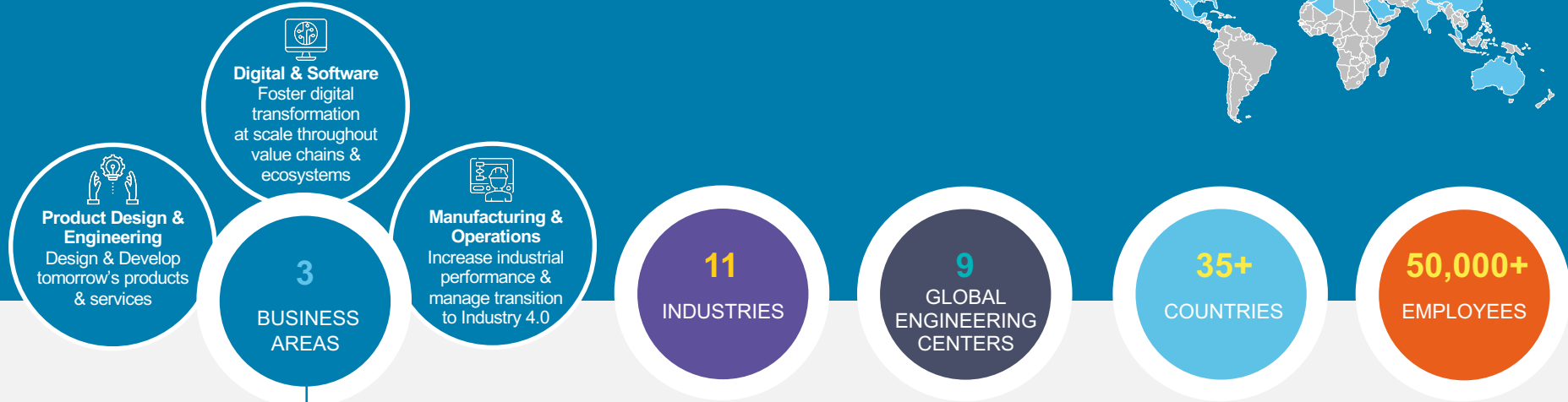
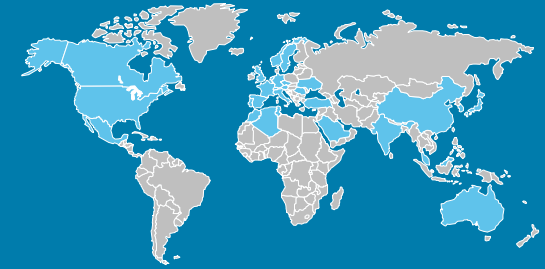




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Serves growth

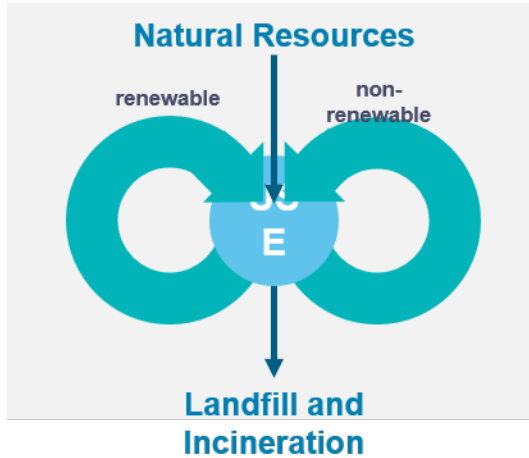
Serves objectives

Kreislauffähige Technologien für eine klimaneutrale Luftfahrt

My key topics today

1

CIRCULAR ECONOMY

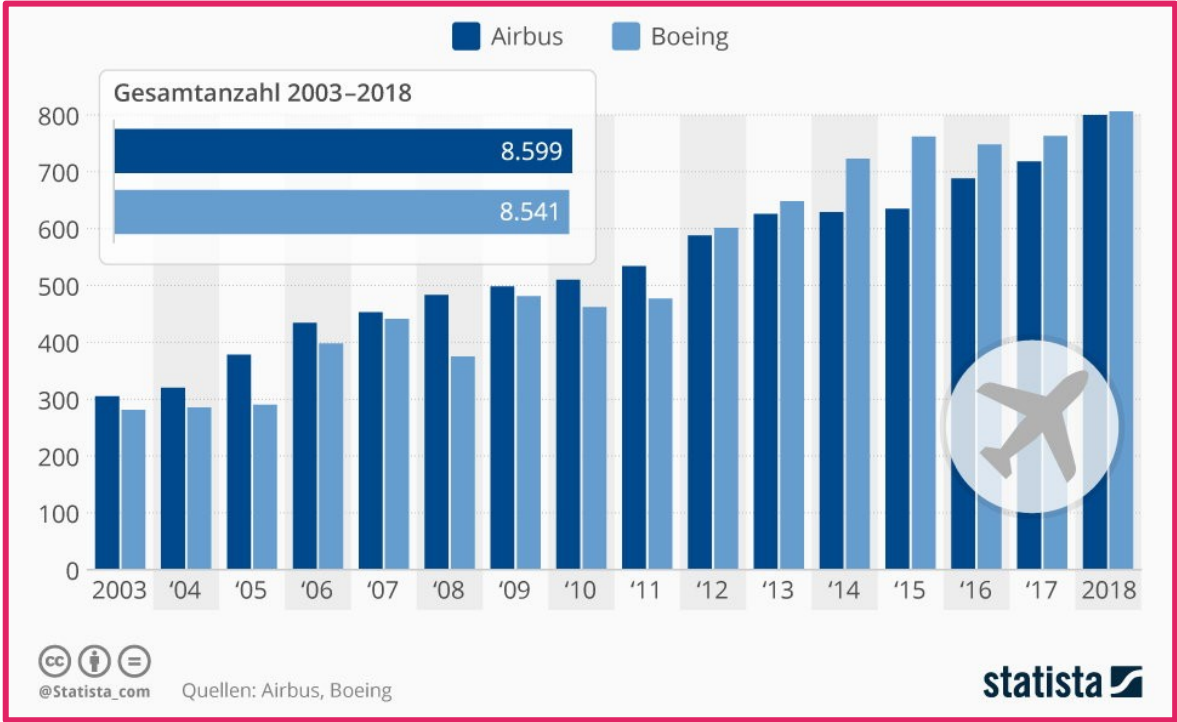


2

INNOVATIVE SYSTEMS

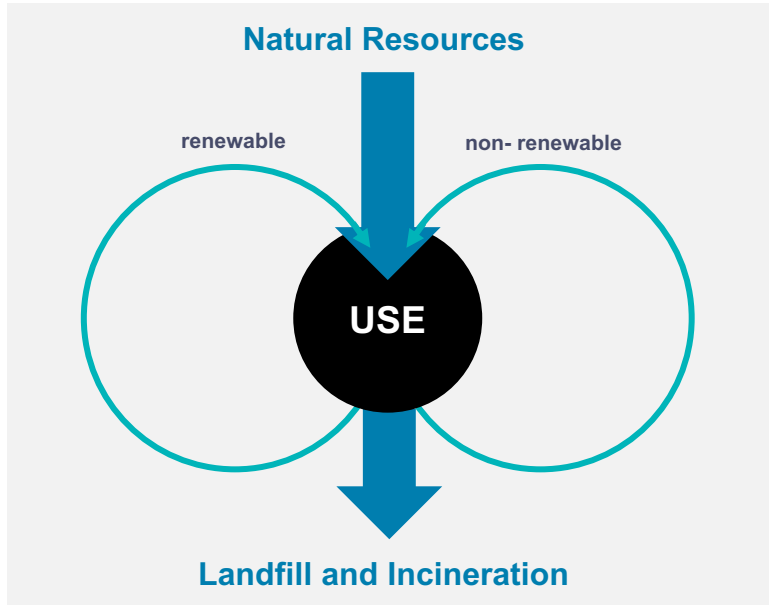


The current situation: A mindset change in aircraft from quantity to sustainability

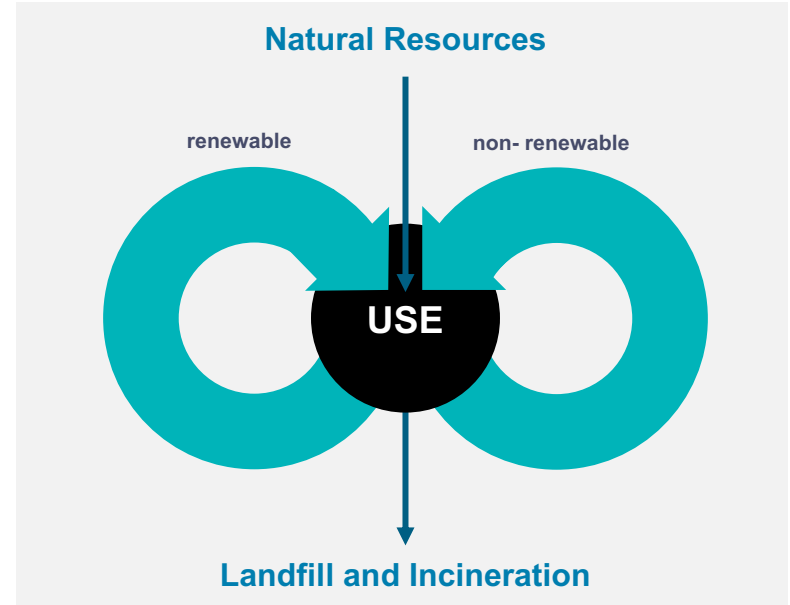


1. The benefits of circular Economy

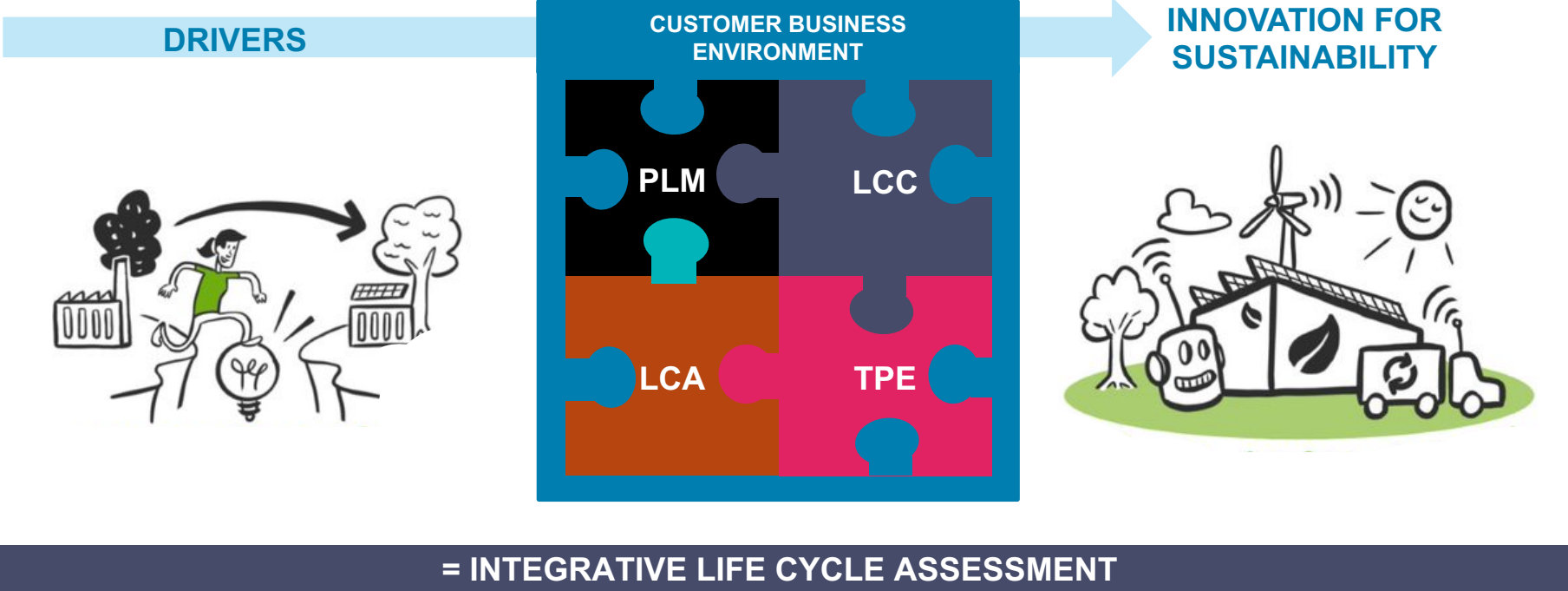
LINEAR ECONOMY



CIRCULAR ECONOMY



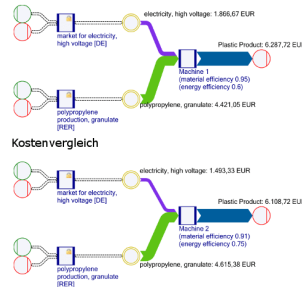
Integrative Life Cycle Assessment (iLCA): A pragmatic approach to tackle sustainable product development



A high variety of Cost and Environmental Impact Categories has to be considered to get a comprehensive picture of future products

COST CATEGORIES:

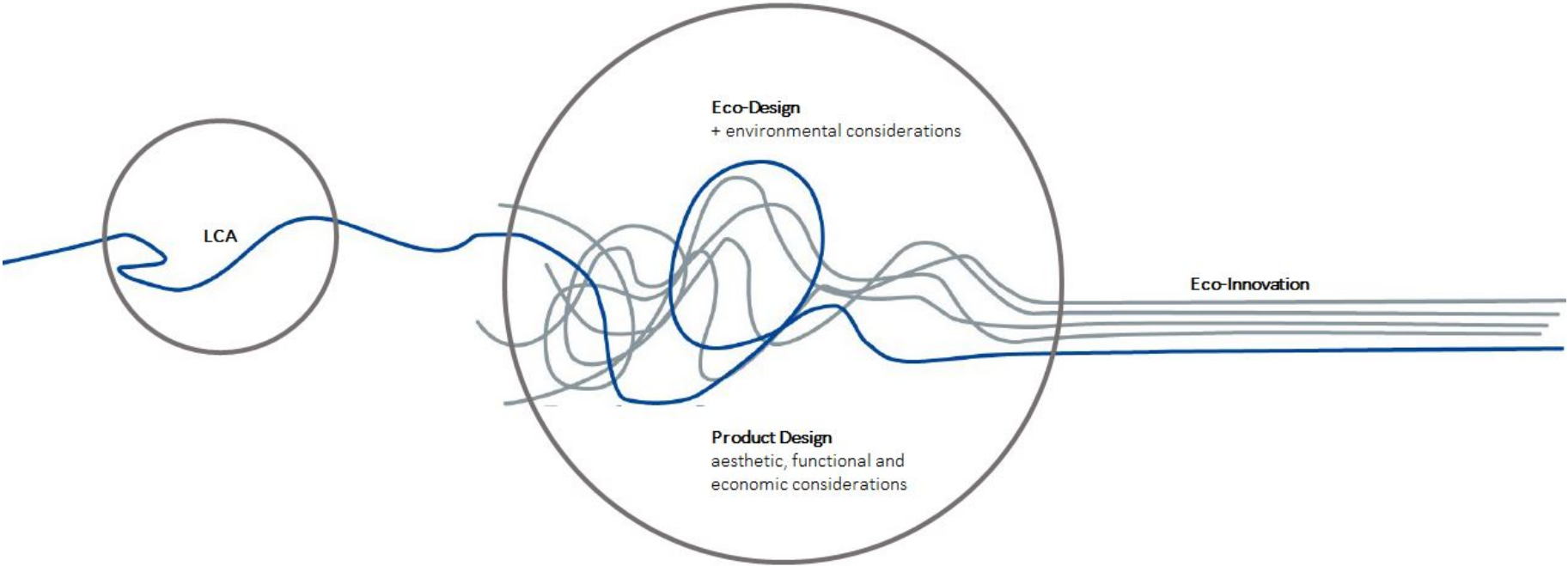
- Depreciation
- Imputed interest
- Material costs
- Energy costs
- Labor costs
- Maintenance costs
- Occupancy costs



ENVIRONMENTAL IMPACT CATEGORIES:

- Climate Change (GWP)
 - Primary Energy Use
 - Human Toxicity (HTP)
 - Acidification
 - Eutrophication
 - Stratospheric ozone depletion
- For each process and its flows

From LCA to Eco-Innovation: A sustainability management approach

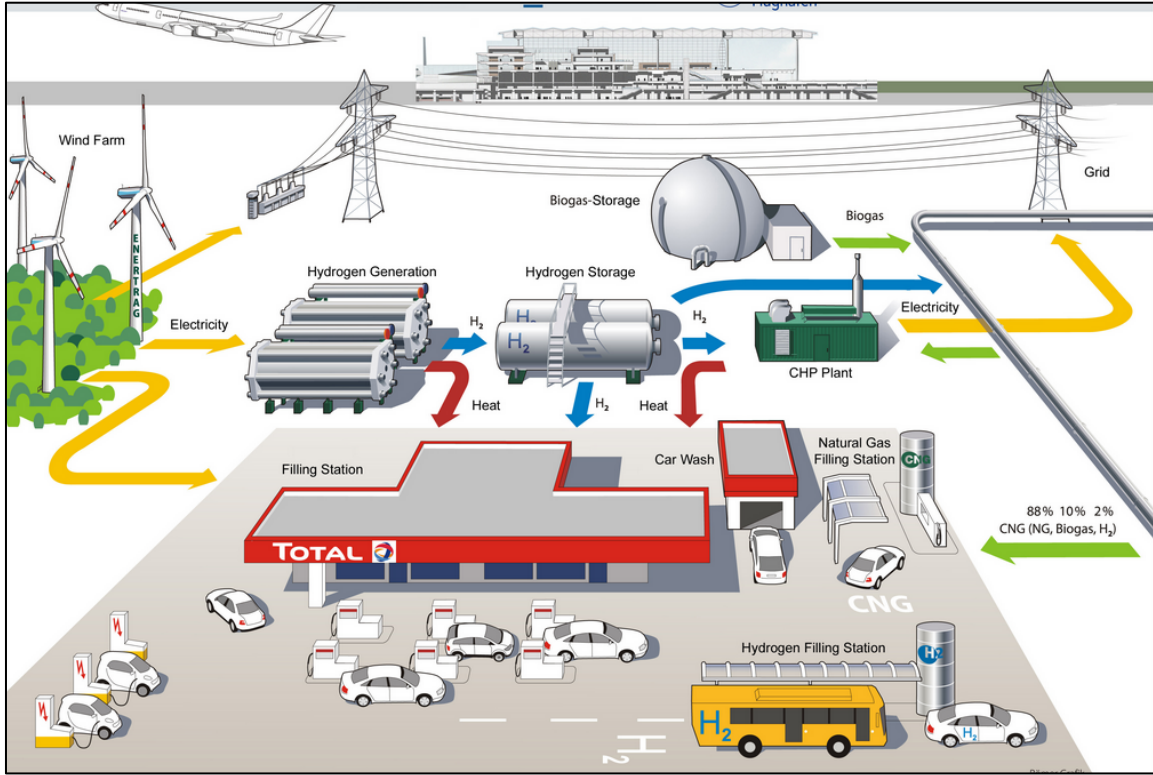


Make sustainability a driver for innovation!

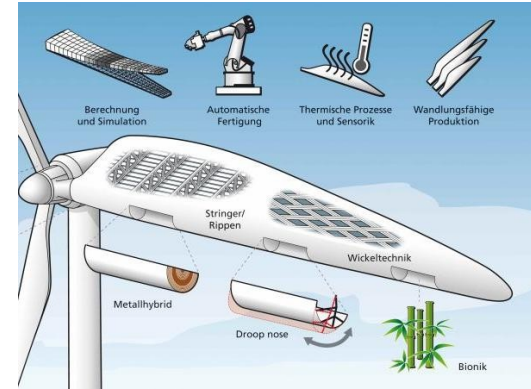
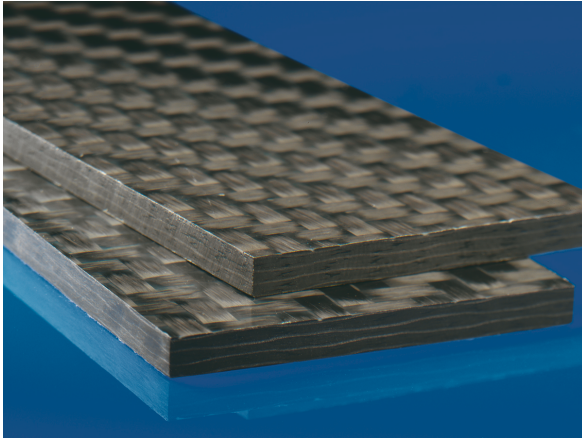


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2. Hydrogen drive



Innovative ideas are never lost and can be applied across industries



Project SmartBlades DLR

Our R&D projects: How Altran is targeting current and future market needs



FUTURE OF MOBILITY

TRINIDAT

Tilt Rotor Innovative Design And Wind Tunnel testing

FUTURE NETWORKS & COMPUTE



Security & traceability in production and value net-works through Blockchain.

FUTURE OF INDUSTRY GREEN ENERGY



Active flow control for an optimized wind harvest on wind turbines

FUTURE OF INDUSTRY INNOVATIVE MATERIALS



Innovative and ecofriendly airframe technologies to improve aircraft life cycle environmental footprint

FUTURE OF ENGINEERING



Retrofit emission reduction technology for HEAVY Duty Engines

APPLIED AI



Artificial Intelligence based cybersecurity for connected and automated vehicles



Ecofriendly & cost-efficient Green Turboprop Experimental Laminar Flow Wind Tunnel testing



Digital portrayal of Circulatory Systems via Blockchain Technology



PEM fuel cell optimization, market, technologies and LCA assessment



Unique Materials for Advanced Aerospace Applications



Smart Intelligent Aircraft Structures



Sector coupling: Bases of a smart, sustainable and effective energy supply LCA assessment



Design for automated manufacturing and installation



Key challenges: Partnership is the answer!

Gefördert durch:



Bundesministerium
für Wirtschaft
und Energie

aufgrund eines Beschlusses
des Deutschen Bundestages



FFG
Forschung wirkt.



**Thank you
for your attention!**

I am looking forward to your questions!

Andreas Kötter

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