projects
    - Organization of (international) technical projects for members, Support with applications for funding & reporting etc.
  - Internationalization
    - International match-making, organization of international events etc.
  - Working groups along the entire value chain
    - 38 expert working groups with participating members for regular exchange of information and knowledge)

COMPOSITES UNITED – A GLOBAL NETWORK

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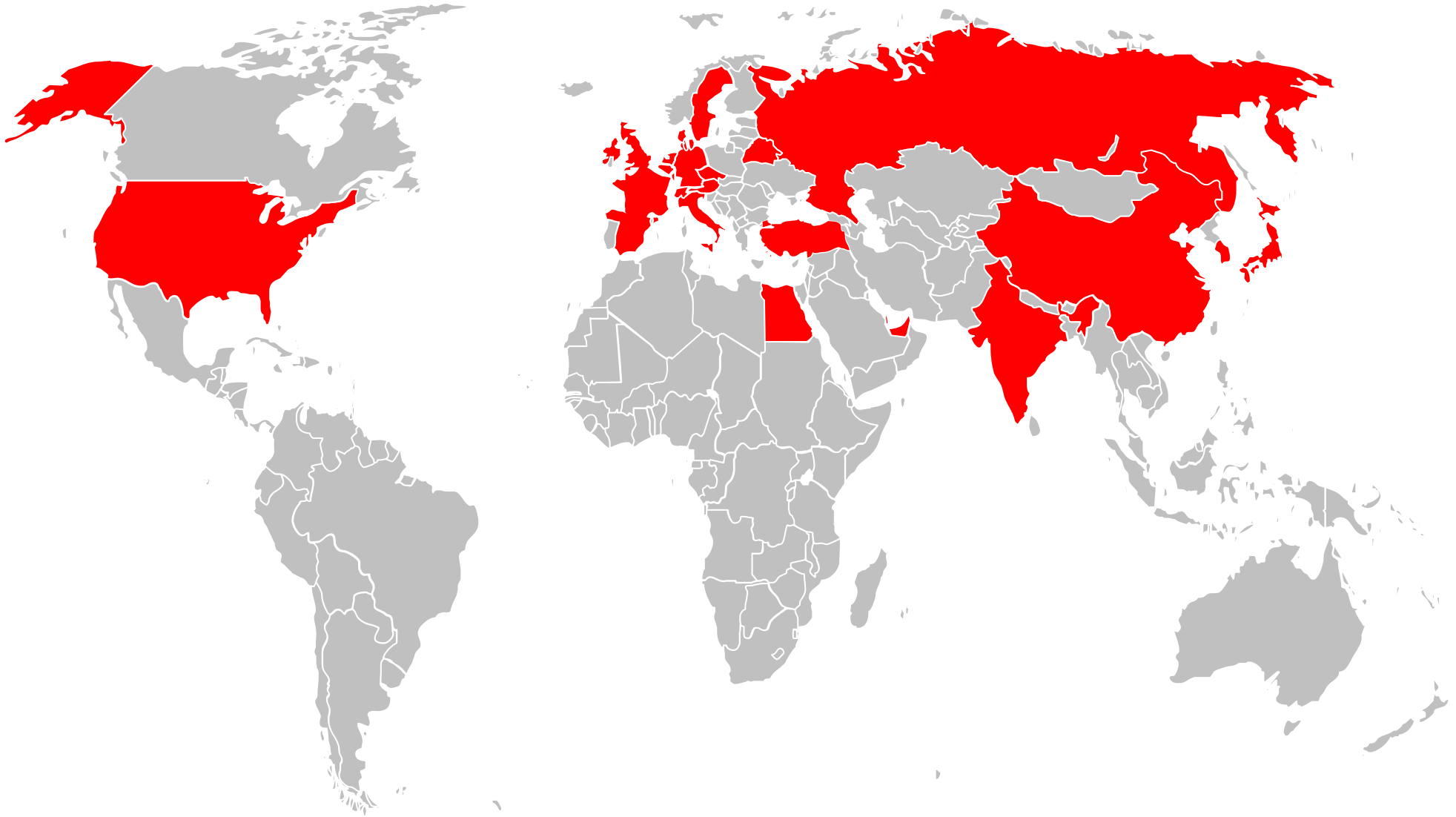

In Red: Countries with CU member(s)

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Bundesministerium
für Wirtschaft
und Energie

Lightweight Technology
Initiative & Technology Transfer Program
of the
German Federal Ministry of Economics and Energy

Strategy Circle and Advisory Board of the Initiative Lightweight

Strategy Circle by State Organizations

LEICHTBAU BW

NMWP.NRW
Cluster NanoMikroWerkstoffePhotonik

bayern innovativ

ECOMAT
Bremen Center for Eco-efficient Materials and Technologies

UNIVERSITÄT DES SAARLANDES

b-tu Brandenburgische Technische Universität Cottbus - Senftenberg

Technologien made in Rheinland-Pfalz
Transferinitiative RLP

TECHNISCHE UNIVERSITÄT DRESDEN

be Berlin
Senatsverwaltung für Wirtschaft, Energie und Betriebe

Universität Rostock

Niedersächsisches Ministerium für Wirtschaft, Arbeit, Verkehr und Digitalisierung

LsW
Leichtbau mit strukturierten Werkstoffen

hamburg.de

MAHREG Automotive

HESSEN TRADE & INVEST

Bundesministerium für Wirtschaft und Energie

POLYMERMAT
KUNSTSTOFFCLUSTER THÜRINGEN

Advisory Board

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GDA GESAMTVERBAND DER ALUMINIUMINDUSTRIE e.V.

Forschungskuratorium textil

Composites Germany

Stahl Stahlinstitut VDEh

VDMA

BAM
Bundesanstalt für Materialforschung und -prüfung

kunststoffland NRW e.V.

sampe Europe

IG Metall

BAU INDUSTRIE

massiver LEICHTBAU

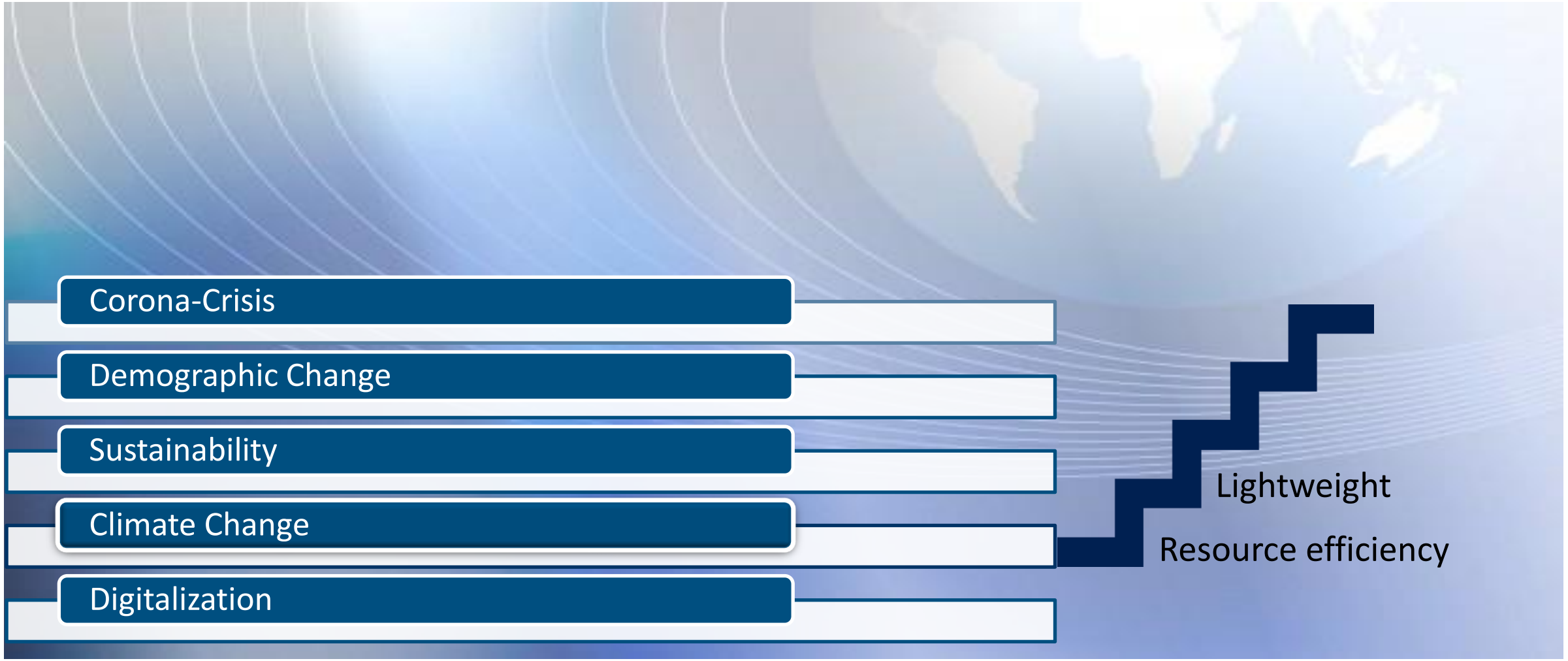
VHI
VERBAND DER DEUTSCHEN HOLZWERKSTOFFINDUSTRIE E.V.

igeL
Interessengemeinschaft Leichtbau e. V.

Helmholtz-Zentrum Geesthacht
Zentrum für Material- und Küstenforschung

C3 carbon concrete composite

Global Challenges



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und Energie

Lightweight Technology

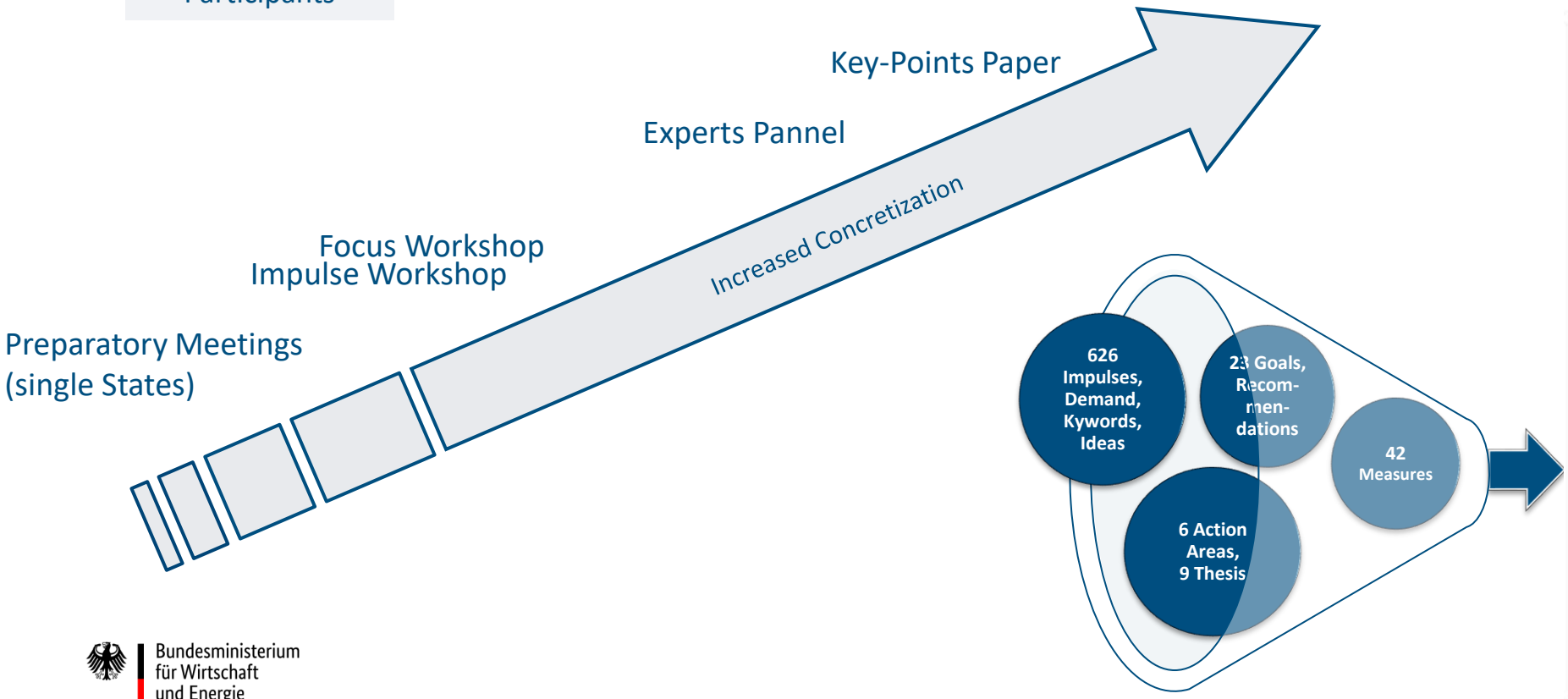
Opportunities	Challenges
➢ Less weight ➢ Less energy consumption ➢ Less emissions ➢ More functionality ➢ Higher resource efficiency	➢ Digitalized & linked value chains ➢ Cost ➢ Serial production suitability ➢ Multimaterials/ CFRP: high value recycling processes ➢ etc.

Win-Win-Win for Economy, Climate and Workplaces!

Strategy Process Lightweight
„By the economy and for the economy“

About 350 Participants

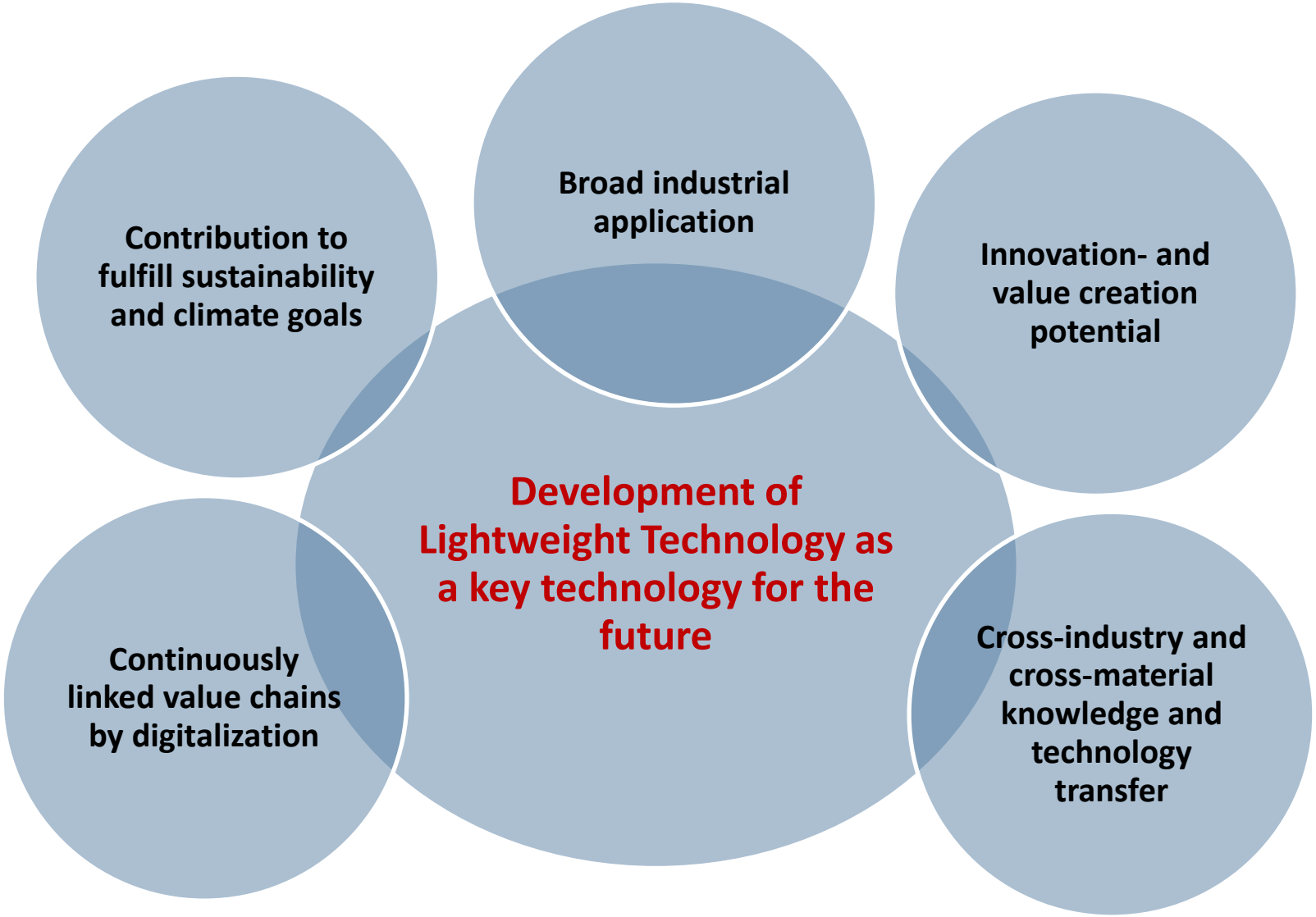
Digital Closing Event 17.09.2020



Key Points for a Lightweight Strategy

Bundesministerium für Wirtschaft und Energie

Technology Transfer Program Lightweight (TTP) - Goals



Bundesministerium für Wirtschaft und Energie

TTP Lightweight – 5 Funding Lines

€

1. Technology development to strengthen the German economy in lightweight technology

€€

2. **Carbon dioxide savings and carbon dioxide binding by usage of new construction technologies**

€€€

3. **Carbon dioxide savings by resource efficiency and - substitution in lightweight technology**

4. Demonstration project

5. Standardization

4. and 5. must be related to 1,2 or 3

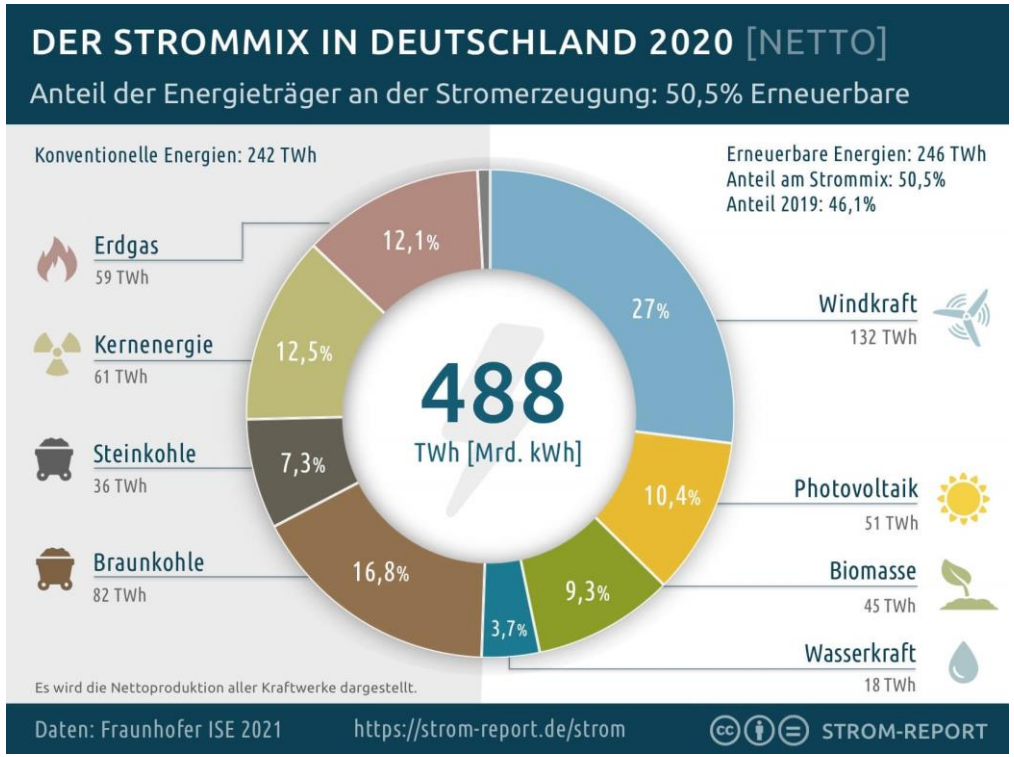
All projects must be related to 1,2 or 3

Financial support for projects related to 3 > 2 > 1

Funding in total: 290 million € until 2023

Bundesministerium für Wirtschaft und Energie

German Energy Mix 2020 and Energy Transition Goals



- About 50 % based on renewable energy
  - 27% Wind Energy
  - 10,4% Solar Energy
  - 9,3% Biomass
  - 3,7% Water Energy
- Germany’s Energy Transition Goals
  - Further Increase the supply by renewables
  - More efficient use of existing energies
  - Closing of all nuclear power plants by 2022
  - Step out for coal usage by 2038

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COVID-19'S INFLUENCE

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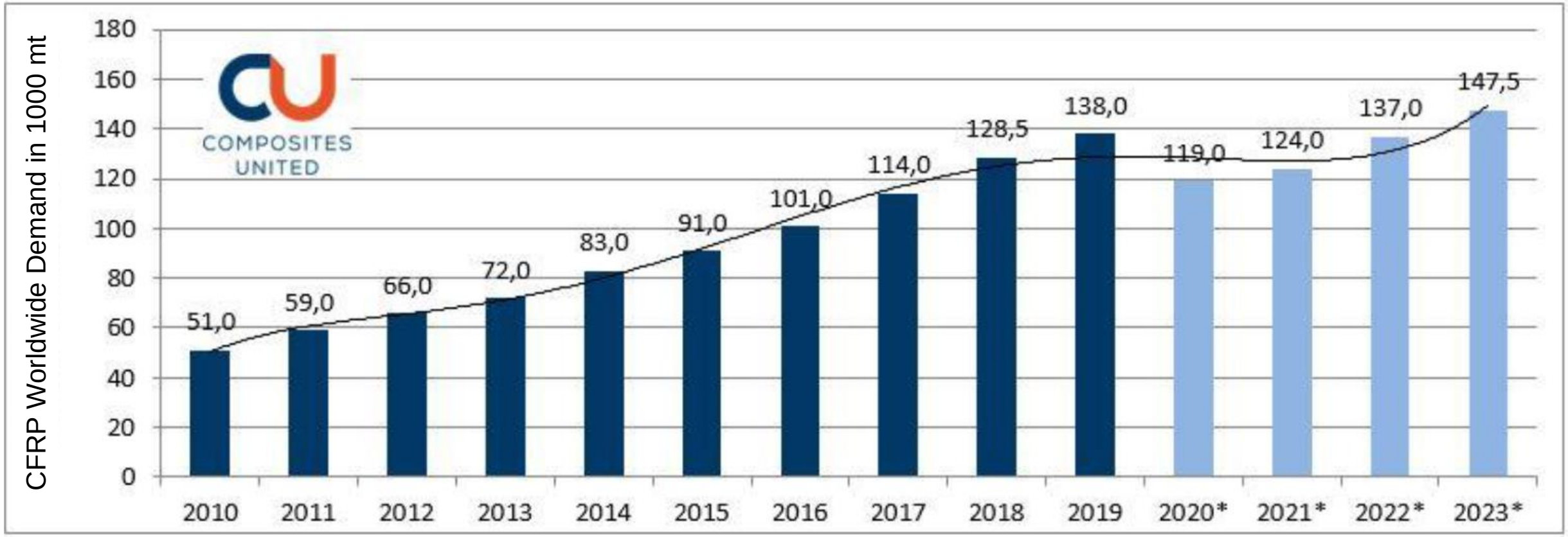
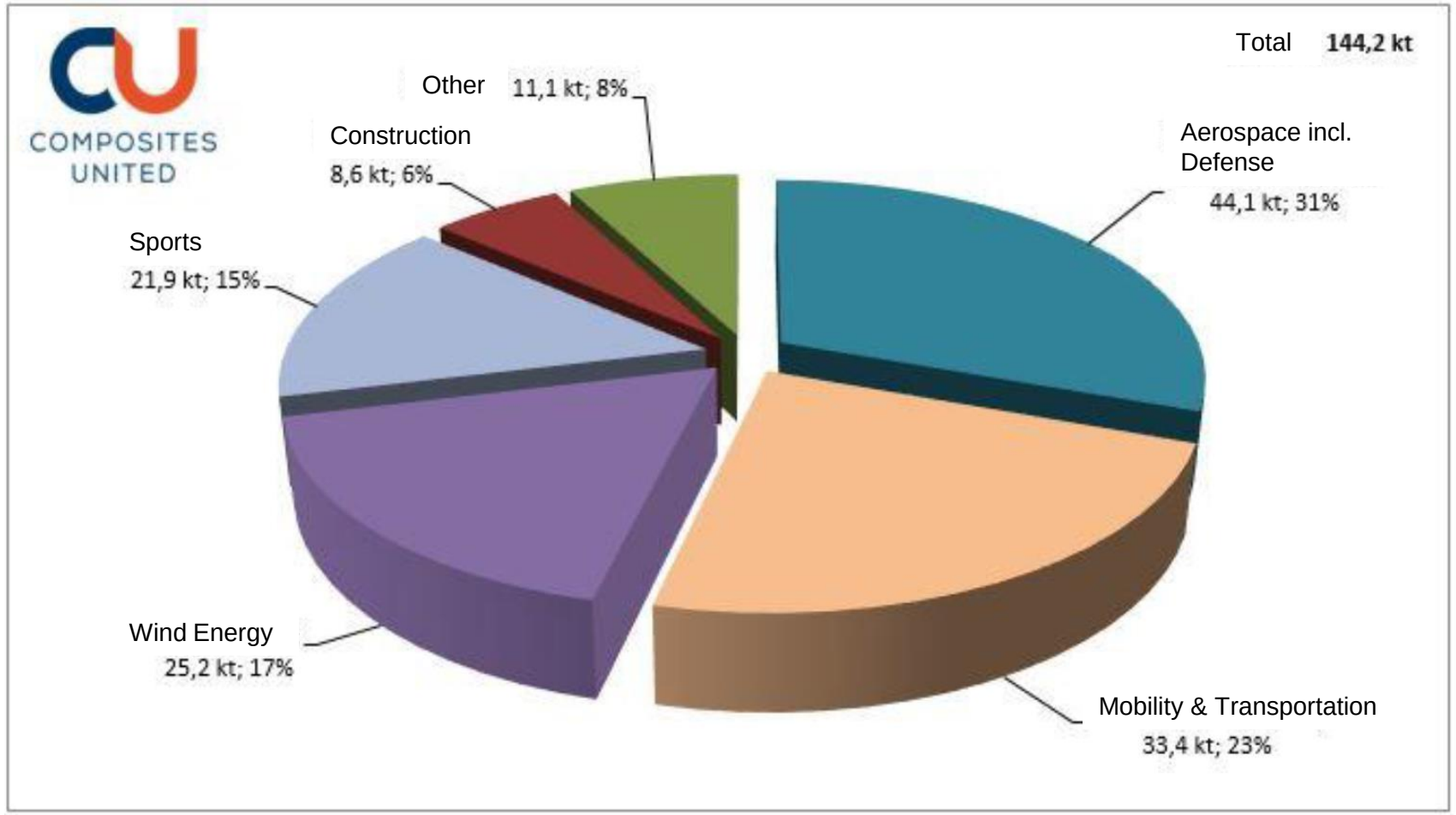
- In total the industry is facing a tense economic situation with clear challenges
- Established markets show weakness
  - Considerable losses in commercial aviation segment
    - Time of economic recovery unclear
    - New perspective for Airbus by focusing on climate neutral drive (green hydrogen technology)
- New markets show growth opportunities
  - Climate goals are booster for Wind Energy Industry
    - High growth potential
- Broad diversification will lead to a relatively fast recovery
  - Based on high flexibility and innovative strength in combination with unique characteristic

DEVELOPMENT OF GLOBAL CFRP DEMAND 2010 TO 2023

ESTIMATION BEYOND 2020 IN 12/2020



GLOBAL CFRP DEMAND 2020 ACCORDING TO APPLICATION



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A Wind Energy Project by our Member ***Spitzner Engineering***

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Combining light weight rotor blades, **renewable energy** production and carbon dioxide bindung for **climate protection**

Carbon Dioxide Absorption by Windenergy Technology

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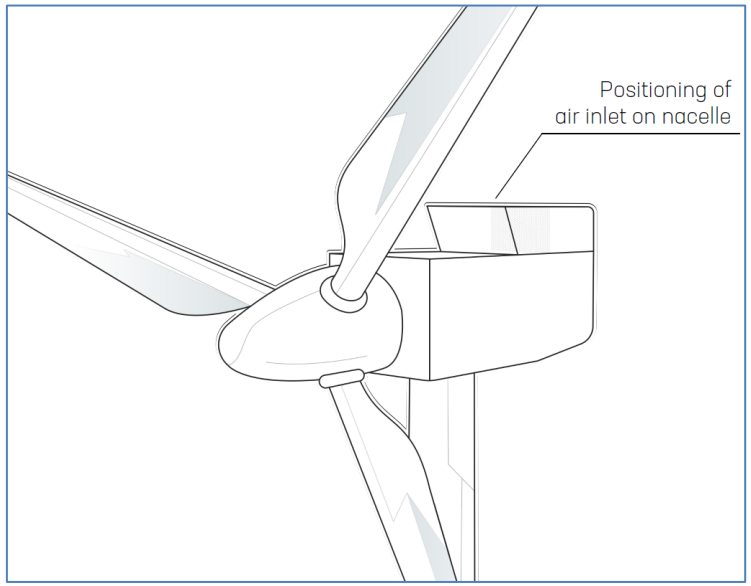
1



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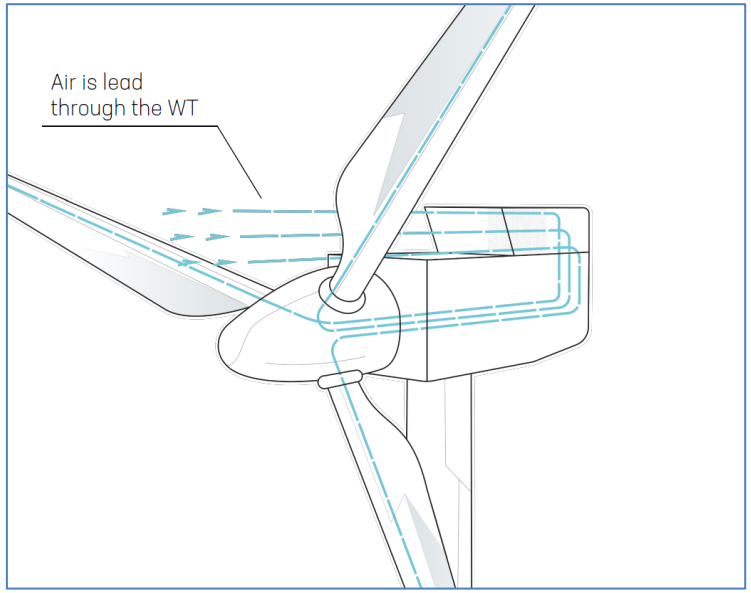

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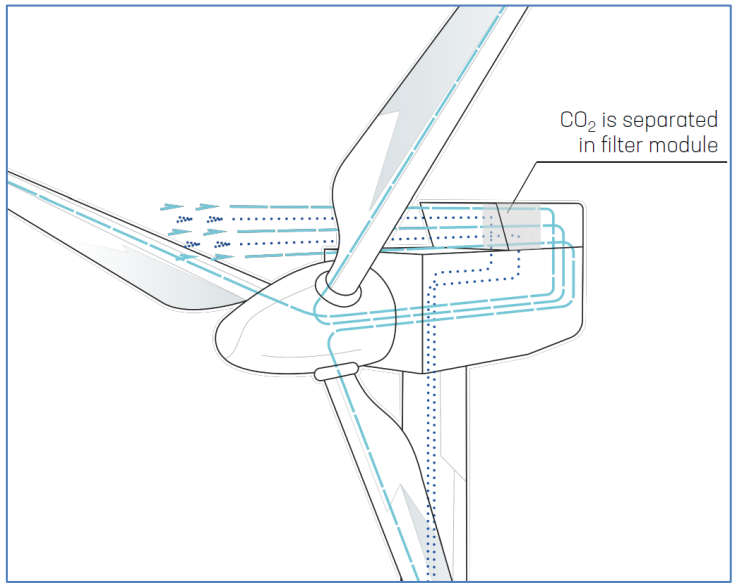

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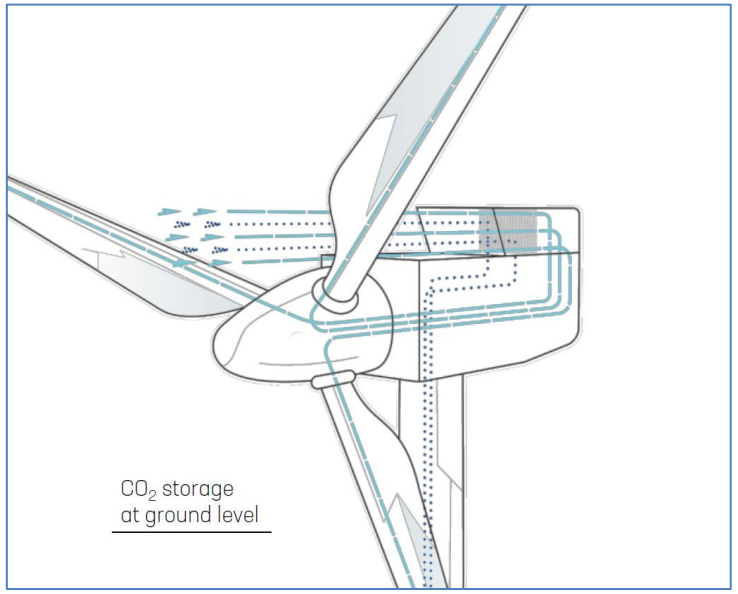
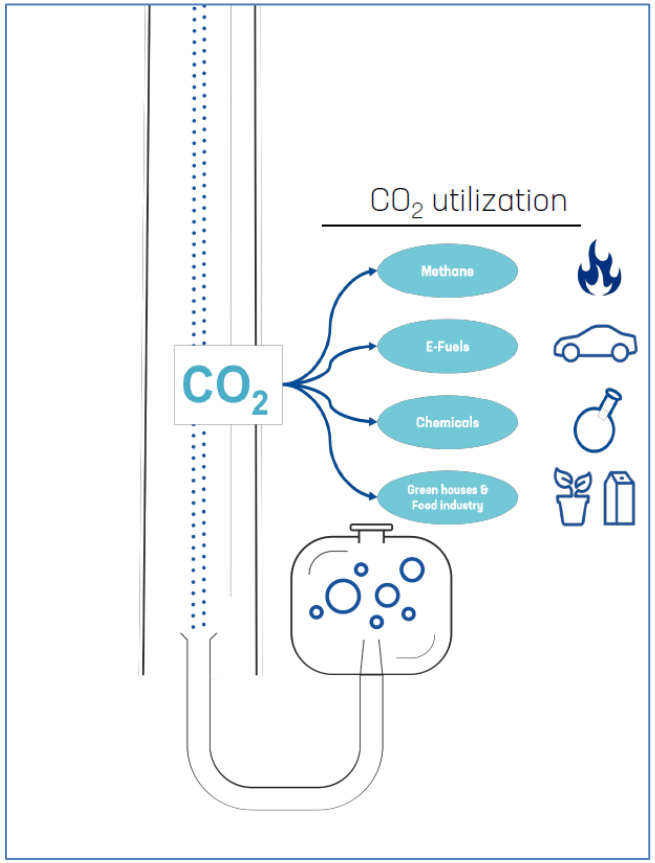
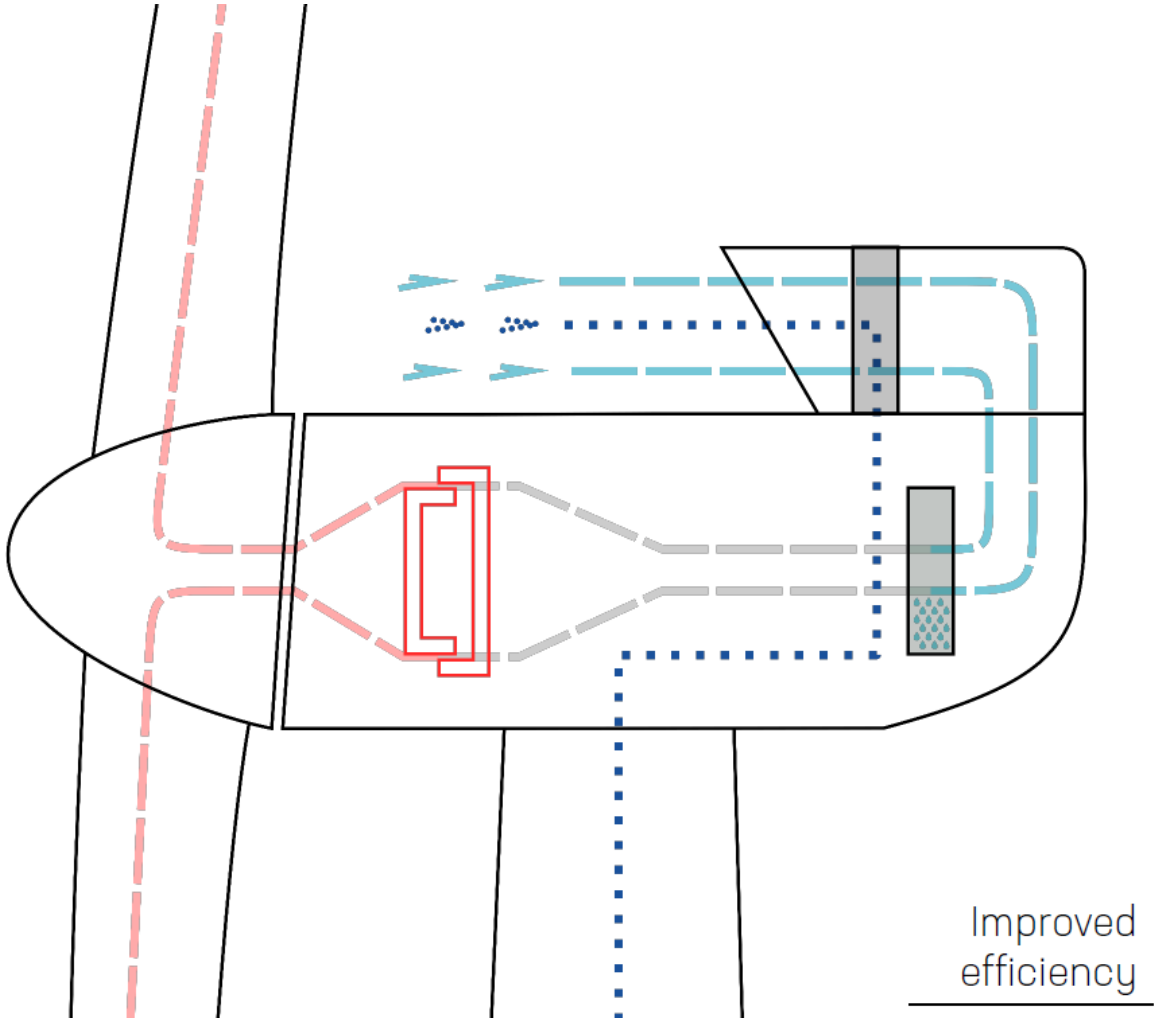


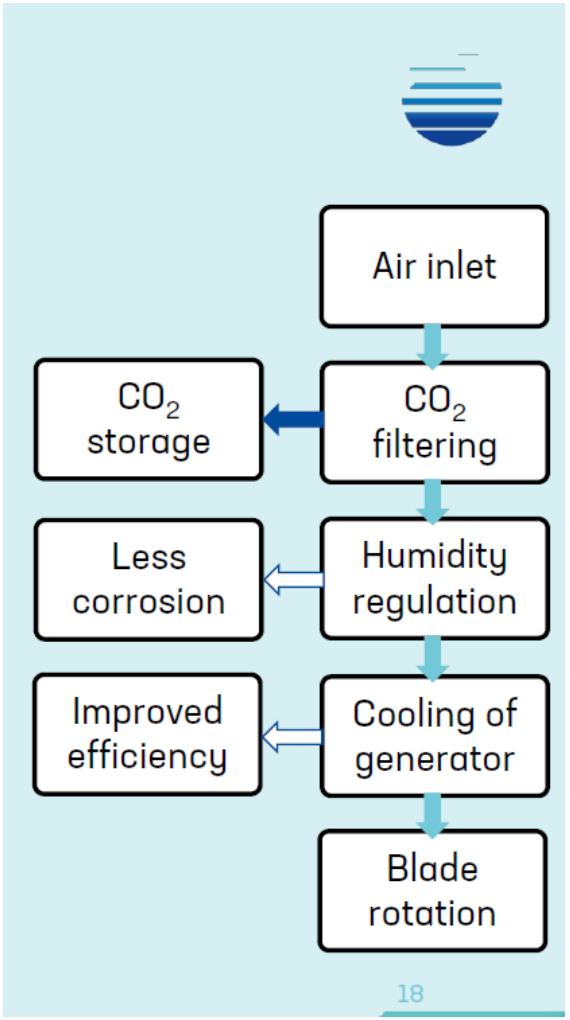


Further Utilization of absorbed Carbon Dioxide possible

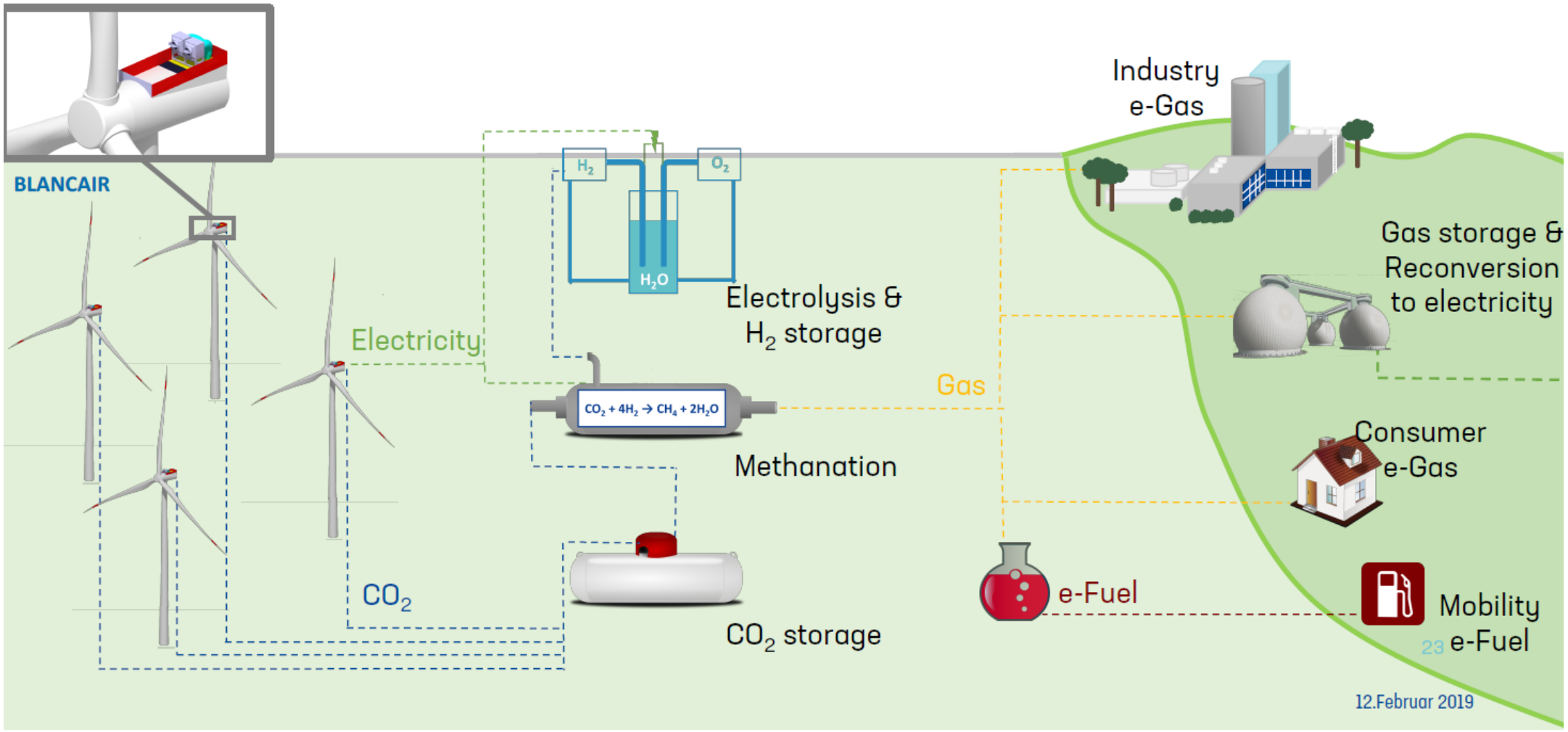
Improved Efficiency, Less Corrosion beside Carbon Dioxide Storage



Improved efficiency



Example for Carbon Dioxide Utilization and Green Hydrogen Production



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THANK YOU

OUR FUTURE WITH COMPOSITES

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