



COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

CODE – CODE2 Cogeneration Observatory and Dissemination Europe



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IENE Workshop: Bulgaria's Green Energy Challenge

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COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

Process Absorption Air Heat Space Heat Hot Water Conditioning Stear Exhaust Hot Water Eduart Ges Water Heat. Heat Exchanger Exhauper Natural Gas Cogeneration Electricity Fuel **On-Site Electrical Power** Cost-Efficient, Clean, & Reliable

Cogeneration of Heat & Power- CHP is the simultaneous production of electricity and useful heat in one process.

What is CHP

Cogeneration solutions simply reduce waste, with only 10%-15% losses, compare that with the 55% or more using traditional generation methods and it is clear that cogeneration uses fuel more efficiently.

CHP is an Energy Efficient Technology – a Green Energy Challenge – as it is the most efficient way to use fuel.



CHP is <u>more efficient</u> than separate generation of electricity and heat.

- Higher efficiency translates to *lower cost*.
- <u>Use of waste or byproduct fuel</u>, where available, further reduces cost.
- On-site electric generation <u>avoids</u> <u>distribution costs</u>, a significant component of grid electricity price.
- <u>Increased reliability and power</u> <u>quality</u> can also add significant value.

Advantages of CHP





Cogeneration Directive 2004/8 requirements

Cogeneration Directive 2004/08 completed in Brussels end of 2008
Directive 2004/8 developed under the energy strategy to promote Cogeneration for its contribution to security of supply and energy efficiency

- Sets up a policy framework for the promotion of cogeneration
- The Directive requires M-S to report on several aspects their cogeneration use and promotion





Share (%) of CHP in total generation 2008







Cogeneration Observatory and Dissemination Europe - CODE

- 30 month program supported by European Commission IEE 2009-2011 and started in October 2008 until June 2011.
- Objectives
 - Monitor the progress of the CHP Directive
 - Identify and exchange best practise
 - Highlight opportunties to improve implementation
 - Build 4 regional specialist groups
 - Propose a CHP roadmap for Europe
- Operation:
 - Regional structure with phased workshops focusing on different aspects of Directive implementation
 - Sequential analysis of member state reporting
 - Case studyand best practise development
 - First steps in European Cogeneration roadmap







Cogeneration Observatory: CODE

Four Regional Groupings :

SE EUROPE

HACHP: Greece, Cyprus, Bulgaria, Romania

SW EUROPE

COGEN ITALY: Italy, Spain, Portugal, Malta, France, Luxembourg

N EUROPE

UK CHPA: United Kingdom, Ireland, Netherlands, Belgium, Germany, Austria, Denmark, Sweden, Finland

E EUROPE

COGEN Slovenia: Slovenia, Hungary, Poland, Czech Republic, Slovakia, Estonia, Latvia, Lithuania



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Background to CODE

CODE RESULTS (2008-2010):

- Monitored the implementation of the Cogeneration Directive at national level and analysis of the 27 M-S reports
 - Different Format
 - Different input/output
 - Difficulties in the analysis for common results
- \bullet An additional 122 GW $_{\rm e}$ of potential CHP capacity in Europe was identified
- The regional groups reported on the successful and struggling initiatives and the legislation and support schemes around the directive
- A central database with EU and national legislation was created and case studies of best practise projects were collected

more info at: www.code-project.eu





Share (%) of CHP in total generation

2008



2008 Plus 1000 TWh heat with 122 GWe



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European cogeneration additional economic potential

The additional economic potential as reported by Member States:

- Total additional Primary Energy Saving electricity (min)
- Total additional Electrical Capacity:
- Total additional Electricity Generation:
- Total additional CO₂ avoided (min):
- Value of CO₂ avoided:

*Evaluated at carbon price of 39 E/ton CO_2 (ref. ETS impact study)

expressed as 46 TWh p.a.

 $122 \; \text{GW}_{\text{e}}$

455 TWh p.a.

20 mton p.a.

798 mEuro* p.a.



European economic potential for cogeneration in 2020





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Current opportunity for CHP

- Europe is failing in its 20% energy saving target for 2020; cogeneration is a fundamental energy efficiency measure in reaching the target.
- Heat is a larger part of end use energy than electricity in the European energy system. It's efficient use and provision are vital.



 The additional potential for cogeneration identified as economic by the Member States identifies opportunities to combine the production of heat and electricity, saving a <u>minimum</u> additional 35mtoe a year of primary energy by 2020.





What does it take to grow CHP?

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

- 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
- New a **Energy Efficiency Directive** in under way. Just voted by the EU Parliament and by 2014 will be in action...





Energy Efficiency Directive

This Directive came as a result of the March 2007 EU summit, when M-S had struck an agreement on a 20% energy efficiency target by 2020, together with a 20% renewable energy target and a 20% CO₂ reduction target. Whilst the latter two were dealt with immediately, the energy efficiency law was postponed to 2012. The main changes the Directive brings to existing legislation are:

- Energy companies are requested to reduce their energy sales to industrial and household clients by at least 1.5% each year.
- A 3% renovation rate for public buildings which are "central governmentowned and occupied".
- An obligation on each M-S to draw up a roadmap to make the entire buildings sector more energy efficient by 2050 (commercial, public and private households included).
- The new Directive also includes additional measures on energy audits and energy management for large firms, cost-benefit analysis for the deployment of CHP and public procurement.





Introduction to CODE2

The CODE2 project jointly funded by the IEE and industry:

- Develops the first clear plan of action for cogeneration in each EU Member State
- Gathers experts and establishes information networks around cogeneration
- Reviews published data and presents conclusions
- Introduces in detail the new Energy Efficiency Directive (EED)
- Assesses the EED's impact with national stakeholders
- In depth analysis of micro-CHP and bio-energy CHP potential.

All in all, CODE 2 mobilises effort in each of the 27 EU M-S.



Follow-up project CODE2

- The new CODE2 project runs from 1 July 2012 till 31 December 2014.
- It will develop 27 national Cogeneration Roadmaps and one European Cogeneration Roadmap. These roadmaps will propose actions on several fronts in close interaction with the key stakeholders (policy-makers, industry and civil society).
- The project uses a desk research/workshop format to develop and comment the roadmaps and raise all round awareness of the opportunity and existing resources for developing CHP deployment. Workshops in 7 pilot countries will specifically explore the implications and develop an interpretation of the new EED and will seek to develop **coalitions on CHP** at national level involving key stakeholders.
- The CODE2 project will identify explicitly the **potentials** for micro-CHP (up to 50 kW_e) and bio-energy CHP.



Cogeneration: Roadmap for Europe

2012		2030
Market	Industry, buildings, home and public offerings Best practise exchanges Improve solutions and service offering	Additional 122
		Gwe
Policy	Complete barrier removal Provide effective Member State support	455 TWh el
		+
Awareness	Strengthen industry communication Increase awareness in all target sectors	TWh heat



Expected results

- A further strengthening of the CODE1 Regional Network.
- 27 national Cogeneration Roadmaps
- One European Cogeneration Roadmap with concrete proposals for policy improvement, and awareness raising
- Identification of micro-CHP and bio-energy CHP potentials
- 7 workshops in pilot countries where draft Roadmaps are discussed
- Establishment of CHP Coalitions in 27 EU M-S involving industry, policy-makers and interest groups
- Practical "How-to" guides for key sectors (paper, food, hospitals, SMEs)
- Best practice cases on cogeneration in target sectors





Partners and contacts

The CODE2 team consists of the following partners:

- **1. COGEN Europe**, the European association for the promotion of Cogeneration (Belgium)
- **2. HACHP**, the Hellenic Association for Cogeneration of Heat & Power (Greece)
- 3. Jožef Stefan Institute (Slovenia)
- **4. FAST**, Federazione delle Associazioni Scientifiche e Techniche (Italy)
- 5. COGEN Vlaanderen (Belgium)
- 6. Energy Matters (Netherlands)
- 7. Berlin Energy Agency (Germany)
- 8. KWK kommt (Germany)



Regional CODE2 leaders

Project Coordinator: Fiona Riddoch, COGEN Europe, fiona.riddoch@cogeneurope.eu

- Eastern Europe region: Stane Merše, Jožef Stefan Institute (JSI), <u>stane.merse@ijs.si</u> Countries: Czech Republic-Estonia-Hungary-Latvia-Lithuania-Poland-Slovakia-Slovenia
- Northern Europe region: Adi Golbach, KWK Kommt, <u>adi.golbach@kwkkommt.de</u> Countries: Austria-Denmark-Finland-Germany and Sweden
- North Western region: Joni Rossi, COGEN Vlaanderen, joni.rossi@cogenvlaanderen.be
 Countries: Belgium-Ireland-Luxembourg-Netherlands and United Kingdom
- Partner responsible for South-Eastern Europe region: Costas Theofylaktos, Hellenic Association for the Cogeneration of Heat and Power (HACHP), <u>hachp@hachp.gr</u> Countries: Bulgaria-Cyprus-Greece-Romania
- Partner responsible for South-Western Europe region: Giorgio Tagliabue, Federation of the Scientific and Technical Association (FAST), <u>giorgio.tagliabue@gmail.com</u> Countries: France-Italy-Malta-Portugal-Spain

For those interested in CHP and CODE2

- Are you a policy-maker?
- Are you working in industry?
- Are you from a civil energy society?
- Are you interested in CODE 2 project?

DON'T HESITATE & SEND US AN E- MAIL: <u>hachp@hachp.gr</u> AND <u>GET INVOLVED!</u>



THANK YOU FOR YOUR ATTENTION! ANY QUESTION?



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