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UPM Energy Oy

# NEW ENERGY BUSINESS MODELS

## D.DAY FOR ENERGY INDUSTRIES 13.6.2017



# UPM today



## UPM BIOREFINING

Pulp  
Plantations  
Biofuels  
Sawmills  
Wood Sourcing  
and Forestry



## UPM ENERGY

Hydro-, nuclear-  
and condensing power  
(incl. shares in energy  
companies)  
Electricity production  
and trading



## UPM RAFLATAC

Label materials  
for product and  
information labelling



## UPM SPECIALTY PAPERS

Fine and specialty  
papers in China and  
APAC  
Labelling material  
globally



## UPM PAPER ENA

Magazine papers,  
newsprint and fine  
papers for various  
end-uses



## UPM PLYWOOD

Wisa® Plywood  
and veneer products  
UPM Grada®  
wood material



## UPM BIOCOMPOSITES

UPM ProFi  
UPM Formi

## UPM BIOCHEMICALS

Chemical building blocks  
Lignin products  
Biofibrils  
Biomedical products

# UPM Energy Oy

>90%  
emission-  
free  
production

71 employees

>350m€  
Turnover

33% EBIT-  
margin

126m€  
EBITDA

2.3bn€  
Capital  
employed  
(average)

8.7 TWh  
production

# UPM's power generation assets are divided between different UPM businesses

## UPM Energy Oy



- Generation capacity 1 494 MWe
- Types: hydro, nuclear, condensing, CHP
- Assets in Finland
- Trading in fuels, emissions, financial and physical power
- Internal and external clients
- 24/7/365 control room operations

## Mills (pulp, paper, timber, plywood)



- Generation capacity 1 464 MWe
- Types: CHP, small hydro
- Assets in Finland, UK, Germany, Austria, France, China, USA, Uruguay
- Participating in all the Nordic energy and capacity markets via UPM Energy
- Significant portfolio of flexible consumption enabled by UPM Energy

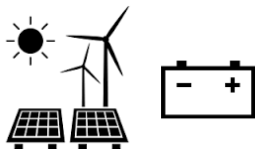
**UPM's total generation capacity is 2 958 Mwe  
#2 producer and #1 consumer in Finland**

UPM Energy

# NEW BUSINESS MODELS

# We witness fundamental change in the Nordic and European energy landscape

INCREASING SHARE  
OF INTERMITTENT CAPACITY



EXPANSION OF  
INTERCONNECTIONS



SMARTER INDUSTRIAL  
ENERGY DEMAND



## Regulation

PROSUMER SCALE  
UP THEIR SHARE



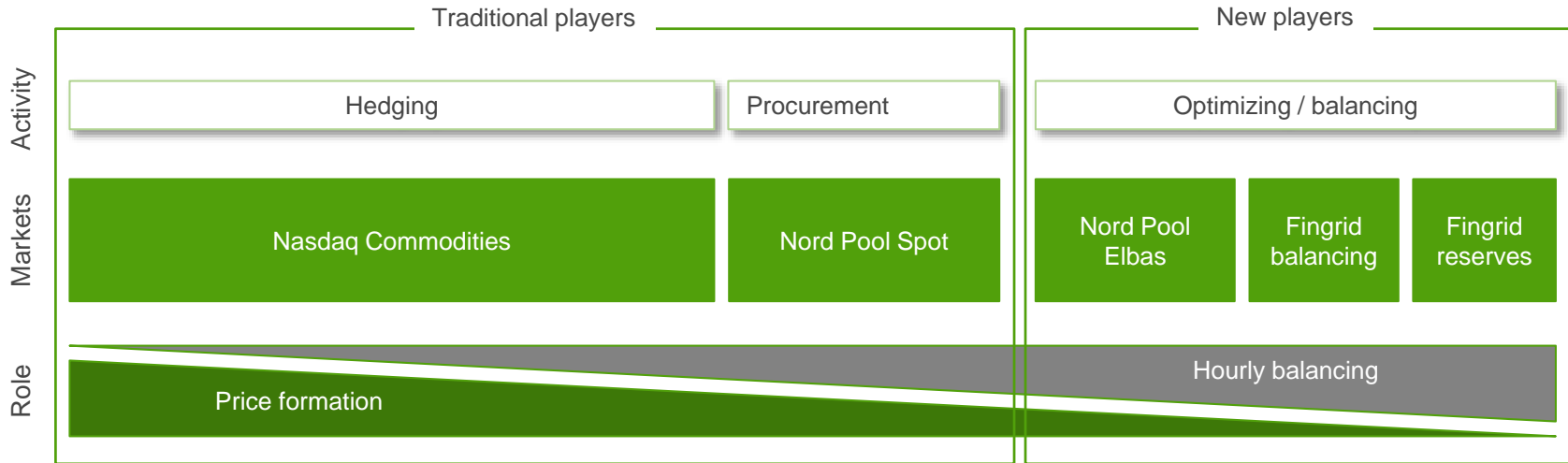
DIGITALIZATION  
IN THE ENERGY SECTOR



CONVENTIONAL BUSINESS  
MODEL EROSION



# Current market model – new players are operating on intra-day markets



# Virtual Power Plant – Case Next Kraftwerke

Power plant operator without any power plants

“The concept of the Virtual Power Plant Next Pool is to network medium- and small-scale power producing and power consuming units and then smartly distribute supply and demand and to profitably trade the generated and consumed power.”

- Sales 275 MEUR (2015)
- Trading 10,2 TWh
- 4000 units which provide 2726 MWs of capacity
  - 750 MWs tertiary capacity reserve
  - 657 MWs secondary capacity reserve
- Staff 135
- Germany, Austria, Belgium, France, Netherlands, Poland, Switzerland and Italy
- Services include:
  - market access
  - portfolio and balancing group management for third parties
  - flexible power delivery

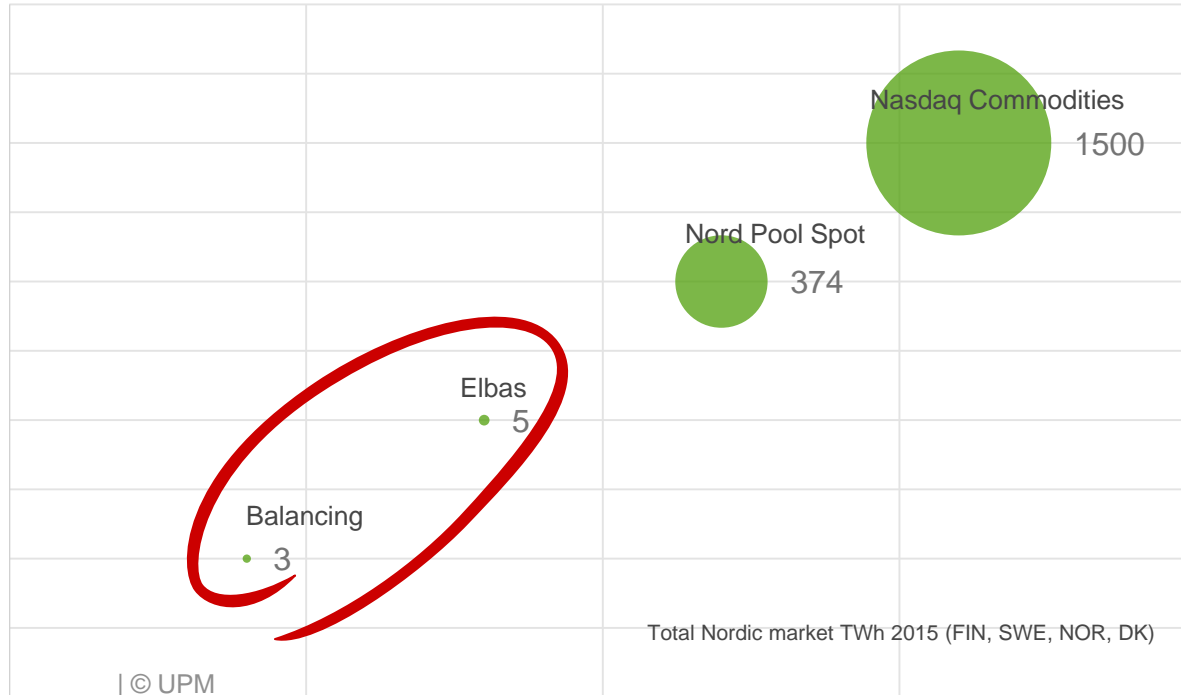
## Virtual Power Plant



“Dutch sustainable energy company Eneco Group acquired a minority interest of 34% in Next Kraftwerke. The investment will allow for the further strategic expansion of Next Kraftwerke in Europe and contribute to the joint ambition of Eneco Group and Next Kraftwerke to accelerate the energy transition by means of technology, enabling more renewable and decentralized energy.”

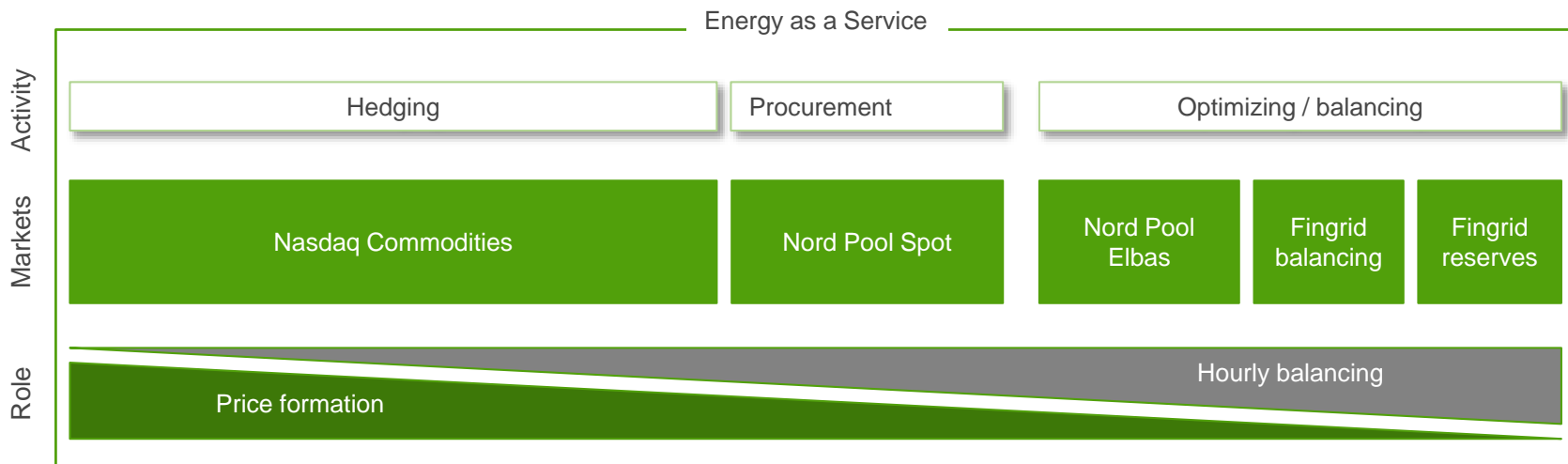


# Market size - Intra-day trading volumes are fraction of the whole market volume



- Business model has to be based on value creation – not volume
- Servicing clients in intraday markets requires robust software and data transfer – not traditional competencies of the energy companies
- Focus from "taking care of business" to creating additional value from the energy consumption

# Energy as a Service – all markets covered by one service concept



- There are no 4000 decentralized production units in Nordic energy market yet, but there is a lot of untapped potential in industrial consumption
  - Based on UPM Energy's experience in servicing one of the most complex industrial client in the Nordic the majority of the value creation comes from improving operational activities at the site level
- ⇒ It takes more than a software to get the mills to "sing along" to the market signals



**UPM**

The Biofore  
Company