

CODE2

**Cogeneration Observatory
and Dissemination Europe**



Policy Recommendations

Report based on results of national CHP workshops
in the CODE2 pilot countries
Belgium, Germany, Greece, Italy,
Ireland, Slovenia, and Poland

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1 CHP Workshops

In the context of the CODE2 project, the National Cogeneration Roadmaps have been thoroughly discussed in 7 pilot Members States (Germany, Italy, Greece, Ireland, Belgium (Flanders), Poland and Slovenia). This has been done using a workshop format addressing key target groups in the respective countries: national and regional policy actors (persons in charge of the implementation of the eventual EED Directive), industry, SMEs, academia, cities, NGOs and interest groups, regulators and network representatives.

In each of the countries, a one day workshop brought together the national experts and a wider group of representatives of the stakeholders to review the roadmaps and discuss how they could contribute to the eventual heating and cooling roadmaps proposed in the EED. The workshops also aimed at initiating coalitions on CHP at the Member State level involving industry, policy-makers and interests groups.

Based on previously elaborated workshop guidelines, all seven events aimed at a similar structure. Usually the workshops involved presentations on the current state of CHP policies and the status of EED implementation. Subsequently, the National Cogeneration Roadmaps was being presented. One objective was a structure allowing for intensive discussions in so-called break-out sessions.

Additionally, the CHP workshops should also provide the possibility to get a very hands-on idea of what CHP is about by including site-visits in the programme. This idea was finally only implemented in two of the seven workshops, as it proved difficult to combine in the limited time frame an extensive programme of presentations and discussion with an excursion. It was therefore decided to offer opportunities for site visits in separate events in 5 of the 7 countries.

2 Recommendations and lessons learned on national level

2.1 Belgium

The workshop in Belgium took place on 12th December 2013 at KBC Headoffice in Brussels. It attracted 40 participants from Regional Energy Institutes, CHP associations and facilitators, research institutes, industry, producers, chemistry, sector organisations, and utilities.



2.1.1. Main conclusions regarding the Roadmap

Areas of Roadmap which need to be revised

- potential study for micro CHP is highly over-estimated

Additions to the roadmap introduced by the workshop

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Economics:

- Flexible electricity production of CHP in smaller installations by use of buffer tanks; however, this might result in additional heat losses of the buffer tank; a study should be considered
- Additional flexibility mechanisms should be offered in medium term, between the short term regulation (day ahead and intraday) and the long term plans (e.g. capacity compensation).
- Possibility of aggregators of several small-scale producers
- Strengthen possibility for private distribution grids
- Use CO2 rights to further stimulate CHP in Belgium
- Exceptions for taxes or grid costs can stimulate CHP.
- A 'blue label' for high efficiency CHP could be used for awareness
- Misconceptions regarding energy balances should be addressed
- Consider local (waste) streams as energy sources.,
- CHP as insurance against blackouts

Potential:

- The potential of CHP in district heating is not estimated.

- There is a high potential for CHP in SMEs. SMEs should be guided during the process and during the implementation and operation of the CHP. The same is true in common housing projects.
- SMEs should receive guarantees for the financial risks.
- Demonstrations projects are important, for example for SMEs.
- CHP benchmarking would be helpful.
- Large potential in large warehouses or shopping malls.
- In a long term vision based on renewables, fossil fired CHP could be coupled to CCS.

Politics:

- The CHP roadmap should align its numbers (potential capacity) with the 'Plan Wathélet' for gas fuelled electrical capacity.
- There should be a framework for biomethane injection.

2.1.2. CHP coalition

This was the first time for Belgian CHP stakeholders from the three regions to have such an event. The participants were positive about the cooperation. Especially among the sector organisations it was realised that more cooperation is needed; e.g. when changes in the certificate systems are at stake, it is important to exchange information between regions and stakeholders.

2.1.3. Lessons learned

- A lot of interaction during the breakout sessions, maybe even more time for interaction could have been interesting
- Administrations of regional governments were present, but no high level representatives
- Very positive feedback from the EU Commission representative (Eva Hoos) on the roadmap and workshop.

2.1.4. Site Visit

The site visit was an introduction to the CHP system at the KBC headoffice. There was great interest for the CHP installation; it was an advantage to combine the workshop and the visit in one day.



2.2 Germany

The workshop in Germany took place on 9th September 2013 at The Federal Ministry for the Environment (BMU) in Berlin. It attracted 30 personally invited experts from policy, industry and science.



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2.2.1. Main conclusions regarding the Roadmap

As in the previous detailed expert interviews, the proposals on the roadmap have been mostly positively received in the workshop. The lively, constructive discussion showed strong interest. In the plenary and group discussions (see program) the draft Roadmap elements including the major barriers against CHP, the resulting strategic consequences and other challenges to be considered as well as the more detailed proposed measures have been largely confirmed, whereby also critical positions have been discussed.

The **main barriers** identified before and confirmed in the workshop are:

- Lack of information and awareness
- Lack of attractiveness and safety for new CHP plants in the energy sector, low electricity prices at the power exchange
- Inhibiting regulatory environment (Tenancy law, residential property law, rules for connection to the power grid, network charges, income and sales tax issues)
- CHP support system too complicated for private households

The main **strategic consequences** and other challenges to be considered are:

- Strengthen information and know-how to CHP
- Strengthen economic incentives and increase security of investment
- Strengthen implementation of CHP by energy services (contracting)
- Adjust regulatory environment and CHP promotion with regards to micro CHP in households

The proposed measures are:

1. Start of a long and wide-ranging information campaign on CHP, jointly carried by the Federal government, associations and companies.
2. Training and certification programs on CHP for planners, installers and consultants.
3. Adaptation of CHP law and RES law. Particularly CHP should be rewarded for its contribution to security against the background of growing amounts of fluctuation power from wind and solar energy.
4. CO₂ limits for new heating systems. This would make transparent that the climate protection goals can only be reached with a forced shift to cogeneration.
5. Municipalities to be obligated to draw up standardized and simplified local heat and cold supply concepts according to the EU Energy Efficiency Directive.
6. Supporting of CHP by energy services (contracting), in particular equal treatment of cogeneration contracting with autoproduction.
7. Systematically check and adjust regulatory environment of the CHP: therefore creating a special task group consisting of participants from policy, industry and science.

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2.2.2. Lessons learned

The workshop was successful with regards to

- participating experts
- support of politics
- quality of presentations and discussions
- Substantial results

Crucial for the success were:

- the explicit support of the Ministries of Environment and Economics
- the early involvement of associations, scientists and company experts in detailed interviews;
- the early save-the-date and invitation with an agenda and a short version of the draft roadmap as discussion;
- invitation of well-chosen high quality experts from different CHP related areas
- 30 persons was a good meeting size with regards to representation of relevant groups; all participants were elected CHP experts;
- Well known and neutral expert as moderator (journalist);

- breakout sessions by main CHP usage areas heat grids, industry and other on-site-installations (“object CHP”); each with around 10 persons; discussions chaired by prepared experts.
- breakdown discussions by using corkboards and carton tags and thick marker pens

2.2.3. CHP coalition

The proposed measures are far-reaching and require further discussion, possibly modification and specification. In the draft roadmap it has been proposed to form a working group under the auspices of the Federal Government and with participation of the topic related organizations and scientists. It would be mandated to develop concrete proposals for policy and economy.

Several participating institutions and experts declared their support for and involvement in a CHP working group. A significant involvement of politics in the working group is considered important. The outcome of this working group will be recommendations. Essential to the role of the WG as an advisory body for policy and economy in any case would be the quality of the suggestions worked out, based on a dedicated collaboration of organizations and scientists.

2.2.4. Site Visit in follow-up event

On July 4th, 2014, the German roadmap was presented to a group of members of the German Parliament in a parliamentary breakfast organised by KWK kommt. Around 30 participants from politics and industry attended the event.

Subsequently, a site-visit organised by BEA took place. Interested participants were brought by bus to the commercial complex "Königstadt Terrassen" in Berlin Prenzlauer Berg, where BEA operates a trigeneration system producing heat, cold and electricity.

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2.3 Greece

The workshop in Greece took place on 10th October 2013 at the Ministry of Environment Energy and Climate Change amphitheatre in Athens. It attracted 45 Participants from the sectors private industries, public energy service companies, public energy organisations, universities, and private energy experts.

2.3.1. *Main conclusions regarding the Roadmap*

- Areas of Roadmap which need to be revised
 - There have to be some extra notes in the barrier chapter.
 - Some extra points of the EED should be mentioned and analysed.
- Additions to the roadmap introduced by the workshop
 - Have to put more weight in the proposals concerning the overcoming of barriers.
- Input from participants on EED implementation regarding CHP need in the roadmap
 - Most of participants are reluctant about the way some measures will be implemented in the national legislation. Some of the mentioned measures should be clearer and more specific.

2.3.2. *Lessons learned*

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Investors and users are reluctant and show limited confidence towards public authorities. Additionally there is a delay of several months concerning the payment of F-i-T to the producers. The ongoing political and economical changes consist major barriers towards potential investors. Most of the users and investors are disappointed by the way the public authorities react on the bad economic situation. On the other hand employees from public organisations responsible for the transactions for CHP systems have the will to overcome barriers but are caught up in a very complicated system that needs brave restructuring in a high management level. What the market and experts need is a clear path with stable mechanisms and limited bureaucracy.

2.3.3. *CHP coalition*

District heating network is limited and although signs of development appear the expansion of the network is moving with slow pace.

2.3.4. *Site Visit*

A site-visit was not possible on the date and at the place of the event. Therefore, the participants will be invited to a separate site-visit in September / October 2014. The systems to be visited are CHP of Aluminium of Greece or the National Water Company.

2.4 Italy

The workshop in Italy took place on 22nd October 2013 at the premises of FAST in Milan. It attracted 26 participants from the sectors associations, consortia, manufacturers, industry, training, schools, consultants, Escos, and governmental ministries.

2.4.1. Main conclusions regarding the Roadmap

The three main objectives of the Workshop, that is

- Illustrate the CODE2 Roadmap document, through its sections describing the actual status of CHP in Italy, the technical and economical potentiality, the barriers and the action plan (called altogether Roadmap)
- Illustrate the importance of the European Energy Efficiency Directive and its possible impact on the development of CHP market in Italy, particularly stressing the opportunity created by the EED acknowledgment within the national legislation to take active participation in all the phases of this process
- Declare the importance and the urgency, given the next deadlines, to establish a strong coordination (called in the Roadmap “coalition”) between the stakeholders in order to propose itself as a privileged channel of communication with legislators and regulatory institutions with data, information and suggestions and constitute an appropriate pressing force in search of a financial regulatory framework and fiscal supports that could facilitate the expansion of cogeneration

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have been substantially reached and especially the last one can be considered the official hint to launch the idea to establish a formal coalition.

2.4.2. Lessons learned

The organization suffered from the unexpected absence of the moderator. This is an important point for a meeting because of two main reasons:

- an experienced moderator can better conduct both the deployment of meeting and give an order to the discussions
- let the staff free to follow other not minor activities like registration, coffee breaks, lunch, photos and in general other reception and entertainment activities

Although we choose to invite a close number of expert participants respecting the nature of the Workshop, some feedbacks we got considered the level of presentations and discussions a bit superficial, some others too specialist. Apart the fact that this imbalance is intrinsic of any meeting, it is here important to restate the importance of the phase of the selection of participants who should, beyond their origin, share at least the same objectives and targets. But this was indeed the scope of the Workshop, that is to disseminate and discuss concepts like what

to get in terms of development of CHP and how to reach it, in practice the core of the Roadmap, as presented.

Given the limited time available in one day Workshop (limit moreover indicated in the preliminary contacts during organization of the event) no other additional activity has been planned.

2.4.3. CHP coalition

The idea, launched during the Workshop, to join the efforts to create a heat coalition among all stakeholders active in the field of CHP, falls in a moment when various groups are moving in the direction to establish their own coalition with poor or no coordination at all.

During the Workshop resulted very important to overcome reciprocal differences and interests in order to gain on the field the position of privileged and listened interlocutor in front of the legislator.

It has been underlined by the participants to the Workshop that this coalition could issue as first document a Position Paper in which the stakeholders could acknowledge themselves as bearers of the same problems and interests and indicate concrete actions.

CODE2 Roadmap is considered an important factor of easing this process thanks also to be, as part of an European project, a communication channel with the European authorities and the participants to the project are requested to feel engaged as far as possible to execute this important role of intermediation.

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2.4.4. Site Visit

A site-visit was not possible on the date and at the place of the event. Therefore, the participants will be invited to a separate site-visit in October 2014. The site-visit will take place at a hospital in Milano.

The workshop in Ireland took place on 6th June 2013 at the Guinness Storehouse in Dublin. It attracted 41 participants from public authorities, private industries, energy service companies, universities, and private energy experts.



2.5.1. Main conclusions regarding the Roadmap

Awareness

- ## Payback times

- ## Market opportunities in industry

- Main opportunities in food industry (mainly dairy), Timber processing and especially Pharmaceuticals.

Market opportunities in public sector

- Healthcare
- Schools, sport & leisure

Market opportunities in the residential sector

- Workshop discussions: 200 to 300.000 units would be feasible.

Bio-CHP

- no control of biomass prices, since highly dependent on import

Building a policy vision for CHP

- Need for a CHP champion working on CHP within the Department of Energy.

Obtaining financial support

- Financial support is essential
- should be well targeted and well calculated.
- there will be no more resources available for grants; Instead a combination of feed-in-tariffs and generation tariffs should be considered
- financial constraints should be overcome (e.g. carbon taxes).

Increasing awareness

- Develop general awareness on the role of CHP in energy independence, security of supply, energy efficiency and emphasize the environmental and social benefits.
- Help realise that pay back times are not the only or most important sales argument. Work on publicity and marketing campaigns and emphasise corporate responsibility, social and environmental benefits and energy independence. Make conservation suspicious.

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Developing a framework for district heating

- Next to supporting district heating, there should also be a regulated network for district heating, in analogy with 'Irish water' for the water network, 'BGE' for the gas network.

2.5.2. Lessons learned

Invitation

Timely save-the-date and invitation are highly important; additionally, many stakeholders, especially from the government, were contacted personally; making sure the relevant stakeholder groups are represented is more important than sheer amount of participants

Number of people

The aim of the workshop however is to get feedback on the roadmap. With a group of 40 people this was difficult. We think that 20-25 people should be good.

Especially during the breakout sessions a small number of people per group is preferable.

Agenda

We had the comment that our workshop was more a seminar than a workshop. We had too many presentations and we would rather advise to spend more time on the discussions and working groups.

Breakout sessions

We gave out too many questions (6), and they were not enough to the point. The answers were too long and were difficult to group and use for the further discussion. The aim is to use these answers to start the discussion. The answers are not the aim as such of the sessions.

Roadmap

It would have been better to have a printed version of the roadmap during the workshop for the participants.

Moderator

It would have been better if we had appointed one extra person with no other task to do the final moderation, introduce the speakers, guide the people to the right place.

Feedback

We made feedback forms but forgot to mention this at the end of the workshop and we also forgot a box to put them.

2.5.3. Site Visit

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In Ireland it was a good idea to combine the workshop with the CHP visit. It has an added value for the participants and almost all participants stayed for the visit.

However this worked well because they were at the same location, during the same day and after the visit there was still a drink for the participants.

For us one day was therefore enough, the duration of the presentations and the workshop was long enough, which allowed us to finish the workshop at 4 and do the site visit.

Having a nice location, an interesting visit and a closing drink in a beautiful setting (all in the Guinness brewery) all worked in the advantage of the workshop.

2.5.4. CHP coalition

In Ireland where there was no CHP coalition, people were surprised and happy about the number of participants on this meeting. It was seen as a very good start of a heat coalition, however the main partners should now take the next steps in order to continue the activities. During the breakout sessions, the participants realised the importance of this coalition and foresaw a number of necessary actions.

However, despite numerous efforts, it was hardly possible to engage stakeholders from the government for this workshop. There was little interest from the political side. We consider however the involvement of the policy makers as a crucial part of the coalition. This will be the main challenge of the coalition.

2.6 Slovenia

The workshop in Slovenia took place on 26th November 2013 at the Reaktorski center IJS, Brinje 40, Podgorica pri Ljubljani. It attracted 30 participants from different sectors and roles in the CHP framework in Slovenia, such as Ministry, Regulator, industry, services, district heating, electricity and natural gas suppliers, ESCOs, CHP equipment producers, CHP project providers.



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2.6.1. Main conclusions regarding the Roadmap

Participant's feedback on the drafted Cogeneration Roadmap for Slovenia was very positive as key aspects and identified barriers were approved and further discussed and extended with more precise practical information during the workshop.

Amendment of Energy law

- change of the current Feed-in support model to the limited tender support model. Key goals of new planned support model are:
- Fast design and implementation of new support scheme is the key precondition for new CHP investments
- deep evaluation of support scheme after 4 years suggested

Problems and inconsistencies to be removed, suggestions for improvements:

- Absence of the support for CHP plants older than 10 years
- Introduction of more smooth support level (curve) for the small scale CHP units

- Decrease of current support for medium size CHP units (above 1 MW)
- additional supplement for steam generation
- More flexible approach in the support implementation
- Bonus for emerging technologies would be good
- Decrease of current 12% discount rate in methodology of the reference costs is necessary

Micro and small scale CHP are the most promising cogeneration niche which boosted in the recent three years and will develop further in with the most typical plant size around 50 kWe. Decrease of connection costs and procedure simplification are one of the key aspect for faster progress of micro units.

- Planned tendering procedure is seen critical (additional barrier)
- Introduction of net metering support model is interesting approach also for cogeneration

District heating (DH) CHP is the most developed cogeneration sector in Slovenia as CHP has been recently installed in almost all district heating systems and has more than 75% share in heat supply.

- Participants strongly support proposed setting the heating mode priorities on local and building level as it is crucial for the future development of DHC and cogeneration.

Industry CHP: in spite minimum recent development few very successful projects proved the huge economic potential in industry by recent support conditions. Current financial crises and very high profitability expectations are key barriers for new investments.

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ESCO and CHP contracting (TPF) is getting predominant implementation model for CHP investments, with several new ESCOs providers. Financing the CHP investment by energy supply contracts is more and more used also by project developers and equipment suppliers.

As **participants are not yet acquainted with EED details** presentation on the workshop was very well accepted and participants supported prescribed activities and measures that should follow EED implementation, especially regulatory aspects (simplification of procedures) and comprehensive assessment of potentials and related energy policy measures for CHP.

2.6.2. Lessons learned

The workshop was very successful and highlighted next key issues:

- Lack of information exchange and huge need for linking of CHP actors
- Huge recent CHP market development
- CHP support scheme is prerequisite for further CHP development
- CHP contracting and ESCO services

- CHP Roadmap for Slovenia was well accepted as document summaries and presents the key information on well developing CHP market in Slovenia with key necessary measures to sustain recent development and exploitation of huge existing economic potential for CHP in Slovenia and important contribution to energy, climate and economy targets of Slovenia.

2.6.3. CHP coalition

Workshop proved the strong interest of CHP actors for participation in the CODE2 activities as they coincidence with the reform of CHP support framework in Slovenia where CHP actors would like to be more actively involved and informed.

Next planned steps:

- Preparation of the final roadmap and circulation between workshop participants and other interest audience
- Presentations of the roadmap: articles, events,...
- Discussion of the roadmap with politicians and ministries;

Considering further steps with the aim of setting up a permanent CHP working group.

2.6.4. Site Visit

With regard that all invited participants came from the CHP sector, all workshop time was devoted to presentations and live discussion with participants, the visit of CHP site was postponed to later demonstration event that will be focused to wider CHP interested audience. It will be performed in October 2014 in a research institute in Ljubljana.

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2.7 Poland

The workshop in Poland took place on 4th December 2013 at the Sheraton Warsaw Hotel, Warsaw, Poland. It attracted 21 participants from public authorities, private industries, energy service companies, universities, and private energy experts.



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Poland is in the ongoing process of update of the CHP support scheme where due to the delay in the notification process at DG Competition (state aid) the CHP plants are facing with the gap in the support and high uncertainty for the future support of new CHP units.

There are already two strong very active associations linked to CHP in Poland:

- Polish Association of Professional Heat and Power Plants (PTEZ) / KOGEN Polska and
- Chamber of Commerce Polish District Heating,

both linked in activities supporting mainly prevailing CHP in district heating systems. So the core of CHP coalition is already established and well-functioning, so additional efforts are focused to extend this coalition also to the industrial and small scale CHP aspects in Poland.

2.7.1. Main conclusions regarding the Roadmap

Participant's feedback on the drafted Cogeneration Roadmap for Poland was positive as key aspects and identified barriers were approved and further discussed and supplemented with more precise practical information during the workshop.

Energy policy

- Energy efficiency is key energy policy priority
- cogeneration is important technology with huge realistic market potential
- national CHP goal to double CHP power generation till the year 2030 (compared to 2006)
- Incentivizing the development of cogeneration through support mechanisms (yellow and red certificates) is one of the main measures in place since 2007:
 - By recent Energy law amendment and Bill adopted in January 2013 the CHP support system was extended till the end of 2014.
 - New support scheme is divided to the support of existing CHP units operation (yellow, red and purple certificates) and higher support of new CHP investments (orange certificates). Ministry is well aware of EED obligations and implementation has already started.

District heating (DH)

Poland is one of the most development district heating countries as around 60% of heat supply in towns is provided by DH and more than 15 million people use DH. CHP units supply more than 62% of total annual 400 PJ heat generation, where hard coal has prevailing 74% share. Several actual aspects were discussed:

- Polish chamber of DH has implemented very successful broad marketing program for promotion of DH (important as as customers have free choice in heat mode selection)
- Environmental regulation is increasing district heating operation costs
- 17% share of RES is expected till 2020 (RENEAP) from 6,5% today share
- Huge untapped potential for burning communal waste
- Substantial District cooling potential was assessed

Industry CHP

Current industrial CHP energy generation is based on mid-sized CHP, usually coal-fired plants:

- Total Industrial CHP electricity generation is close to 8 TWh
- Increase of energy efficiency and decrease of operation costs in industry is key policy priority
- Due to obsolete equipment, efficiency of generation is often low
- Natural gas is the best choice for industrial CHP
- Utilizing existing industrial infrastructure and energy demand offers very good opportunity for further development of CHP generation

Micro and small scale CHP have huge prospect for growth in Poland:

- Lack of public awareness, proper support and legislative reasons are key barriers
- Micro CHP could significantly contribute to the stability of the low voltage grid
- Micro CHP is huge economic opportunity for the Polish industry

2.7.2. Lessons learned

The workshop was very successful and highlighted next key issues:

- High level of expert knowledge reflecting from the presenting analysis results and long CHP tradition in Poland are two very important pillars for future CHP *development*
- Strengthening further development of district heating and cooling infrastructure
- Fast European commission notification approval of the updated successful certificate support scheme is prerequisite for further CHP development
- EED implementation which already started in Poland could have several positive effects for future development of cogeneration
- CHP Roadmap for Poland was well accepted and will be updated based on the workshop presentations and discussion and circulated for final approval and remarks to the participants of the workshop.

2.7.3. Next steps

Workshop proved good cooperation of especially large CHP market players in Poland and participants expressed further interest for participation in the CODE2 activities and exchange of actual information from other EU member states and EU policy issues, with special emphasis on EED and State aid regulation.

Next planned steps:

- Preparation of the final roadmap and circulation between workshop participants and other interest audience.
- Presentations of the roadmap: articles, events,...
- Discussion of the roadmap with politicians and ministries.

2.7.4. Site Visit

With regard that all invited participants came from the CHP sector, all workshop time was devoted to presentations and live discussion with participants, the visit of CHP site was postponed to later demonstration event that will be focused to wider CHP interested audience.

3 Summary and conclusions

In an overall assessment, the series of seven national cogeneration workshops proved to be successful, as they ensured

- Active participation of and feedback to the CHP roadmaps from the most relevant stakeholders of CHP
- Involvement of ministry representatives (in most workshops)
- Presentation on and discussion about EED issues and their implementation
- Room for discussion on specific issues or CHP market sectors in break-out sessions

Key success factors were

- Visible role and support of ministerial offices in the organisation (premises at ministry) and the implementation (presentations / speeches) of the workshop
- Thorough preparation of the workshop, according to the established workshop guidelines
- Professional moderator
- Use of feedback and visualisation techniques (flipcharts, cards on pinboards, voting)
- Combination of workshop with attractive location and CHP site-visit opportunity

Goals not fully achieved

- Kick-starting the coalitions for CHP with the workshop proved more difficult than expected; most people are hesitant to quickly commit to a new group which has to find a role between already existing stakeholders
- The combination of the workshop with a site visit on one day only worked in private premises; but this again was contrary to the goal of having the workshop at ministry premises, so there was no perfect choice or solution

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