



Co-funded by the Intelligent Energy Europe  
Programme of the European Union



# CHP potential in SE Europe

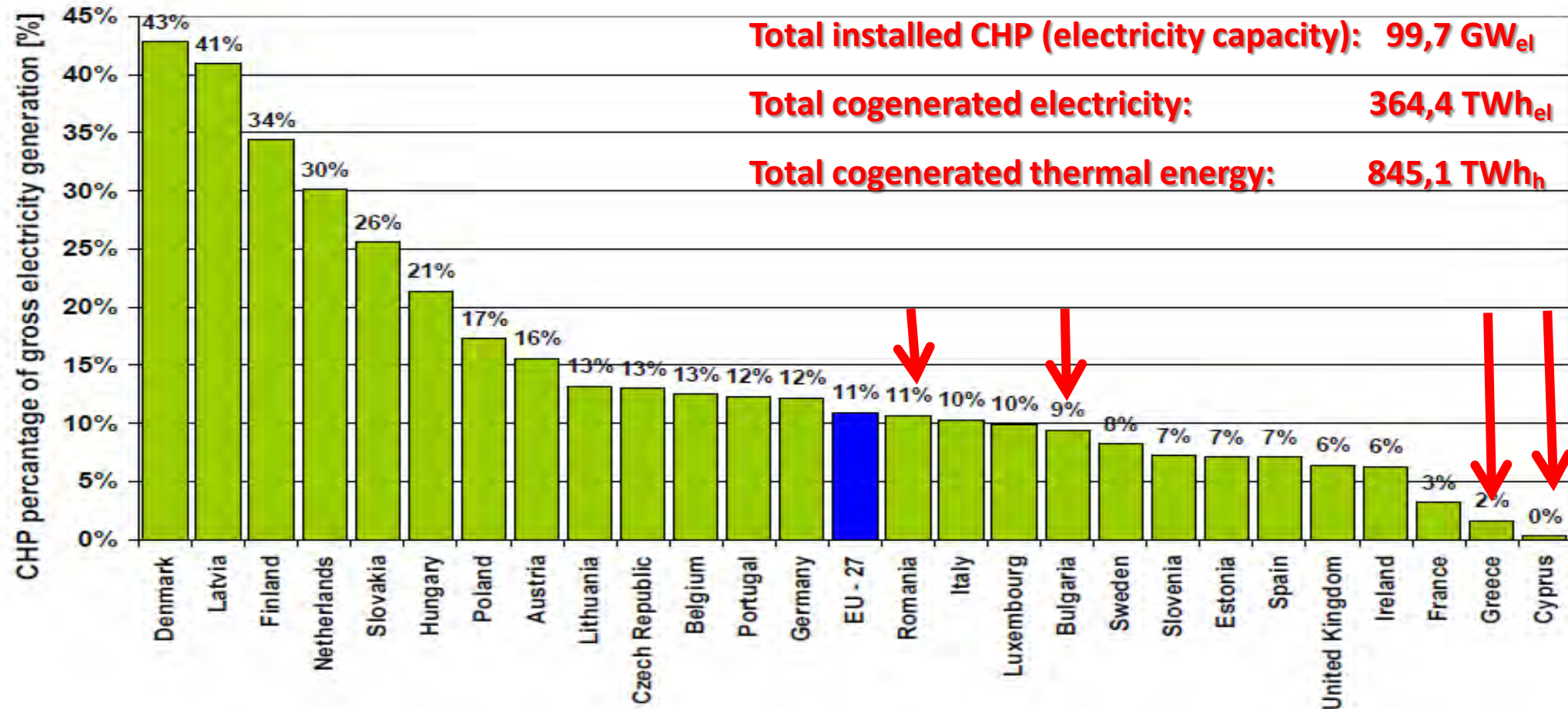
## The output from CODE2 Project



A Regional Conference on  
“ENERGY SECURITY AND GAS SUPPLY  
IN SE EUROPE”  
Vienna, Thursday, 12<sup>th</sup> March, 2015

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SENIOR EXPERT

# Current CHP in Europe



# The role of 2012/27/EC for the promotion of CHP in SE Europe

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The EE Directive is setting up the discussion for promoting Cogeneration in Europe, as the Directive 2004/8/EC is fully accepted as Appendix in this new Directive.

There are stronger initials for the promotion of **Cogeneration of Heat and Power** and **District Heating and District Cooling** in this new Directive.

There was an on-going discussion on high efficiency CHP in Europe, but there are many non-HE CHP schemes left out of the discussion, of how they will be improved. This situation was straight out by this Directive.

The Directive should have been transposed by June 2014. Only Cyprus has done it from the SE EU M-S.

# The CODE2 Program



- The CODE2 project run from 1 July 2012 till 31 December 2014 and is funded by IEE-EU
- It developed 27 **national Cogeneration Roadmaps** and one **European Cogeneration Roadmap**. These roadmaps propose actions on several fronts in close interaction with the key stakeholders (policy-makers, industry and civil society).
- The CODE2 project identified explicitly the **potentials** for **micro-CHP** and **bio-energy CHP**.
- The CODE2 team consists of the following partners:
  - COGEN Europe, the European Association for the promotion of CHP (Belgium) - HACHP, the Hellenic Association for Cogeneration of Heat & Power (Greece) - Jožef Stefan Institute (Slovenia) - FAST, Federazione delle Associazioni scietifiche e tecniche (Italy) - COGEN Vlaanderen (Belgium) - Energy Matters (Netherlands) - Berlin Energy Agency (Germany) - KWK kommt (Germany)

# Data on Energy and CHP for the 4 EU M-S in SE Europe

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## BULGARIA

- ❑ Low energy prices - CHP has long tradition – Cogen electricity production passes a decline period – Intense use of CHP in DHS – Lack of large investments for renovation - incentives by F-i-T

## CYPRUS

- ❑ “Energy-island” – High energy dependency - High energy prices - Lack of natural gas and networks – Small scale CHP in agricultural sector - Main fuel for CHP units is biofuels – incentives by F-i-T

## GREECE

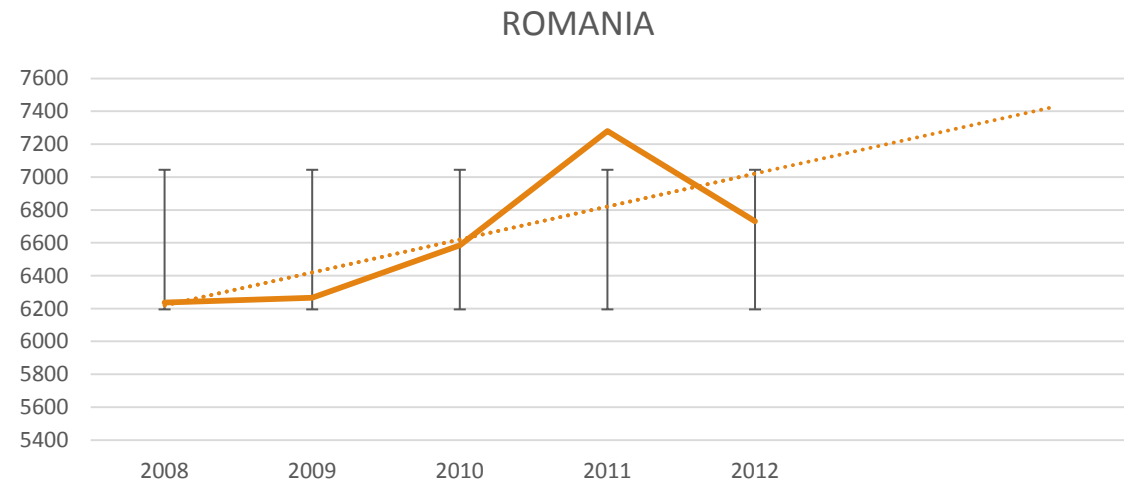
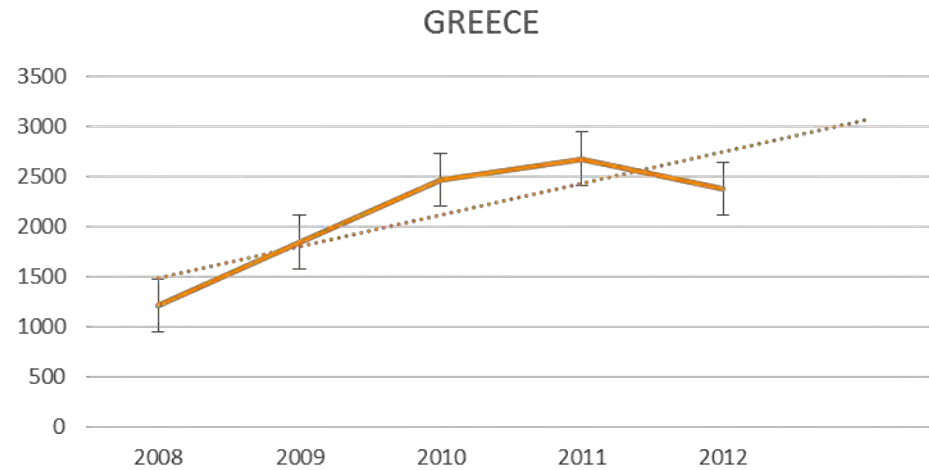
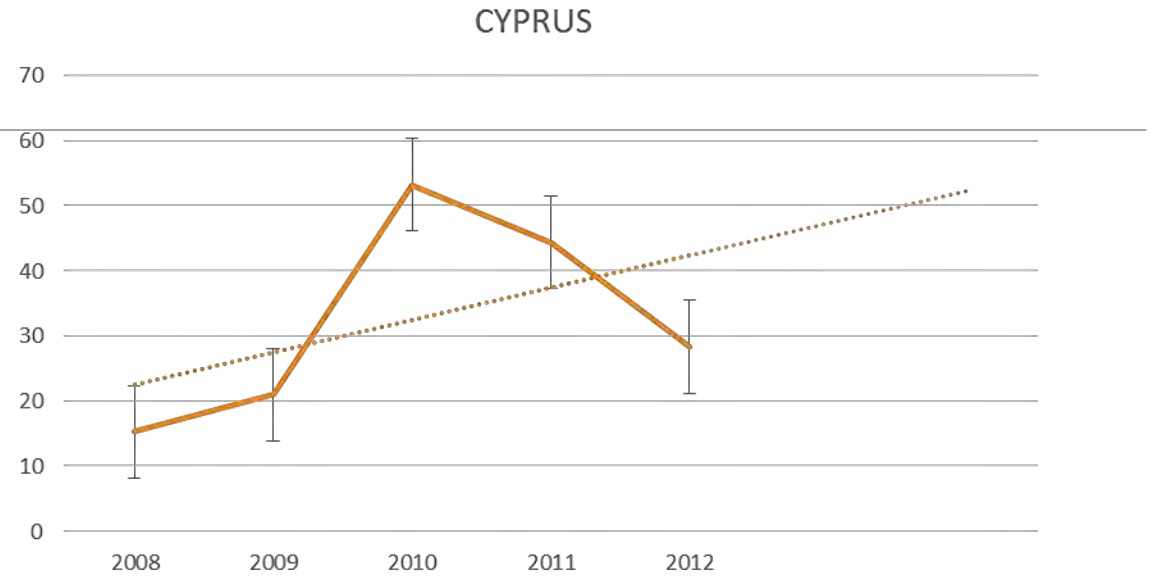
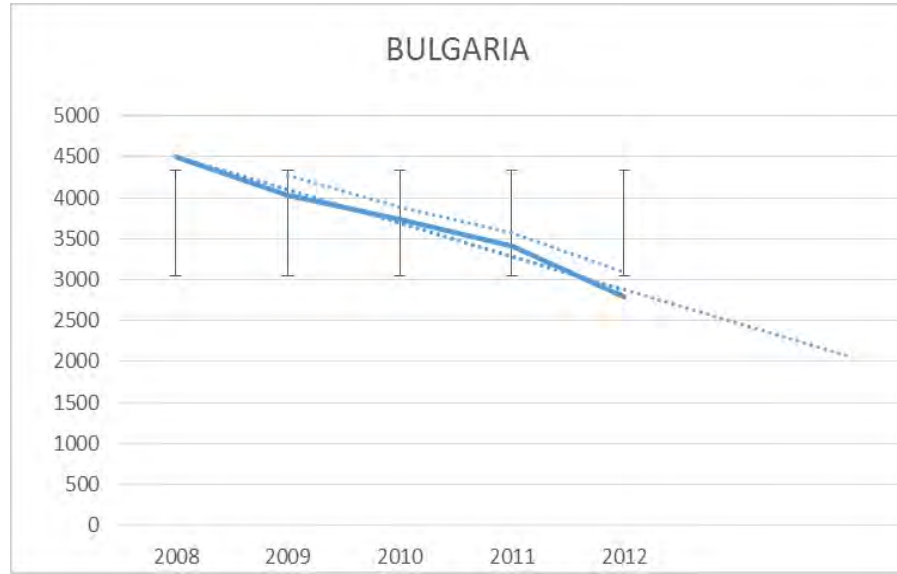
- ❑ High NG price – Low electricity prices - Main fuel is natural gas – CHP mainly in industry and agriculture sector – Incentives F-i-T -

## ROMANIA

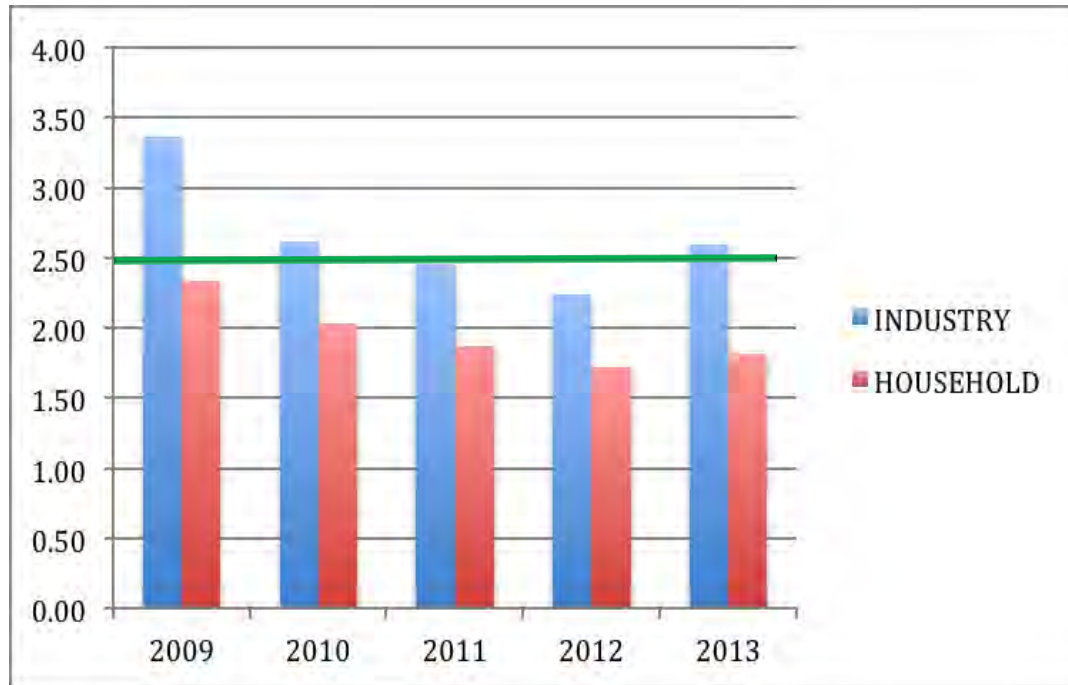
- ❑ Oil & NG producing country - CHP has long tradition mainly in Industry – Strong CHP in industry – incentive: CHP bonus

Total installed CHP capacity in SE Europe: 3.93 GW<sub>e</sub> - Notable DHS in the region – No DCS

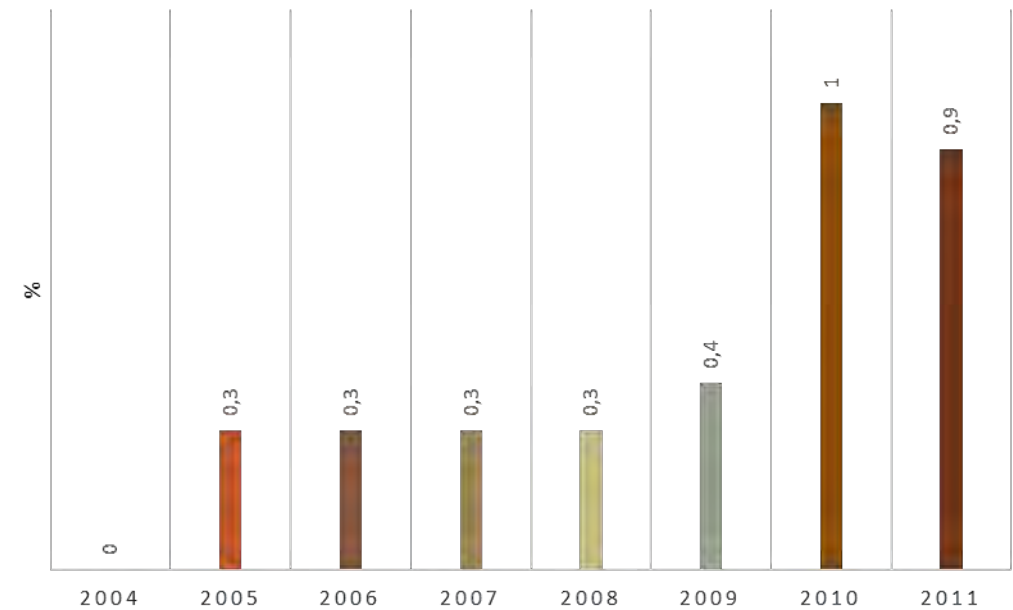
# Current status of CHP in SE Europe



# The economics of CHP in SE Europe

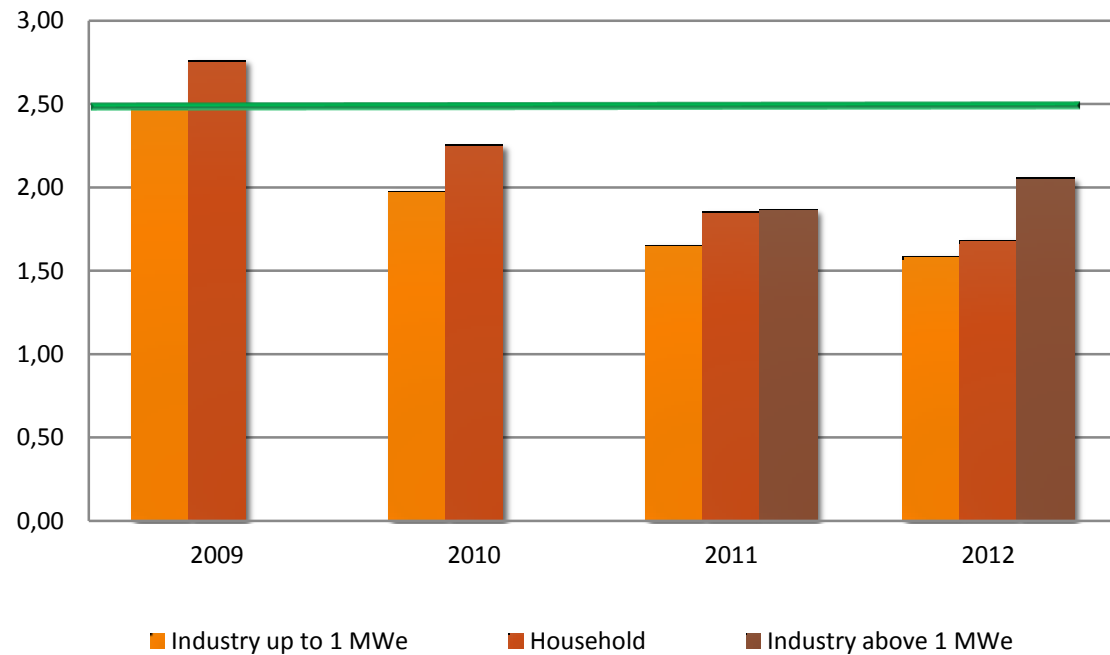


Bulgaria

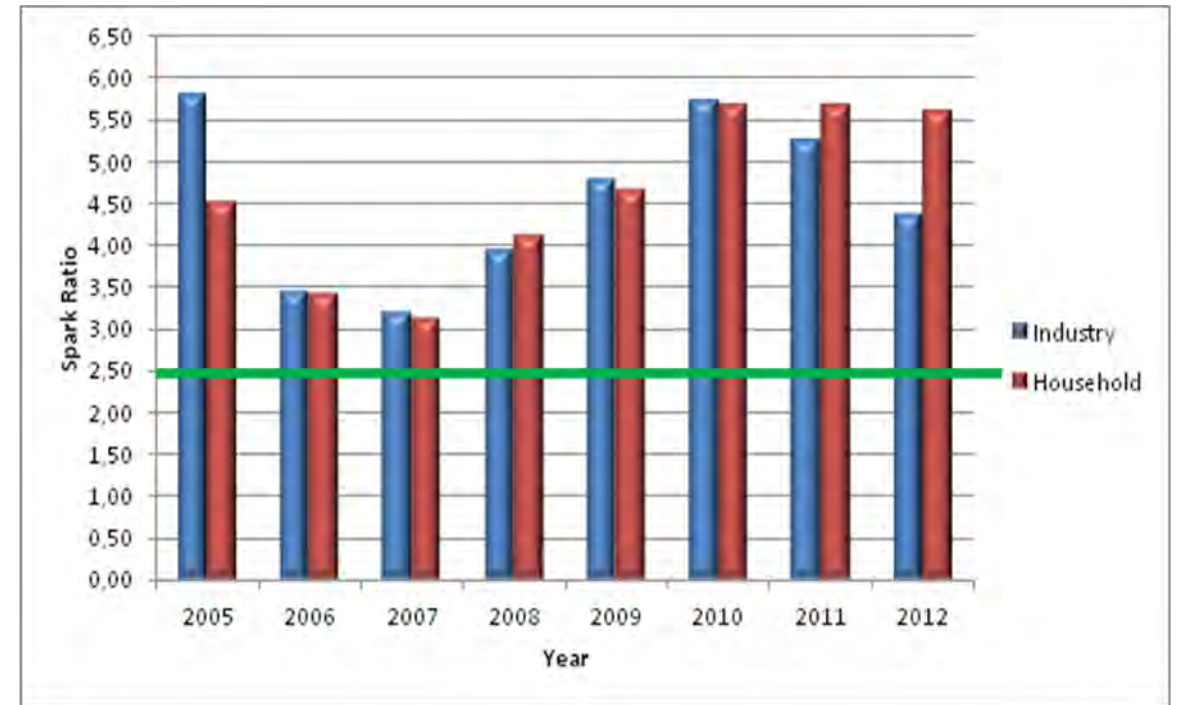


Cyprus

# The economics of CHP in SE Europe



Greece



Romania



# Existing barriers for the promotion of CHP

Member state	Bulgaria	Cyprus	Greece	Romania
<b>Barrier 1*</b>  (economic and non-economic)	Unfavorable energy prices for high capital investment	All fuels are imported – Absence of natural gas	Low electricity pricing for all sectors and one of the highest gas price in EU – So unfavorable energy prices for CHP	Characterization of all CHP units as high-efficient ones, under current situation
<b>Barrier 2</b>	The role of existing political environment and of bureaucracy in the promotion of CHP - Relatively limited funds for energy efficiency measures	Difficulties occurring as the country is moving from an island-mode energy market to a liberalized one and the implementation of Electricity and Heat Policies	The role of existing political environment and of bureaucracy in the promotion of CHP – No stable policy towards CHP as no long-term energy policy	Lack of specific national targets regarding the development of CHP- Complicated support schemes - No support mechanisms to encourage small-scale and micro-CHP
<b>Barrier 3</b>	Heat trading in the district-heating sector	Electricity market prices and F-i-Ts impede investments in new HECHP plants	No consideration for micro & small-scale CHP	Aged district heat networks, many of them connected with CHP units

# Roadmaps for CHP for the 4 EU M-S in SE Europe

BULGARIA	Substitution method		EED method	
	Low case	High case	Low case	High case
PE saving	17.3 TWh/a	17.6 TWh/a	7.8 TWh/a	10 TWh/a
CO <sub>2</sub> saving	10.2 Mio t/a	12.3 Mio t/a		
-per kWh el*	1.31 kg	1.57 kg		

CYPRUS	Substitution method		EED method	
	Low case	High case	Low case	High case
PE saving	4.93 TWh/a	4.84 TWh/a	1.91 TWh/a	1.91 TWh/a
CO <sub>2</sub> saving	0.47 Mio t/a	0.30 Mio t/a		
- per kWh el*	0.21 kg/kWh el	0.14 kg/kWh el		

GREECE	Substitution method		EED method	
	Low case	High case	Low case	High case
PE saving	24.3 TWh/a	24.8 TWh/a	11.1 TWh/a	11.1 TWh/a
CO <sub>2</sub> saving	14 Mio t/a	14.7 Mio t/a		
- per kWh el*	1.18 kg/kWh el	1.47 kg/kWh el		

ROMANIA	Substitution method		EED method	
	Low case	High case	Low case	High case
PE saving	20 TWh/a	23 TWh/a	9.3 TWh/a	9.3 TWh/a
CO <sub>2</sub> saving	12 Mio t/a	15 Mio t/a		
- per kWh el*	1.29 kg/kWh el	1.64 kg/kWh el		

In total in SE Europe, if EED method is applied: Cogen electricity in 2020: **30.1-32.3 TWh/a** & **36.7-42.2 Mio t/a CO<sub>2</sub>**

# Conclusions

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The CODE2 project has identified 4 major barriers to the wider uptake of CHP:

- ❑ Currently heat and power markets do not consistently reward CHP operators for the system-level energy savings made;
- ❑ Barriers to entry persist for distributed generators;
- ❑ Regulatory and legislative uncertainty add significant risk and cost to new investments,
- ❑ A lack of adequate focus on primary energy savings and heat in EU energy efficiency policy risks moving CHP to the margins of policy action.

# Conclusions

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Gas-fired CHP, which constitutes the majority of Europe's installed capacity, is facing particular difficulties due to a combination of high gas prices and low electricity wholesale prices.

As a result much CHP is not running. This has the knock-on effect of increasing CO<sub>2</sub> emissions whereby more electricity is produced using conventional power plants.

This comes at a time when reinvestment in installed plants is under consideration and the opportunity can be taken to reinvest while modernizing plants to meet the new demands of the electricity market.

# Conclusions

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The **Energy Efficiency Directive (EED), 2012/27/EC**, contains many elements that could assist growth in cogeneration.

But significant take-up of CHP across Europe is unlikely to happen without a continued focus from the EU on improving legislation and particularly on ensuring that CHP is empowered to play a strong role in the ancillary services and electricity markets.

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Thank you for your attention!

Any Questions?

[www.code2-project.eu](http://www.code2-project.eu)

[www.cogeneurope.eu](http://www.cogeneurope.eu)

