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## Germany and Latam

To what extent does German-Brazilian energy cooperation contribute to the Brazilian energy transition?

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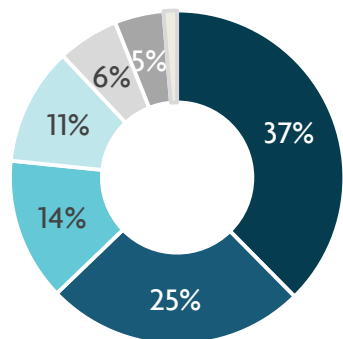
1. Brazilian energy transition: challenges and opportunities
2. German–Brazilian cooperation efforts
3. The common agenda for energy transition

# Brazilian energy transition

Aiming for a more diverse mix to support a growing demand

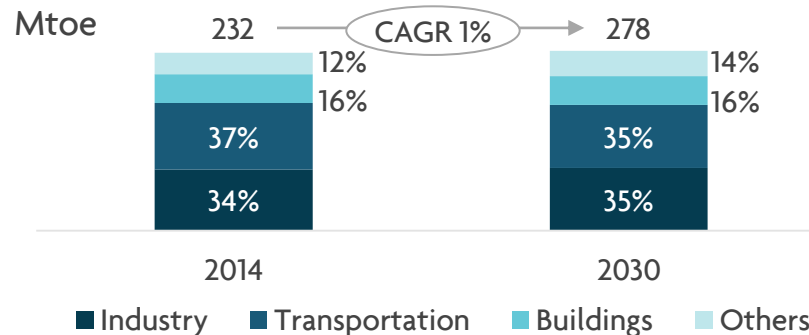


Brazilian energy matrix, 2015

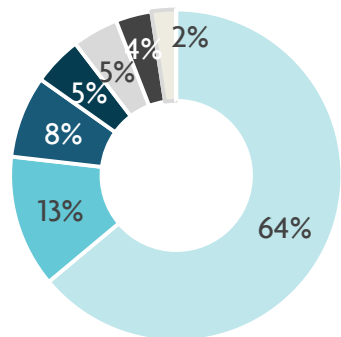


Brazil = 41% renewables  
World = 18% renewables

Increase in final energy consumption by 2030

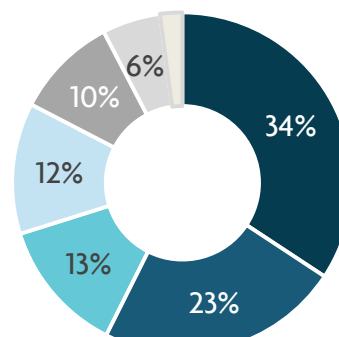


Brazilian electricity matrix, 2015



Brazil = 76% renewables  
World = 33% renewables

Brazilian energy matrix, 2030



Increase to 45% renewables share

- Oil
- Biomass
- Gas
- Hydro
- Coal
- Other renewables
- Nuclear
- Wind
- Solar

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# Brazilian energy transition

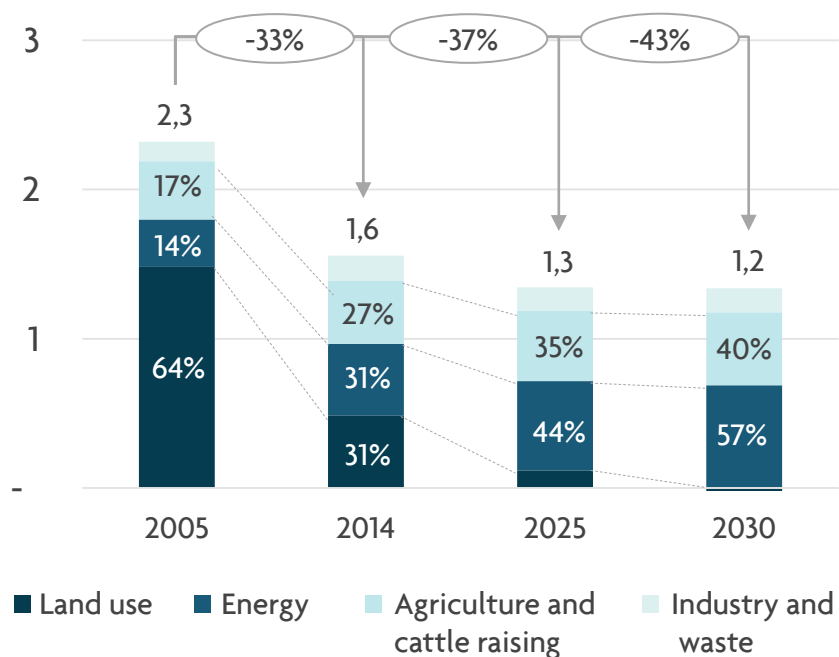
## Paris Agreement commitments



Reduce 37% of GHG emissions by 2025, in comparison to 2005. Subsequently, reduce GHG emissions in 43% by 2030, in comparison to 2005

### GHG emissions in Brazil

GtCO<sub>2</sub>eq



- Reach a share of **45% renewable energy in the energy matrix in 2030**
  - Increase the participation of **bioenergy to 18%** (1G and 2G ethanol, biodiesel) in the energy matrix
  - Expand the use of **non hydro renewable in the energy matrix to 28%-33%** by 2030
- Obtain at least **66% of hydroelectricity in the electric matrix in 2030**
  - Increase the use of **non hydro renewables in the electricity matrix by 23%** in 2030 through the growth of wind, biomass and solar energy
  - Reach **10% efficiency gains in the electric sector by 2030**

# Brazilian energy transition

## Challenges and opportunities facing energy end use

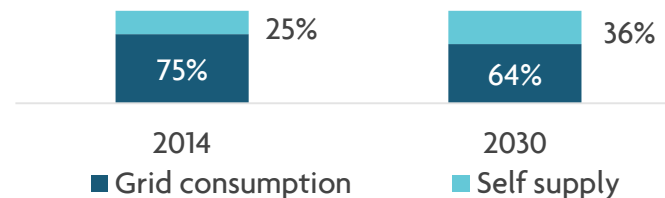


### Industry



- Opportunity of decarbonizing its energy matrix through **increased self supply** from renewable sources such as **biomass and new renewables**

#### Self supply share in large industries mix

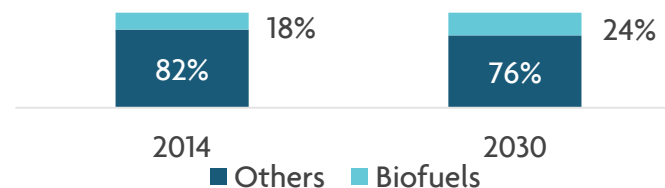


### Transportation



- Challenge to increase **biofuels penetration** and respond to new trends in mobility and technology, such as **EVs** (0,8% sales share in 2030)

#### Biofuels share in transportation mix



### Electricity



- Challenges regarding **renewables intermittency and complexity** of the Brazilian National Integrated System (SIN), with **possible emissions growth** due to increased penetration of gas power plants
- Need for adaptation in **decentralized power generation** regulatory framework, tariff system and utilities business model, due to expected increased “prosumer” participation

# German-Brazilian cooperation efforts

## Partnerships for trade and sustainable development



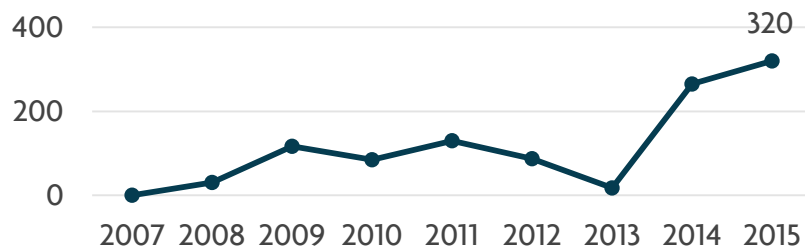
- Brazil is **Germany's largest trade partner** in Latin America, while Germany is Brazil's most relevant European commercial partner
- Germany's **€ 1bi direct investment in Brazil** (2014)
- German-Brazilian development cooperation amounted to **€ 552 mi** (2015)

€ 2bi

**Renewable energies** (wind and small hydro plants) and **energy efficiency**  
KfW Development Bank portfolio in Brazil

### Total new KfW commitments in Brazil

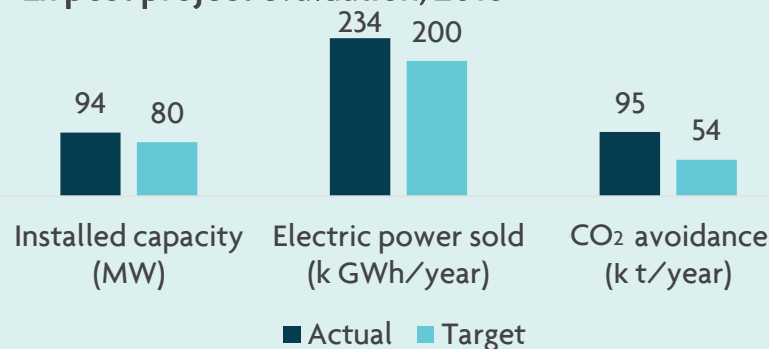
€ million



Sources: AHK - "Deutsch-Brasilianische Industrie- und Handelskammer", 2017; KfW – "An important country and partner in climate protection", "Ex post evaluation – Brazil", 2016; Brazilian Federal Government – "Brazilian-German Joint Statement on Climate Change", 2015

- **€ 210 million investment in three Brazilian wind farms**, co-financed with the Brazilian Development Bank (BNDES)

### Ex post project evaluation, 2016



- **€ 265mi funding to the Brazilian Development Bank (BNDES) from KfW**, to promote **sustainable urban mobility** (2015)
- Ongoing **technical cooperation** with the Brazilian Ministries of Mines and Energy, Cities, Development, Industry and Foreign Trade

# The common agenda

## How cooperation can further boost the energy transition



### Deployment of knowledge sharing and technical cooperation in key common energy issues

- Increased penetration of **renewables in the electricity mix** and their implication on overall **emissions**, due to intermittency issues and fossil fuel need for baseload power
- **Decentralized power generation** regulatory framework, affordability and social aspects
- **Utilities business model** innovation, from traditional power suppliers to modern providers of energy solutions
- **Trends in urban mobility** such as electric vehicles, regarding incentives needed and consequences for the power and distribution sectors

### Financial partnerships between Germany and Brazil to promote a smoother energy transition

- **Investments in the Brazilian renewable sector**, given German investors interest and expertise in the industry
- **R&D programs** and science exchange initiatives to further increase **renewable competitiveness, penetration and affordability**



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