130 kWh low-carbon economy

130 kWh low-carbon economy

To the authors" knowledge, this study presents the first comprehensive and optimised techno-economic analysis of a CCGT fitted with post-combustion CO 2 capture operating with a scope 1 carbon intensity of 0.0 gCO 2 e/kWh. This is achieved by designing the PCC plant to achieve a gross capture fraction of 99.16% in the absorber column.

The data collected in this study shows that solar, wind, geothermal, tidal, large and small hydropower, nuclear, and other low-carbon technologies vary in their lifetime costs, the amount of greenhouse gas emissions per kWh, air pollution and related health implications, as well as the amounts of required materials and minerals.

To achieve climate-adaptive energy resilience and low-carbon transformation, main challenges include socio-economic equality access, deployment of charging piles and smart charging development for electric vehicles, battery circular economy in integrated rural-city energy systems, and carbon intensity of battery circular economy.

For power supply from fossil fuels with CCS, bioenergy without CCS and hydropower, specific GHG emissions range from 78 to 109 gCO 2 eq kWh -1, while nuclear, wind, photovoltaics (PV) and ...

Low-carbon electricity or low-carbon power is electricity produced with substantially lower greenhouse gas emissions over the entire lifecycle than power generation using fossil fuels. [citation needed] The energy transition to low-carbon power is one of the most important actions required to limit climate change. [1]

Feature papers represent the most advanced research with significant potential for high impact in the field. A Feature Paper should be a substantial original Article that involves several techniques or approaches, provides an outlook for future research directions and describes possible research applications.

Feature papers are submitted upon individual invitation or recommendation by the scientific editors and must receive positive feedback from the reviewers.

Editor"s Choice articles are based on recommendations by the scientific editors of MDPI journals from

around the world. Editors select a small number of articles recently published in the journal that they believe will be particularly interesting to readers, or important in the respective research area. The aim is to provide a snapshot of some of the most exciting work published in the various research areas of the journal.

Visit our dedicated information section to learn more about MDPI.

Proskuryakova, L. The Contribution of Low-Carbon Energy Technologies to Climate Resilience. Climate 2023, 11, 231. https://doi /10.3390/cli11120231