

**The European Commission's
science and knowledge service**

Joint Research Centre

Power grid digitalisation and JRC activities

***Gianluca Fulli,
JRC C3 Deputy Head of Unit***



Joint Research Centre (JRC)

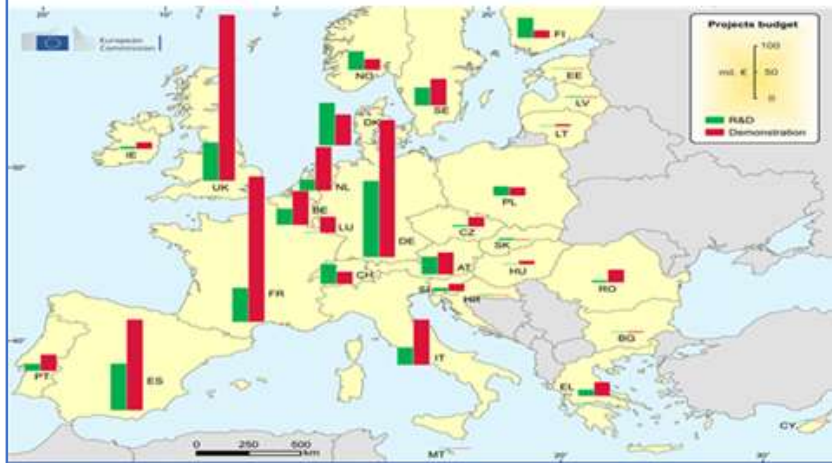
JRC Smart Electricity
Systems and
Interoperability team



As the **science and knowledge service** of the Commission, the JRC's mission is to support EU policies with **independent evidence** throughout the whole policy cycle

Research areas on power systems & smart grids

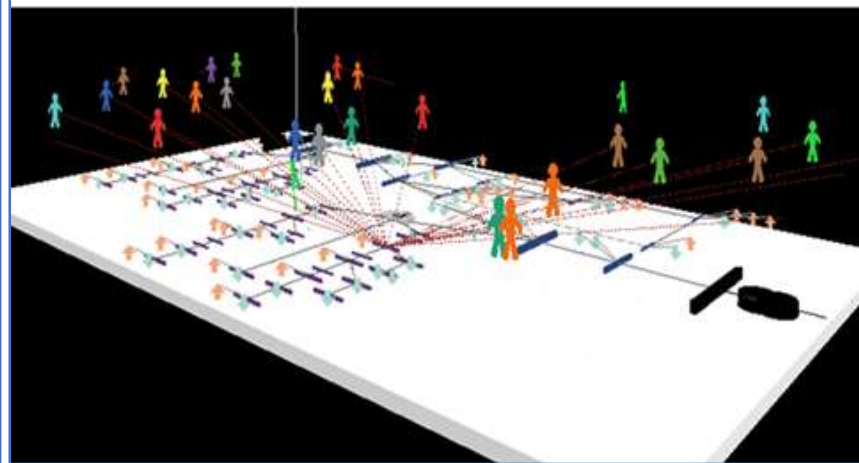
Scanning the smart electricity ecosystem



Putting the digital grid interoperability under test

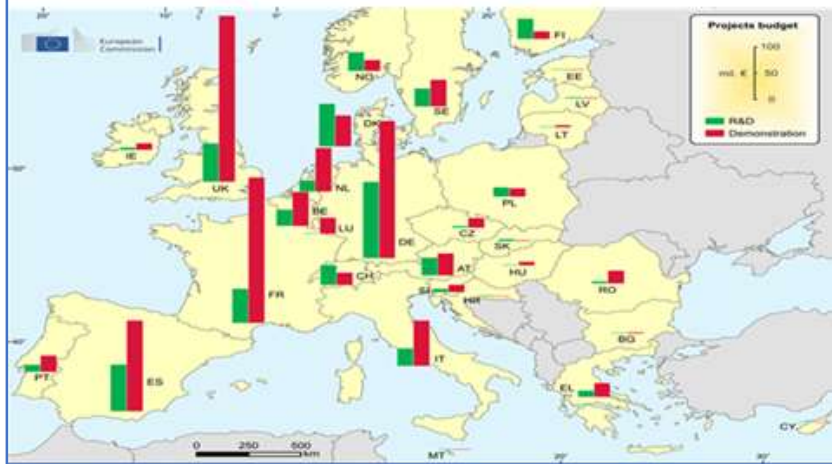


Capturing the electricity socio-technical interface



Research areas on power systems & smart grids

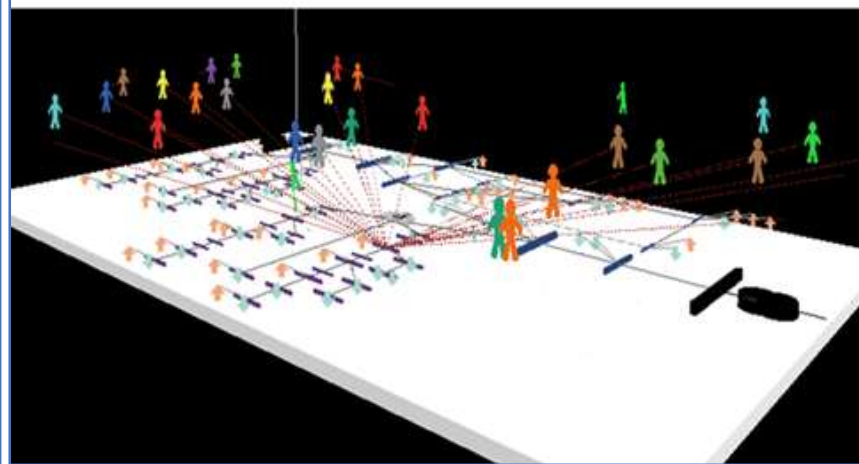
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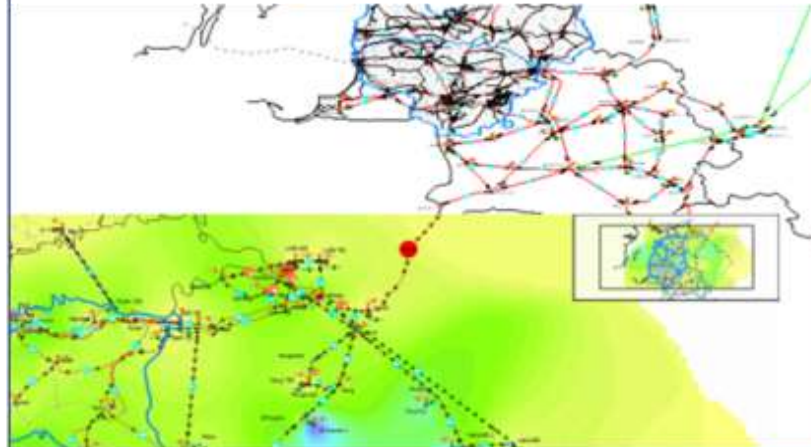
Research areas on power systems & smart grids



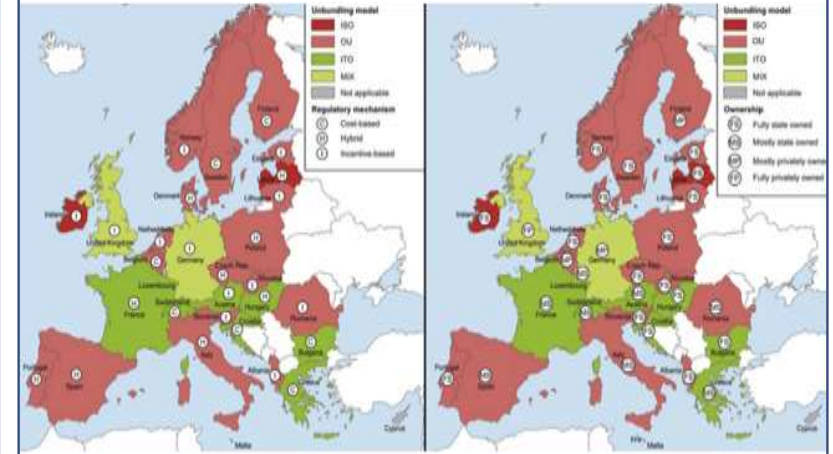
Assessing smart grid costs, benefits and impacts



Evaluating electricity supply security and resilience



Assessing the evolving electricity markets schemes



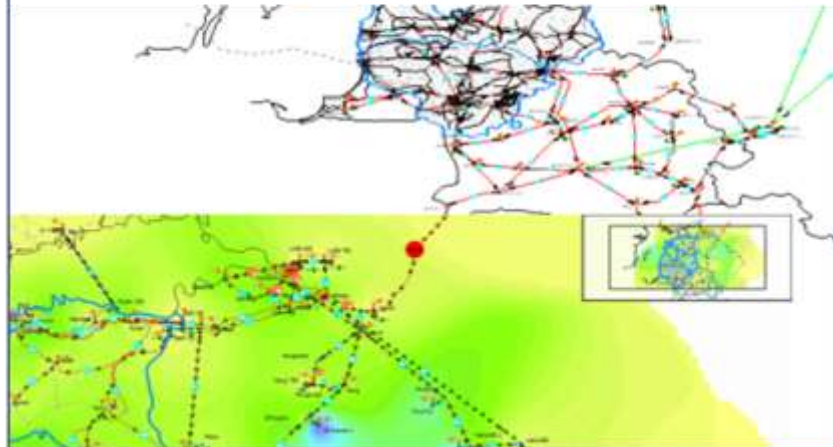
Research areas on power systems & smart grids



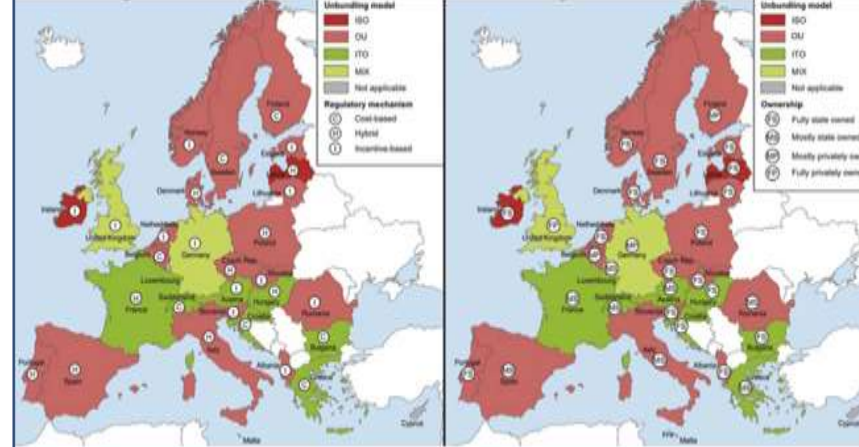
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Evaluating electricity supply security and resilience



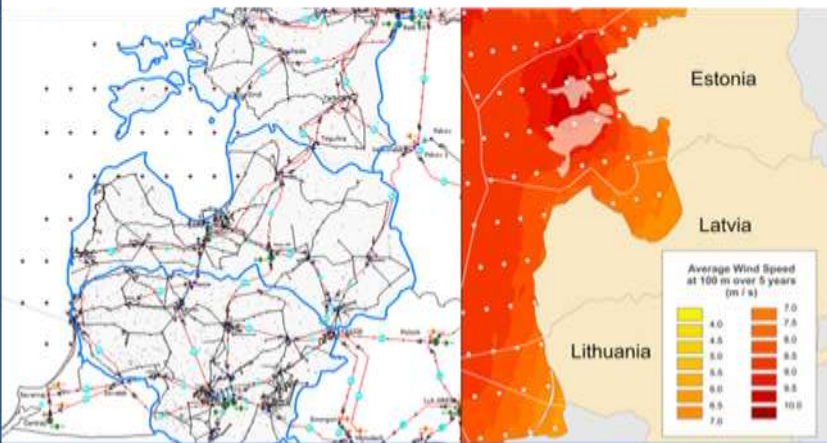
Assessing the evolving electricity markets schemes



Research areas on power systems & smart grids



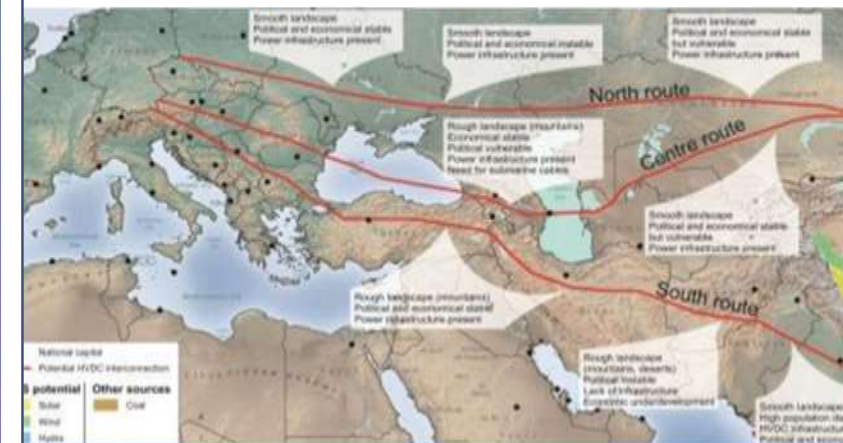
Studying low-carbon power system integration



Informing national, regional investment strategies



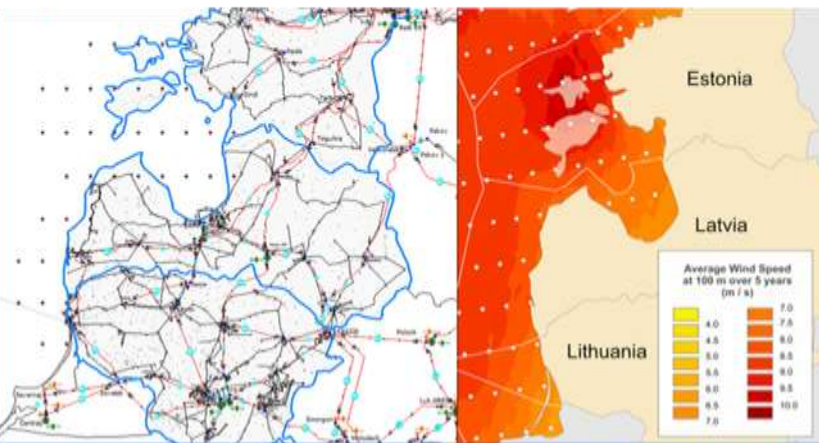
Looking at transcontinental and global power grids



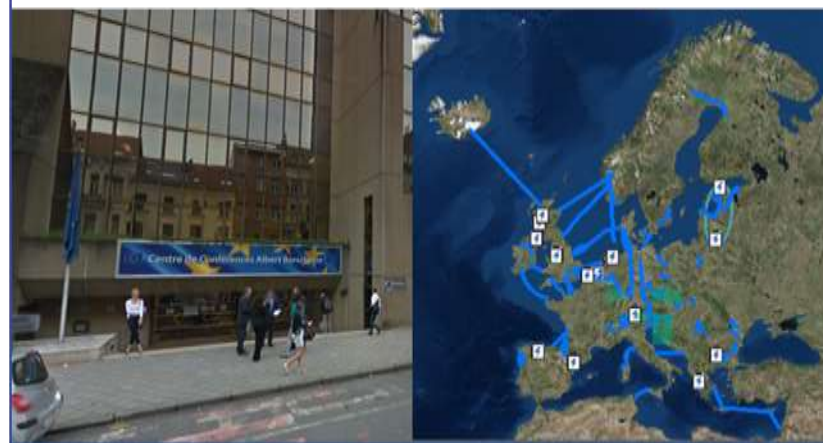
Research areas on power systems & smart grids



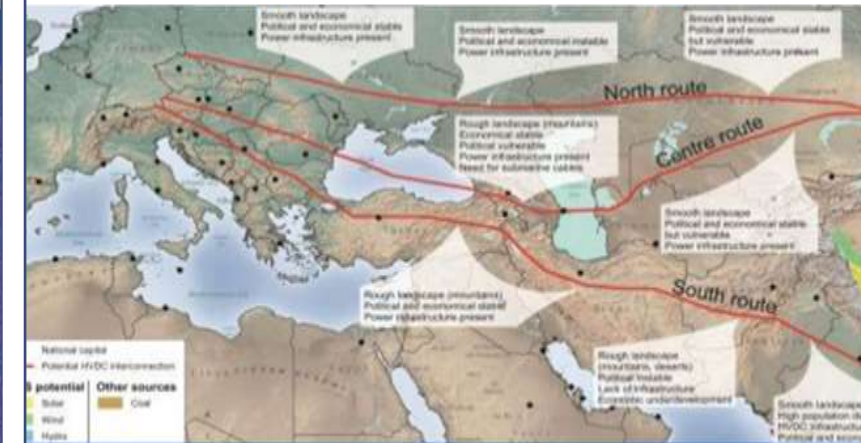
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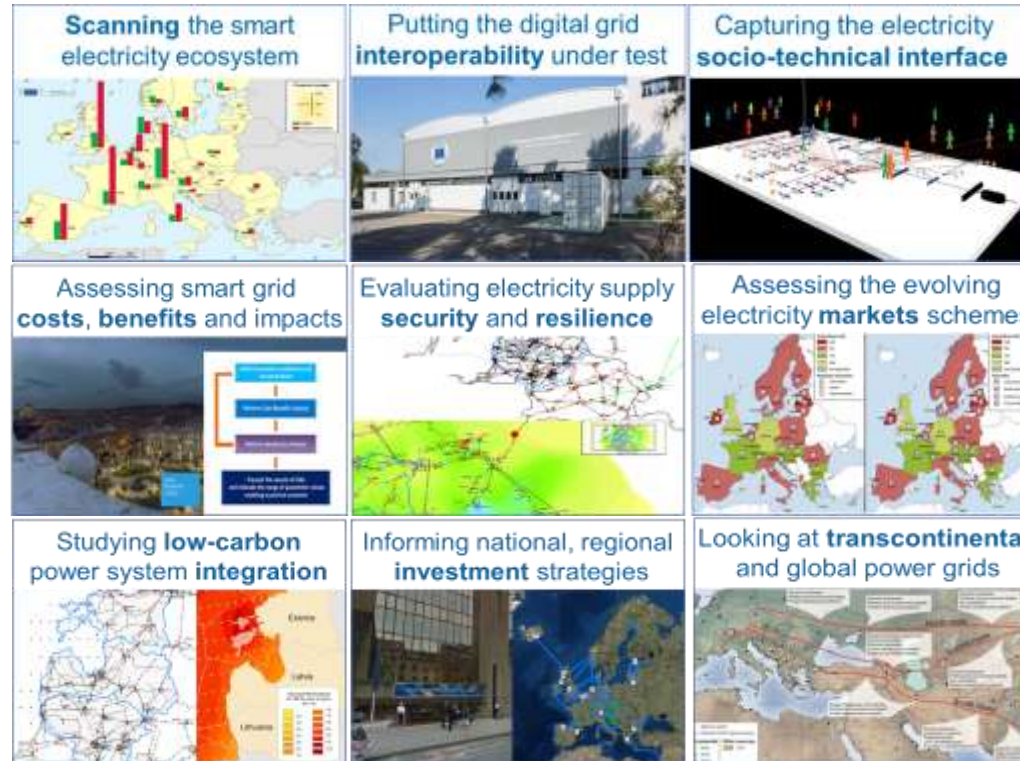
Informing national, regional investment strategies



Looking at transcontinental and global power grids



Research areas on power systems & smart grids



DIGITALISATION OF THE POWER SYSTEM – SOME KEY AREAS

LOCAL ENERGY
MARKETS SUPPORT
TECHNOLOGIES

ICT SMART CITIES –
ENERGY MGMT

SMART HOMES AND
BUILDINGS IN SMART
GRIDS

CONSUMER
ENGAGEMENT

SMART TRANSPORT

SMART GRID MGMT

IT-RES

DATA ACCESS AND
SECURITY

SYSTEMS INTEGRATION

DIGITALISATION OF THE POWER SYSTEM – MORE DETAILS

- COMBINING SERVICES
- LOCAL ENERGY COMMUNITIES
- LOCAL MARKETS

LOCAL ENERGY
MARKETS SUPPORT
TECHNOLOGIES

- ENERGY PERFORMANCE
- GRID SERVICE FOR ICT-ISOLATED SYSTEMS
- ELECTRICITY-HEAT-COOL INTERFACES
- HEALTH, ENERGY & MOBILITY IN RURAL AREAS
- EDGE COMPUTING
- ASSET MANAGEMENT

ICT SMART CITIES –
ENERGY MGMT

- SMART HOMES AND ICT SERVICES INTEROPERABILITY
- SMART HOMES AND CYBER SECURITY AT SMALL SCALE
- HOME AUTOMATION
- SERVICES
- INDUSTRIAL FLEXIBILITY

SMART HOMES AND
BUILDINGS IN SMART
GRIDS

- TECHNOLOGIES
- LEARNING

CONSUMER
ENGAGEMENT

- SMART EV CHARGING AND VEHICLES TO GRID
- CONNECTED CAR & EV
- ICT FOR TRANSPORT MGMT

SMART TRANSPORT

SMART GRID MGMT

- ACTIVE GRID OPERATION
- MARKETS AND PLATFORMS FOR GRID SERVICES
- 2050 EU GRID MODELLING
- TECHNOLOGIES

IT-RES

- AUTOMATIC CERTIFICATION
- RES FORECASTING
- RES ENERGY FARM MGMT
- OFFSHORE O&M VIA DRONES

DATA ACCESS AND
SECURITY

- CYBER-PHYSICAL SECURITY
- BIG DATA & SUPERCOMPUT.
- DATA ACCESS AND REUSE

SYSTEMS INTEGRATION

- TELECOM & ENERGY INFRA & BUSINESS MODELS
- TRUST BUILDING BETWEEN SECTORS
- INFRASTRUCTURE SHARING
- COMMUNICATION
- DSO/TSO MANAGER VS USER

Smart grid interoperability

JRC Petten, NL

Smart home technologies
Digital energy solutions



JRC Ispra, IT

Smart city
Smart mobility

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