TeasiMed

TOWARDS AN EFFICIENT, ADEQUATE, SUSTAINABLE AND INTERCONNECTED MEDITERRANEAN POWER SYSTEM

Closing Conference

A project by

Med-TSO

MEDITERRANEAN TRANSMISSION SYSTEM OPERATORS

Co-funded by the European Union

INTEGRATION OF THE MEDITERRANEAN POWER SYSTEMS:

A KEY DRIVER FOR ENERGY TRANSITION

Regional Interconnection for the Energy Transition

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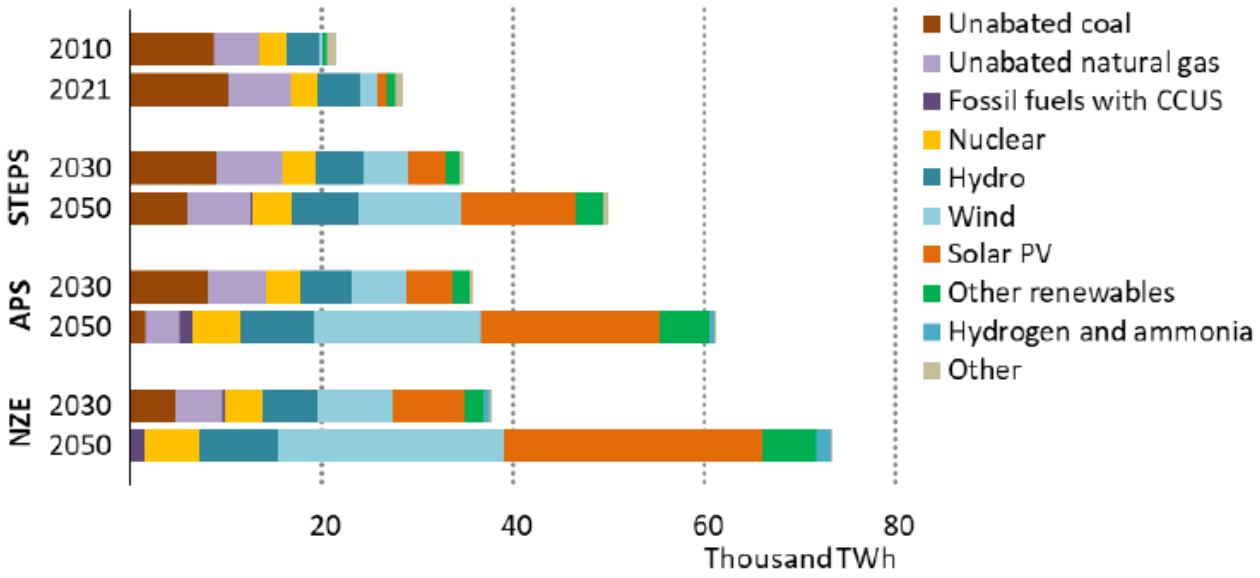
80% of the new generation capacity to come from renewables

Global electricity generation by source and scenario, 2010-2050



50% global electricity supplied by renewables by 2030, 80% by 2050

IEA (2022) World Energy Outlook

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What does this high penetration of renewables, and the energy transition mean for our power systems?

Power systems are more and more stressed!

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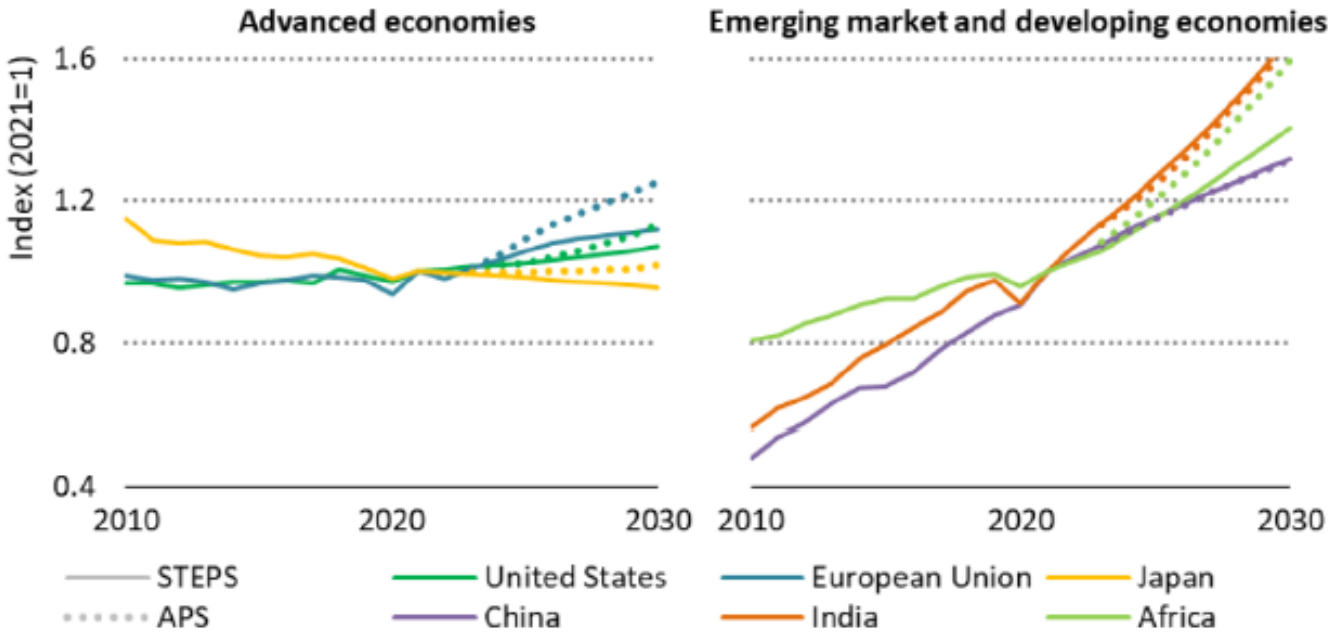
Electrification: demand magnitude and variability increase

Electricity demand in key regions by scenario, 2010-2030



60% demand increase in African countries, more than 20% increase in Europe by 2030.

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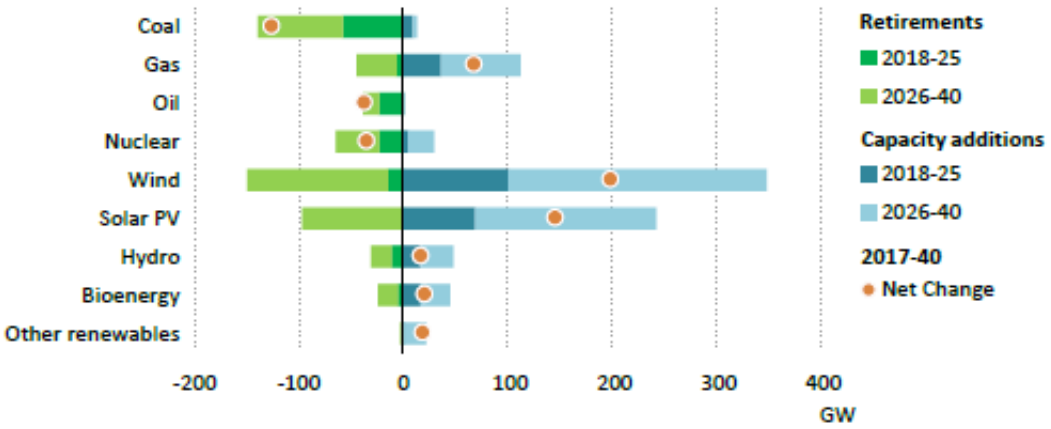
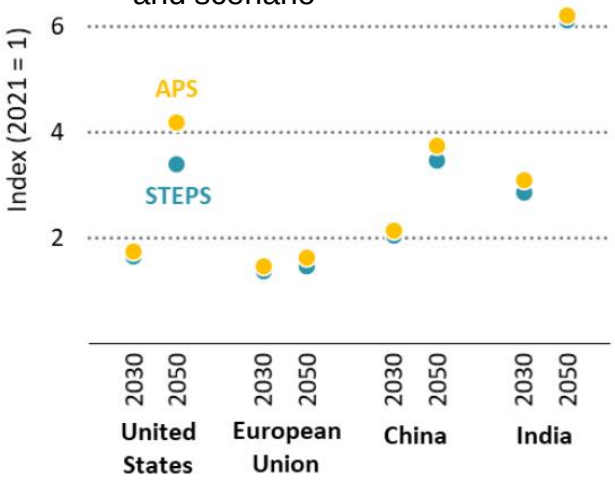
RE integration & fossil phaseout

Power generation capacity retirements and additions in the European Union, 2018-2040



IEA (2018) World Energy Outlook

Flexibility needs by region and scenario



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supply variability increase and grid services decrease

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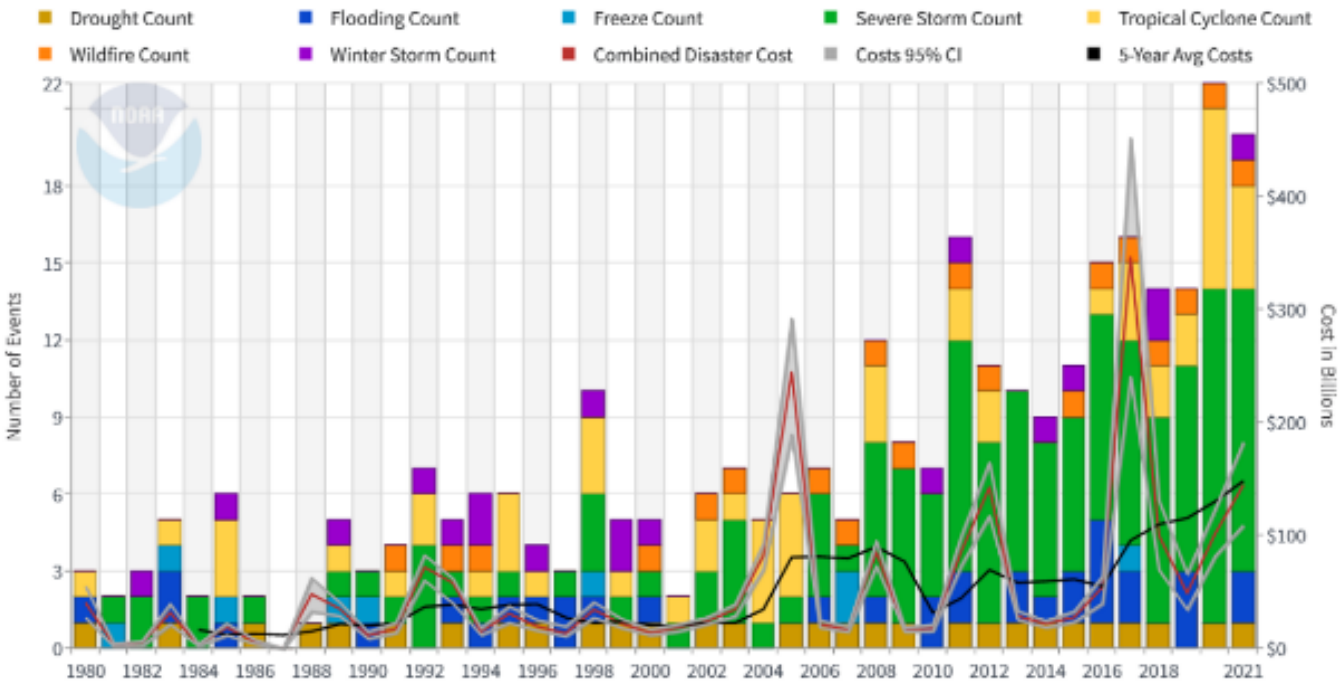
Climate change and aging infrastructure

United States Billion-Dollar disaster events 1980-2021



More impacts from outages

NOAA (2021)

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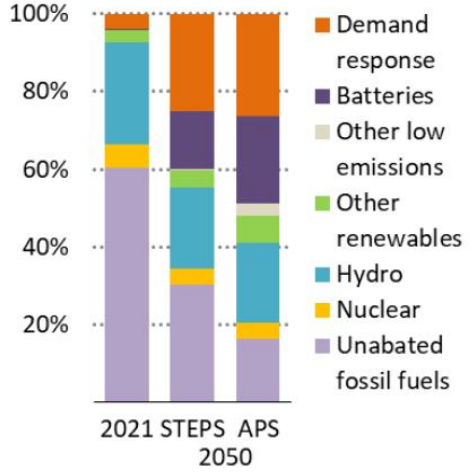
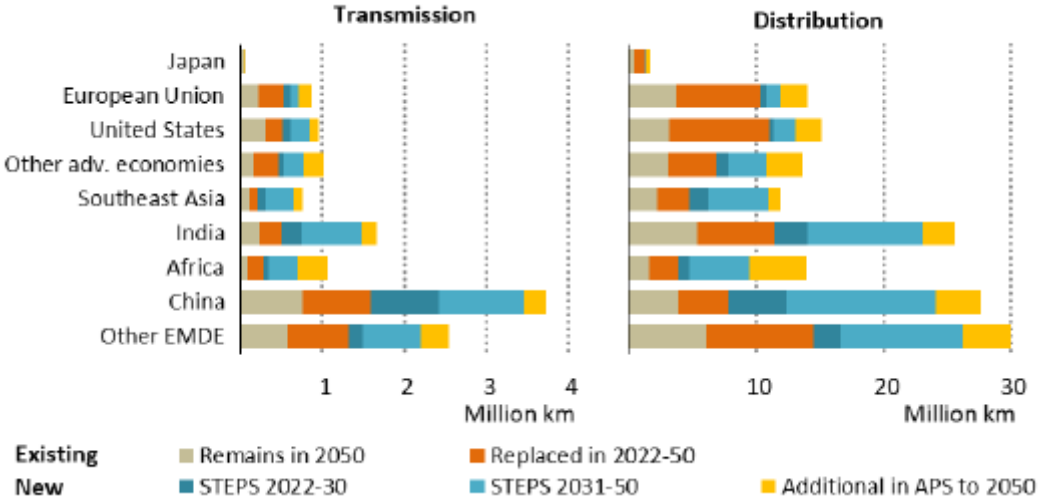
Grids are needed to facilitate flexibility

Flexibility supply by region and scenario



Grid development by type, region and scenario, 2022-2050



Stronger grids is part of the solution, together with supply and demand side future proofing

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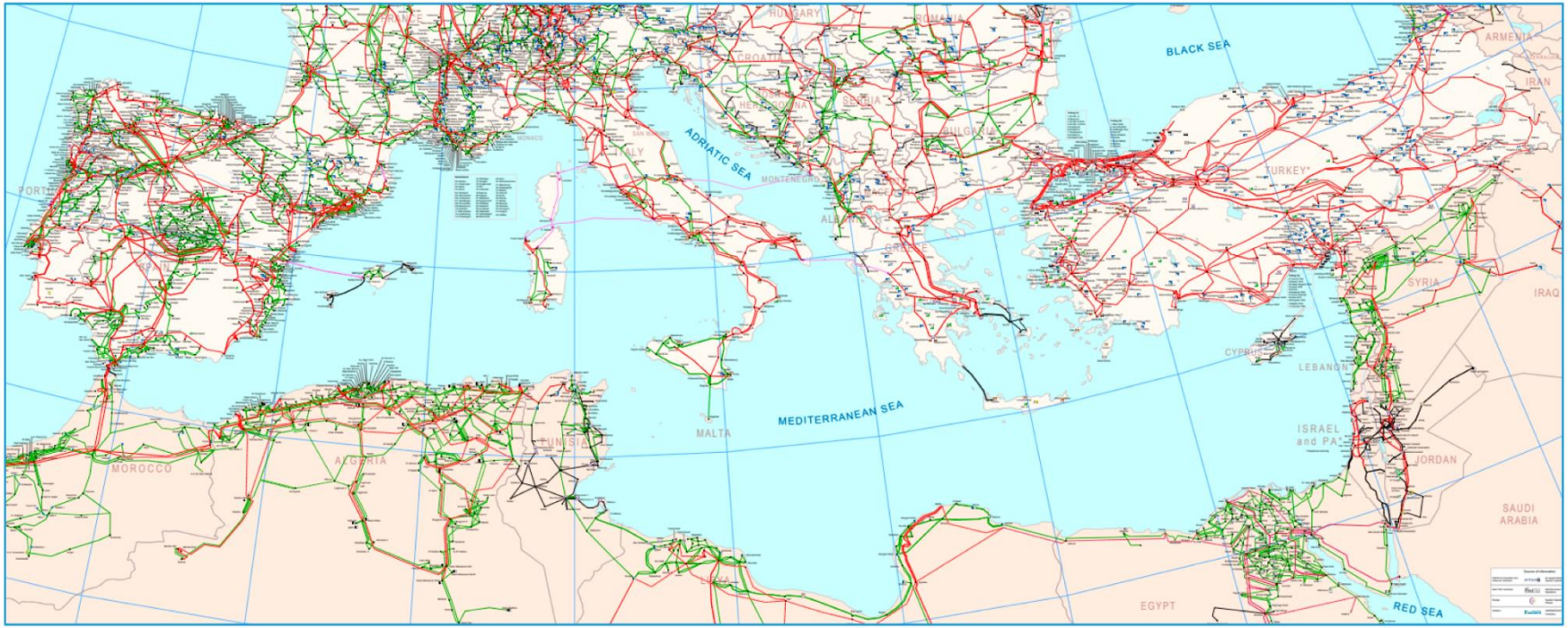
Benefit of regional interconnection: wider access to cheapest production

Regional interconnection is a useful tool to accelerate a secure and efficient transition to clean electricity



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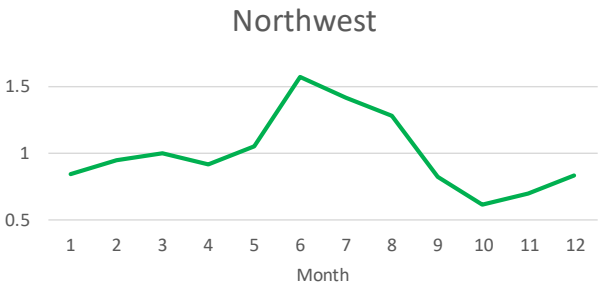
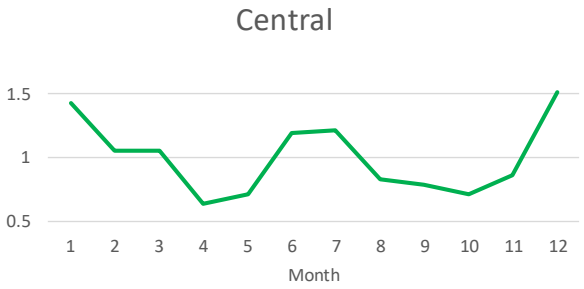
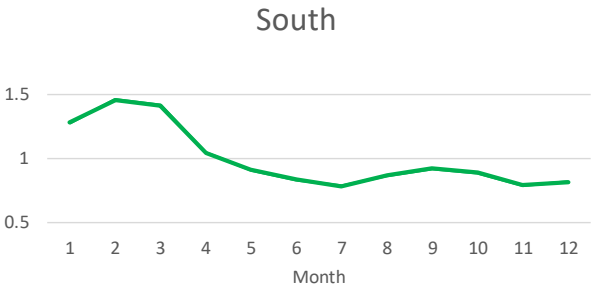
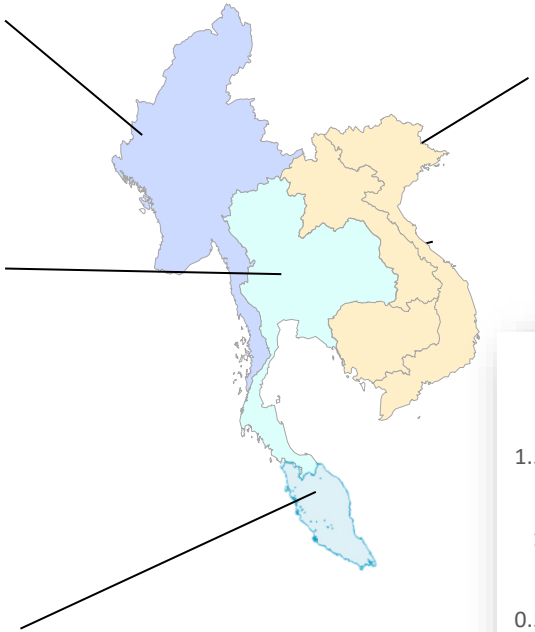
Benefit of regional interconnection: variability smoothing

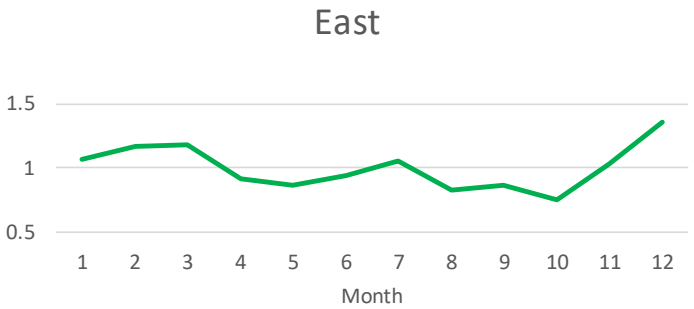
VRE generation per month

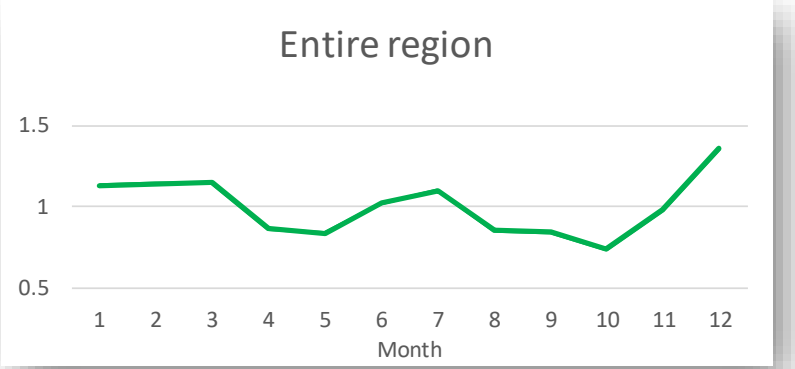








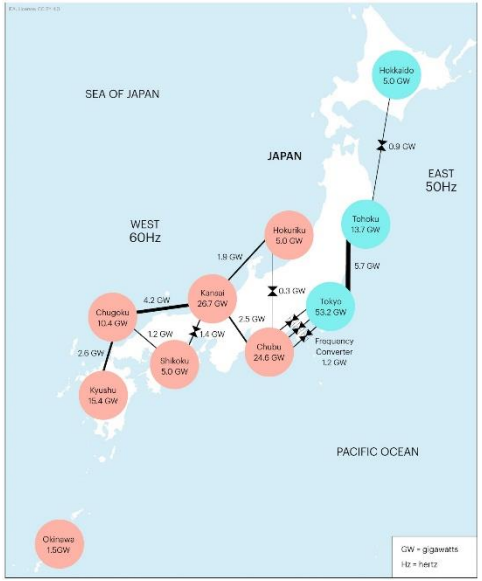


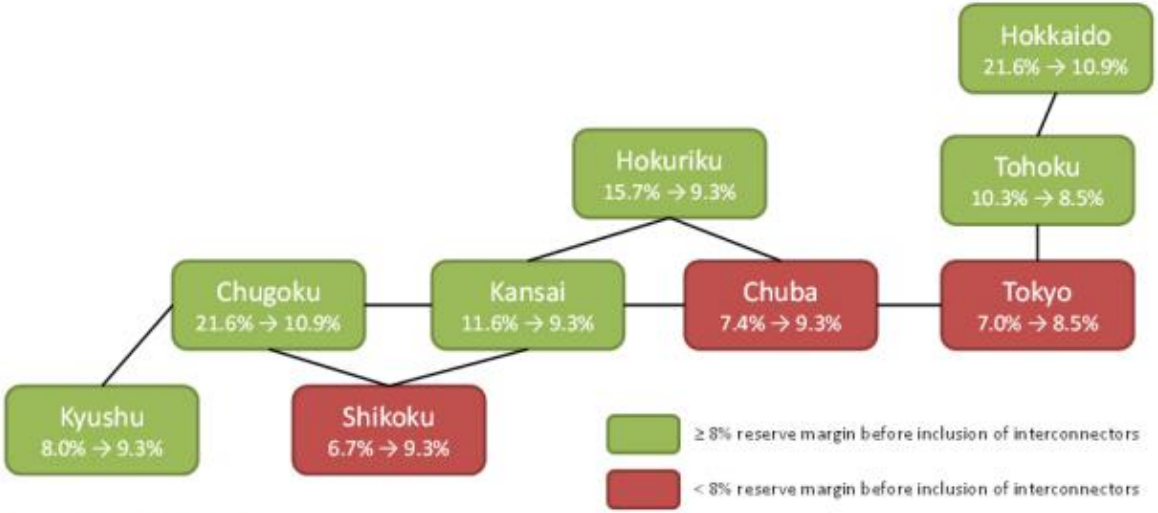


Note: VRE generations are calculated based on the generation capacities in the 5th ASEAN Energy Outlook

Benefit of regional interconnection: flexibility sharing

Reserve margin in Japan by EPCO with and without interconnectors (2019 fiscal year)





Note: Excludes Okinawa area.
Source: OCCTO (2018).

Without interconnectors, three out of ten EPCOs would be unable to meet their minimum reserve margin requirement.

Adequacy (security) and balancing reserves (flexibility) sharing

IEA (2019) Integrating Power Systems across Borders

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THANK YOU!

TEASIMED Closing Conference
Brussels, 15 march 2023

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