



clean energy starts with

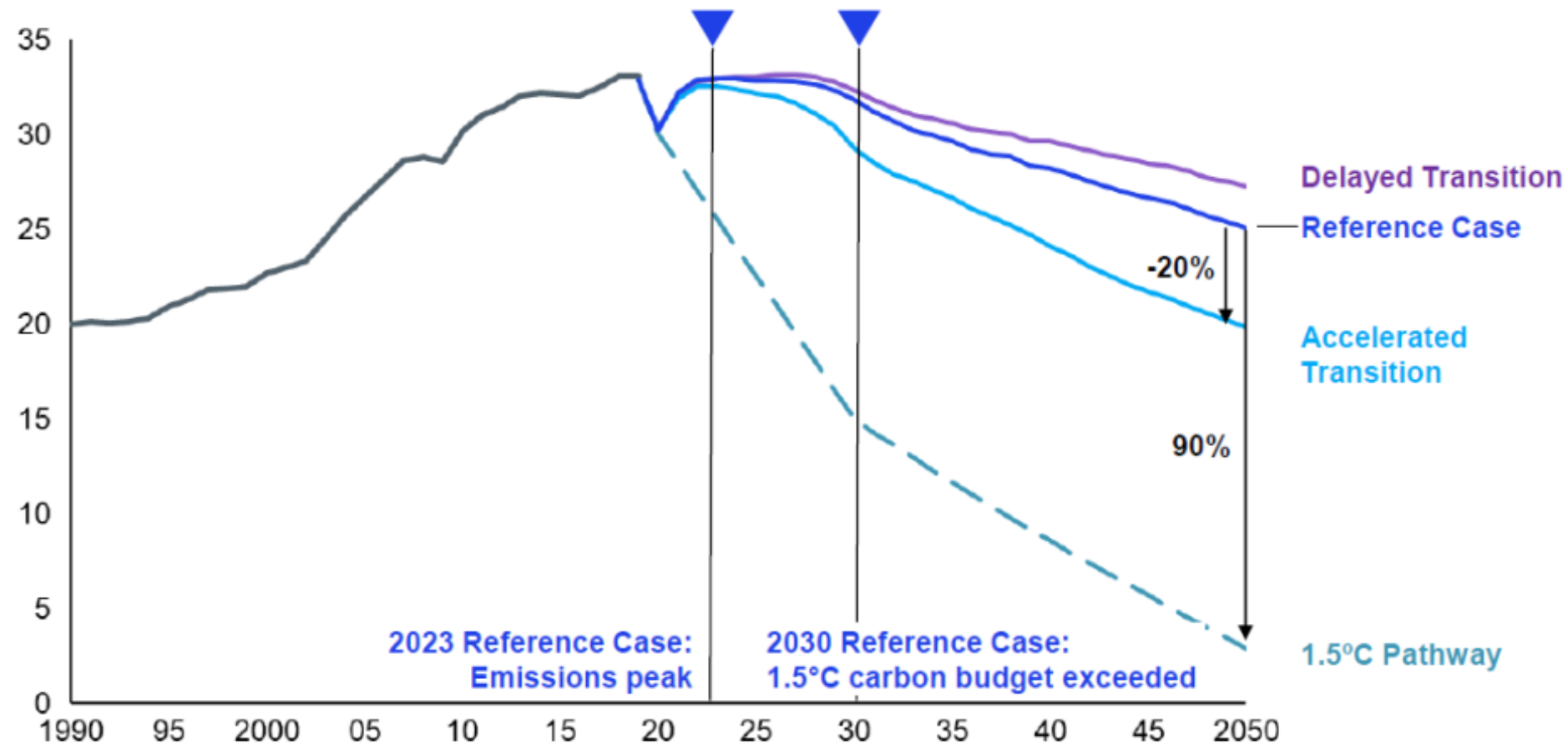
**ceres**

Long duration storage:  
delivering the missing  
piece of the energy  
transition in time

Mark Selby

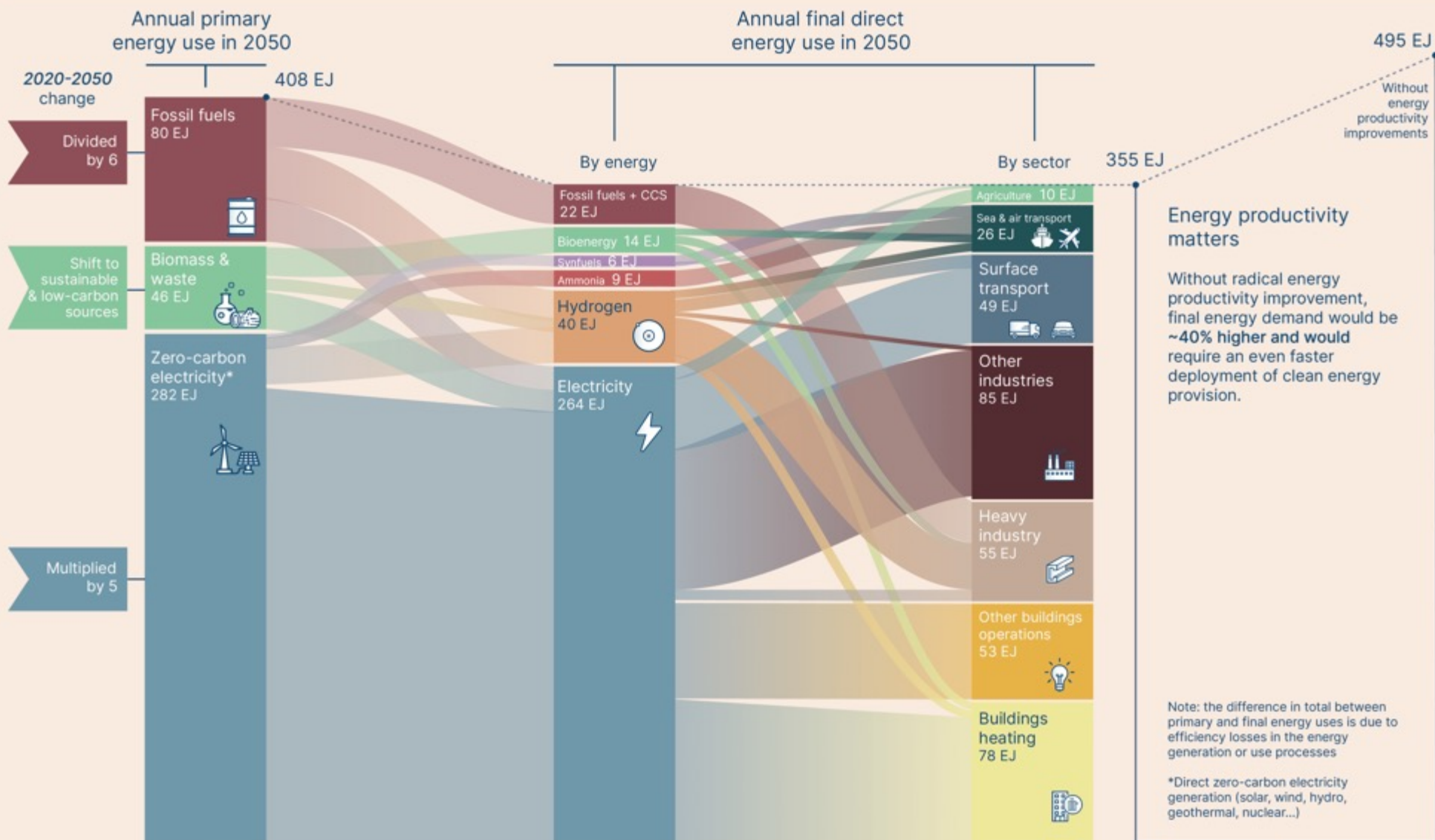
# WE ARE NOT ON TRACK TO ACHIEVE A 1.5°C FUTURE

Global gross energy-related CO<sub>2</sub> emissions,  
GtCO<sub>2</sub> p.a.





# A complete transformation of our energy system is required to support a zero-emissions economy



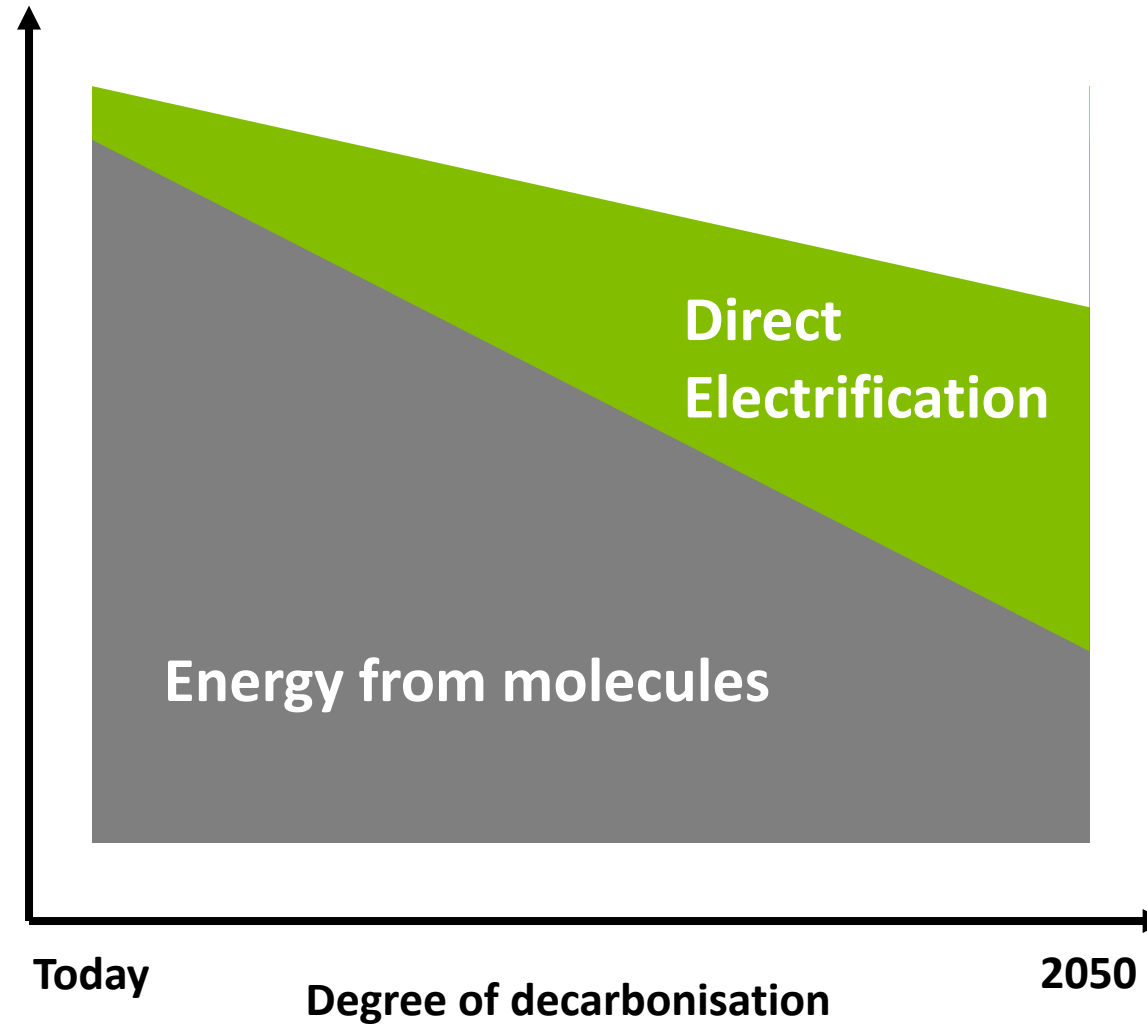
[Making Mission Possible:  
Delivering a Net-Zero Economy](https://www.energy-transitions.org)

[www.energy-transitions.org](https://www.energy-transitions.org)

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Commission.

Energy Will  
be  
consumed  
differently

Long Duration  
Energy  
Storage is a  
solution to  
the  
challenges



### Three challenges emerge

- balancing electricity supply and demand
- a change in transmission flow patterns
- a decrease in system stability.





**ceres**

**Leader in electrochemical technology  
enabling the world's most  
progressive companies to deliver  
clean energy at scale and pace.**



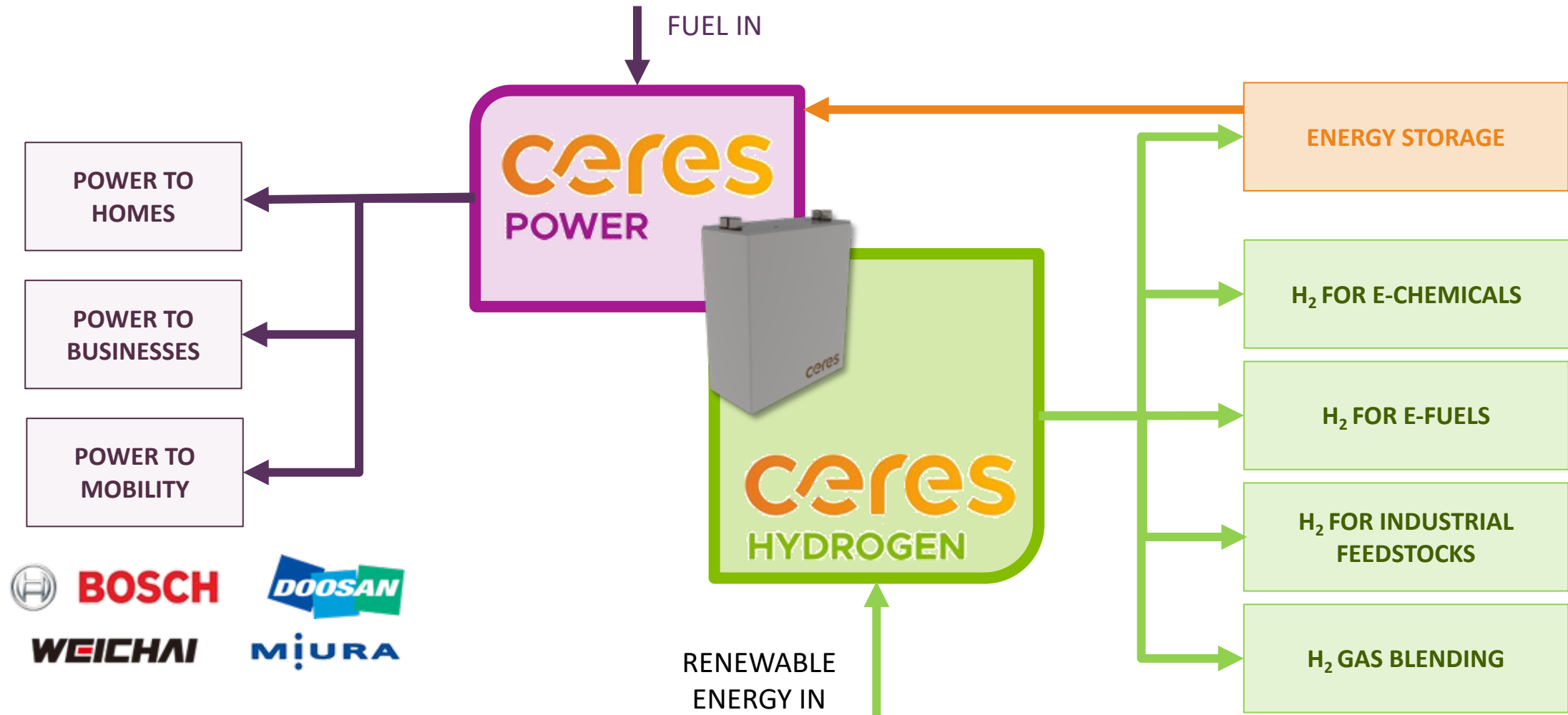


WE ARE  
COMMITTED

Proud to be a UK technology company  
with over 500 passionate scientists and  
engineers partnering with global giants of  
industry to deliver a net zero future.




# Ceres SteelCell™ technology developed over 20 years, for power generation and hydrogen production





GREEN HYDROGEN REQUIRED FOR DEEP  
DECARBONISATION OF INDUSTRY  
WHICH ACCOUNTS FOR 24% OF GLOBAL  
CO<sub>2</sub> EMISSIONS





What does this mean for  
Long Duration Energy Storage?  
What is it?  
What does it do?





# The Long Duration Energy Storage (LDES) Council was launched at COP26



Signing of statements of intent and launch ceremony



Introduction to the Council



Networking lunch



# To date ~50 leading companies have joined the LDES Council to accelerate decarbonization

## Technology providers



## Anchors

### Industry and services customers



### Capital providers



### Equipment manufacturers

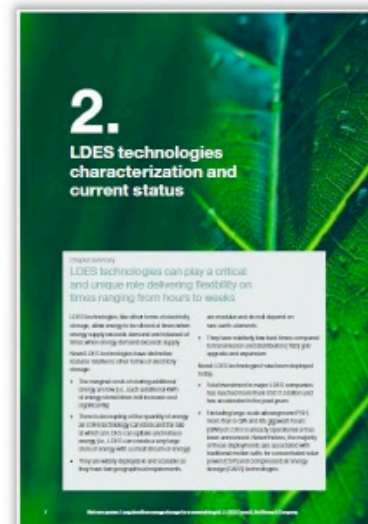
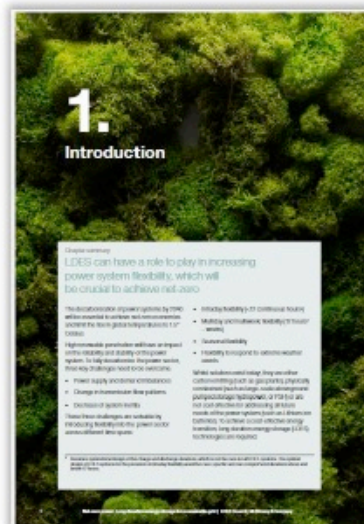


### Low-carbon energy system integrators & developers



# Inaugural report released in November 2022

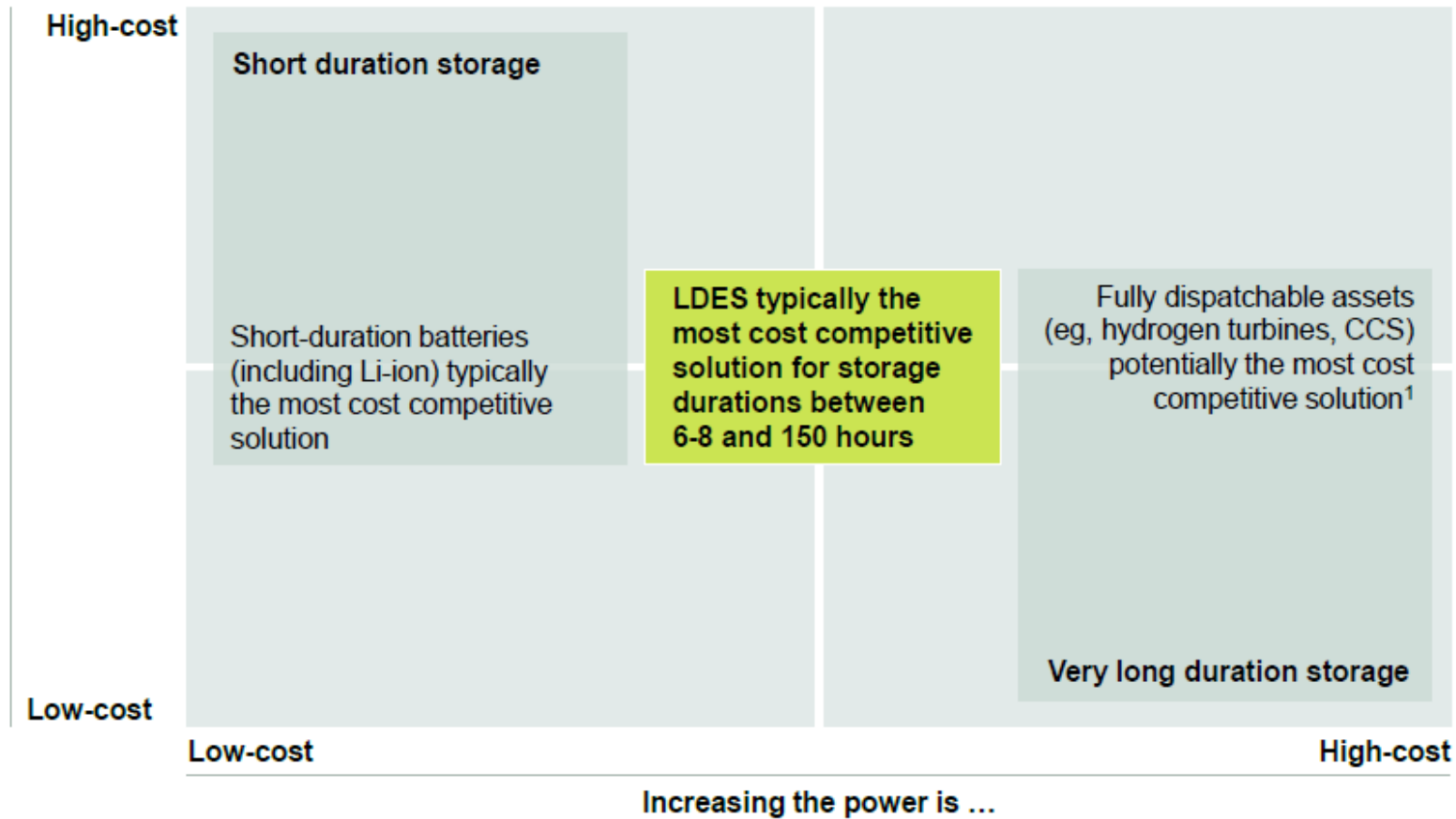
## Net-zero power: Long duration energy storage for a renewable grid





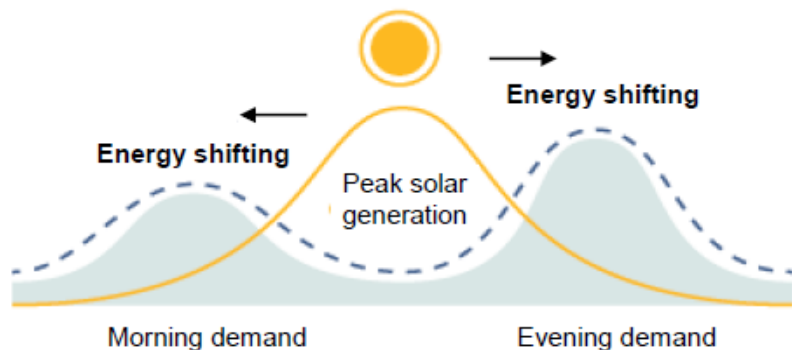
# Break the link between the cost of power and the cost of energy

Increasing the amount of energy stored is...



# Long Duration Energy Storage deployed in different contexts

## LDES unlock many different use cases



### Energy shifting



### Grid services

### Optimising transmission & distribution investment



### Firming renewable PPAs

### Supporting island grids



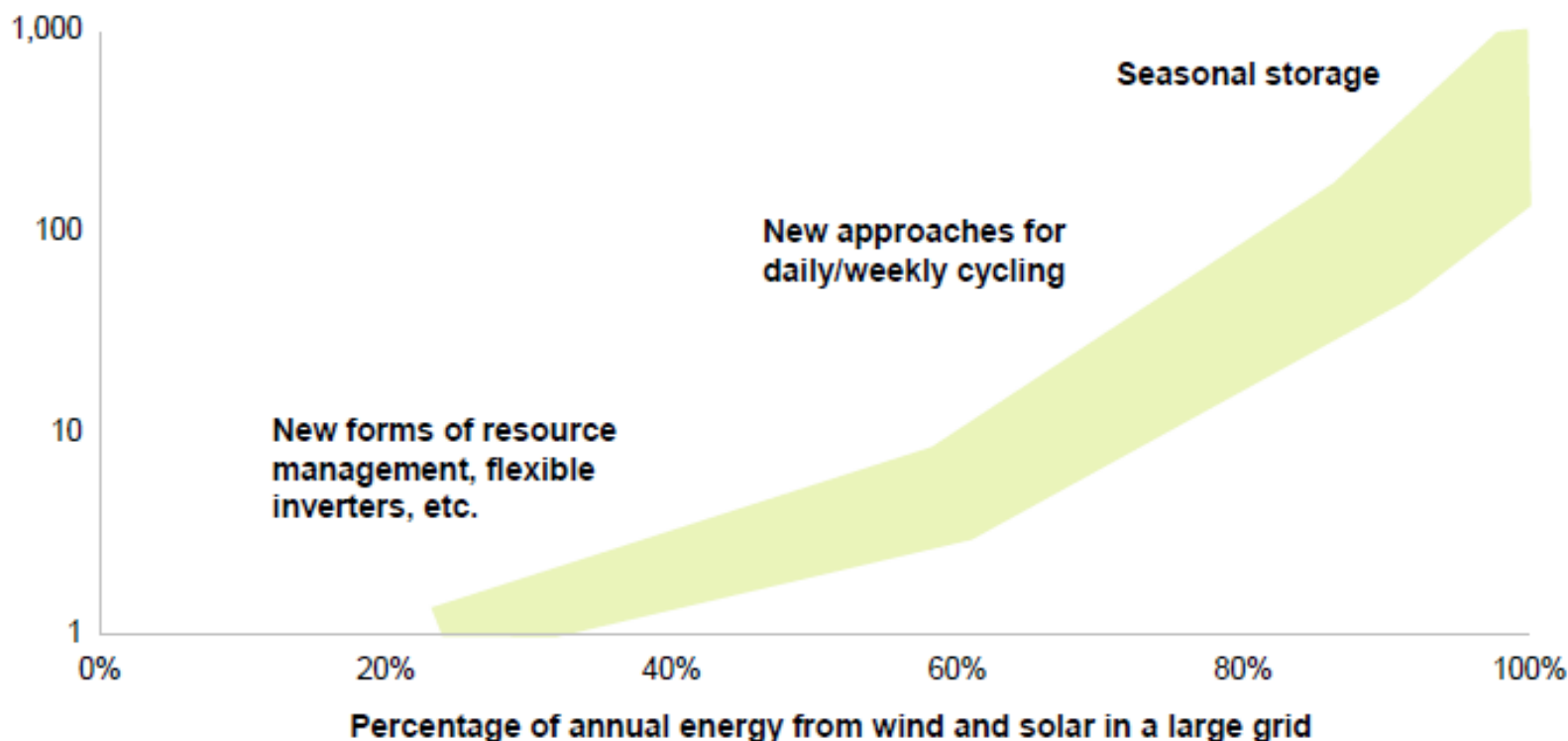
### Supporting industries with remote and unreliable grids



# Flexibility is critical for decarbonisation of power systems

## Adoption curve of longer flexibility durations accelerates at 60-70% RE penetration

Storage duration, hours at rated power



### RES integration leads to new system challenges



Power supply and demand not always in balance



Transmission flow changes potentially require costly and lengthy transmission upgrades

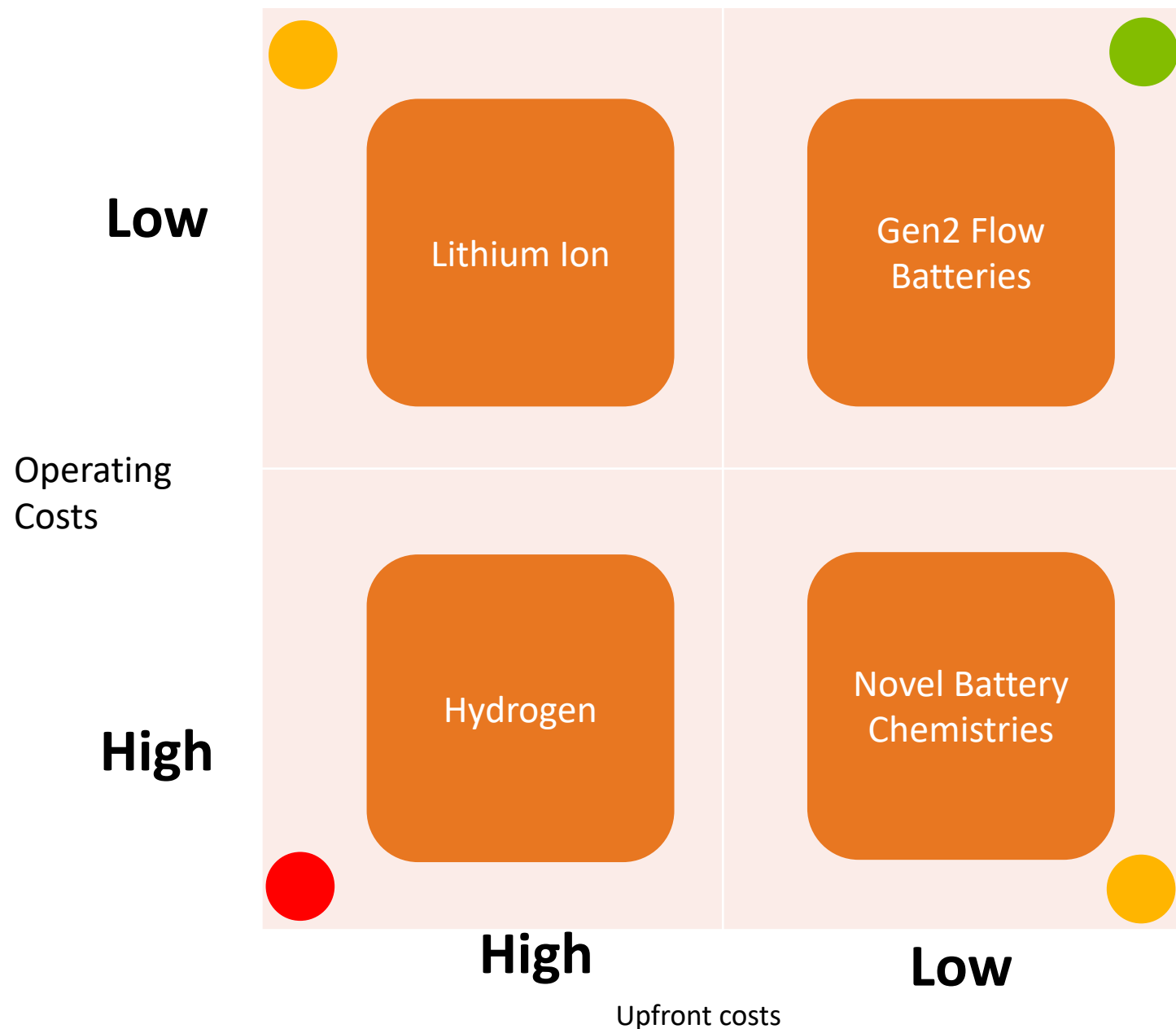


Retirement of conventional, synchronous generators creates need for new sources of grid support services, e.g., reactive power, inertia

LDES is lots  
of things

No winner  
takes all

(only one  
example in each  
box!)





**LDES are a host  
of different  
technologies**

**10% of all  
electricity  
generated  
would be  
stored in LDES  
at some point.**

**Requires  
Long-term  
system  
planning to  
create the right  
investment  
signals**

**Creating the  
market to  
capture LDES  
value and allow  
monetization**



An aerial photograph of a coastline. The water is a vibrant green, transitioning to a darker teal further out. The shoreline is rugged with dark, rocky outcrops and patches of green vegetation. A winding road is visible along the coast. The overall scene is serene and natural.

CLEAN ENERGY FOR A CLEAN WORLD

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