

# WHAT WILL THE OFFSHORE GRID LOOK LIKE?

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**The North Seas Offshore  
Grid Initiative  
Conference  
Oostende**

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# Quick facts about ENTSO-E



**41**

TSOs  
from 34 countries

Adequacy forecasts



**530**

million  
citizens served

Ten-Year Network  
Development Plans



**830**

GW  
generation

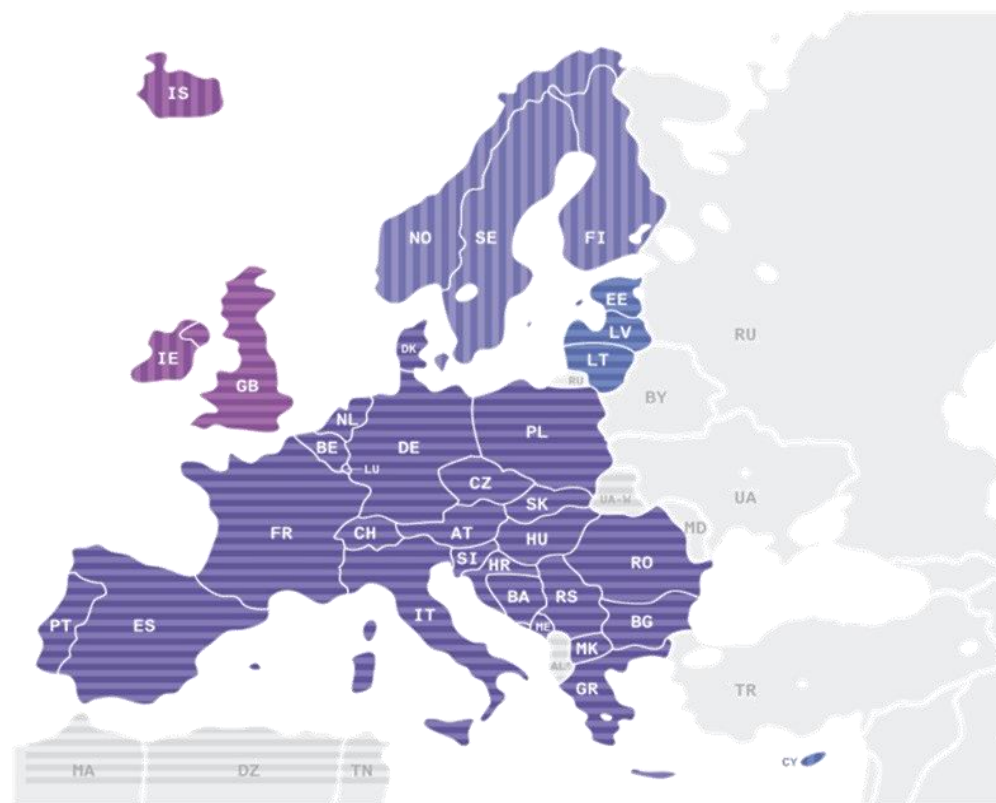
Market Platforms



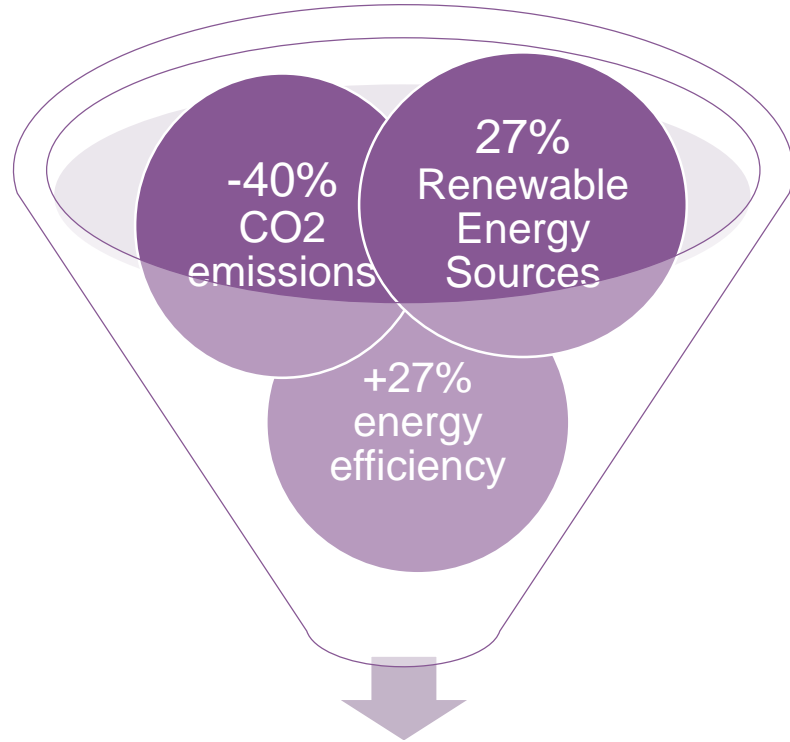
**300**

Thousand Km  
of transmission lines

Network Codes

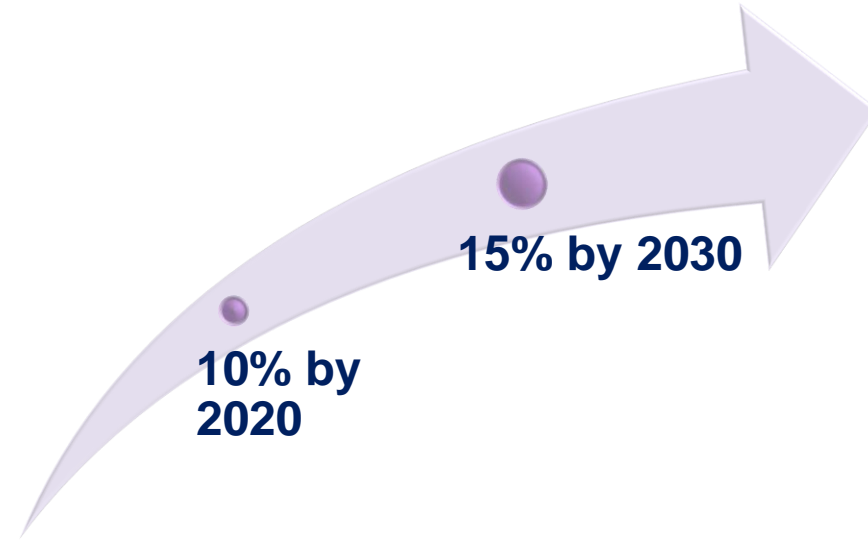


# The 2030 EU Council targets and the electricity transmission system



**>45% of RES generation in the electricity transmission system in 2030**

**Interconnection target**



**BUT**  
**regional differences & needs must be considered**

# Northern Seas Offshore Grid Infrastructure 2030 – a strategic EU corridor

## 2008: EC's Strategic Energy Review

- North Sea grid = one out of six highly prioritised infrastructure measures in the Second Strategic Energy Review
- Expectations for < 20% infrastructure investment cost savings.

## 2010-2012: NSCOGI

- The amount, timing and location of offshore RES determines the level of *hybrid* offshore grid infrastructure.
- Modular approach mitigates associated uncertainties.

## 2013-2014: EC study on a meshed grid

- higher benefits for coordinated design compared to NSCOGI, especially for the more ambitious RES scenarios, due to applying higher interconnection capacities.

## 2015: EC study on regulatory matters

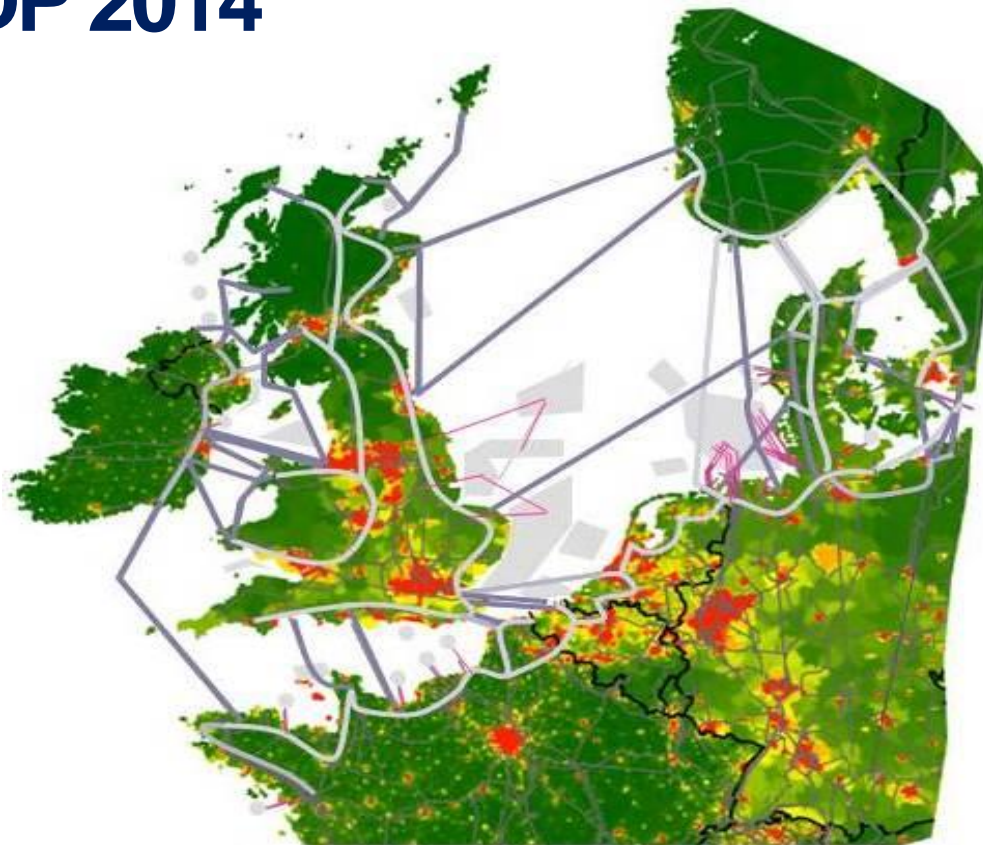
- Build the grid first – keeping in mind the bigger picture





# ENTSO-E's current view on the 2030 offshore grid infrastructure

## TYNDP 2014



Existing and new connections 2030

### TYNDP14 Key Facts and Figures 2030

- Additional 10.000 km,
- 19 projects
- Infrastructure costs of 17-22 bn €

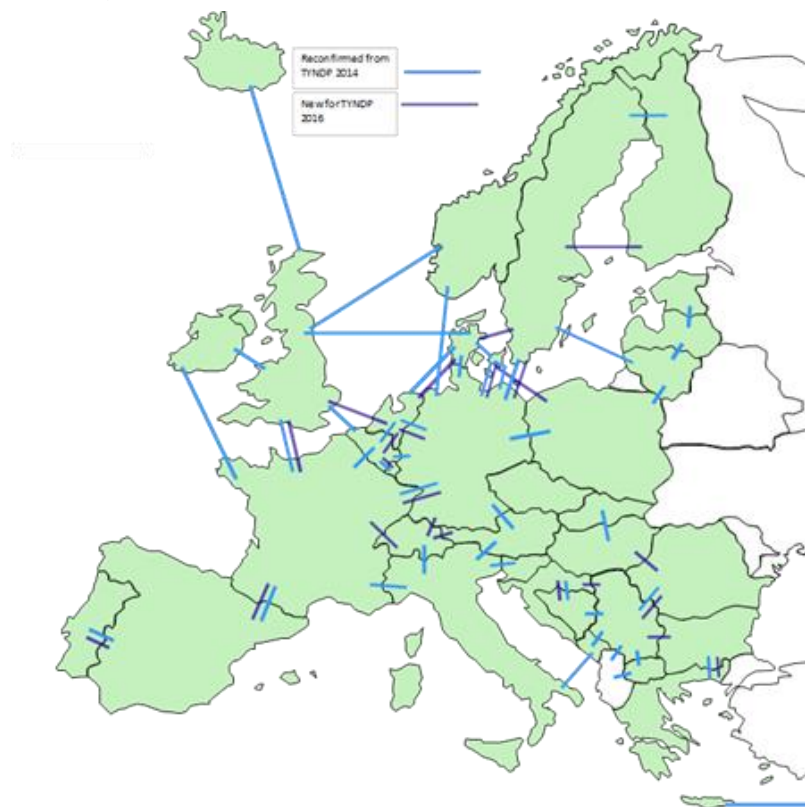
### General findings

- **to move along, cooperation among countries and among stakeholders is key.**
- Modular step-wise development of the North Seas grid is ongoing and re-evaluated every 2 years

# Outlook to TYNDP2016 – Result of planning studies

## Regional Investment Plan 2015

Project Identification



Long Term Concept



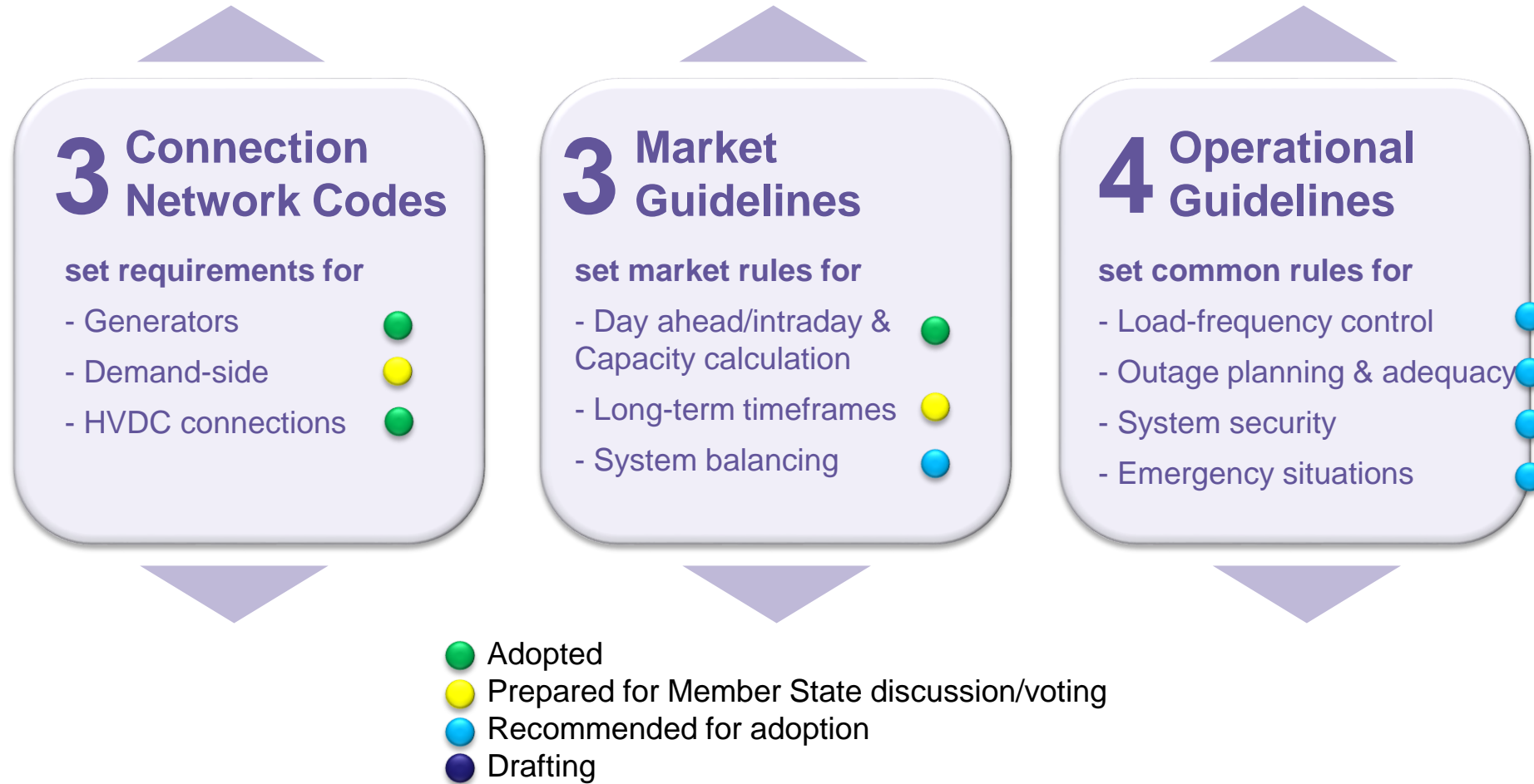
[https://consultations.entsoe.eu/system-development/regional-investment-plans/consult\\_view](https://consultations.entsoe.eu/system-development/regional-investment-plans/consult_view)

# Development since 2011

2011 / 2012 – Call for ....	2015 - Status today:
<b>General</b>	
<ul style="list-style-type: none"> <li>- Masterplan</li> <li>- Binding 2030 targets</li> <li>- Demos needed</li> </ul>	<ul style="list-style-type: none"> <li>-&gt; TYNDP every 2nd year</li> <li>-&gt; 40 / 27/ 27 (non binding)</li> <li>-&gt; EEPR projects, Horizon 2020</li> </ul>
<b>Technical issues</b> (~ NSCOGI WG1)	
<ul style="list-style-type: none"> <li>- DC breaker</li> <li>- Ancillary services</li> <li>- Standards &amp; frameworks</li> </ul>	<ul style="list-style-type: none"> <li>-&gt; Available ... but not yet tested</li> <li>-&gt; Possible (RES able to deliver)</li> <li>-&gt; IEC &amp; NCs underway</li> </ul>
<b>Market / regulatory issues</b> (~NSCOGI WG2)	
<ul style="list-style-type: none"> <li>- Treatment of hybrid projects</li> <li>- Responsibility OWP connection</li> <li>- Anticipatory investments</li> <li>- Distribution of Cost / Benefits</li> <li>- Compatibility billing &amp; subsidy schemes</li> </ul>	<ul style="list-style-type: none"> <li>-&gt; Case by case – no one-fits-all</li> <li>-&gt; still differs</li> <li>-&gt; national issue</li> <li>-&gt; (EU) 347/2013</li> <li>-&gt; work initiated by EC</li> </ul>
<b>Permit Issues</b> (~NSCOGI WG3)	
<ul style="list-style-type: none"> <li>- Long procedures, internat. uncoordinated</li> </ul>	<ul style="list-style-type: none"> <li>-&gt; (EU) 347/2013</li> </ul>

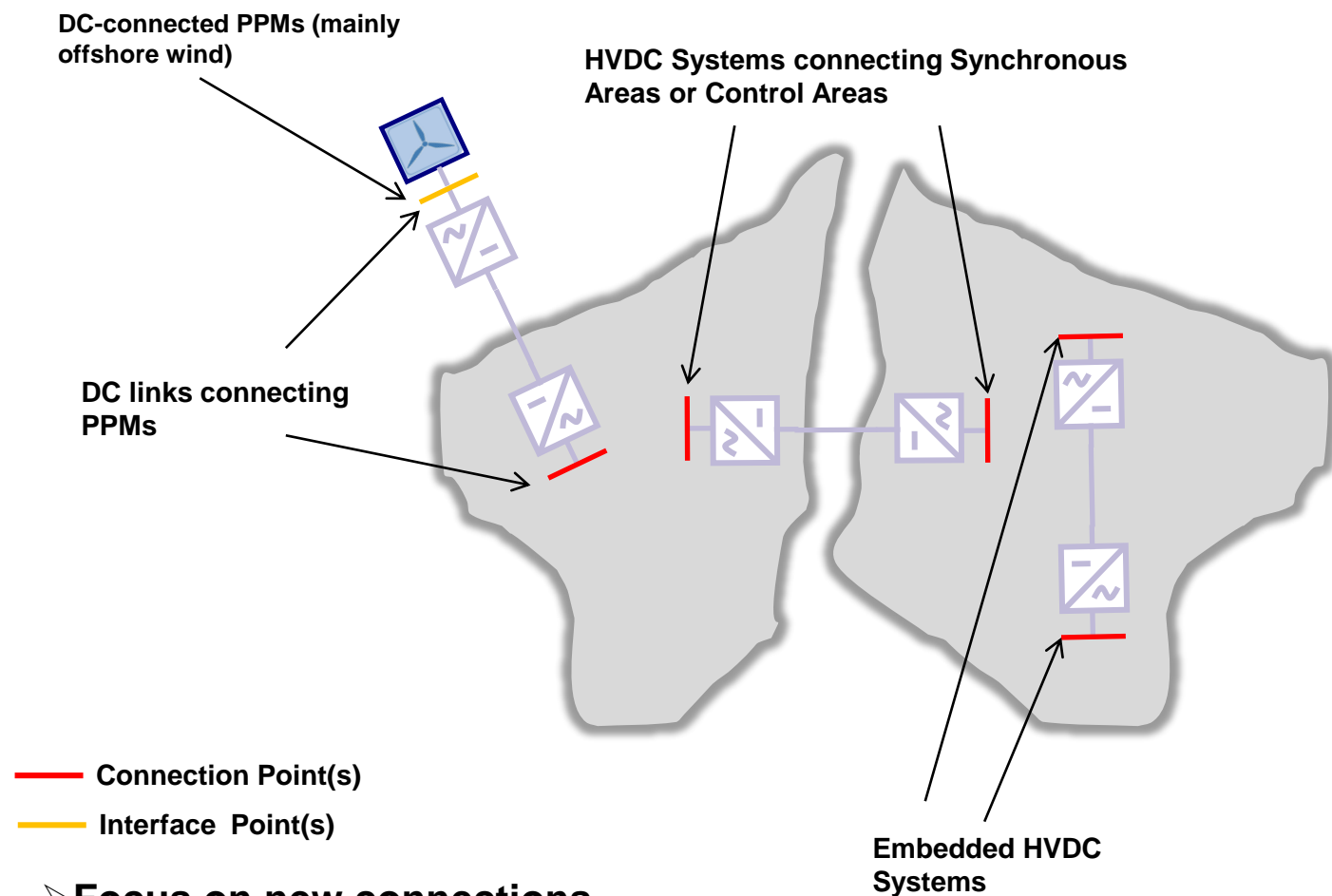
# Network Codes

*common reference for internal market, secure system operation, and facilitated RES connections*





# Network Code for HVDC connections and offshore wind



HVDC technology has a large potential, and is increasingly used in Europe's grid planning.

An **integrated system vision** is crucial, driven by TSOs at European level.

Application is based on often national best practices. Also standards are still under development.

A NC HVDC gives a clear framework for future **project specifications** and **technical standards**

A level playing field is needed for all generation (including offshore wind), for all DC links (including 3<sup>rd</sup> parties), regardless of ownership.

The NC HVDC **completes** the trio of connection codes.

# Conclusions



# In Conclusion : further offshore RES integration requires:

- Political agreement and political coordination across Member States
- A coherent regulatory framework to allow such complex projects to happen
- A functioning market allowing for market-driven investments
- A strong investment climate
- Continued regional coordination to master technological and operational challenges
- A coordinated maritime spatial planning



# Recommendations: How can NSCOGI help?

- Support coordination of national energy policies and energy mix decisions for 2020 and 2030 targets
- Support TSOs with public acceptance and help explain the benefits of infrastructure
- Exchange experience to accelerate international projects.





# ENTSO-E Annual Conference

20 November 2015, Brussels

**The Energy Union ahead:  
Reliable, Sustainable,  
Competitive**

ENTSO-E will reveal its Vision for the Energy Union,  
with recommendations on:

- better regulation in energy;
- market design and innovation;
- security of supply;
- energy regions.

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