Energy storage in EU energy policy

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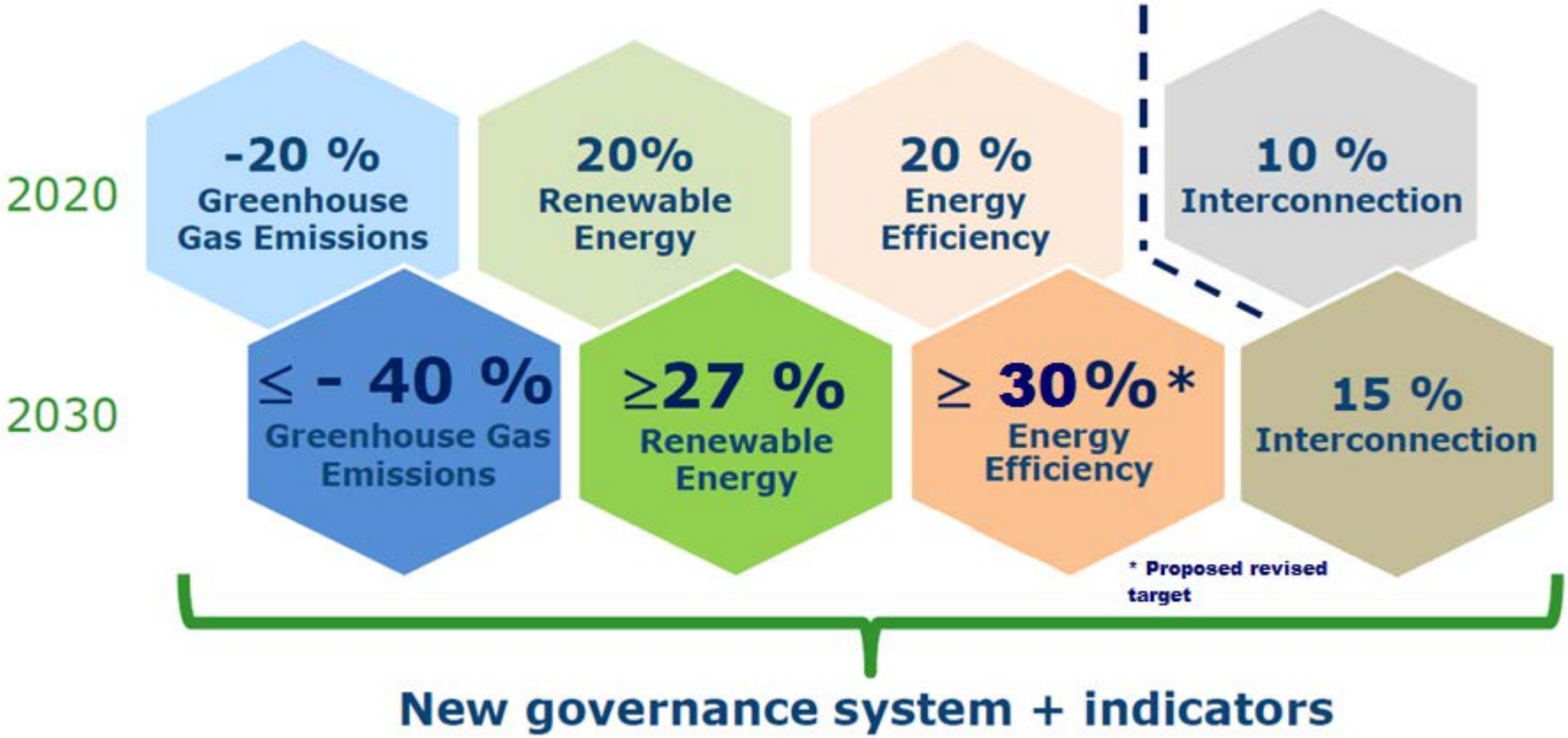
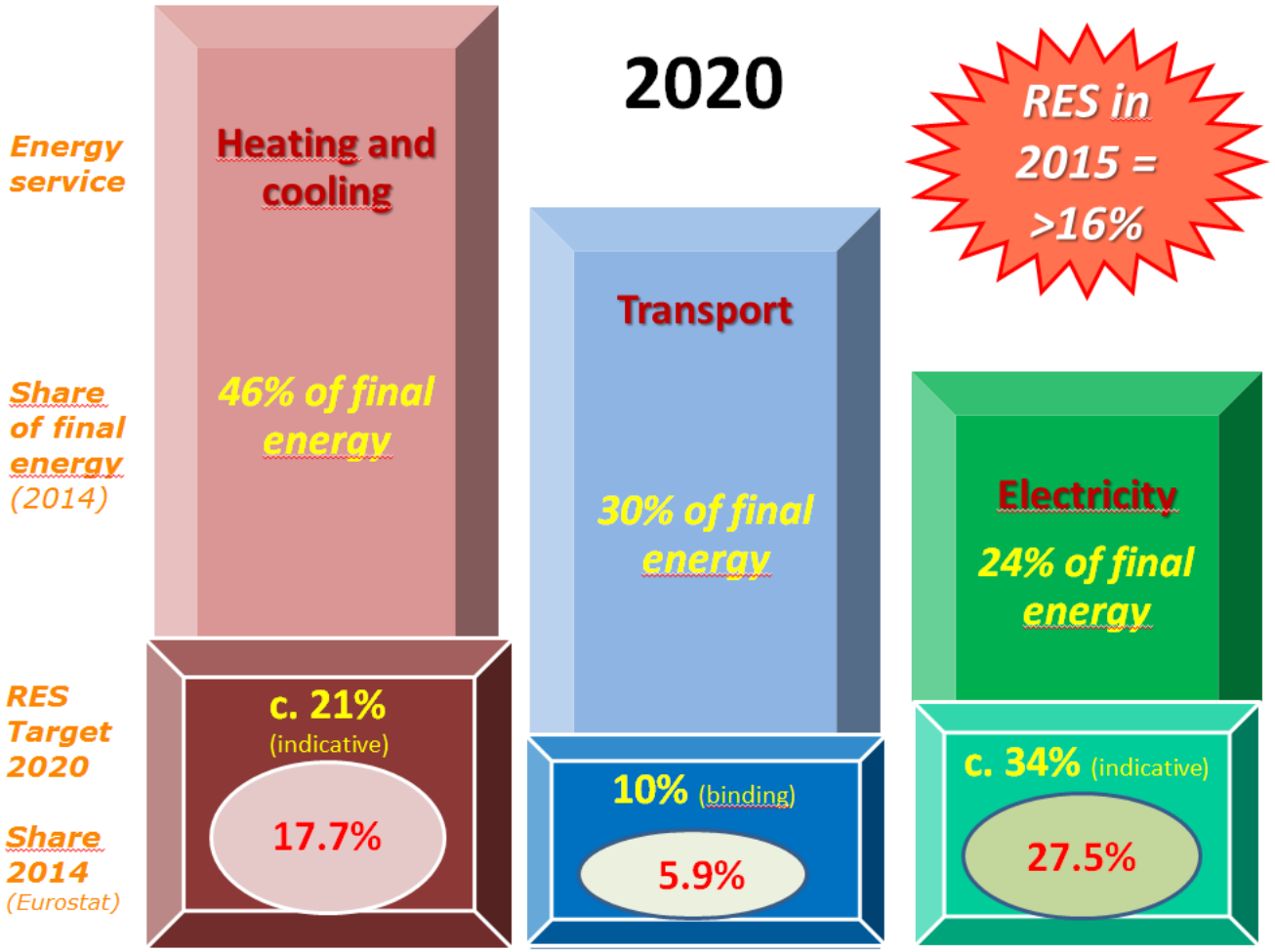
2030 framework for climate and energy policies



Renewables in the EU – progress per sector



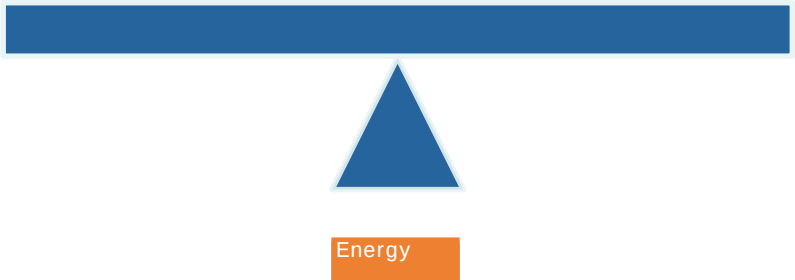
A market for renewables and renewables in the market

Making the market fit for RES

- Transparency and non-discrimination (e.g. curtailment)
- Flexibility (incl DSR, storage, review of conventional support)
- Market rules compatible with RES (e.g. gate closure, bid size)
- Improved short term markets (ID, BAL), bidding zones

Integrating RES into the market

- More coord. approach to support schemes
- RES providing system services
- Exposure to market signals (dispatch rules, balancing responsibility)
- Higher share of revenues from the market



RED revision

- 27% EU binding target for 2030
- Empower consumers, including energy communities, and self-consumption
  - Right to **self-consume and store energy**
  - **Non-discriminatory grid fees and charges**
- More targeted **non-distortive market** support
  - Coherence in support schemes across EU
- Revised **renewable** targets in **transport**
  - Focus on advanced biofuels & fuels from non-biological origin
- **Thermal storage**: DSO's and DH operators to assess annually the potential of thermal storage (district heating/cooling)
  - To assess if more **resource- and cost-efficient** than alternative solutions
- **GoO's for renewable gas**

Electricity Market Design

Directive - Storage

- **Storage definition**: 'energy storage' means, in the electricity system, deferring an amount of the electricity that was generated to the moment of use, either as final energy or converted into another energy carrier.
- **Cross-border** flows… including for energy storage
- **Services** to be procured by DSO's… including storage
- **Standardised market products** to be defined by DSO's
  - Such services to be **included in DSO's cost base**
- **Network planning** by DSO's and TSO's... including energy storage
- **Ownership of storage** by TSO's and DSO's excluded, with some exceptions
- **Access**: Regulatory authorities to facilitate storage access, TSO's to allow non-discriminatory connection of new power plants and energy storage.

Electricity Market Design

Regulation – Storage (1/2)

- **Balancing**: All market participants shall aim for system balance
  - Financial responsibility
- **Day-ahead and intraday**: the imbalance settlement **15 minutes** and bid size **not above 1 MW**
- **Price caps**: **No maximum** (or <value of lost load), **no minimum** (or minus 2000 €)
- **Priority dispatching**: **Only** for small RE generators and high-eff. CHP & "old" RE & CHP assets.
- **Curtailment or redispatching:** when **economically efficient** and does **not exceed 5 %**
- **Bidding zone:** shall be based on long-term, structural congestions

Electricity Market Design

Regulation – Storage (2/2)

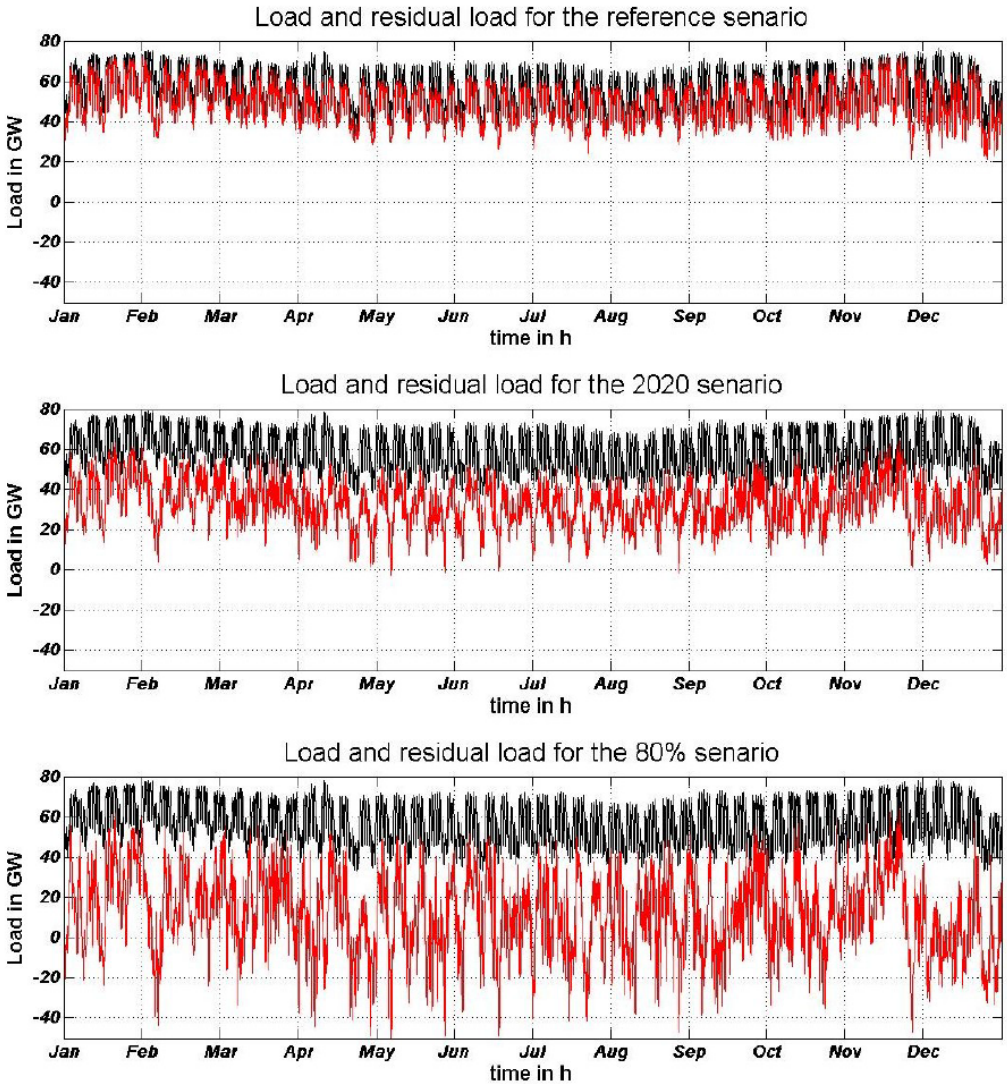
- **Network congestion:** to be addressed with non-discriminatory market-based solutions
- **Grid fees:** To reflect **actual costs; non-discriminatory** (incl. energy storage), not distance-related, customer profile could impact the fees (incl. storage), procured storage services would be included in the system operators cost base, recommendation on the structure of fees by ACER.
- **Regional TSO cooperation**: by performing functions of regional relevance.
- The "**EU DSO entity**": (a) coordinate operation and planning of T&D networks; (b) integration of renewable energy resources, distributed generation …energy storage; ...
- **Network codes:** The Commission may adopt delegated acts, such as network codes on the basis of text proposals developed by the ENTSO for Electricity, or, by the EU DSO entity and ACER.

Large scale energy storage*

Flexibility becoming key:

- Existing grid flexibility in generation and storage appears able to balance current variable RE
- Shift from conventional to variable RE generation reduces the contribution to flexibility of conventional assets
- The stoRE project indicates the need of TWh scale storage in Europe by 2050.

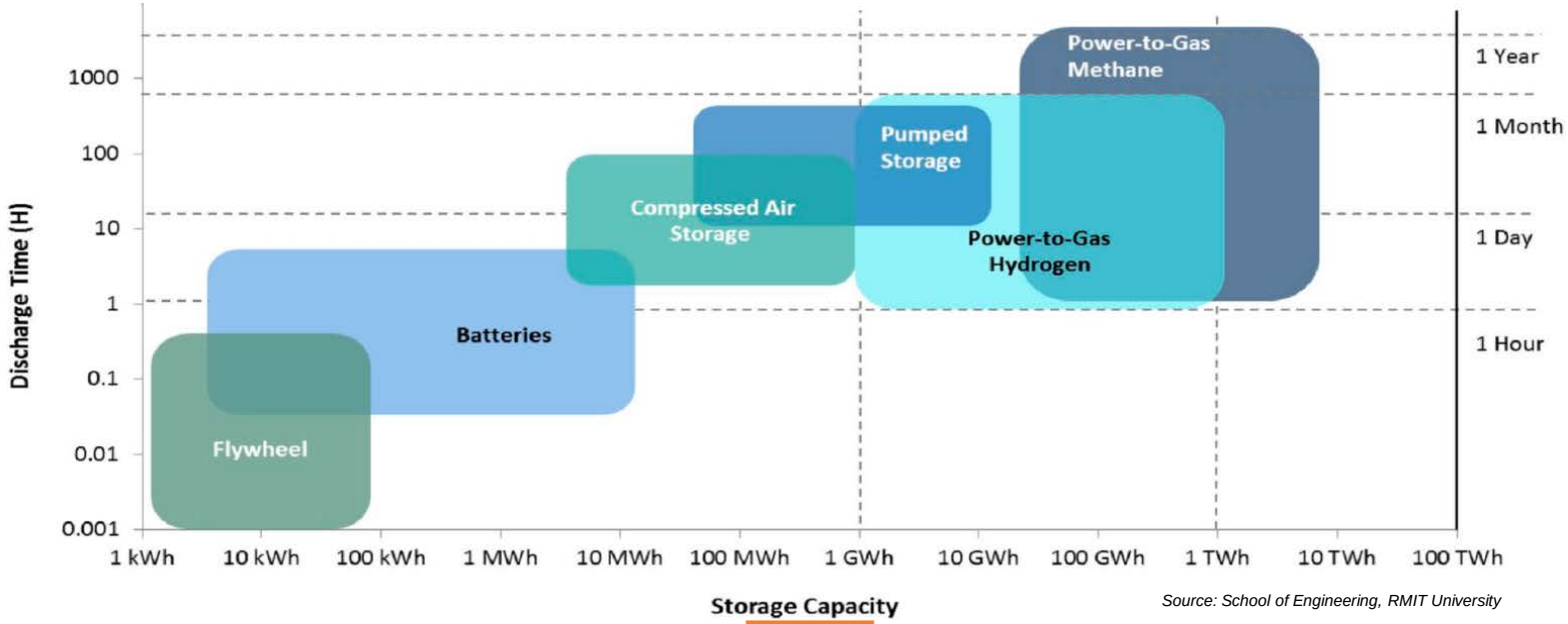
*stoRE – project (EU)



Large scale energy storage

- Large scale RES integration
- Complement Strategic energy reserves and diversification of supply
- Decarbonisation of the energy system
  - » **Synergies between RES and the natural gas grids**
  - » **Indigenous energy sources more important in future**
  - » **Link to other economic sectors (transport and industry)**

Current trajectory for renewables on track



Source: School of Engineering, RMIT University

Energy storage SWD

The Staff Working Document on Energy storage presents views on energy storage developments related to electricity grid:

- Supporting the electricity generation profile of variable RES
- Enabling energy efficiency
- Storage characteristics for the market
- The role of innovation and cost of technology
  - Standardisation needs
- Storage within the electricity system
- Storage connected to the electricity system and sectorial integration
- General principles

Markets needs reliable certification

Certificates are important to the existence of low-carbon electricity and gas markets.

- Reliability
  - Green washing needs be minimised
  - Misuse must be addressed
- Defendable by grid and policy benefits
  - Providing grid friendly market signals
  - Link these signals to renewable production
    - reasonable assumptions reflecting the physical grid (bottle necks, etc.)
  - Ensure public acceptance for the benefits of the certification system
    - Consumers should not have to question the green value of the certificates

The Certifhy project is well including these aspects.

European Commission

Thank You for Your Attention!

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http://ec.europa.eu/energy/index_en.htm