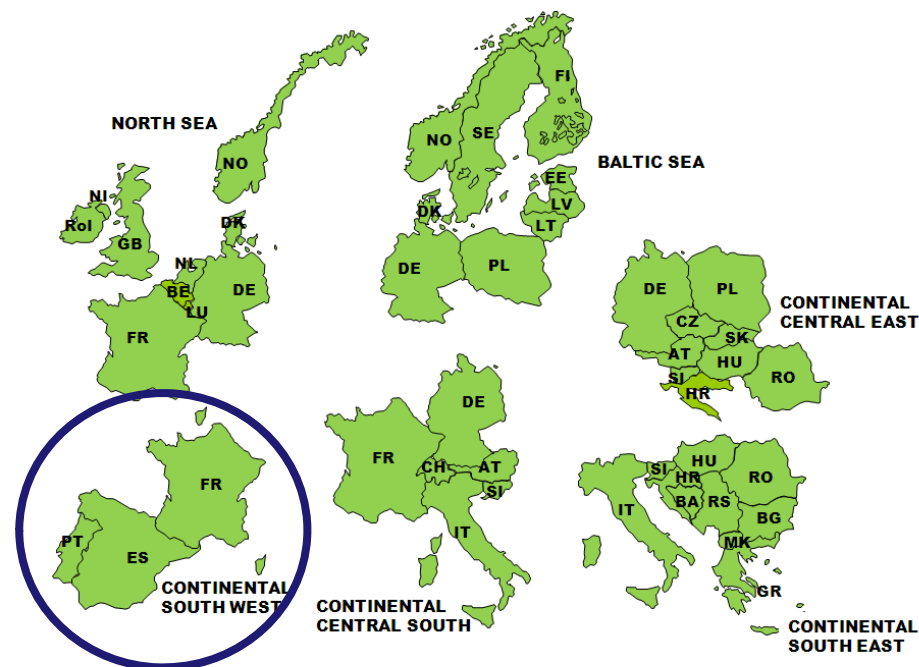
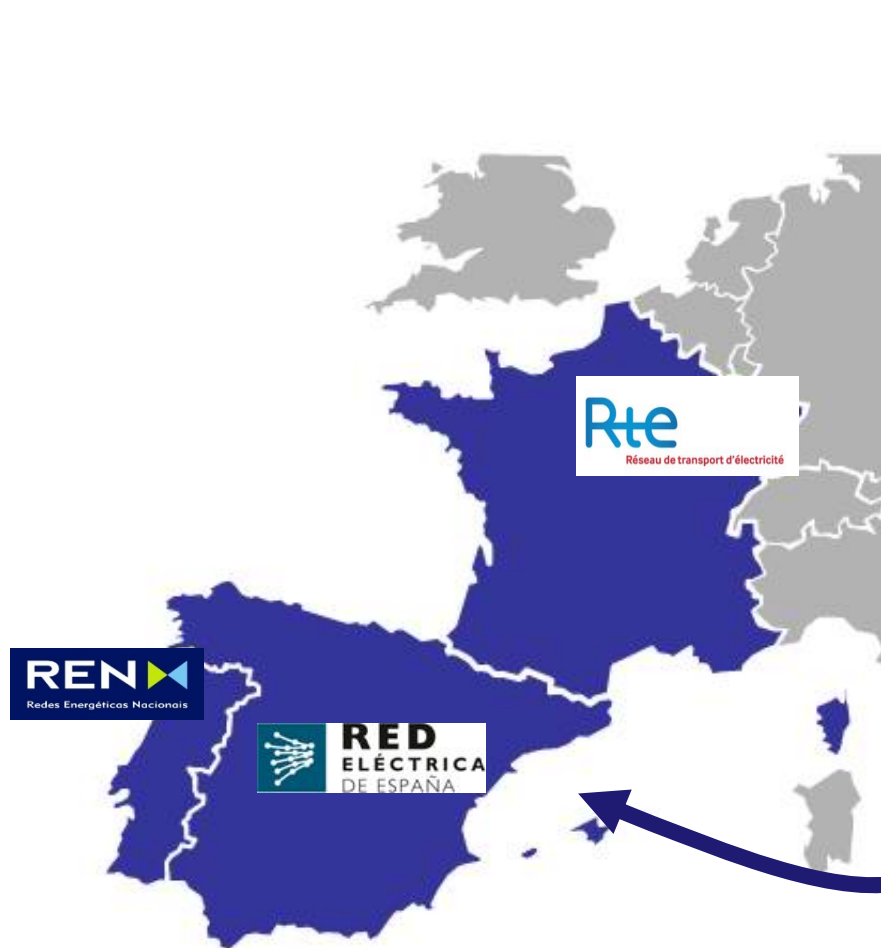


Continental South West Regional Group Investment Plan

Patricia Labra
Regional Continental South West
Coordinator

Ten Year Network Development Package 2012 Workshop
Brussels, 28 March 2012,

Continental South West Regional Group

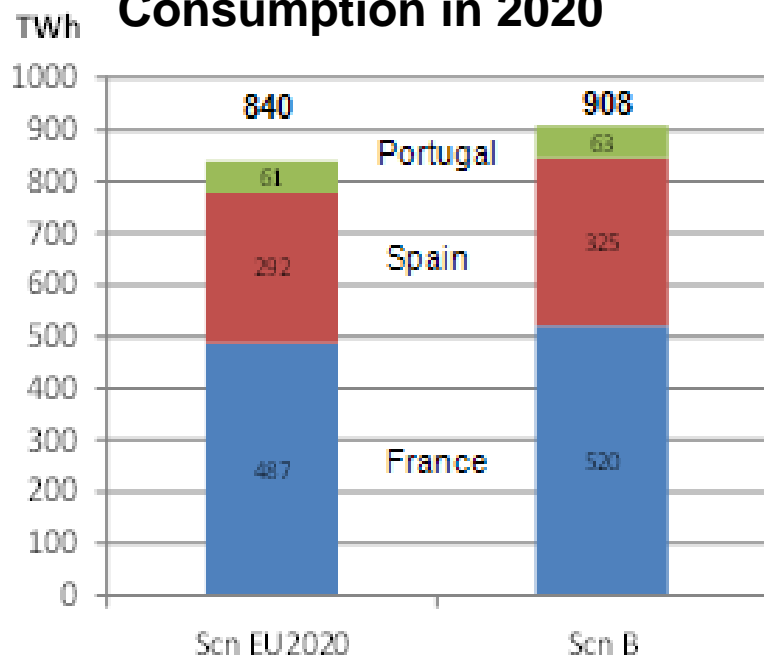


3 countries:

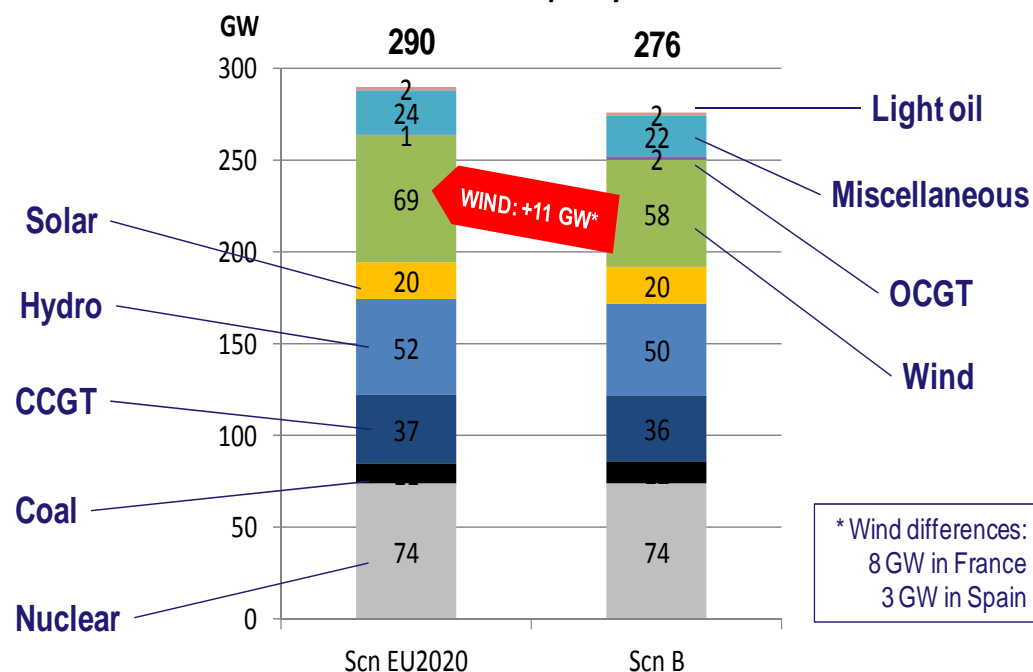
- ☐ France
- ☐ Portugal
- ☐ Spain

Scenarios “EU2020” & “B” in CSWR

CSW Annual Electricity Consumption in 2020



CSW Installed Generation Capacity in 2020



- The **Nuclear Phase Out** has a low impact in the CSW region:
→ production in CSW region increases by 5 TWh, produced half by French nuclear energy, and half by coal and gas in all three countries of CSW region.

Investment Needs

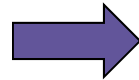
Market Integration

Insufficient cross-border capacity that causes structural market congestion between price zones, especially between Spain and France.

Low interconnection ratios, specially in Spain (3.5%) that forces the Iberian Peninsula to be an “electric island “

RES integration

Today
41GW RES

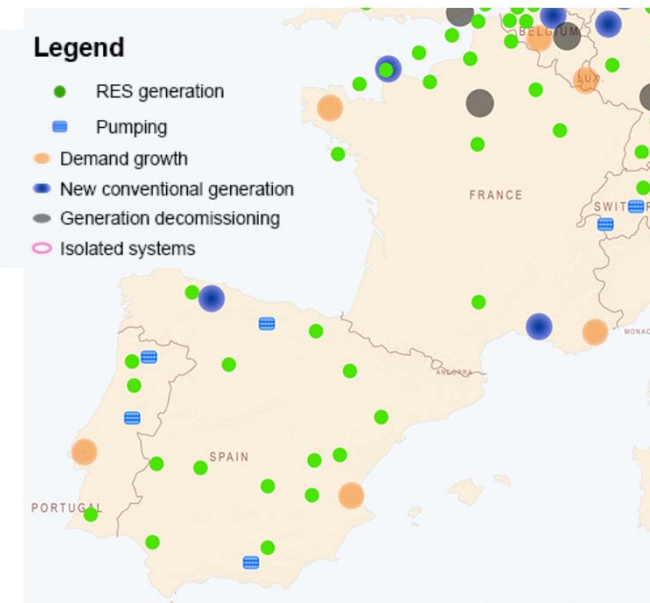
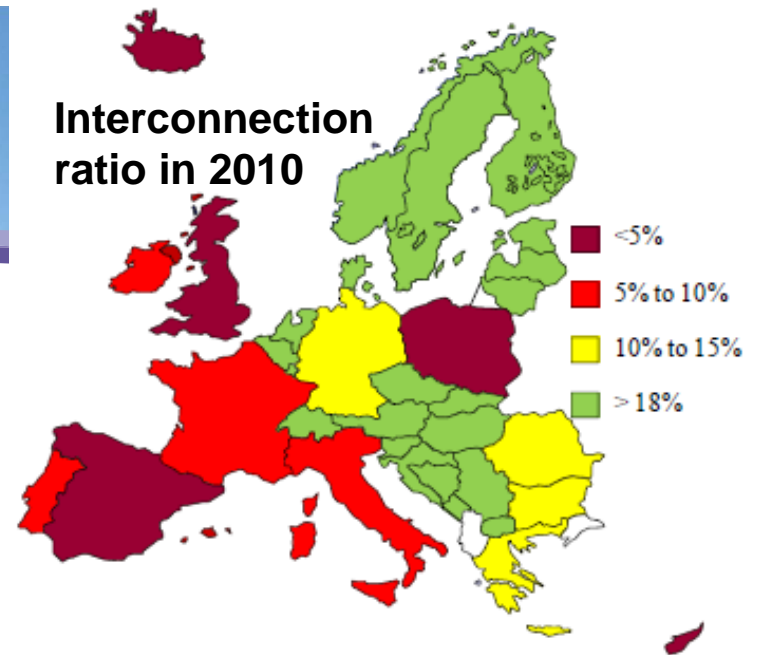


2020
41GW RES
+ 45-57 GW of new RES

Security of Supply

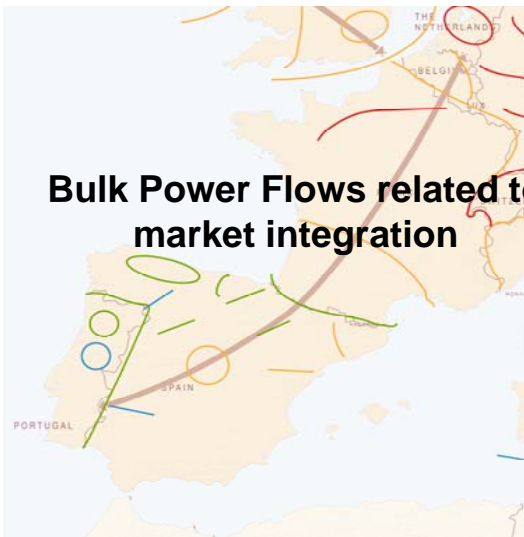
The forecasted demand growth, while modest, gives rise to security of supply issues in certain areas or big cities that will require transmission investment

Interconnection ratio in 2010

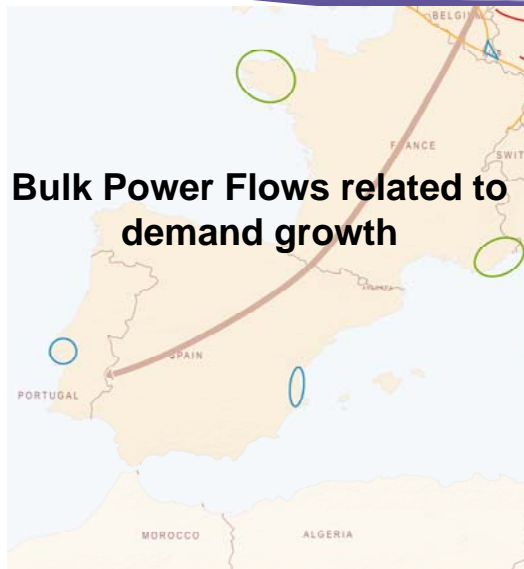


Drivers for grid development

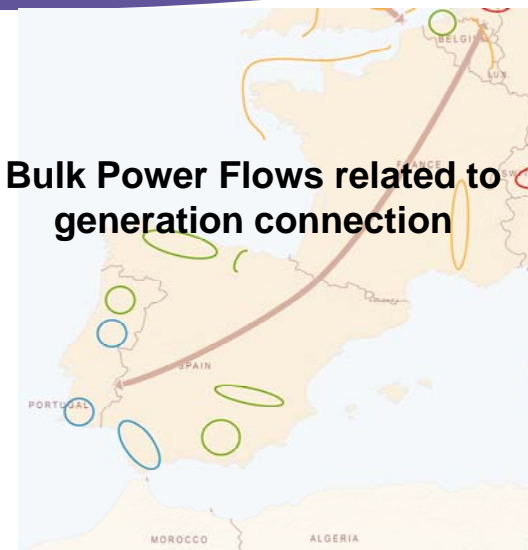
Bulk Power Flows related to market integration



Bulk Power Flows related to demand growth



Bulk Power Flows related to generation connection



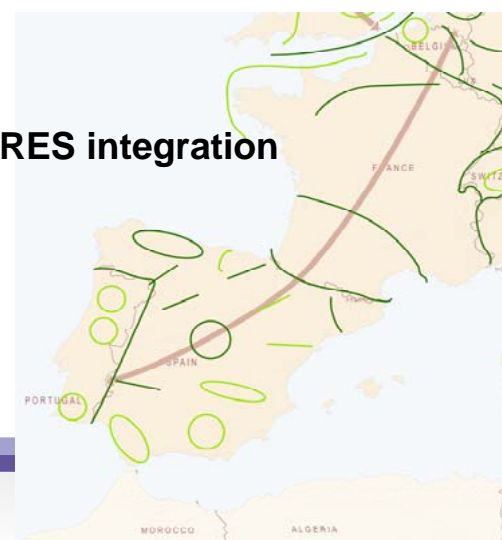
Legend

- <2000 MW
- 2000 - 4500 MW
- 4500 - 10000 MW
- >10000 MW
- Main power flow trends

Legend

- Direct connection of RES
- Inter-area transit triggered by RES

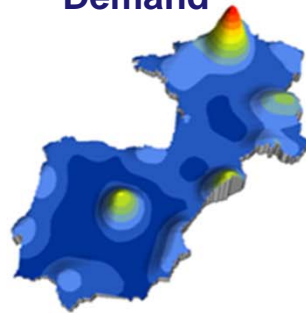
RES integration



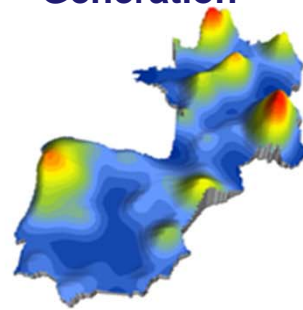
Network Studies: from needs to proper investments

Tools: PSSE,
Convergence
and UPLAN

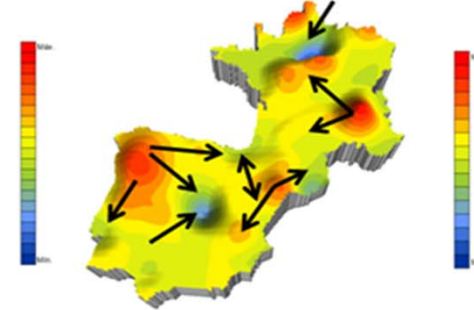
Demand



Generation



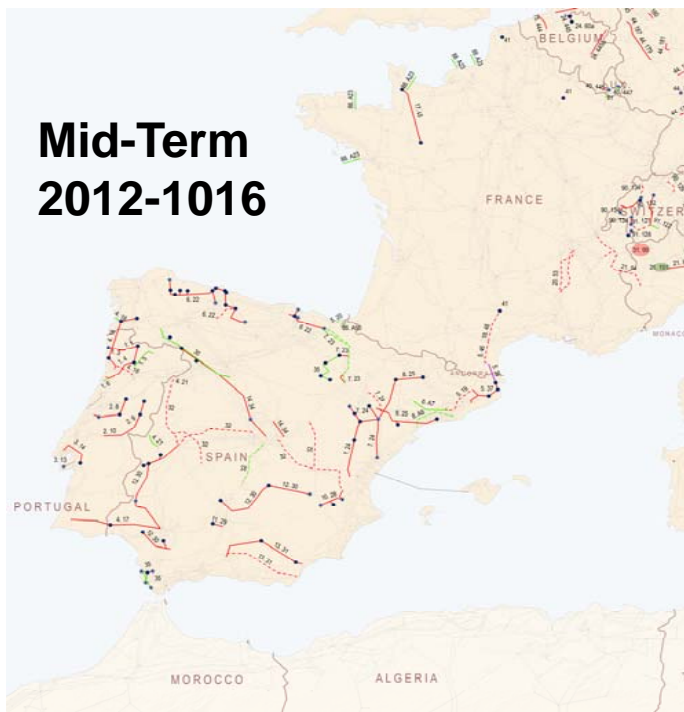
Generation minus Demand



Red=high value
Blue= low value

analysis of a set of cases, such as the above example: winter Peak 2020

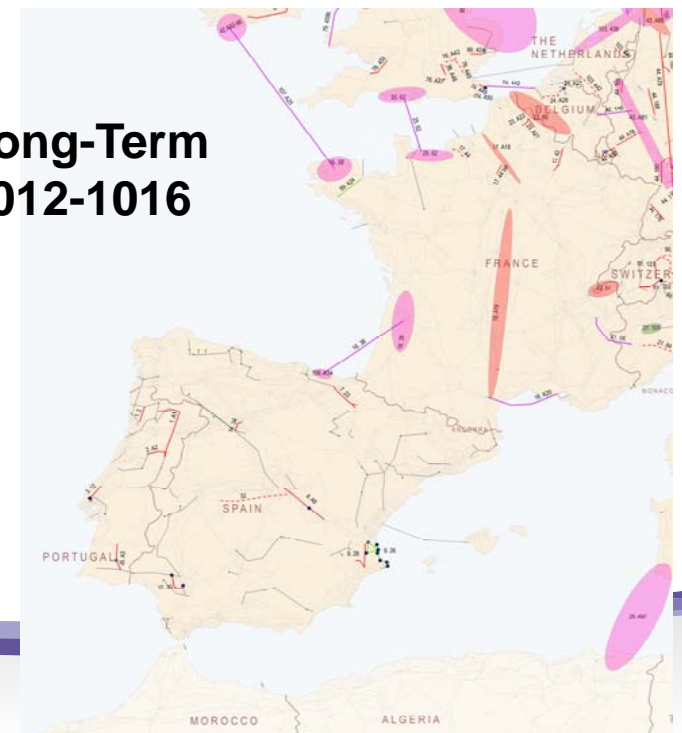
Mid-Term
2012-1016



Legend

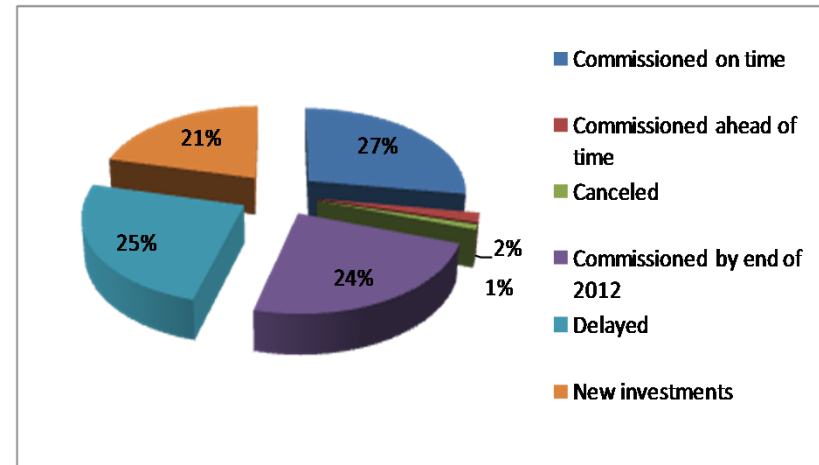
- DC - New
- 150kV, New
- 220, New
- 220, Extension
- 330, Extension
- 330, New
- 400, New
- 400, Extension
- Extension
- New

Long-Term
2012-1016

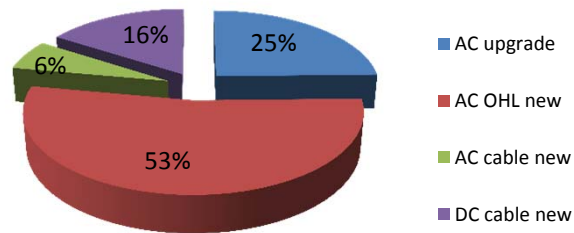


Investments: Statistics

Monitoring of pilot TYNDP

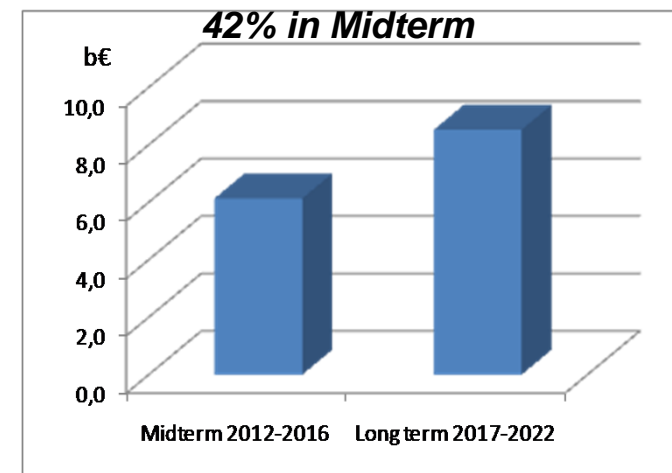


Rights of way: 14.000km
65% in Midterm



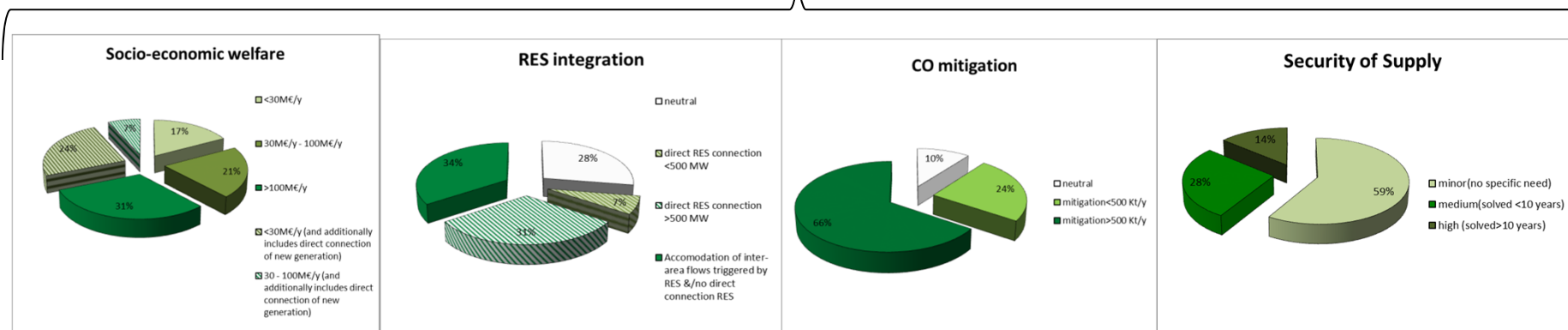
Big effort to make the best of existing assets

Cost: 14.7b€

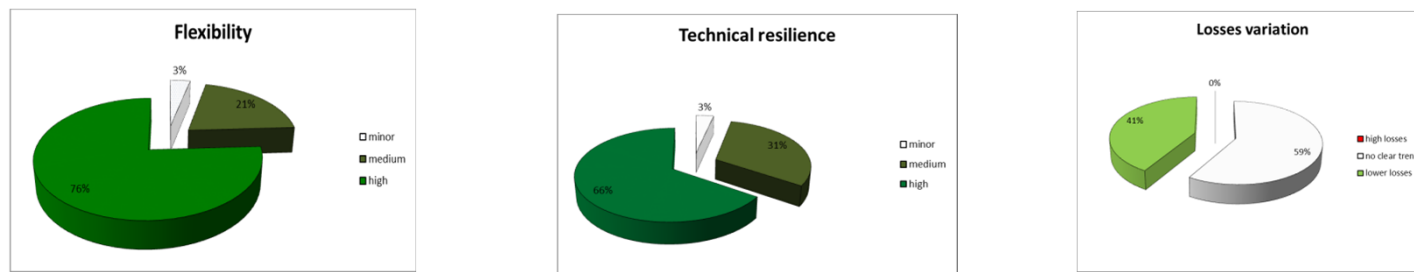


Assessment of CSWRG projects

Contribution to EU energy policies

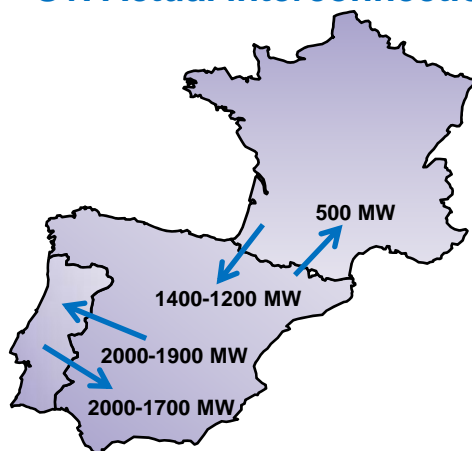


High technical performances

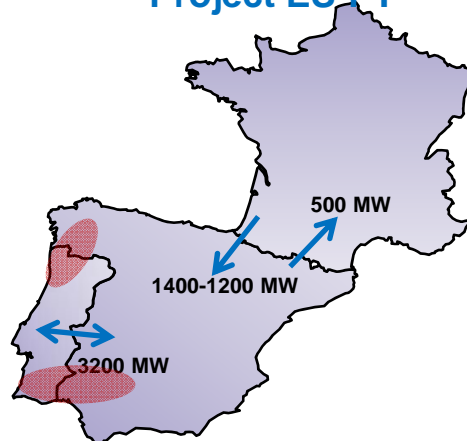


Special Focus on the interconnections

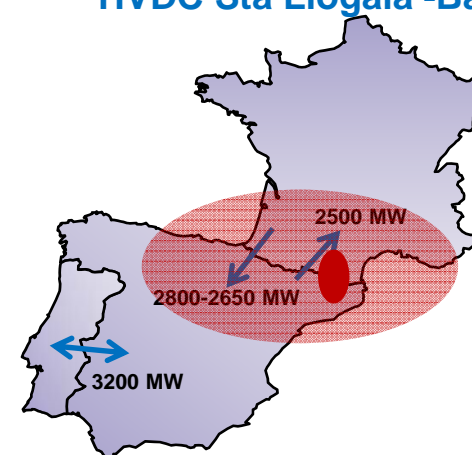
S1: Actual interconnections



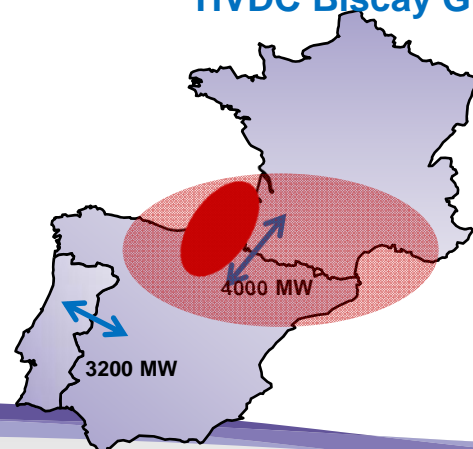
S2: Northern and Southern Project ES-PT



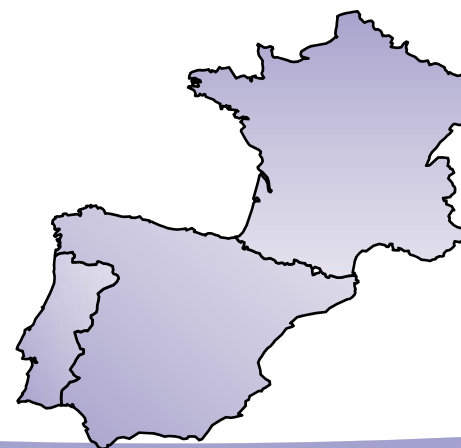
S3: Eastern Interconnection ES-FR HVDC Sta Llogaia -Baixas



S4: Western Interconnection ES-FR HVDC Biscay Gulf



S5: Copper-plate = infinite capacity



LEGEND

3200 MW = NTC =

Net Exchange Capacity

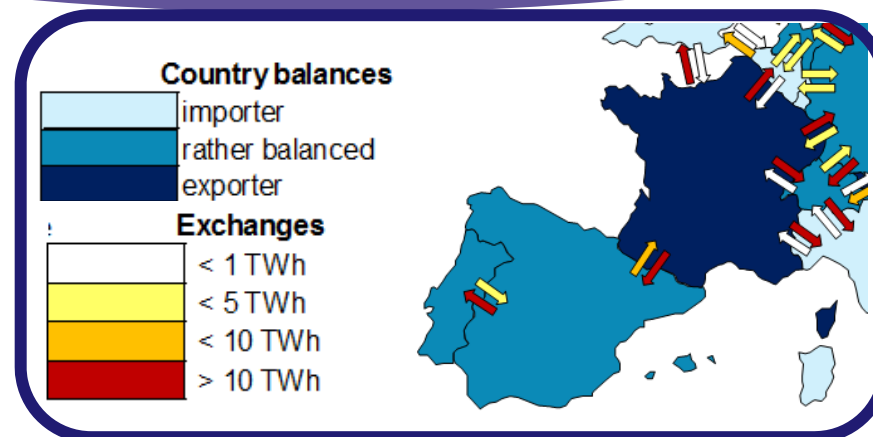
Special Focus on the interconnections

Tools: Antares and Marea



Market Studies results show that :

➤ France will be a net exporter in 2020,
Portugal and Spain will be rather balanced



➤ Interconnections within the region...

✓ Allow higher and more volatile exchanges of energy in both directions



✓ Avoid around 960-1580 GWh/year of RES spillage in Sc EU2020 and ScB, respectively



✓ Contribute importantly to the Social & Economic Welfare (369-664 M€/year)



✓ Reduce up to 2.3 MtonsCO₂ emissions per year in Europe in Sc2020

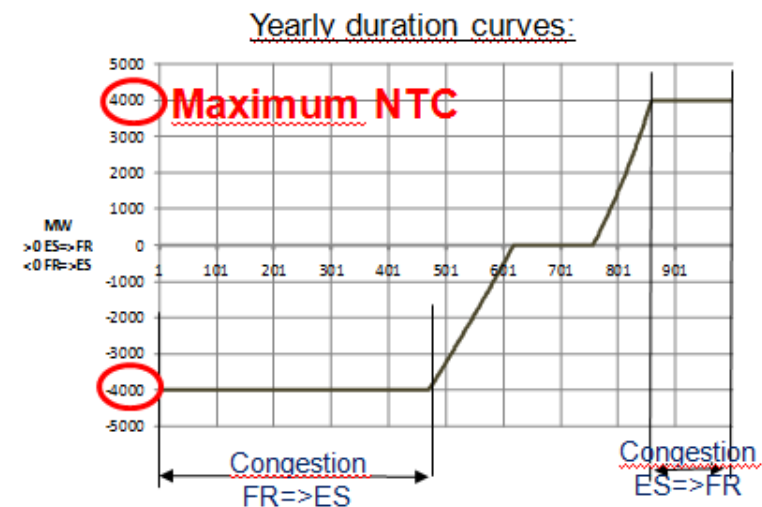


Special Focus on the interconnections

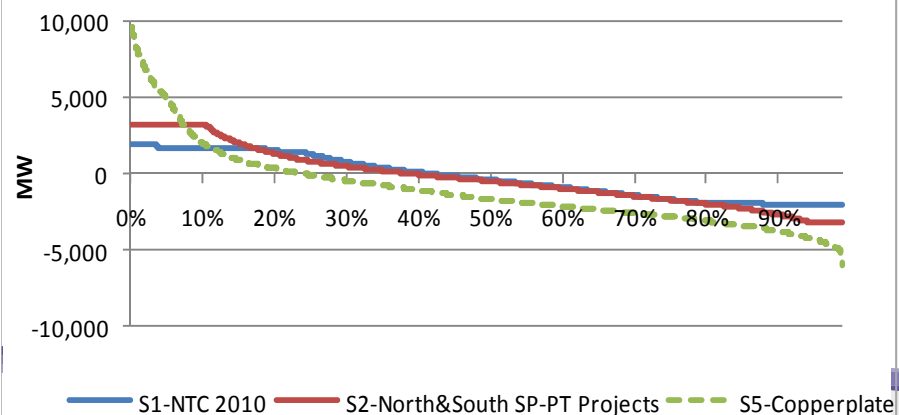
Border Congestion in 2020

	NTC 2010	NTC 2020
ES-PT	36-40%	10-15%
ES-FR	85-90%	50-60%

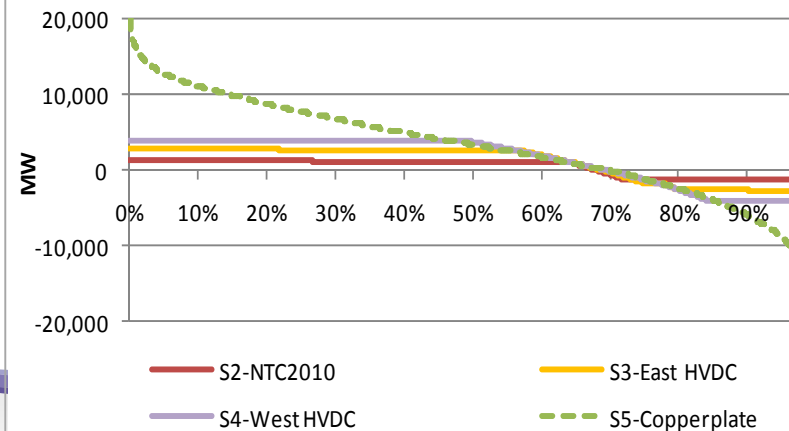
(Range considering ScEU2020& ScB)



Congestion in the Portugal-->Spain interconnection.
Scenario EU2020



Congestion in the France-->Spain interconnection.
Scenario EU2020



Transmission Adequacy

Investment needs in 2020 in the region are solved with the proposed Regional Investment Plan (*)

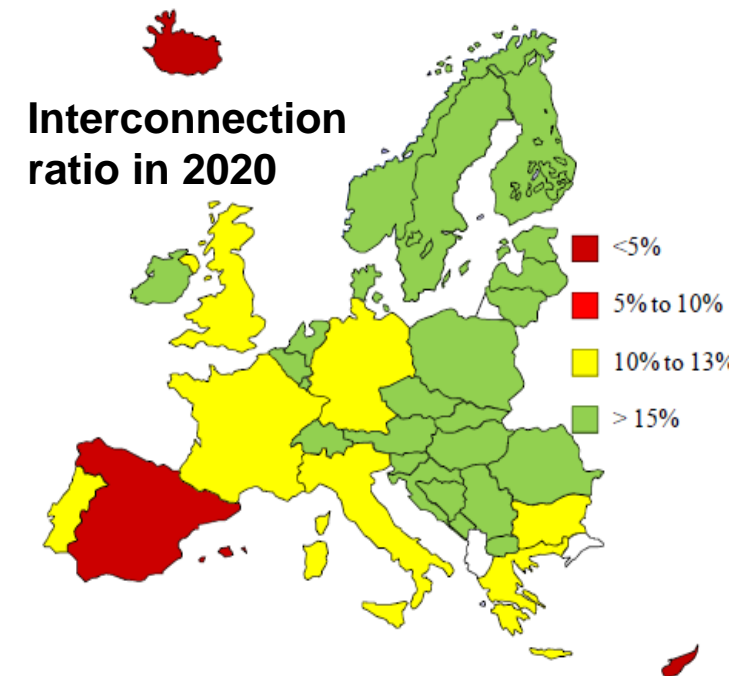
(*) Except for one issue

- ES-FR will continue to have congestions more than 50% of the time,
- Spain will be the only one country in continental Europe that will not fulfill the 10% objective.


Higher FR-ES exchange capacities provide additional savings according to the studies.

However,

- Projects have to be implemented step by step,
- progress of first projects can affect the definition of following projects
- Interconnections are expensive → CBA and cost effective projects



Conclusions

- 
- ☐ **High development of RES (mainly onshore in Iberia) is the main driver of 400kV reinforcements**
 - ☐ **Proposed investments**
 - ☐ **Fulfill requirements of both ScenB and Scen EU2020, including also SoS**
 - ☐ **Try to make the best of existing assets (uprating, FACTS, etc..)**
 - ☐ **Consider new technologies**
 - ☐ **Are cost-effective compared to the benefits**
 - ☐ **Interconnections mainly but also internal projects enhances Market Integration, and have an important social welfare as allow the production with more sustainable and cheaper power plants**
 - ☐ **Main Priority in the region is the reinforcement of the FR-ES border, which is the main bottleneck in any scenario**

Thank you for your attention

