



EVROPSKÁ UNIE



MINISTERSTVO ŠKOLSTVÍ,
MLÁDEŽE A TĚLOVÝCHOVY



OP Vzdělávání
pro konkurenceschopnost



INVESTICE
DO ROZVOJE
VZDĚLÁVÁNÍ

COMMON ENERGY MARKET – INTERCONNECTORS

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FSS MU

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Drivers of investment

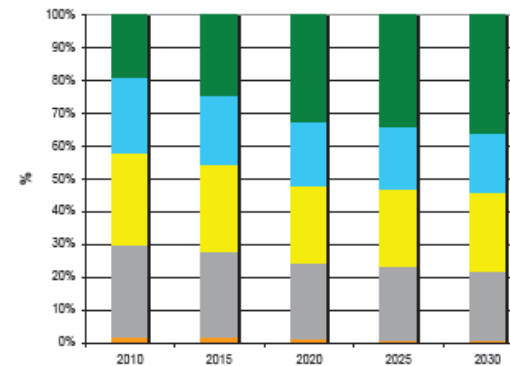
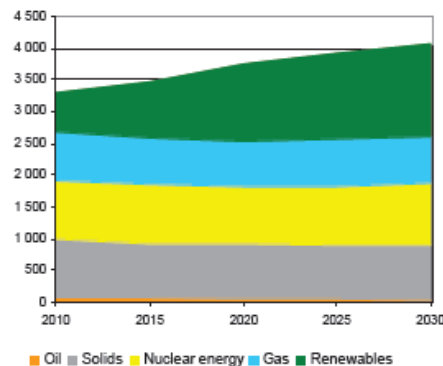
- Development of common energy market (+ security reasons)
- Development of renewables
 - Binding targets – 20 % of RES by 2020

PROJECTED EVOLUTION OF RENEWABLE ELECTRICITY GENERATION (TWH), 2010-2020

RESOURCE TYPE	GENERATION 2010 (TWH)	GENERATION 2020 (TWH)	SHARE 2020 (%)	VARIATION 2010-2020 (%)
HYDRO	342.1	364.7	32%	7%
WIND	160.2	465.8	40%	191%
BIOMASS	103.1	203	18%	97%
SOLAR	21	102	9%	386%
OTHER	6.5	16.4	1%	152%
TOTAL	632.9	1151.9	100%	82%

SOURCE: EC, 2010

GROSS POWER GENERATION MIX 2010-2030 BY SOURCE IN TWH (LEFT) AND CORRESPONDING SHARES OF SOURCES IN % (RIGHT), ACCORDING TO THE PRIMES REFERENCE SCENARIO



SOURCE: EC, 2010

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Common market and energy lines

„Despite... Directive 2009/72/EC ... and Directive 2009/73/EC ...the market remains fragmented due to insufficient interconnections between national energy networks and to the suboptimal utilisation of existing energy infrastructure. However, Union-wide integrated networks and deployment of smart grids are vital for ensuring a competitive and properly functioning integrated market, optimal utilisation of energy infrastructure, increased energy efficiency ...“

Regulation 347/2009

- Art. 194 TFEU:
 - 1) Ensuring the function of the energy market
 - 2) Ensuring security of supply in the Union
 - 3) Promoting energy efficiency and energy saving and the development of new and renewable forms of energy
 - 4) Promoting the interconnection of energy networks

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Estimated investments (2010 – 2020)

- 1) Electricity sector – TYNDP (2010) stipulates about 70 bn. euro for transmission infrastructure, of which 28 bn. euro to be devoted to cross border interconnections.
- 2) Gas sector – 28 bn. euro for import pipelines, 21 bn. for intra-EU interconnectors.
- 3) CO₂ pipelines infrastructure – 2,5 bn. Euro.

**BUSINESS-AS-USUAL, COMMERCIALY VIABLE AND TOTAL NEEDED INVESTMENT BY SECTOR
2010-2020**

SECTOR (INVESTMENT 2010-2020, BN €)	BUSINESS-AS-USUAL DELIVERY	COMMERCIALY VIABLE DELIVERY	TOTAL NEED
ELECTRICITY	45	90	142
GAS	57	63	71
CO ₂ TRANSPORT	0	0	2.5
TOTAL	102	153	215.5
TOTAL (IN %)	47%	71%	100%
INVESTMENT GAP (IN BN €)	113.5	62.5	0

SOURCE: EC, 2010

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Investments - challenges

2 problems:

Financing

Permission and administration procedures (incl. local opposition)

And the rising role of the EU in dealing with them.

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EU financing

Economically viable – economically non-viable interconnectors (esp. cross-border – case of CZ/PL gas pipeline)

TSO's own equity financing complemented by loans from commercial banks and international financial institutions (EIB etc.)

Advantage of domestic transmission and distribution over crossborder interconnectors or multiple-country cross-continental pipeline projects.

= role of the EU in the economically non-viable coross-border interconnectors

TOTAL AMOUNT OF PUBLIC EXPENDITURE IN THE FIELD OF ENERGY (NATIONAL AND EU LEVEL), 2009

	TOTAL (IN MILLIONS €)	AS PERCENTAGE OF TOTAL ENERGY-RELATED SPENDING IN EUROPE	AS PERCENTAGE OF TOTAL PUBLIC SPENDING THAT YEAR IN EACH LEVEL OF INTERVENTION
MEMBER STATES	7,210	96	0.12
EU (EU BUDGET) ¹⁰	300.2	4	0.26
TOTAL	7,510.2	100	...

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EU financing

- ❑ **TRANS-EUROPEAN ENERGY NETWORK – TEN-E**
 - ❑ Since 90s, enhanced in 2006 by Decision 1364/2006/EC.
 - ❑ Limited budget of about 22 million euro annually, with a total of 155 million euro for the period 2007-2013.
 - ❑ Too many candidates for too small an amount of funding.
 - ❑ Support mainly to feasibility studies and studies related to the project (up to 50 % of costs). The project itself only up to 10 %.
 - ❑ Mainly gas and electricity sector.
- ❑ Inclusion of a given project in TEN-E means the chance to gain resources from other EU instruments (EIB, structural funds, Instrument of Pre-accession Assistance EIA, European Neighbourhood Policy, RTD Framework programs).

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EU Financing - EIB

Major source of EU infrastructure financing

Plays an important role in facilitating the implementation of the TEN-E – in 2007-2009 up to 6 bn. euro (3,4 bn. natural gas, 2,6 bn. electricity).

In addition to the conventional loan financing also Trans-European Network Investment Facility – for priority TEN projects (0,5 – 1 bn. euro per year for energy)

Structured Finance Facility – since 2001, high-risk profile projects.

Infrastructure Equity Fund, JESSICA, JASPERS...

EIB SIGNED LOANS FOR ENERGY INFRASTRUCTURE OF TRANS-EUROPEAN INTEREST IN THE PERIOD 2007-2009 (MILLION €)

	2007	2008	2009	2007-2009
ELECTRICITY (AMOUNTS)				
TEN PROJECTS OF EUROPEAN INTEREST	0	90	600	690
TEN PRIORITY PROJECTS	140	140	0	280
TEN PROJECTS OF COMMON INTEREST	16.1	300	144.45	460.55
OTHER TEN PROJECTS	558	0	0	557.86
LOANS ALLOCATED TO A SET OF PROJECTS OF VARIOUS TEN PRIORITY LEVELS	150	163	260	572.5
GAS (AMOUNTS)				
TEN PROJECTS OF EUROPEAN INTEREST	185	50	0	235
TEN PRIORITY PROJECTS	160	375	275	810
TEN PROJECTS OF COMMON INTEREST	255	183	0	438
OTHER TEN PROJECTS	0	642	337	979
LOANS ALLOCATED TO A SET OF PROJECTS OF VARIOUS TEN PRIORITY LEVELS	0	574	371	945
TOTAL AMOUNTS				
TEN PROJECTS OF EUROPEAN INTEREST	185	140	600	925
TEN PRIORITY PROJECTS	300	515	275	1090
TEN PROJECTS OF COMMON INTEREST	271	483	144	898.55
OTHER TEN PROJECTS	558	642	337	1536.86
LOANS ALLOCATED TO A SET OF PROJECTS OF VARIOUS TEN PRIORITY LEVELS	150	737	631	1517.5

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EU financing

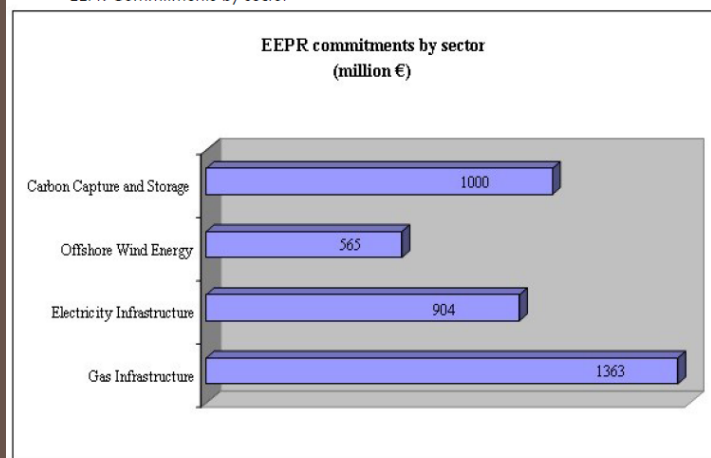
□ The European Economic Recovery Plan

- A special one-time impetus aimed at boosting EU economies (due to the financial crisis 2008) through a combination of short-term measures to stimulate demand and long-term investments in strategic sectors.
- Regulation 663/2009, aim was to co-finance projects in energy infrastructure, offshore wind energy and CCS. Rapid allocation, 96,3 % (3,8 bn. euro out of 3,9 bn. total) by the end of 2010 in the form of commitments to 59 projects.
- 44 gas and electricity projects, 9 offshore wind farms and 6 CCS.

18 gas infrastructure projects = 1,440 million

Central and South East Europe = 310 million

EEPR Commitments by sector



Source: Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the implementation of the Trans-European Energy Networks in the period 2007-2009.

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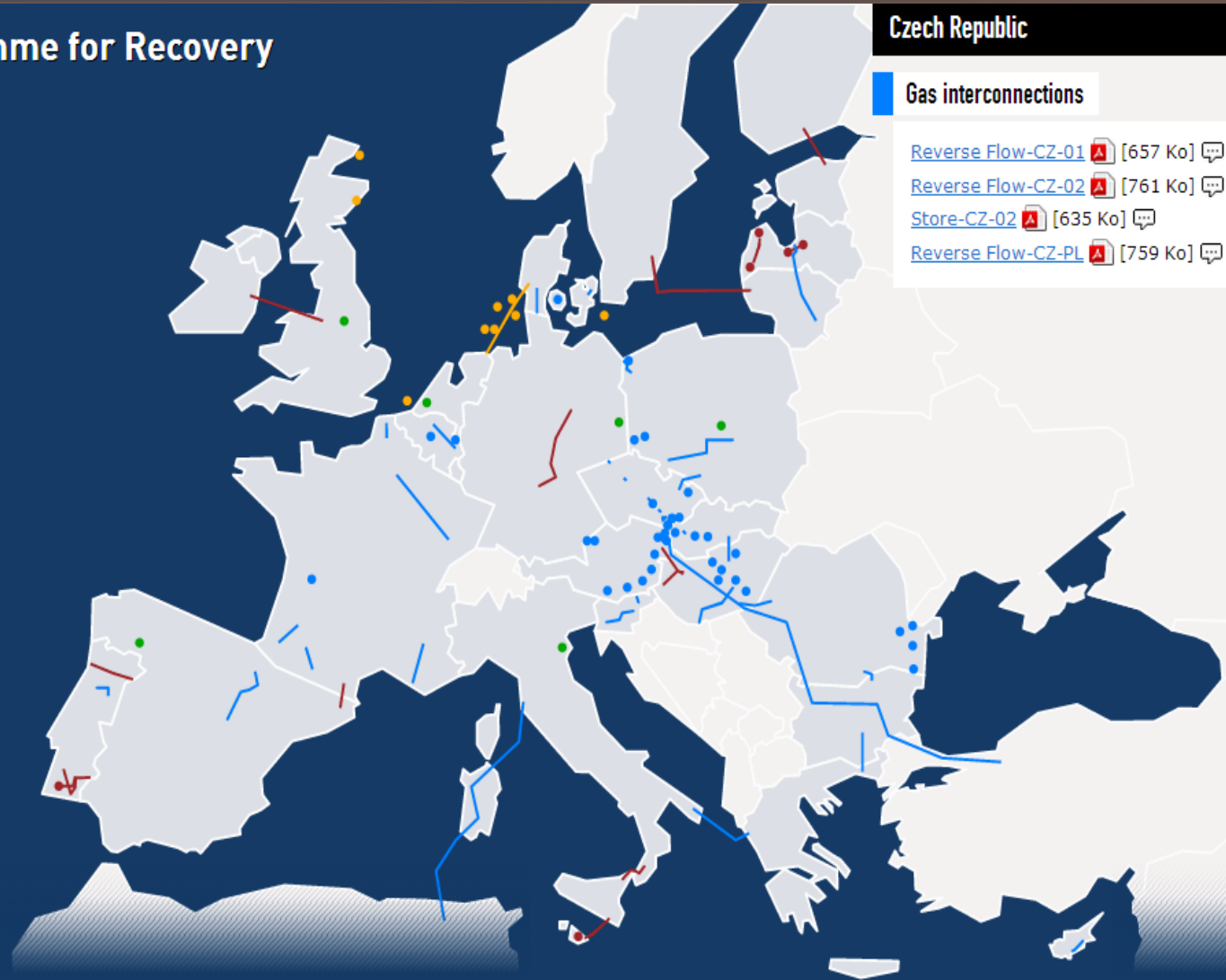


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EERP

European Energy Programme for Recovery

- All projects
- Gas interconnections & Reverse Flow
- Offshore Wind Energy
- Carbon Capture and Storage
- Electricity interconnections



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Protracted permit granting procedures

- ❑ Difficult and time consuming procedures
- ❑ Public opposition
- ❑ ENTSO-E = new power generation equivalent to 1/3 of present capacity will be built in the EU (220 out of 250 GW net increase from RES). 100 grid bottlenecks are expected to the end of the decade .
- ❑ 53300km of new and upgraded high-voltage routes (104 bn.euro) needed. 1/3 of those investments are being delayed „...mostly because of social resistance and longer than initially expected permitting procedures...they are lengthy and often cause commissioning delays...it is of utmost importance to smooth the authorisation processes“.
- ❑ **GB:** a 2005 proposal to expand a 200km transmission line carrying wind power across Scottish mountains to south cities attracted 20 244 objections. (approval in 2010).

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Energy Infrastructure Package

- 2011, with the aim to speed up and complete EU transmission infrastructure (strategic energy networks and storage facilities) by 2020.
- **Regulation No 347/2013 on guidelines for trans-European energy infrastructure**
- 12 priority corridors and areas covering electricity, gas, oil and carbon dioxide transport networks.
- Projects of Common Interests (PCIs) – label for the projects contributing to implementing these priorities. Projects displaying economic, social and environmental viability, with at least 2 MS.
- Streamlining of bureaucracy and permitting procedures to reduce their duration for PCI, increase public participation and acceptance of the implementation of such projects. Facilitating the regulatory treatment of PCI, providing market-based and direct EU financial support.

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Energy Infrastructure Package

- In the field of energy the amount of EU financial support shouldn't exceed 50 % of the eligible cost of studies and/or works. Co-financing rates may be increased to a maximum of 80 % for actions with a high degree of regional or EU-wide security of supply or strengthened solidarity of the EU or comprise highly innovative solutions.
- Co-financing rates may be increased by up to 10 % for actions having cross-sector synergies, reaching climate mitigation objectives, enhancing climate resilience or reducing the greenhouse gas emissions.
- Source: CRPM

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Energy Infrastructure Package

- The following financial instruments may be used:
 - (a) equity instruments, such as investment funds with a focus on providing risk capital for actions contributing to projects of common interest;
 - (b) loans and/or guarantees facilitated by risk sharing instruments, including sharing enhancement mechanism to project bonds, issued by a financial institution on its own resources with a Union contribution to the provisioning and/or capital allocation;
 - (c) any other financial instruments.
-
- Source: CRPM

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Energy Infrastructure Package

■ Connecting Europe Facility

- Plan to invest 50 bn. euro (9,12 and then 5,1 bn. euro to energy infrastructure).
- Providing the financial resources for the PCI.

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Energy Corridors

- ❑ **In the electricity sector four EU priority corridors are identified:**
- ❑ **An offshore grid in the Northern Seas and connection to Northern and Central Europe** to transport power produced by offshore wind parks to consumers in big cities and to store power in the hydro electric power plants in the Alps and the Nordic countries.
- ❑ **Interconnections in South Western Europe** to transport power generated from wind, solar, hydro to the rest of the continent.
- ❑ **Connections in Central Eastern and South Eastern Europe**, strengthening the regional network.
- ❑ **Integration of the Baltic Energy Market into the European market.**
- ❑ **In the gas sector, three EU priority corridors are identified:**
- ❑ **Southern Corridor** to deliver gas directly from the Caspian sea to Europe to diversify gas sources.
- ❑ **Baltic Energy Market Integration and connection to Central and South East Europe**
- ❑ **North-South corridor in Western Europe** to remove internal bottlenecks and enable best use of possible external supplies.



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Energy Corridors

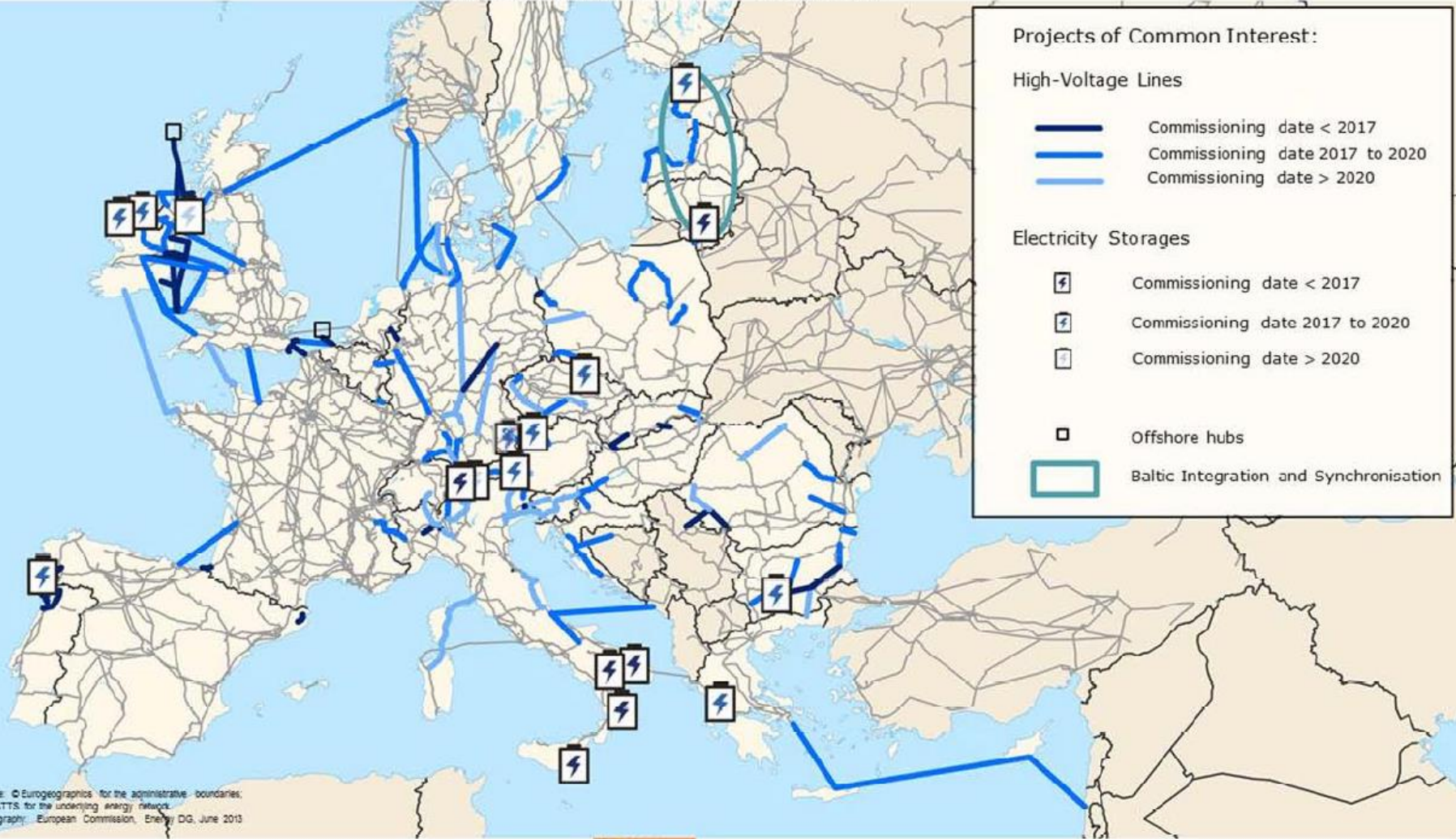
- **Priority Oil Corridor**
- *Oil supply connections in Central Eastern Europe ("OSC")*
- **3 priority thematic areas**
- *Smart grids deployment:* adoption of smart grid technologies across the Union to
- efficiently integrate the behaviour and actions of all users connected to the electricity network, in particular the generation of large amounts of electricity from renewable or distributed energy sources and demand response by consumers;
- *Electricity highways:* first electricity highways by 2020, in view of building an electricity highways system across the Union;
- *Cross-border carbon dioxide network:* development of carbon dioxide transport
- infrastructure between Member States and with neighbouring third countries in view of the deployment of carbon dioxide capture and storage.

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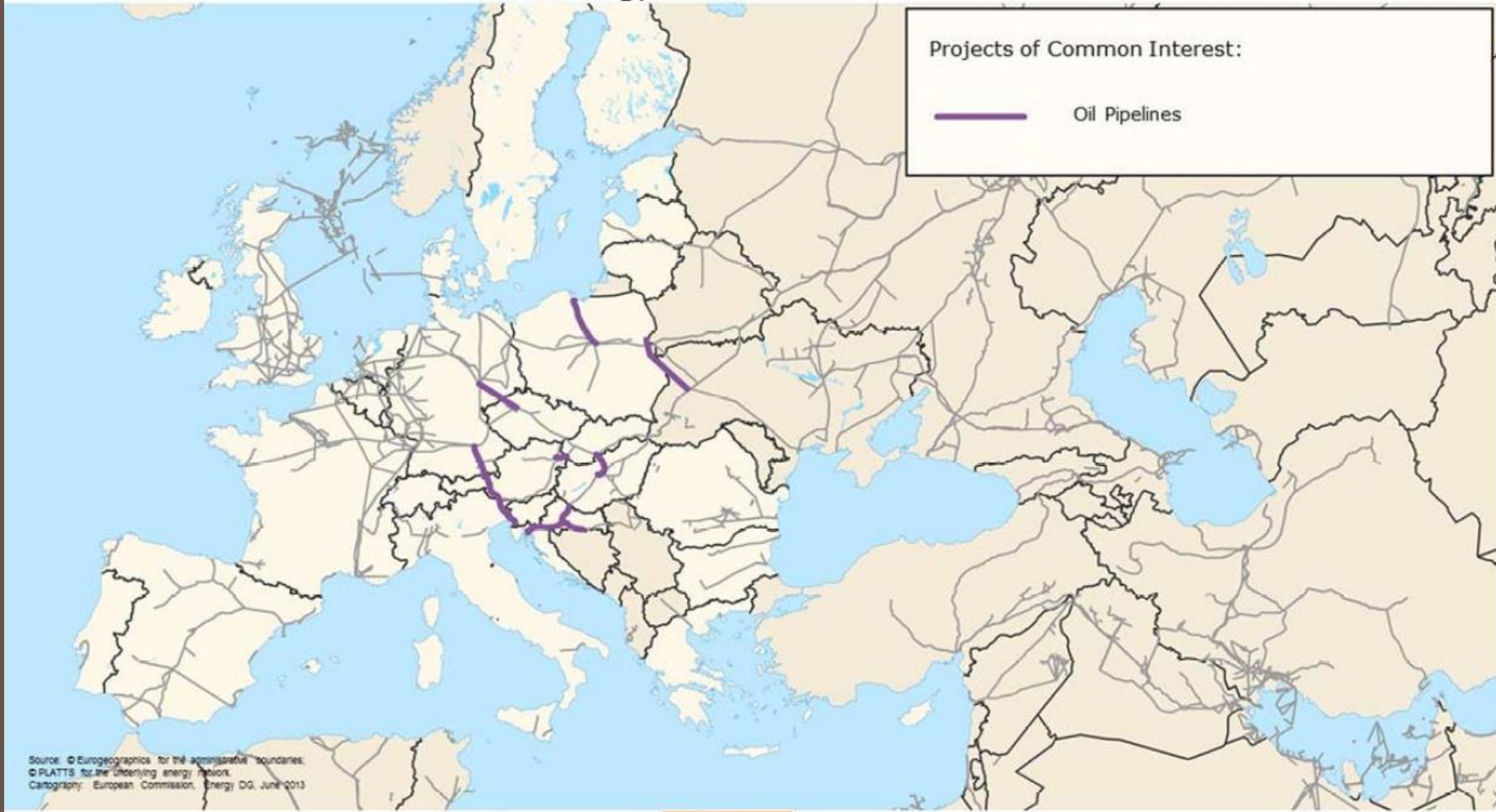
Energy Infrastructure - Electricity



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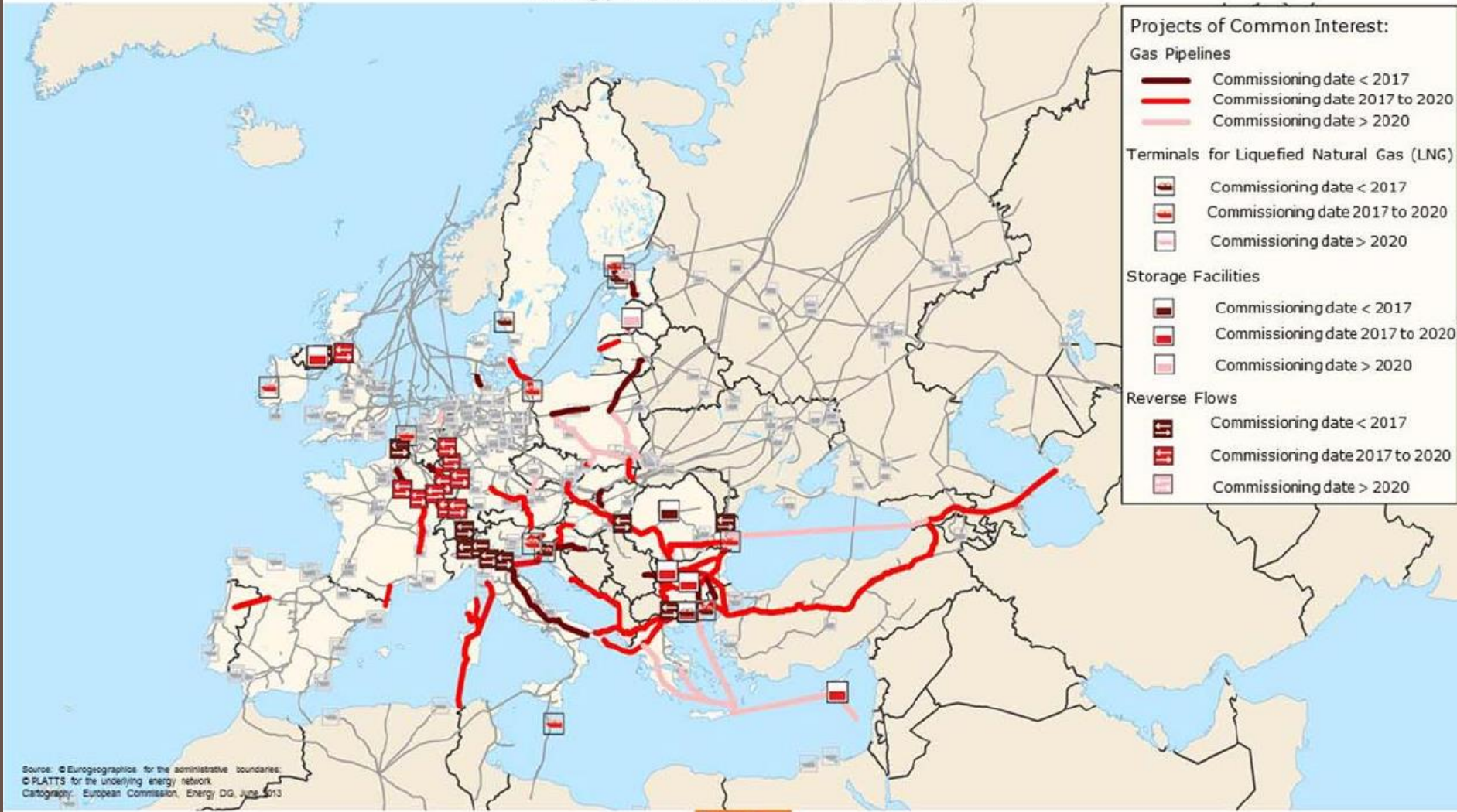
Energy Infrastructure - Oil



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Energy Infrastructure - Natural Gas

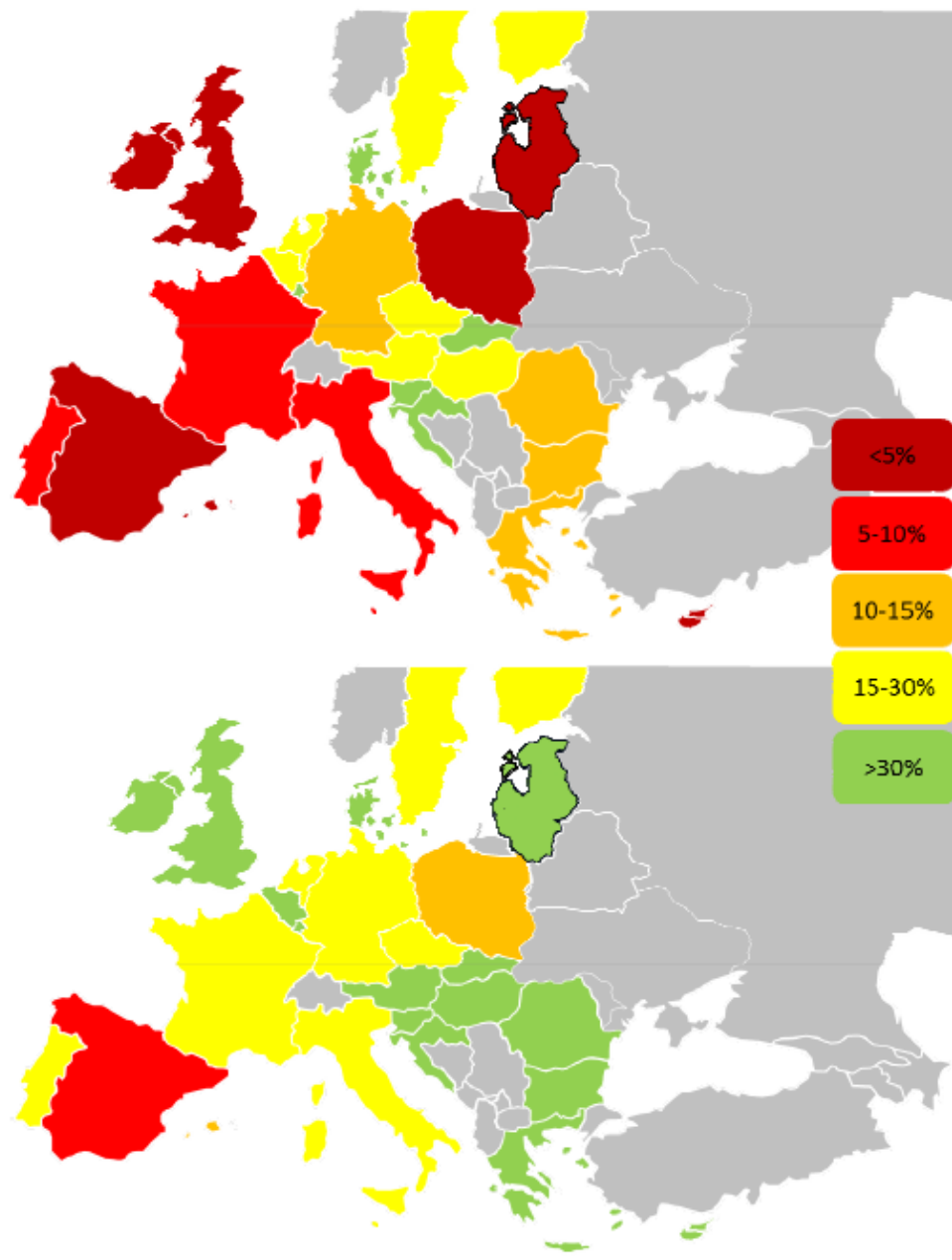


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PCIs

10% interconnection target in electricity before and after the PCIs



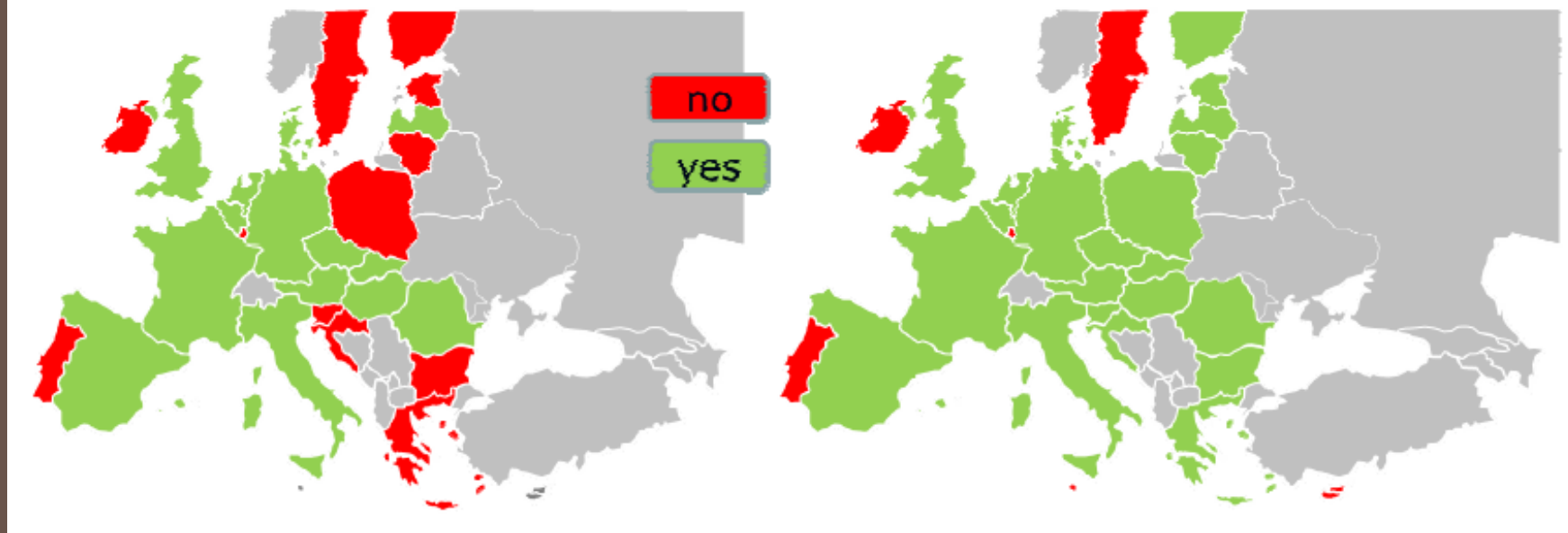
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PCIs

Compliance with the N-1 infrastructure standard before and after the implementation of the PCIs



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