



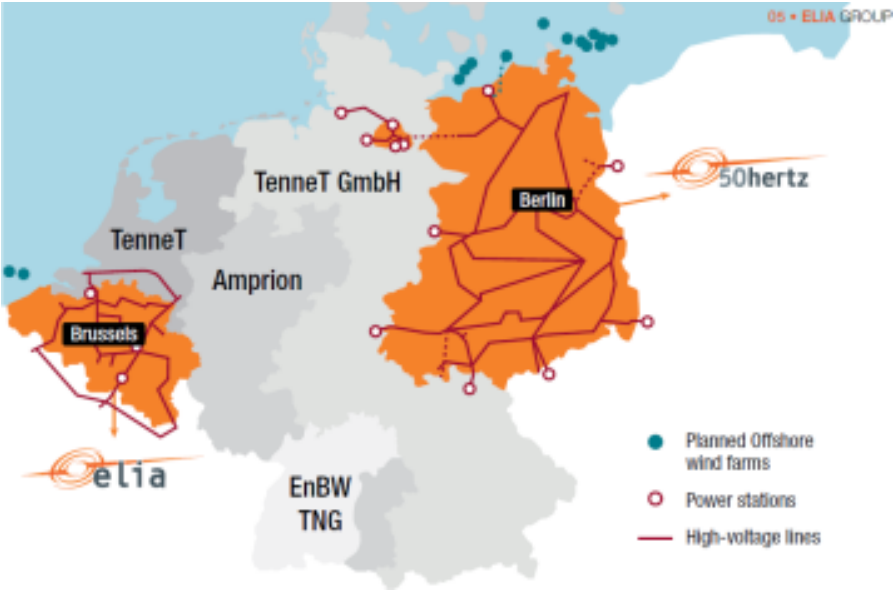
# RES integration: opportunities for Grid companies

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# Elia Group - reliable and resilient networks



## Ownership

### Elia

- 100% of 380-150kV network
- 94% of high voltage network (70-30kV)

### 50Hertz

- 100% of 380-220kV network
  - ❖ 34% of the German 380kV network
  - ❖ 19% owner of the German 220kV network

## Age of networks











### Elia

- Less than 15 years for 50% of underground cables
- Less than 25 years for 50% of lines & substations

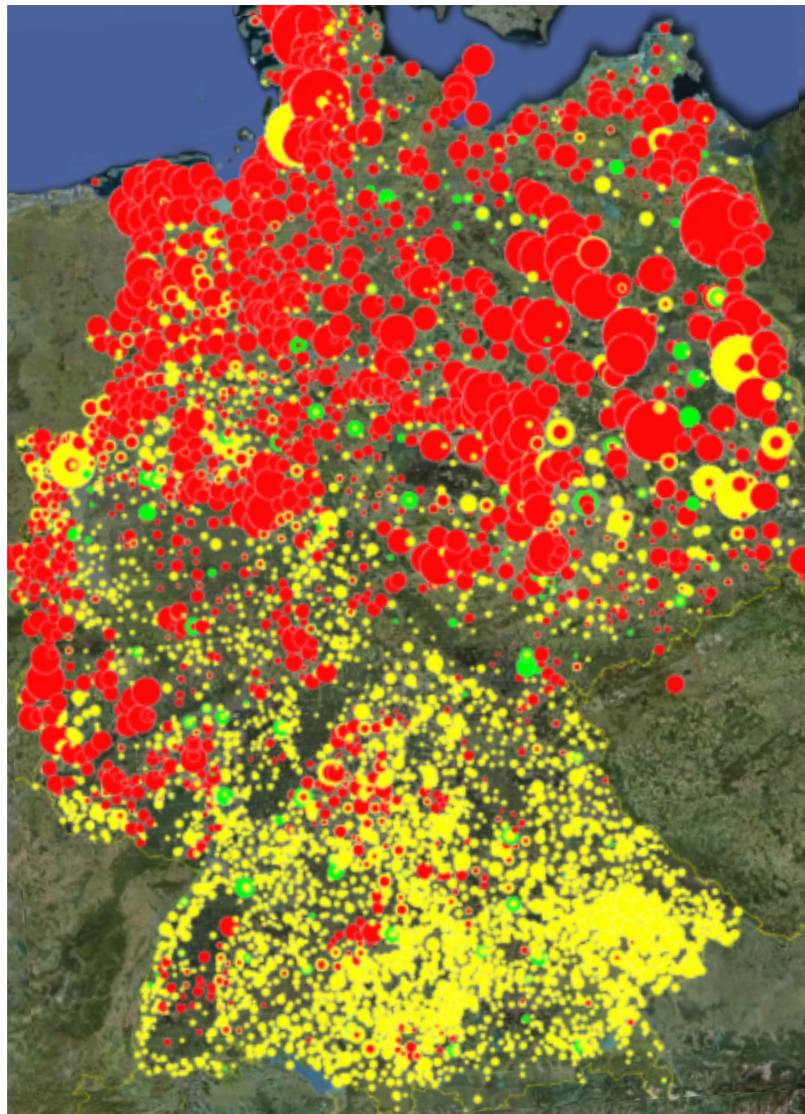
### 50Hertz

- Around 10 years for 90% of the network (refurbished after German reunification in 1989)

## Elia + 50Hertz Transmission = Top 5 in Europe

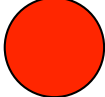
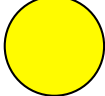
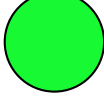
	 elia	 50hertz	Elia Group
<b>110-380 kV lines and cables</b>			<b>13,431 km</b>
<b>30 tot70 kV lines and cables</b>			<b>4,800 km</b>
<b>Substations</b>			<b>872</b>
<b>Served territory (km2)</b>			<b>~ 143,000</b>
<b>Direct consumers</b>			<b>~ 130</b>
<b>Inhabitants</b>			<b>&gt; 30m</b>
<b>Staff (FTE)</b>			<b>~ 1,900</b>
<b>Regulated Asset Base (RAB)</b>			<b>€ 5,843m</b>

# RES Integration : some figures



## Total capacity of renewables *(End 2012)*

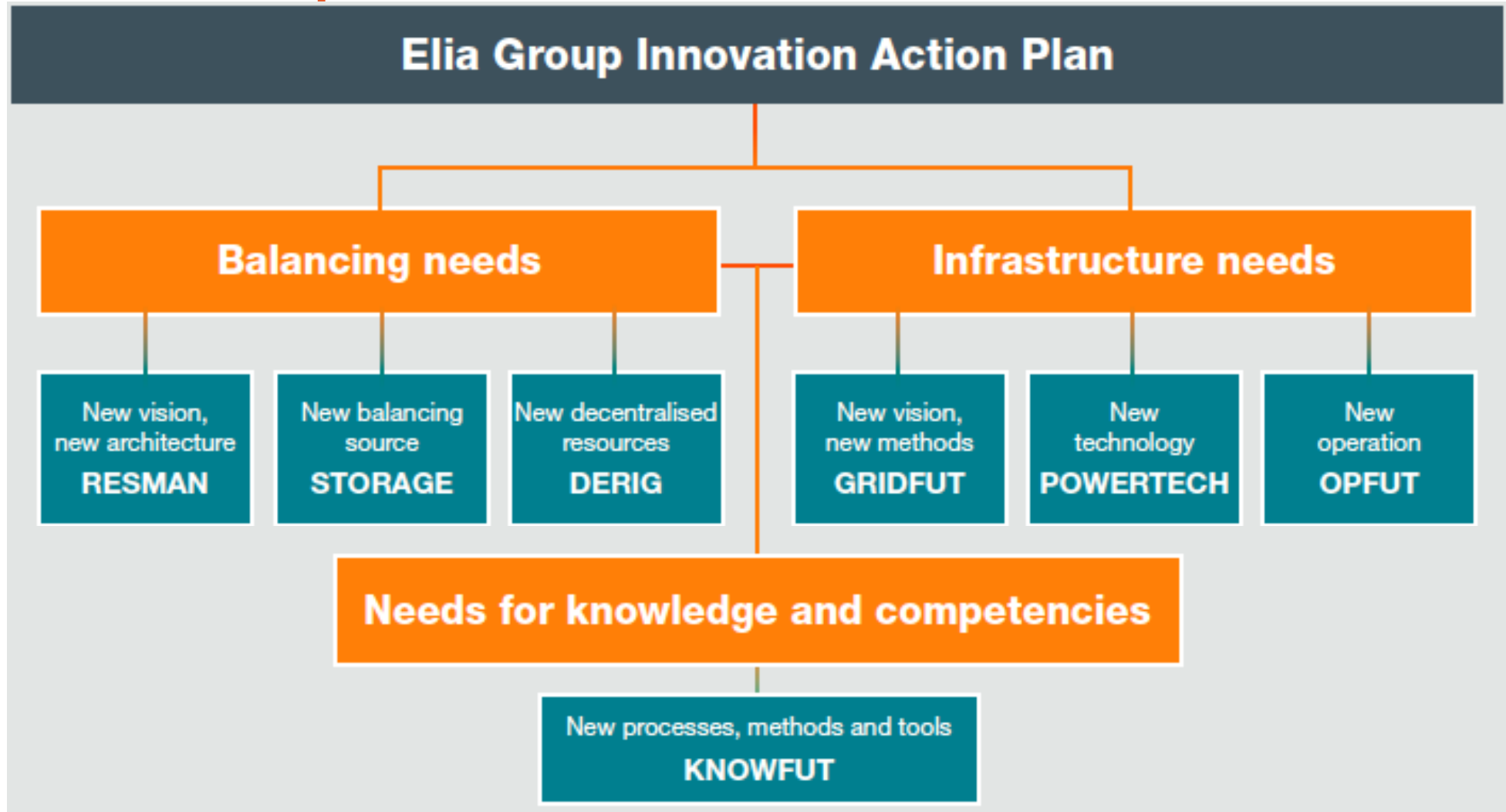
~ 1.300.000 installations

-  *Wind energy*
-  *PV*
-  *Biomass*

*The circle diameter is proportional  
to the electrical capacity*

Sources: 50HertzT, TenneT, Amprion, TransnetBW, internal data

# Elia Group Innovation Priorities





# Smart Regulation yet to come

- Current European regulation for TSOs based on asset base x WACC

→ No incentive for TSOs to innovate or take risks on board !

- But

**Customer Value =**



(i.e. hardware)

**X**



(i.e. software)

→ Concern:

- How to evolve towards a smart regulation that takes into account the need for innovative solutions given the increasing complexity of the power systems?
- ... within a context striving for low transmission tariffs despite high investments ?

## Conclusions

- **Infrastructure developments face two main challenges:**
  - Fair return on investments
  - Permits
- **Market requires new technologies and sophisticated services:**
  - HVDC, meshed offshore grids
  - Full flexible EU markets, close to real time gate closure
  - But maintaining high level of reliability.
- **Innovation in System operation is key:**
  - Novel business models
  - Long term incentives for innovation
  - Smart regulation is key to make it happen

**Thank you !**