COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

IENE 5TH SE EUROPE DIALOGUE

2-3 June 2011, Thessaloniki

The status of Cogeneration in Europe today – CODE Programme

Costas G. Theofylaktos

President HACHP

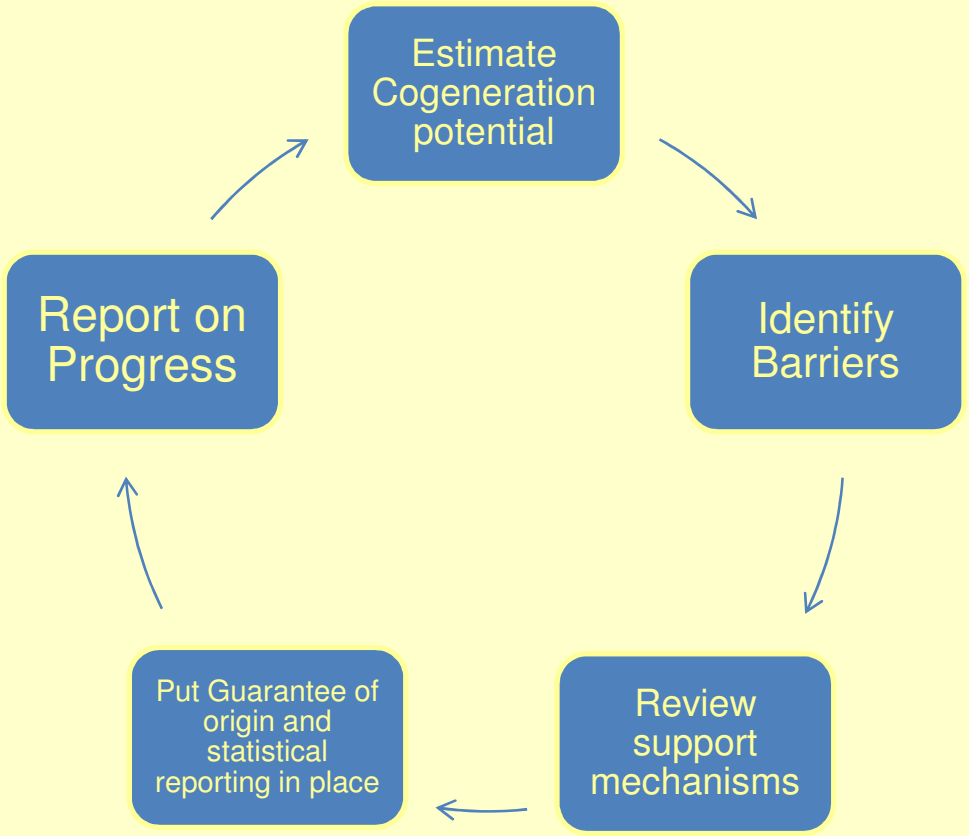
2 June, 2011

INTELLIGENT ENERGY EUROPE

COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

COGENERATION DIRECTIVE REQUIREMENTS

- Cogeneration Directive 2004/08/EC adopted in Brussels end of 2008
- European Directive 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 Member States to report on several aspects their cogeneration use and promotion



COGENERATION OBSERVATORY AND DISSEMINATION EUROPE - CODE

- 30 month program supported by European Commission IEE 2009-2011
- Objectives
  - Monitor the progress of the CHP Directive
  - Identify and exchange best practise
  - Highlight opportunities 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

CODE PROJECT

Implementation

- Analyse Member State CHP potentials reports (WP2)
- Assess level of implementation

Progress?

- Model the impact of support mechanisms (WP3)
- Analyse progress reports (WP5)

What next?

- Identify best practise cases (WP4)
- Draft a CHP Roadmap for Europe to 2020 (WP6)

COGENERATION OBSERVATORY
AND DISSEMINATION EUROPE

THE POTENTIAL FOR COGENERATION IN EU-27 WP 2

COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

AIM OF WP2

According to the Directive 2004/8/EC, the European Union M-S are required to report, within a fixed timeframe, on the potential for cogeneration in their country and their progress towards achieving it.

The Member States reporting duties were:

- a report with the results of the analysis and evaluations carried out in accordance with articles 5(3), 6(1), 9(1) and 9(2) of Directive 2004/8/EC.
- a report with the results of the evaluation referred to art. 6(3) of the Directive
- Statistics on national electricity and heat production from CHP and statistics on cogeneration capacities and fuels.

So, the Work Package 2 reviews, evaluates and analyses each of the M-S responses to the reporting requirement and, then, through regional workshops process summarises its findings to the local CHP world and reports to the Commission.

RESEARCH APPROACH

The research approach developed, by the CODE team in order to fulfill the requirements of WP 2, was to:

1. Divide EU M-S in four regions, as presented below:

- Eastern region: Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia.

  Coordinator: JSI, SL

- Northern region: Austria, Belgium, Denmark, Finland, Germany, Ireland, Netherlands, Sweden, UK.

  Coordinator: CHPA, UK

RESEARCH APPROACH contd

- Southeastern region: Bulgaria, Cyprus, Greece, Romania
  Coordinator: HACHP, GR
- Southwestern region: France, Italy, Luxembourg, Malta, Portugal, Spain.

  Coordinator: FAST, IT

2. Separate analysis and evaluation of the reports of each M-S of the region, and, then, qualitative comparison of obtained data; similarities and differences, barriers, laws, etc.
3. SWOT analysis for each Region.
4. Conclusions; as per region and for EU27.

MAIN POINTS FOR CHP IN EASTERN REGION

1. Long tradition on large industrial CHP and DHS mainly from fossil fuel CHP
2. Transposition of the Directive: All M-S into their energy legal system
3. All M-S with Energy laws, dealing with CHP and HECHP
4. Main barrier: the existing bureaucracy and the different level of their liberalized market.

COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

NATIONAL SUPPORT MECHANISMS

M-S	Tax support	F-i-T	Certificate scheme	Capital grant	Other
Czech Republic		✓			
Estonia					✓
Hungary		✓			✓
Latvia		✓			✓
Lithuania		✓			✓
Poland			✓		
Slovakia		✓			
Slovenia		✓			✓

COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

SWOT ANALYSIS FOR CHP IN EASTERN REGION

Strengths	Weaknesses	Opportunities	Threats
• Long tradition on DHS with CHP • F-i-T dominant • Poland: certificate and quota • Investment subsidies • Centrally planning tools for CHP	• Limited price data availability - coal • No economically feasible mCHP w/o support • No local involvement in planning for CHP • Problems in connection	• Refurbishment of DHS and their upgrade • Potential in Tertiary sector • Potential in industrial sector • Trigeneration • microCHP	• Economic crisis • Bureaucracy • Energy prices • Low spark spread through low electricity supply prices • High capital cost investment

MAIN POINTS FOR CHP IN NORTHERN REGION

1. Regarding the evolution of CHP in the region, M-S fall into two distinct groups, those with high % of cogenerated electricity and those with average one (approx. 10%).
2. Transposition of the Directive: All M-S into their energy legal system
3. Many M-S of the region with high % of cogenerated electricity are moving to RES and lower carbon solutions. This is leading to no support to fossil fuel CHP.
4. Lack of data for coal and less for gas oil.

COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

NATIONAL SUPPORT MECHANISMS

M-S	Tax support	F-i-T	Certificate scheme	Capital grant	Other
Austria		✓			✓
Belgium (Flanders)	✓		✓		✓
Denmark	-	-	-	-	-
Finland				✓	✓
Germany		✓			✓
Ireland					✓
Netherlands	✓	✓		✓	✓
Sweden				✓	✓
UK	✓	✓		✓	

COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

SWOT ANALYSIS FOR CHP IN NORTHERN REGION

Strengths	Weaknesses	Opportunities	Threats
• CHP a key player in electricity market • Complex liberalized markets • Central and local government tools • Good spark spreads • RES with CHP is strong • Transparency in connections • Variety of support mechanisms	• In some M-S support mechanisms removed • Complex support mechanisms in some M-S • Limited support to fossil CHP	• Trigeneration • Potential in tertiary sector • Potential industrial sector • microCHP	• Lack of fossil fuel CO_2 abatement • High regulatory burden • Competition incentives vs costs

COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

MAIN POINTS FOR CHP IN SOUTHWESTERN REGION

1. Transposition of the Directive: All M-S into their energy legal system
2. Dominant role of N.G., as fuel for CHP.
3. Plants up to 1 MW_e represent the highest percentage of installations – Important the role of small CHP.
4. The role of micro-CHP and of trigeneration is still underestimated.

COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

NATIONAL SUPPORT MECHANISMS

M-S	Tax support	F-i-T	Certificate scheme	Capital grant	Other
France		✓			✓
Italy	✓	✓		✓	
Luxembourg	✓				✓
Malta	✓				✓
Portugal				✓	✓
Spain	✓	✓			✓

COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

SWOT ANALYSIS FOR CHP IN SOUTHWESTERN REGION

Strengths	Weaknesses	Opportunities	Threats
• Fully liberalized market -FR • Dominant role of NG, as fuel • Hard coal is given a positive scenario for POR • Variety support mechanisms • Mainly centrally planning tools • IT, SP invest in medium size CHP • Transparency in connection	• No local involvement in planning for CHP • No long tradition on DHS with CHP • Coal and diesel far less common in CHP • Complex support mechanisms	• Trigeneration • Potential in tertiary sector • Potential in industrial sector • microCHP	• Economic crisis • Bureaucracy •Energy prices

COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

MAIN POINTS FOR CHP IN SOUTHEASTERN REGION

1. Transposition of the Directive: All M-S the Directive into their energy legal system
2. Laws for CHP in all M-S
3. Barriers
   - Not fully liberalized energy markets
   - Bureaucracy – Administrative barriers
   - There are thresholds for cogenerated electricity in GR and CY
   - Low spark spread – low electricity prices
   - No transparent rules for connection
4. The role of micro-CHP and trigeneration is still underestimated.

COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

NATIONAL SUPPORT MECHANISMS

M-S	Tax support	F-i-T	Certificate scheme	Capital grant	Other
Bulgaria		✓			✓
Cyprus					✓
Greece	✓	✓			✓
Romania		✓		✓	

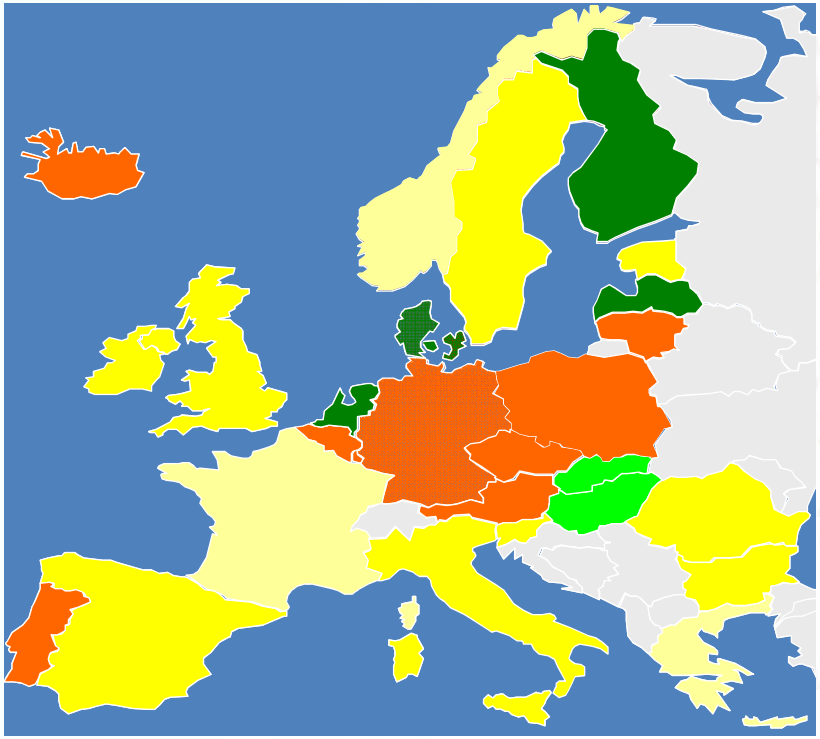
COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

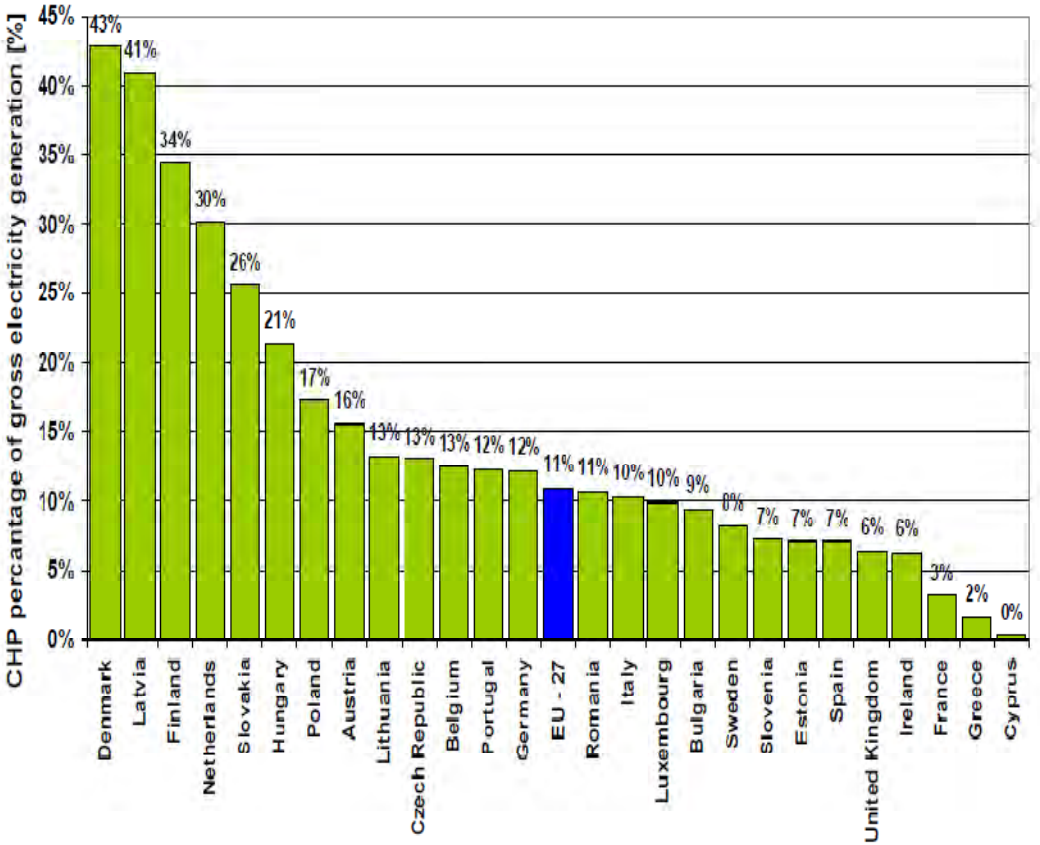
SWOT ANALYSIS FOR CHP IN SOUTHEASTERN REGION

Strengths	Weaknesses	Opportunities	Threats
• Long tradition on DHS with CHP • Mainly F-i-T / other support • Romania: certificate and quota • Investment subsidies • Centrally planning tools for CHP	• Limited price data availability/ coal • No economically feasible mCHP w/o support • No local involvement in planning for CHP • Problems in connection	• Trigeneration • Potential in tertiary sector • Potential in industrial sector • Potential in agriculture sector – greenhouses • CHP with RES i.e. biomass	• Economic crisis • Bureaucracy • Energy prices • Low spark spread through low electricity supply prices • High capital cost for CHP > 1 MW_e

COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

Share (%) of CHP in total generation 2008





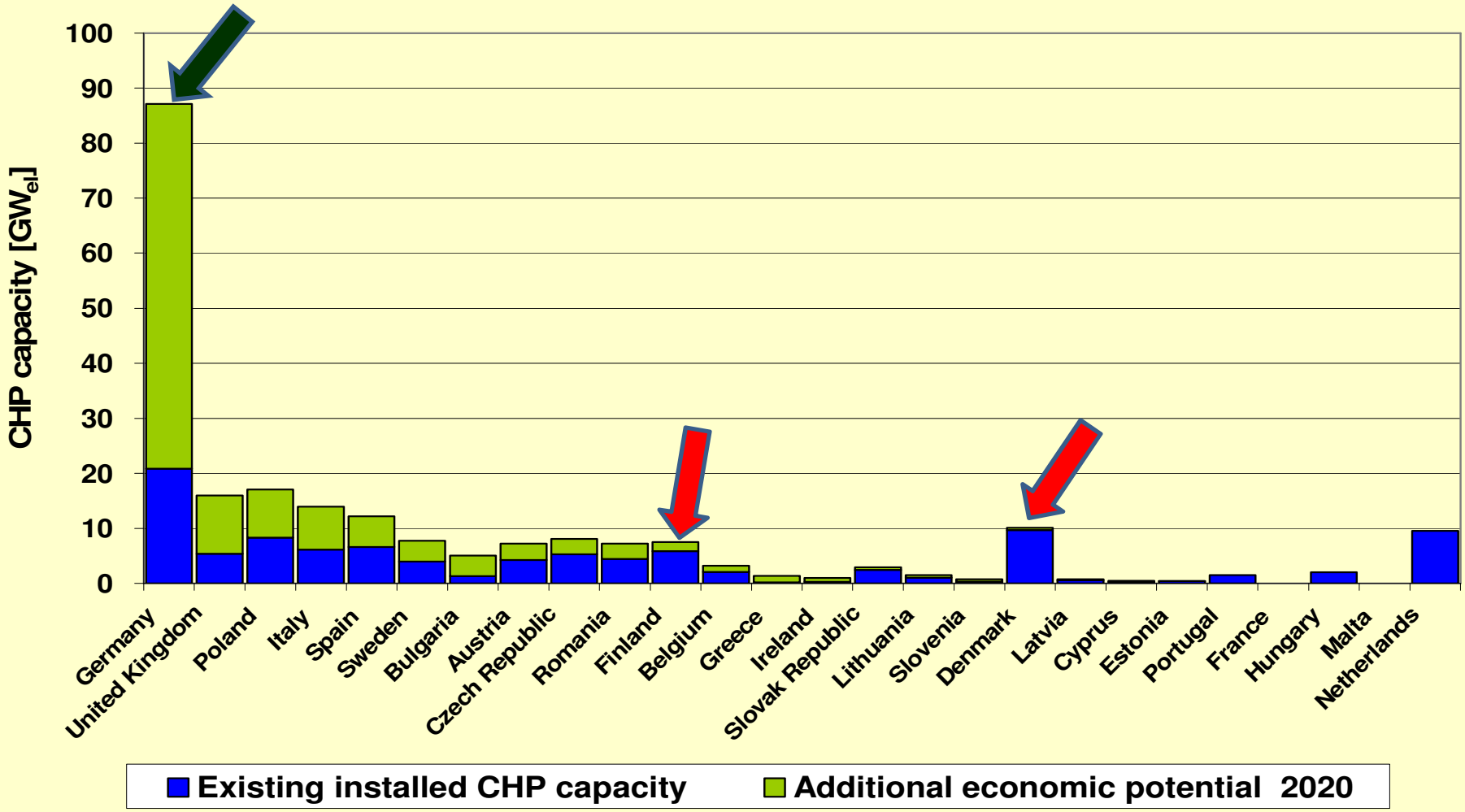
< 5% | 5-10% | 10-20% | 20-30% | >30%

www.code-project.eu
www.cogeneurope.eu

COGEN europe

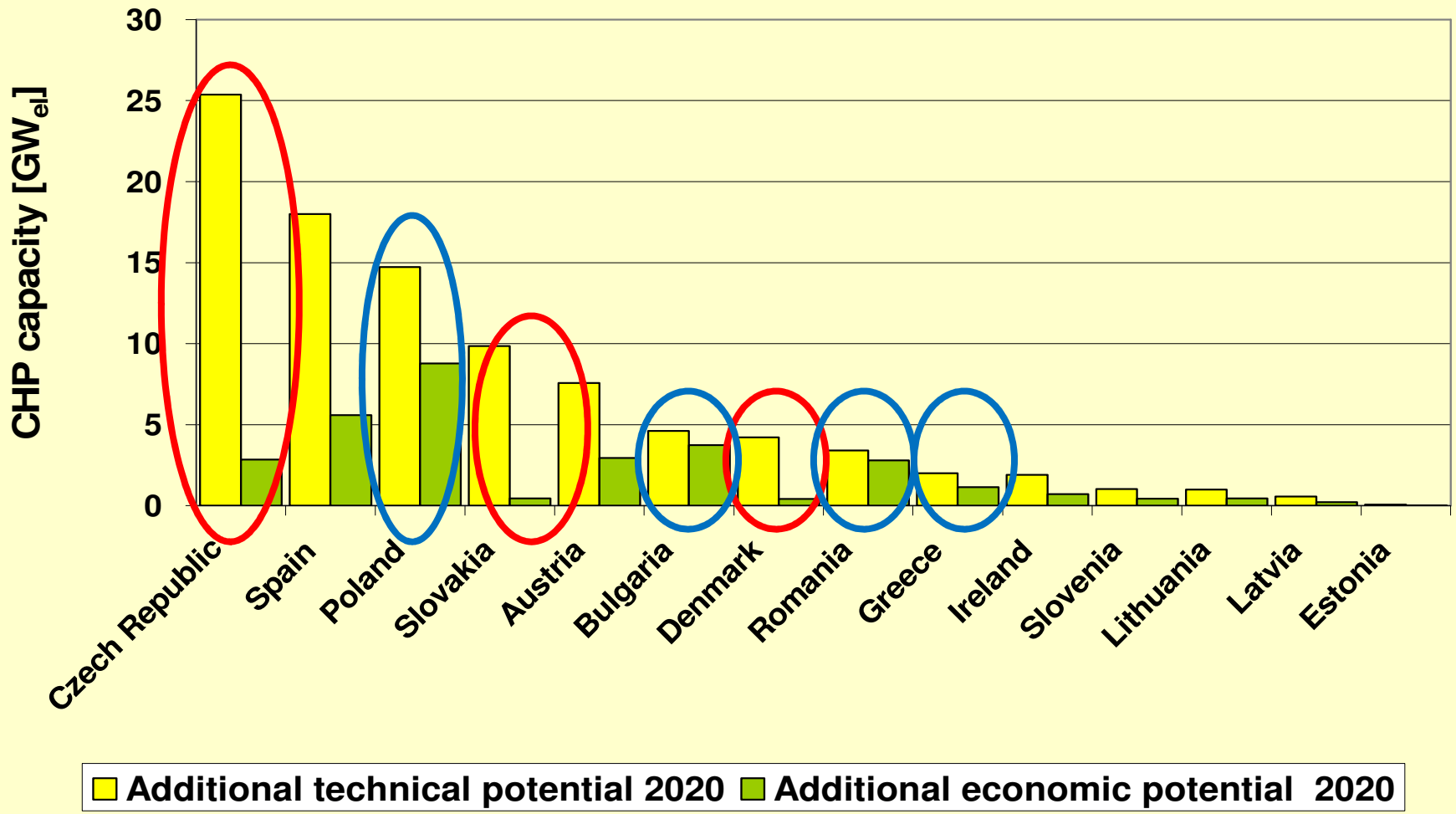
COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

ADDITIONAL ECONOMIC POTENTIAL TO 2020



COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

ADDITIONAL TECHNICAL AND ECONOMIC POTENTIAL



COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

CONCLUSIONS

There is an additional economic potential as reported by M-S:

- Total additional Primary Energy Saving expressed as electricity (min) 46 TWh p.a.
- Total additional Electrical Capacity: 122 GWe
- Total additional Electricity Generation: 455 TWh p.a.
- Total additional CO_2 avoided (min): 20 mton p.a.
- Value of CO_2 avoided: 798 mEuro* p.a.

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

These figures promise a brighter future for CHP until 2020 and even further !

But, there are lot of difficulties, barriers, to overcome in order to reach this target

COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

CONCLUSIONS

Several M-S report difficulties is assessing the following:

micro CHP : poorly defined economic and technical capability as yet makes micro CHP difficult to include in analysis.

cooling potential : Data on cooling requirements is not available in many member states and there is little available product on which to base an economic assessment.

bio-energy and use of waste materials for energy production.

COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

RECOMMENDATIONS

A possible revision of the Directive 2004/8/EC should include the following, based on the CODE project recommendation:

- A clear structure for future reporting
- Clear specification of energy units to be used
- Require reporting of both heat and electricity
- Define market segmentation for reporting including the granularity of : 1) industrial sector 2) Thermal/Electrical capacity of installations
- Clear measures covering the status of implementation.

For example regarding GoOs, the measure should certainly address volume of GoOs issued in last year, and possibly traded volume.

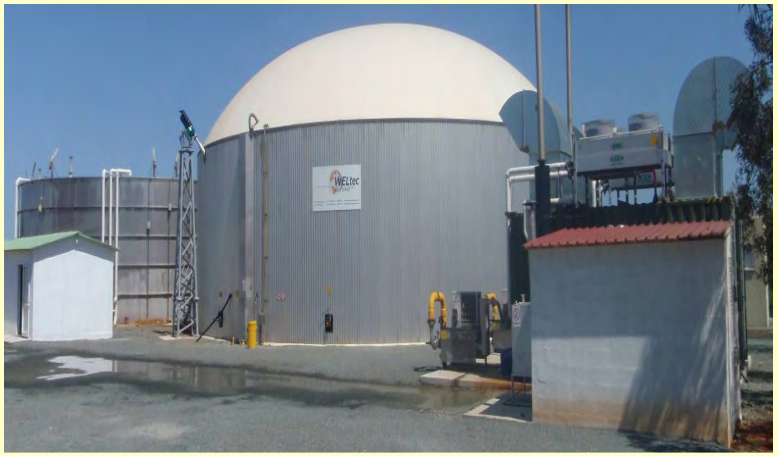
COGENERATION OBSERVATORY AND DISSEMINATION EUROPE

RECOMMENDATIONS

- Further reporting requests to M-S should emphasise the need to look at : The cooling, waste heat, micro and bioenergy potential for CHP.
- M-S should clarify explicitly what assumptions are being used, and what scenario is being assumed, to determine what is “economic” potential and what is “technical” potential.
- The European Commission should be firm on M-S and firmly impose reporting deadlines. The continual process of assessment, learning and reporting under the Directive is a “strong card”, which the Directive contains and so must be enforced.

COGENERATION OBSERVATORY
AND DISSEMINATION EUROPE

Thank you for your attention!



INDUSTRIAL COGEN in Bucharest, Romania (2005)
SE-GES BOOT ZENTIVA

For more information on the CODE project:

Coordinator: Dr Fiona Riddoch

Email: fiona.riddoch@cogeneurope.eu Tel: +32 2 772 82 90

For more information on this presentation:

Coordinator for WP2: Mr Costas Theofylaktos

Email: hachp@hachp.gr Tel: +30 6932 319 385

For all general inquiries please send an email to:

info@code-project.eu

www.code-project.eu