

Cogeneration becoming a cornerstone of our future energy system

24 April, Hannover

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COGEN
EUROPE The European Association
for the Promotion of Cogeneration

Who We Are

COGEN Europe...



...is the **European Association** representing the cogeneration sector.



...aims at promoting the **benefits and wider use of cogeneration in Europe.**



...works **together with EU Institutions, Member States and other stakeholders** to develop sustainable energy policies.



...is a **membership based organisation** with over 50 members (13 national associations and over 40 corporate members).



...was established in 1993 as a not-for-profit organisation under Belgian law.



...is based in **Brussels.**



...has a **Secretariat** of 7 staff.



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COGEN Europe's Vision

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

More than 50 members representing the whole supply chain

Our National Members
(representing over 75% of CHP capacity in Europe)



Our Corporate Members
(covering the entire energy value chain)

How we Shape Policy

Public Affairs



Consultations and meetings in Brussels with EU Institutions and relevant stakeholders to present point of view of cogeneration sector.



Targeted Public Affairs campaigns.



Active involvement in Brussels stakeholder platforms such as the European Energy Forum, IDEAS, EEFIG, Decarb Europe, Brussels Electricity Club.

Projects



Managing EU co-funded projects to support further advancement and deployment of cogeneration technologies and solutions.

Information Dissemination



Sharing the latest cogeneration policy and Europe-wide market developments with our members.



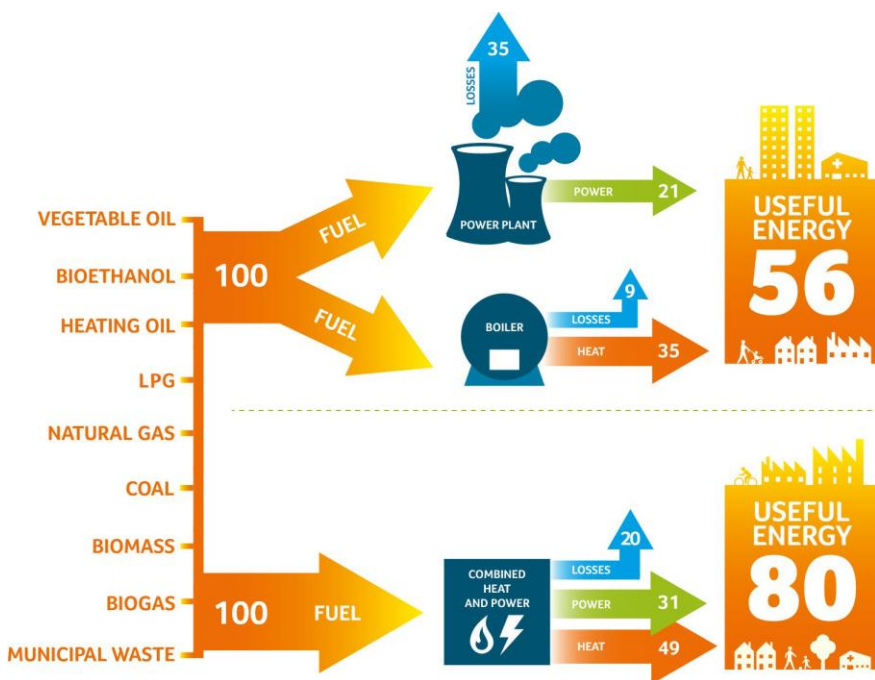
Promotion of our positions and activities via relevant specialised media (Decentralised Energy, Cogeneration Channel) and social media.



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Cogeneration – Efficient



- Transforms more than 80% of the energy into useful heat and electricity for industry, tertiary sector and homes.
- Saves between 15-40% energy compared to the separate supply of electricity and heat from conventional power stations and boilers.

Empowering consumers



Contributing to Europe's Competitiveness

- **100,000 people are directly employed** by the cogeneration sector.
- **Majority of refineries, paper mills and chemical manufactures use cogeneration** to produce their own efficient, secure and low-carbon electricity and heat.



Local & Flexible

Distributed

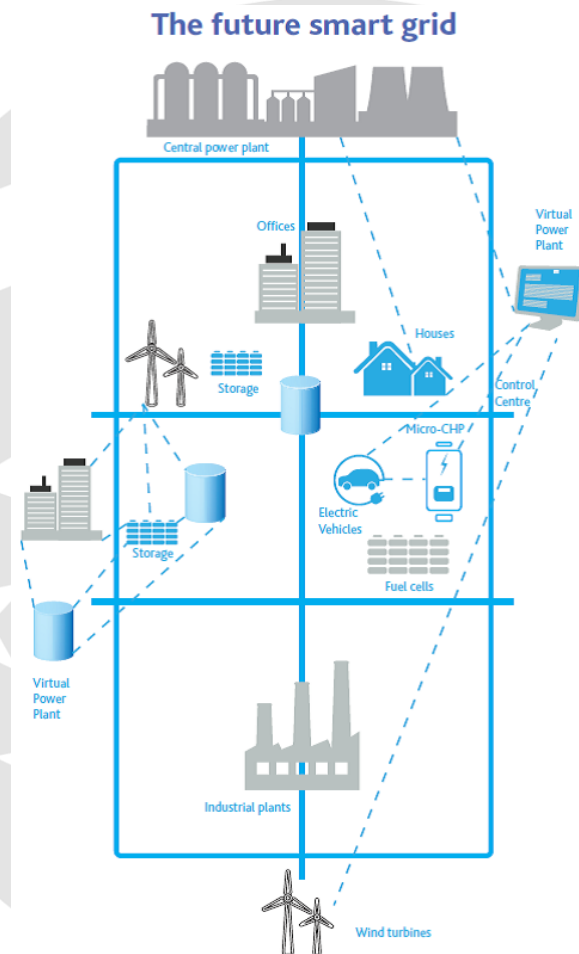
→ Located near or at the point of consumption, reducing generation and costs.

Dispatchable

→ Controllable and predictable generation patterns.

Demand Response & Smart Grids Ready

→ Can ramp up or down, making use of controls and storage, to respond to energy system needs.



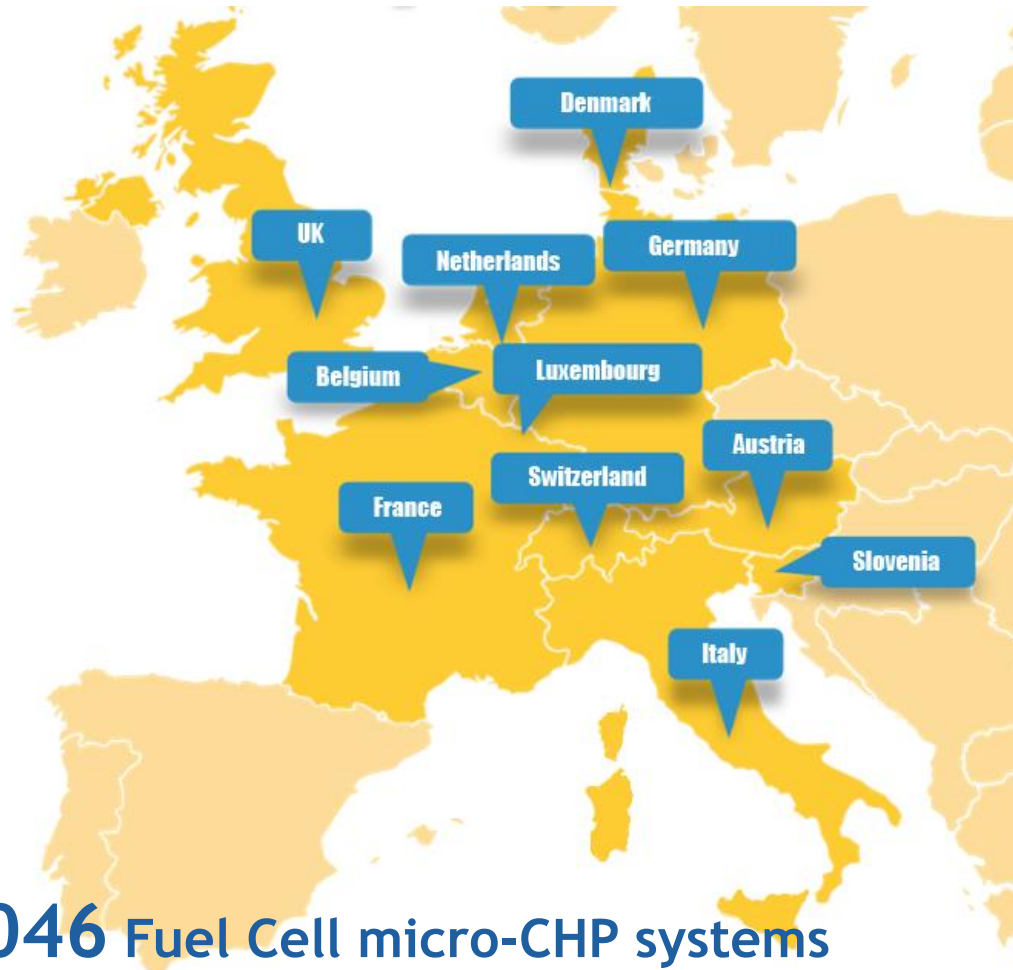
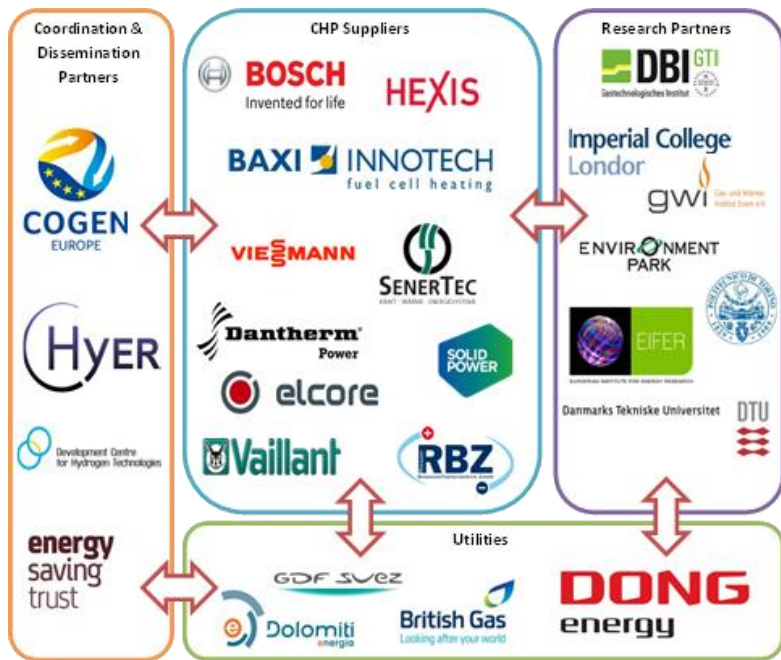
Innovative: Fuel Cell micro-CHP



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Fuel Cells x Combined Heat and Power

2012 - 2017



1,046 Fuel Cell micro-CHP systems
deployed across 10 key EU countries.

Innovative: Fuel Cell micro-CHP

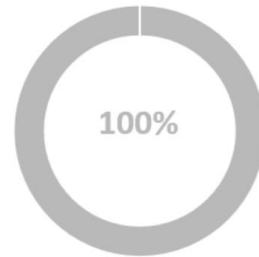


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Fuel Cells x Combined Heat and Power

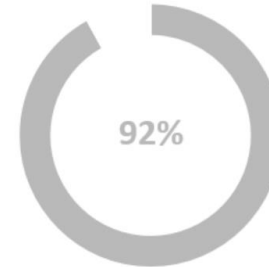
2012 - 2017

Customer satisfaction

Environmental performance



Comfort and warmth



Running costs



Important distribution network cost reductions

in 2030

Up to 31 GW
micro-CHP potential



€ 62 bn

in avoided grid
investments associated
with micro-CHP



Up to 28%

of EU's projected grid
reinforcements needs
potentially delivered by
micro-CHP

Micro-CHP displaces more carbon intensive power, while
reducing grid losses

Innovative: Fuel Cell micro-CHP



Pathway to a Competitive European
Fuel Cell micro-CHP Market

2016 - 2021

8

Partners

Representing
manufacturers,
utilities & research
community

> 2,500

Fuel Cell micro-
Cogeneration
units

To be deployed
across Europe
between 2016-
2021

>500

Systems per
manufacturer

Established
production
capacity per
manufacturer

10

Countries

Where the units
will be installed

4

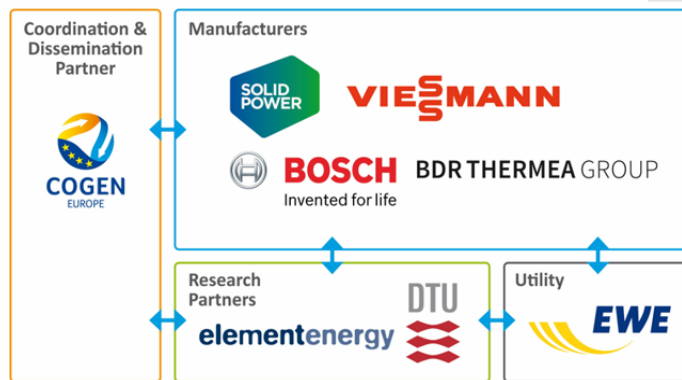
Countries

Selected for policy
& market
development
(Belgium, Italy,
Netherlands and
UK)

€90m

Total budget

Including €33.9m
Horizon 2020
funding via FCH JU



>10,000

FC micro-
cogeneration
units/year post 2020



Field trial + installer training +
targeted market & policy
development activities

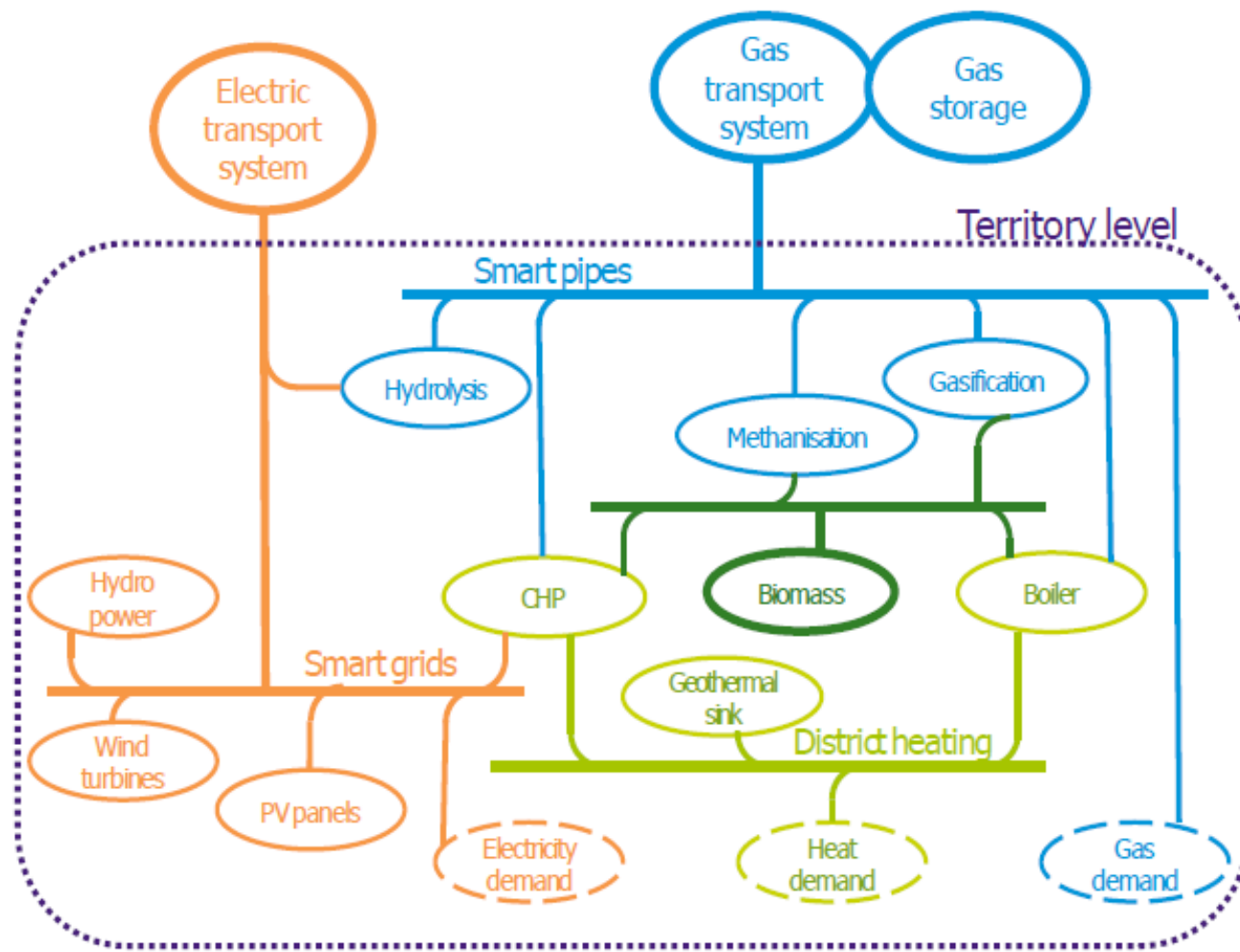
Field trial + local installer
training



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CHP at the centre of an Integrated Energy System



Source: GrDF

Expert contributions from **20** CHP national experts...



2017 Cogeneration National Snapshot Survey

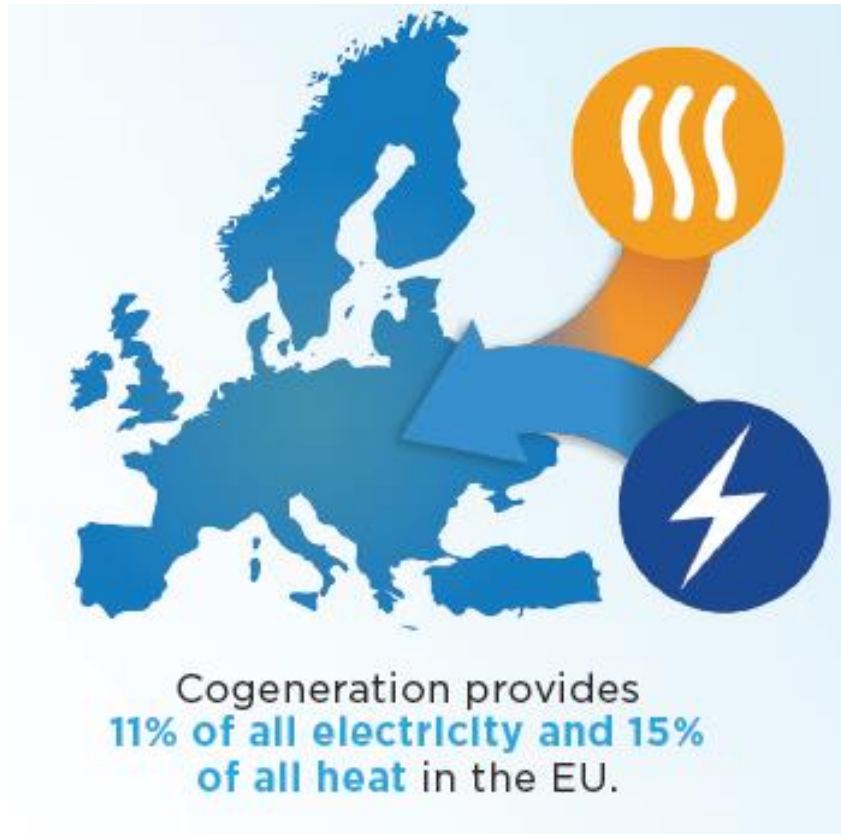
...representing **95%** of installed capacity **in EU28 & Turkey**

...capturing the **European CHP industry sentiment**

...expanding outside of Europe, with **guest contribution from Japan**

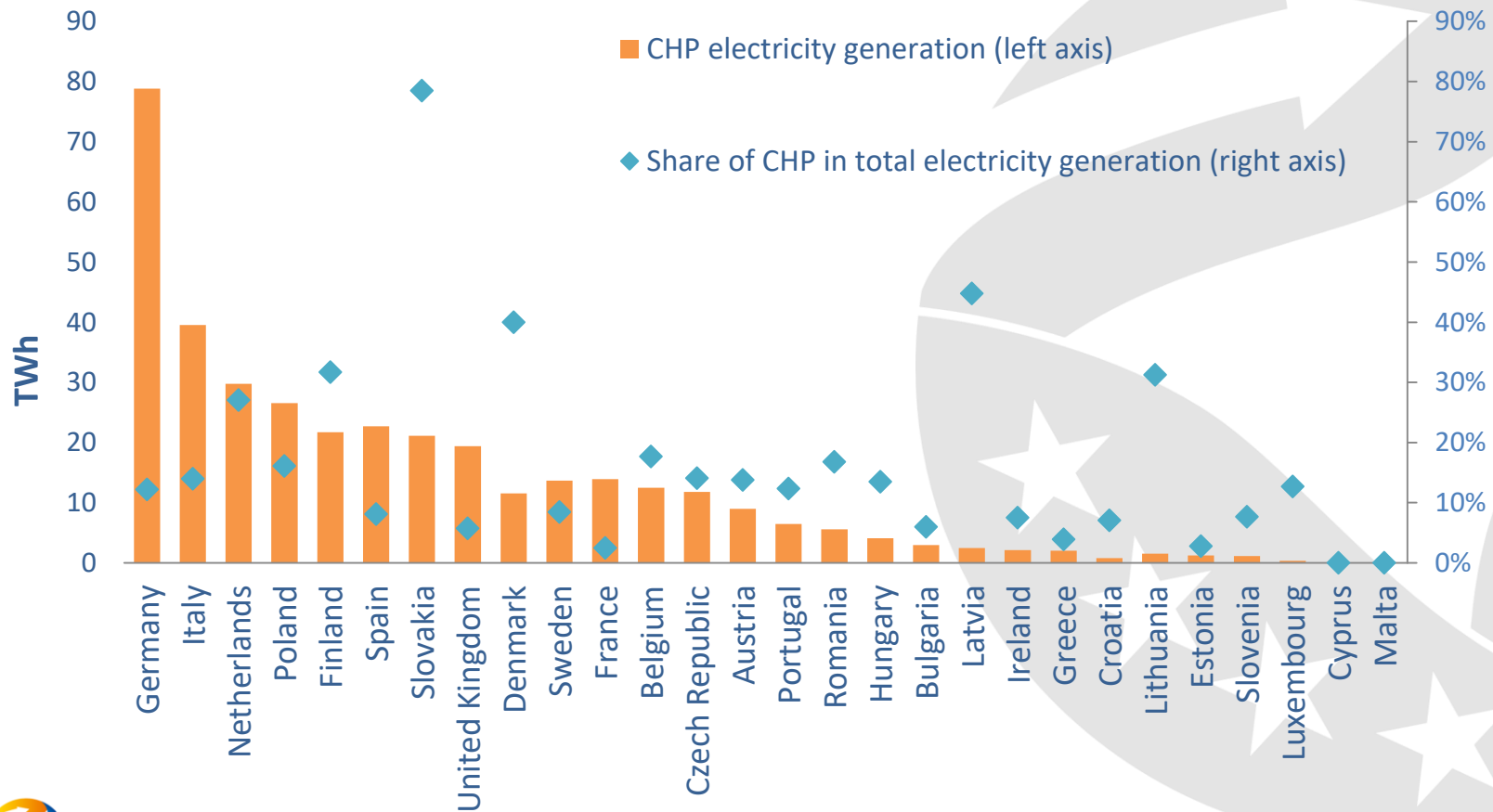


Cogeneration Today



- More than 100,000 European consumers self-generate electricity and heat with cogeneration in their homes and businesses.
- 70 million Europeans use district heating, half of which is supplied by cogeneration.
- Delivers around 15% of EU's energy efficiency & 20% of EU's climate 2020 objectives.

Cogeneration Uptake Across EU



CHP in Europe - Overview

Electricity and Heat Generation (2007-2015)



Data source: European Commission, Eurostat, 2017

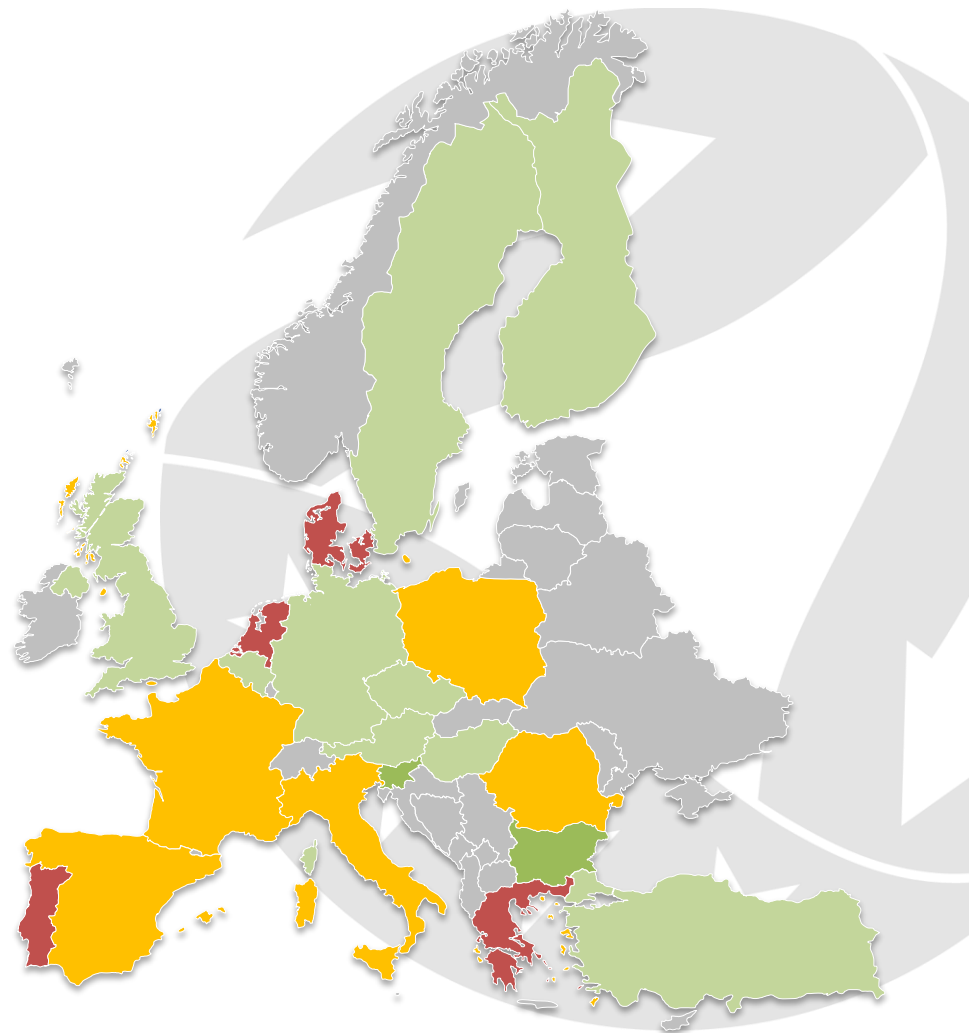
Available Support for CHP

in EU28 & Turkey in 2015

	Feed-in Tariff	Feed-in Premium	Quota Obligation & Certificates	Capital grant	Tax incentives	Other support	No support
Austria	✓			✓	✓		
Belgium - Flanders			✓		✓		
Bulgaria						✓	
Czechia		✓		✓			
Germany		✓		✓		✓	
Denmark						✓	
Finland		✓		✓	✓		
France	✓	✓				✓	
Greece	✓	✓		✓			
Hungary						✓	
Italy			✓				
Netherlands				✓	✓		
Poland			✓	✓			
Portugal	✓						
Romania		✓					
Slovenia	✓	✓					
Spain		✓					
Sweden			✓				
Turkey							✗
United Kingdom	✓		✓	✓	✓		

5-year CHP Markets Outlook

In nearly **60% of the CHP markets** in Europe, experts expect **steady and moderate growth** in the next 5 years.



Main Factors Affecting CHP Markets at National Level



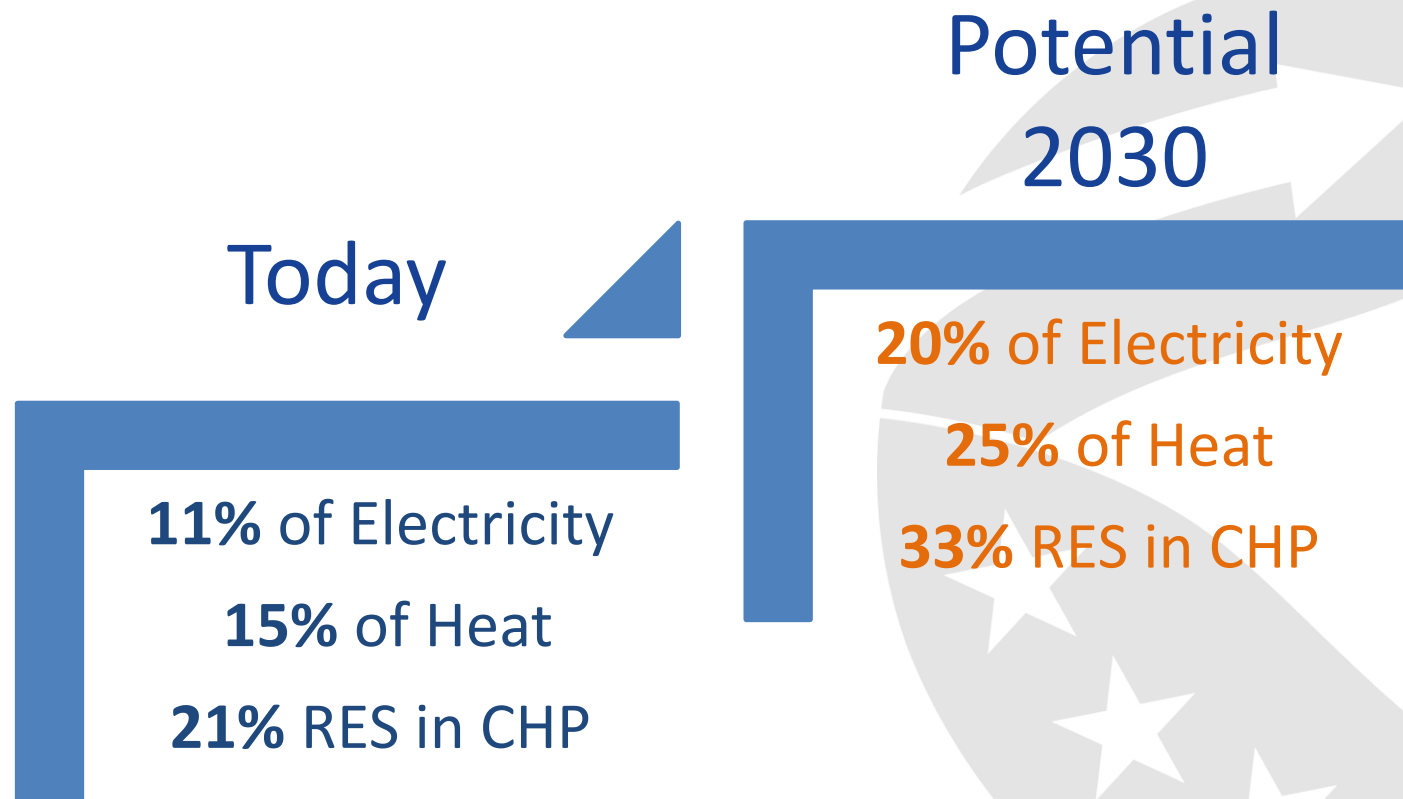
- Stable support schemes in some markets (especially for RES)
- Positive on-site spark spreads in key markets



- Depressed wholesale spark spreads/low wholesale el. prices
- Unpredictable regulatory framework



Untapped Cogeneration Potential in the EU



Source: EU Funded Project CODE2 (2014)

Cogeneration already delivers today...

Cogeneration can deliver key benefits for 2030

Climate & Energy Targets



EFFICIENCY UP



EMISSIONS DOWN

Source: EU funded project CODE2

2020

11%-17%
of EU Energy Efficiency
target

16%-25%
of EU GHG target

2030

up to 26%
of EU Energy Efficiency
target*

up to 25%
of EU GHG target

* Assuming a 35% energy
efficiency target in 2030

...and will continue to contribute in 2030
with the right policy framework



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Source: EU Funded Project CODE2 (2014)

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Policy implementation: key to further CHP development

CHP/DHC Comprehensive Assessments

Member States should **introduce new policy measures to achieve CHP potential identified as part of Comprehensive Assessments** (Energy Efficiency Directive, Art 14)

Favourable electricity rules for CHP

TSOs & DSOs should **facilitate grid connection, access & priority of dispatch for CHP / simplified grid connection for micro-CHP** (Energy Efficiency Directive, Art 15)

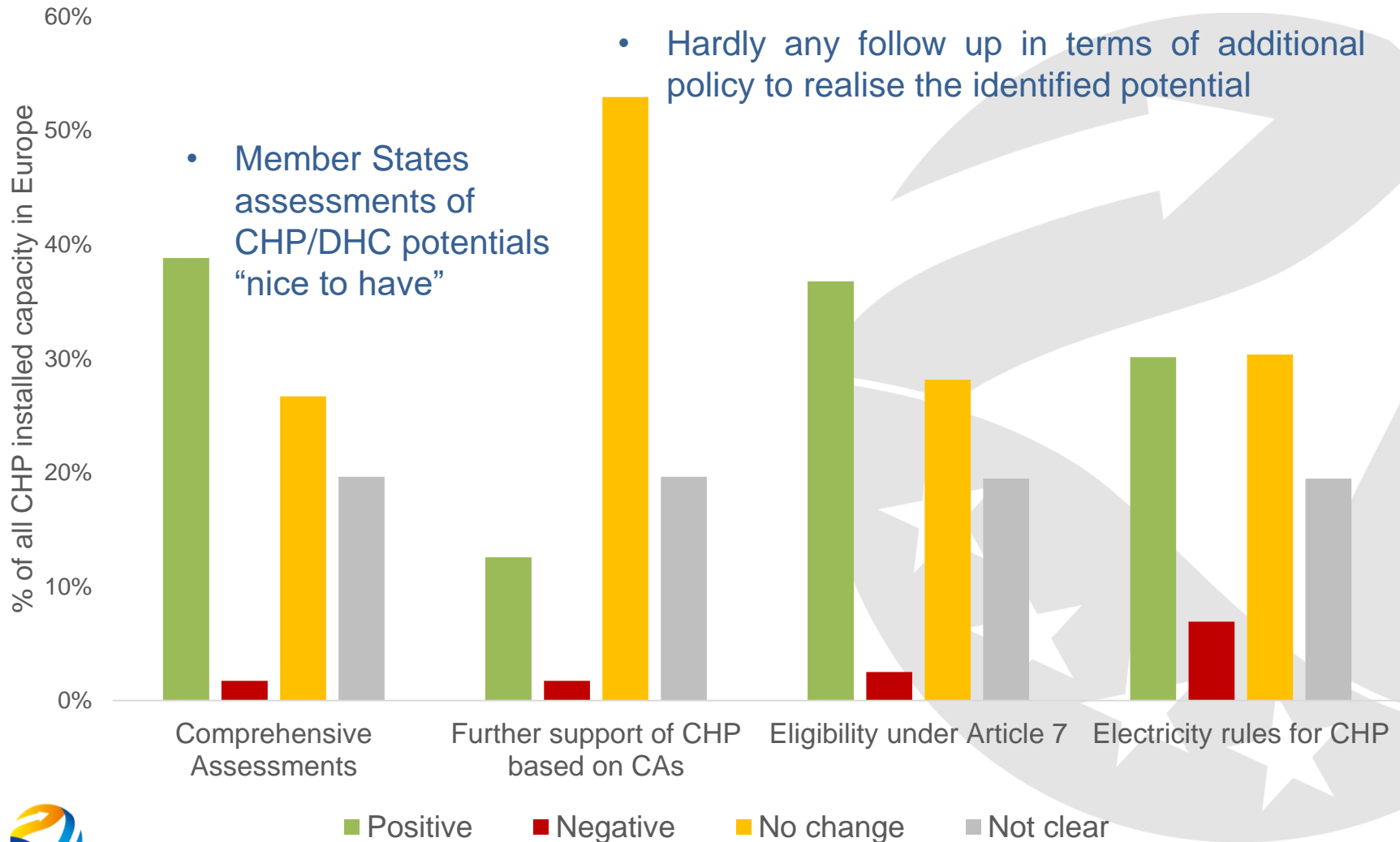
CHP enabled to contribute to Energy Savings Obligation

CHP & DHC eligible up to 25% of “Energy Savings Obligation”, which Member States could exploit more (Energy Efficiency Directive, Art 7)

Network Codes

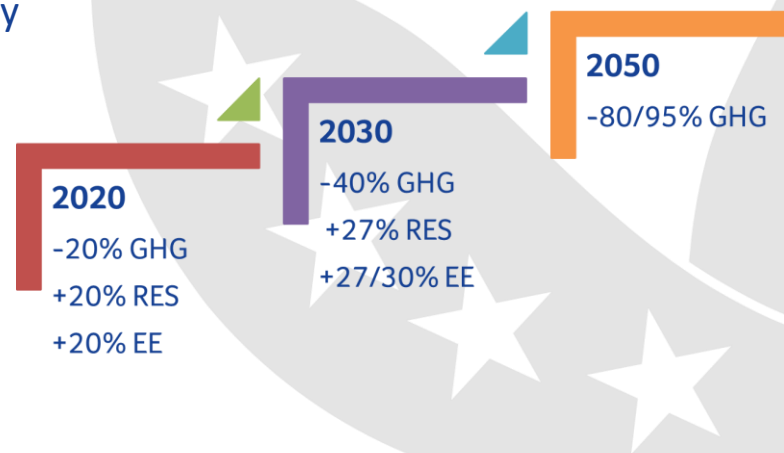
Derogation for must-run CHP & micro-CHP as part of the Network Code on Requirements for Generators.
Dedicated derogations possible for fault ride through

Energy Efficiency Directive Implementation for CHP (Articles 14/15)



“Clean Energy for all Europeans” Package

- **European Commission** published major legislative package at the end of November 2016:
 - **Energy Efficiency:** Energy Efficiency Directive & Energy Performance of Buildings Directive Reviews
 - **Market Design Initiative:** Electricity Directive and Electricity Regulation Reviews, Sector inquiry into capacity mechanisms
 - **Renewable Energy Directive Review**
 - **Energy Union Governance Proposal (new)**
- Key legislative package, setting the 2030 policy framework for the energy sector.
- Three key aims:
 - Put energy efficiency (EE) first
 - Make Europe #1 in RES
 - Empower energy consumers



Opportunities & risks for CHP in the Clean Energy Package

- CHP main option for efficient use of biomass
- Waste heat should not exclude CHP, but prioritise it
- Dispatchable RES should be promoted

Energy
efficiency

- Key to focus on both primary and final energy
- Efficiency across the whole energy value chain
- Realistic EU Primary Energy Factor for electricity

Renewable
energy

Electricity
Markets

- Active energy consumers (self-consumers) should be promoted
- Priority of dispatch maintained for existing CHP
- Fair curtailment & grid access rules for all CHP

COGEN Europe's High-Level Recommendations on the Clean Energy Package

Enabling cogeneration to contribute towards a consumer-led, secure, clean and affordable energy transition:

- Take a consumer-centered approach to policymaking;
- “Energy efficiency first” principle should be applied across the whole energy value chain, to energy conversion, transmission, distribution and final use
- Energy systems’ integration is key: policy should take a holistic approach & explore synergies between electricity, heat and gas networks.





Join us!

**Anniversary
Annual
Conference,
Awards
& Gala Dinner**

5-6 June, 2018

Brussels, Belgium



Thank you for your attention!

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