

SMART Devices in Utilities

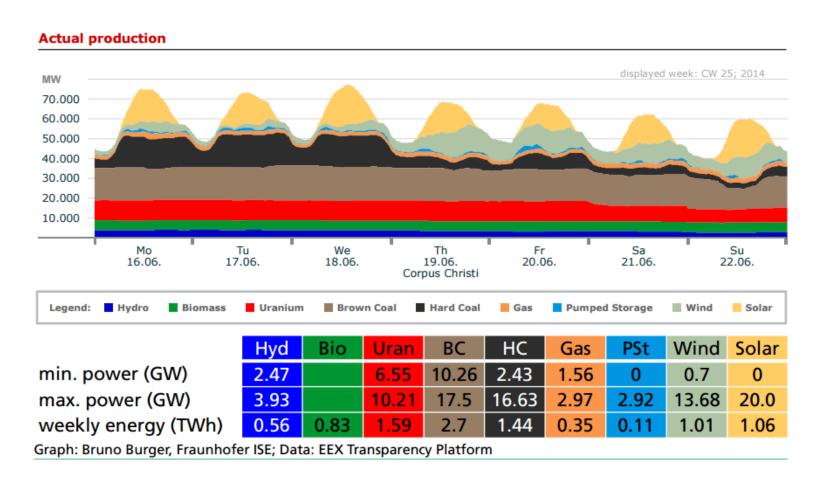
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Electricity Production in Germany: Calendar Week 25



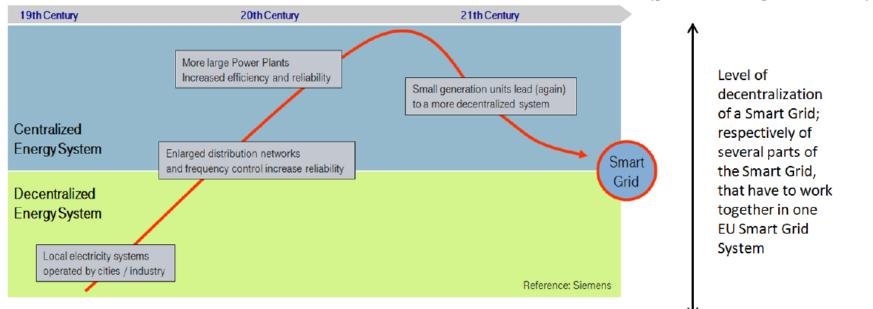
Source: Fraunhofer Institute: Electricity production from solar and wind in Germany in 2014



ENERGY NETWORKS DEVELOPMENT

Centralized extremity:

Centralized Energy System (generation in large Power Plants)



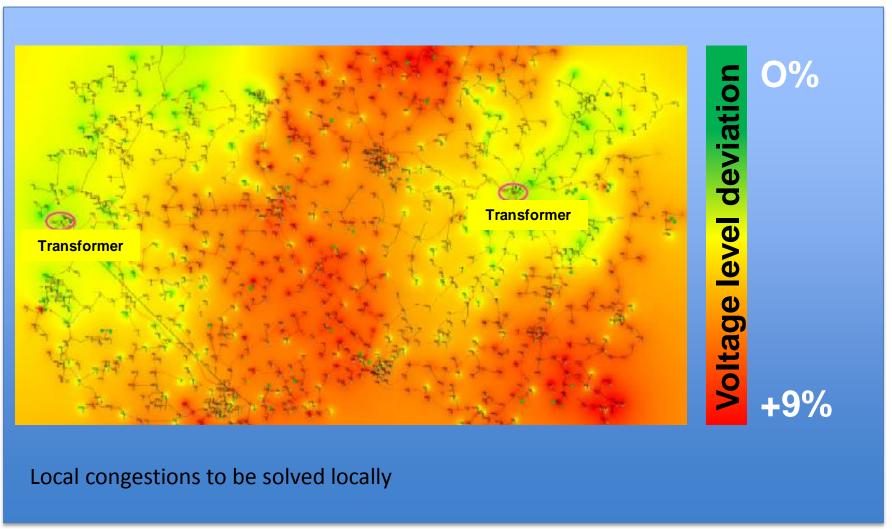
Decentralized extremity:

Decentralized Energy System (generation in a very big number of distributed small and midsize generation units, all units are interconnected; large Power Plants did not exist)

Source: CEN-CENELEC-ETSI Smart Grid Coordination Group, Smart Grid Reference Architecture working group.



NEW DISTRIBUTION PROBLEMS



Source: E.ON Bayern, 2011 in IEA Electricity Networks: Infrastructure and Operations 2013



DISTRIBUTION NETWORKS TODAY

Numerous and very heterogeneous (from rural aerial to city cable network)

Do not provide for real time electricity prices or network operations

Apply connect-and-forget approaches for generation and demand

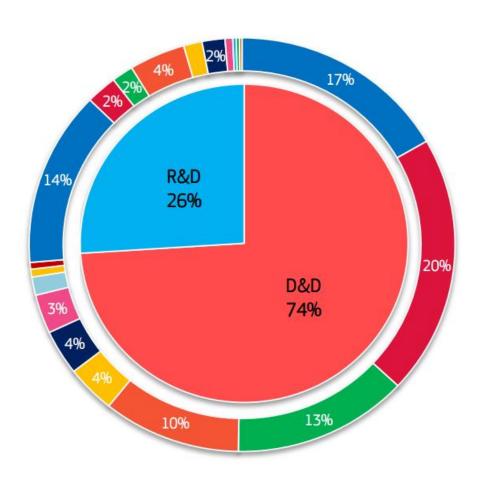
Built for peak demand

Treated as passive load centers from the transmission perspective

Turning into generation centers with decarbonisation, renewable



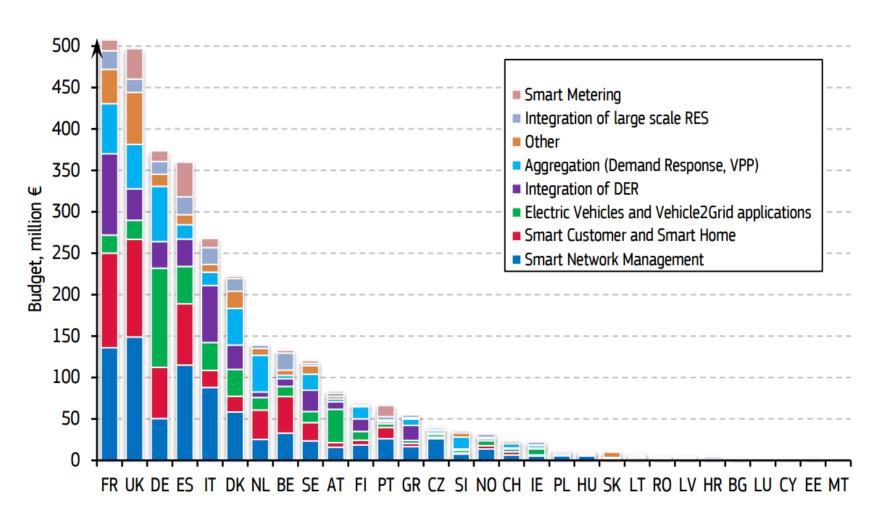
EUROPEAN SMART GRID PROJECTSWHO IS DOING?



- University/Research centre/Consultancy
- Distribution system operator
- Energy company/Utility company/Energy retailer/Electricity Service provider
- Manufacturer/Engineering services/Contractors/Operators/Manager company
- IT company and Telecom
- Transmission system operator
- Municipalities/Public Authority/Government
- Other
- Association
- Generation company



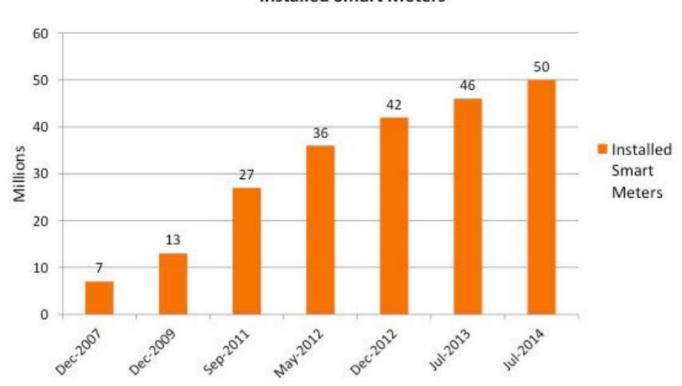
EUROPEAN SMART GRID PROJECTS BUDGET PER APPLICATIONS





SMART METERS IN U.S.

Installed Smart Meters



Source: The Edison Foundation Utility-Scale Smart Meter Deployments 2014



ABOUT OUR COMPANY

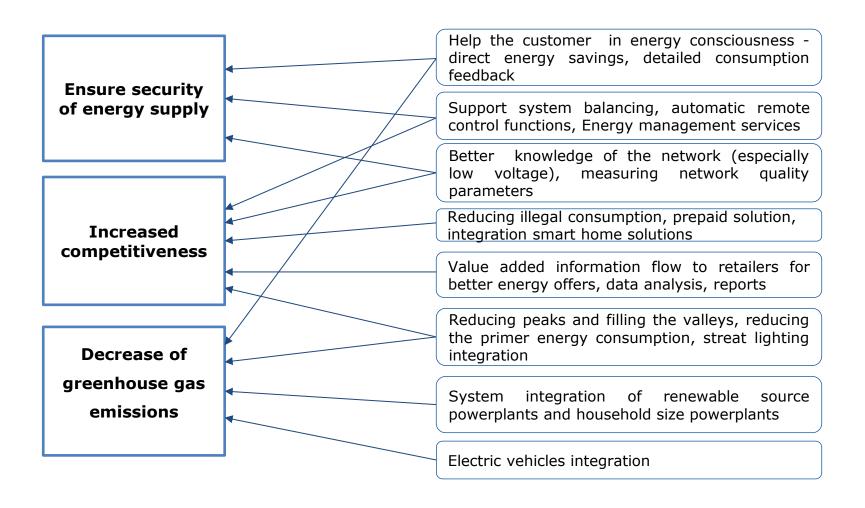
- Preliminaries (2011-12)
 - The Hungarian State has complied a National Plan with a list of investments
 - As part of the National Plan the State intends to support a smart grid model pilot through the 10c Support Mechanism
 - The Smart Grid Pilot Project will be implemented by MAVIR or its exclusively owned project company.
- KOM Central Smart Metering Company Ltd. was established by MAVIR (TSO) in 2013
- Our challange: Realization of the most considerable smart grid model pilot in the CEE region from 2014



COMPLIANCE WITH ENERGY EFFICIENCY DIRECTIVE

NATIONAL PLAN

Smart Grid project execution





Use cases

Identifying more than 50 use cases

- Energy consumption / production data
- Network quality data
- Switch on/off of local producer (solar, wind systems)
- Central support of flexible payment functions (prepaid TOU tariffs)
- Exploration of network losses
- Supporting low-voltage operation control
- Supporting Energy traders for capacity allocation
- Energy Management, Smart Home Device Support
- Electric vehicle integration, charging control



Thank you for your attention

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