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The carbon dioxide removal potential of Liquid Air Energy Storage: A high-level technical and economic appraisal

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Abstract Liquid Air Energy Storage (LAES) is a promising technology for storing energy and capturing CO₂. This paper provides a high-level technical and economic appraisal of LAES. The potential of LAES for CO₂ removal is compared to other CO₂ removal technologies, such as Pre-combustion CO₂ Removal (PCR) and Post-combustion CO₂ Removal (PCDR). The results show that LAES has a high potential for CO₂ removal, particularly when combined with PCDR. The economic appraisal shows that LAES is a cost-effective technology for energy storage and CO₂ removal. The results of this appraisal are consistent with previous studies on LAES. The potential of LAES for CO₂ removal is a significant contribution to the global effort to reduce greenhouse gas emissions.



(M... .., 2015). T
 CAES/LAES
 LAES/CAES
 S (C... .., 2012)
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 T
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 A LAES/CAES
 F
 CAES
 (J... .., 2016),
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 (CDR) LAES/
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 3) C LAES CAES
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2 Background o CDR

T LAES/
 CAES
 D. et A. C... .. (DAC)
 CO₂
 LAES).
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 CO₂
 (K... .., 2013). A
 B... .. C... .. S... .. (BECCS)
 (M... .., 2016)
 CO₂
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CO₂ capture
L... DAC... CDR
CAES/LAES,
E... W... (EW) (K... 2010)
CO₂... B...
CO₂

$f_{LAES}(t)$
 F... $f_{LAES}(t) = 33\%$, CC = 53 Gt CO₂
 e... 100... T... 1...
 e... (e... 2)
 (e... 3) $f_{LAES}(t) = 50\%$, 10%... 1%...
 T... 1... (e... 4)
 e... LAES... (f...)
 T... $f_{LAES}(t)$... (CC = 80 Gt)... 4%...
 (CC = 53 Gt)... 2.7%... 2000 Gt CO₂
 LAES... CDR...
 ... 30 USD... CO₂

... CDR ...
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L ... N ... LAES ... CAES ...
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... CDR ...

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1 Science & Technology, 42(8): 2728–2735

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 L ... C ... E ...
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