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Câmara de Comércio e Indústria Brasil-Alemanha

#PartnerInEnergyTransition

Supported by:

Federal Ministry for Economic Affairs and Climate Action

on the basis of a decision by the German Bundestag

Green Hydrogen in Brazil

Status and Opportunities

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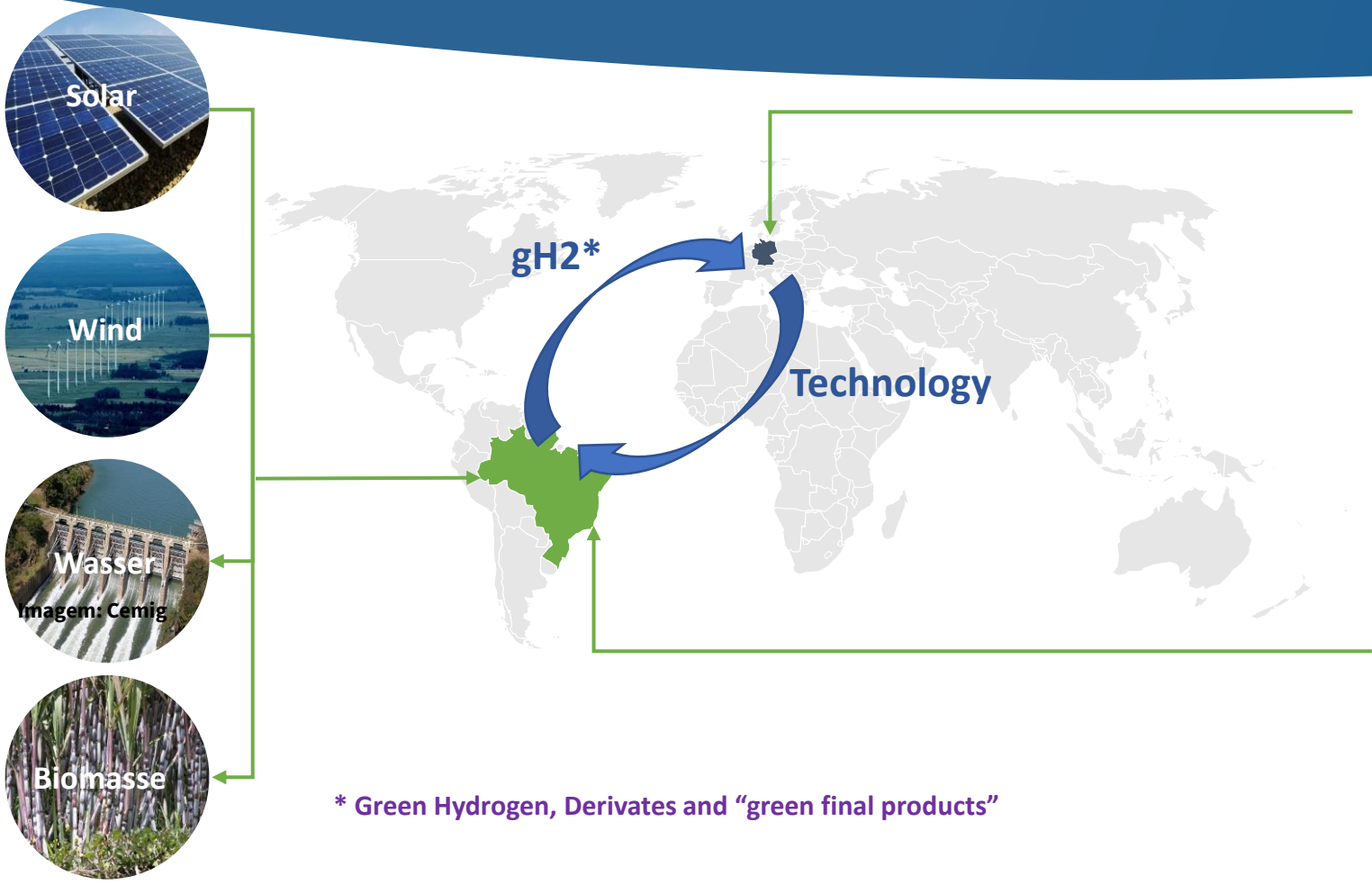
2023

Potential and Opportunities for a cooperation between Germany and Brazil in the area of green hydrogen



The German government has set ambitious targets for decarbonizing the country by 2050 (55% reduction by 2030)

- Germany will invest €9 billion by 2030, including €2 billion in partner countries to promote hydrogen imports
- Other European countries have very similar plans

Brazil is in a unique position to be a strategic partner for Germany in the supply of green hydrogen

- Excellent and favorable climatic conditions for energy production by wind, sun, water and biomass
- Brazil has a mature logistics infrastructure and strong economic ties with Germany
- Brazil has the largest German company base in the world and a very well-developed industry

* Green Hydrogen, Derivates and “green final products”

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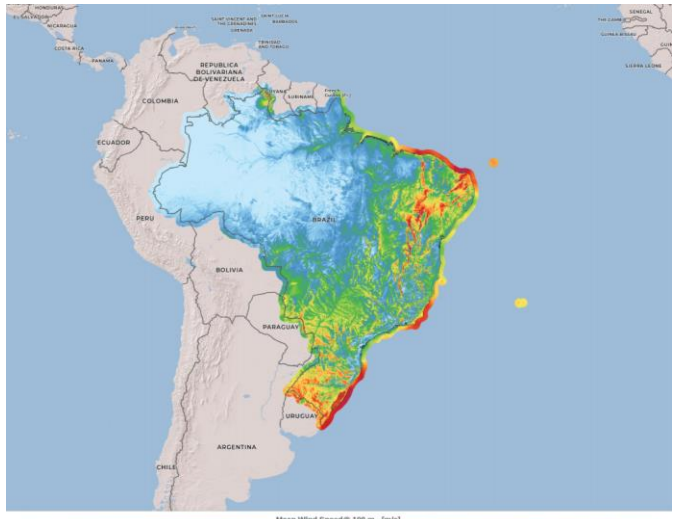
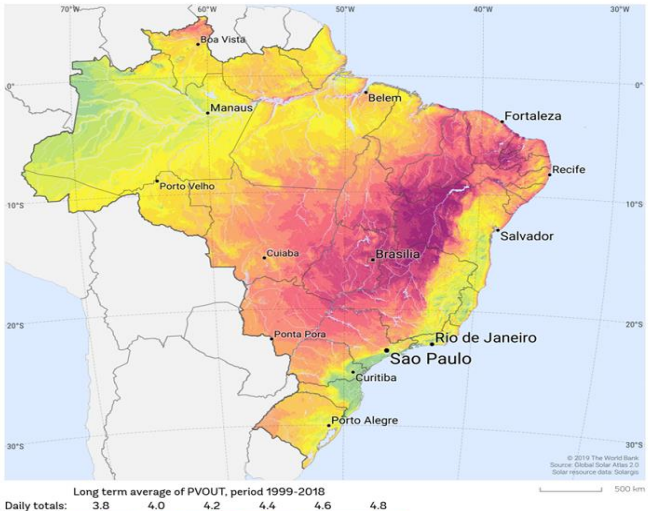
Renewable energy in Brazil

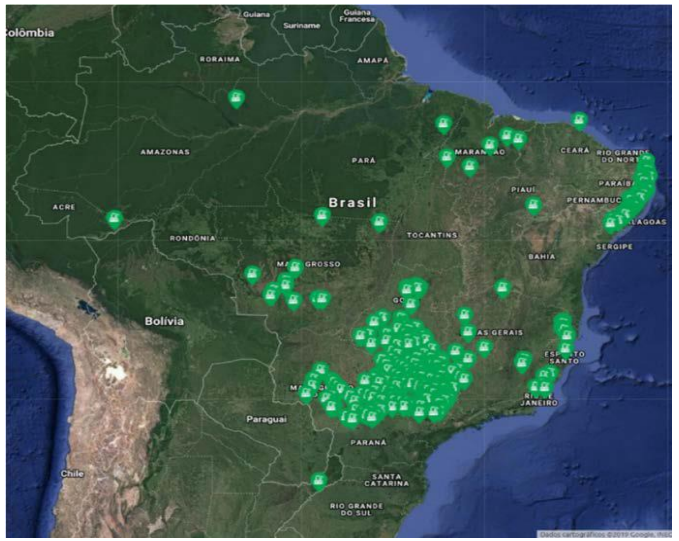
Wind

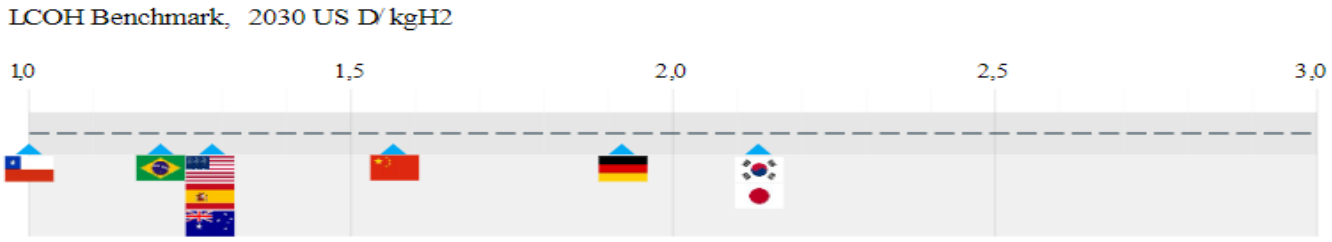


Solar



Biomass





Brazil is one of the most competitive locations in the world for the production of green hydrogen (LCOH2 in 2030 - USD 1,50/ H2 kg

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Green hydrogen in Brazil – a market of 15-18 Billion USD

4-6 Bill. USD

10-12 Bill. USD

Study McKinsey 2021

International Market

Brazil has the potential to be competitive and compete for a significant share of the U.S. and EU import markets

- by 2030 - US$1-2 billion
- by 2040 - US$4-6 billion (2-4 million tons of green hydrogen)

National Market

The domestic market represents the largest opportunity for Brazil and could reach $10-12 billion (7-9 million tons) by 2040, driven primarily by trucks (~3 million tons), green steel (~2 million tons), and other industrial energy applications (~1 million tons).

- Green hydrogen for the steel industry
- Green hydrogen for the fertilizer industry
- Green hydrogen for refineries
- Green hydrogen for transportation
- Green hydrogen for mining

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Brazil has the potential to deliver to both markets

Northeast

- High Potential on solar and windenergy
- Low costs for the production of greenm hydrogen and close to international Offtaking market
- Perfect conditions for fulfilling international certification (e.g. H2 Global)

Excellent conditions for the international market

Middle-East, Southeast, Southwest, South

- Good potential for the generation of solar and wind energy (MG, RJ, ES) and high Potential for the generation of green hydrogen from Biomass
- Biorefinaries are being built to diversify the products and increase production capacity
- Close to the main local industrial centers
- **RENOVABIO** as certification of Products from Biomass

Excellent conditions for the national market

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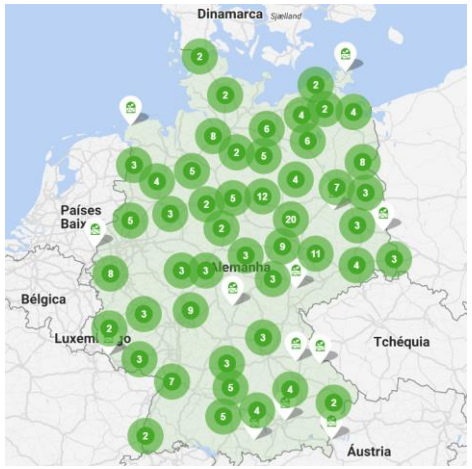
Germany has very mature technology in usage of Biogas and Biomass



- Usinas na Alemanha: 9.200
- Capacidade instalada: 4.200 Mw_{el}
- Redução de Co2: 20 Mio t
- Faturamento 2015: 9,4 Bil. Euro

Interaktive Karte "Gas kann grün" | BDEW

Panorama da geração de energia elétrica com a fonte Biogás

Biogás no **Brasil**

Geração Distribuída

105.212,17kW
Capacidade instalada

Geração Centralizada

246.446,60kW
Potência outorgada

351.658,77 kW

492 usinas

Fonte: **ANEEL, 04/2023**

Mapa do biogás no Brasil e no mundo - Portal Energia e Biogás (portalenergiaebiogas.com.br)

Território: 24x (Brasil) – Capacidade instalada: 12 x (Alemanha) – Usinas instaladas 19x (Alemanha)

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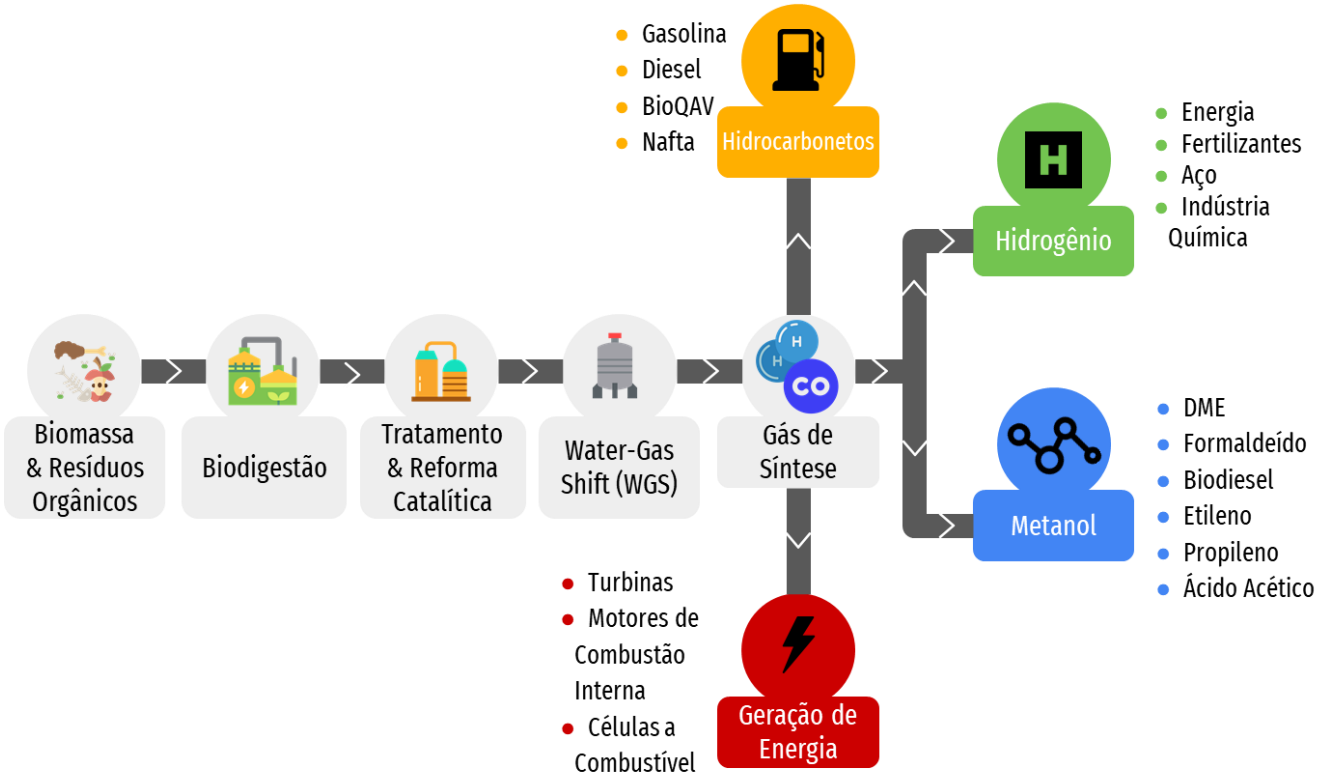
Biorefineries – an opportunity for a sustainable agrobusiness



Biorefineries will be able to supply the market with sustainable fuels, ammonia and green hydrogen derivatives

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Competence Center for Green Hydrogen in Brazil

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Competence Center for Energy Transition and green Hydrogen

Competence Center
Energy Transition and green Hydrogen

Studies gH2	**Events gH2**	**International Delegations**
Innovation	**Support for Financing (e.g. H2Uppp)**	**Matchmaking companies**
National e International Offtaking	**Consulting**	**Professional Training in gH2 & Energy Transition**

The competence center promotes the energy transition and green hydrogen by offering technical and market-related know-how and promoting companies, contacts and business initiations

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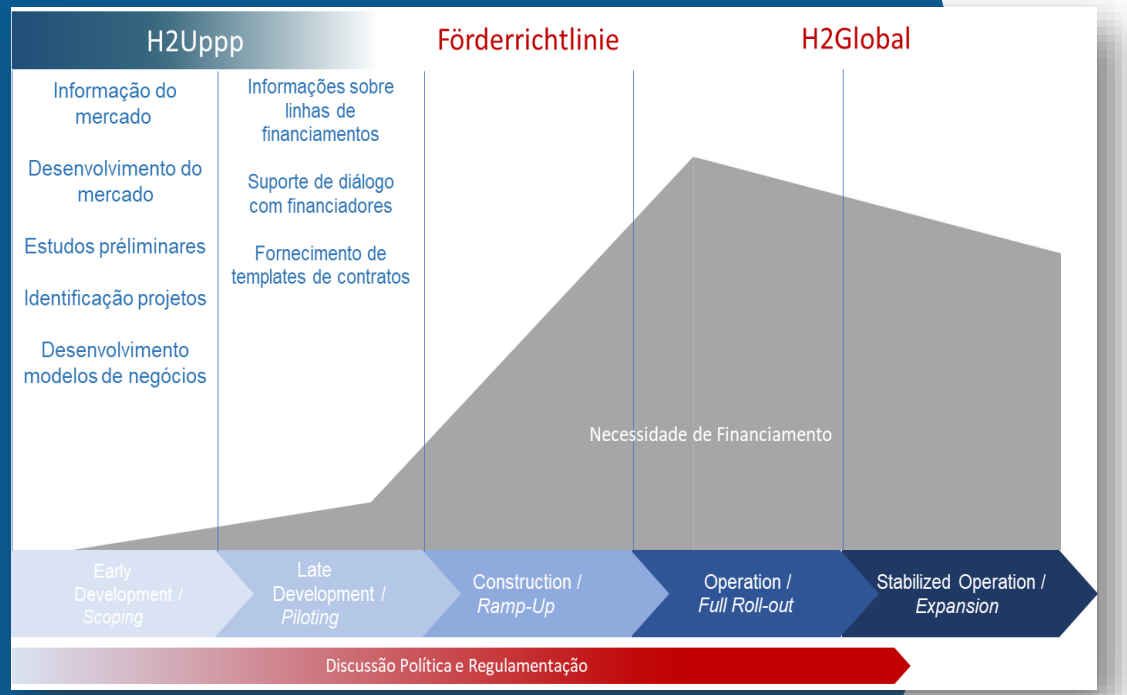
H2-Uppp



A H2Uppp apoia empresas na identificação de ideias de projetos e na criação de redes com projetos similares ou potenciais clientes

A H2Uppp colabora com empresas privadas para implementar conjuntamente projetos piloto no campo de hidrogênio verde e PtX através de acordos de PPP

A H2Uppp apoia diferentes propostas de projetos por meio de estudos e treinamento técnico além de oferecer treinamentos especializados para instituições locais

Critérios para aplicação

- A empresa deve ser alemã ou europeia (consórcio com > 50%)
- A empresa deve contribuir com o mínimo de 50% do volume total do projeto
- Valor mínimo do apoio da GIZ: 100 mil EUROS
- Estar em conformidade com os padrões de sustentabilidade do projeto

Se tiver interesse, favor entrar em contato com a AHK Rio

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Projeto PPP: Desenvolvimento de um conceito replicável para a produção de SynCrude verde para exportação utilizando resíduos agrícolas

Brasil: SynCrude: Produção de hidrogênio sustentável derivado do biogás e hidrogênio verde em vários municípios do estado do Paraná/Brasil.

Impacto	➢ Trata de um enorme problema ambiental devido aos resíduos agrícolas não utilizados (especialmente estrume de suínos) ➢ Potencial significativo de replicação devido à grande economia agrícola no BRA e à pressão política para resolver este problema ➢ Os off-taker (refinarias na Alemanha) mostram um interesse significativo pelo SynCrude

Dados	Volume 2,368,400 €, dos quais 20% de contribuição pública
	Período 1 ano (01/23 - 12/23)
	Parceiros de cooperação ➢ Mele Biogas GmbH, SME (Torgelow) ➢ COOPERSAN, AMBICOOP, Cooperativas (Paraná, Brasil)

Photo by: Luíz Diaz/GIZ

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Federal Ministry for Economic Affairs and Climate Action

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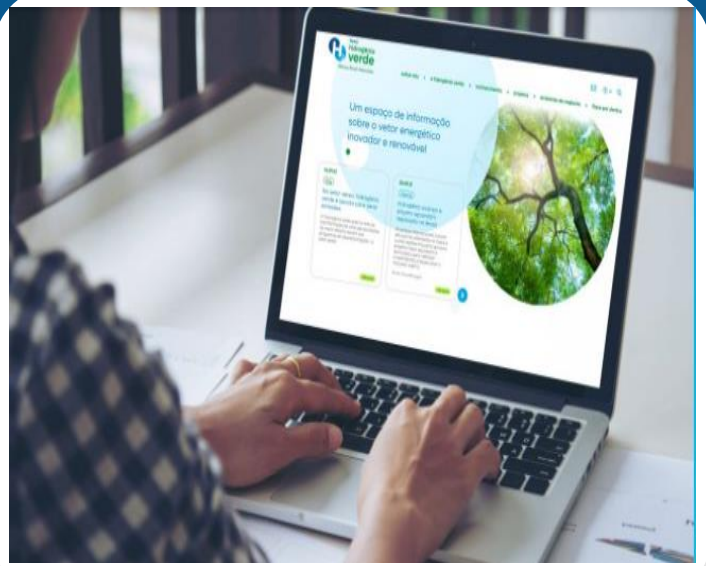
Hydrogen Expo South America
Rio de Janeiro
June 21-22, 2023

Green Hydrogen Portal Brazil
www.h2verdebrasil.com.br



Segundo Hackathon para Inovação em Hidrogênio verde Brasil

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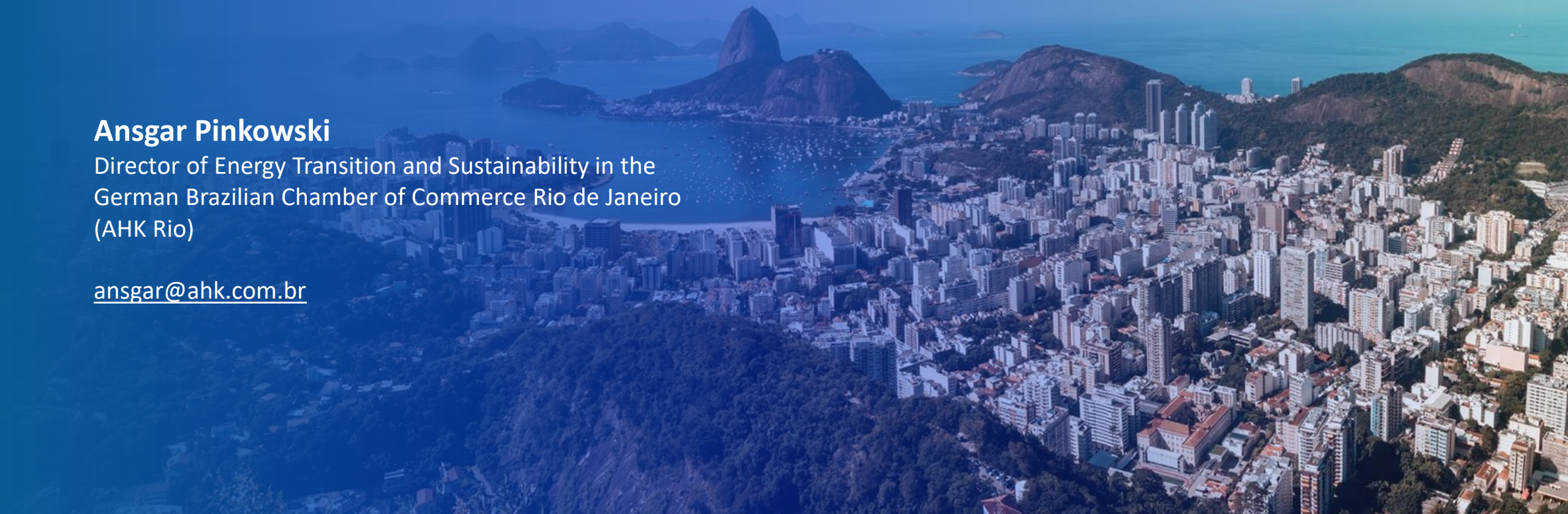
Obrigado!



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