

Brazil's low-carbon energy storage system





Overview

Here an energy system model is used to assess the BECCS decarbonization potential in Brazil, considering uncertainty in low-carbon biomass resources, and storage potential, injection rates and costs o.

Does a low-carbon Brazilian energy system have a potential for BECCS?

This methodological framework allows to assess the potential for BECCS within a low-carbon Brazilian energy system for 2050, including its deployment pathways and its impact on the energy system (total system costs and energy mix), considering uncertainty in biomass sources, CO₂ transport options, injection rates and storage potential of CO₂.

Does Brazil have a decarbonization potential?

Here an energy system model is used to assess the BECCS decarbonization potential in Brazil, considering uncertainty in low-carbon biomass resources, and storage potential, injection rates and costs of CO₂ storage, assessed in eight scenarios.

How much CO₂ is stored in Brazil?

The total amount of stored CO₂ between 2010 and 2050 ranges between 2.84–2.95 Gt CO₂, which is approximately 18% of the entire Brazilian carbon budget for that period (see Section 2.1 for details on the carbon budget). The stored CO₂ originates from biomass in all scenarios. When comparing the six scenarios, two things stand out.

Is BECCS a cost-competitive option to decarbonize the Brazilian energy system?

This shows that BECCS is a cost-competitive option to decarbonize the Brazilian energy system, even under pessimistic estimates of CO₂ storage potential and costs, and low biomass availability. The cheapest sink locations are selected, in the high development scenario. When CCS development is low, injection rates are the limiting factor.

Does Brazil have a good energy transition?



On the one hand, Brazil's energy transition is well under way. The country has the cleanest electricity generation among Group of 20 members and has seen a significant increase in wind and solar generation in the past few years. Energy storage is expected to take off soon.

Are CCS and biomass a viable option for a low-carbon energy system?

This shows that both CCS and biomass are key options that can ensure the transition towards a low-carbon energy system in Brazil, while minimizing the total system costs. However, the development of both factors is very uncertain and therefore it is important to explore several potential development pathways. 2.4.1. Biomass availability



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Brazil: Hydrogen, Energy Storage and Smart Grids , Carbon ...

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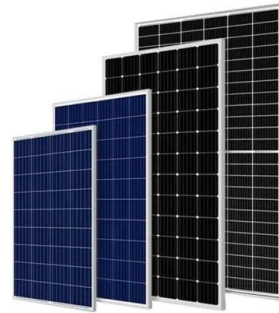


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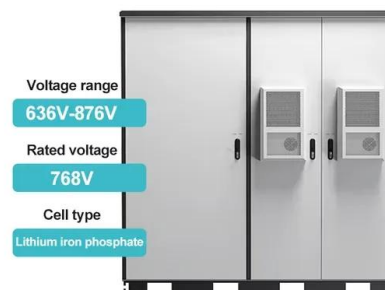
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