

Towards future sustainable energy systems

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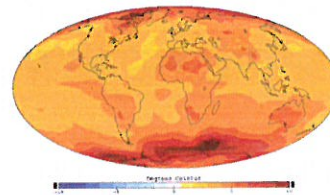
Contents

- **Long term energy strategy (2050)**
- **Energy Union (2030)**
- **Cyprus – A green island**

Long term energy strategy

Future energy systems

- **Climate change**



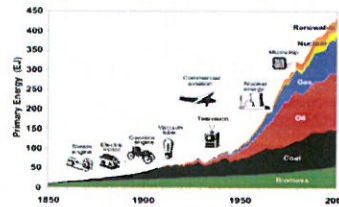
- **Third industrial revolution**

- **Future energy economics**

EU energy objectives



- greenhouse gas reduction
- sustainable production and consumption
- competition in electricity and natural gas markets
- security of supply



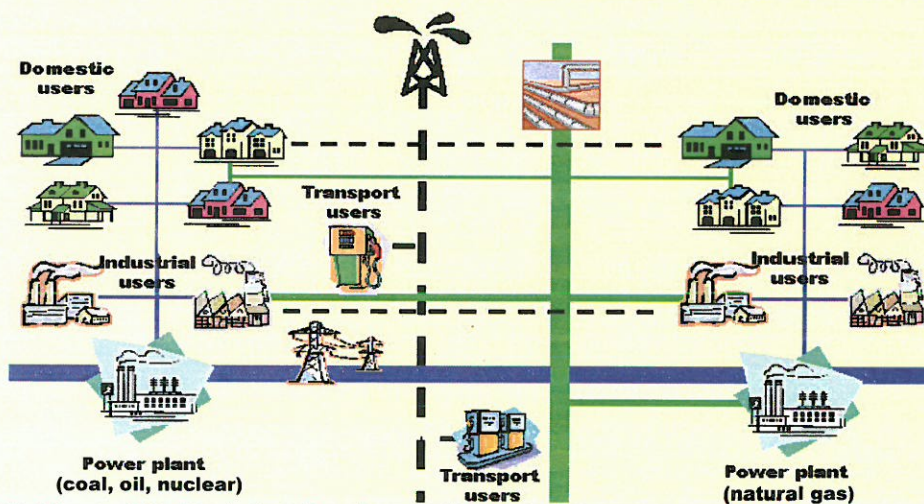
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Future energy systems



EU energy system today*



* Poulikkas A., 2009, *Introduction to Power Generation Technologies*, ISBN: 978-1-60876-472-3

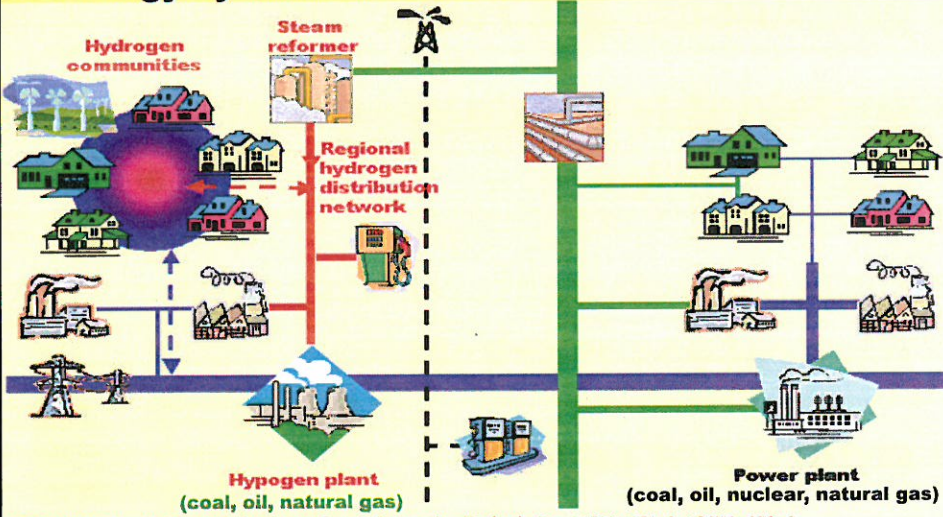
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Future energy systems



EU energy system in 2020-30*

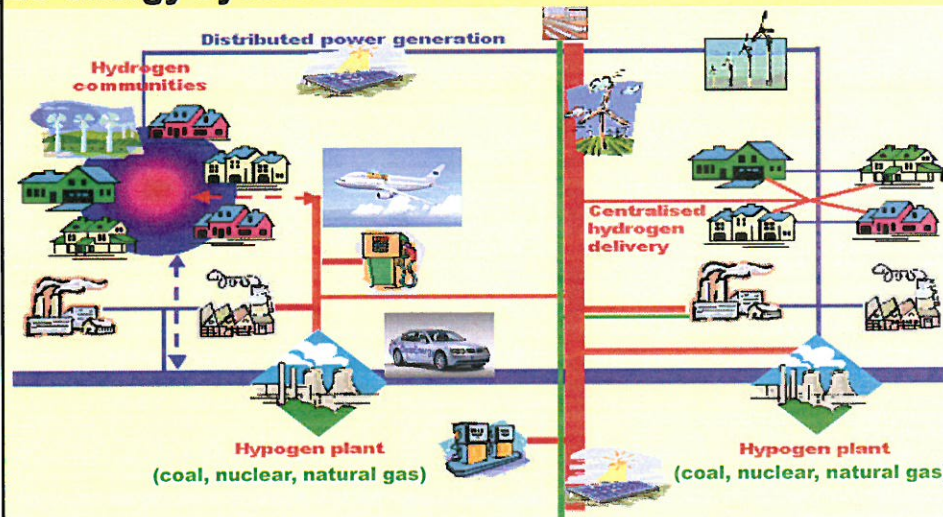


* Poullikkas A., 2009, *Introduction to Power Generation Technologies*, ISBN: 978-1-60876-472-3
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Future energy systems

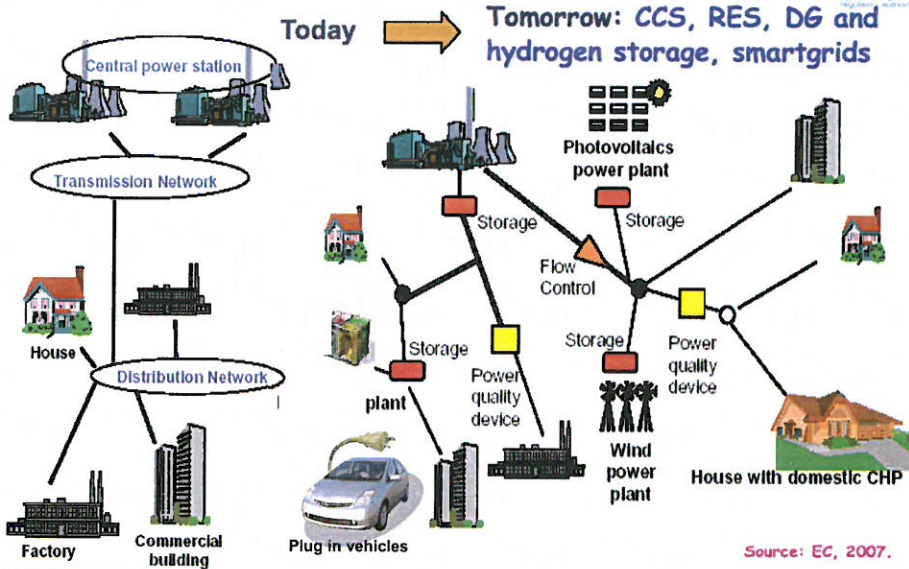


EU energy system in 2040-50*



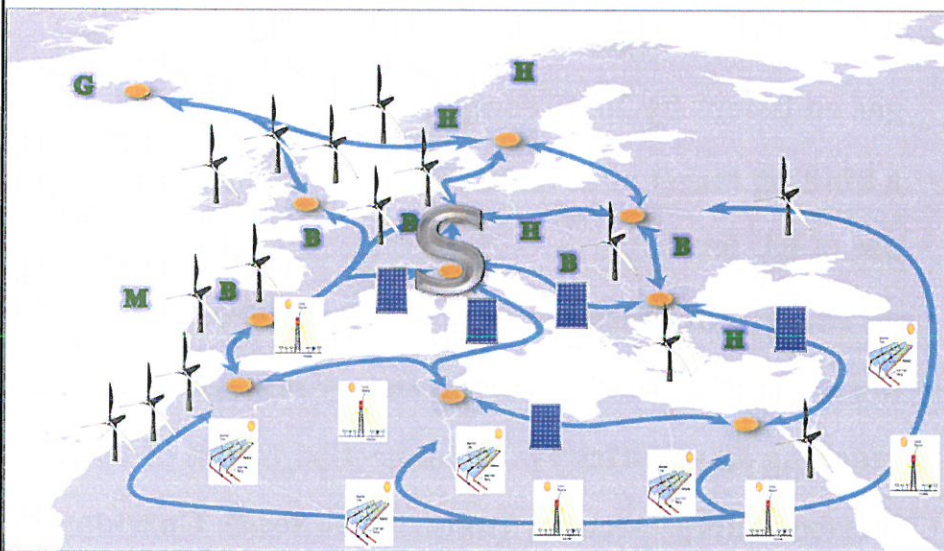
* Poullikkas A., 2009, *Introduction to Power Generation Technologies*, ISBN: 978-1-60876-472-3
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Future power systems



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The Super Smart Grid after 2050 (may allow for 100% RES)



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European Union

Energy Union

- a binding EU target of at least 40% less greenhouse gas emissions by 2030, compared to 1990
- a binding target of at least 27% of renewable energy use at EU level
- an energy efficiency increase of at least 27%
- the completion of the internal energy market by reaching an electricity interconnection target of 15%
- increase energy security (natural gas South Corridor)

Connecting electricity markets

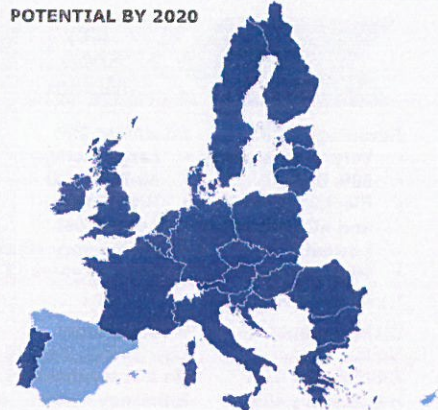


TODAY



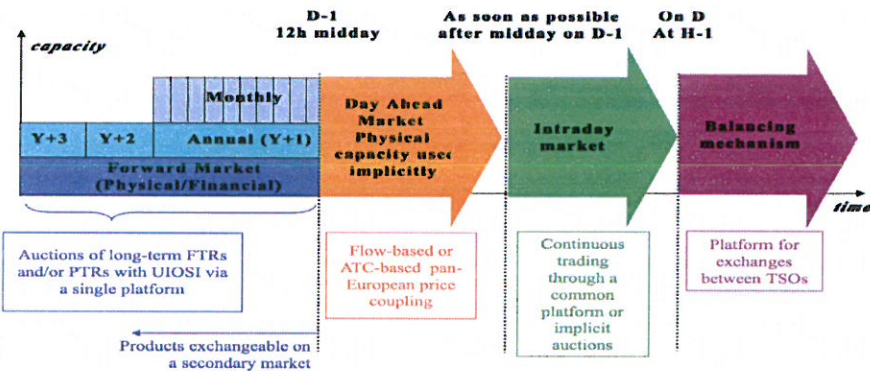
- Countries meeting the 10% interconnection target
- Countries not meeting the 10% interconnection target

POTENTIAL BY 2020

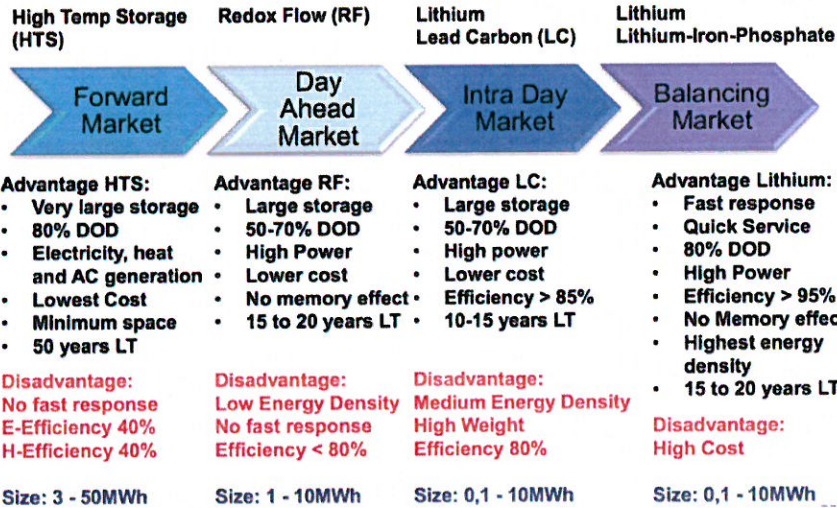


Efforts need to be stepped up for those below the 10% target by 2020, mainly Spain and Cyprus, and in view of achieving the 15% target by 2030.

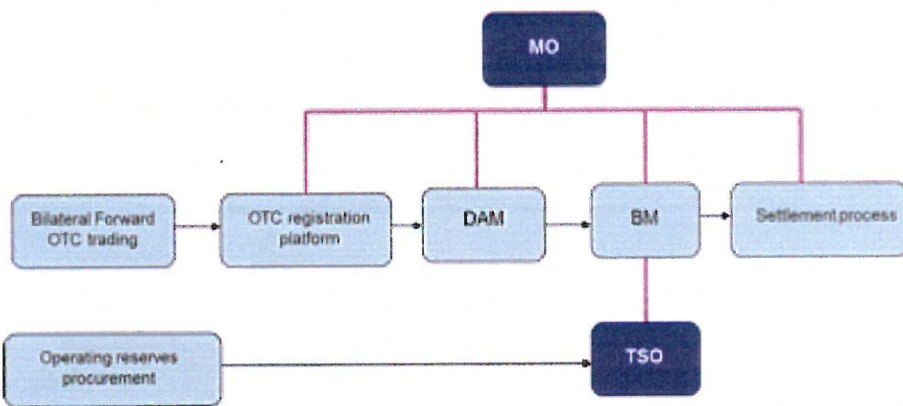
EU electricity target model



Storage is the missing link



The Net-Pool model



- **Central dispatch**
- **Market regulation:** CERA
- **Market participants:** TSO, MO, DSO, Generators, Aggregators, Suppliers (wholesale or retail markets), etc.

Cyprus – A Green Island

Green island by 2050?

