



COGENERATION OBSERVATORY
AND DISSEMINATION EUROPE

CODE

Cogeneration Observatory and Dissemination Europe

CODE Final Dissemination Workshop

25 March 2011

Dr Fiona Riddoch

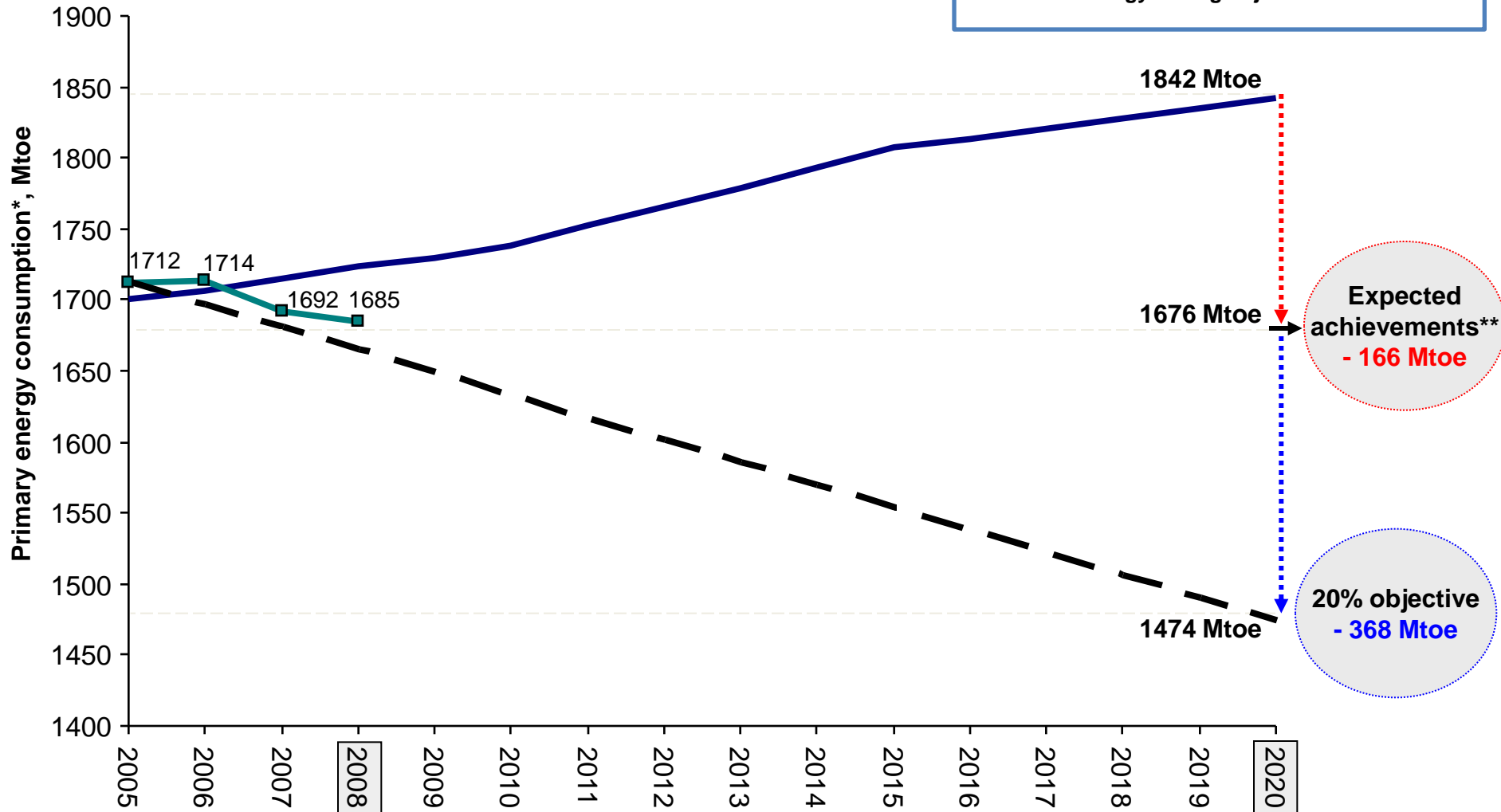




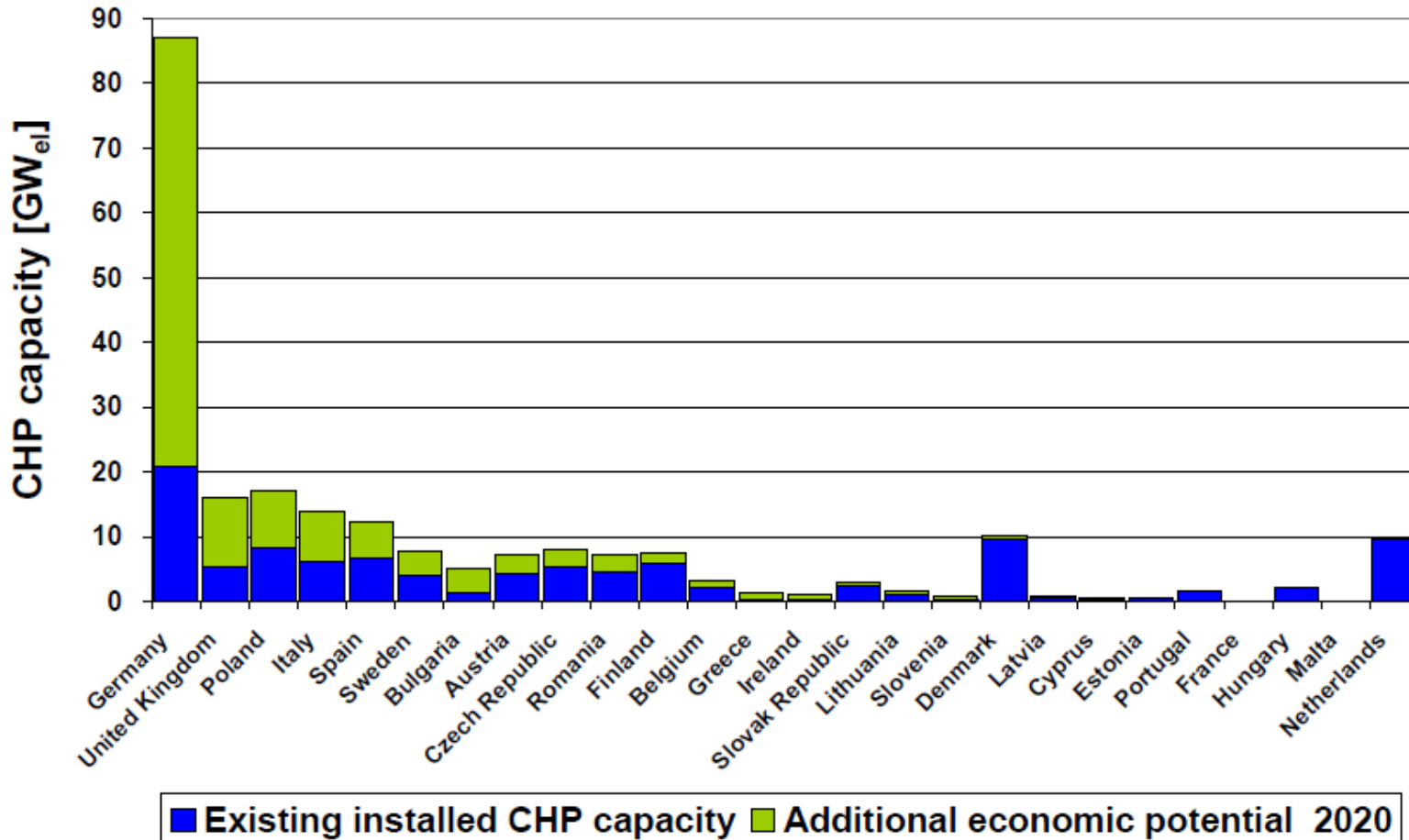
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20% Energy efficiency target for 2020

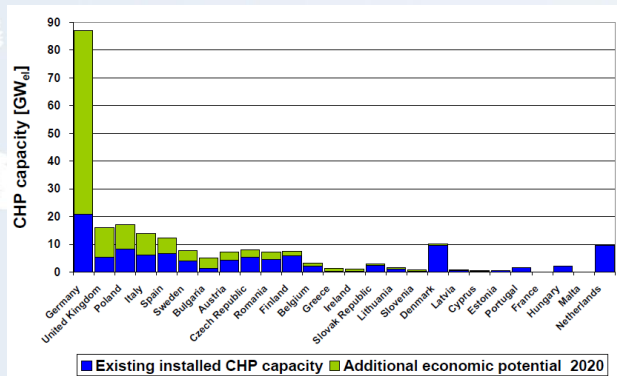
- Historical consumption (Eurostat)
- Baseline projections for 2020 (Primes 2007)
- - 20% Energy saving objective



European economic potential for cogeneration in 2020




CODE Project outcomes



Member state CHP Potential

CODE: Work package 3 – Comparison of member state approaches
Country overview of Internal Rate of Return calculations



Country name	United Kingdom
Organisation providing data	CHPA
Contact name providing data	Paul Gardiner

IRR calculations (based on 2007 prices and regulations)

Notional electrical capacity	50kWe	1MWe	1MWe	12MWe	66MWe
Primary generator	Reciprocating	Reciprocating	Reciprocating	Steam Turbine	Gas Turbine
Heat recovery method	Exchanger	Exchanger	Exchanger	Boiler	Heat Recovery Steam Generator
Secondary generator	None	None	None	None	Steam Turbine
Fuel type	Natural Gas	Natural Gas	Gas Oil	Hard Coal	Natural Gas
Electrical output	52 kWe	1,027 kWe	1,027 kWe	11,896 kWe	66,000 kWe
Heat output	80 kW	1,414 kW	1,414 kW	80,878 kW	85,000 kW

Economic levers

Electrical capacity (total)	MW _{el}	1,065
Heat capacity (total)	MW _{th}	1,268
Technology	Motor engine	
No. of units	1	
Manufacturer	Jenbacher	
Type of Fuel	Natural gas	
Electricity: yearly generation	GWh	2,366
Heat: yearly generation	GWh	2,572



Best Practise Cases

Best Practice case studies

□ Success factors

- A sustainable business model for the CHP which provides a reliable income to the operator.
 - Good CHP Design (operating hours, low additional costs, reliable heat host)
 - Appropriate member state support (funds and duration)
 - New business applications (waste treatment, electric cars)

Best Practice case studies

- Main barriers to be overcome in realising a project
 - **Grid connection**
 - **Project authorisation**
 - Business model (public sector financing and predictability of heat host/behaviour of customers)

Prospects: facts & context

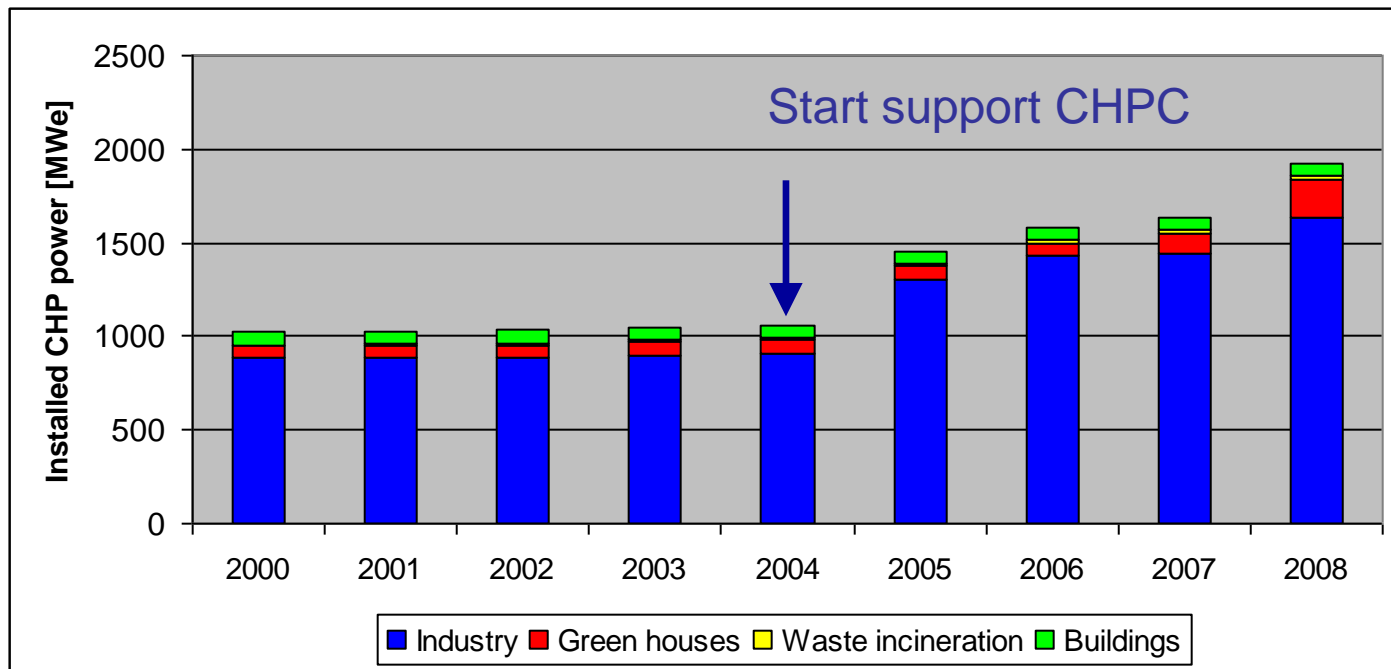
- ❑ CHP share overall grew 0.5% p.a. between 2004-2008 with important differences between Member States

- ❑ Heat & cooling consumption will continue to grow:
 - 0,19% p.a. & 3.14% p.a., respectively until 2030
 - 0.7% p.a. growth in heat demand 2008-2020

- ❑ Average growth rate needed to realise this potential by 2020
 - 9-10% pa starting NOW

Flanders CHP Certificates – Effects

- Installed electrical power of CHP 1.9 GWe 2008
 - Big increase in industry and green house gases 16% pa growth.



What does it take to grow CHP?

Breweries, hospitals, industrial plants, schools must find it advantageous to make their own electricity as well as heat (or let someone else provide the service)

A large number of district heating schemes need to upgrade and renovate their infrastructure and the buildings they serve

Traditional electricity companies need to find it attractive to develop a business model for heat customers

Energy service companies need to create new CHP offerings

CODE Project outcomes

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•Analyse factors which promote best practise

Best Practise Cases

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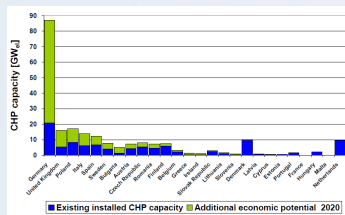
IRR calculations (based on 2007 prices and regulations)

	50kWe	1MW _e	1MW _e	12MW _e	60MW _e
Nominal electrical capacity	50kWe	1MW _e	1MW _e	12MW _e	60MW _e
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•Identify indicators of attractive financial model for CHP

- Regional
- Market based
- Skills based
- Politically driven

Economic levers



•Propose sectors and geographies for growth

Member State CHP Potential

Checklist for CHP Growth

- Is the IRR close to attractive for CHP ?
- Is there any policy on heat (local /central)?
- Is there a public commitment or target driving CHP?

- Is electricity grid connection standardised and possible?
- Is there a reasonable balance between the incentives for renewables and for cogeneration if such exist?
- Is there access to affordable capital finance?
- Are there solution providers active in the market ?
- Is there a structured energy planning/ CO2 reduction process at regional level?

- Is there a CHP champion in government central or regional?
- Is there a good awareness of CHP as a low carbon option for DH, industry and own supply at national and local level?

FLANDERS		
	Is the IRR close to attractive for CHP?	4 (large)
	Is there any policy on heat (local /central)?	1
	Grid connections standardised and possible?	3
	Is there a reasonable balance between the incentives for renewables and for cogeneration if such exist?	3
	Is there access to affordable capital finance?	3
	Are there solution providers active in the market ?	3
	Is there a structured energy planning process at regional level?	2
	Is there a CHP champion in government central or regional?	3
	Is there a good awareness of CHP as a low carbon option for DH, industry and own supply at national and local level?	4

Most attractive segments for growth: commercial/tertiary sector

SLOVENIA		
	Is the IRR close to attractive for CHP?	5
	Is there any policy on heat?	3
	Grid connections standardised and possible?	3
	Is there a reasonable balance between the incentives for renewables and for cogeneration if such exist?	4
	Is there access to affordable capital finance?	3
	Are there solution providers active in the market ?	4
	Is there a structured energy planning process at regional level?	1
	Is there a CHP champion in government central or regional?	2
	Is there a good awareness of CHP as a low carbon option for DH, industry and own supply at national and local level?	2

Most attractive segments. Small scale applications (up to 1 MWe in all sectors), district heating, industry

UK		
	Is the IRR close to attractive for CHP?	2
	Is there any policy on heat?	1
	Grid connections standardised and possible?	3
	Is there a reasonable balance between the incentives for renewables and for cogeneration if such exist?	2
	Is there access to affordable capital finance?	4
	Are there solution providers active in the market?	3
	Is there a structured energy planning process at regional level?	
	Is there a CHP champion in government central or regional?	2
	Is there a good awareness of CHP as a low carbon option for DH, industry and own supply at national and local level?	2

Most attractive segments: micro CHP, Hospitals, food industry, Universities.

CHP Roadmap for Europe



Contact

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