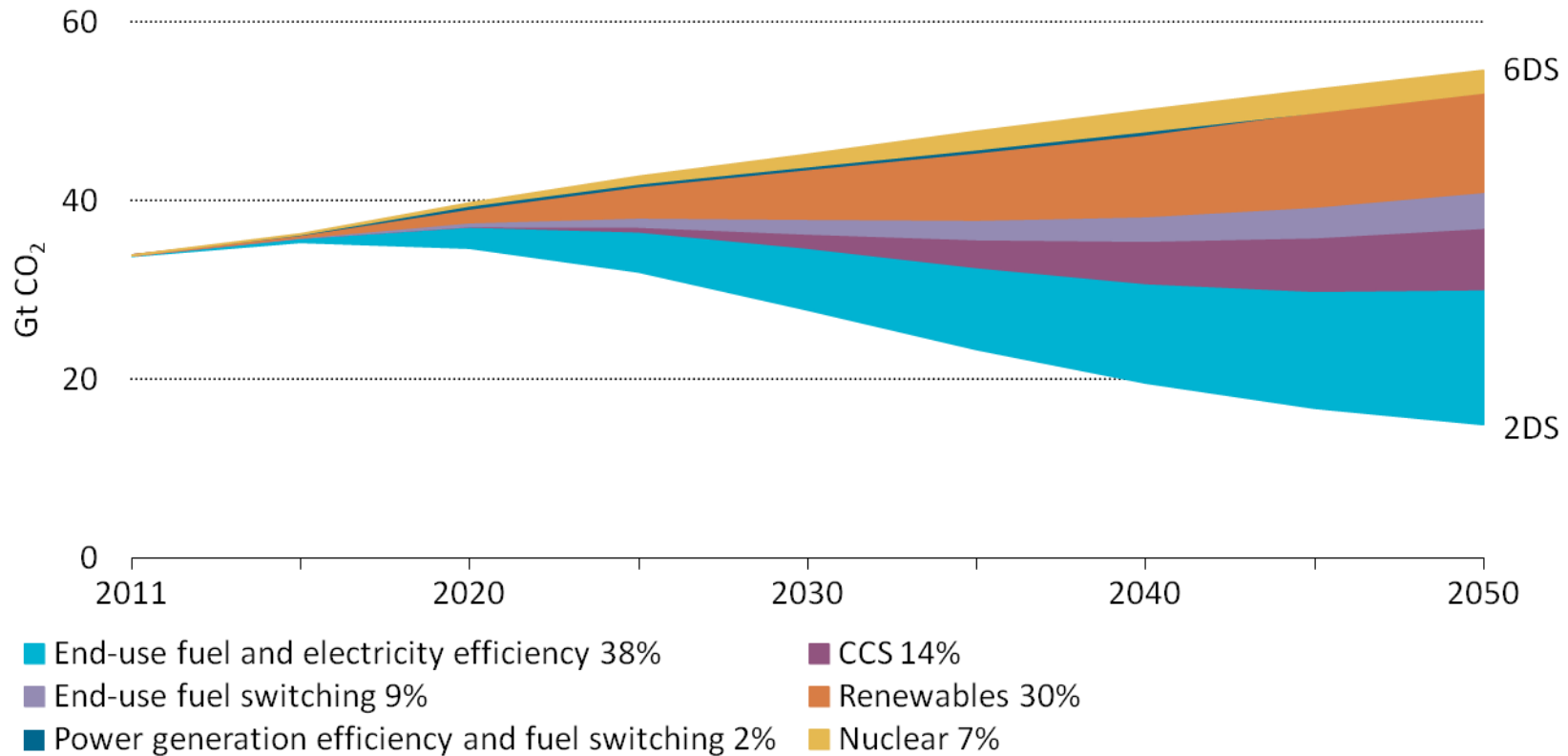


Energy Technology Perspectives 2014

Energy Technology Perspectives 2014: Harnessing Electricity's Potential

A transformation is needed...

ETP
2014

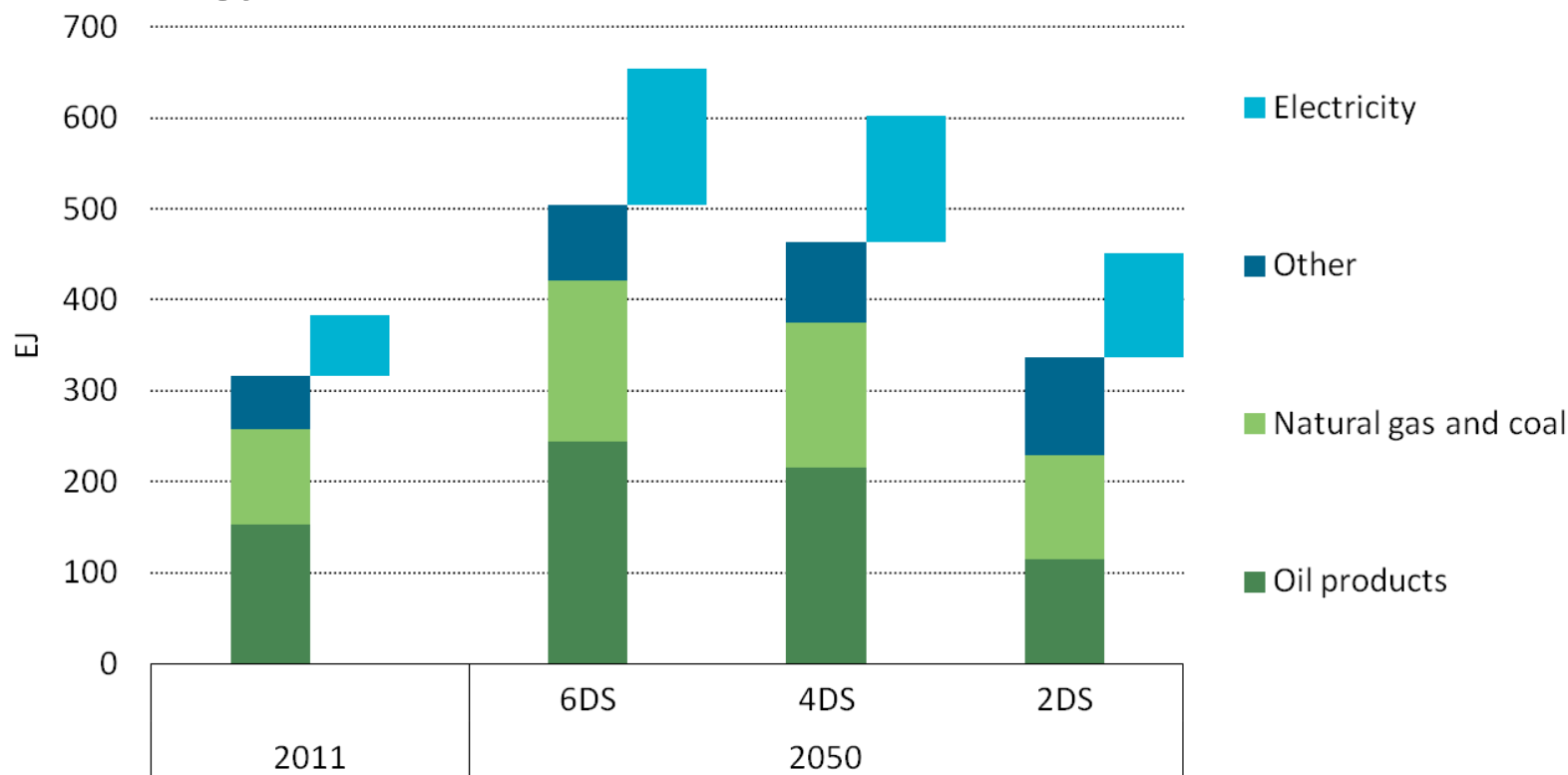


..and we to have the tools to develop a strategy and be proactive.

Harnessing Electricity's Potential

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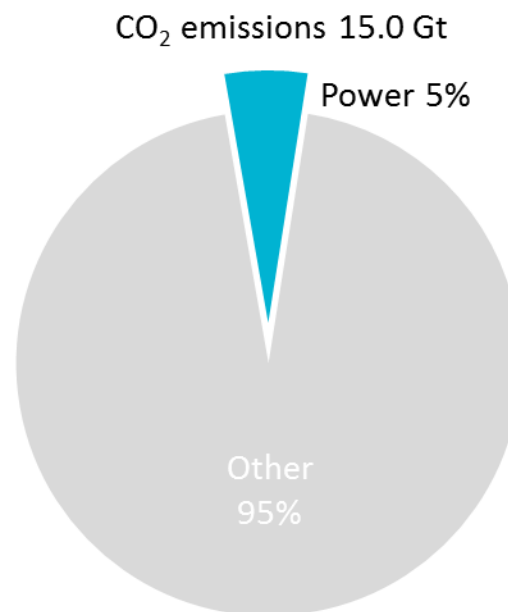
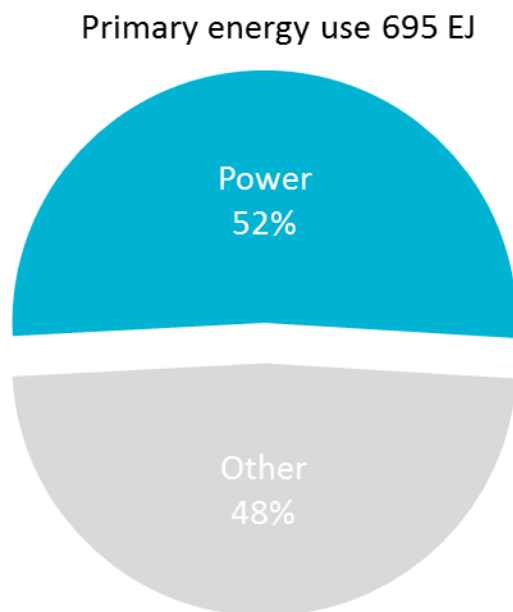
Global energy demand



*Increasing electricity consumption and share of overall energy usage—for **ALL** forward looking scenarios*

Electricity dominates the energy system

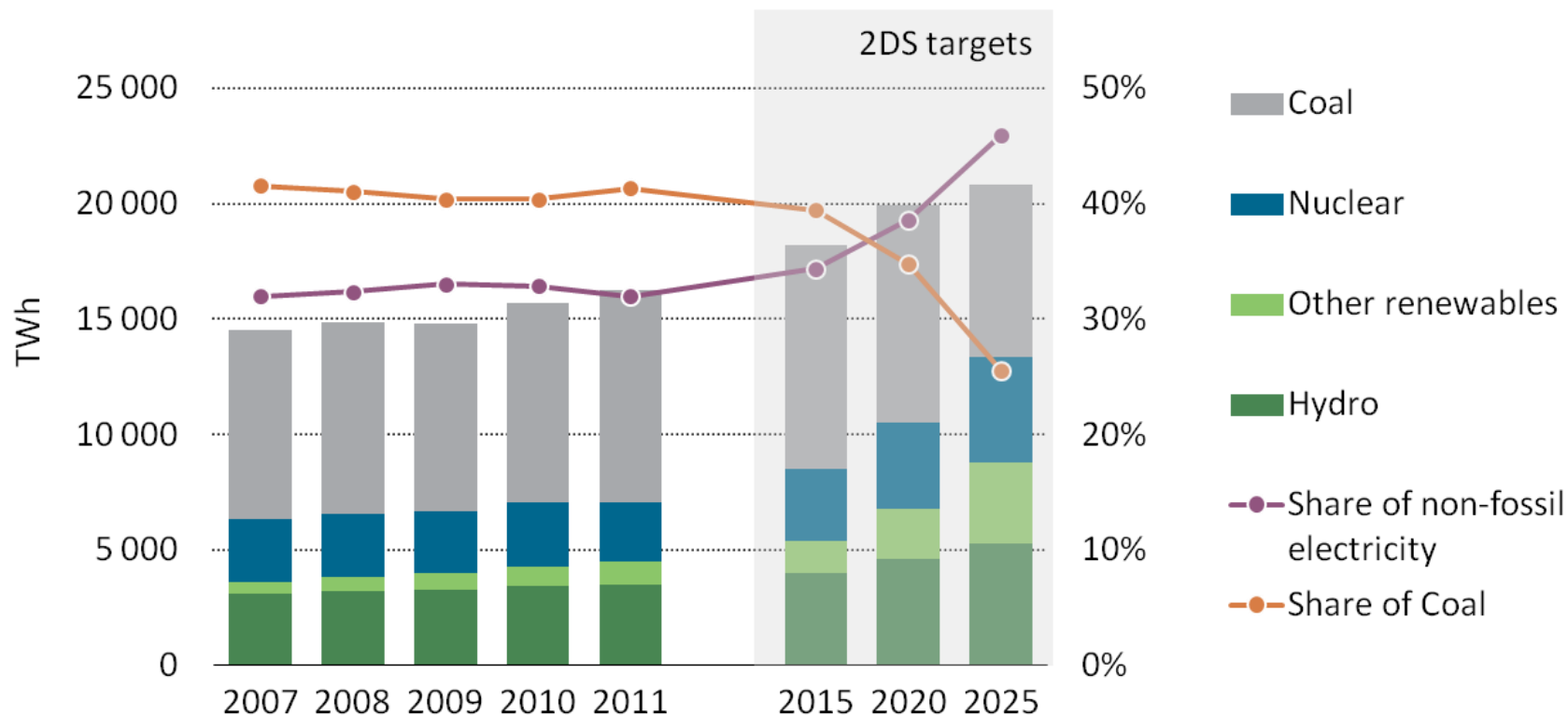
2050 2DS



The 2DS pathway disconnects primary energy used in generation from emissions

Going in the wrong direction globally

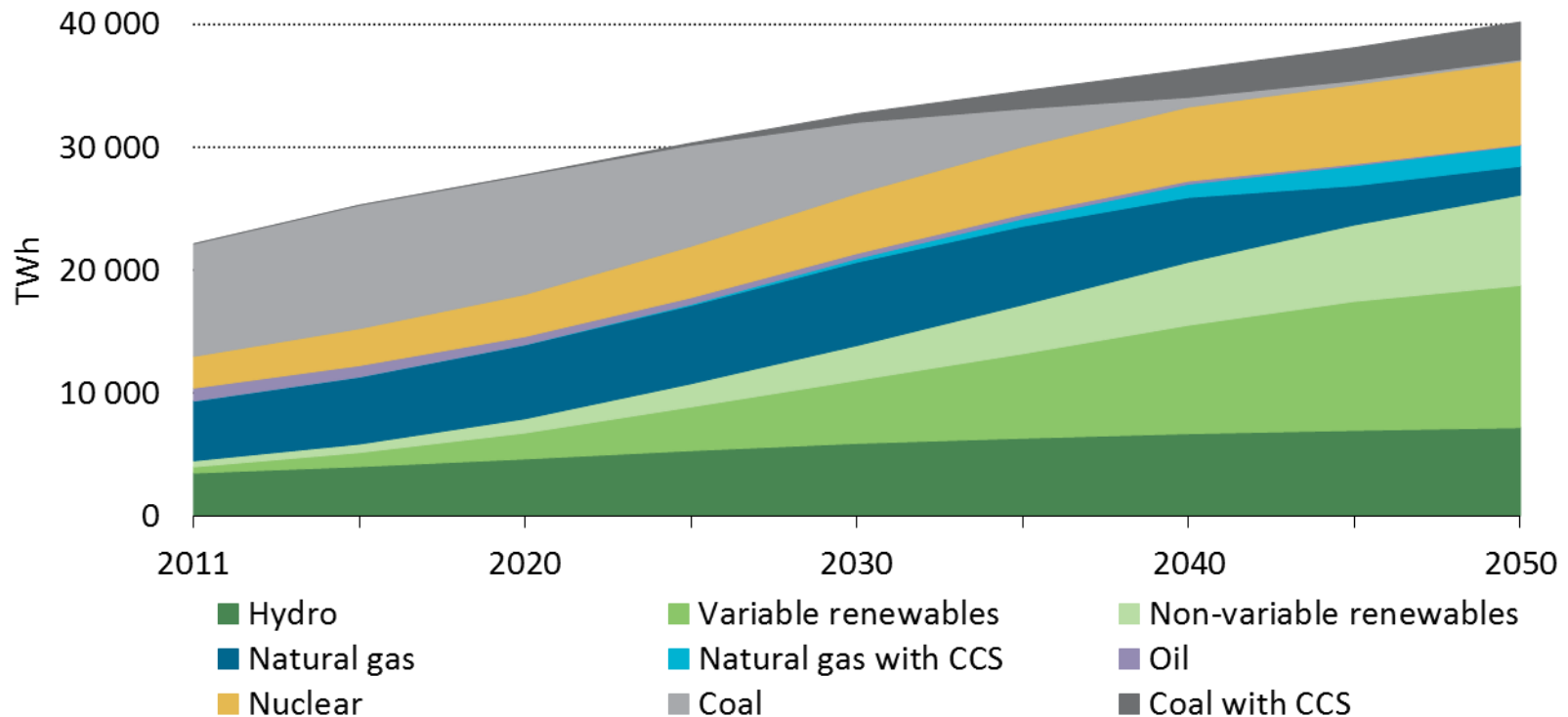
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Unabated coal use in electricity generation is incompatible with 2DS objectives

Electricity Generation: a share reversal

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■ Generation today:

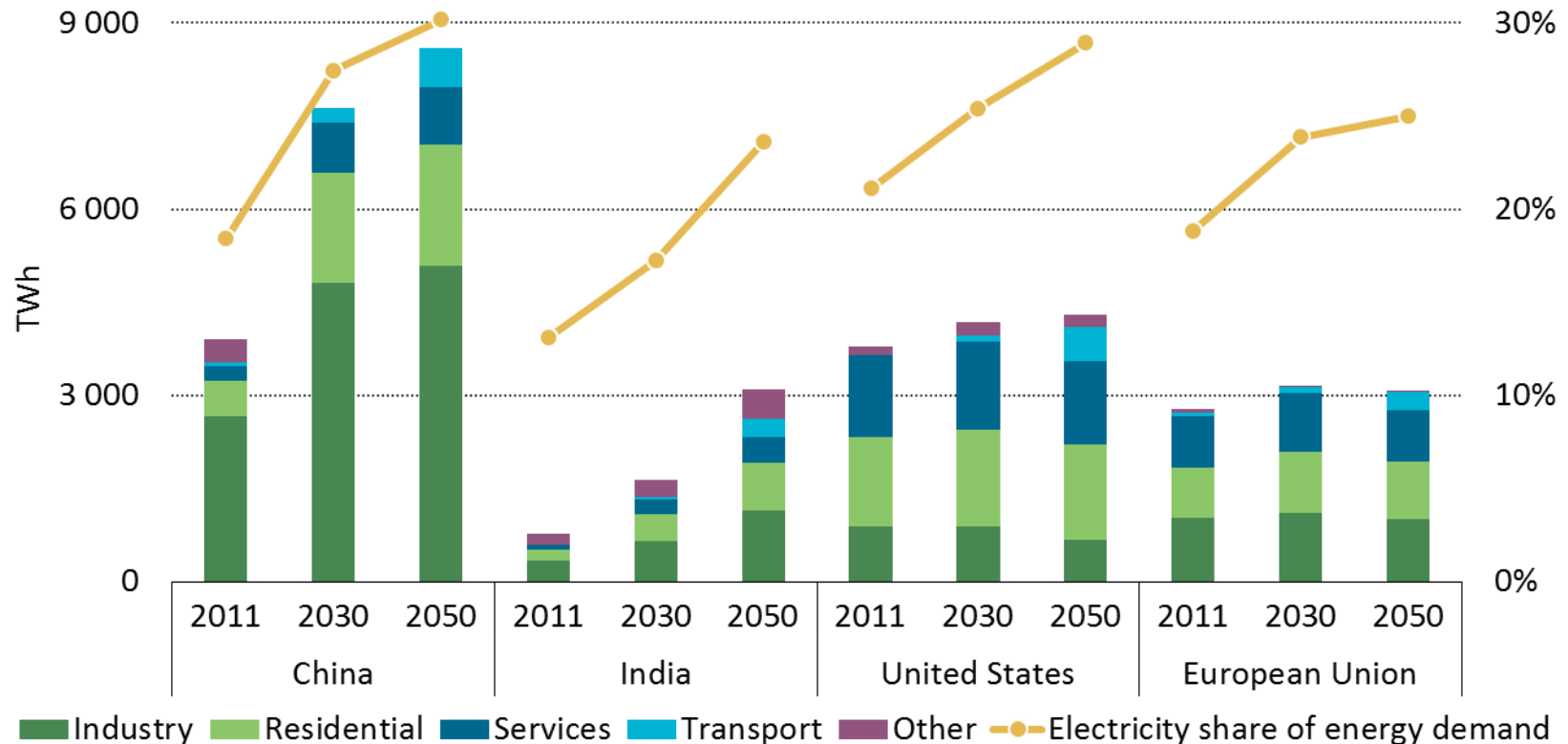
- Fossil fuels: 68%
- Renewables: 20%

■ Generation 2DS 2050:

- Renewables: 65%
- Fossil fuels: 20%

Understanding the regional context in the 2DS

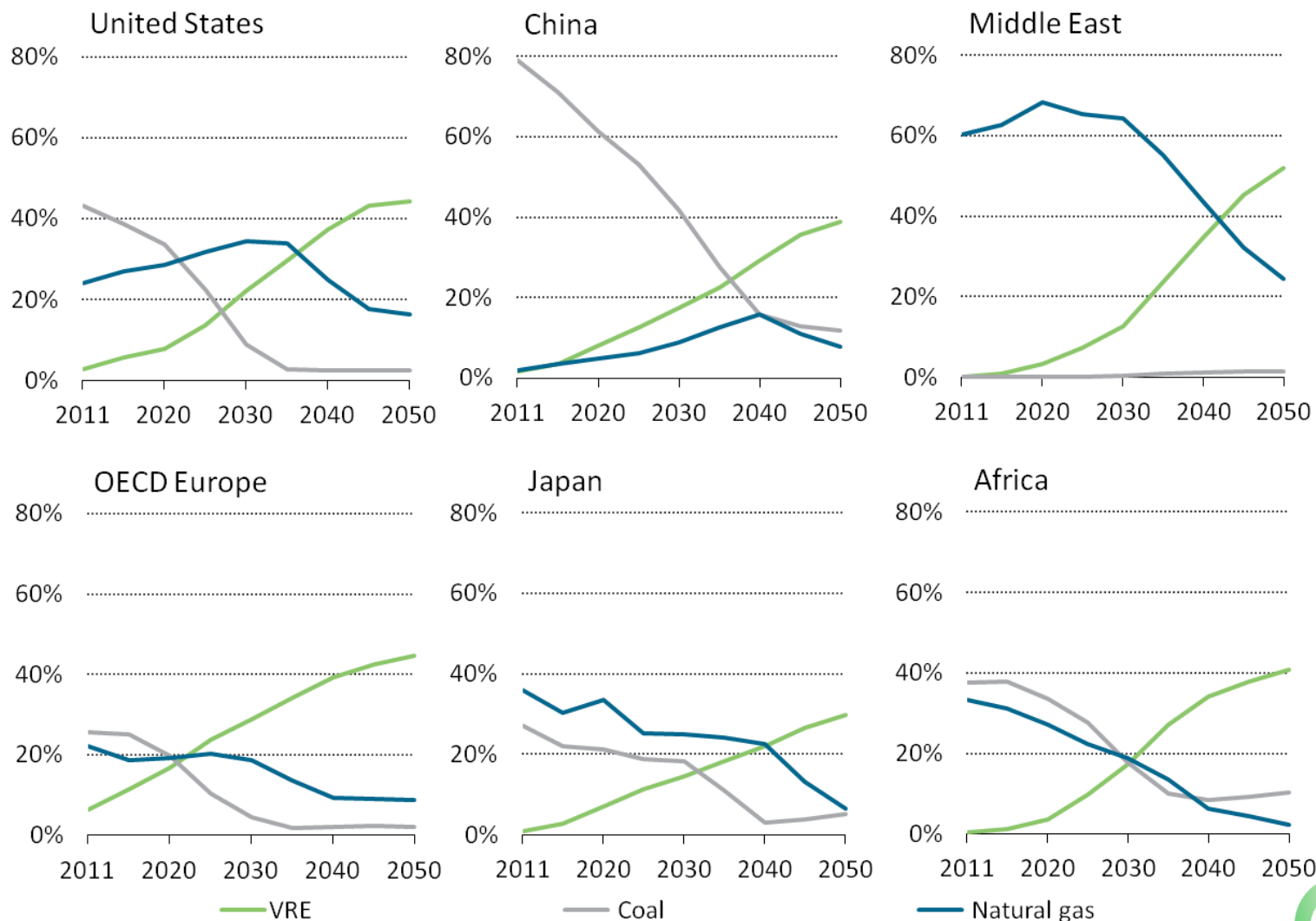
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Differences in growth of *electricity* demand and sectoral distribution require targeted systems development plans. All regions show high growth in VRE deployment

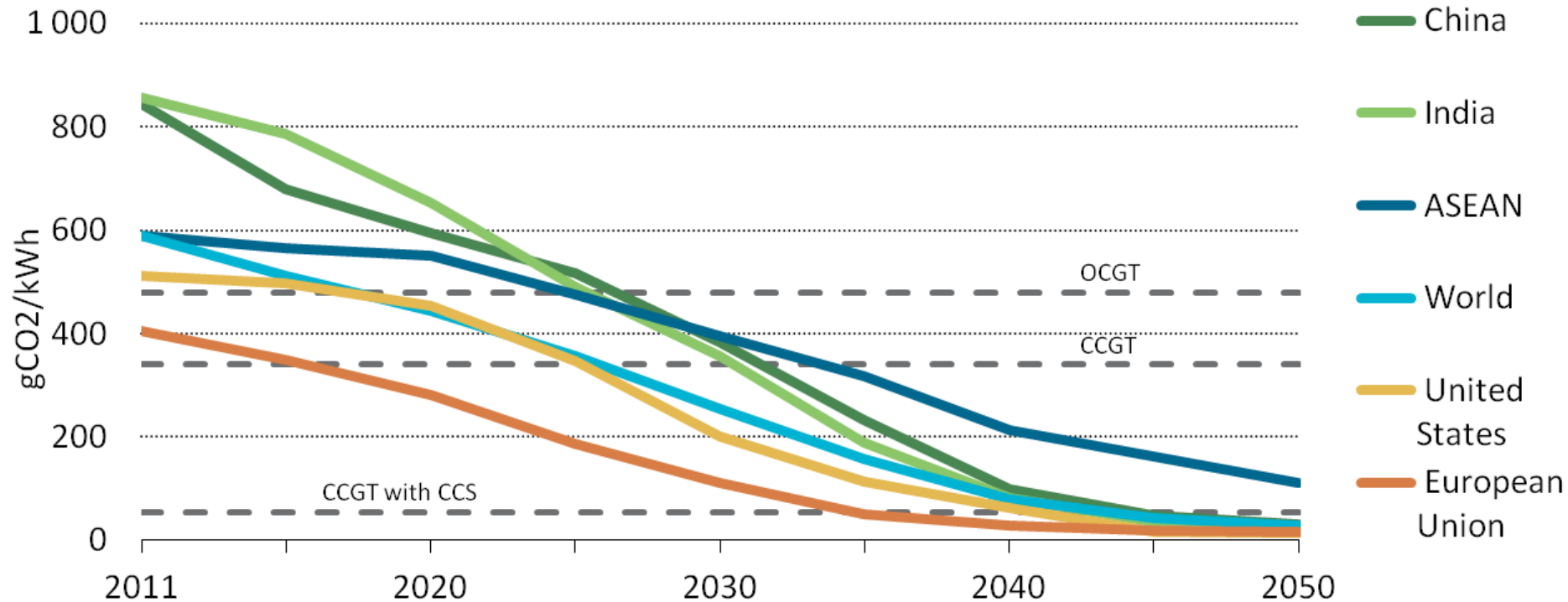
Evolution of generation in 2DS

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Gas-fired generation technology carbon intensity compared to the 2DS

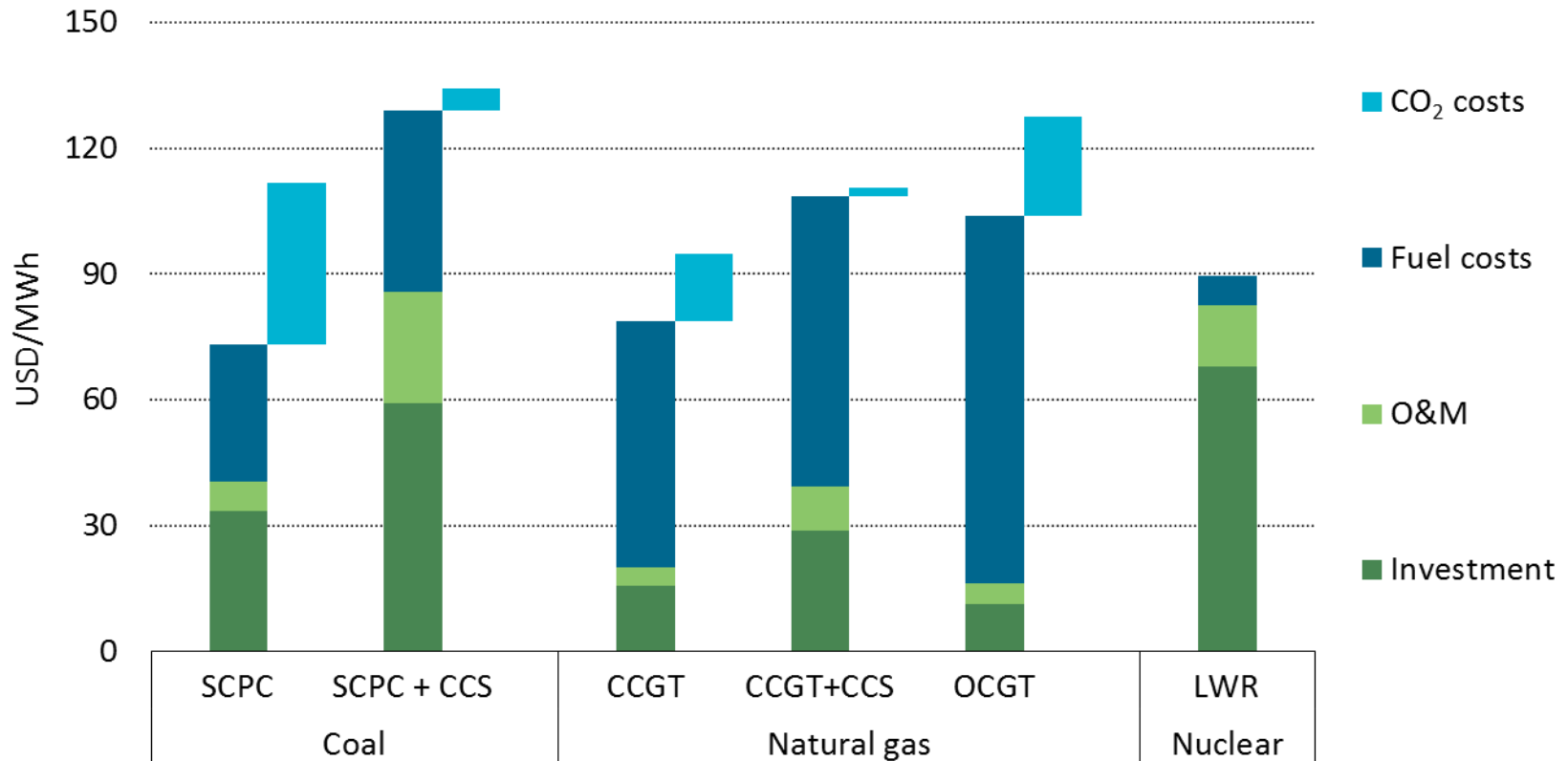
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Without CCS, gas-fired generation is transitional technology – not a long-term low-carbon solution.

Without CCS natural gas power generation is not carbon free

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CCS for natural gas power generation is less expensive than CCS for coal.

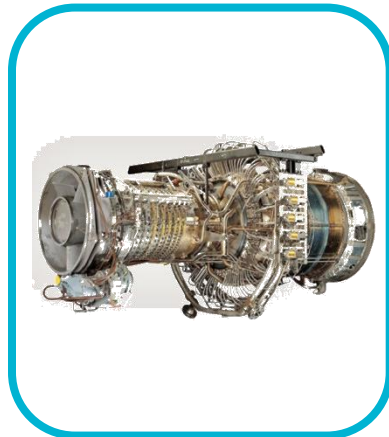
We have the flexible resources

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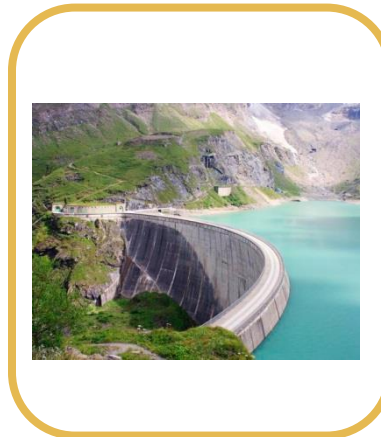
Four sources of flexibility ...



**Grid
infrastructure**



**Dispatchable
generation**



Storage

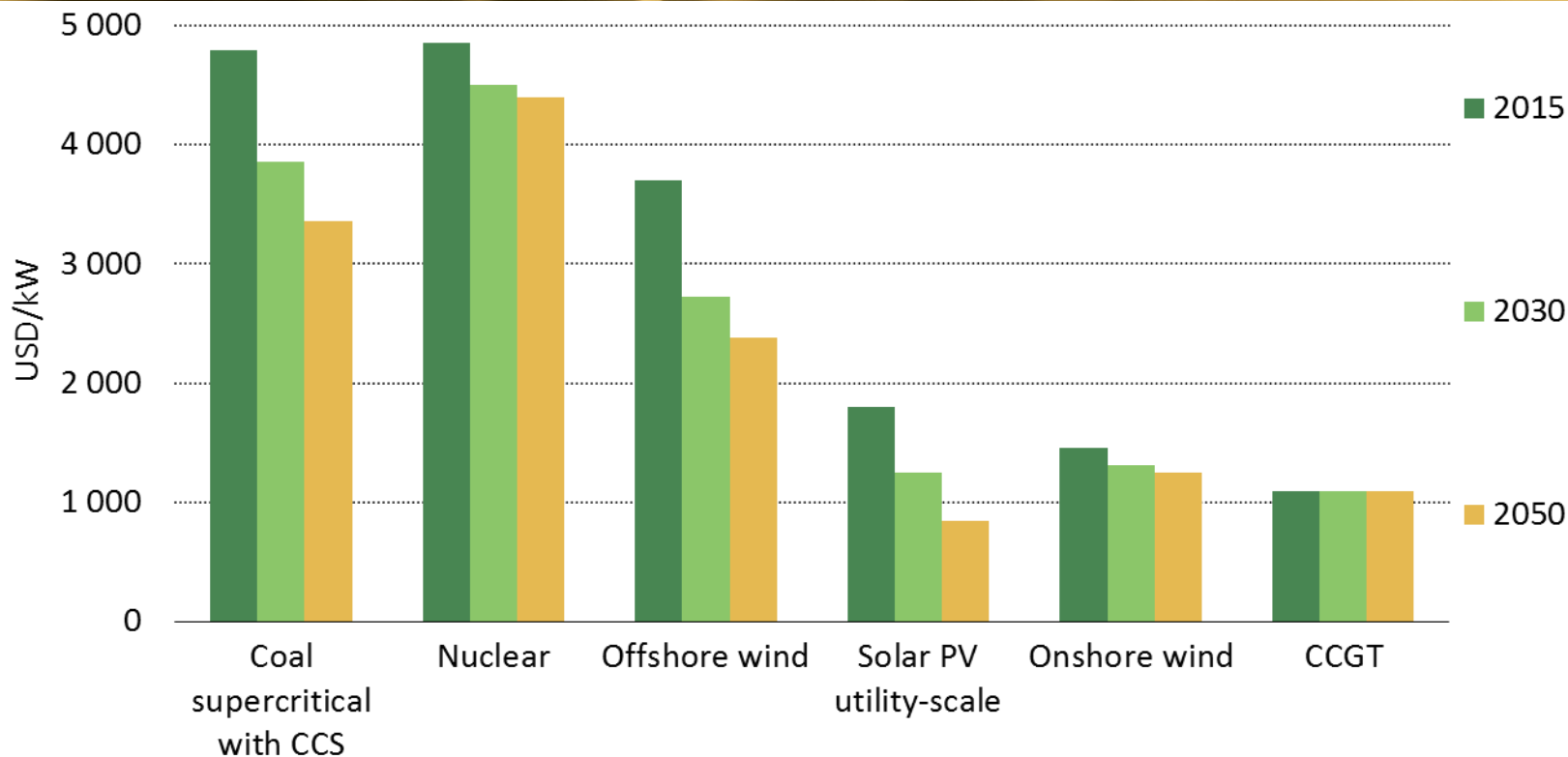


**Demand side
integration**

No one flexible resource meets all the needs.

Financing low-carbon generation

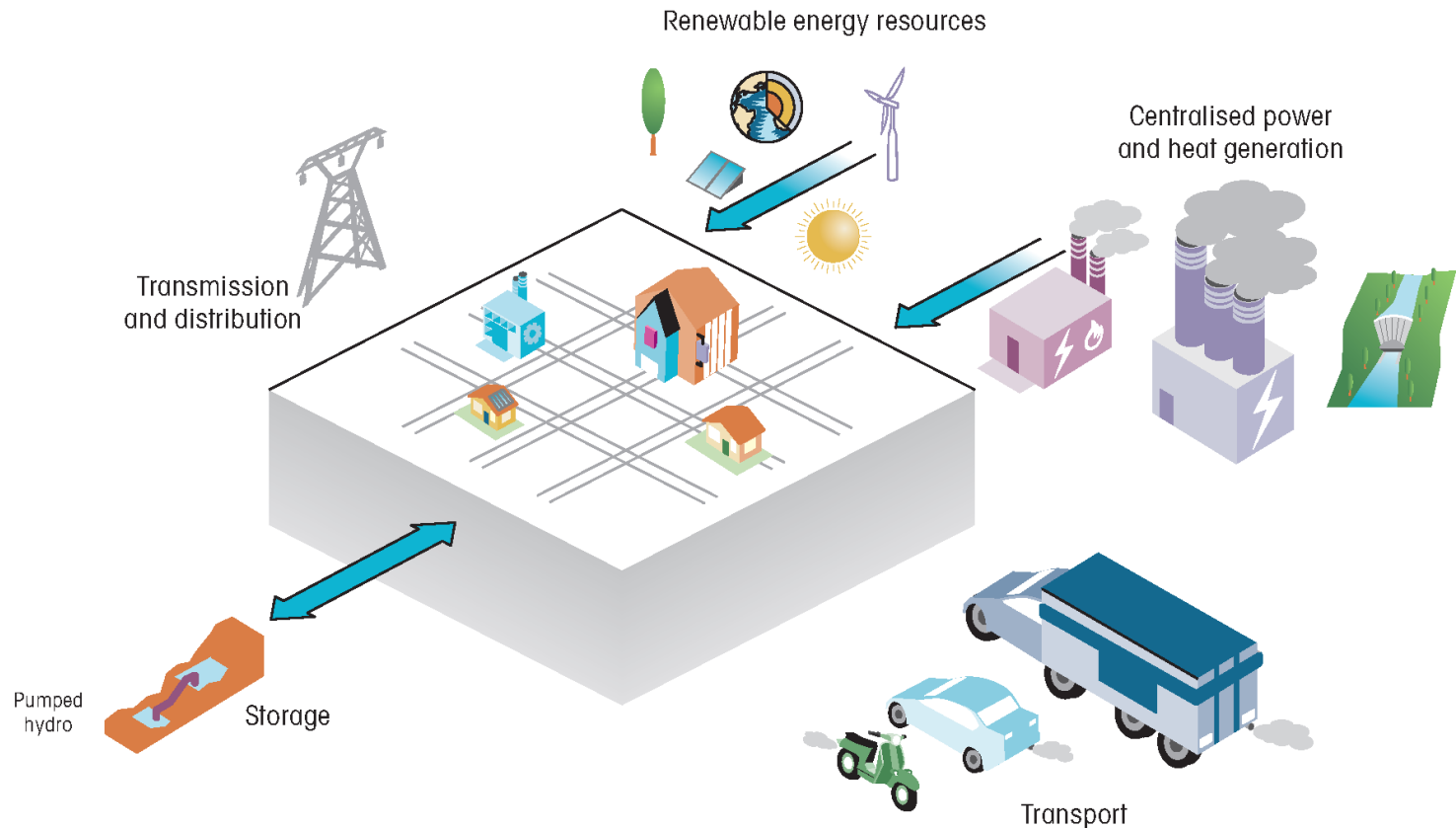
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The upfront capital costs of low-carbon technologies are higher than gas fired generation – increasing the importance of financing

Systems thinking and integration

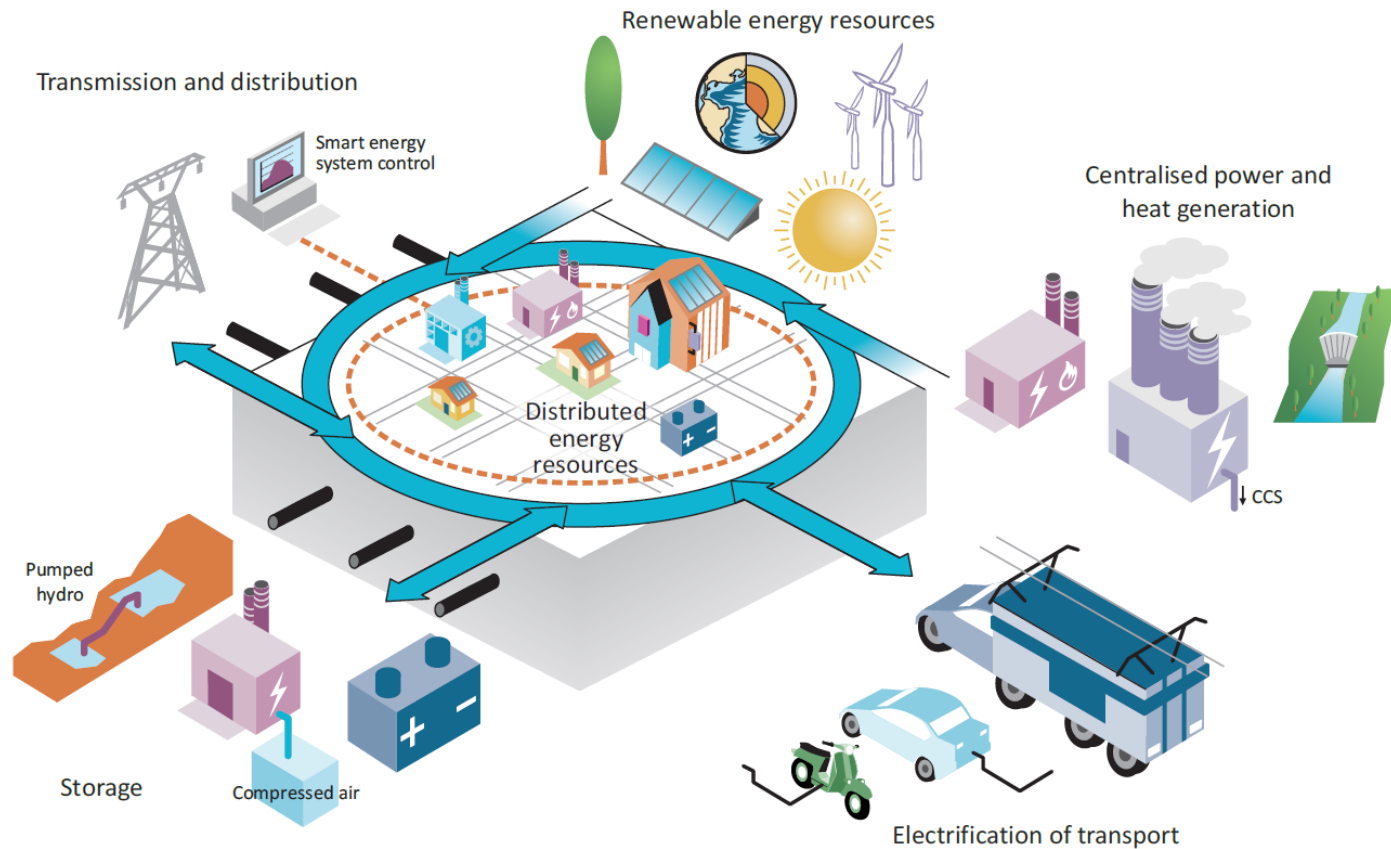
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Today's energy system paradigm is based on a unidirectional energy delivery philosophy

Systems thinking and integration

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A sustainable electricity system is a smarter, multidirectional and integrated energy system that requires long-term planning for services delivery

Thank you

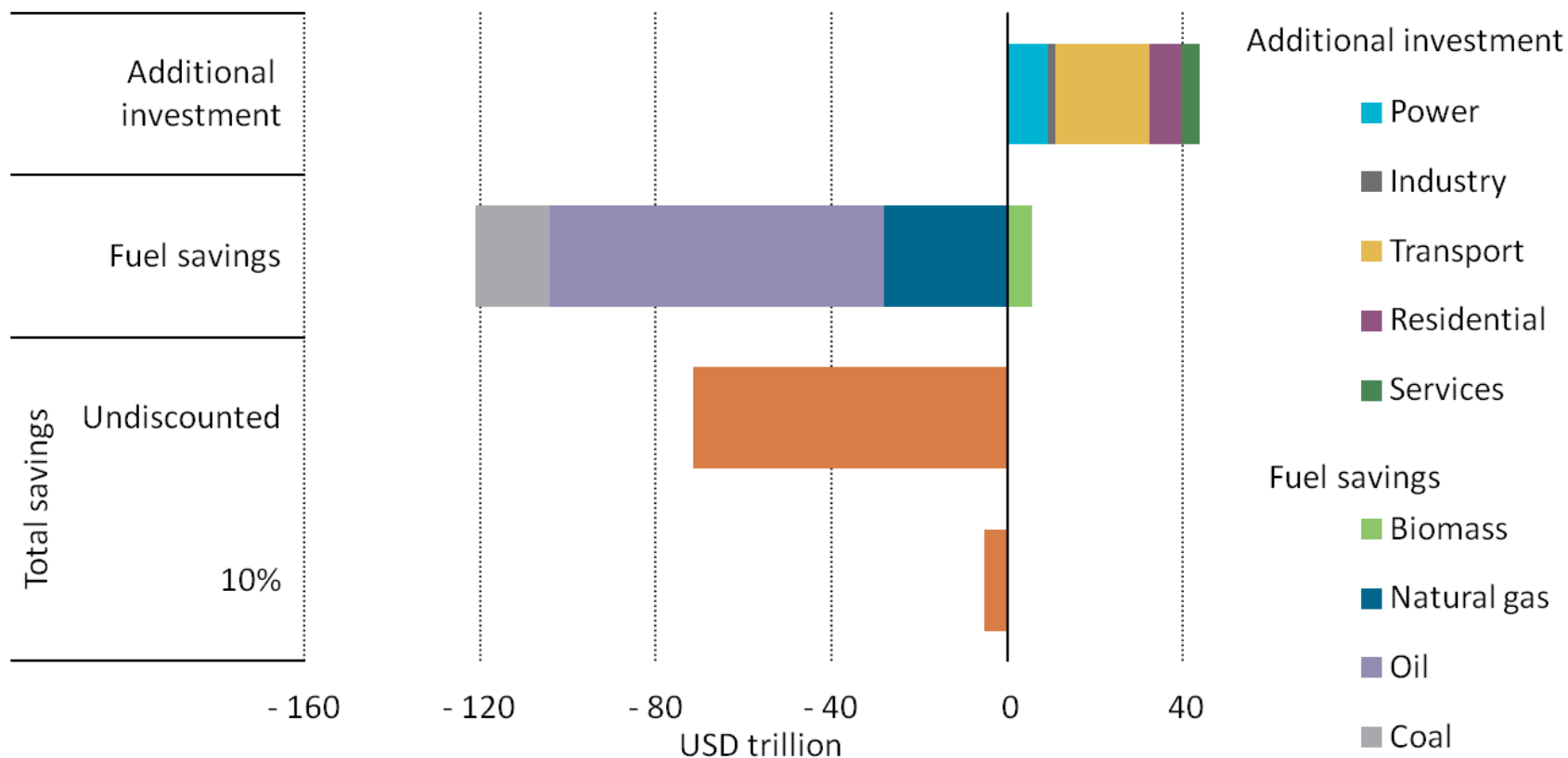
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Explore the data behind ETP

Investment in our future pays off...

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...and it is cost effective to make the transition

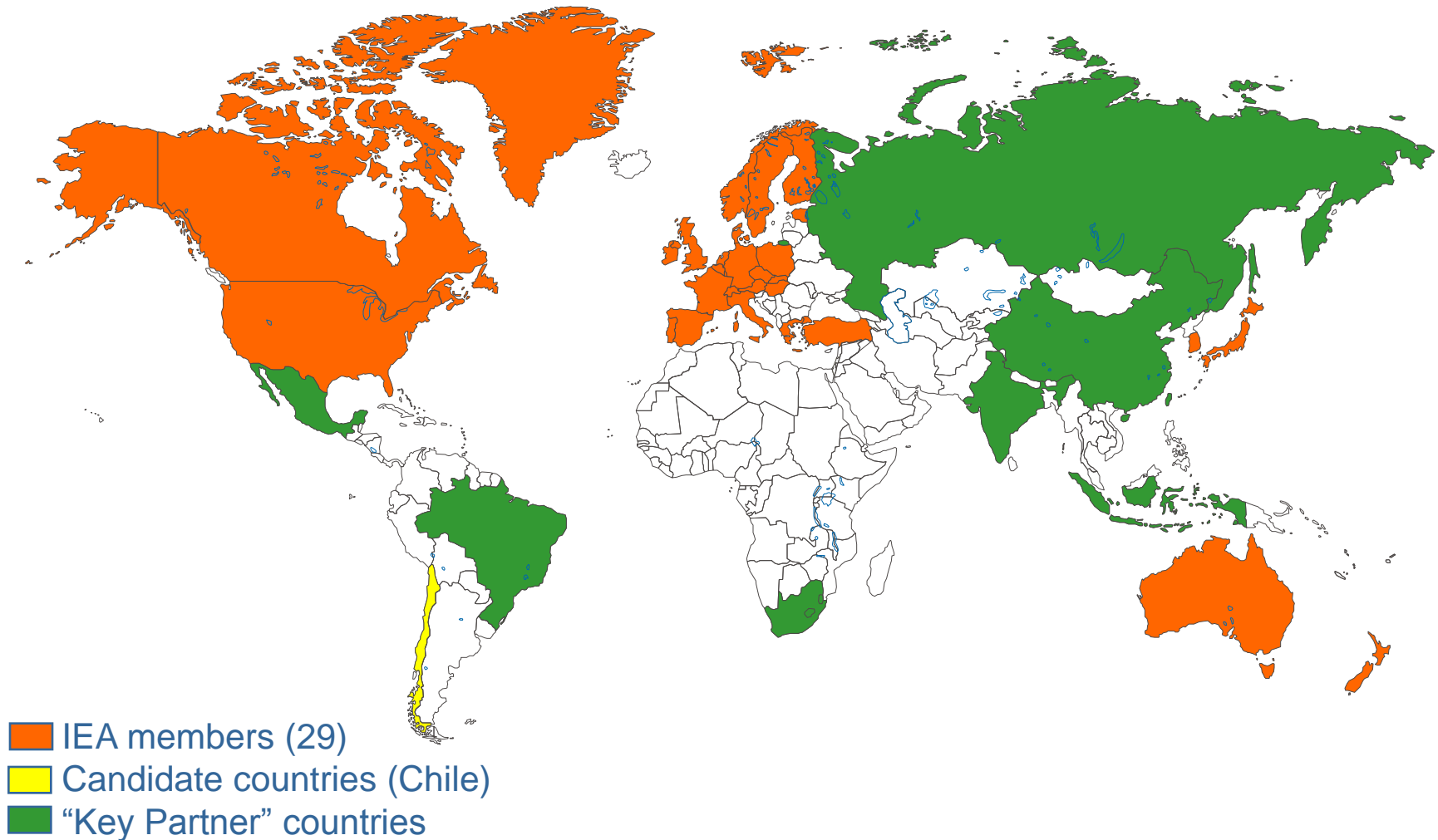
The IEA at a glance

- Formed in 1974 after the first oil shock with a mission to promote Member countries' energy security
- Autonomous organisation affiliated to the OECD



- 29 Member countries (Estonia newest member as of 2014)
- Staff of around 250 - energy experts, economists and statisticians
- Headquarters in Paris

IEA worldwide engagement



The 3 'E's of Sound Energy Policy

- Energy security
- Economic growth
- Environmental sustainability

And a fourth 'E'

- Engagement worldwide