

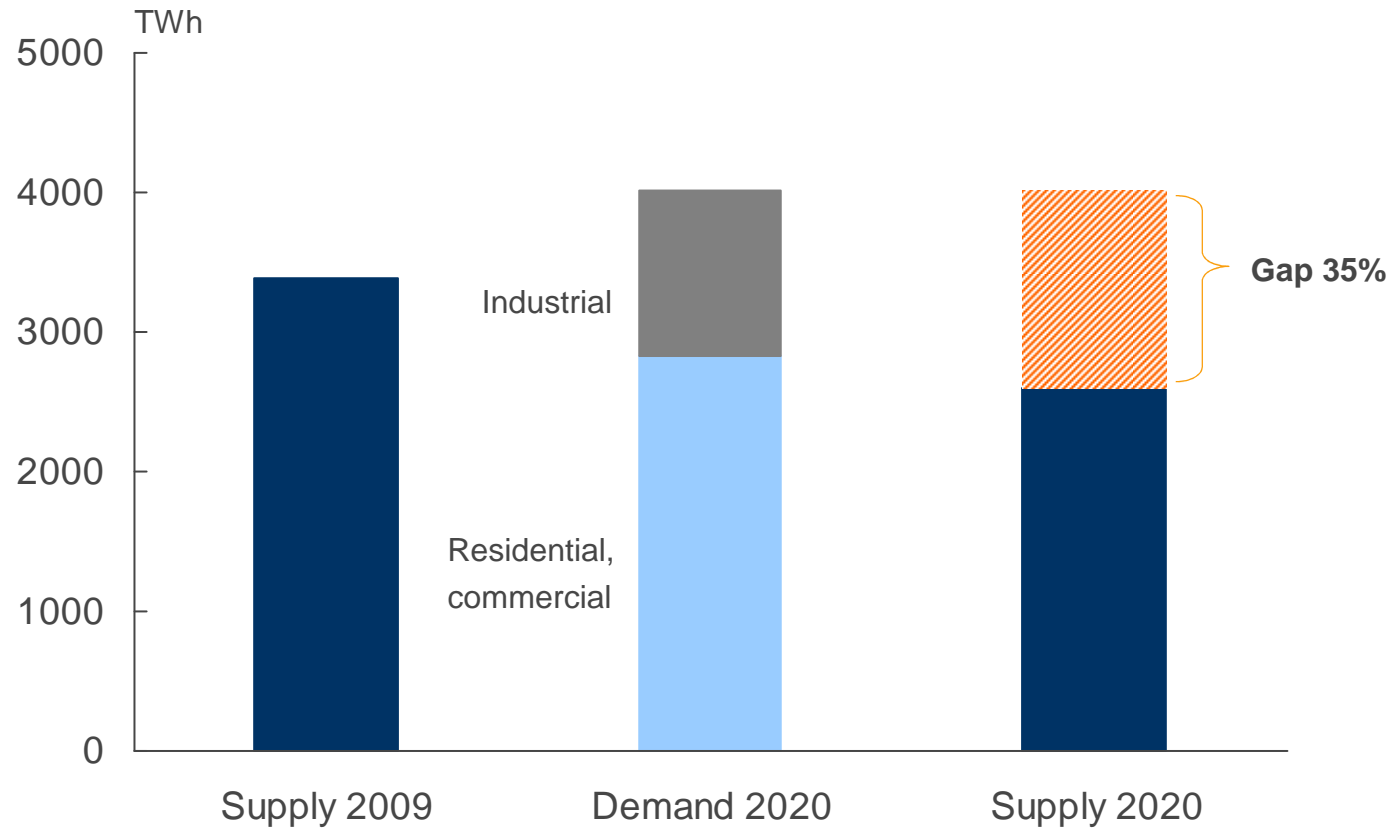
# GROWTH IN COMPETITIVE LOW-EMISSION ENERGY

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ENERGY

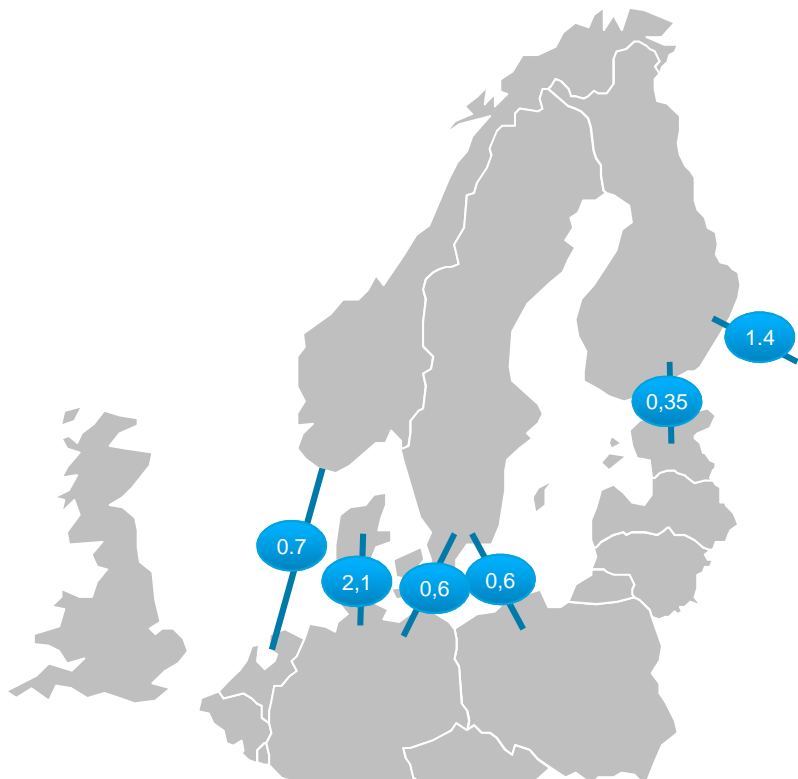
# Fully open energy markets are needed in Europe to fulfill the electricity D/S gap by 2020



Source: International Energy Agency (IEA); World Nuclear Association (WNA); PowerVision by Platts; McKinsey Integrated Power Model; European Energy and Transport: Trends to 2030 – 2007 update. Covering major European markets

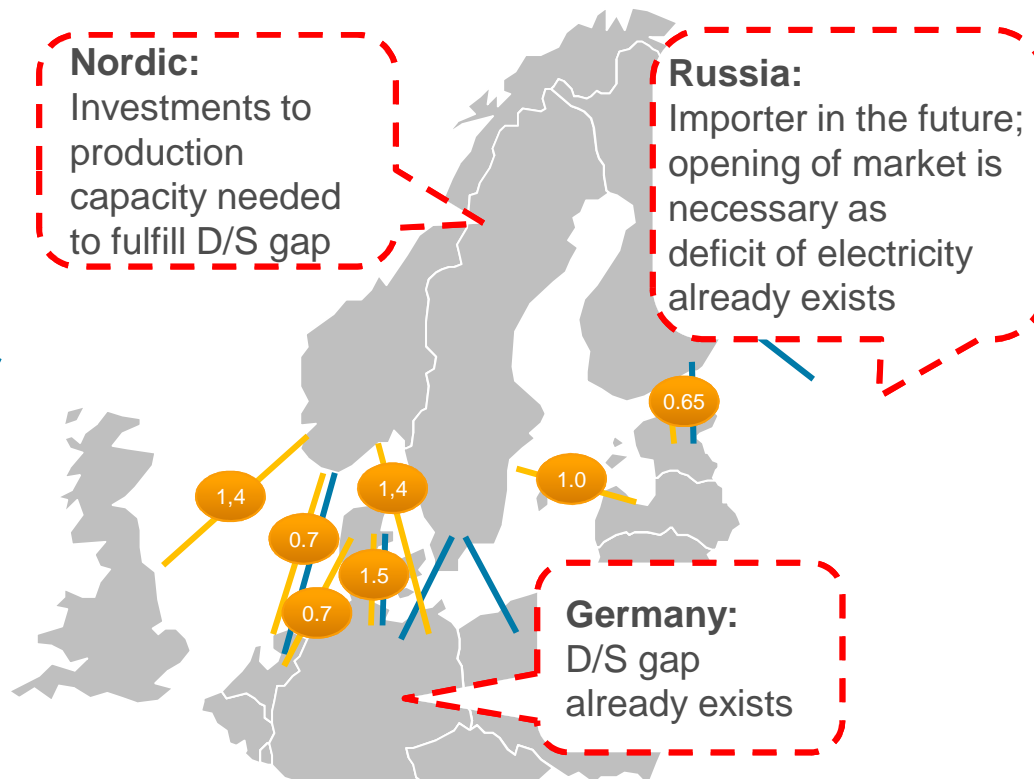
# Market integration is taking place all the time

### Interconnection 2010



Total of 5,8GW interconnection capacity installed

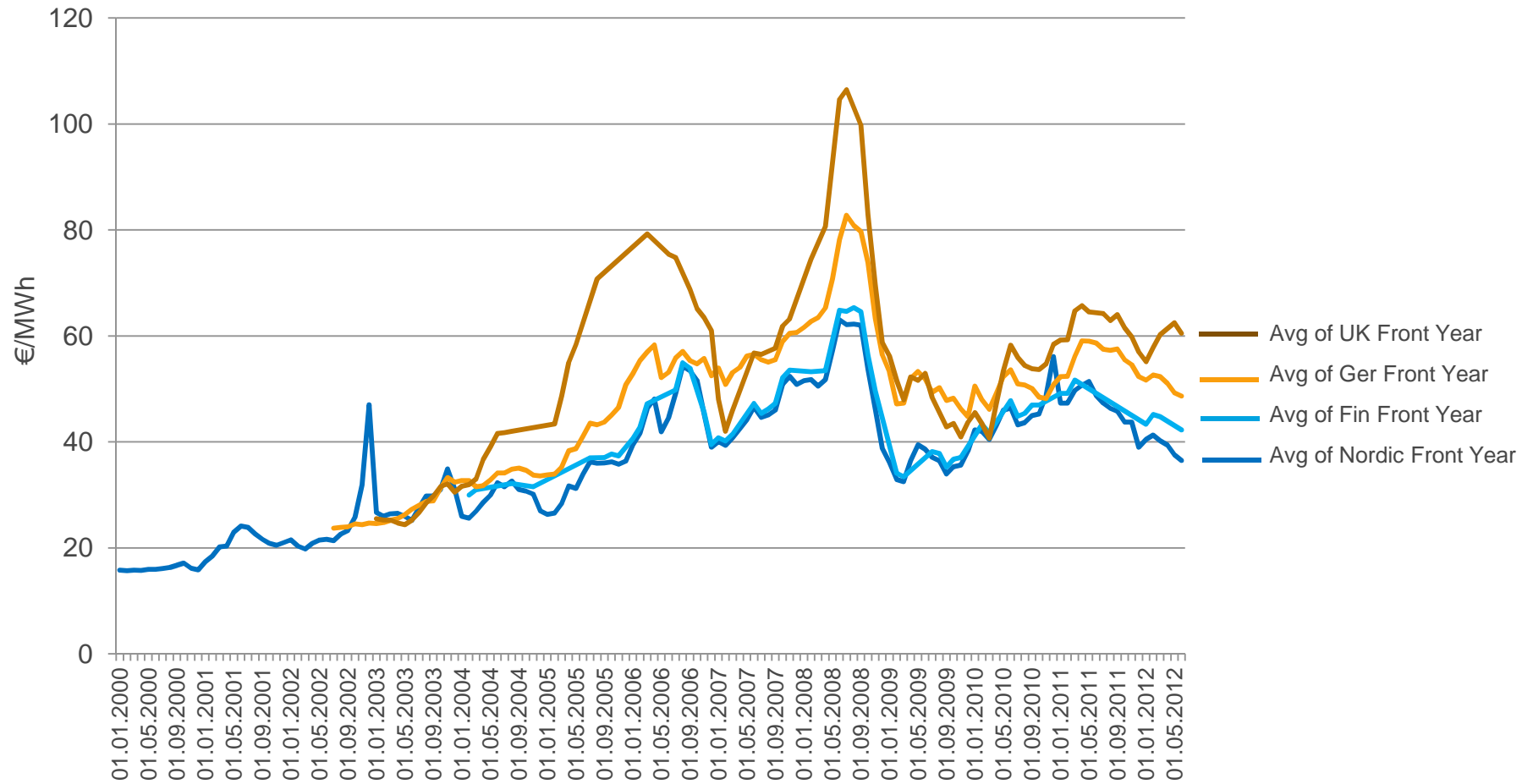
### New interconnections until 2020



Additional of 7,4 GW interconnection capacity planned until 2020

# ENERGY

## Increasing transmission capacity will connect Nordic and Continental prices in the future



Source: Nord Pool, EEX, Reuters  
4 | © UPM

## Achievements in key targets

1

### Market driven business model in Energy

- Re-organize from resource function to business
- Set up the organisation and expertise in multi commodity energy trading
- Trading of power, gas, coal and emission allowances
- Market presence in Nordic and Central European markets



2

### Leverage market operations

- Growth in physical and derivatives trading activities
- Growth in traded volumes and new products
- Keep net gain positive (external sales vs. external purchases)



3

### Expand in cost competitive low-emission energy

- Utilisation of cost competitive energy sources
- Increased stake in Pohjolan Voima Oy



4

### Future growth

- New nuclear power reactor OL3 at Olkiluoto in Finland in 2014
- Participation in OL4 bidding and engineering



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UPM targeted value chain position: Generation and trading, biomass based fuels



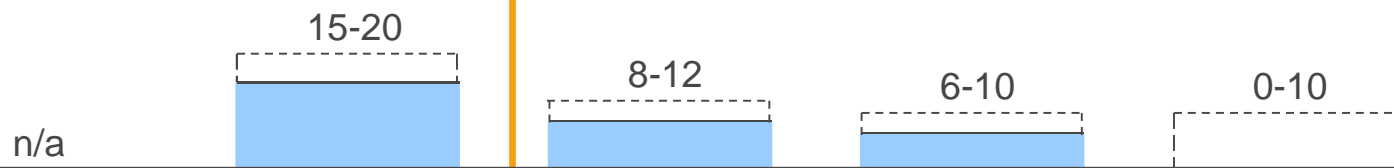
UPM Strategic Focus



Market size, EU27 EUR bn



Typical average ROIC, %



Current UPM Involvement

- Forest energy biomass
- Peat
- 3.9 TWh hydro (own, PVO, Kemijoki)
- 4.5 TWh nuclear (TVO)
- 4.3 TWh CHP
- Fingrid (PVO)
- None
- None

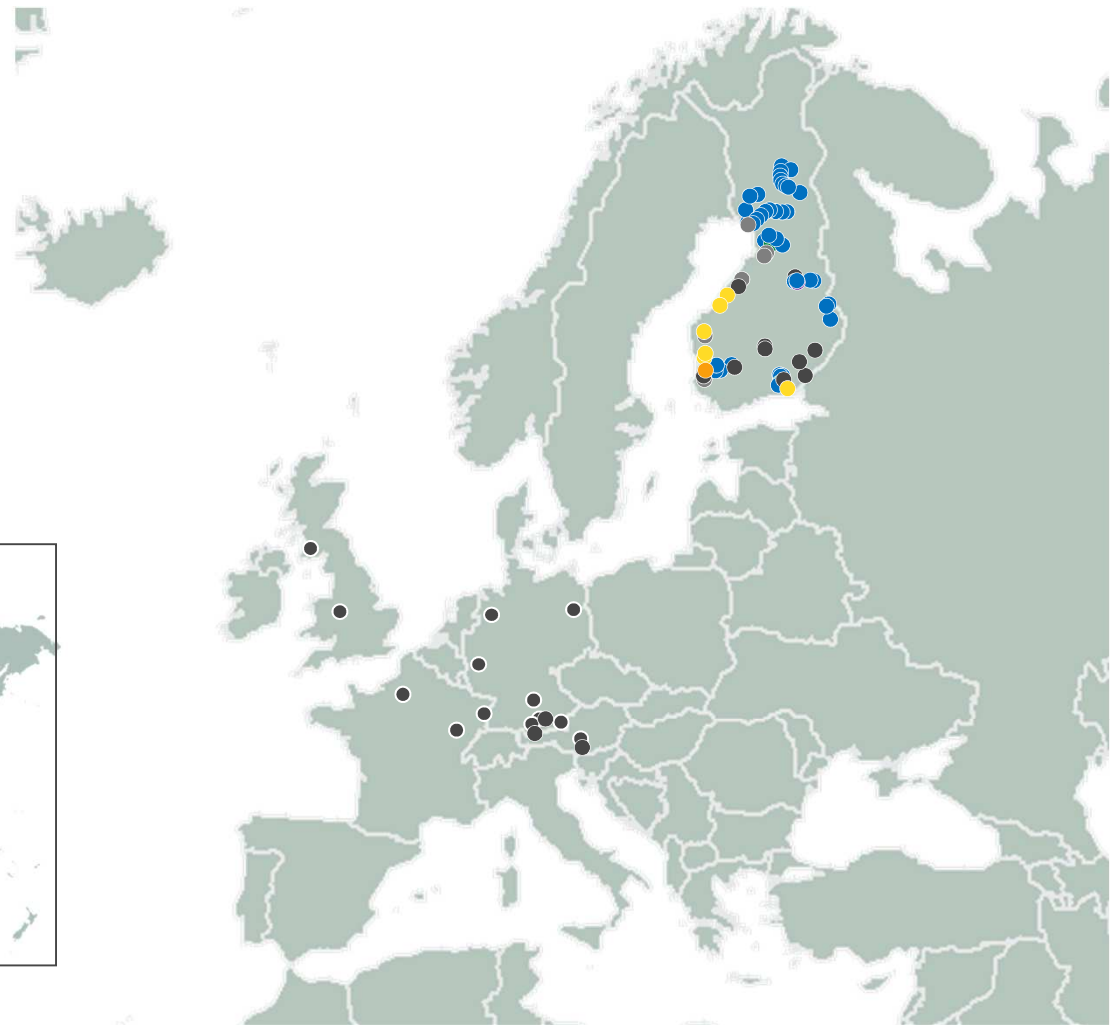
<sup>1)</sup> Excluding heat sales

## ENERGY

**UPM has long and vast experience in electricity generation with unique production fleet**



- Own hydropower plants, Share-owned hydropower plants
- Thermal power plant PVO
- Nuclear power plant PVO
- Wind power plant Innopower
- Paper and pulp mill sites and power plant, mill hydro power plant



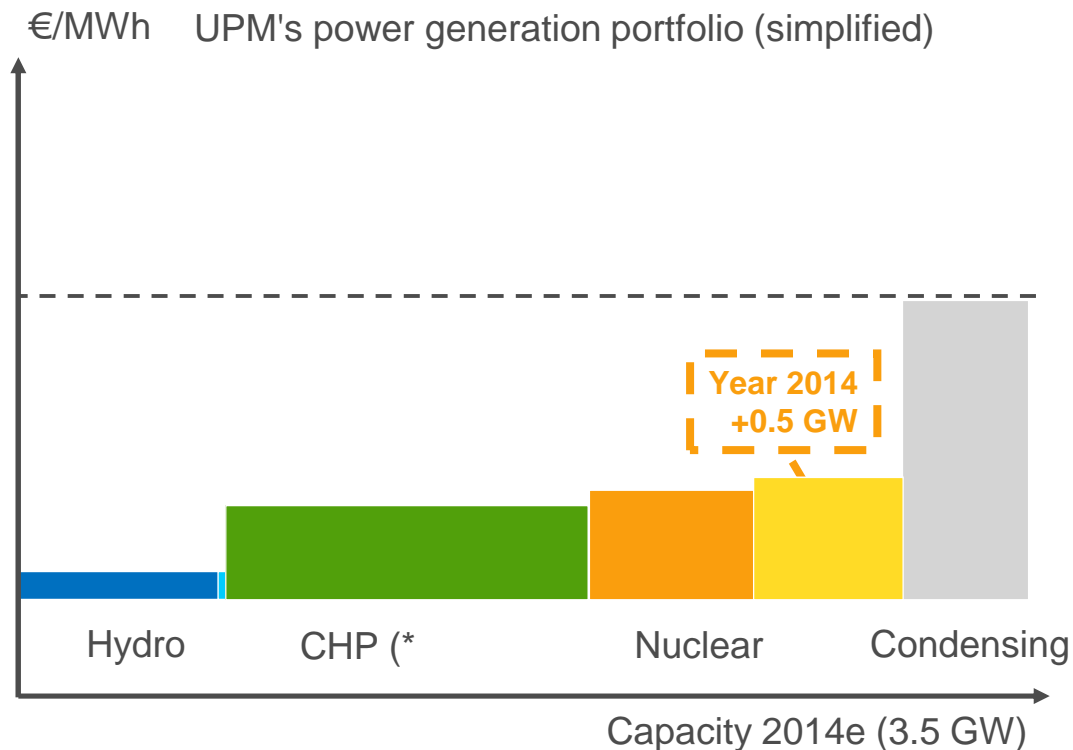
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# UPM is strong in low-cost, low-emission electricity generation



Electricity generation capacity in 2012

| Type                             | Nominal capacity<br>MW |
|----------------------------------|------------------------|
| Hydropower                       | 702                    |
| Nuclear power                    | 581                    |
| Condensing power                 | 431                    |
| Wind power                       | 2                      |
| <b>Total in Energy</b>           | <b>1,716</b>           |
|                                  |                        |
| CHP and hydropower at mill sites | 1,561                  |
|                                  |                        |
| <b>Total UPM</b>                 | <b>3,277</b>           |





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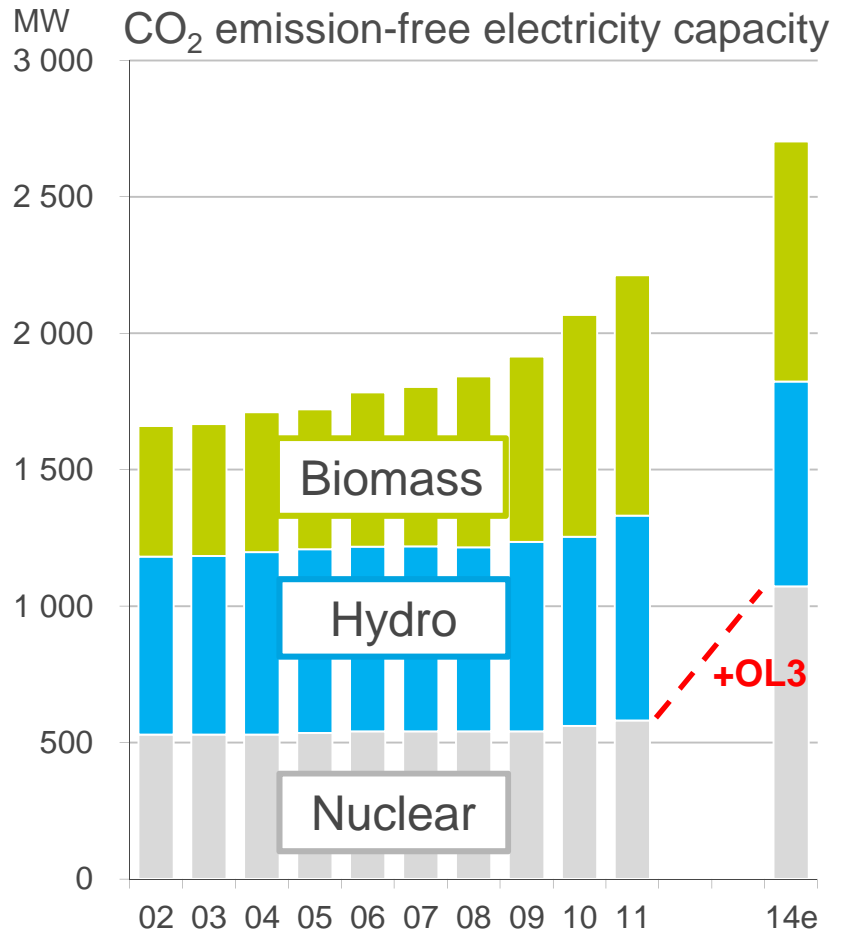
# Consistent growth in low-emission electricity generation, over EUR 1 billion invested since 2000



The Biofore Company

UPM

- During the past decade:
  - 84% growth in biomass-based electricity generation
  - 15% growth in hydropower
- UPM is the second-largest generator of biomass based energy in Europe
- 79% of UPM's power generation is CO<sub>2</sub> neutral



## ENERGY

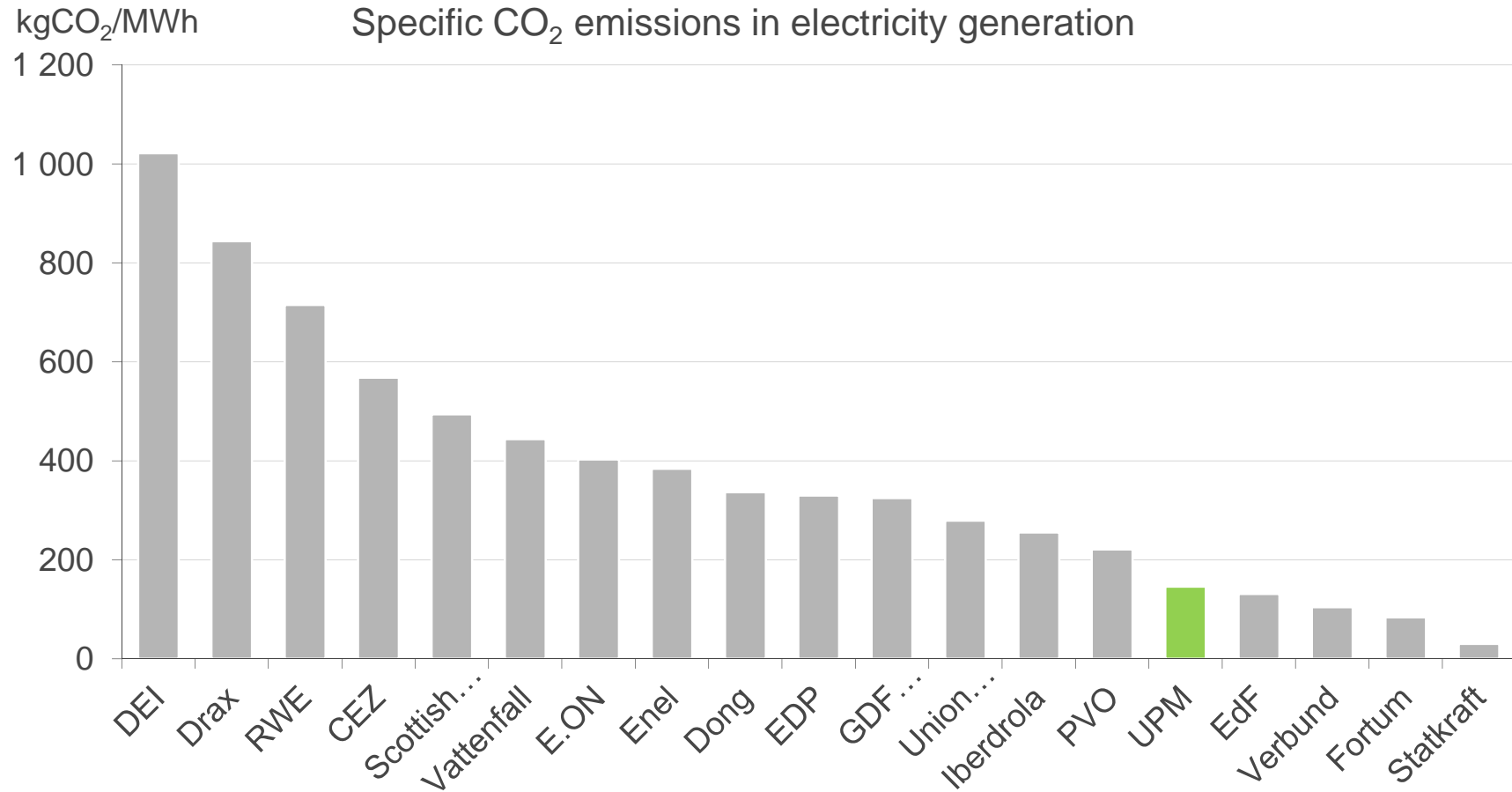
**UPM will expand in cost competitive low-emission energy  
– new nuclear plant units OL3 and OL4 in Finland**



- UPM has a 33% of Olkiluoto 1 and 2 nuclear power production capacity and 30% of the new OL3 output, which will began operation in 2014
- UPM is participating in the planning phase of OL4

## ENERGY

# UPM is well positioned and aims to grow in low-emission electricity generation



Source: PWC 2011, UPM

## ENERGY Summary

- Fully open energy markets and significant power generation investments are needed to fulfill D/S gap in Europe by 2020
- Increasing transmission capacity will connect Nordic and Continental prices in the future
- UPM has competitive, low emission energy assets
- UPM has continuously developed its competencies and platform to be able to achieve future growth in profitable low-emission energy generation



**UPM**

The Biofore  
Company