

# Smart Grid projects in Europe lessons learned and current developments

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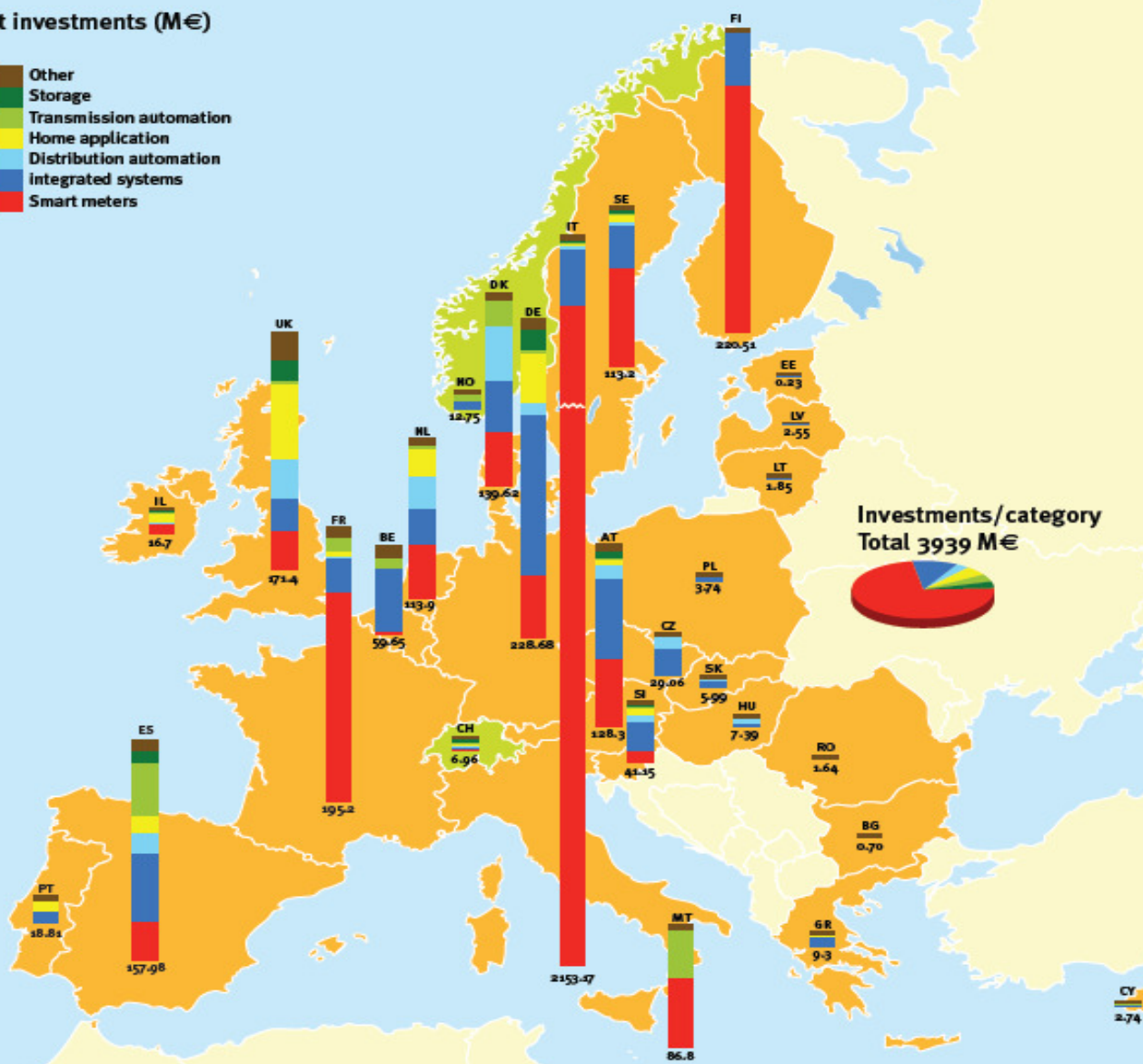
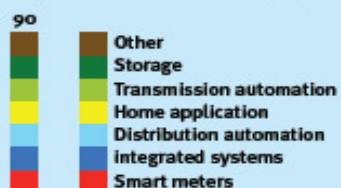
- Questionnaire sent in November 2010
- Over 300 projects received accounting for over 5 Billion Euros
- Screening of the projects to take out those which did not fall into the scope of our study or that didn't provide enough information for the analysis
- 219 projects in the final catalogue.

- The catalogue includes projects focusing on grid integration of new energy technologies and resources (e.g. new storage devices, electric vehicles).
- Includes projects aiming at making the grid smarter (through new technologies and new ICT capabilities).
- Does not include projects aiming at making the grid stronger (e.g. through new lines, substations and power plants).

# Distribution of project investments across countries and project categories

E&I Workshop "Enlarging and Integrating Energy Security" – Assessing infrastructure in the electricity and gas sector, Dubrovnik, 5-7 October, 2011

Project investments (M€)

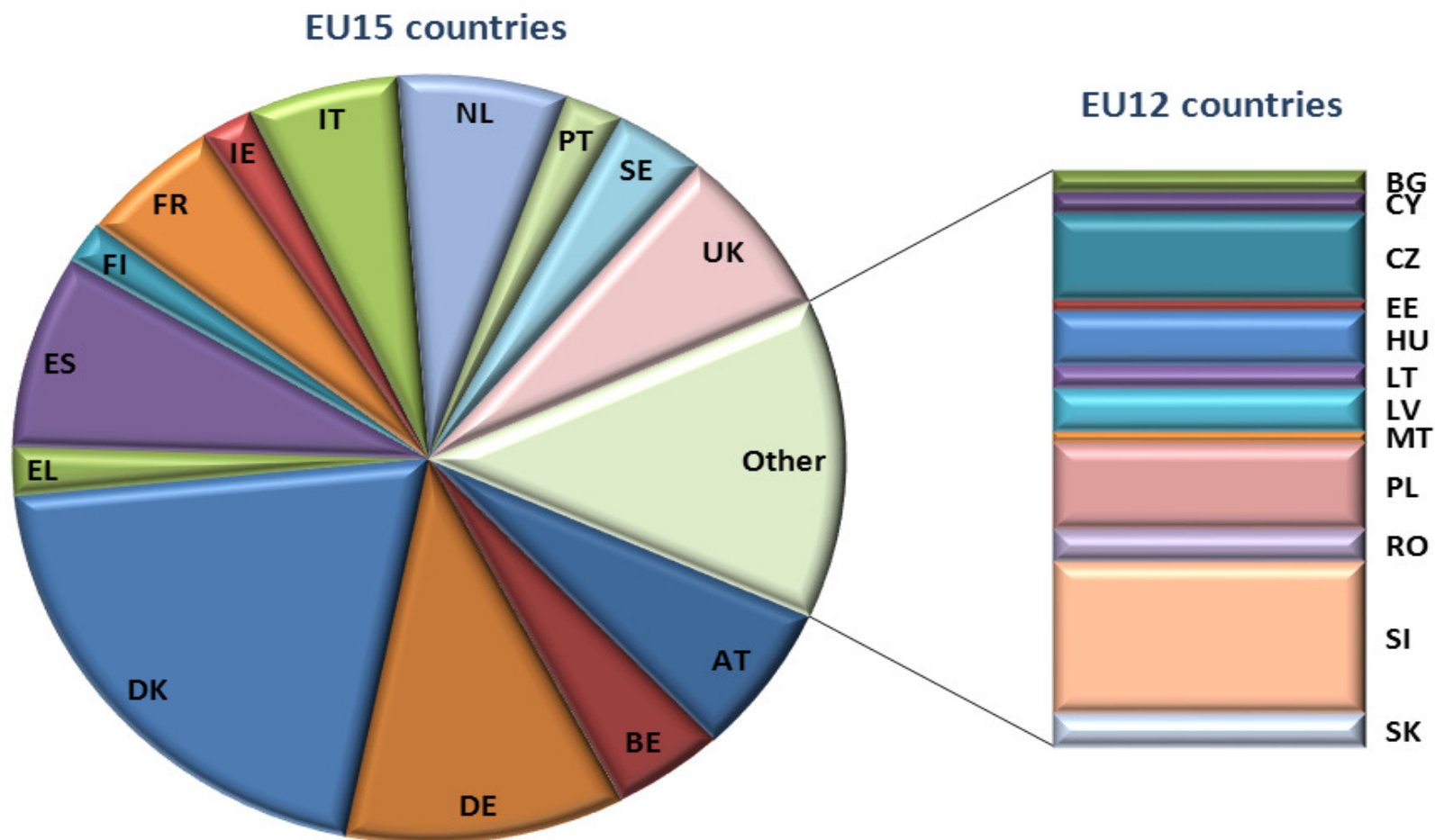


- ✓ Uneven distribution of investments across Europe. Most of investments in EU-15 Countries
- ✓ Over 5 billions of investments, but still at the beginning of the Smart Grid transition

Projects can span over more than country and can include more than one category. The picture does not include the Smart Meter Roll-out in Sweden, spanning approx. 150 projects and amounting to approx. 1500 M€, as a detailed description of the projects was not received.

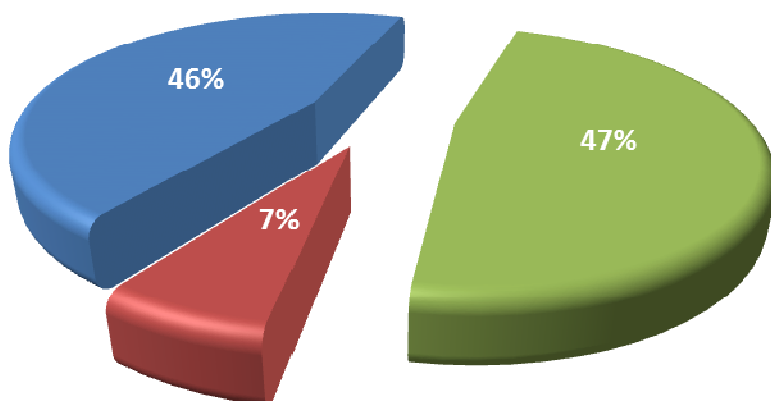
# Project distribution across countries

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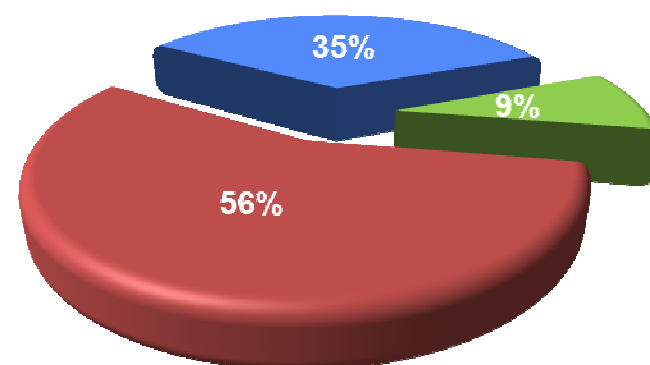
## Share of R&D, demonstration and deployment projects

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■ Deployment ■ Demonstration ■ R&D

Number of projects



■ Deployment ■ Demonstration ■ R&D

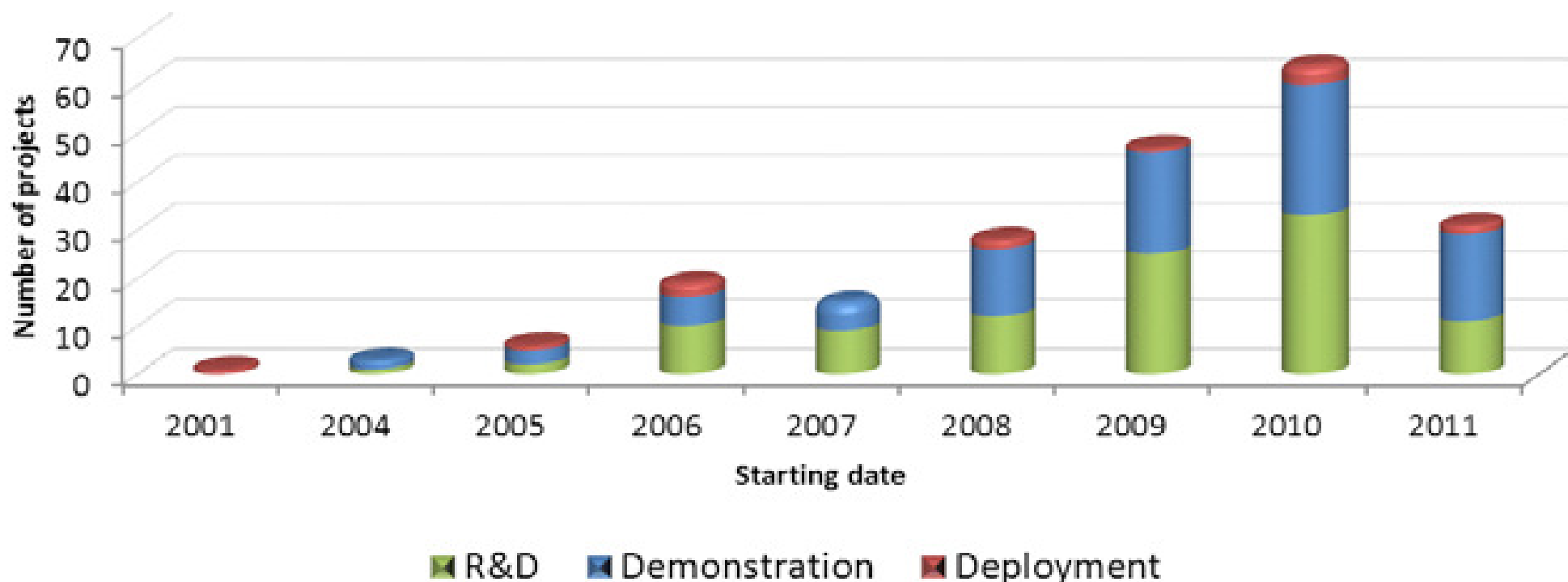
Budget (M€)

R&D and Demonstration projects represent the great majority of projects

Deployment projects account for the largest part of investment. Main focus: **Smart Meters** roll-outs

## Share of R&D, demonstration and deployment projects

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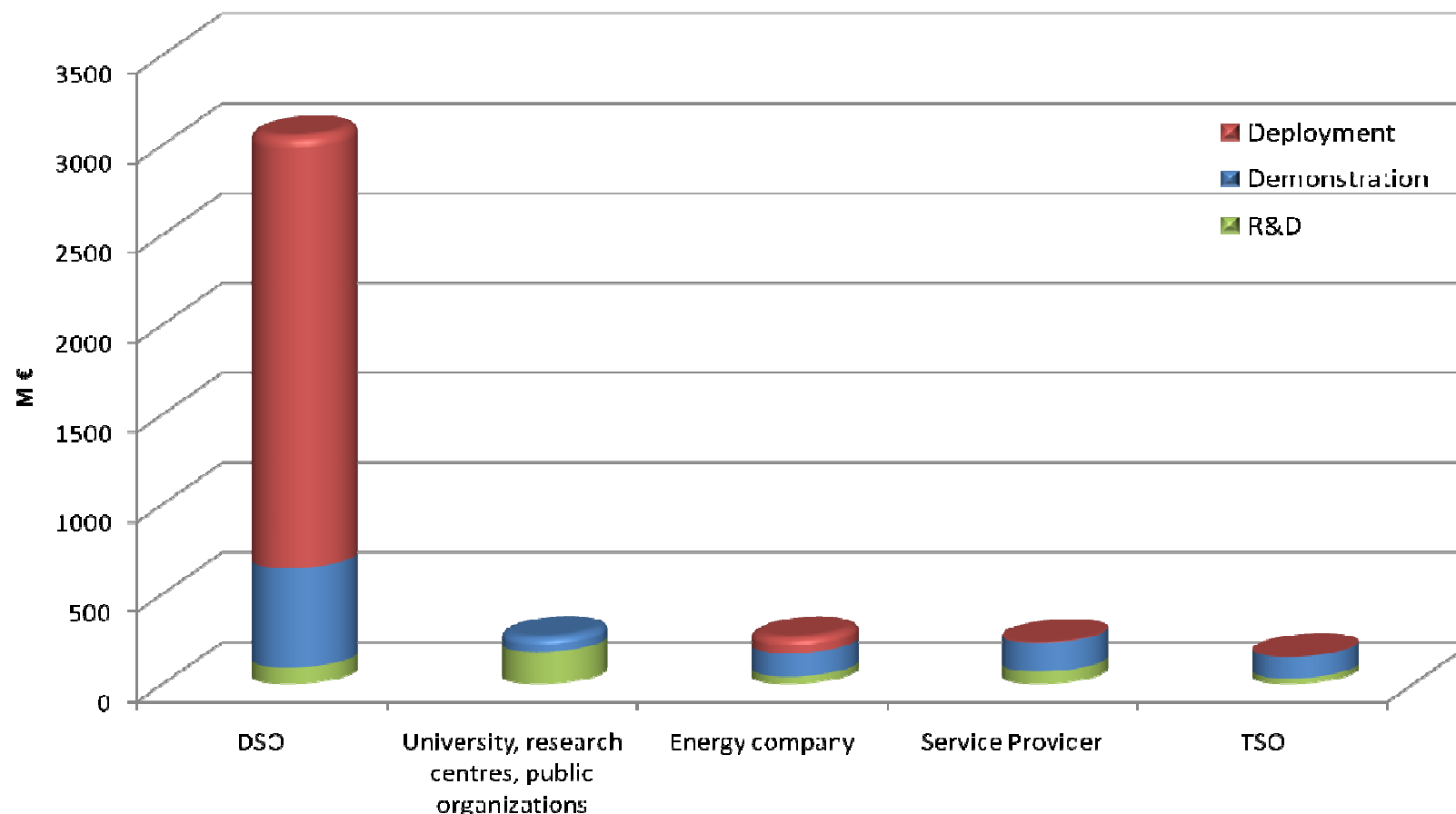


The constant growth of demonstration projects shows an increasing confidence in the viability of Smart Grid projects.

R&D and Demonstration projects: mostly small-medium scale (4.5 and €12 million of average budget respectively)

## Share of R&D, demonstration and deployment projects

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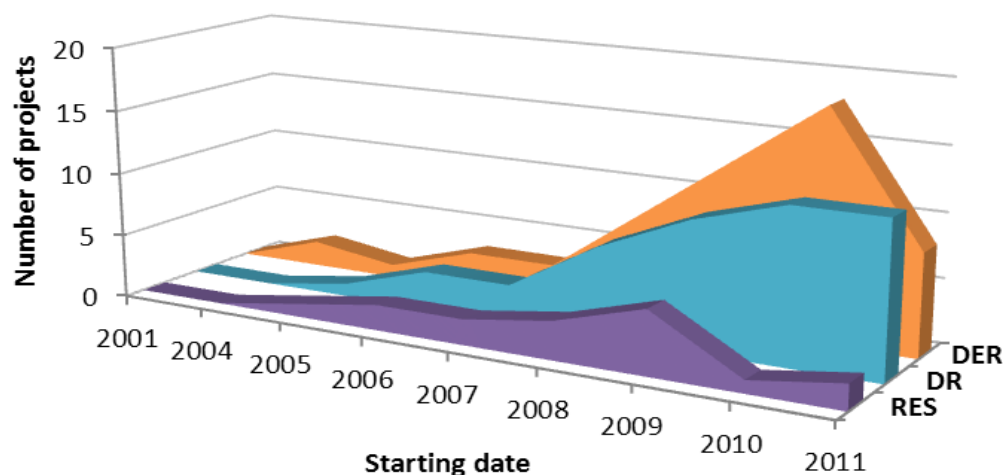
- ✓ DSOs are leading Smart Grid investments. Need to ensure fair sharing of costs and benefits.
- ✓ Multidisciplinary consortia to share competencies and reduce risks.



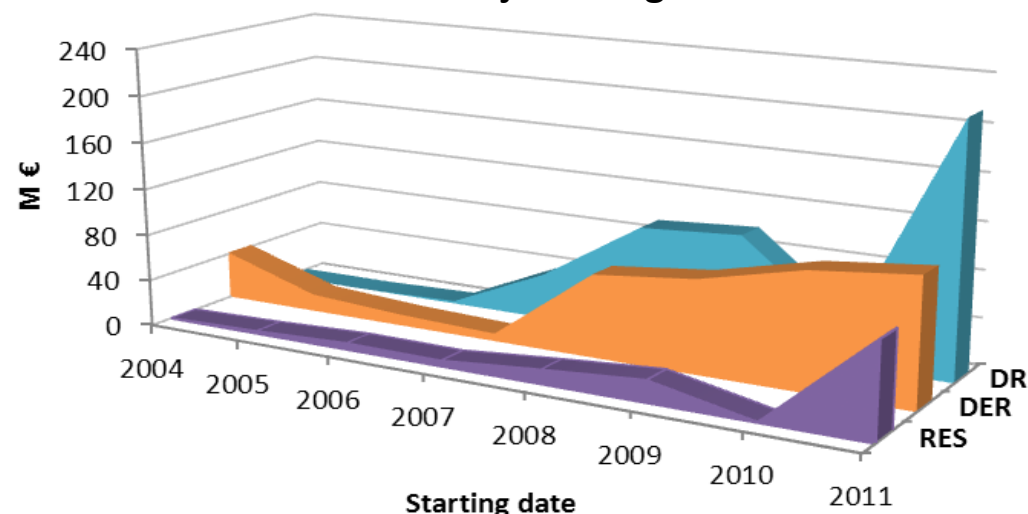
## Main applications addressed by the projects

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Number of projects



Project budget

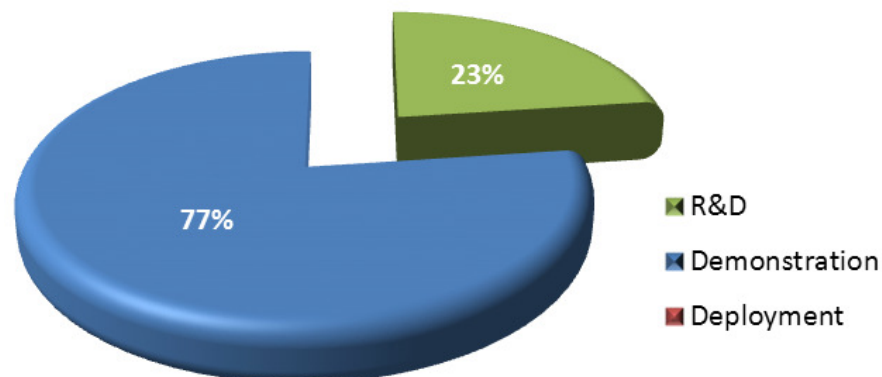


- ✓ Integration of Distributed Energy Resources (DER) steadily growing
- ✓ Demand Response (DR) projects, testing dynamic pricing and consumer participation, are growing in number (smart meters as key enabler)

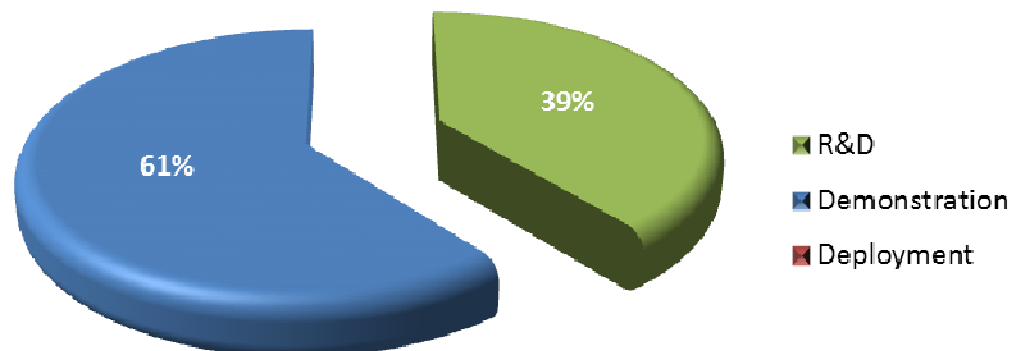
# Main applications and stage of development

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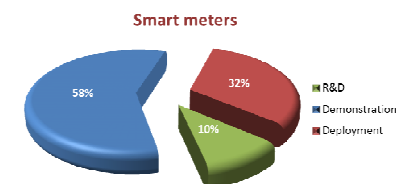
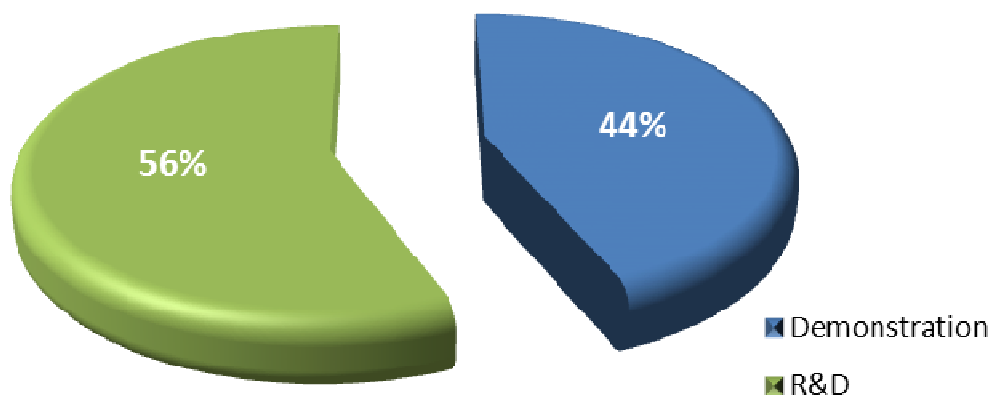
## Demand Response



## Distributed Energy Resources



## Large scale RES



**To sum up**

- ✓ Investments are not equally distributed across Europe
- ✓ Need to increase investors confidence in the viability of SG projects and to shed light on the distribution of costs and benefits between different stakeholders. Therefore there is a need for:
  - Large scale demonstrators to understand system dynamics and reduce investment risks
  - Incentives for DSO to invest in SG, taking into consideration their role in laying the infrastructure
  - Dissemination of lessons learned and knowledge sharing.

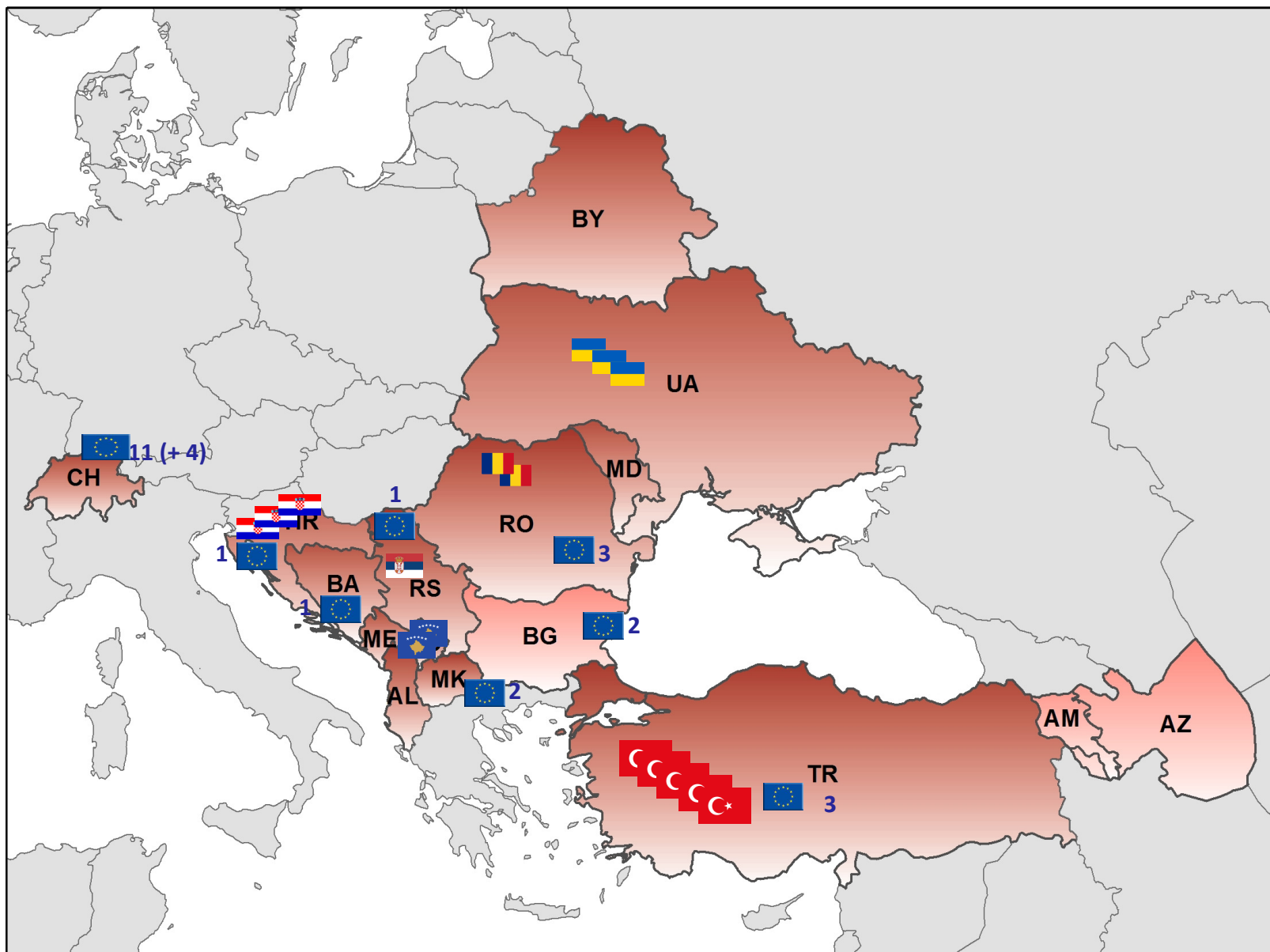
**And what is the situation in E&I countries?**

...

**Some preliminary results of our exercise**

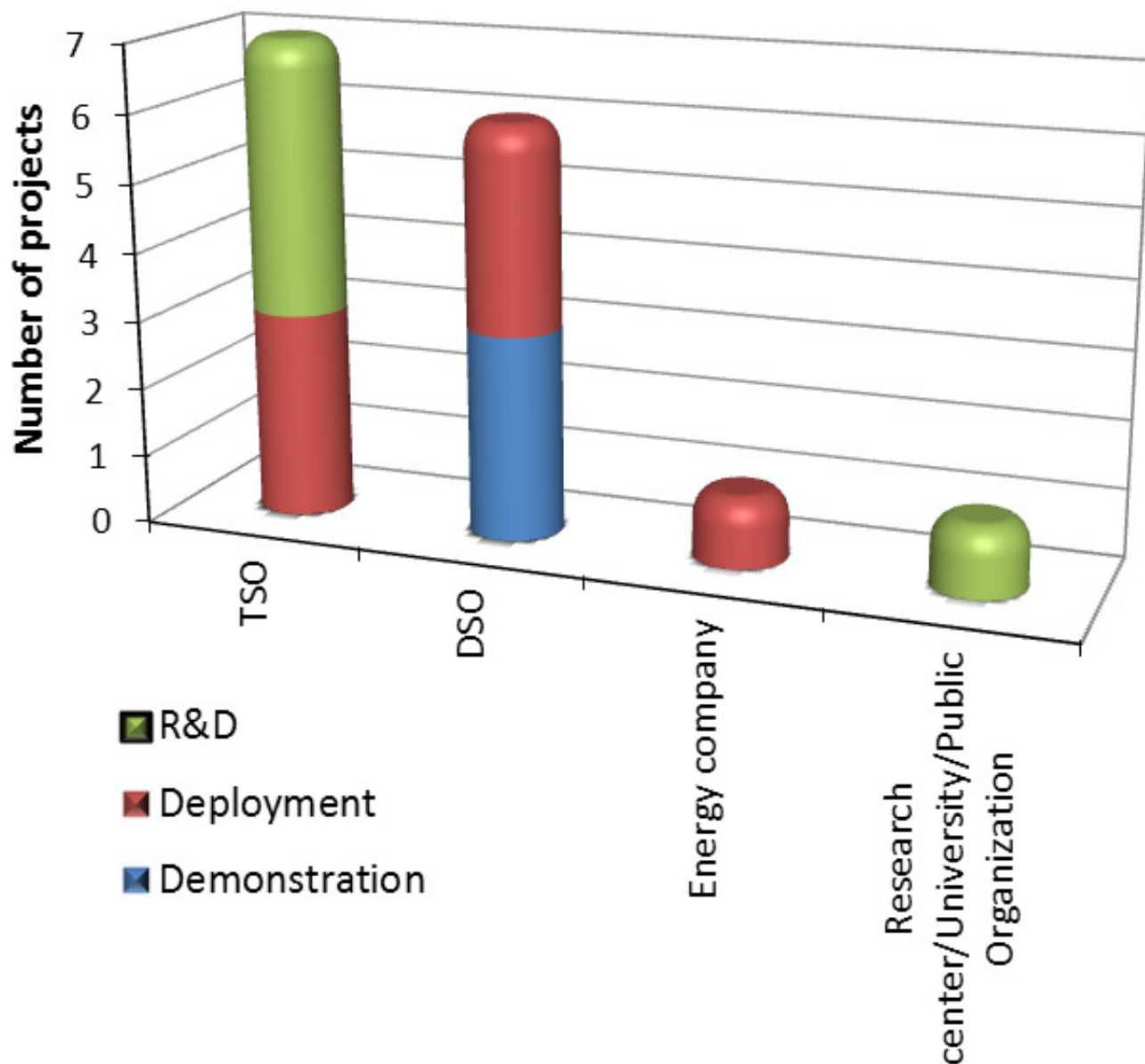
# E&I Smart Grid projects survey\_Project distribution

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✓ 15 projects received, accounting for about 136 M € investment

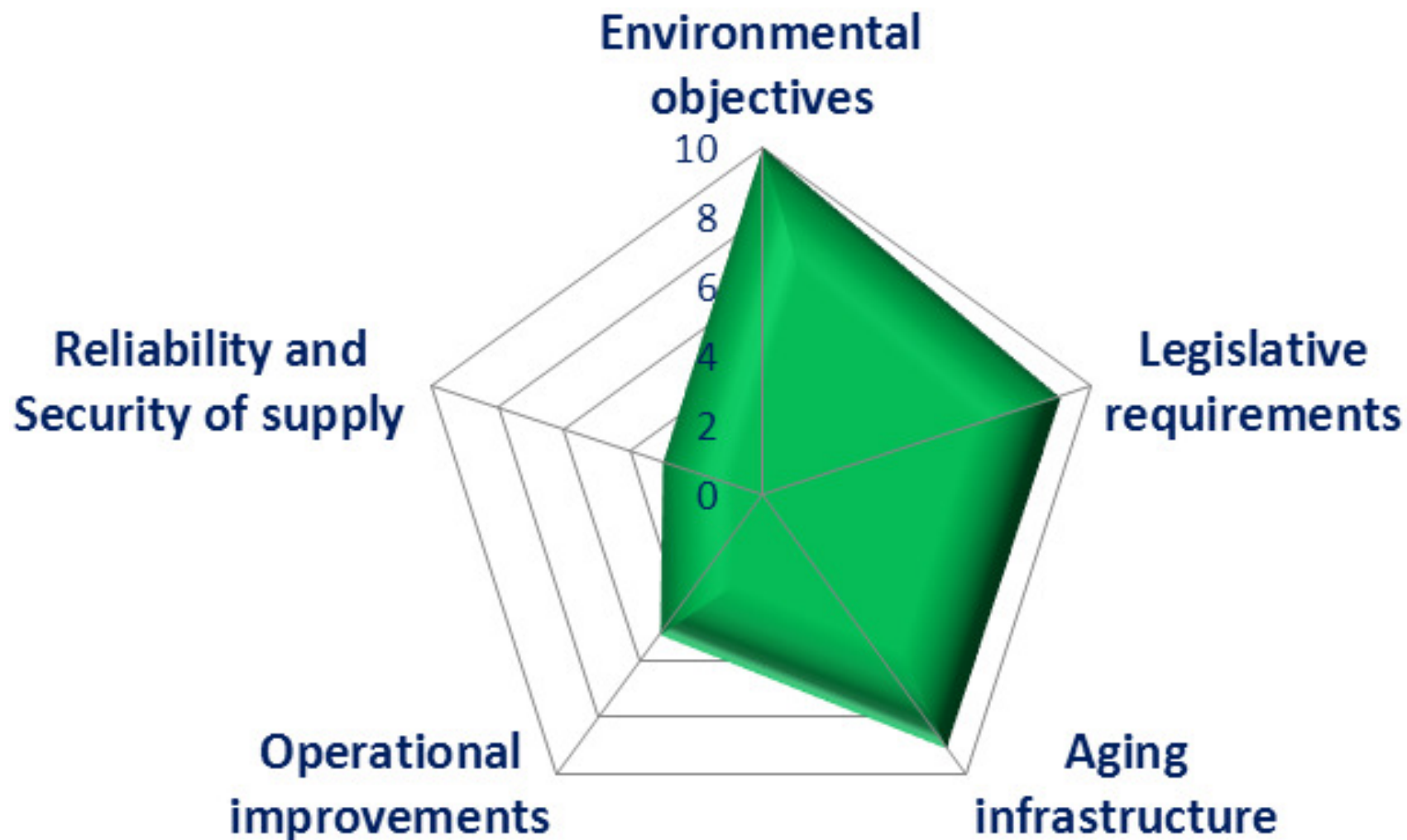
✓ Most projects in the smart metering or in the network automation field.



DSOs and TSOs  
are leading  
investments in  
E&I countries.

# E&I Smart Grid projects survey main drivers

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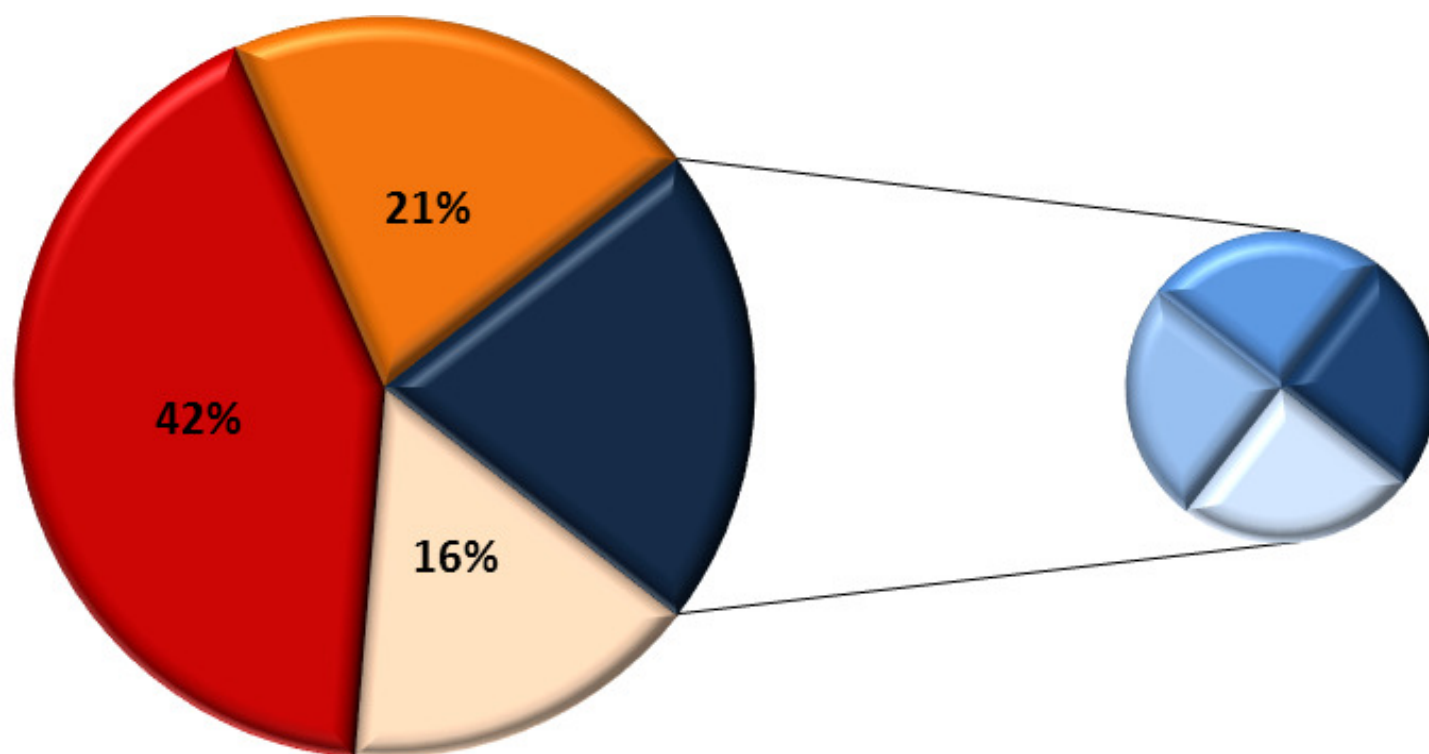




# E&I Smart Grid projects survey main obstacles

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- Lack of (open) standards
- Lack of regulatory resources/funding
- Complexity and confusion / Lack of a clear vision of what the system will look like



- ✓ Workshop mapping exercise only as a first step towards a survey of SG projects in wider Europe.
- ✓ Need for more cooperation. Our mapping exercise is ongoing!
- ✓ Lack of financial resources seems to be the most important obstacle to SG development. Need to revise the existing regulatory frameworks and to mobilize public funding.
- ✓ Most of the projects are concentrated in areas where the technology is already mature, as it has been tested in other countries. Sharing of knowledge and lessons learned is of crucial importance to accelerate the deployment of SG.

# New mapping tool to track Smart Grid projects

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## JRC – IE, Smart Electricity Systems

<http://ses.jrc.ec.europa.eu/>



# Questions?