

# Energy and Transport in Green Transition

Perspectives on ecomodernity

Edited by  
Atle Midttun and Nina Witoszek

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# **Business Models for Sustainability:**

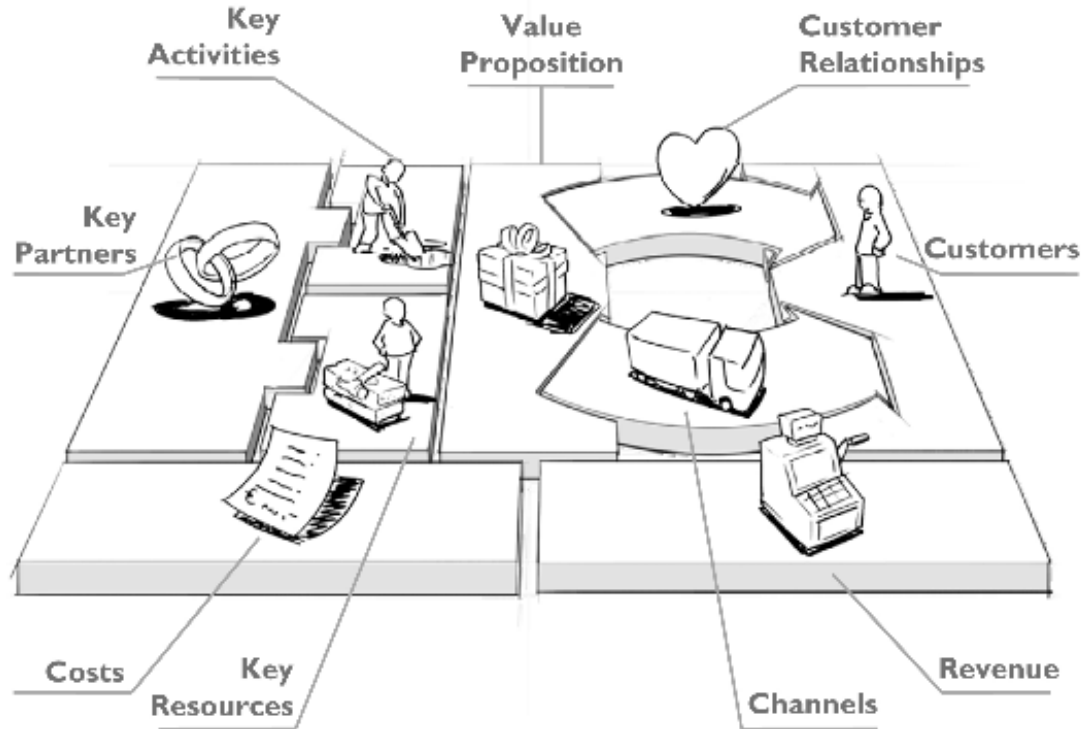
## **Energy Industry Under Commercial and Ecological Transformation**

*Atle Midttun*

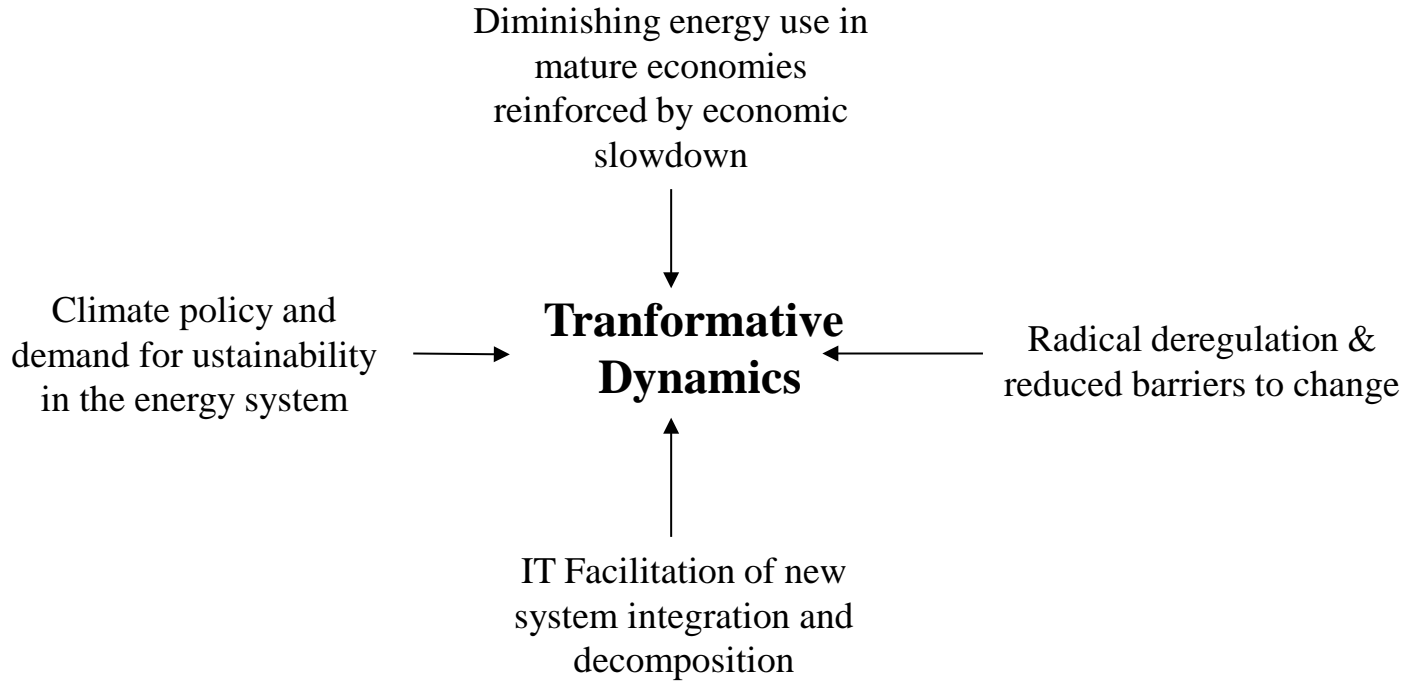
**Presentation at the Salzburg Energy Seminar 3 September 2015**

Based on Midttun & Piccini: European Energy Industry: Towards Sustainability and Transformative Change.  
Working paper Centre for Energy Studies, BI Norwegian Business School (forthcoming)

# Business Model Canvas – (Ostervalder)

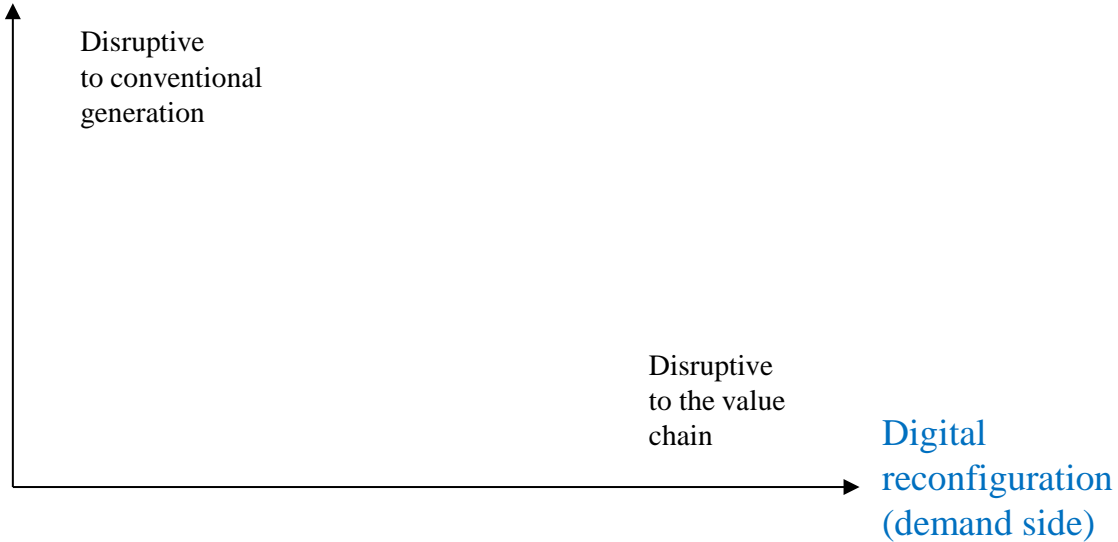


# Pressures for Change

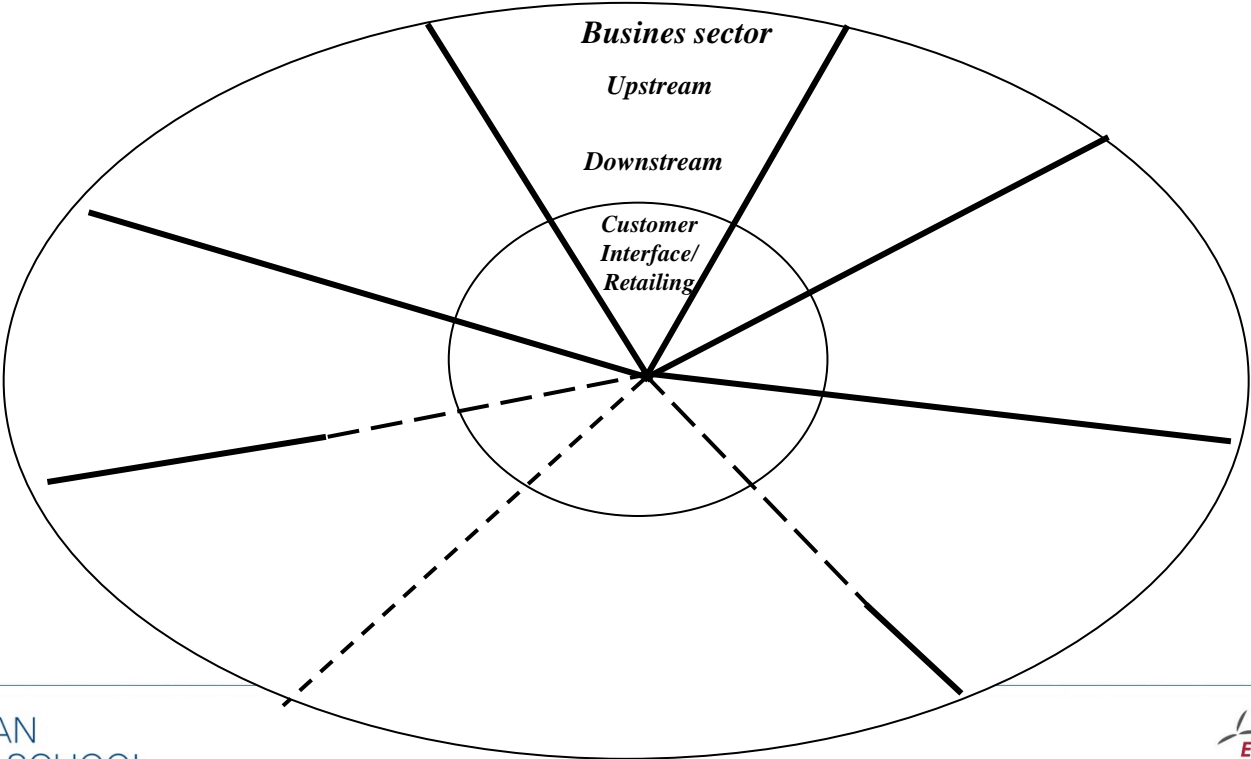


# Two Dimensions of Transition

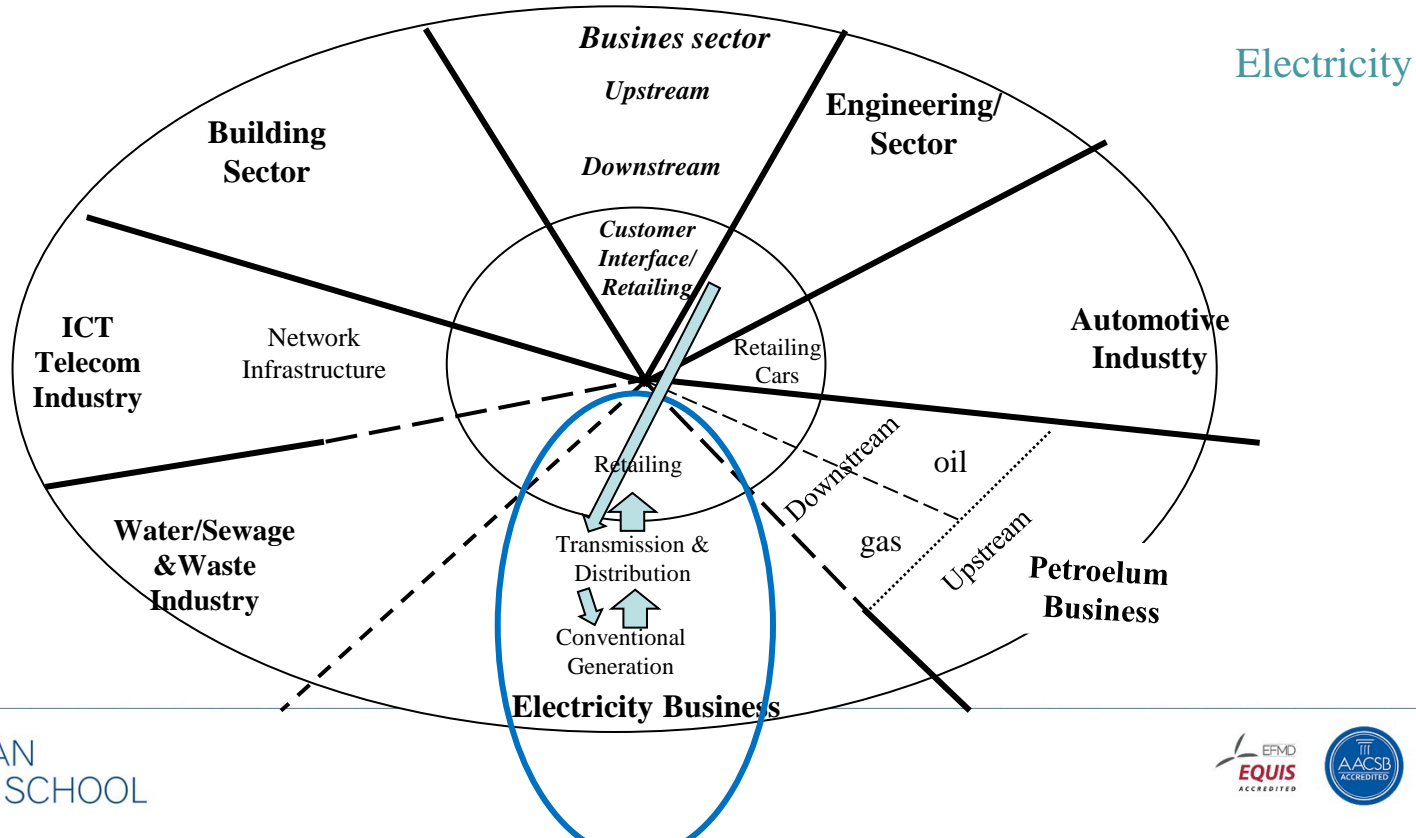
Green energy  
transition  
(supply side)



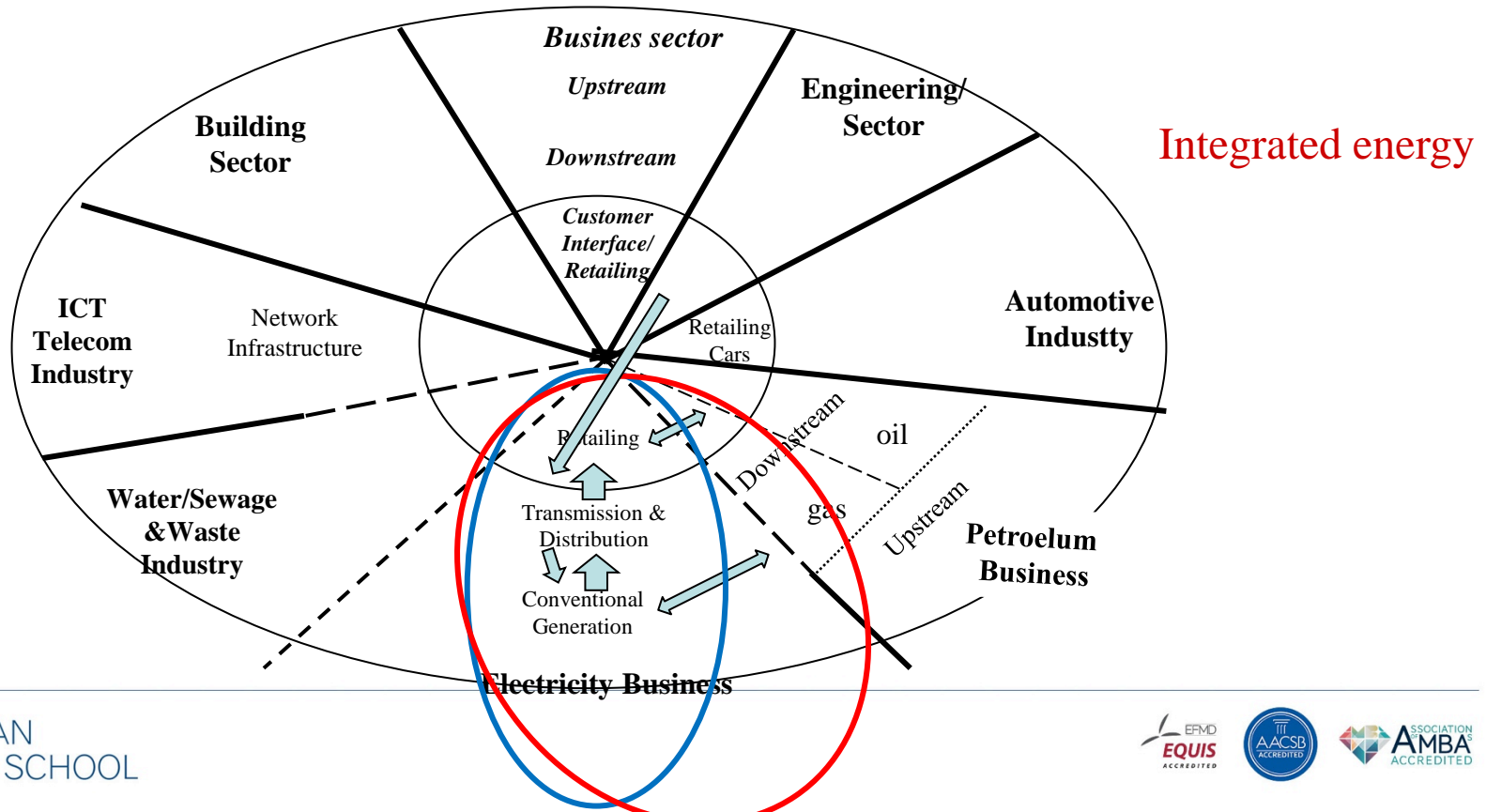
# Business Models – A Schematic Overview



# Traditional Business Models: The Electricity Company

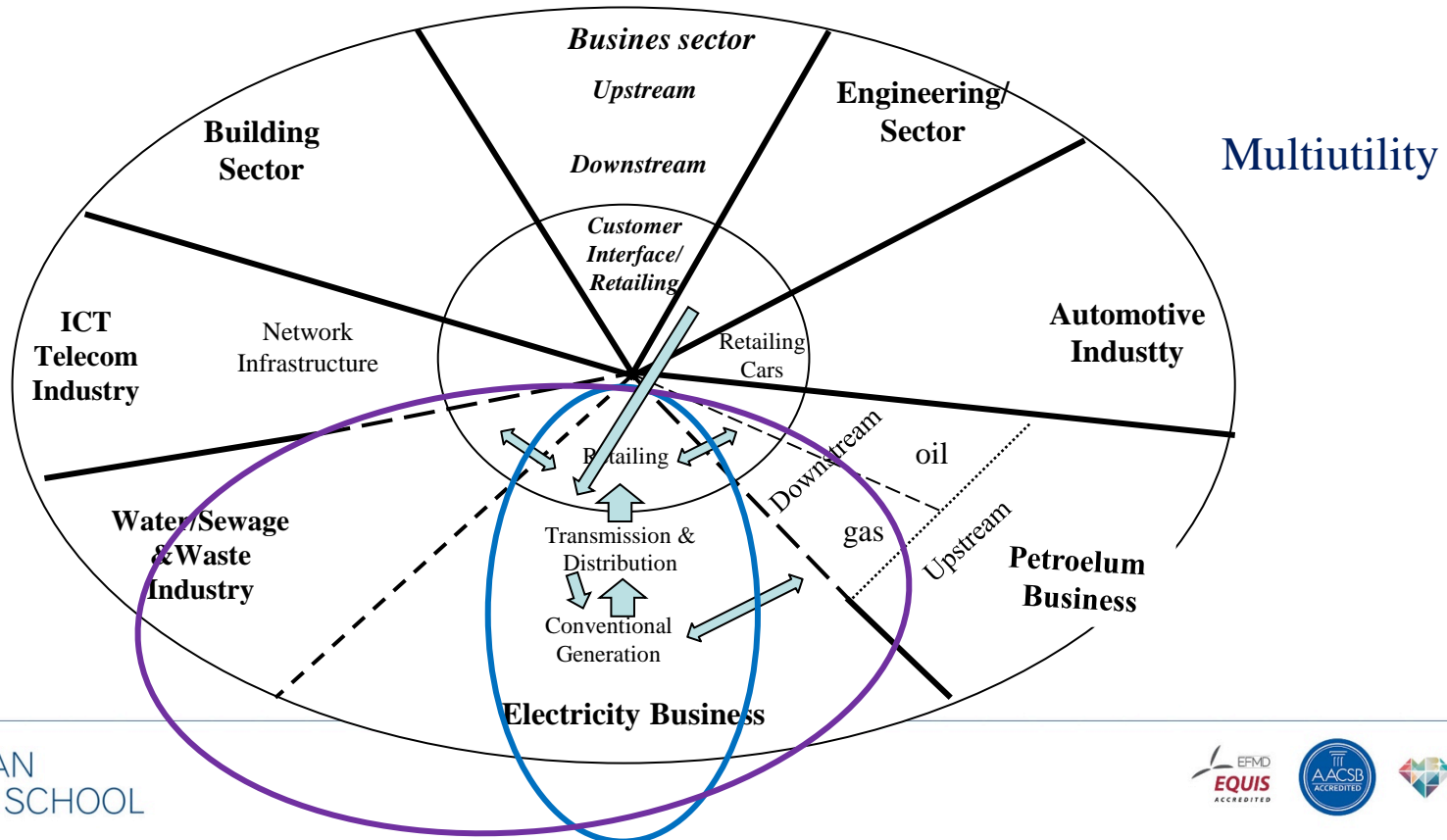


# Traditional Business Models: The Integrated Energy Company

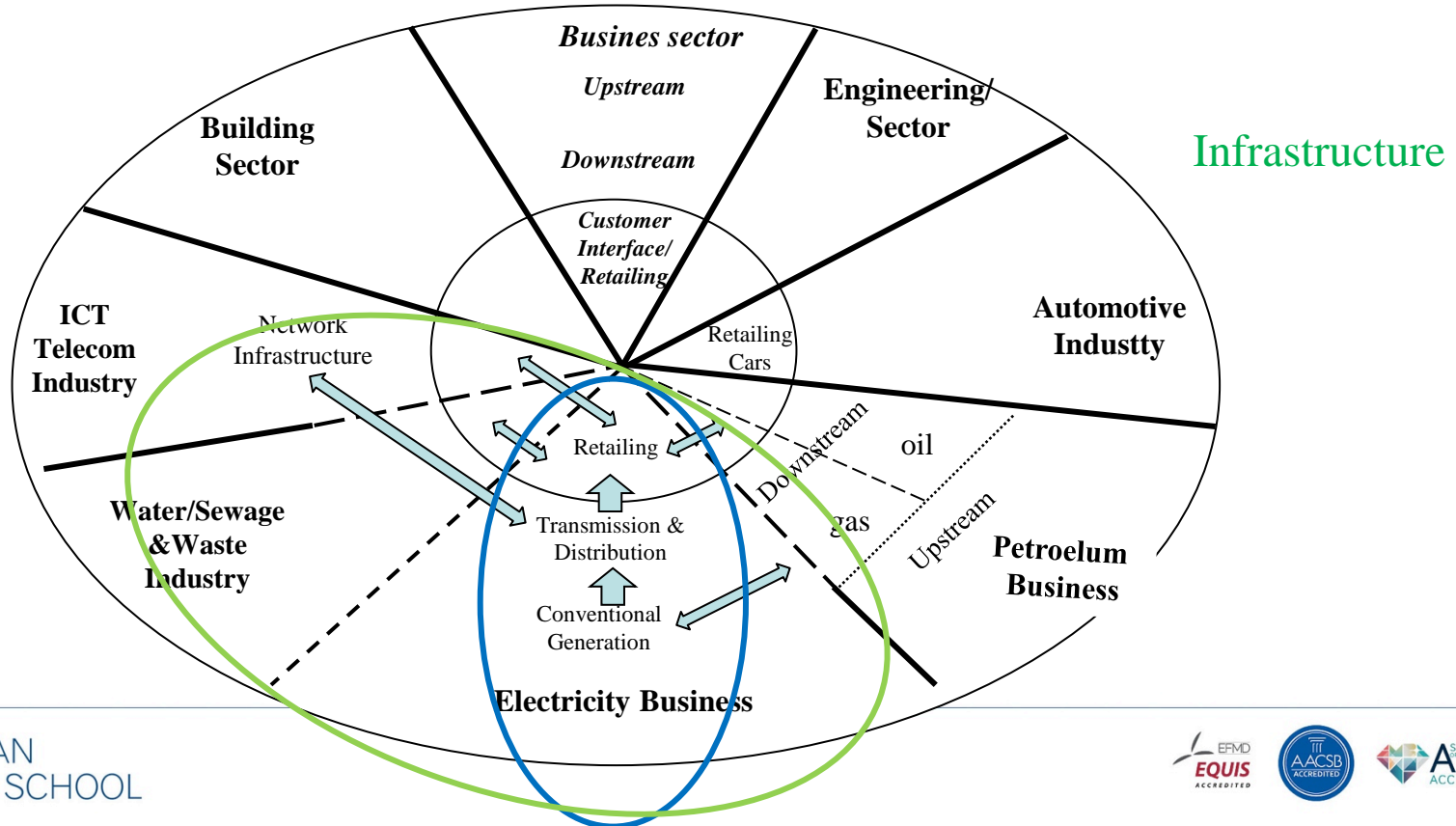




# Traditional Business Models: The Multiutility Company



# Traditional Business Models: The Infrastructure Company



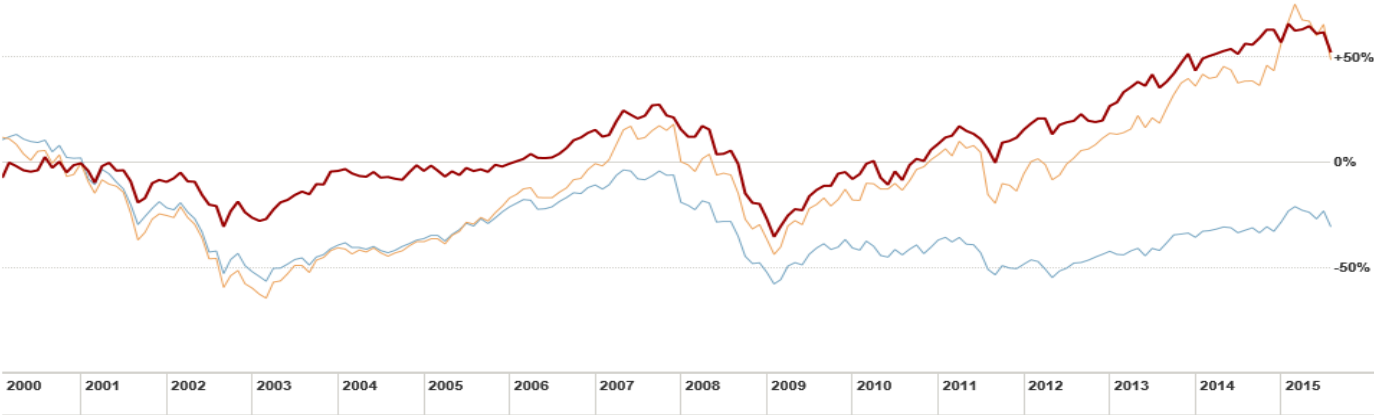
# General Stock Index as a Benchmark

FINANCIAL TIMES

Dow Jones Industrial Average DJI:DJ

01/03/2000 - 08/31/2015: Monthly data interval

DJ EURO STOXX 50 EUR Price GERMAN SE XETRA DAX INDEX



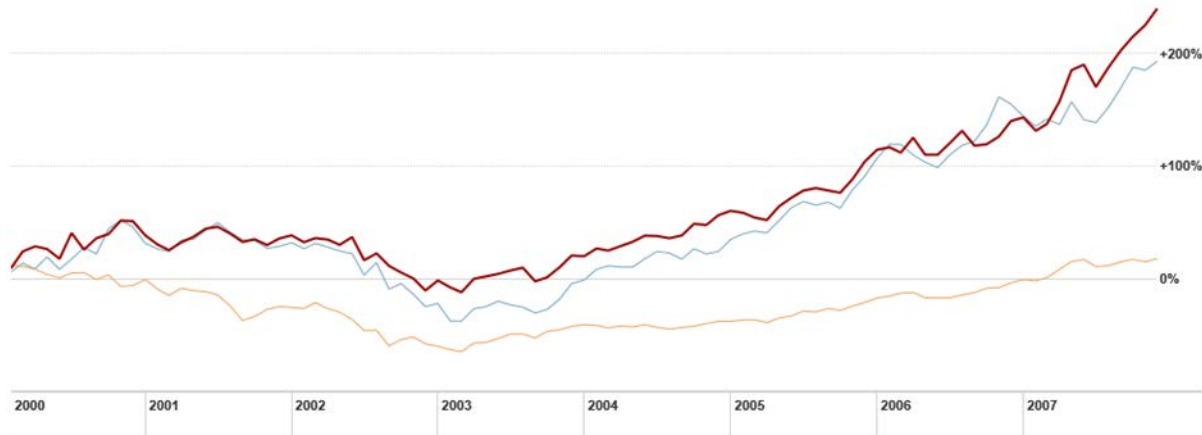
# The Golden Age of European Electricity (2003-2007)

FINANCIAL TIMES

E.ON SE EOAX.N:GER

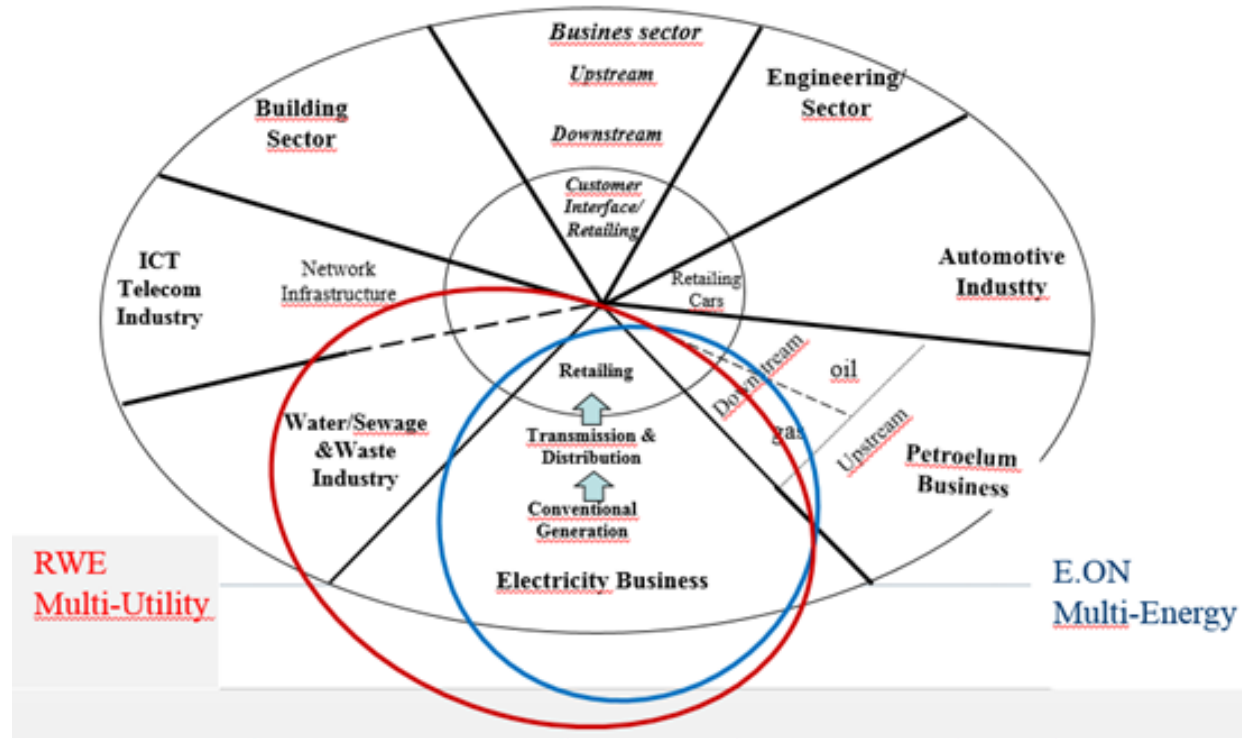
01/03/2000 - 12/31/2007: Monthly data interval

RWE AG GERMAN SE XETRA DAX INDEX



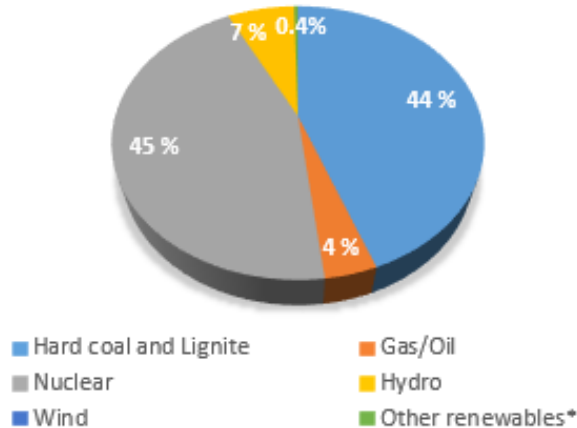
RWE has two types of share traded in the stock market, which are common share and preferred share. Of the total outstanding stock 614,745 thousand shares, the common share accounts for approximately 94%, while the preferred share represents 6%. We have used the price development of RWE's common share is used in this analysis

# Multi-Energy and Multi-Utility Business Models

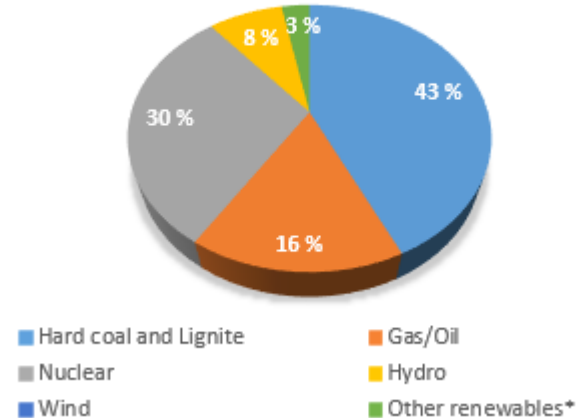


# Source-Mix in the Golden Age – E.ON

**E.ON 2000**  
Total production 124.50 TWh

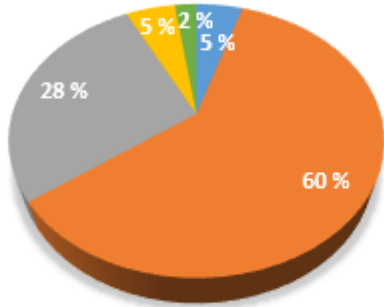


**E.ON 2007**  
Total production 257.10 TWh



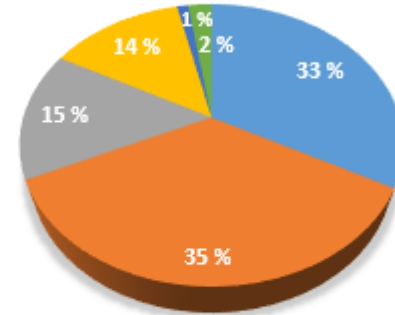
# Source Mix in the Golden Age RWE

RWE 2000  
Total production 113.90 TWh



- Coal
- Nuclear
- Pumped storage, oil, other
- Lignite
- Gas
- Renewables

RWE 2007  
Total production 216.10 TWh



- Coal
- Nuclear
- Pumped storage, oil, other
- Lignite
- Gas
- Renewables

# Crisis and Transformation (2008 – 2015)

FINANCIAL TIMES

E.ON SE EOAX.N:GER

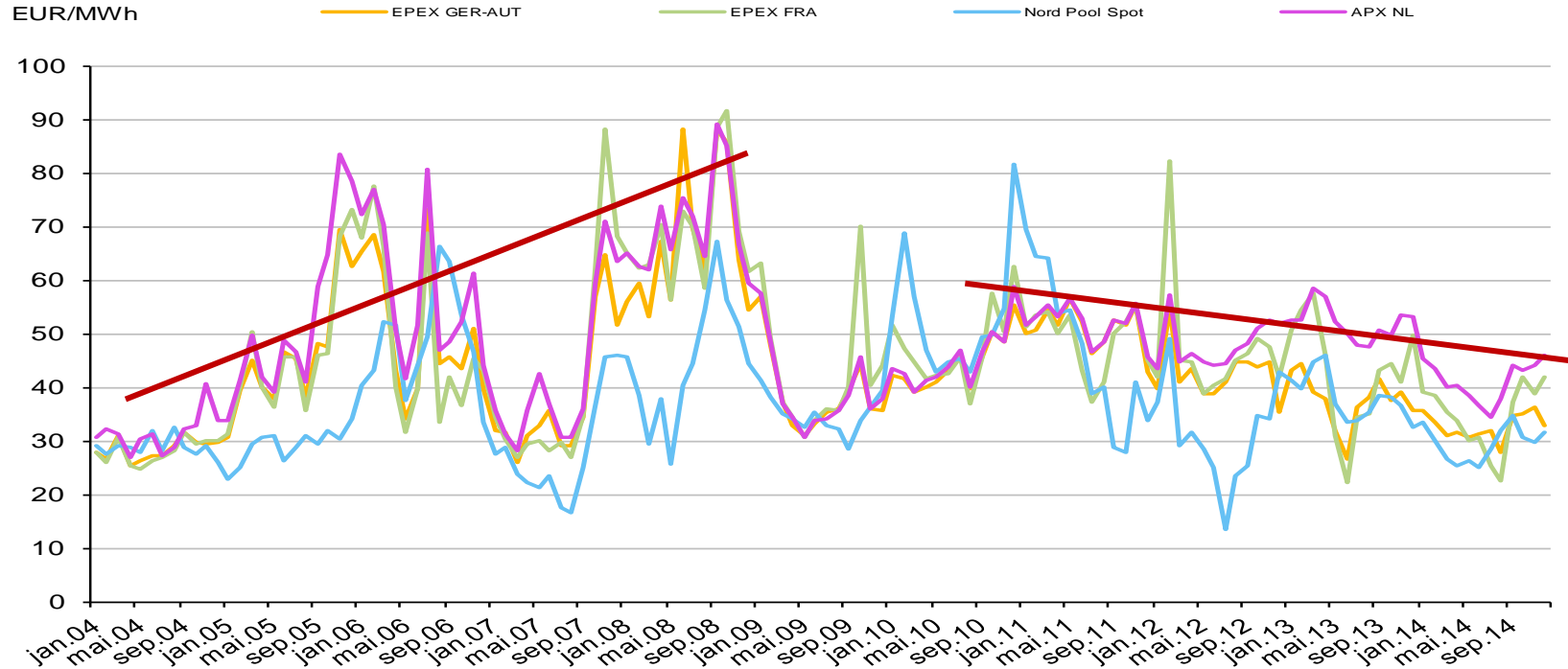
01/01/2008 - 09/01/2015: Monthly data interval

RWE AG GERMAN SE XETRA DAX INDEX



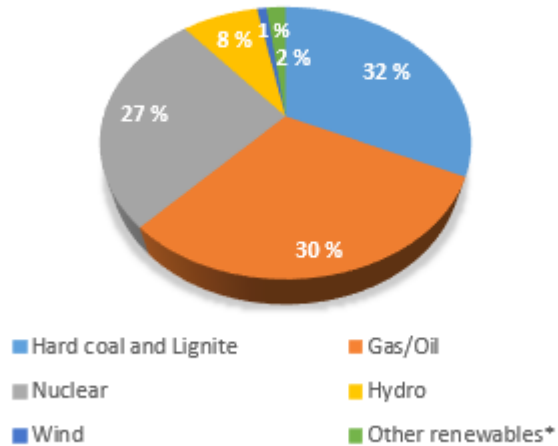


# Monthly spot prices for Electricity

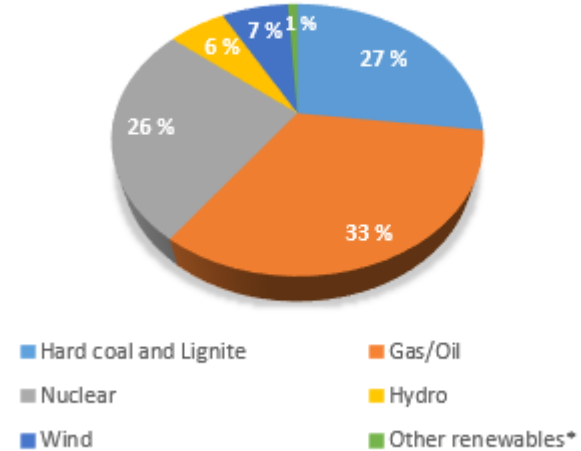


# Source-Mix Under Crisis and Transformation

**E.ON 2008**  
Total production 317.60 TWh

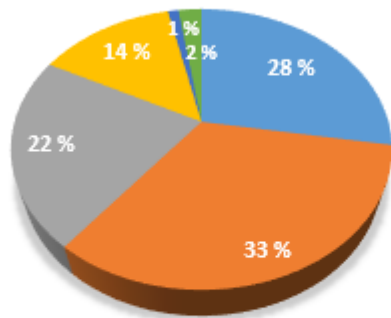


**E.ON 2014**  
Total production 215.20 TWh



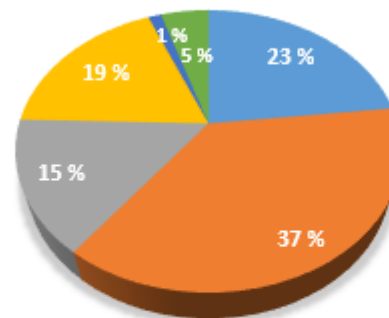
# RWE Source Mix

**RWE 2008**  
Total production 224.10 TWh



- Coal
- Lignite
- Nuclear
- Gas
- Pumped storage, oil, other
- Renewables

**RWE 2014**  
Total production 208.30 TWh



- Coal
- Lignite
- Nuclear
- Gas
- Pumped storage, oil, other
- Renewables

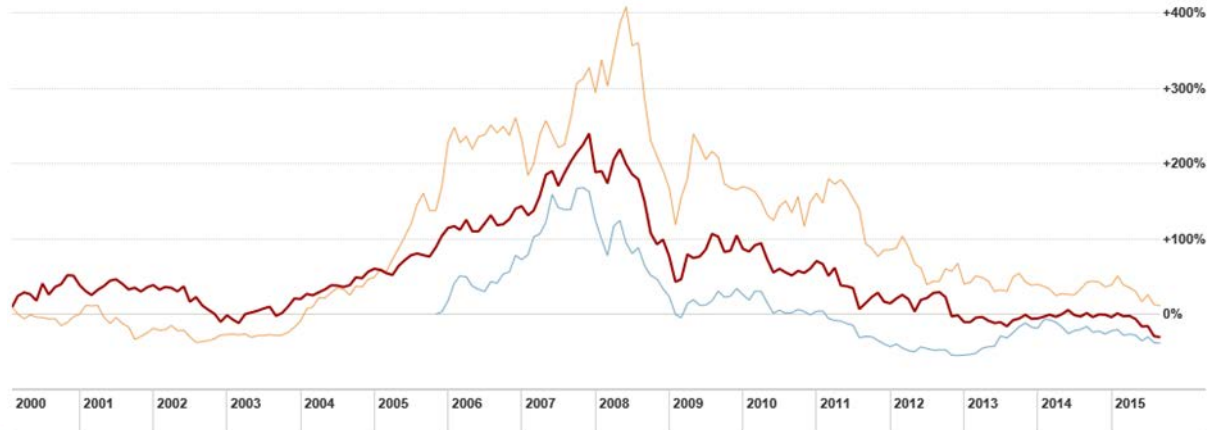
# Other Problem Cases I

FINANCIAL TIMES

E.ON SE EOAX.N:GER

01/03/2000 - 09/01/2015: Monthly data interval

Electricite de France SA Verbund AG



# Other Problem Cases II

FINANCIAL TIMES

E.ON SE EOAX.N:GER

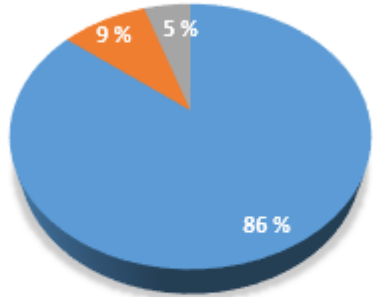
12/01/2005 - 09/01/2015: Monthly data interval

Electricite de France SA Verbund AG



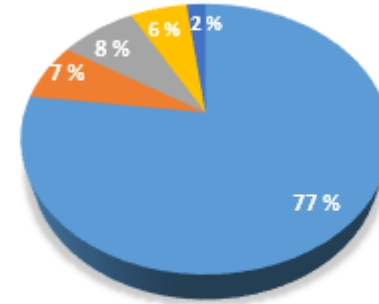
# EDF Source Mix

**EDF 2003**  
Total production<sup>3</sup> 490.90 TWh



- Nuclear
- Hydro
- Fossil-fired (Coal, Oil)
- Combined Cycle and Cogeneration
- Renewables (manily wind)

**EDF 2014**  
Total production 623.50 TWh



- Nuclear
- Hydro
- Fossil-fired (Coal, Oil)
- Combined Cycle and Cogeneration
- Renewables (manily wind)

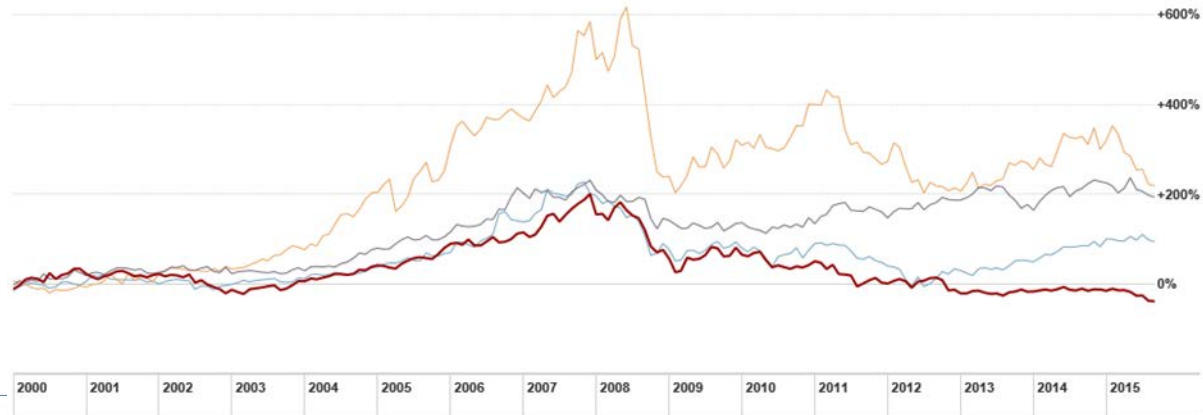
# Incumbent Winners

FINANCIAL TIMES

E.ON SE EOAX.N:GER

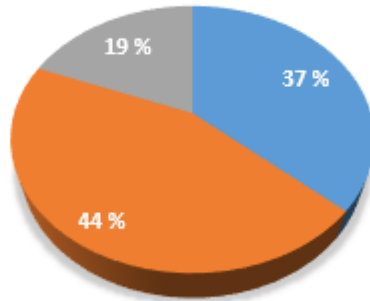
01/01/2000 - 09/01/2015: Monthly data interval

Iberdrola SA Fortum SSE PLC



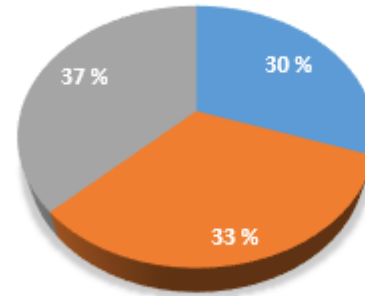
# Fortum Source Mix

**Fortum 2001**  
Total production 46.50 TWh



■ Hydro ■ Nuclear ■ Thermal (mainly natural Gas)

**Fortum 2014<sup>4</sup>**  
Total production 73.40 TWh

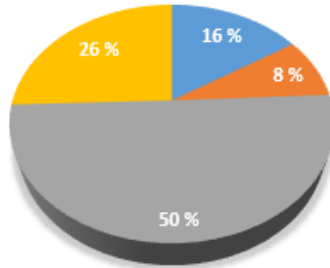


■ Hydro ■ Nuclear ■ Thermal (mainly natural Gas)



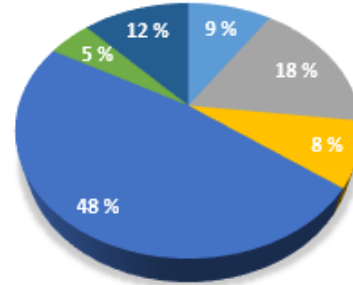
# Iberdrola Source-Mix

**Iberdrola 2000**  
Total production 51.20 TWh



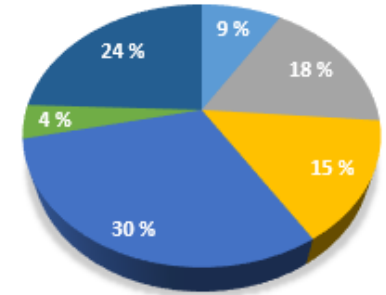
- Coal
- Oil
- Nuclear
- Hydro
- Gas combined cycle
- Cogeneration
- Renewables

**Iberdrola 2008**  
Total production 141.30 TWh



- Coal
- Oil
- Nuclear
- Gas combined cycle
- Cogeneration
- Hydro
- Renewables

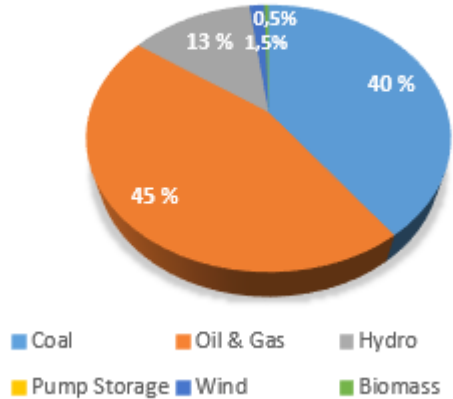
**Iberdrola 2014**  
Total production 138.90 TWh



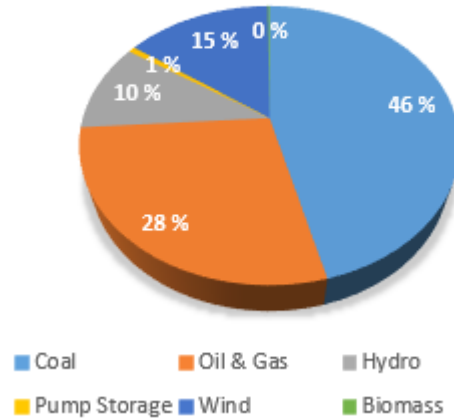
- Coal
- Oil
- Nuclear
- Gas combined cycle
- Cogeneration
- Hydro
- Renewables

# SSE Source Mix

**SSE 2007<sup>5</sup>**  
Total installed capacity 10,017 MV



**SSE 2014**  
Total production 36.10 TWh



Since production figures were not available, we have used installed capacity for SSE

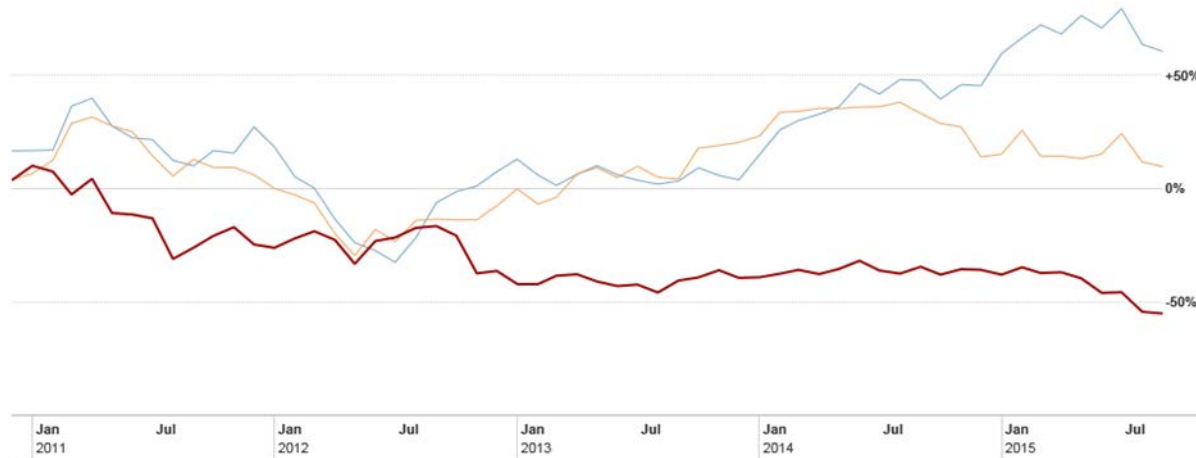
# The Green Spin-off Winners

FINANCIAL TIMES

E.ON SE EOAX.N:GER

12/01/2010 - 09/01/2015: Monthly data interval

Edp Renovaveis SA Enel Green Power SpA



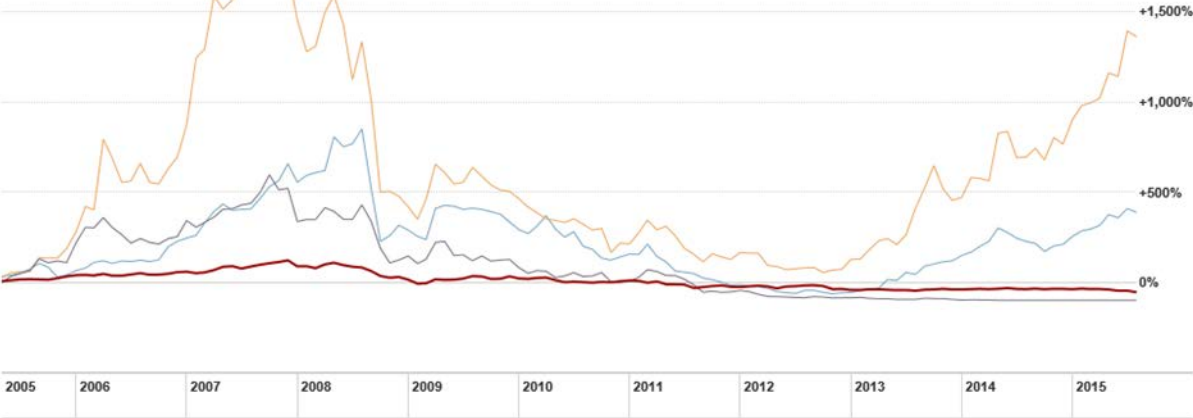
# Green Technology Suppliers

FINANCIAL TIMES

E.ON SE EOAX.N:GER

04/11/2005 - 08/31/2015: Monthly data interval

Vestas Wind Systems A/S Nordex SE SolarWorld AG



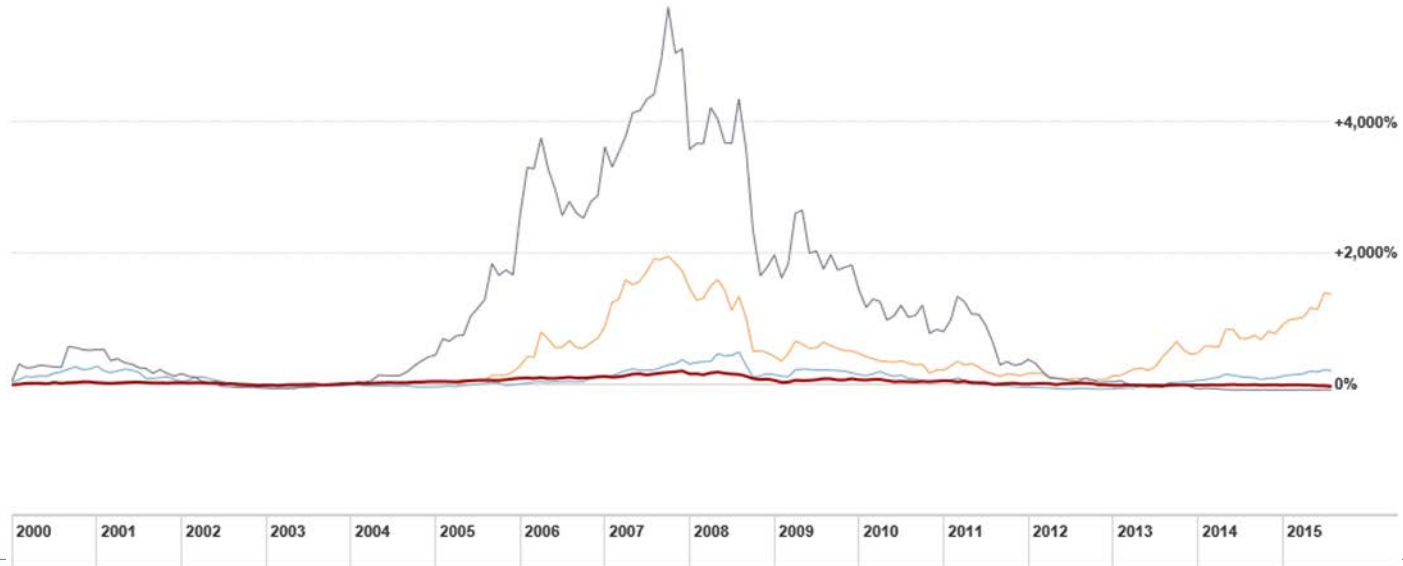
# The Green Suppliers

FINANCIAL TIMES

E.ON SE EOAX.N:GER

01/01/2000 - 08/31/2015: Monthly data interval

Vestas Wind Systems A/S Nordex SE SolarWorld AG

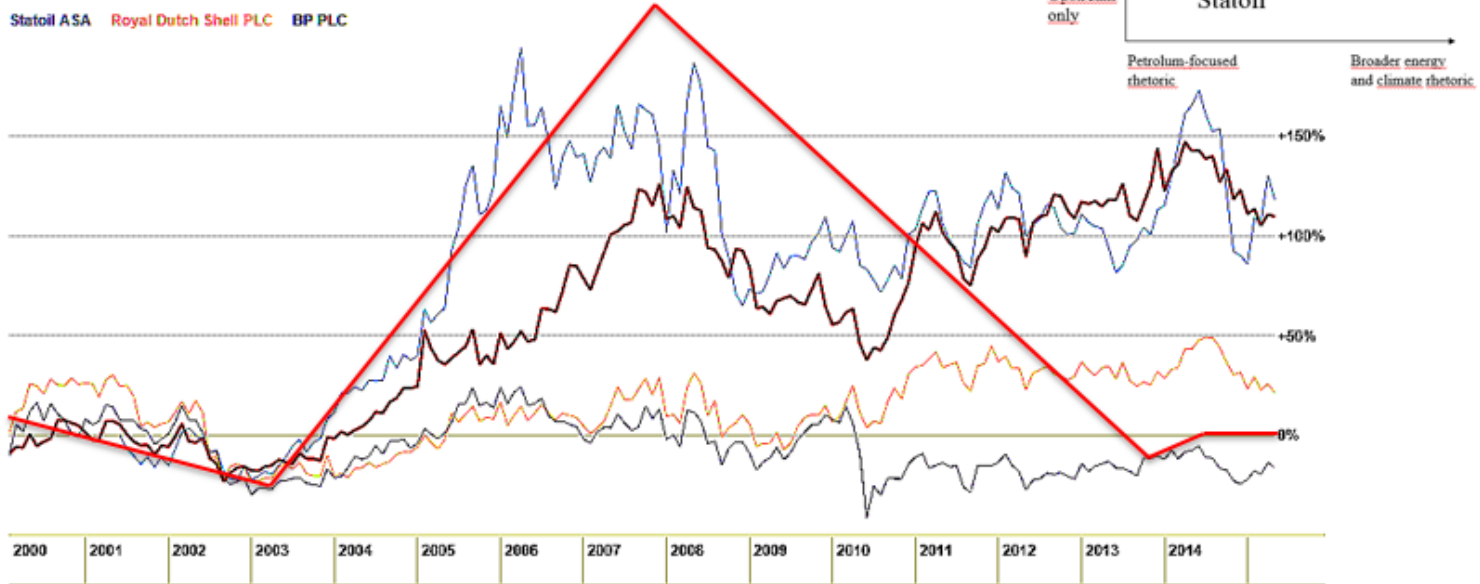


# Petroleum industry

Exxon Mobil Corp XOM:NYQ

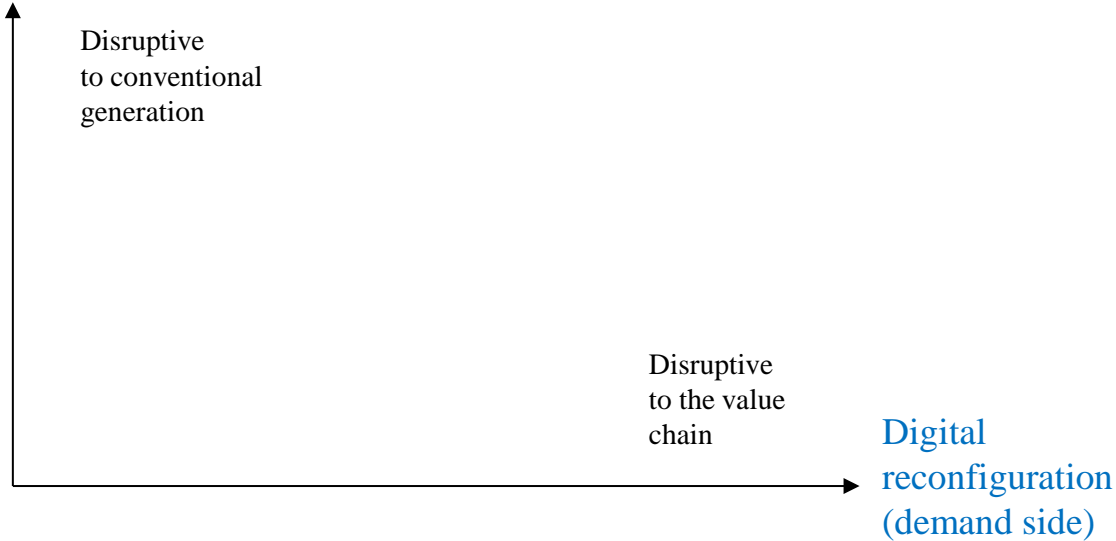
01/03/2000 - 05/19/2015: Monthly data interval

Statoil ASA Royal Dutch Shell PLC BP PLC



# Two Dimensions of Transition

Green energy  
transition  
(supply side)

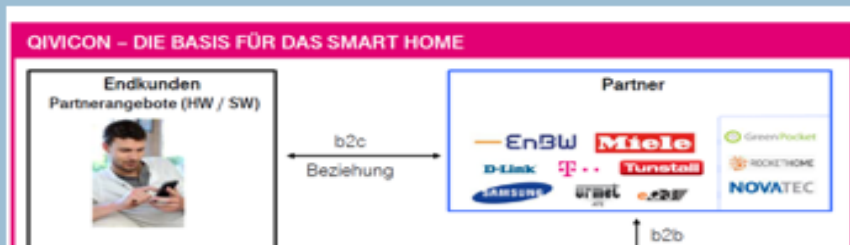




Qivicon is an initiative of Deutsche Telekom partnering with a number of leading German and international companies and brands in all sectors that want to join a smart home via a single open platform.

Qivicon offers a partnership that enables its members to overcome bottlenecks in the development of new business models in their portfolio, and not only an automatization gateway in itself. Qivicon has connected to a large amount of well-known white goods producers for installing devices that communicates with the Qivicon platform, making the platform into a market place where the consumer meets the providers of different components and appliances.

Qivicon's competitive landscape is dominated by ABB Group, Robert Bosch GmbH, and Cisco Systems Inc which have said they plan to establish a joint-venture company to develop and operate an open software platform for smart-home equipment and applications (Dec 2014).







**SUNGEVITY®**  
GENERATE POSITIVE®

Sungevity is a global based company focused on making it easy and affordable for the consumer, mainly homeowners, to benefit from solar power. Sungevity provide access to qualified team of designers to develop the solar system. The financing can be done either through leasing or by providing loans; hence the business model contains financing of the product for the customer.

The company has a community focus and aim to connect everyone under the sun with a new purpose: cleaner, safer, lower-cost energy for a brighter world. Founded in 2007, it was the first American solar company to design residential solar energy systems remotely over the Internet, using satellite imagery.

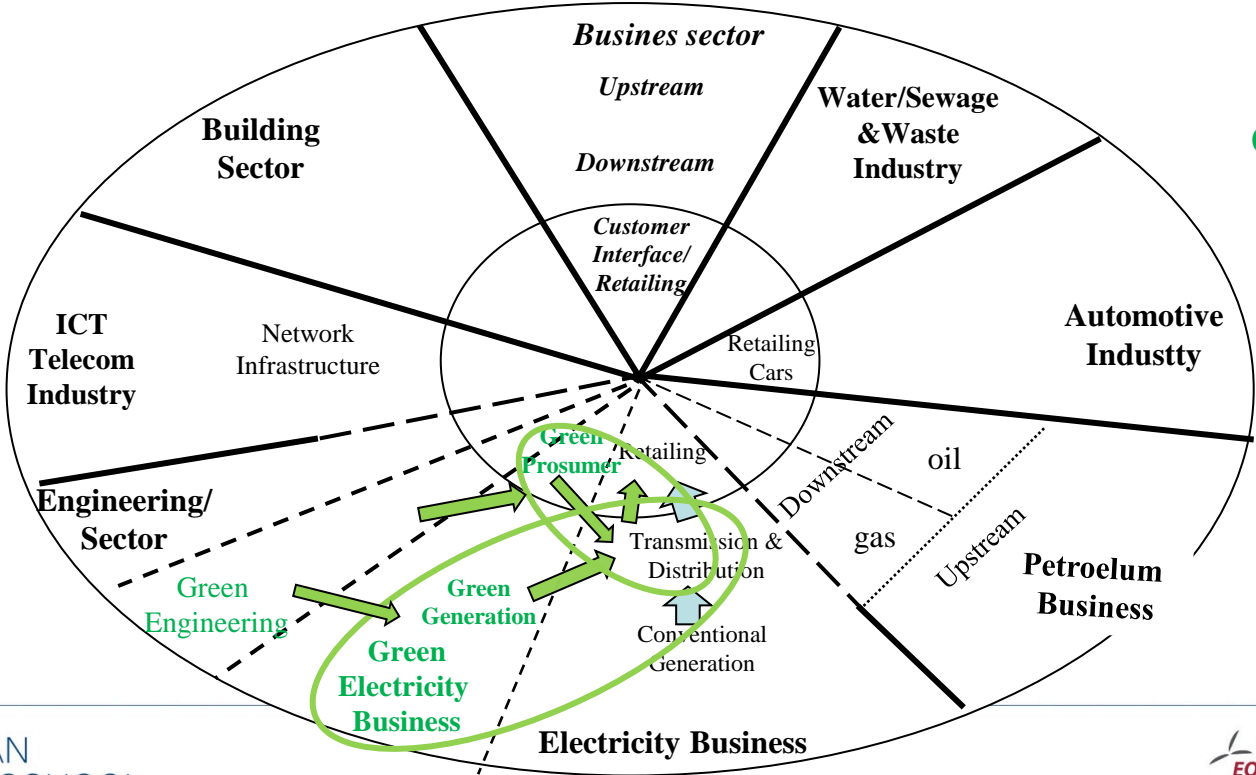
By leveraging proprietary remote solar design technology, Sungevity can deliver a firm quote including financing instantly without a home visit (Remote Solar Design (RSD) strategy).

Sungevity provide access to qualified team of designers to develop the solar system. The financing can be done either through leasing or by providing loans; hence the business model contains financing of the product for the customer.

Sungevity has risen \$129.6M in 8 rounds. The latest round was in 2014. Some of Sungevity's investors include E.ON, GE Ventures and Brightpath Capital Partners.

Sungevity's latest acquisition was Zonline. The companies Co-Founder & CEO, Andrew

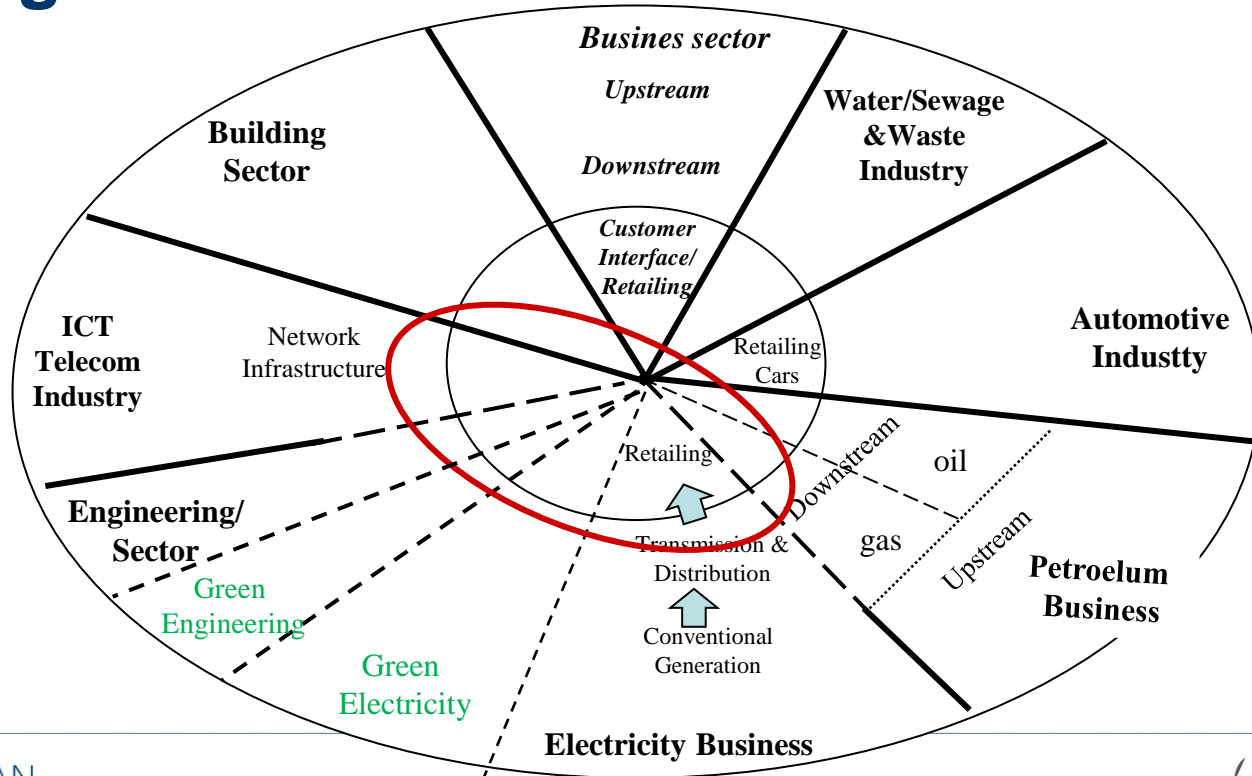
# New Business Models: Supply Side and Demand Side Green Electricity



Green el I

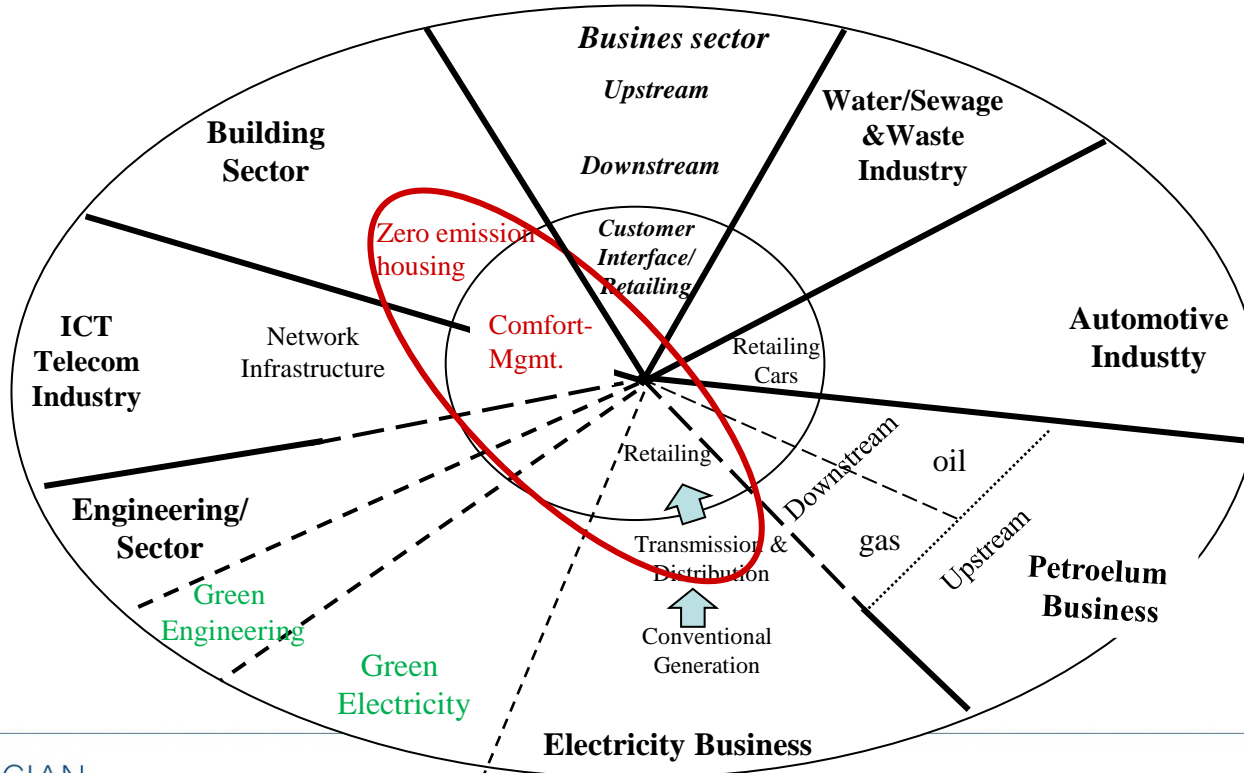
Green el II

# New Business Models; ICT Based System Integration



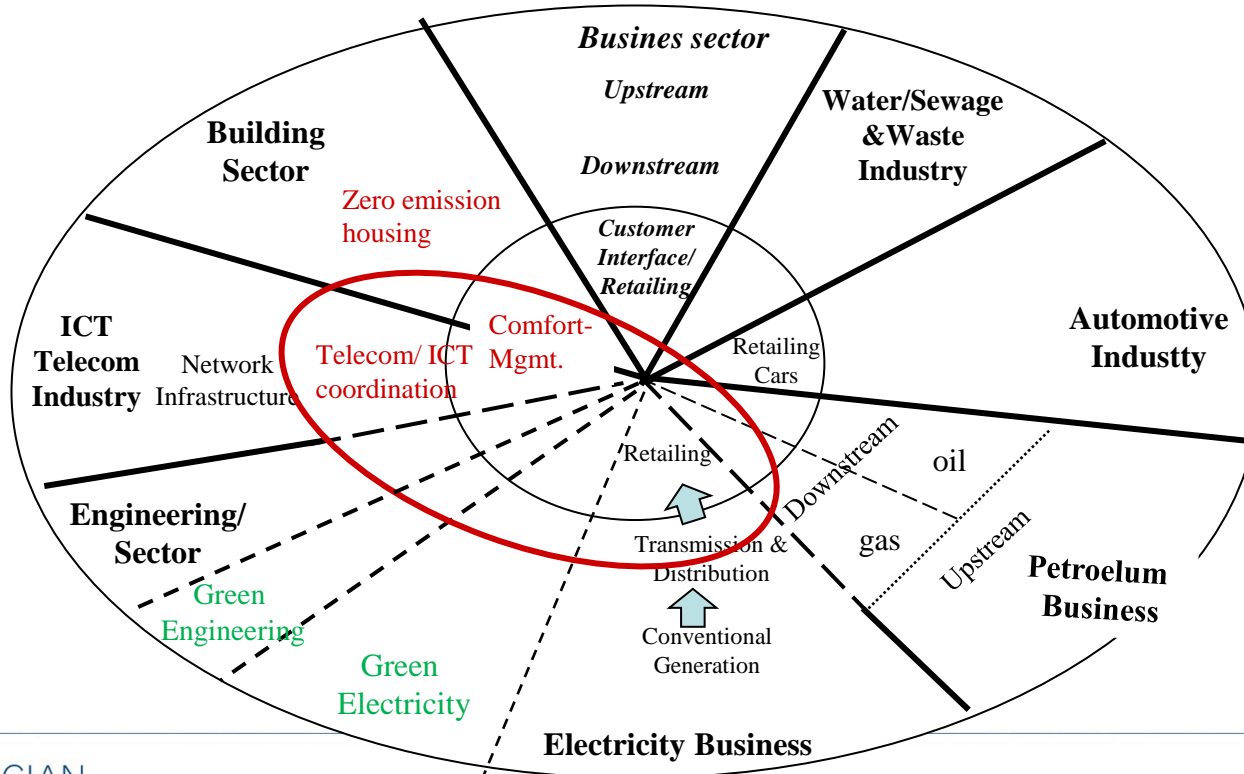
ICT based System integration

# New Business Models: Systemic Integration Through Extended Property Management



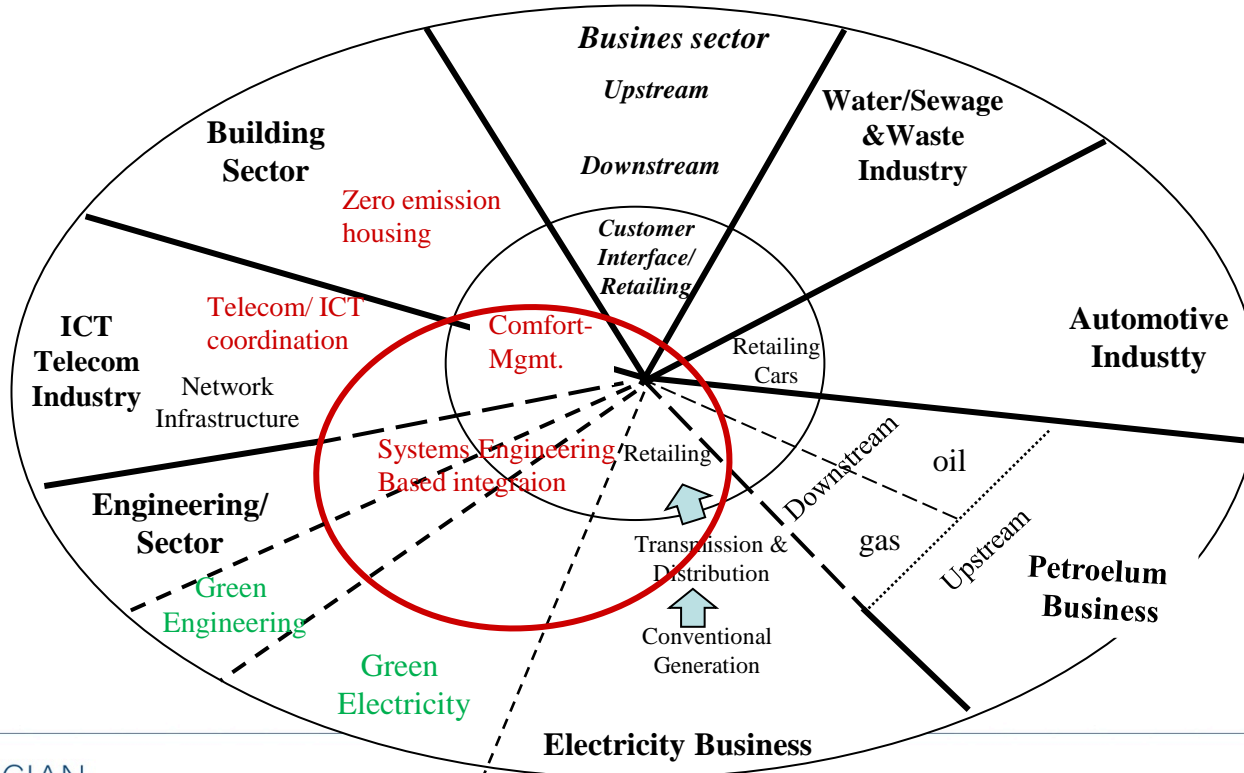
ICT based  
Systemic integration I  
Extended property  
Management

# New Business Models: Systemic Integration Under Extended IT& Telecom control



ICT based  
Systemic integration II  
Extended Telecom/  
ICT Management

# New Business Models: Systemic Integration Under Extended Engineering Control.



ICT based  
Systemic integration III  
Extended Systems  
Engineering Control

# Business Model Canvas – (Ostervalder)

