



# Industrial Dynamics & Energy Industries, (and Starting the Project work)

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# The online test

# Chapter 1: This is Industrial Dynamics

**ME2087: Global Energy Markets**



**ME2085: Transformation in  
Energy Systems and Industries**



**ME2086: Energy business**

# Theories from Industrial dynamics which we will use

- Evolutionary and institutional economics
  - *As opposed to neoclassical economics*
- Innovations and industrial change
  - *Creative destruction & disruptive innovations*
  - *Diffusion of innovations*
- Innovation systems and socio-technical systems
  - *Large Technical Systems*
  - *Multi-level Perspective*
  - *Technological innovation systems*

**Neoclassic economy  
or  
Evolutionary economy**

# **Energy Industries**

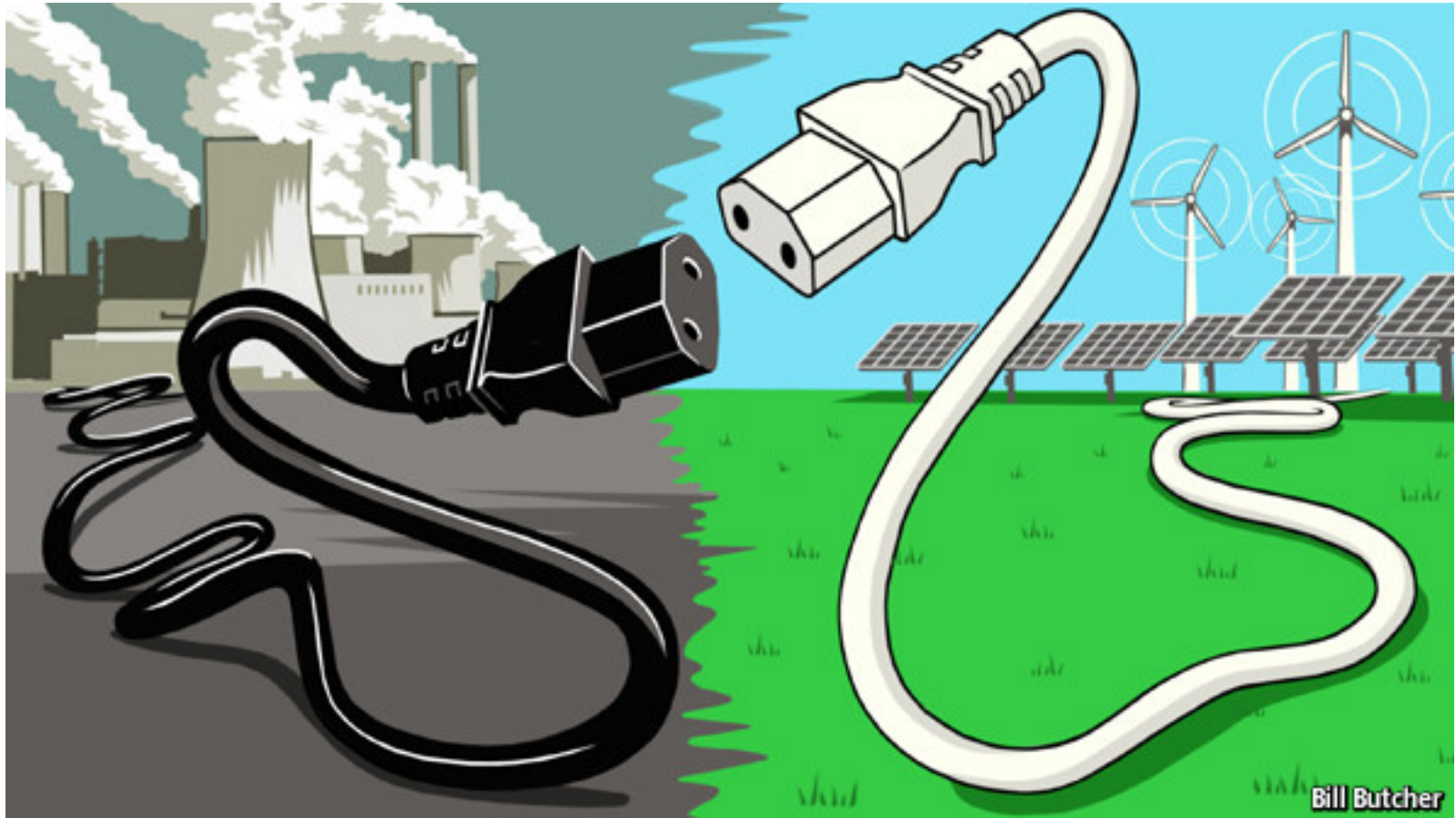
Descriptions of the actors on the electricity  
and natural gas markets -  
Energimarknadsinspektionen (2012)


# Actors on the electricity market

- Electricity consumers
- Municipal energy and climate advisors
- Other consumer support organisations
- The Swedish Energy Market Inspectorate (Ei)
- Swedish Energy Agency
- TSO (Svenska Kraftnät)
- Electricity supplier
- Electricity grid operators
- Electricity producers
- Etc.



# How to lose half a trillion euros



A faint, stylized image of a wind turbine is visible in the background on the left side of the slide.

# Transformation pressure on the "NEL" (new energy landscape)

- Expansion of shale gas and price pressure on fossil fuels
- Increased amount of intermittent electric production (with variable prices)
- Decreasing demand (with increased energy efficiency)
- Policy developments (what to do with nuclear?)
- Over-investments

# Shale gas





OPEC has been producing way above their stated quota (of 30 million barrels/day) for the last years – in November (2016) OPEC agreed on first production cut in the last eight years

OPEC earned \$920 billion in 2012, expected to earn \$341 billion this year



# Renewables



"Schneebergerhof 01" by Kuebi = Armin Kübelbeck - Own work. Licensed under CC BY-SA 3.0 via Wikimedia Commons - [http://commons.wikimedia.org/wiki/File:Schneebergerhof\\_01.jpg#mediaviewer/File:Schneebergerhof\\_01.jpg](http://commons.wikimedia.org/wiki/File:Schneebergerhof_01.jpg#mediaviewer/File:Schneebergerhof_01.jpg)



# Examquestion from 2015

**Briefly explain why and how the expansion of shale gas in the US has had effects on the European energy market**

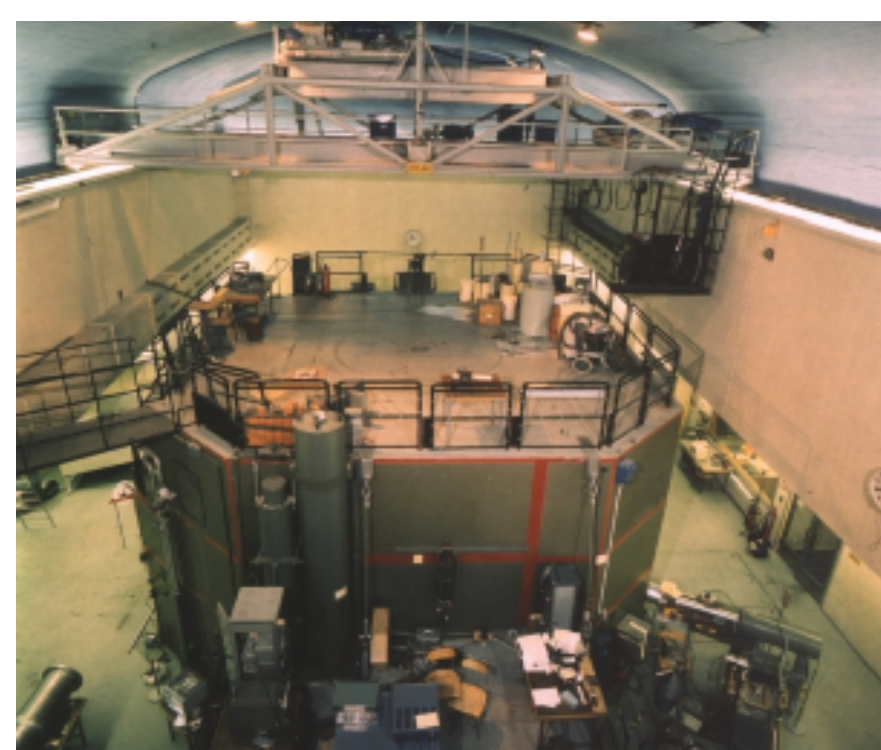


A historical example of  
industrial dynamics in  
energy industries

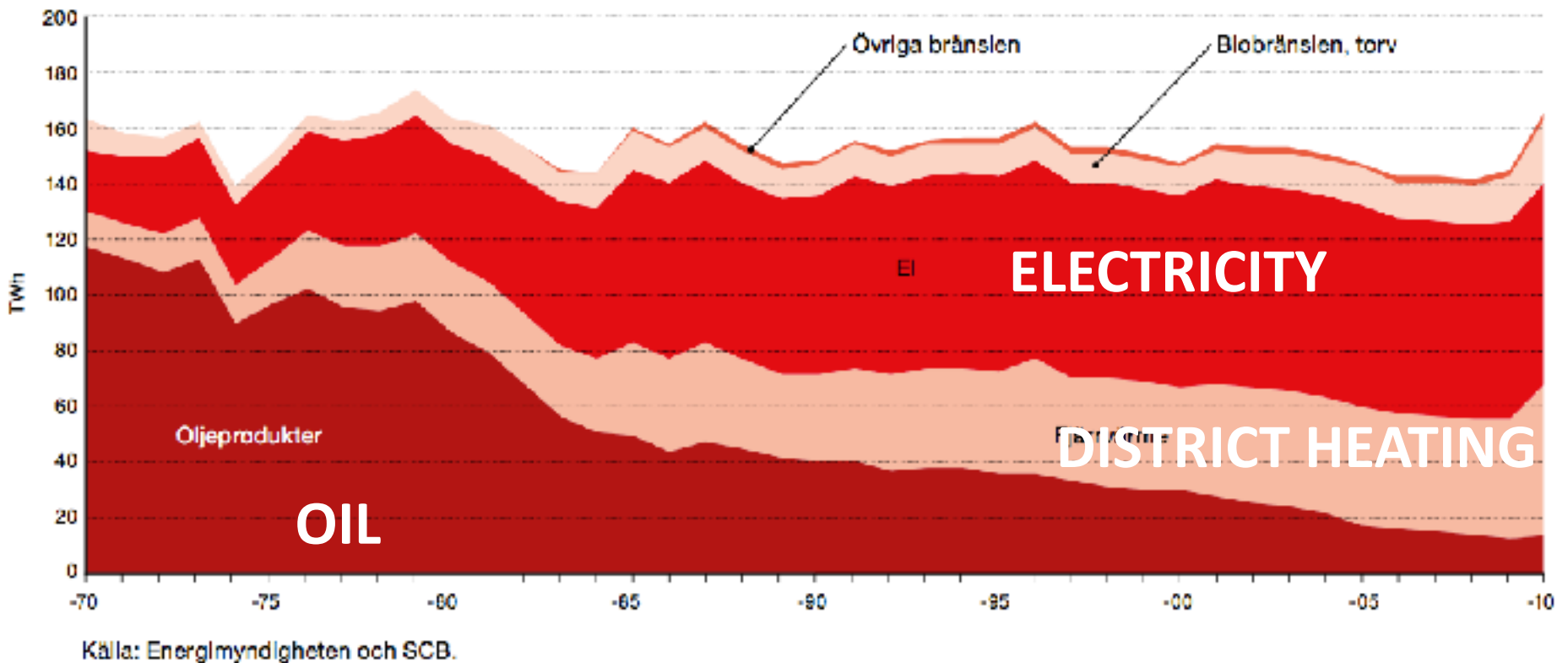




Landscape pressure  
caused existing (and  
new) industries to  
reconfigure their  
value networks

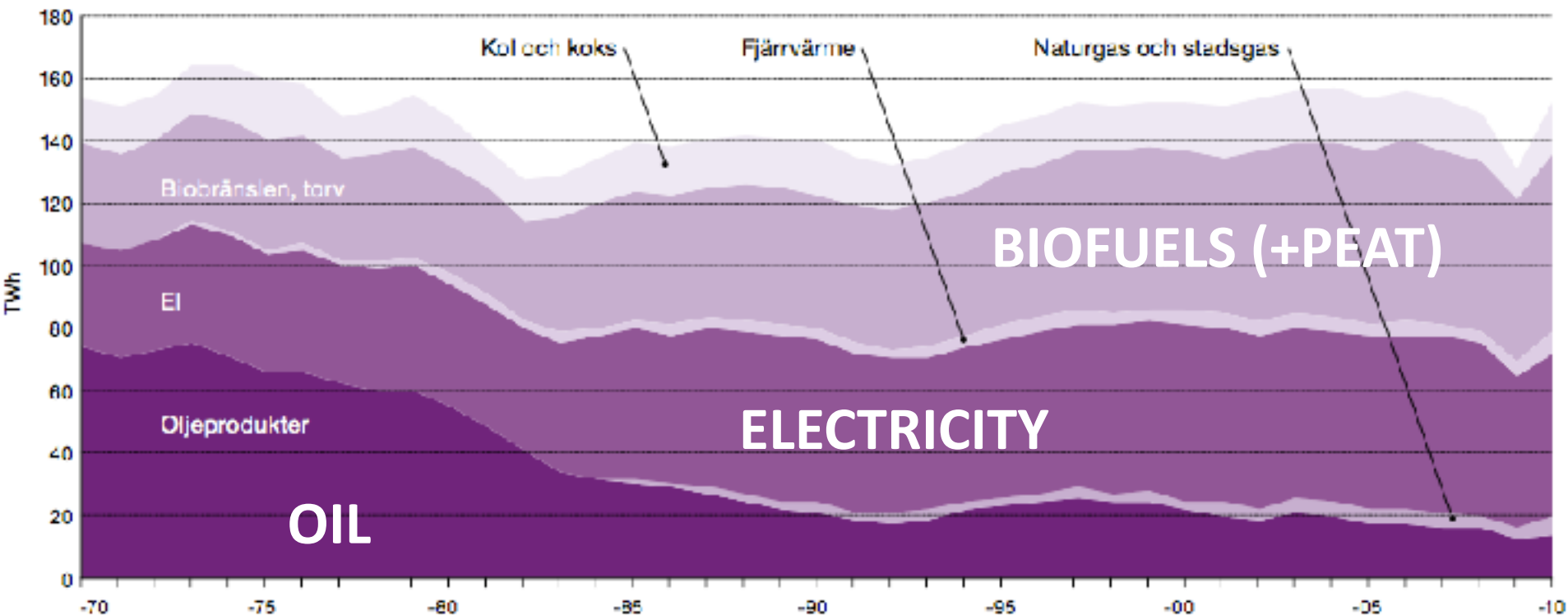


# Energy consumption in the dwelling and service sector in Sweden 1970-2010



Från Energiläget 2012

# Energy consumption in the industrial sector in Sweden 1970-2010



Future changes in the  
energy system and in  
energy industries?

# THE GROUP PROJECT

"New Business Models for Energy  
Companies in a 100%  
renewable energy system"

- *You choose your business area*



# How to write the report?

Imagine you being an academic consultant firm to a Swedish energy company

- you need high academic quality, but also present useful results for practitioners

Read the instructions on  
the Project work  
in the Course PM



# Examples on business areas for energy companies

- Heat;
  - Wind;
  - Generation;
  - Distribution;
  - Markets;
  - Energy efficiency (ESCOs)
  - Bio Power;
  - Solar;
  - Hydro power;
  - Transportation;
  - Smart appliances;
  - Other?
-

