Vision and strategy for the deployment of Smart Grids

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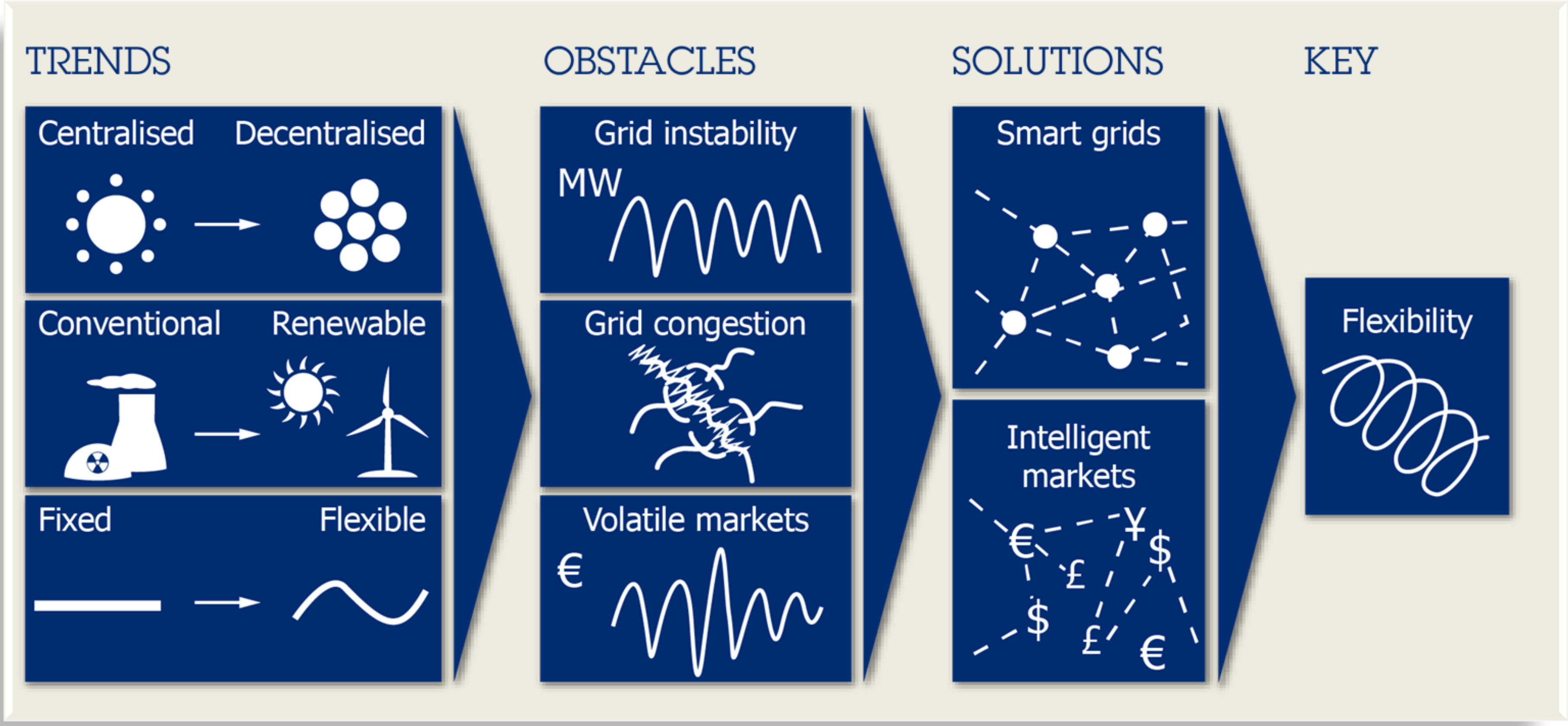
Low carbon economy requires significant changes of energy systems



Main benefits and challenges for smart grids

- Innovative services
- Consumer awareness

- Capacity and reliability
- RES and DER

- Environmental impact
- Reinforcement needs

- Jobs and growth
- Exporting solutions

- Public awareness
- Acceptance

- Open standards
- Interoperability
- New technologies

- Regulation
- Financing

- Business cases
- Markets

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SG Task Force - Plan of Work for 2010-2014

http://ec.europa.eu/energy/gas_electricity/smartgrids/taskforce_en.htm

Standards and interoperability	• Validation the M/490 Work Plan • Monitoring work and deliverables • Ensure coordination within and other Mandates
Privacy, Data Protection and Cyber-security	• Privacy and Data Protection Impact Assessment Template • Develop a Best Available Techniques • Develop a cyber-security assessment framework
Regulation	• Define reference data processing models • Examine regulatory challenges for flexibility, commercial arrangements and incentives
Infrastructure and technology	• Establish a process for identifying projects of common interest • Develop an industrial policy for Smart Grids

EU framework for Smart Grids

- ✓ Electricity Directive 2009/72/EC
- ✓ Energy Efficiency Directive 2012/27/EC
- ✓ Energy Infrastructure Regulation (EC) 347/2013
- ✓ Electro-mobility Draft Directive AFI COM(2013)18
- ✓ COM(2011)202 on Smart Grids
- ✓ COM(2012)663 Recommendation OJ L/73 13/03/2012
- ✓ COM (2013)7243 on IEM and public intervention
- ✓ COM(2014) 2014/724 Recommendation on Data Protection Impact Assessment Template for SM and SG

Key 1: Consumer protection and empower

- ✓ guarantee privacy and security
- ✓ inform and engage consumers, i.e. interested and equipped to play an active role in the market
- ✓ provide consumers with choices and the possibility to exercise the choice
- ✓ Integrate consumers in energy system so that they can not only consume but also supply energy

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6 reasons why SM are key for SG – or just 1?

Energy Savings	**more accurate and frequent consumption data demonstrably help consumers reduce their consumption and save money**
Energy Efficiency	**more detailed consumption measurements help consumers identify opportunities for energy efficiency improvements**
Innovative Services	**smart meters are indispensable for smart home solutions/home automation, reducing energy costs**
Consumer Empowerment	**switching suppliers, modifying contractual terms, etc. becomes easier, faster and cheaper**
Sustainability	**use of local renewable sources and storage potential (micro-grids), electromobility become easier**
Distribution System Efficiency	**management of the distribution systems becomes cheaper and more effective, leading to lower distribution costs**

Commission Benchmarking Report Adopted on 17 June


EUROPEAN
COMMISSION

Brussels, 17.6.2014
COM(2014) 356 final

REPORT FROM THE COMMISSION

Benchmarking smart metering deployment in the EU-27
with a focus on electricity

{SWD(2014) 188 final}
{SWD(2014) 189 final}

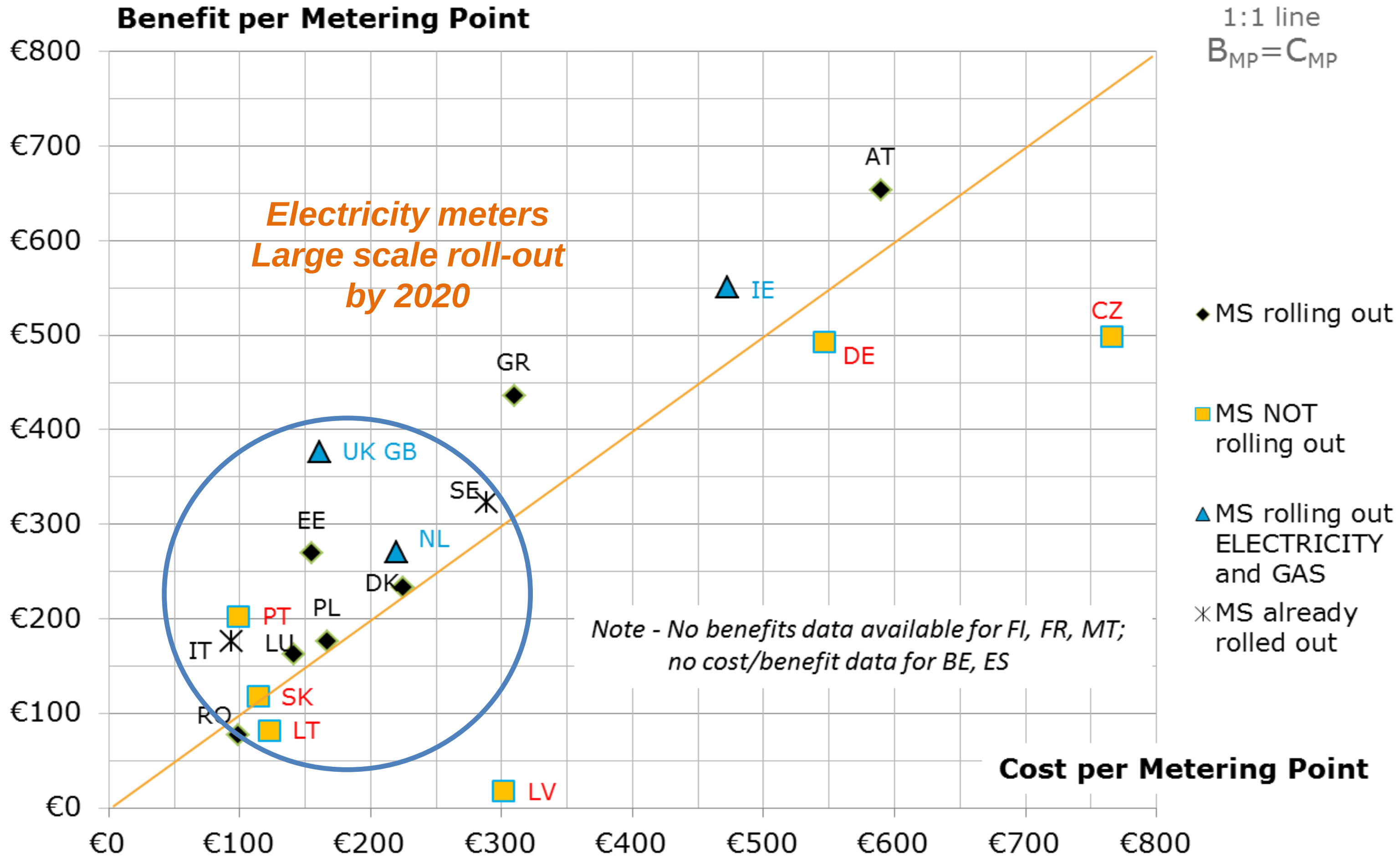
EN EN

"Benchmarking Smart Metering Deployment in the EU-27 with a focus on electricity"

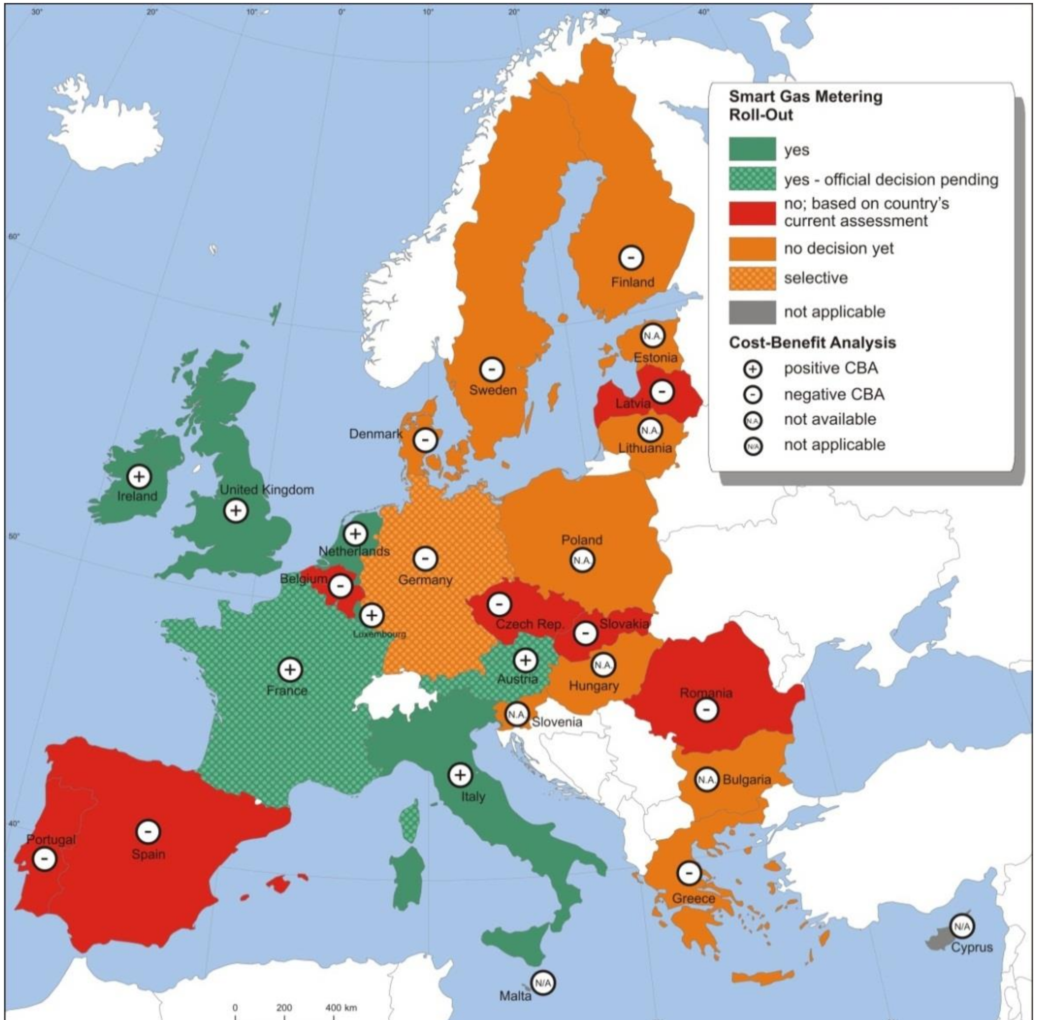
- **Commission Report** (COM(2014) 356)
- **Country fiches** (SWD(2014) 188)
- **Cost-benefit data analysis** (SWD(2014) 189)

http://ec.europa.eu/energy/gas_electricity/smartgrids/smartgrids_en.htm

Costs & Benefits (normalised by number of metering points)



Smart Meters CBAs: Encouraging Gas Results



Roll-out of GAS smart metering by 2020

- 19 CBA, 7 MS: wide roll-out
- ~ 40 % EU consumers
- 45 million meters
- €10 billion

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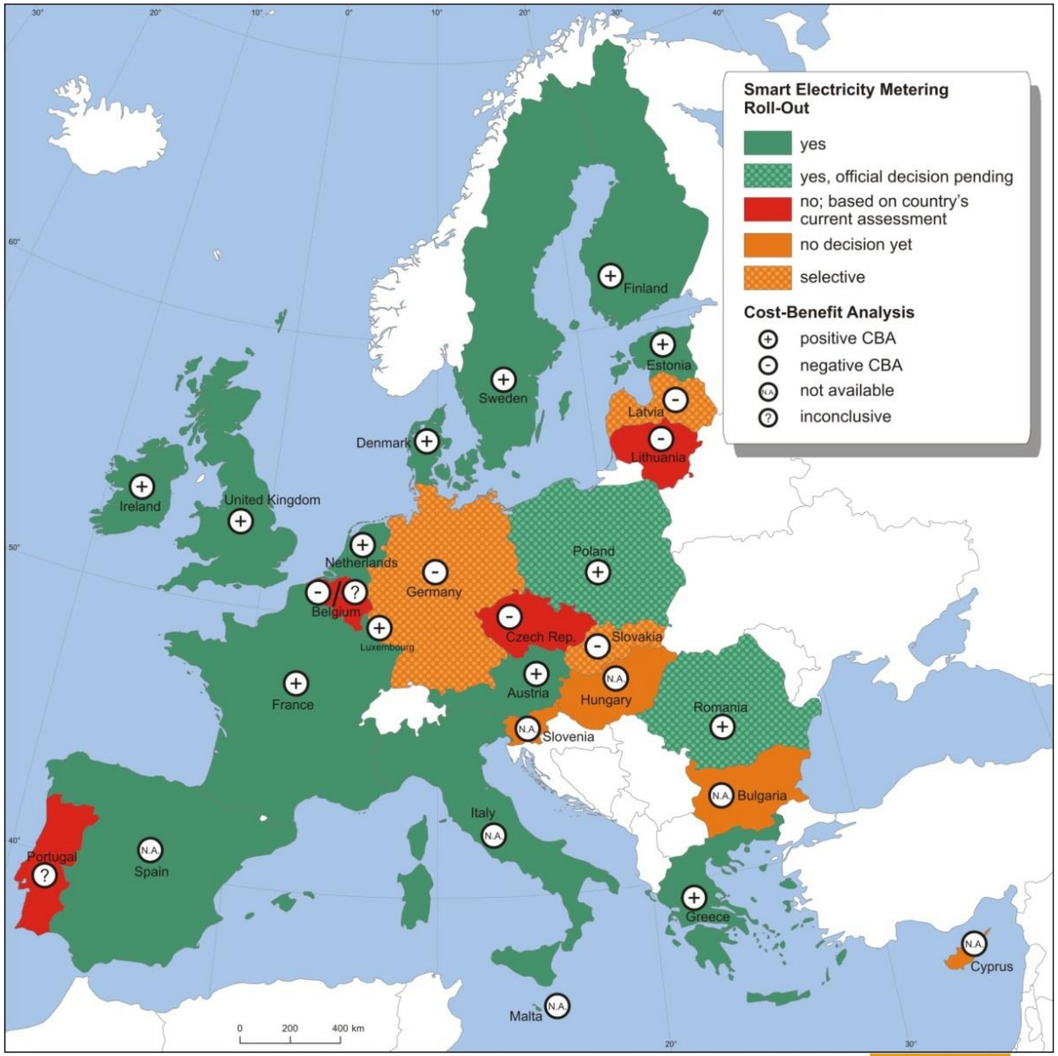

Roll out of ELECTRICITY smart metering by 2020

- 20 (21) CBAs, 16 MS: large-scale roll-out
- ~ 72% EU consumers
- 195 million meters
- € 35 billion

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Electricity: 16 Member States with Wide-Scale Roll-out by 2020

Sweden		2003	2009	Completed
Italy		2001	2011	Completed (ENEL: 2001-2006)
Finland	Mandated	2009	2013	
Malta	Mandated	2009	2014	
Spain	Mandated	2011	2018	
Austria	Mandated	2012	2019	
Poland	Under Discussion	2012	2020	
UK	Mandated	2012	2020	
Estonia	Mandated	2013	2017	
Romania	Under Discussion	2013	2020	
Greece	Mandated	2014	2020	
France	Mandated (timetable TBC)	2014	2020	
Netherlands	Mandated (timetable TBC)	2014	2020	
Denmark	Mandated (>1.5mn SM already installed)	2014	2020	
Luxembourg	Mandated	2015	2018	
Ireland	Mandated	2016	2019	

+80%

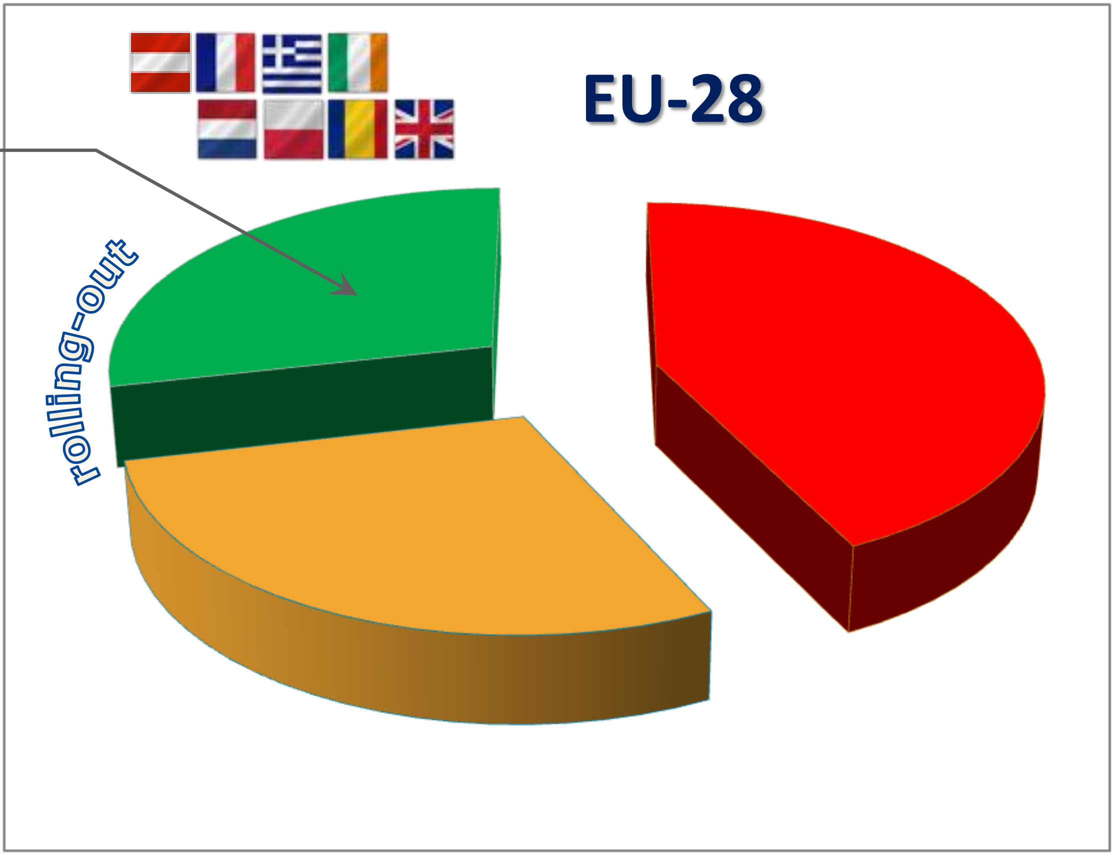
Altogether: roll-outs in 19 MS => 72% EU electricity consumers with a smart meter by 2020

50% of roll-out plans follow recommended functionalities

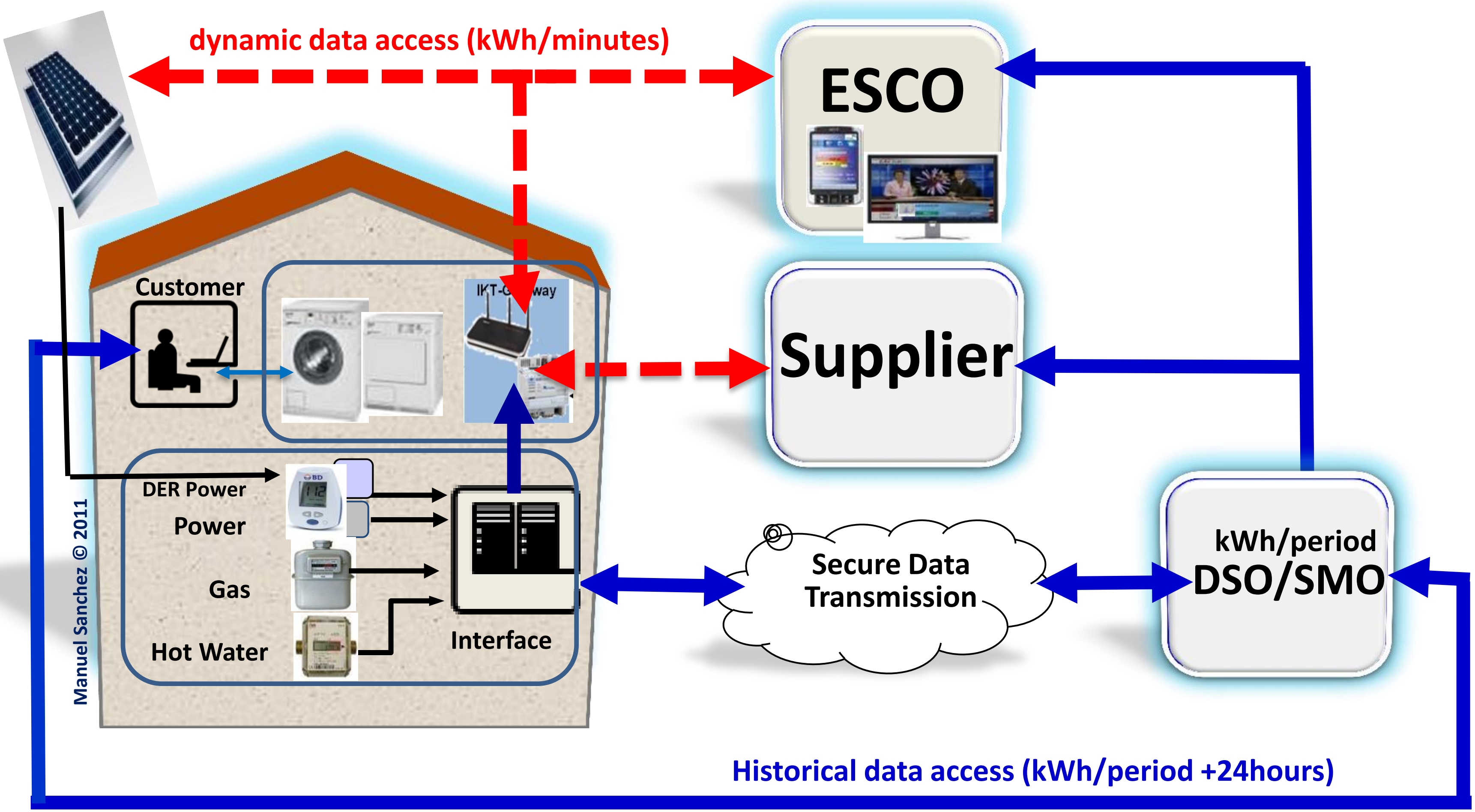
in the 16 Member States proceeding with large-scale smart metering roll-out by 2020

8 Member States (50% of those rolling-out) consider all recommended functionalities

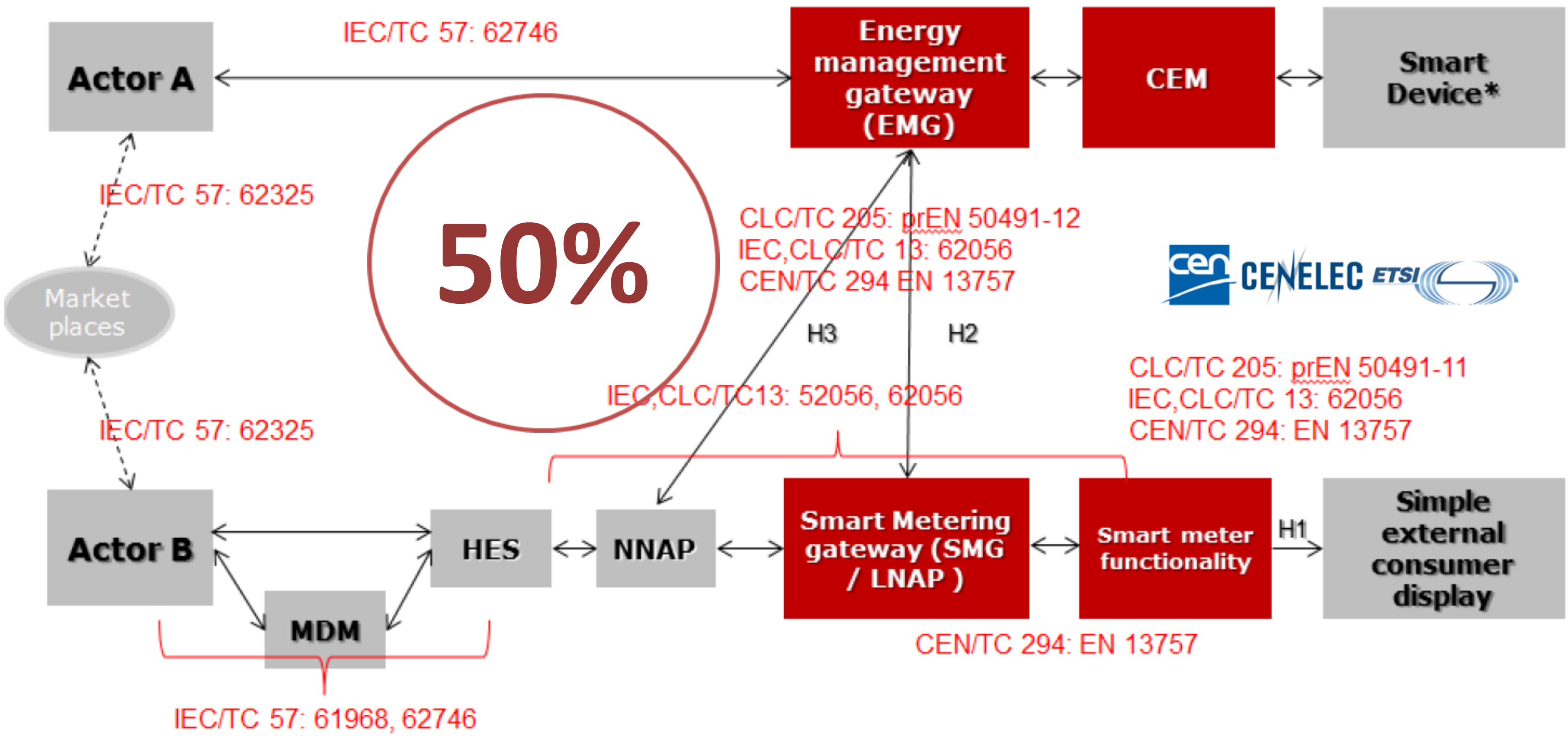
CONSUMER	• a) Provide readings directly to the consumer and/or any 3rd party • b) Update readings frequently enough to use energy saving schemes
METERING OPERATOR	• c) Allow remote reading by the operator • d) Provide 2-way communication for maintenance and control • e) Allow frequent enough readings for networking planning
COMMERCIAL ASPECTS OF SUPPLY	• f) Support advanced tariff system • g) Remote ON/OFF control supply and/or flow or power limitation
SECURITY - DATA PROTECTION	• h) Provide secure data communications • i) Fraud prevention and detection
DISTRIBUTED GENERATION	• j) Provide import/export and reactive metering



Key 2: Open model for consumption data flow

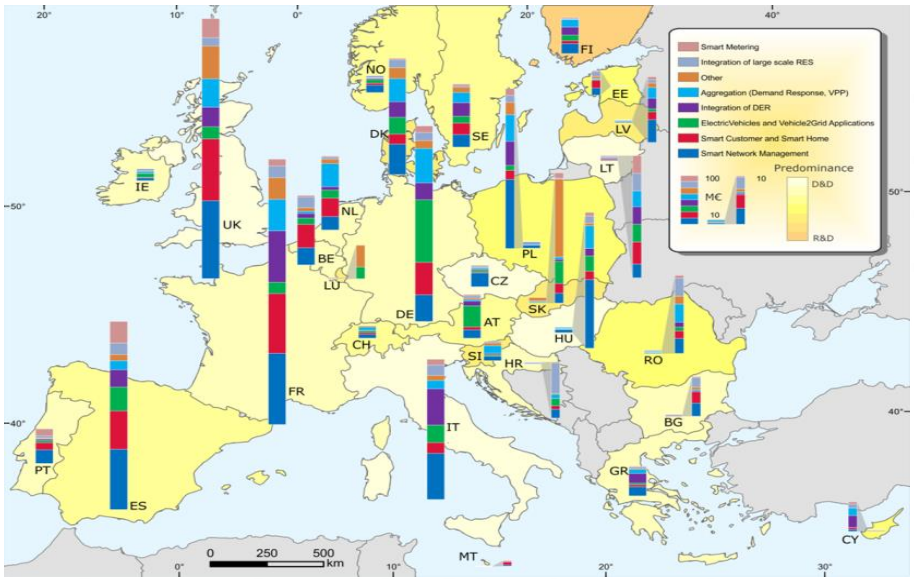


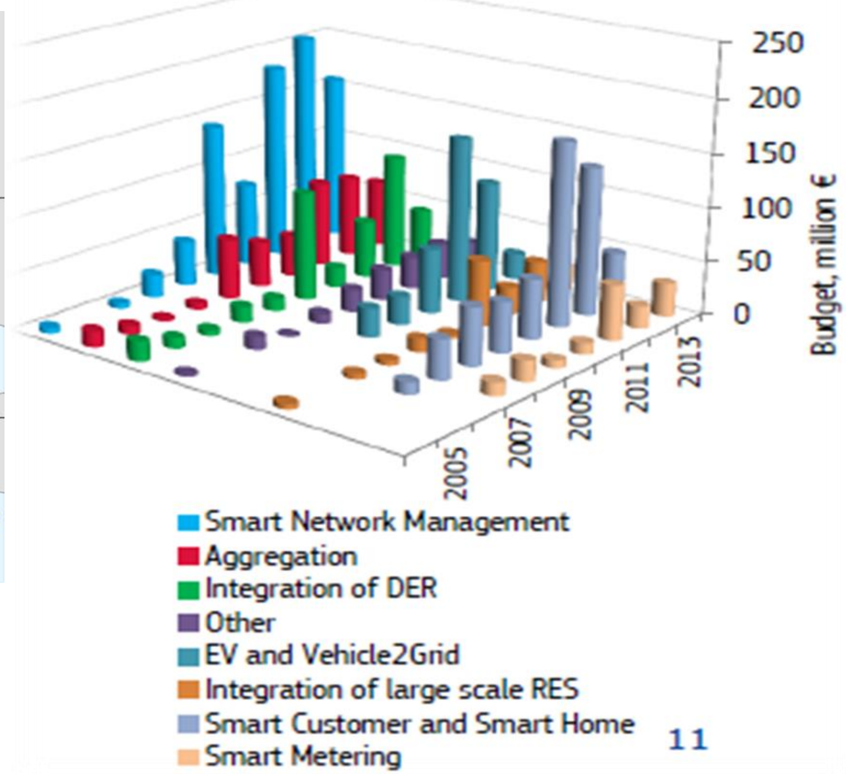
Key 3: Interoperability and open standards



Ref.: SWD(2014)189 accompanying the **Smart Metering Benchmarking Report** (COM(2014)356)
http://ec.europa.eu/energy/gas_electricity/smartgrids/smartgrids_en.htm

Investments in SG projects (2013, excl. metering)





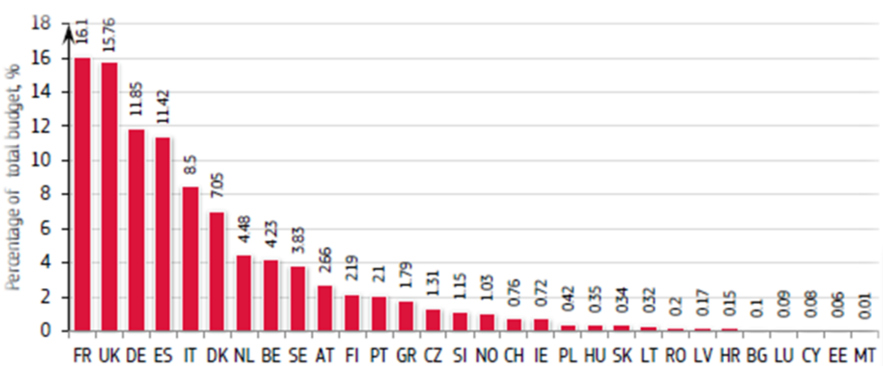
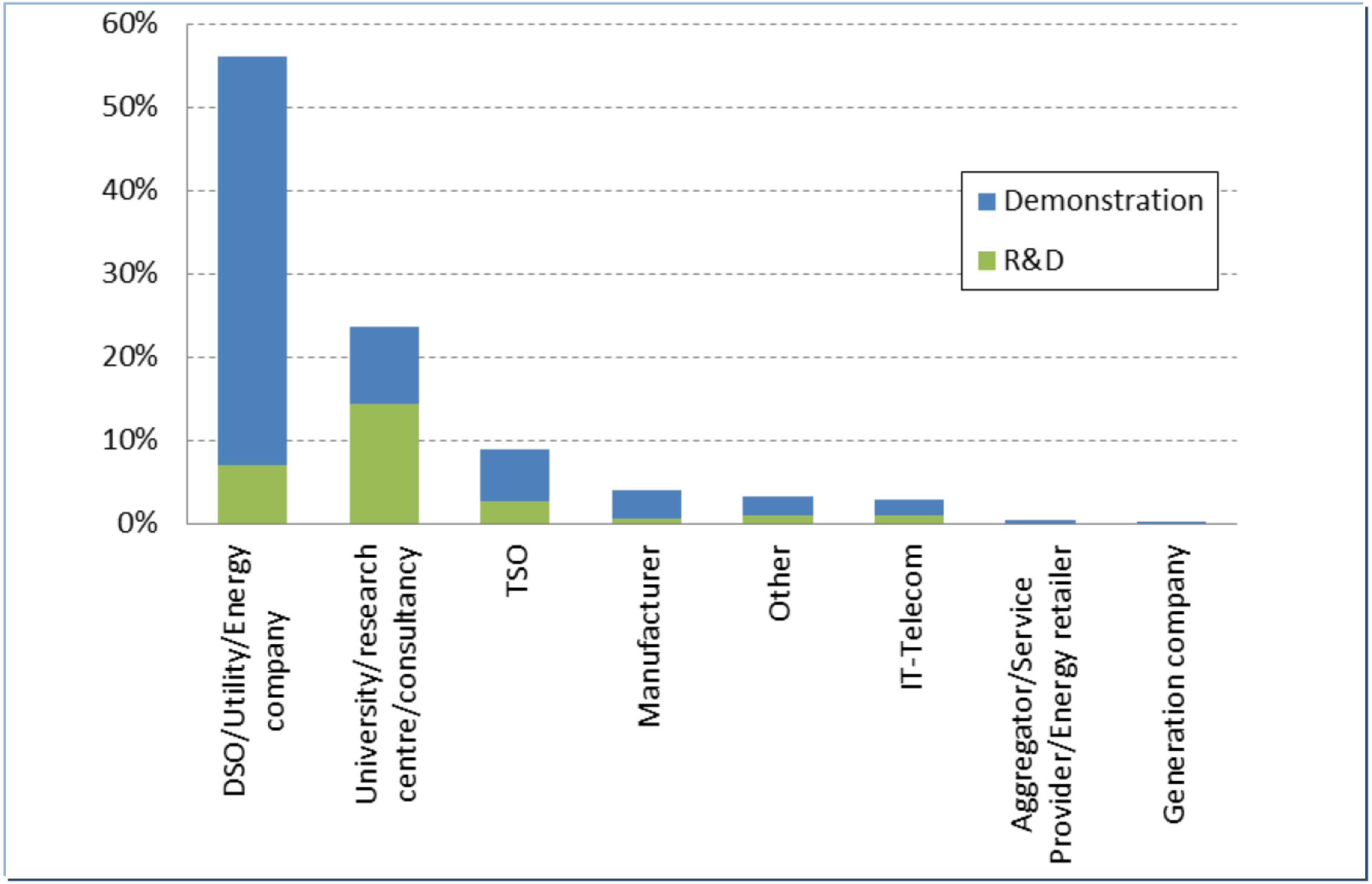


Figure 8 Percentage from total budget per country

459 smart grid projects and €3.15 billion
26% R&D and 72% Demo & Deployment

Who is leading the smart grids projects?



EU financial support for SG 2014-2020 under a market driven approach of large impact

Cohesion Policy Investments

- Support shift to low-carbon economy
- Doubling of current amounts

Connecting Europe Facility

- €6B for trans-European energy infrastructure
- SG identified as priority
- 1st list of PCIs January 2014
- Positive assessment of 2 SG projects

Horizon 2020

- Research and Innovation programme contains activities to facilitate SG development ca. €5B

Key 4: Current status of demonstration activities

Closed to market deployment	• Smart meter infrastructures • ICT and communications infrastructures supporting and managing MV networks
Most covered but still on going	• Integration of DER into MV and LV networks • Active Demand in distribution networks • Automation and control of grid operation • Integrating eV into grid infrastructure
Needs to be better addressed	• Market Design (interaction with prosumers, local dispatching, ancillary services) • Asset Management for both DSO and TSOs • Synergies with other energy networks

Key 5: Immediate challenges under discussion

Market design

Active Demand Response

Charging eV

Standards and functionalities for smart metering

Automation and control of MV network

Monitoring and control of LV network

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Final remarks

- Smart Grids are enables for energy policy targets
- Consumer-centric vision is a key genuine added value
- Energy/ICT is fundamental part of the smart solution
- Data process, automation and interoperability are key
- Rethink regulatory framework and stimulate investments

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

http://ec.europa.eu/energy/gas_electricity/smartgrids/taskforce_en.htm