Deployment of micro-CHP in the European Energy Framework

Micro Gas Turbines in the European Energy Scenario

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The European Association for the Promotion of Cogeneration

Outline

- About COGEN Europe
- Overview of micro-CHP technologies
- Benefits of micro-CHP
- Micro-CHP commercialisation & new business models
- Conclusions

About COGEN Europe

Who we are

Structure

- European trade association for the promotion of cogeneration
- Established in 1993 and is headquartered in Brussels
- Secretariat of 7 staff

Vision

- Through the promotion of cogeneration, to grow an industry which changes the way Europe provides heat and electricity for a sustainable future

Approach

- We promote the wider use of cogeneration as part of Europe's sustainable energy strategy
- We participate in the EU legislative process and liaise with key actors in the European Commission and European Parliament
- We work closely together with other stakeholders
- Relations with Brussels-based and sector media/press (incl. Decentralised Energy, Cogeneration Channel)

What we do

- Liaison with the relevant Commission Directorates-General and staff, including DG Energy, DG CLIMA, DG ENVI, DG RTD and DG GROWTH;
- A network of links with key Members of European Parliament (MEPs) from ITRE and ENVI committes;
- Cooperation with other key industry associations (EuroHeat & Power, CEPI, CEFIC, FoodDrinkEurope, CEWEP, FuelsEurope, Cerame-Unie, EHI, ETN), renewable associations (EREC, AEBIOM, EREF, EUBIA, EGEC) and city representations (Energy Cities, Covenant of Mayors);
- Working groups formulating our positions on key topics (e.g. on Energy Efficiency Directive, electricity Network Codes, micro-CHP, bio-energy CHP and on Industrial Emissions Directive);
- EU co-funded projects (CODE2, ene.field, PACE);
- Regular events such as our Annual Conference, EP dinner debates and others.

Our Members

- Around 50 corporate members, including:

- 14 National COGEN Associations

Overview of micro-CHP in Europe

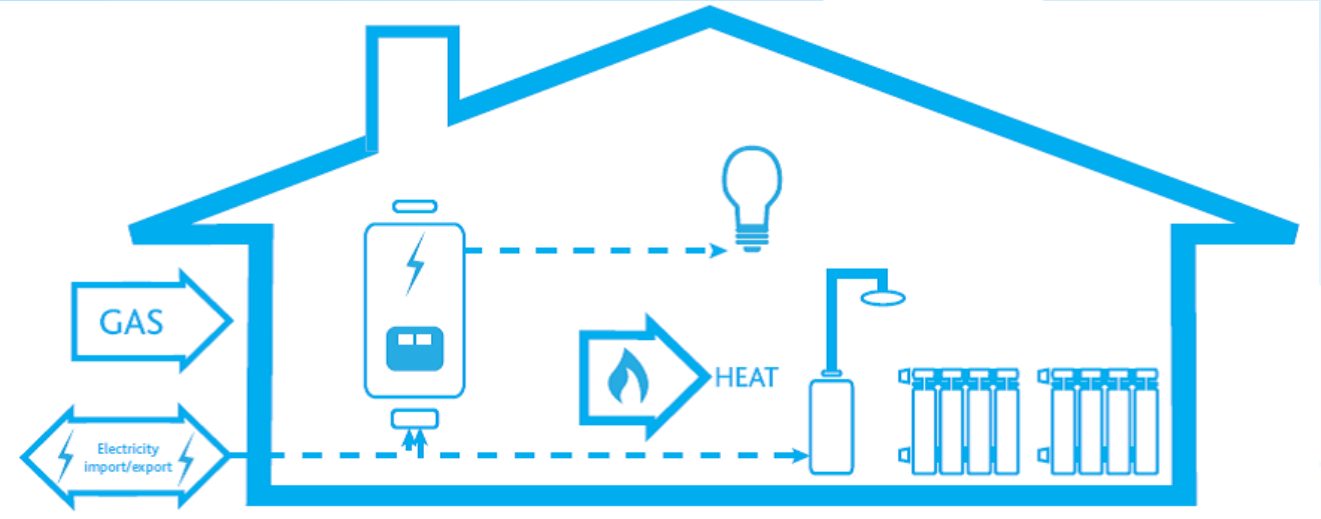
What is micro-CHP

Micro-CHP…

…meet demand for heating and/or cooling and/or hot water while providing electricity to replace or supplement the grid supply

…defined in the Energy Efficiency Directive as “cogeneration smaller than 50 kWe”

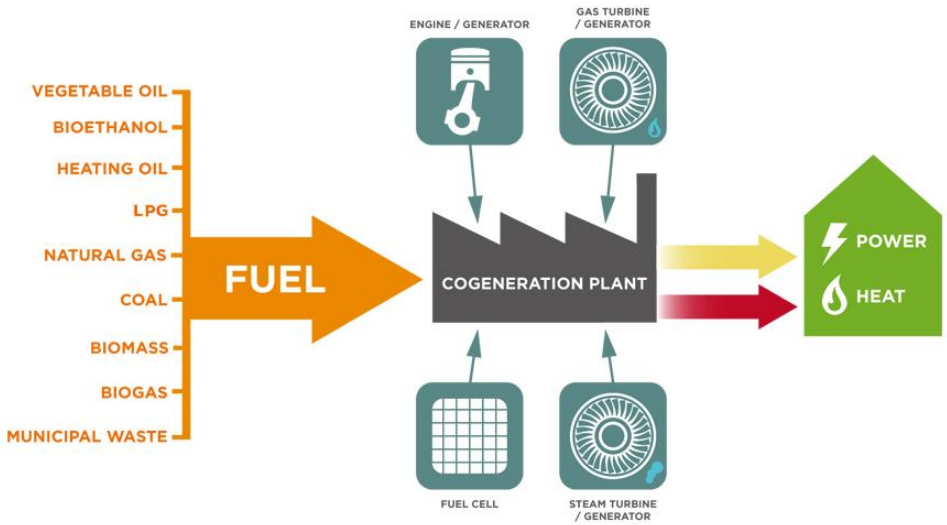
…normally installed in residential and public buildings, as well as small businesses



What is micro-CHP

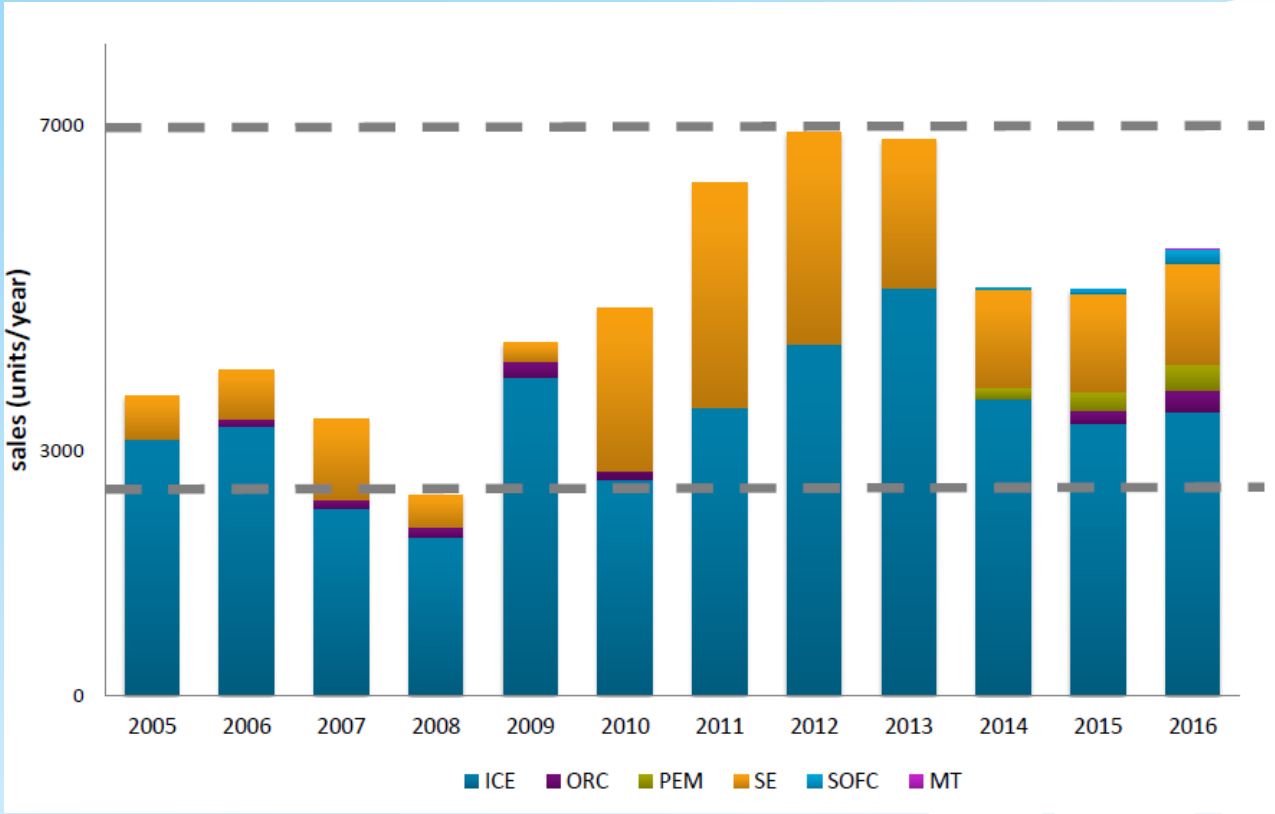
Diversity of CHP technologies...

...micro-CHP is largely based on Stirling engine, Organic Rankine Cycle, micro-turbines, internal combustion engines or fuel cells
...the majority of micro-CHP run on natural gas
...the technology is adapted for biogas/biodiesel, hydrogen, waste heat, biomass and solar thermal



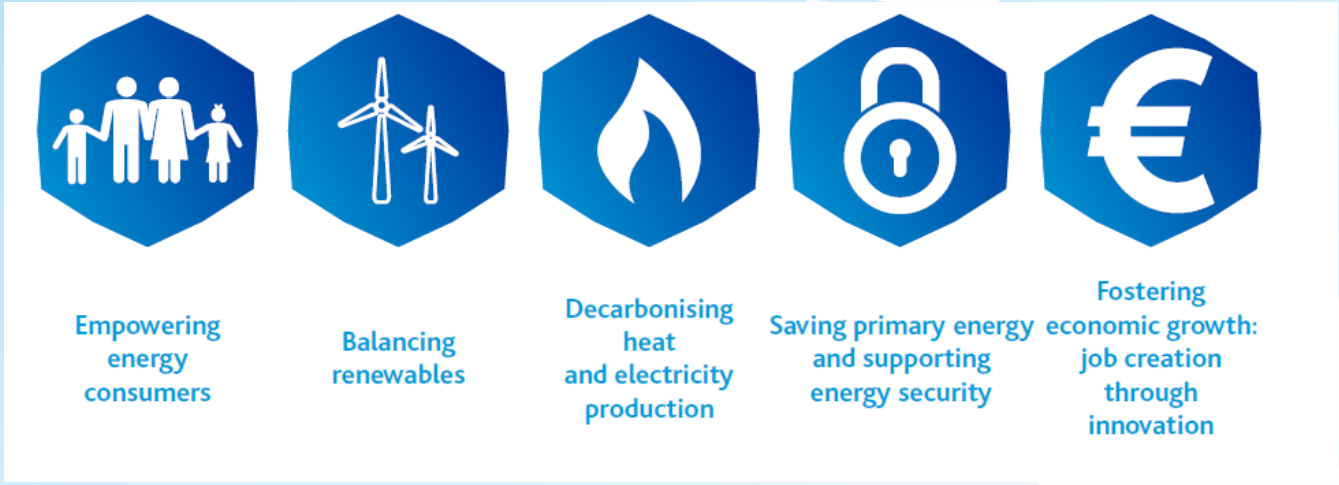
*CHP also runs on waste heat, geothermal, CSP (concentrated solar power) and nuclear energy sources.

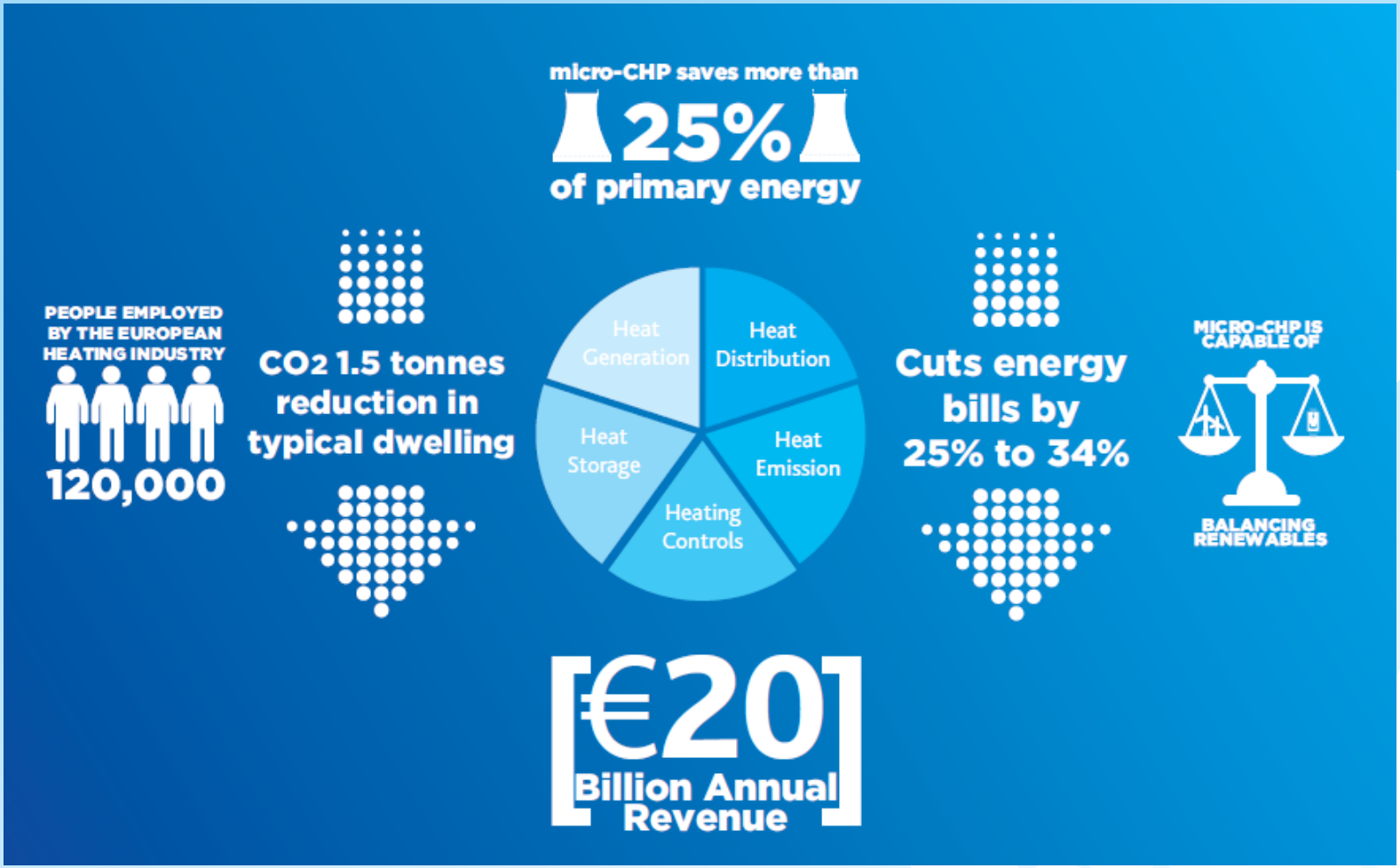
Micro-CHP < 5kW market (EU)



Source: Delta-ee, 2015

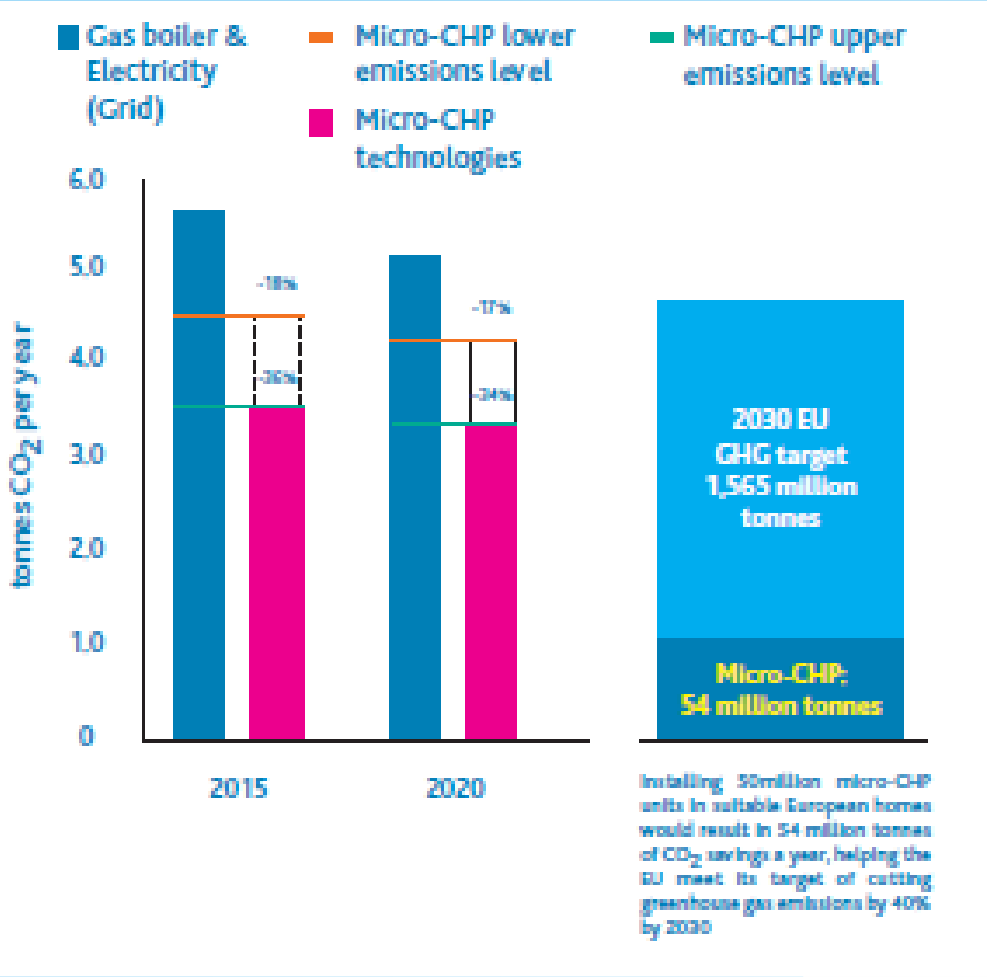
Benefits of micro-CHP





Source: Micro-CHP Benefits Study, Prepared by Delta-ee for COGEN Europe, May 2015

Decarbonising heat and electricity



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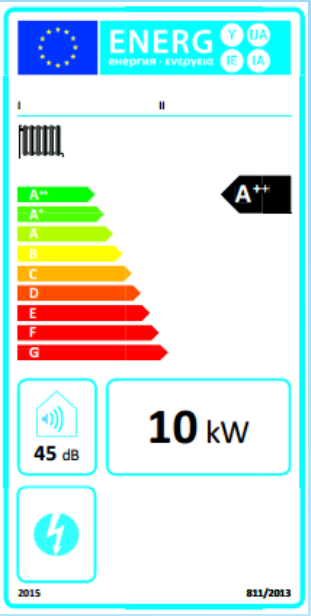
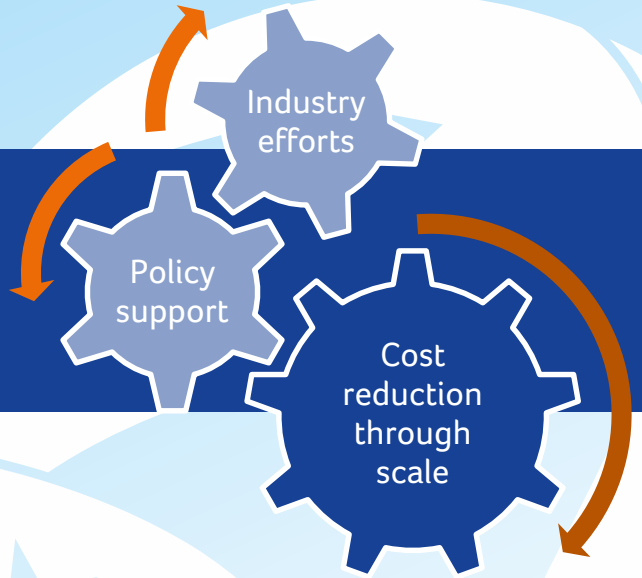
Primary Energy Savings & Security of Supply



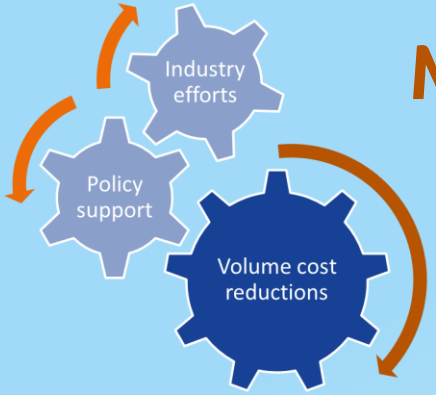
- Micro-CHPs can attain total efficiencies above 90%
- Primary energy savings of around 25% compared to centralised generation
- Recognised as a highly efficient heating system via Ecodesign & Energy Label

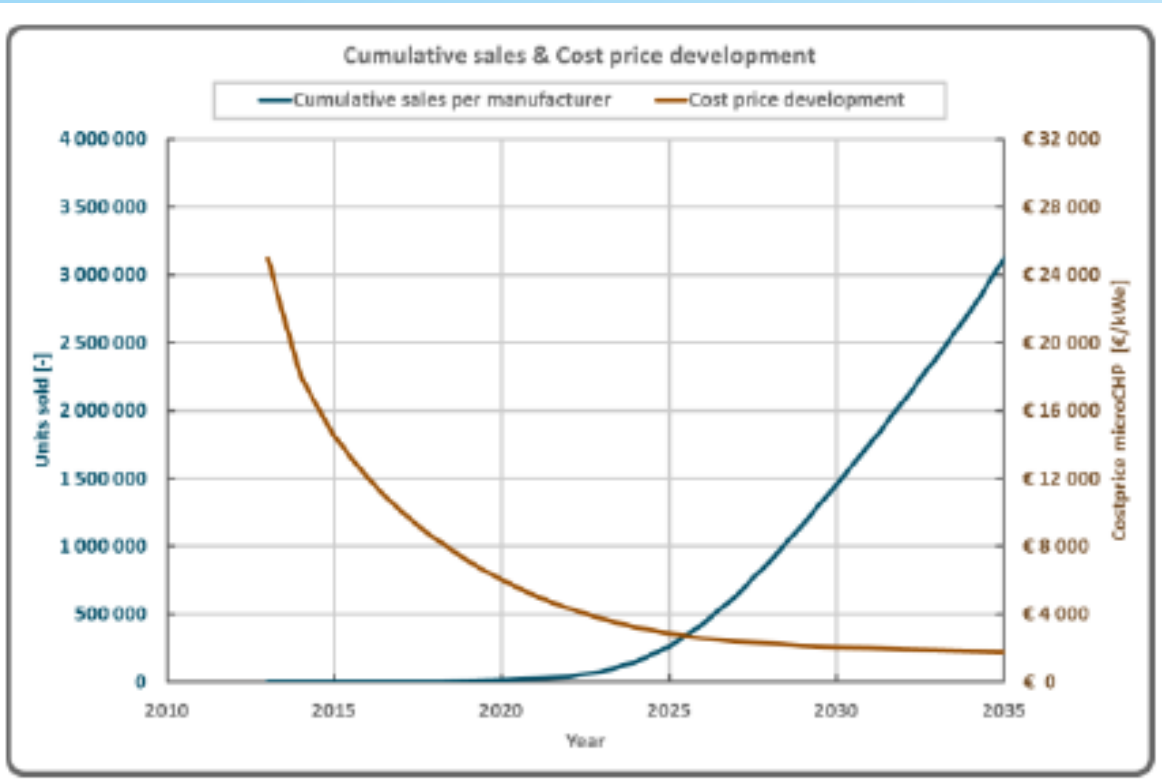
Source: COGEN Europe, 2015

Pulling micro-CHP out of the niche



Micro-CHP potentials by 2030





15% cost reduction for every doubling of production volumes

3,000 €/kWe production cost expected in 2025

Source: CODE2 project, May 2013

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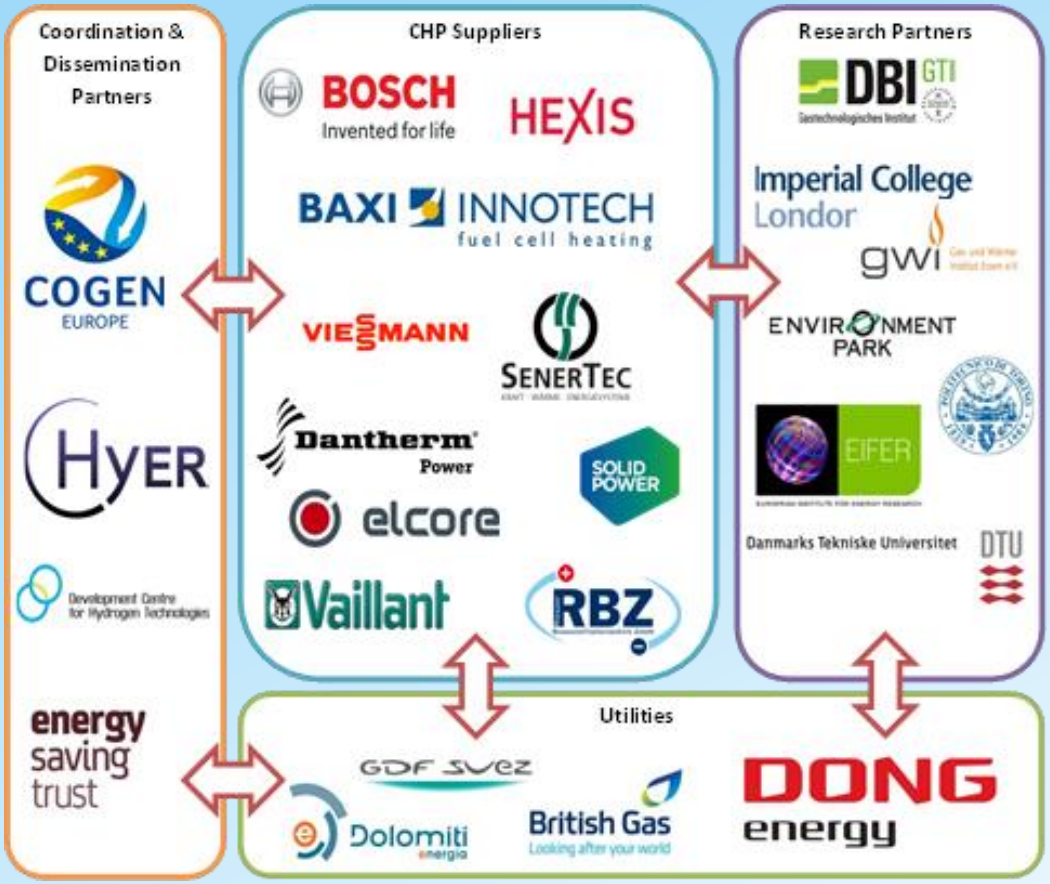
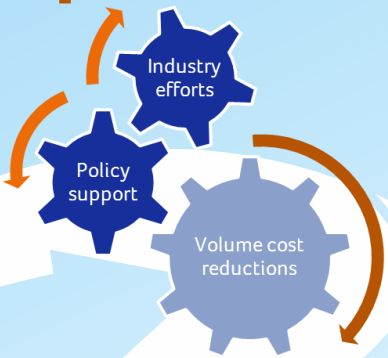
Supported by INTELLIGENT ENERGY EUROPE

Successful EU-industry partnerships

ene.field
Fuel Cells x Combined Heat and Power





- Project co-financed by the FCH JU
- Industry-wide involvement
- Aims to deploy and monitor up to 1000 fuel cell micro-CHP units across Europe by 2017
- Main deliverables: Lifecycle cost assessment, barriers report, commercialisation framework

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FCH FUEL CELLS AND HYDROGEN JOINT UNDERTAKING

Main factors affecting the mCHP market

Trends at national level are affected by several factors

- Determinants of growth:
  - ✓ Proven technology with high potential for energy savings, energy bill reductions and important environmental benefits (lower CO2, NOx)
  - ✓ High appeal among consumers who learn about it
  - ✓ Strong and stable support schemes in some markets (e.g. Germany, Slovenia)
  - ✓ High and increasing on-site spark spreads in several markets
  - ✓ Favourable provisions in the Energy Efficiency Directive (simplified grid connection procedures; mCHP to be included in the assessment of CHP potential in Member States)

- Barriers to growth:
  - ✓ Lack of awareness among consumers, installers, utilities and policymakers
  - ✓ Unstable and/or unfavourable regulatory framework (e.g. cumbersome grid connection in France and elsewhere)
  - ✓ Still high costs → Industry, EU and some national governments committed to reduce costs

Better communicating mCHP benefits

What is myCHP?

myCHP is a community of users, installers, manufacturers who enable and are committed to using CHP technologies to meet the energy needs of their businesses and homes.

Check out the latest myCHP stories on COGEN Europe website and get engaged!

Twitter:
@myCHP_in_action

Save the date!

2016

The Power of Heat

COGEN Europe Annual Conference & Gala Dinner

22 -23 March 2016 | Brussels

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#thepowerofheat

Conclusions

Conclusions

Micro-CHP technologies will become mainstream, provided that committed industry and policymakers work together!

- Micro-CHP technologies can have an important role in empowering energy consumers, saving energy and reducing GHG in buildings and supporting the electricity networks
- Industry is committed to deliver viable and highly performing technologies to the market
- These benefits should be recognised and taken into account in policy frameworks for energy transition at EU and national levels

Thank you!

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