

Smart Grid i Danmark - satsning med muligheter

- Rammevilkår – hvilken retning går Danmark
- Smartgrid – nettutvikling og forretningsutvikling for DONG Energy
- IKT-bransjen og nettselskab – felles muligheter?

Knud Pedersen, Vice President, DONG Energy og formand
for det danske branchefællesskab iEnergi (Intelligent Energi)

DONG Energy

Our business is based on procuring, producing, distributing and trading in energy and related products in Northern Europe.

DONG Energy has 6,500 employees and is headquartered in Denmark.

 **Exploration & Production**

 **Wind Power**

 **Thermal Power**

 **Customers & Markets**



The Danish Intelligent Energy Alliance – Platform for companies contributing to the intelligent energy system

BRANCHEFÆLLESSKAB FOR INTELLIGENT ENERGI FAVNER I DAG ET STORT ANTAL VIRKSOMHEDER, ENERGISELSKABER OG INSTITUTIONER



Ambitious political goals towards 2020

➔ Danish Energy Agreement of March 2012 with broad political backing

➔ Sets a number of ambitious goals for Danish energy supply towards 2020



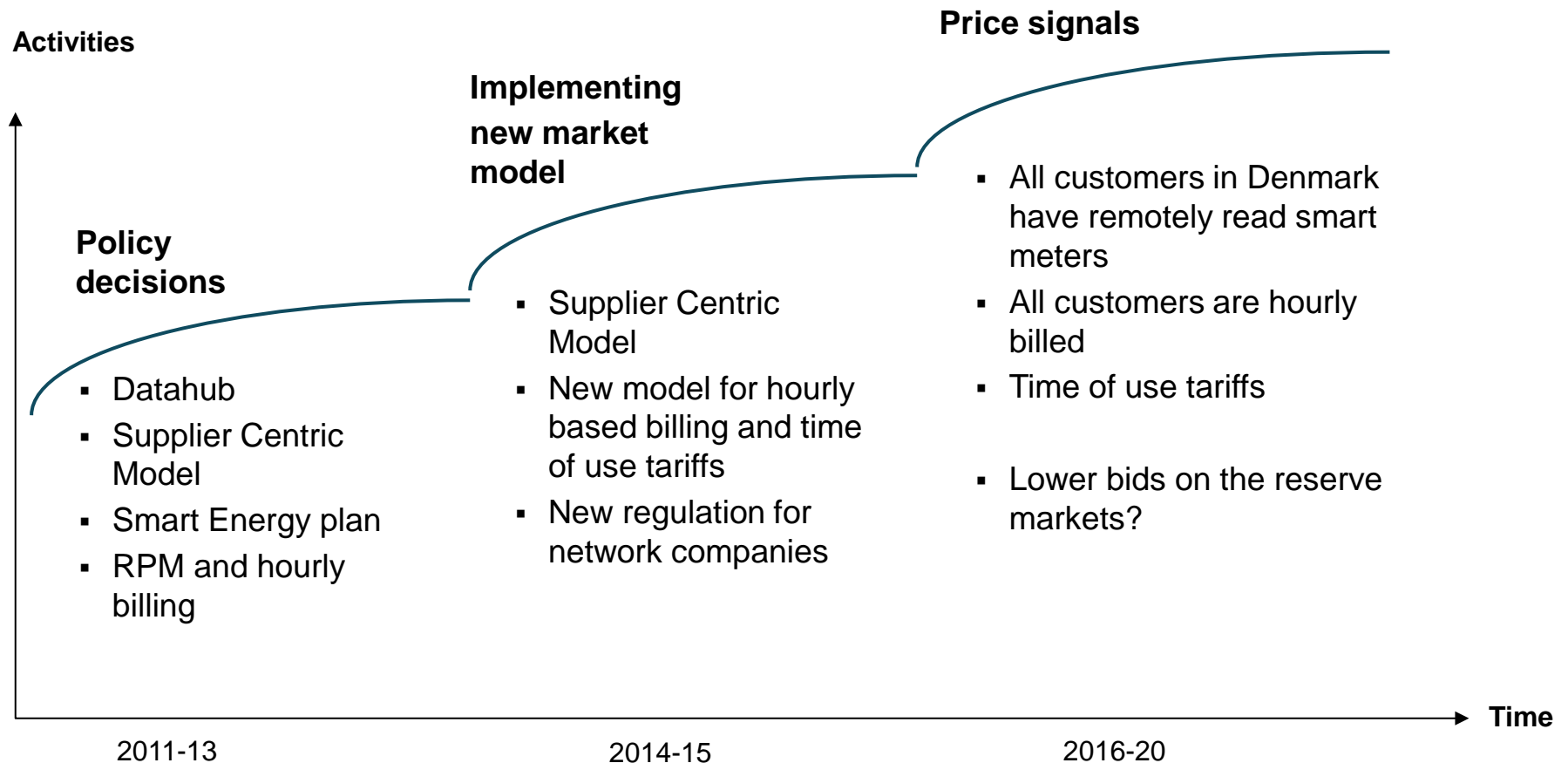
Goals set by the Government		Status 2012	Expected effect in 2020*
CO ₂ -emissions (compared to 1990)	↓ 40 % (2020)	↓ 25.2 %	↓ 35.0 %
Renewable energy (share of energy consumption)	100 % (2050)	25.6 %	35.9 %
Wind power (share of Danish electricity consumption)	50 % (2020)	33.0 % (H1,2014: 41.2 %**)	50,1 %
Coal use	No coal (2030)	6.1 mill. tonnes	2.8 mill. tonnes

Source: Statistics from the Danish Energy Agency (2012)

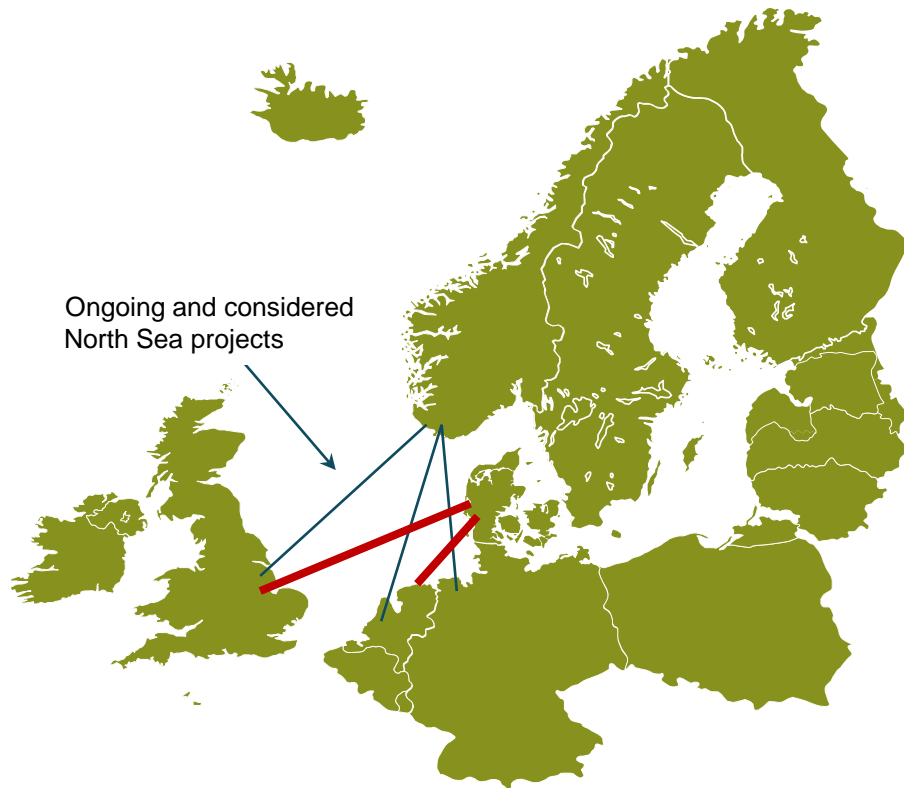
*) Effect of known initiatives incl. of energy agreement based on Danish Energy Agency's Energy Forecast (2012)

***) According to Energinet.dk's first half year report, wind power delivered 41.2 % of the Danish electricity consumption.

Smart Grid fundamentals in Denmark: Developing at accelerating pace



Smart grid to integrate off-shore wind power and Smart Energy to secure interaction of electricity, district heating and natural gas systems



Ongoing and considered North Sea projects

International involvement needed to maximize value of wind power. Connecting markets through stepwise development of the North Sea super grid.

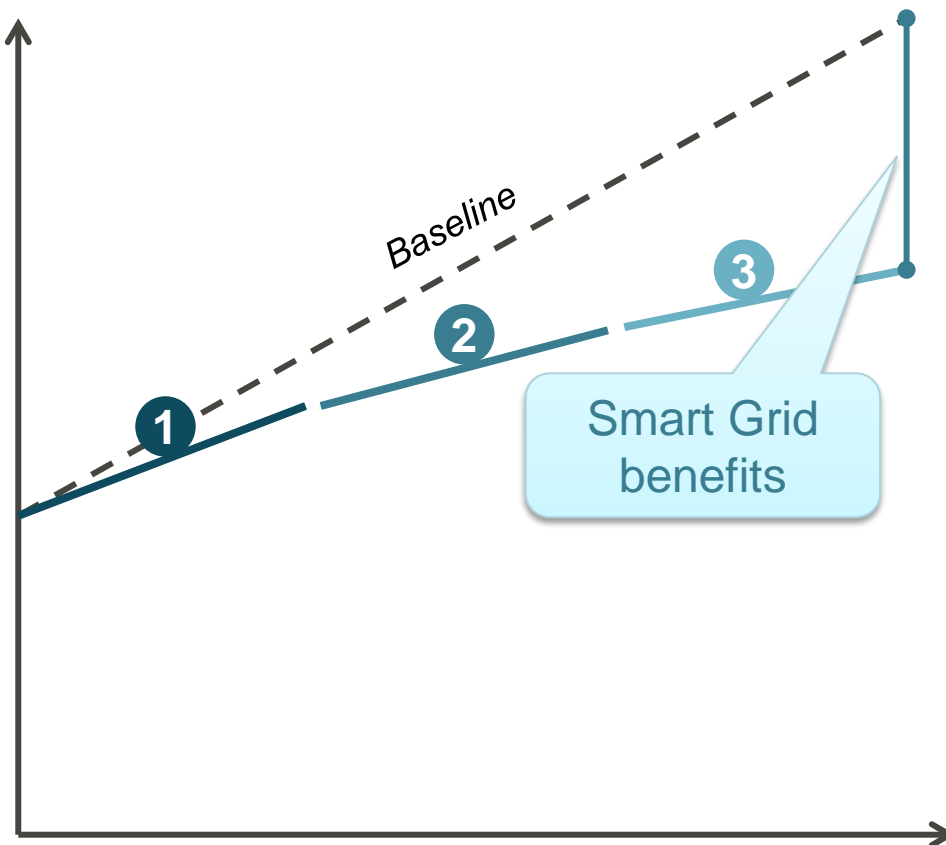
National strategy needed to increase coming value streams. From Smart Grid to Smart Energy – integrating district heating and natural gas

"However, development of the energy system will not stop with the electricity grid. The next step is to utilise and store wind energy in other energy sectors and thus render the entire energy system smart."

Source: Ministerial Smart Grid Strategy



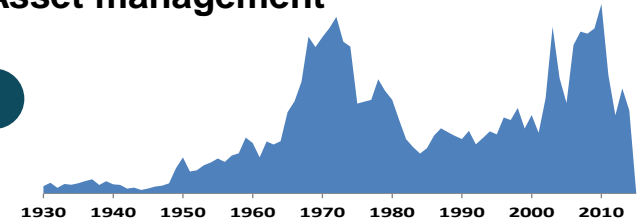
What smart grid is from the perspective of a Distribution company



Smart Grid

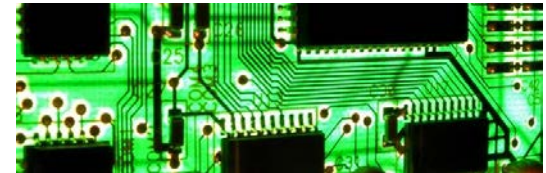
Asset management

1



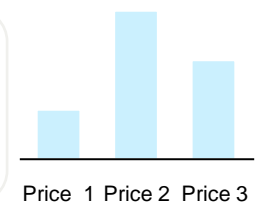
IT investments - monitoring and automation

2



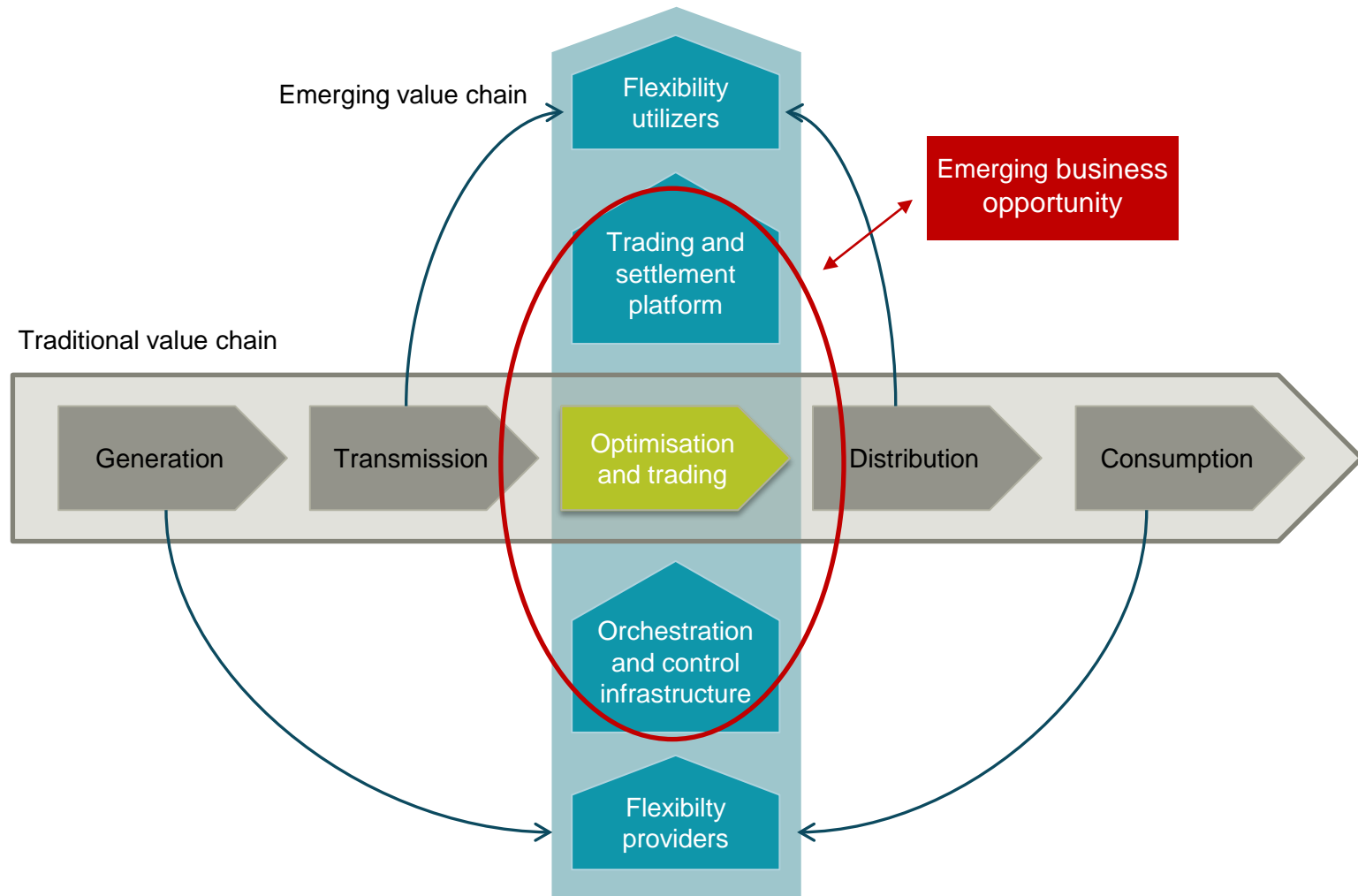
Price signals and flexible products

3



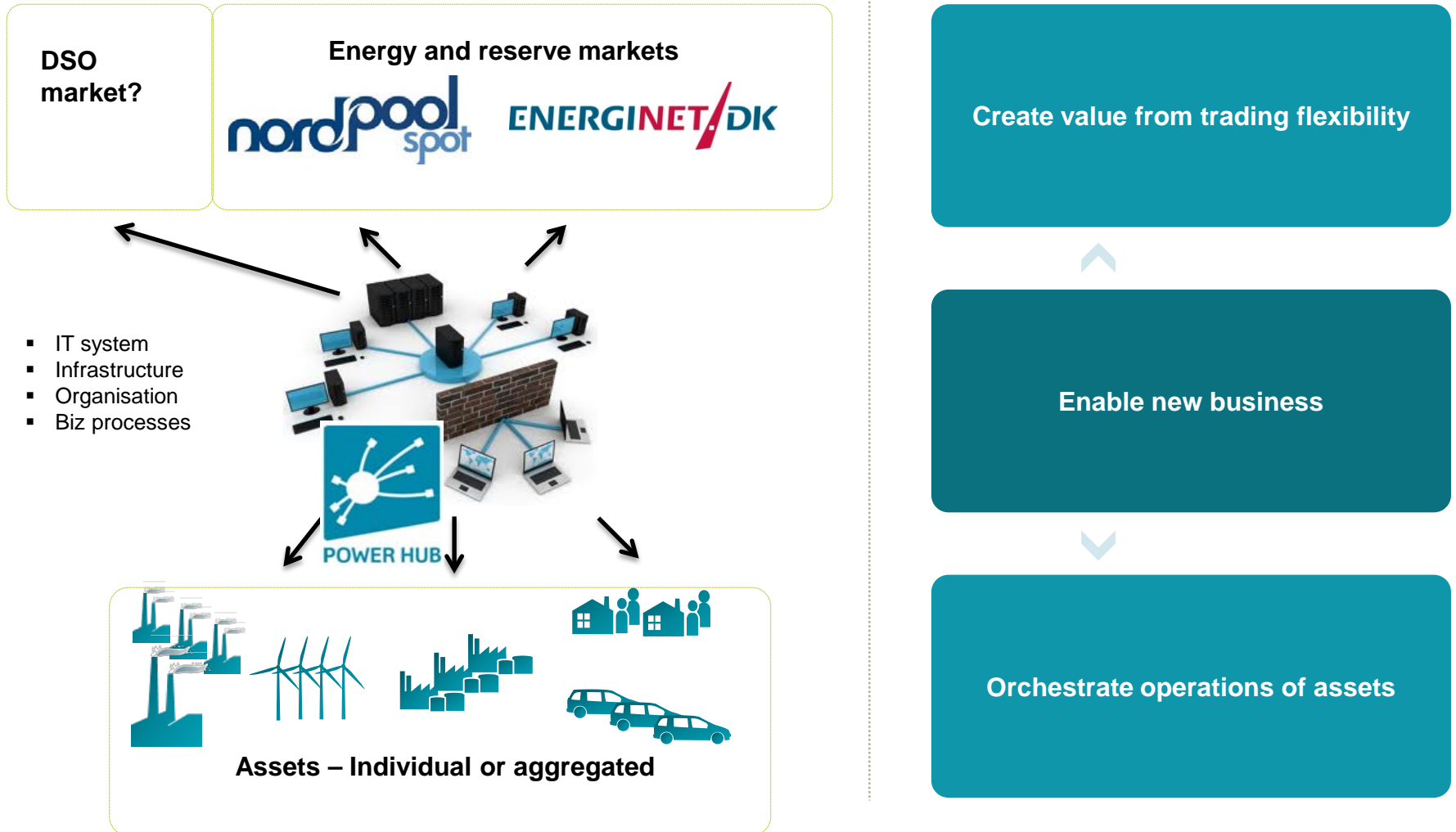
The traditional and the emerging value chain

Roles are changing and new players enter the markets

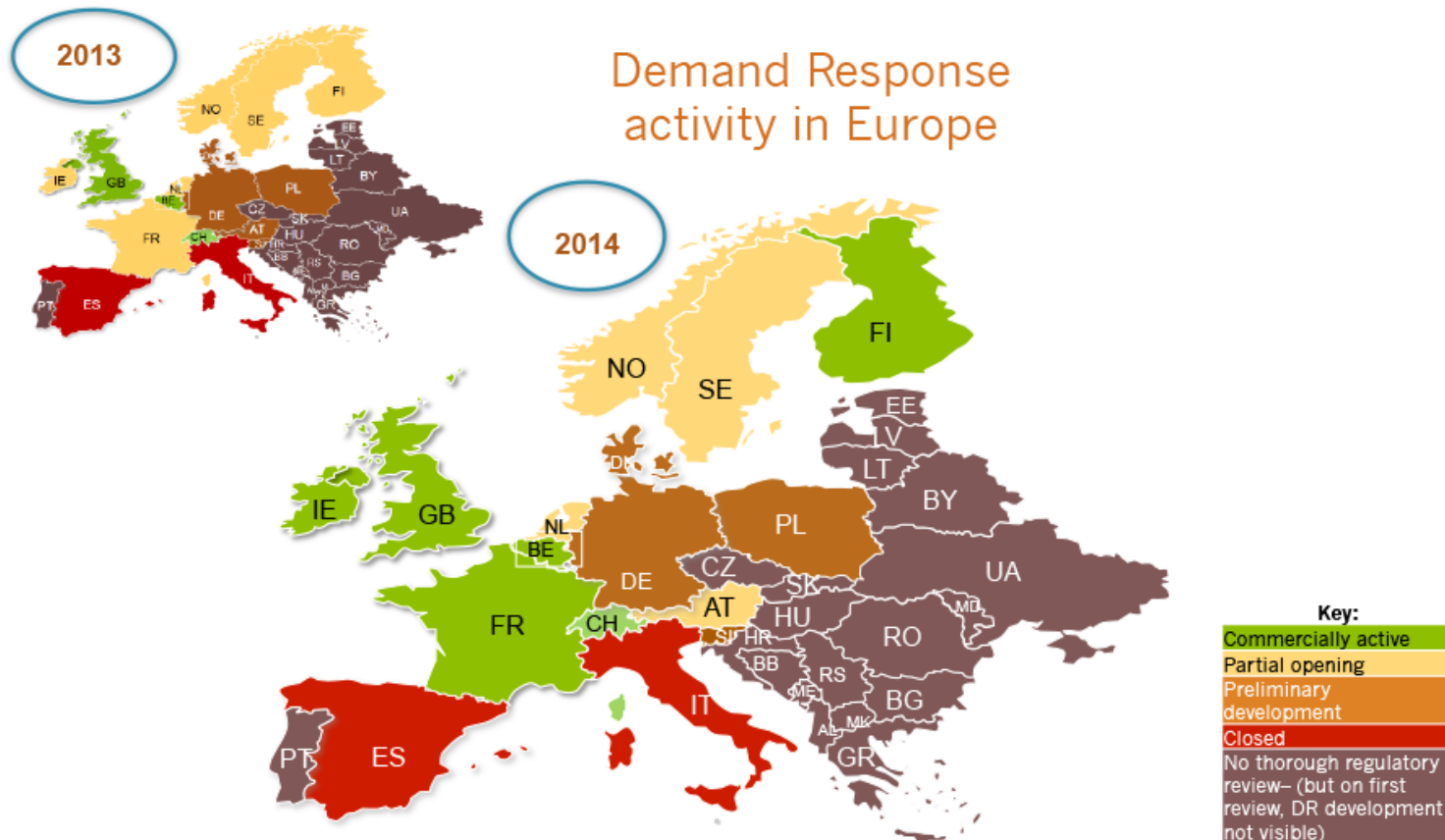


The virtual power plant – Power Hub

Providing the link between distributed energy resources and system operators



Denmark lacks behind in implementation (according to Smart Energy Demand Coalition Europe)



Conclusion



- Political commitment to developing the basic framework is necessary
- A market based system attracting players on both the demand side and the supply side seems to be the most cost effective solution
- The basic components for a market based system are or will be in place in Denmark by 2020



The major barrier to the rapid development of smart grid is weak price incentives due to:

- slow progress in the electrification of the transportation and heating sectors
- strong grids with surplus capacity
- strong interconnectors
- sufficient conventional resources to provide balancing services.