

THE BASICS & THE GAPS

Climate Innovation Factsheet Series #3/2023

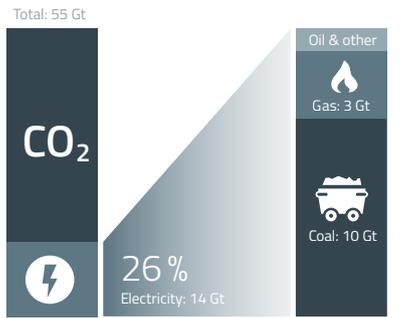
Long Duration Energy Storage
for the Power System

LDES

THE CLEAN ELECTRICITY CHALLENGE: SOLAR AND WIND FLUCTUATE

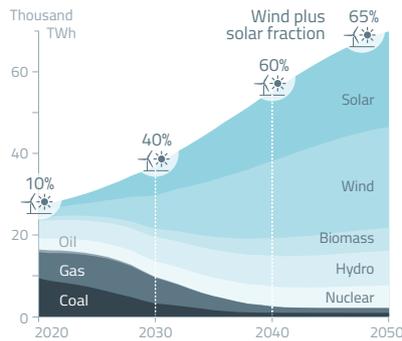
Electricity generation is responsible for over a quarter of global greenhouse gas emissions.

Global emissions (Gt CO_{2,eq}/year)



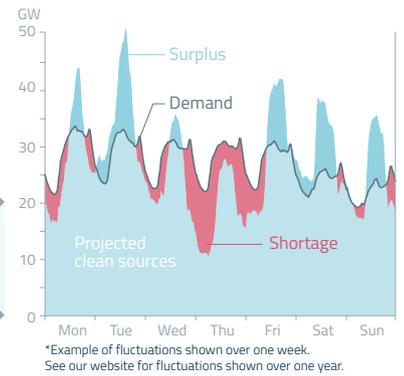
Solar and wind energy are key to quickly decarbonizing the power system.

Global electricity generation under a net-zero scenario (thousand TWh/year)



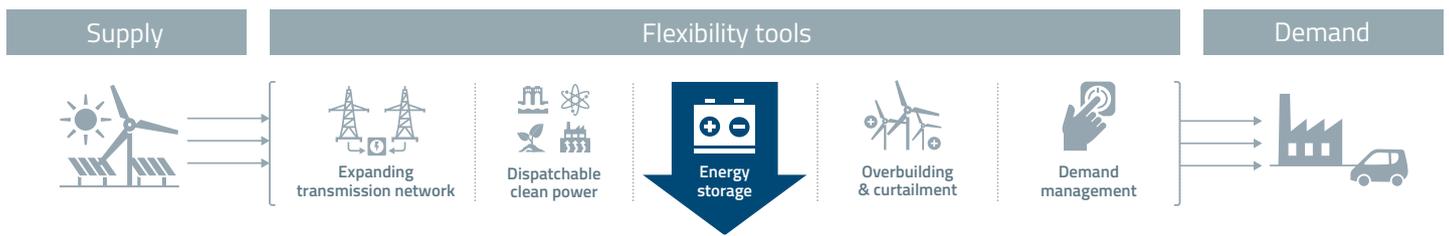
Since solar and wind are intermittent, this results in an increasing mismatch between supply and demand.

Projected generation in a developed economy* (GW)



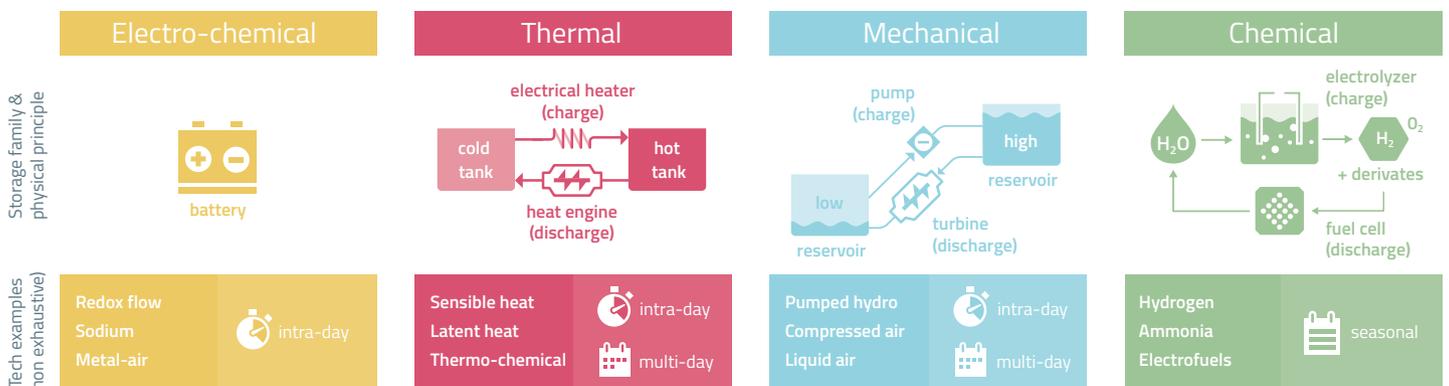
THE MAIN SOLUTION: FLEXIBILITY TOOLS

Integrating intermittent renewables requires combining multiple flexibility tools, including Long Duration Energy Storage (LDES).

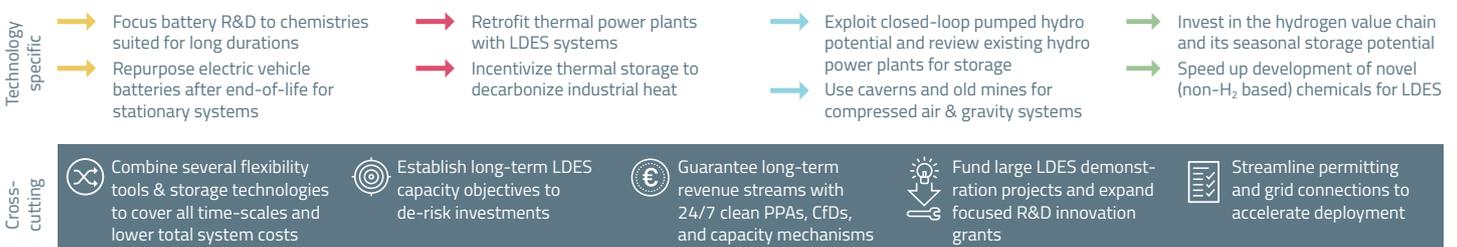


THE FOUR FAMILIES OF LONG DURATION ENERGY STORAGE

LDES includes any storage technology that can supply energy continuously for at least 10 hours in a row at full (nominal) power, up to several days, weeks, or months. LDES balances supply and demand, reduces curtailment, and increases energy security during times of low supply.



OUR RECOMMENDATIONS



Condensed sources: IEA (2023), UNEP (2022), IPCC (2018), NREL (2021), LDES Council (2021), OurWorldInData (2022), Spanish electrical grid (REE) (2022)

Detailed list of sources: fcarchitects.org/ldes-factsheet-sources/

Want to learn more? Visit fcarchitects.org or contact us: mail@fcarchitects.org

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