The New Architecture of the Electricity Sector and Batteries

ALPER ÇETİN - Head of Business Development

VESTEL
MOBILITY


VESTEL
30 Million
Device
Production
Capacity
$ 3,8 Billion
Turnover
Export Leader
of Turkey
with $ 2,7
Billion
500+ Brands 900+
Customers
Exporting 160+
Countries
20,000+
Employees
1.300.000 m²
Closed
Production
Area
ZORLU
ENSURING
CONTINUITY
VESTEL
Mobility

Vestel's New Strategic Focus Areas | Vestel has actively started to grow and actively invest in three main areas under mobility & energy solutions

Auto Electronics

- Display Systems
- Domain Controllers
- Elec. Control Units (ECU)
- EV Powertrain

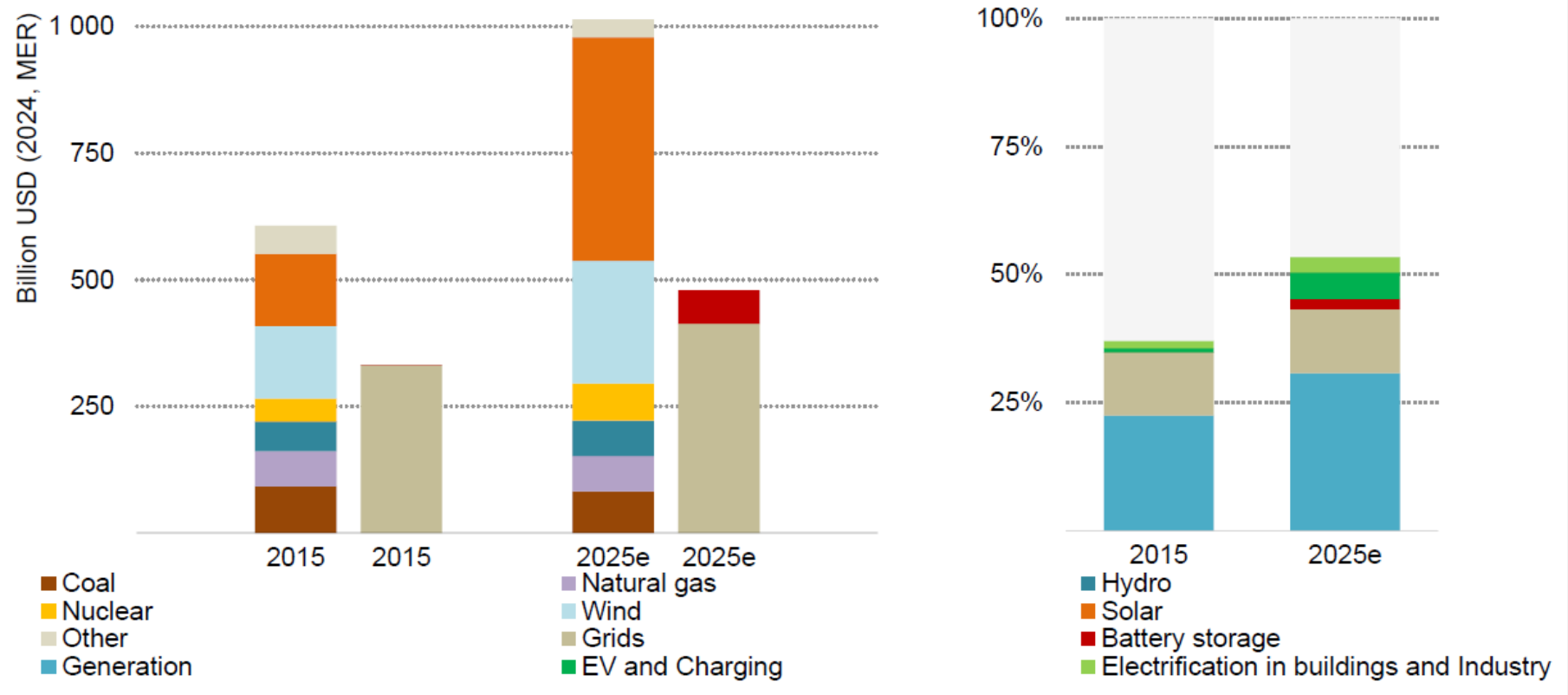
EV Chargers

- AC Chargers
- DC Chargers
- HPC chargers

Battery Solutions

- Energy Storage
- E-Bike
- Telecom
- Consumer Electronics

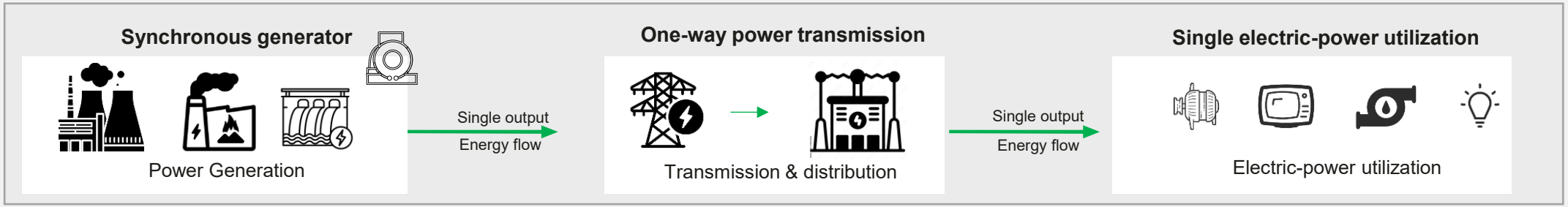
Global Energy Transition| Solar PV & Wind account for 98% of the growth in investment in electricity generation over the past decade. Today, over half all energy investment goes into the power sector and towards the electrification of end-uses.

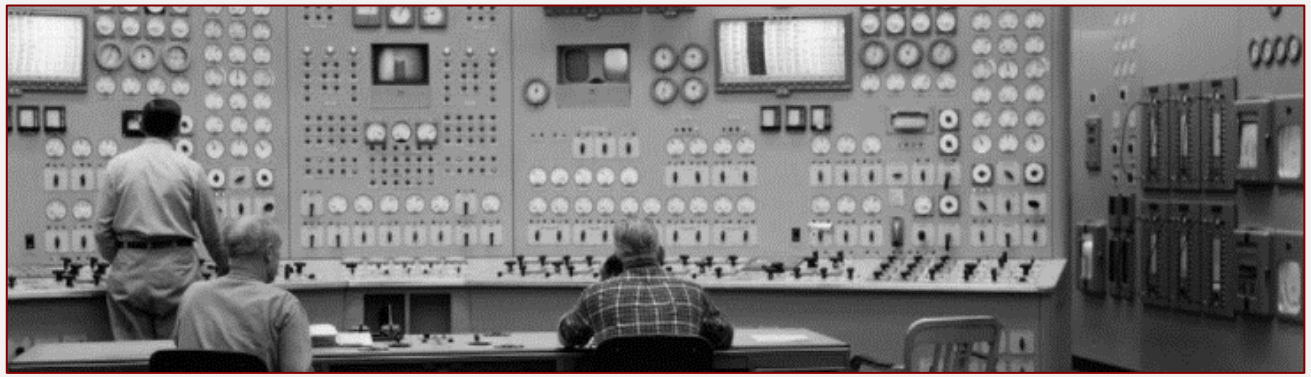


Source: IEA World Energy Investment 2025

Power Systems Transition| How the power grid has been until now ?

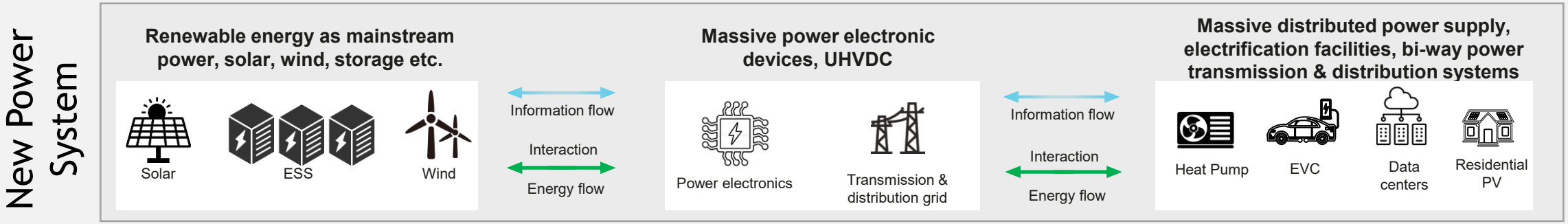
Traditional Power System





- The power flow was unidirectional
- The generators were synchronous, totally grid-friendly (inertia, voltage regulation, power system stabilizers, high power quality, etc.)
- Low amount of data required for managing the grid

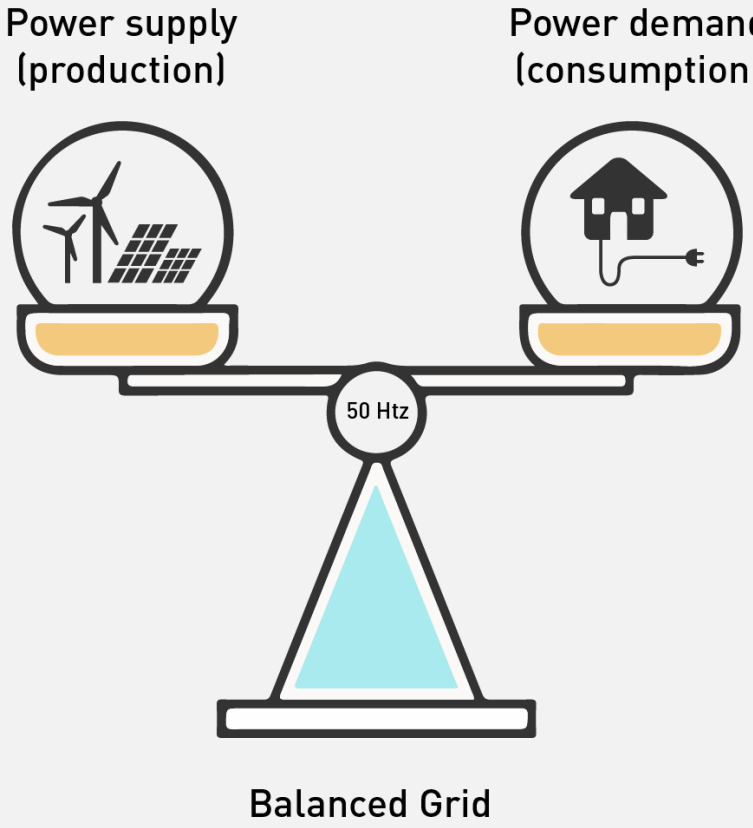
Power Systems Transition | The New Architecture of the power grid



- The power flow now is bidirectional
- The generators are based on power electronics, most of them without inertia, poor voltage regulation, no PSS, low power quality, etc.
- Hight amount of data required for managing the grid

Power Grid Stability Challenges and Weak Power Grid Features|

Grid become ‘weaker’ with renewable penetrations raising

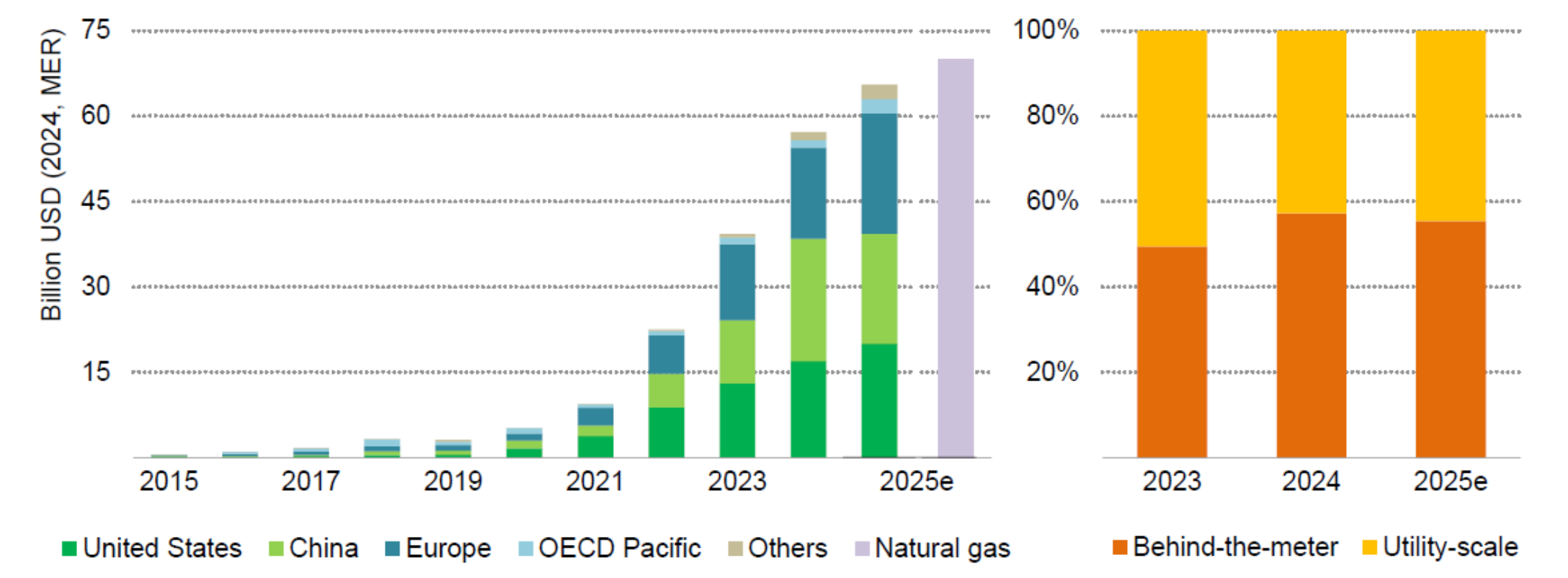


Balanced Grid

- Frequency instability
- Voltage imbalances
- Low system inertia (RoCof)
- Reactive power instability
- Power quality issues
- Market & System Balancing Challenges

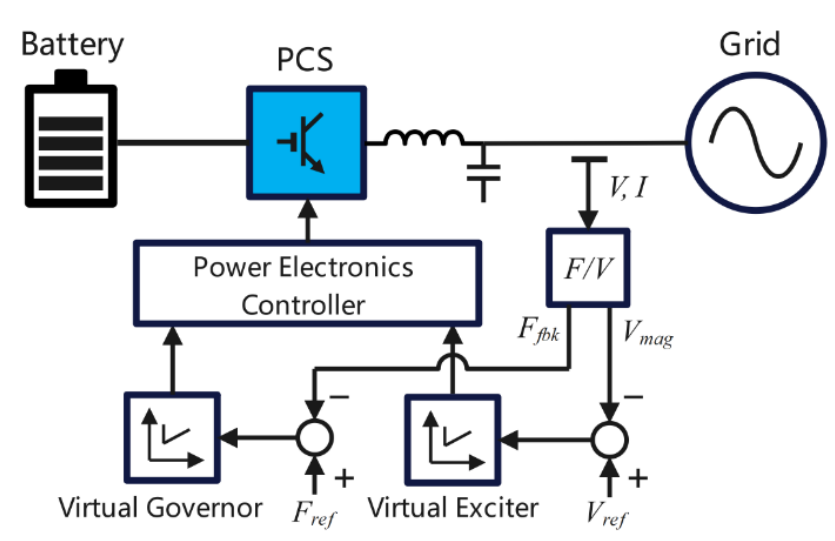
Unbalanced Grid

Role of Batteries| The cost of utility-scale batteries has fallen %70 over the past decade, and global battery storage investment is approaching the level of gas-fired power generation investment

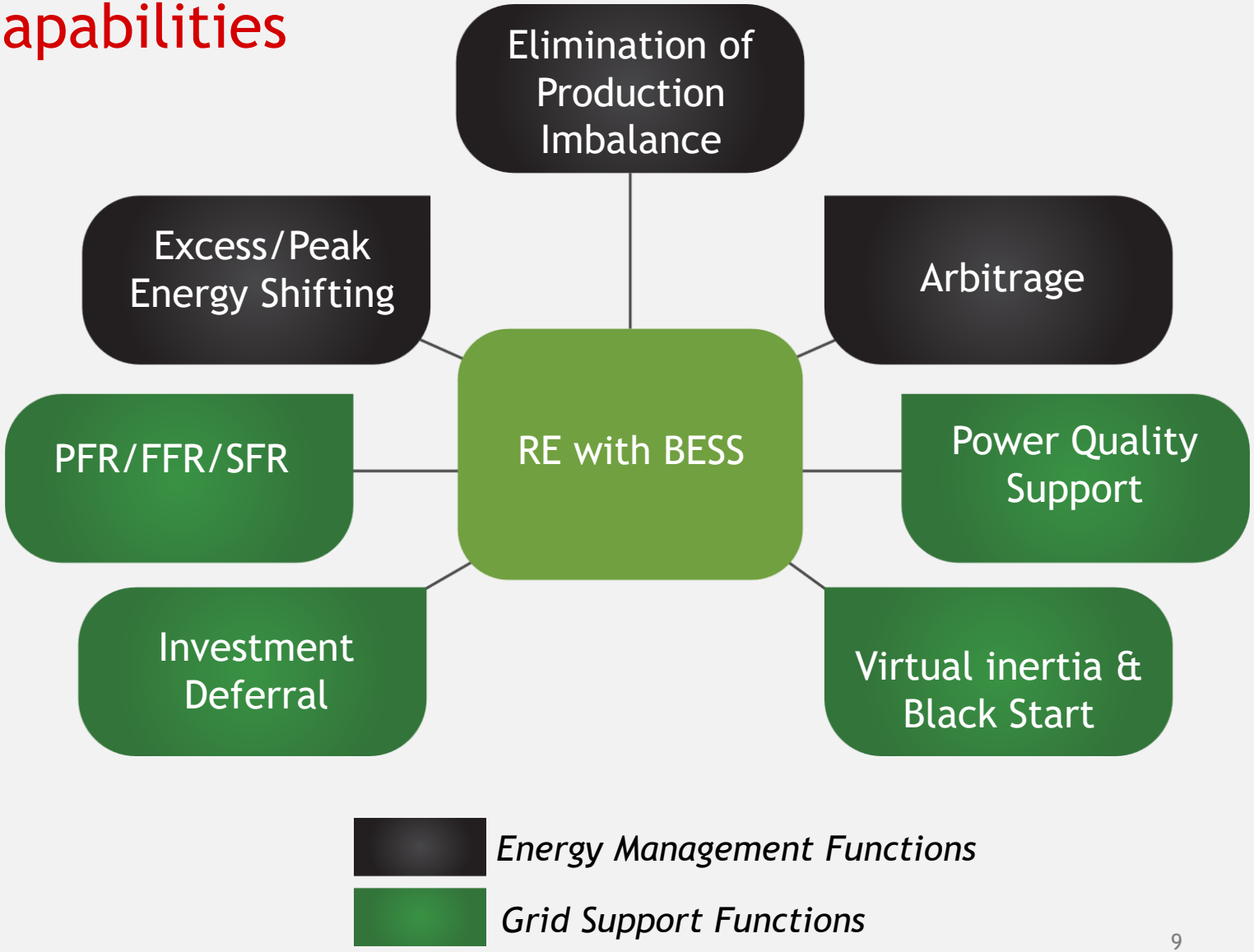


Source: IEA World Energy Investment 2025

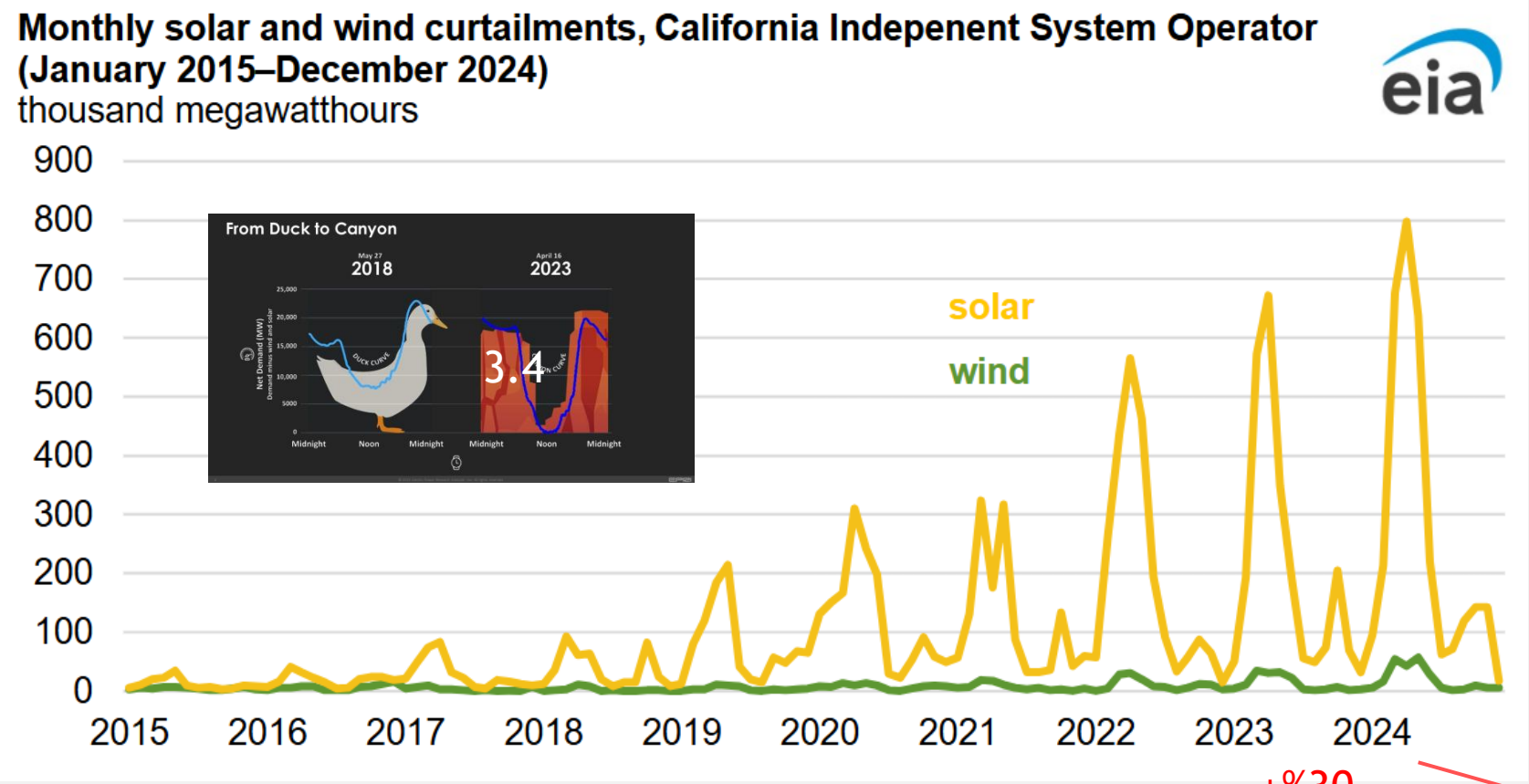
BESS for increasing flexibility on renewable plants | Grid Forming as Technology Leap and its capabilities



- 100% active power and 100% reactive power output Grid forming BESS
- Delivering large amount of short-circuit current and fast response to grid disturbances



Why Energy Storage?| From Duck to Canyon Curve: CAISO Example

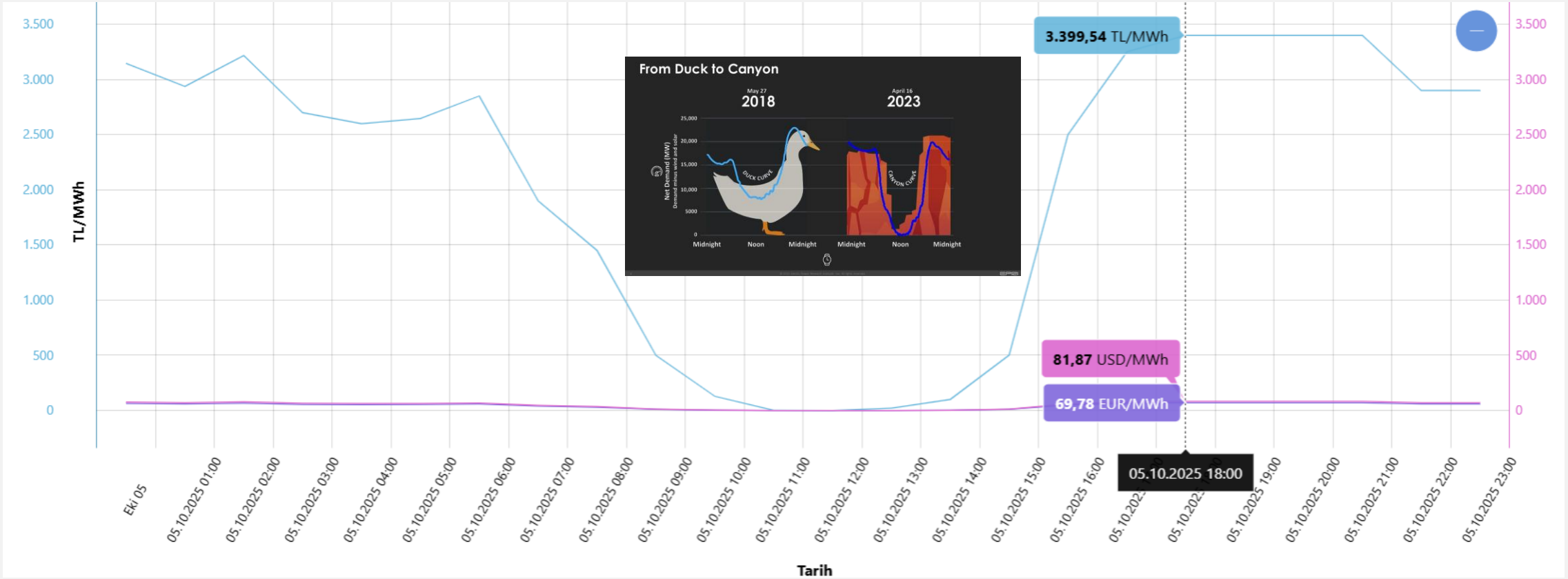


Source: California Independent System Operator (CAISO)

+%30

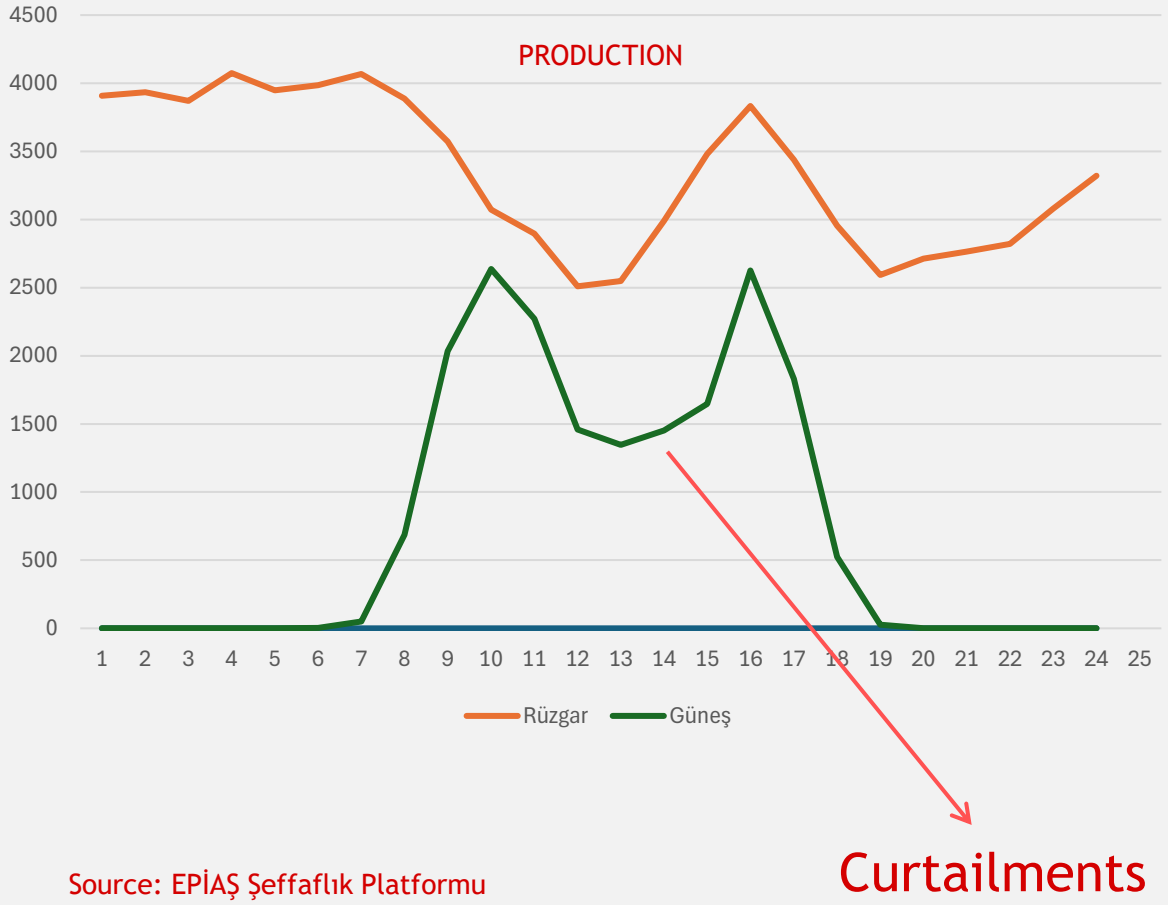
3.4 TWh curtailment

Regional Situation | Türkiye Outlook and Market Response



Source: EPİAŞ Şeffaflık Platformu (GÖP-PTF)

Regional Situation | Türkiye Outlook and Market Response



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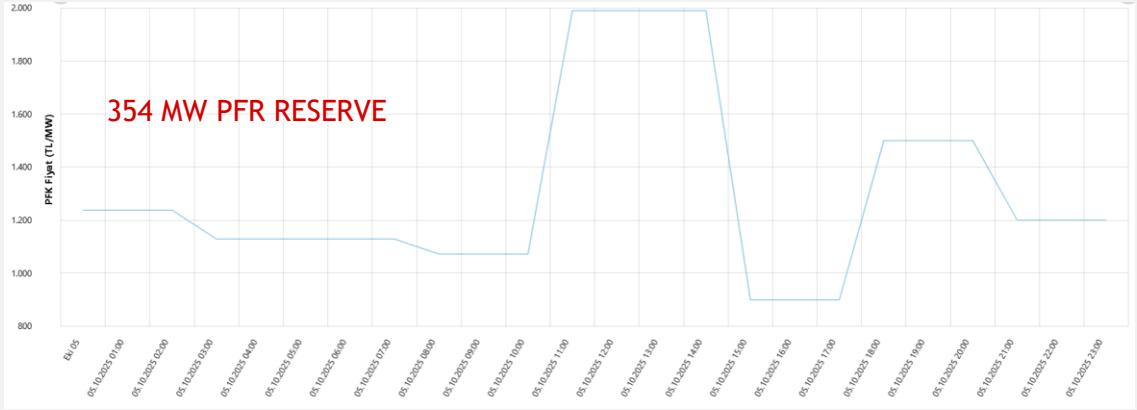
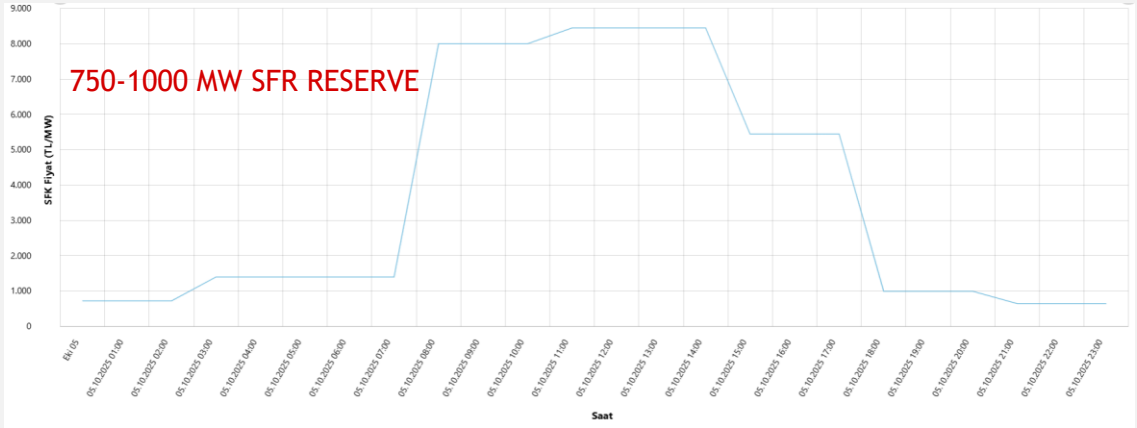
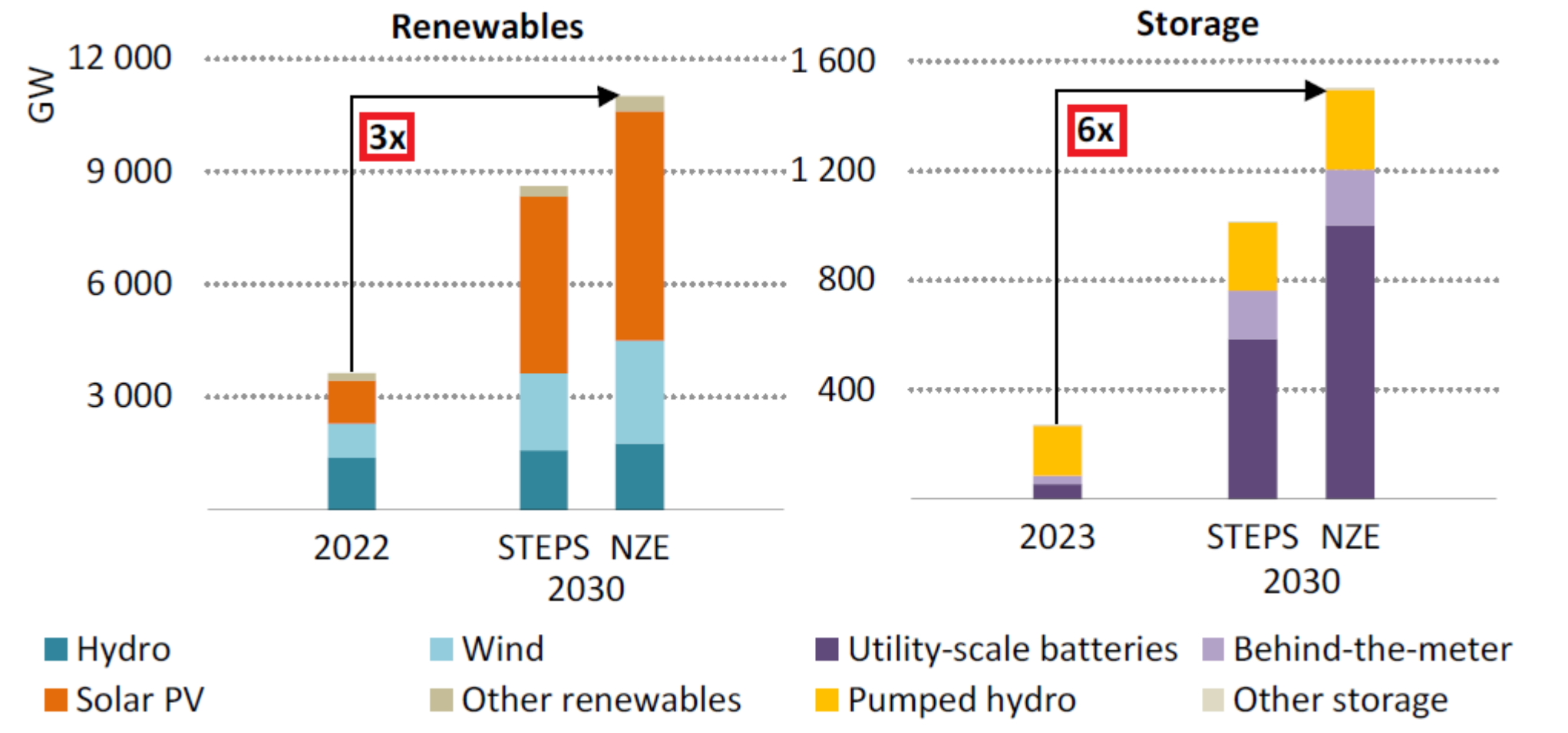


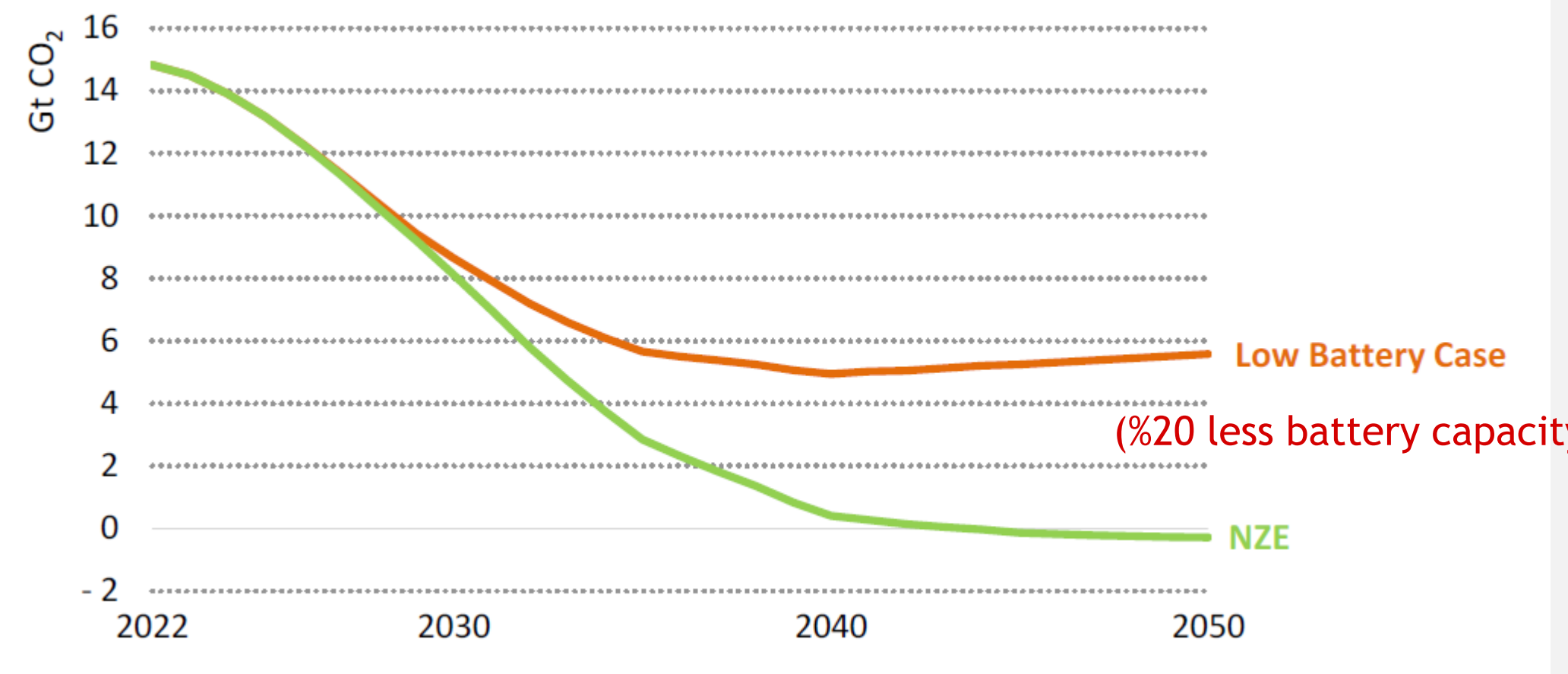


COP28 commitments | Energy storage capacity, led by battery storage, increases sixfold by 2030 in the NZE Scenario and supports the tripling of renewables capacity goal



Source: IEA Batteries and Secure Energy Transitions

Energy storage – the backbone of Net Zero| Global power sector CO2 emissions in the NZE Scenario and Low Battery Case, 2022-2050



Source: IEA Batteries and Secure Energy Transitions

These might look like shipping boxes in the desert, but they are actually the key to unlocking a

‘’clean energy revolution”

Source: Financial Times

Thank you
Q&A

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