

Joint Workshop:

Achieving 2030 targets through synergies between energy efficiency and renewable energy

30th & 31st January 2020

Summary of Proceedings

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Contents

1	Background	2
2	Parallel Sessions	3
	2.1 Zero Energy Communities - Unlocking the Potential of Renewables and Energy Efficiency at District Level.....	3
	2.2 The Governance Regulation and How it Interacts with the 3 Directives: Focus on the Interaction between Provisions that Require Coordination and Promote Better Regulation	4
	2.3 Changing Consumers' Behaviour through Information, Incentives and Innovative Services	5
	2.4 National Energy and Climate Plans: Exchange on Implementation, Reporting & Monitoring	5
	2.5 Energy Poverty	6
	2.6 Heating and Cooling Decentralised & District Level Energy and Waste Heat	7
	2.7 Long-term Renovation Strategies	8
	2.8 Energy Efficiency and Renewable Energy Measures – Synergies between EED/REDII/EPBD Implementation to Achieve Targets.....	9
	2.9 Innovative Financing Solutions to Bridge the Investment Gap for 2030	9
	2.10 Smart Buildings in a Smart System.....	10
	2.11 Multiple Benefits of Energy Efficiency and Renewable Energy and How to Account for Them	11
3	Closing session	12
4	Presentations	13

1 Background

The Joint Workshop brought together the Concerted Action for the Energy Performance of Buildings Directive (CA EPBD), the Concerted Action for the Renewable Energy Sources Directive (CA RES) and the Concerted Action for the Energy Efficiency Directive (CA EED). The event took place in Barcelona, Spain on the 30th and 31st January 2020. During the course of the Joint Workshop, over 220 experts, policy makers and implementers gathered to discuss issues related to the implementation of the three Directives in Member States, Norway, Iceland and the UK.

This was the first Joint Concerted Action Workshop, of this scale, to include experts working on three different policy areas: energy performance of buildings; renewable energy sources; and energy efficiency. By bringing together policy makers and implementers from these three groups, the workshop aimed to increase understanding of the different policy areas and help delegates identify the potential synergies in how the three Directives can be implemented.

A key focus was to encourage dialogue between participants, through which they can identify possible cooperation opportunities on these cross-cutting areas and also identify ways to improve the coordination between institutions that implement the Directives.

1.1 Opening plenary session

The Joint Workshop started with an opening address by Maria Laguna, Head of Sector at the Executive Agency for Small and Medium-sized Enterprises (EASME); a recorded video message from Ditte Juul Jørgensen, Director-General of DG ENER, and a welcome speech from Claudia Canevari, Head of Unit, Energy Efficiency: Policy and Financing, DG ENER, all of whom emphasized the importance of cooperation and sector integration in achieving the goals of the Clean Energy for all Europeans package.

As the host country, Juan Groizard, Director General of the Institute for the Diversification and Saving of Energy in Spain (IDAE), welcomed delegates and gave an overview of key policy areas in Spain.



Delegates at the opening session

2 Parallel Sessions

During the Joint Workshop twelve sessions took place, covering a range of topics. This section gives an overview of the key learnings from each of the twelve sessions, as well as the highlights from the discussions.

2.1 Session 1&4: Zero Energy Communities - Unlocking the Potential of Renewables and Energy Efficiency at District Level

The aim of the double session was to highlight areas of collaboration between the three CAs in the context of Zero Energy Communities (ZECs), to share examples of good practices and to identify topics for future joint workshops. To this goal, these sessions were always based on the principle of energy efficiency first and the production of decentralized renewable energy in buildings.

Although ZECs have not yet been formally defined, several Articles in the three Directives guide MS in this area. A key aspect that was highlighted is the need to involve not only communities, but also citizens, since their active collaboration is critical for the success of a ZEC. This can be seen in initiatives by organisations such as RESCoop, who have bought together 1,500 European energy cooperatives with collectively over 1 million active citizen members. The solution proposed involves tackling the issues from numerous different angles, including policy, power sources, buildings and transport.

A key investor in this area is the European Investment Bank who has several instruments to help ZECs grow. For instance, ELENA is an instrument that grants funding to public and private sector organisations which can be used to design schemes, as well as in the early stages of implementation. This is a funding instrument that has been used at the local and national levels and across various sectors and industries with projects including building renovations and low carbon power generation. The work to ensure the link between these schemes and ZECs is ongoing.

The presented examples of work in the area of ZECs included a project in Avedøre, Denmark. Here, citizens wanted to make their city more sustainable, but due to a lack of knowledge, they were unsure of the steps needed. Once the city was given the appropriate tools and ideas, the citizens were able to own the projects and make substantial progress. Similarly, the Scottish CARES Programme is a national project that helps to fill these knowledge and funding gaps amongst communities. CARES is a one stop shop that provides local communities with advice and support (through a Local Development Officer), online tools and financial support to community groups seeking to develop renewable and low carbon projects.



The sessions highlighted that whilst most MS are just beginning to think about implementing ZECs, there is a strong interest in continuing discussion on this topic across the three CAs. Participants saw this session as a good starting point and welcomed more exchange and deeper of collaboration. Some of the key topic areas identified included capacity building on Article 22 RED (legal frameworks and governance, the characteristics of an energy community - definition, legal structure, different models and scales and harmonisation of terminology and definitions). There was also a strong appetite for knowledge sharing on successful approaches to community engagement. Deeper collaboration is needed to overcome implementation challenges for specific cases where integrating the requirements of all the three directives is difficult. Examples highlighted included multi-dwelling buildings, mixed use sites (e.g. domestic and mixed-use offices) and flexibility markets. Participants recognised the need to look beyond 2030 and towards 2050 to ensure an enabling and supportive environment for future innovation in this space.

2.2 Session 2: The Governance Regulation and How it Interacts with the 3 Directives: Focus on the Interaction between Provisions that Require Coordination and Promote Better Regulation

The main objectives of the Governance Regulation are to promote integration of strategic planning and reporting on the implementation of climate and energy policies, multi-level energy dialogue, co-ordination MS, and promote certainty for investors in close relation to the Directives. An integrated, energy systems approach was taken to planning and reporting to take into account the interlinked nature of objectives and measures (the same measure can contribute to GHG, RES and EE targets). Some key connections are the targets for efficiency and renewables being interrelated and LTRS feeding into both the EPBD and EED Directives. Examples of the interlinkages between Directives and the regulation were given with a focus on the key, cross-cutting topics. The implementation of the Governance Regulation and the directives requires breaking silos across policies and sectors, across government departments, with stakeholders and the public, and cross-border. Strengthening regional cooperation is key to the achievement of the objectives in a cost-optimal manner.

MS and the Commission have to provide integrated reporting on how national contributions are delivered. Gaps between implementation and NECPs will be monitored and the EC will publish recommendations for MS based on 2023 progress reports – if there is a delivery gap, national measures will have to be taken or contributions to a financial platform made.

An insight into Germany's strategy was given, with key points on main targets and measures for 2030 and 2050 (NECP, grid expansion, National EE Strategy 2050, Market Incentive Programme for RES heat, EE strategy for buildings), links between governance, EU legislation and national strategies/programs and how monitoring processes have been implemented. A roadmap has been developed which helps establish a dialogue process and ensure the right direction is being taken for 2050. The EE strategy for buildings foresees a gradually raising carbon price for the heating sector. A holistic market incentive programme for renewable heat generation has also been introduced which provides funding for both large- and small-scale projects. Regional cooperation was strengthened with the Governance Regulation and the NECP process, to foster integration of regional electricity markets through the Pentilateral Energy Forum and the North Sea Energy Cooperation.

Denmark presented reflections on the interlinkages between climate, renewable energy and energy efficiency policy and goals. DK developed an integrated energy system e model for then set targets which include electrification and flexibility to achieve their ambitious energy plan. Dilemmas to implementation include: the importance of balancing energy efficiency and renewables (e.g. need to reduce electricity consumption if the source is 100% renewable) and understanding the CO₂ impact of energy efficiency in a renewable based system. Denmark is part of the North Seas Energy Cooperation (NSEC), which creates synergies between national policies and joint approaches.

Potential governance topics for cooperation include regional cooperation (e.g. to facilitate better policy coordination, support cross-border projects or reg. coop. between subnational actors), coordinated implementation of the directives (e.g. coupling policies on RES and EE domains, combining EE and RES measures in buildings e.g. for implementation of LTRS and sector Integration) and Integrated Reporting (e.g. improvement of M&V of policy measures, linkages between GHG emissions reporting and RES and EE reporting overcoming lack of reliable and accurate data and national and EU systems for policies and measures and projections).

2.3 Session 3: Changing Consumers' Behaviour through Information, Incentives and Innovative Services

The session was introduced by outlining the consumer and behavioural change aspect in each directive. In the EED articles 12 (promote behaviour change), 7 (obligation scheme), 10 (billing information and individual metering) and 17 (information and training). In the EPBD articles 20 (information), 10 (financial incentives and market barriers), 11, 12 and 13 (Energy Performance Certificates). In the revised EPBD articles 2a (LTRS), 8 (technical building systems) 14 (inspection of heating systems) and 15 (inspection of air conditioning systems). In the RED articles 18 (benefits and support measures), 24 (share of renewables in district heating), 15 (encourage switch to renewable heat), 21 and 22 (self-consumers and energy communities).

Linda Steg, environmental psychologist from the University of Groningen gave a presentation on human behaviour and its impact on energy related actions. People's values affect their behaviour. Three things are required for promoting sustainable energy behaviour: information, extrinsic motivation (making pro-environmental actions more attractive) and intrinsic motivation (people find it important to act themselves). Eudaimonia is an important concept here – the term encapsulates 'do good, feel good'; acting sustainability feels good because it is meaningful, which provides a positive self-signal, encouraging sustainable energy behaviour. This can be utilised in policy. Both an environmental self-identity (past behaviour is repeated) and involvement in community energy initiatives also encourage sustainable behaviour, as does corporate environmental responsibility (CER). Even people who do not hold strong biospheric values will be influenced to act responsibly if CER is at their place of work. Public acceptability of new policies is influenced by if people think they will benefit (cost benefit analysis), if they are able to input and if they trust the implementing party.

The session leader shared preliminary findings from an ongoing working group of the CA EED on behavioural change. The majority of MS include behavioural science in energy efficiency policy, although it is a minority of this group who do so to a large extent. A minority of MS have experts on behavioural science in the Ministry responsible for energy efficiency, and a majority have expertise at their National Energy Agency. The majority of MS said there are barriers to applying behavioural science in energy efficiency policy design mainly because the topic is perceived as difficult and there is a lack of expertise available.

Karl Purcell from the Sustainable Energy Agency of Ireland (SEAI) presented examples of behavioural insights used in energy policy in Ireland. A strong understanding of behaviour is important for achieving net zero scenarios and in some cases behaviour can trump energy efficient design. Economics say incentives matter, psychology says context matters (e.g. whether people opt-in or opt-out of a scheme), and sociology says culture and society matters (e.g. social norms). At SEAI, the process is: understand how people think about energy, pre-test policy tools and solutions, field-test policy solutions, scale and measure impact, to finally design policy through a behaviourally informed lens. SEIA studies show that people don't know how much energy they use and how they compare to others, or where energy is used in the home. Messaging and timing of communications to consumers matter; SEIA measured the response rate to letters encouraging heat pump uptake with different messaging, finding that exclusivity ('you have been selected') received the strongest response, followed by environmental messaging. However, there was no change in actual uptake of heat pumps. This shows that 'nudging' is often not enough (e.g. halogen lightbulb ban). Understanding why people behave in a certain way helps us to design energy policy that delivers real behaviour change.

The session ended with a participant survey. The majority of participants have little experience in policies concerning consumers. A combined approach on information to consumers on energy efficiency and on renewables is seen in the majority of MS. Topics of interest for future joint CA cooperation include policy design, incentives, renovation, behaviour and climate.

2.4 Session 5: National Energy and Climate Plans: Exchange on Implementation, Reporting & Monitoring

The aim of this session was for participants to share their knowledge and views on the implementation, reporting and monitoring of the National Energy Climate Plans (NECP), creating links across CAs.

The Commission gave an overview of how many MS have submitted their NECP, with attention drawn to the fact that some MS had submitted it without the required annexes, which are important for ensuring 2030 targets will be met. A prediction of how close to meeting the EU27 targets MS are was given based on the submitted drafts and

final NECPs. For energy efficiency, there is still an ambition gap of PEC and FEC of the collective EU27 EE headline target - although this gap is expected to close as all NECPs are submitted. If based on final NECPs there still is a gap in EU27 collective ambition target, the Commission shall propose measures. These will be looked at the same time when scope for actions related to Green Deal will be considered.

Biannually from 15 March 2023, MS will submit reports containing data on policies adopted and the progress made, and it can also inform updates to the NECP. Even targets set cannot be reduced, when applicable, indicative national trajectories for PEC and FEC and indicative milestones of long-term renovation strategies (LTRS) for renovation can be altered, and reported policy measures updated in the reports. MS need to submit these biennial reports via e-platform which will be provided by the Commission in due time.

Currently, the average rate of renovation across the EU was said to be around 1% which is too low to provide a fully decarbonised building stock by 2050. Consideration was given to how LTRS integrates into NCEP while a majority of MS will submit their LTRS according to the EPBD dead line by 10 March 2020. The LTRS should contain indicative milestone for 2030, 2040, and 2050 of the national stock of residential and non-residential buildings, as well as consider many other aspects among energy poverty, split-incentives, skills, and the implementation of smart technology. MS were encouraged to consider links in their policies where RED II, EED and EPBD could together to form a coordinated response.

Groups discussed to what extent the NECP forms part of or contributes to the national energy and/or climate strategy and how MS benefit on a national level from the NECP exercise. There was consensus that the NECP increased collaboration between different ministries and other parties and this was beneficial as cross-cut initiatives emerged, such as storage and infrastructure. In some MS the NECP was compiled from current energy and climate strategies, while in others the NECP allowed for the mobilisation of resources and became the energy and climate strategy - enabling countries to develop new policies. In some MS it was also mentioned that requirements in NECP helped to improve the development of modelling tools.

Most participants agreed that it was useful to discuss the NECP at a joint workshop and that future topics could include topics like monitoring schemes under different obligations, links between NECP and LTRS, consistency of material and energy efficiency policies, and other focused cross-cutting issues.

2.5 Session 6: Energy Poverty

The Articles relating to energy poverty are Art. 7(11) under the EED, Art 2(a) under the EPBD and Articles 21(6a) and 22(4f) under the RED. The objective of the session was to assist MS in the implementation of the three directives by giving insights into energy poverty in the EU, examples of measures to fight energy poverty and discuss ways to reach out to energy poor households.

Paula Rey Garcia from the European Commission gave an overview of the challenges related to energy poverty and the requirements of the different directives. In Europe, 50-125 million people are unable to afford proper indoor thermal comfort. This is due to low finances, high energy use, non-efficient appliances and poor performance of buildings. Recommendations include a focus on long-term prevention, investing in measures and making them available to target groups in building renovation schemes, providing accessible information and empowering consumers. The Clean Energy Package includes several energy poverty provisions as do all energy directives and the Energy Union Governance Regulation (see presentation for details). The Commission concluded that energy poverty levels are on the rise across the EU, there is a lack of reliable data at the MS level, and weak policy transfer from successful programmes.

Paolo Bertoldi from the JRC at the European Commission gave examples of energy poverty measures in the long term renovation strategies (LTRS) under EPBD: French national housing agency programme 'Habiter mieux' and the Irish Warmth and Wellbeing scheme. Policy considerations include incorporating specific measures in energy efficiency obligation schemes, targeted subsidies and attention to distributional impact of current energy efficiency policies and the rebound affect after implementation (possible increased energy consumption). Not all energy efficiency policies work well for reducing energy poverty, and most have focused on heating – cooling should not be forgotten as an issue. More policies are expected at the local level, as energy poverty is now a key pillar of the Covenant of Mayors.

Roel Vermeiren from the Flemish Energy Agency presented measures to combat energy poverty used in Flanders, Belgium. In Flanders, 1 million homes don't meet the minimum requirements of the Flemish Housing Code. Research

shows a high number of instances where rent increases after limited renovation, creating affordability problems. The LTRS goal of 2050 (high energy efficiency and fossil free building stock) means 90-95% of the stock needs renovation, and that 3% will need to be upgraded to energy performance level A each year. The poor must be included this transition using targeted energy efficiency measures, which in Flanders include free domestic 'energy scans' (receive energy advice in the home), higher grants, energy loans and dedicated services in the form of local energy houses. The Energy Poverty Program as part of the LTRS demonstrates the importance of this issue to the political level.

Roundtable discussion topics were definition of energy poverty, renovation, energy poverty strategies, measures to combat energy poverty, potential partners to reach out to energy poor households, key success factors in communication with energy poor households, the link between energy efficiency and improved health and opportunities for renewable energy communities to help tackle energy poverty.

Topics for future cooperation were identified through a quick online participant survey and include good practices to fight energy poverty, definition, financing of measures, social housing, education and energy poverty related to transport.

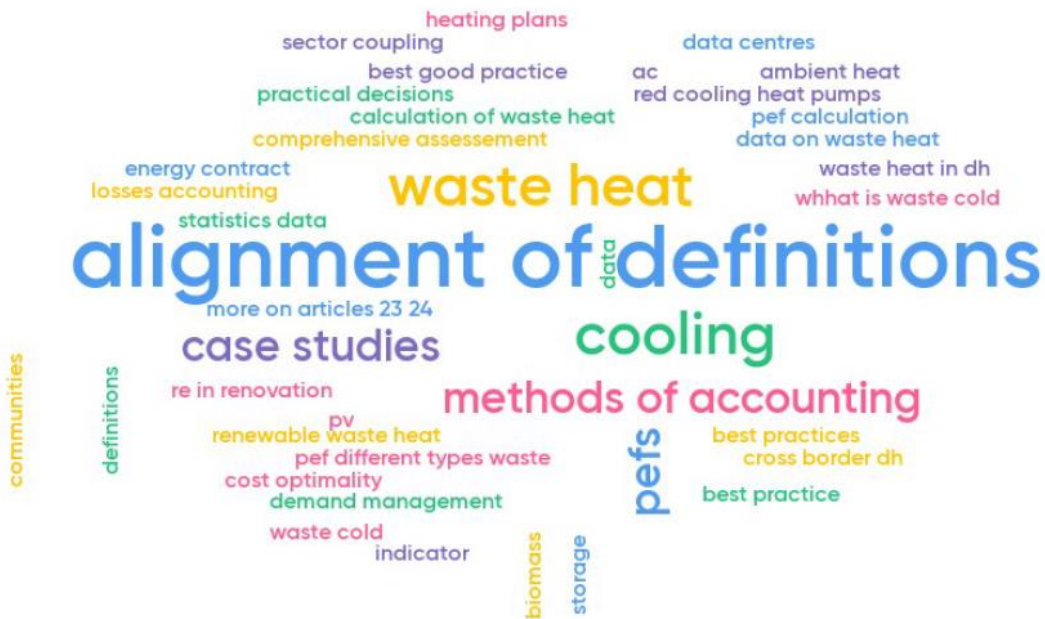
2.6 Session 7: Heating and Cooling Decentralised & District Level Energy and Waste Heat

The aim of this session was to discuss waste heat in the context of the three Directives including its definition, its impact and its potential implementation paths.

The definition of waste heat was given by DG Energy and taken from REDII as "unavoidable heat or cold generated as a by-product in industrial or power generation installations or in the tertiary sector, which would be dissipated unused in air or water without access to a district heating or cooling system". Some of the sources identified included industrial sources such as factories, heat taken from power generation, waste incineration and cooling systems. It is important to note that waste heat does not count as renewable for overall targets though it can contribute to heating and cooling (Art. 23 REDII) and district heating and cooling targets (Art. 24 REDII) up to 40% and 100% respectively and in the minimum RES level in buildings (Art 15(4) REDII) through efficient district heating and cooling as well. Waste heat can play an important role in factors such as primary energy and greenhouse gas however DG Energy is in the process of finalising guidelines for how these should be calculated when using waste heat.

A presentation on the EPBD showed how cost optimality is used to achieve nearly zero energy buildings in MS Building Codes. This process of finding the most cost-effective way of minimising energy use in buildings has now been used by all MS. Due to MS setting targets in different ways, the way nearly zero can be achieved varies; either as a trade-off between energy efficiency and using renewable energy or as requirements for both. For example, it is possible to set a primary energy target along with a minimum level of renewables, set a maximum amount of fossil fuel energy use or to set a total emissions target. These various targets can mean solutions, including those using waste heat, vary across MS. As stated above, one of the difficulties with waste heat is to ensure correct accounting in terms of primary energy and emissions. The Netherlands explained how renewable energy and waste heat can contribute towards the required minimum level of renewable energy. Waste heat can only be included if delivered through a district heating grid. Energy sources not attached to the building can only be included in the calculation of the energy performance of a building if there is a direct connection. It was shown that this methodology is already used and how the quality of the information is checked.

Participants indicated a strong desire to discuss heating and cooling topic further at future joint workshops with some key topic areas including alignment of definitions, methods of accounting and case studies.



2.7 Session 8: Long-term Renovation Strategies

The session gave an overview of what are LTRS, how they interact with the EED and RED, and how the 2020 implementation could consider the new impetus from the Green Deal. An insight was given into the theory behind LTRS. Most member states updated their strategies for 2017. With the introduction of the green deal, the long-term vision will become even more important, with countries having to include 2030 and 2050 milestones in their strategies. The alleviation of energy poverty is also an important factor as it is considered important to make sure renovation doesn't lead to an increase in energy poverty. A holistic view considering issues beyond just energy efficiency was taken by several MS, who provided examples of wider benefits, good practices on RES in buildings and how these interact with the three directives. ESCOs were identified as an important model for the renovation of buildings, social housing especially. Examples of financing measures were also provided by MS as financing was suggested to be the biggest barrier to LTRS; the solution might be national or regional funding such as grants or loans with low interest being awarded to buildings with improved energy efficiency ratings.

An in-depth analysis was presented on how the 2020 Spanish LTRS is currently being developed. Inter-ministerial working groups were formed for the coordination of the national energy plan and the decarbonisation of energy, as well as an intensive public consultation process organised jointly with the Spanish Green Building Council. A special challenge is the differentiation of the Spanish LTRS according to the climate zones and thus totally different optimal renovation strategies on a regional level. Solar thermal and PV systems play a major role in the LTRS, with a new self-consumption regulation creating synergies between RED and EPBD. New measures are being discussed, including providing free solar (+heat pump) kits to energy poor households, combining a "book of the building" with EPCs and building evaluation reports and using the EED national efficiency fund for the PAREER II programme, which finances energy retrofits with grants and loans, defines minimum efficiency requirements and rewards social housing, better energy efficiency and integrated actions.

Finally, several experiences collected by BPIE were shared in developing LTRS alongside MS. These gave ideas on who should actually be involved in LTRS; how it should be distributed on a government level with clear responsibilities; and on how RED, EED and EPBD reporting duties could be amalgamated. A special challenge is the allocation of resources to collect data on the building stock. The combined development of the LTRS with measures for central government buildings can save time and stimulate additional ideas. Also, the LTRS could trigger approaches to leverage private financing, to support aggregation and the supply of a guarantee fund supporting local financing institutions to lower their financing risk. This led into the discussion that revolved around how to improve the building stock modelling and data acquisition and how user behaviour changes as buildings become more efficient.

More and more MS are recognising that a good LTRS requires a successfully balancing efficiency and renewable energy with knowledge, experience and data coordination at different levels. It also requests locking down the vision; skills at all levels; modelling metrics for measuring progress and a monitoring methodology; mechanisms for updating and correcting the strategy; awareness of citizens and cost allocations. Finally, there is a need for combining public and private investments.

2.8 Session 9: Energy Efficiency and Renewable Energy Measures – Synergies between EED/REDII/EPBD Implementation to Achieve Targets

The session opened with a presentation by the European Commission on synergies between the 3 directives (RED II, EED and EPBD), highlighting especially the RES measures in EED (Art. 7) and RED II (Art. 23), and how, by working together, they can strengthen the achievement of targets at both EU and MS levels. The presenters stated that the achievement of objectives should be ensured through coherent national policies and synergies.

Under RED II, MS are to achieve an annual average 1.3%-point increase in renewable heating and cooling in the period of 2021-2030. MS must ensure accessibility of measures to all consumers, particularly low income, vulnerable consumers. EED Art. 7 links to RED II Art. 23 through small-scale RES measures that can count to saving obligation according to EED Annex V 2.e, such as carrying out an oil boiler replacement with a gas-solar hybrid package. Incentives to make use of all means and technologies to achieve cumulative final energy savings should be utilised, including promoting sustainable technology in efficient heating and cooling systems and infrastructure and energy audits or equivalent management systems.

Under EPBD, reducing energy demand can also improve building performance. Buildings affect RED II in Art. 15, 21 (self-consumers), 22 (renewable energy communities) and 23 and 24 (district heating and cooling systems). The long-term aim of the directives is to decarbonise the building stock, using both on-site and off-site renewables.

RES and EE policies and schemes may be combined, allowing them to be implemented by the same actors, and often reported in the same reporting, though data and calculations can vary. Under the Green Deal, the EC is creating a sector integration strategy; EE and buildings will have a role to play in this, with home storage of energy and water playing a key part. The use of RES is encouraged in conjunction with seeking energy savings from the building envelope and its technical building systems. Financing measures can be used for building integrated RES as they are part of the building's energy performance under EPBD and building renovations are necessary for both.

A representative from Croatia provided a case example on the synergy of RES and EE measures in their current implementation. Croatia aims to fulfil the target of Art. 7 half by using energy efficiency obligation scheme and half by alternative measures including energy renovation of buildings and transport. Achieving energy savings in final energy consumption involves investing in measures for improving end-use sector EE including small scale RES, purchasing energy savings from third parties, or paying fees into an EE fund. Especially in programmes for energy renovation of buildings, using RES is not only eligible but additionally supported, which also contributes to the achievement of nZEB standard in energy renovation and decarbonisation of building stock in line with EPBD.

Participants discussed what possible concrete synergies they have found working together in EED, RED II and EPBD implementation and whether MS have concrete plans to use EED Art. 7 in RED II Art. 23 implementation. Through a quick participant survey, after information given in the session, the majority (40) of responded participants (51) saw more opportunities to implement RES in collaboration with EE and thought it would be useful for CAs to work on synergies in future on more specific topics. Unsurprisingly, the favourite concrete topics listed by participants (46/82) to be covered in future are related to monitoring, reporting, calculation methodologies and best practices, in addition to transport and renovation.

2.9 Session 10: Innovative Financing Solutions to Bridge the Investment Gap for 2030

The aim of this session was to increase the understanding of common issues and solutions surrounding finance, with a focus on smart finance, across the three Directives and across MS.

Financing solutions are recognised in all three Directives as important factors in delivering the objectives of the three Directives and are therefore mentioned in several Articles. However, there is currently an estimated gap of around €260 billion per annum to meet the 2030 targets. To help close this gap, public and private financing is needed, with

an emphasis on the latter. The European Green Deal Investment Plan will provide around €500 billion from the EU budget, which is intended to trigger investment from the private and public sectors to bring about a total of at least €1 trillion. Some of the instruments that will be used to deliver this include, the InvestEU fund, the Modernisation fund and Taxonomy. These all have different mechanisms and requirements, but it is hoped that through EU investments, other private organisations will also be encouraged to invest. A key barrier is recognised as being the lack of knowledge of these schemes, which will need to be overcome through combined efforts by the EU, finance, private and public sectors as well as industry. A key investor in these schemes is the European Investment Bank which aims to provide at least 50% of its financing into climate action and environmental sustainability projects by 2025, as well as phasing out investment into fossil fuel related projects. Current investments cover a broad range of projects including building renovation and low carbon power generation.

The Energy Efficiency Financial Institutions Group discussed the solutions they provide to help industry, services and public sector act. A barrier found is that there is often little knowledge on which projects or solutions to implement. To help with this, a database of over 10,000 projects with various data points called the De-risking Energy Efficiency Platform was created. This allows users to select project types to see the outcomes they might expect to see if they were to do similar work.

Work presented by GNE Finance showed that technical assistance, affordable financing and smart funding are all required to achieve the trust to renovate and this combination is being used in a H2020 project called EuroPACE. This enables homeowners to have access to finances along with the assistance on how to best utilise the funding.

All in all, different financial mechanisms are needed to reach the targets set in the three Directives, and to achieve the 2030 targets. Most participants agreed that this was a useful area to discuss at future joint workshops and that topics to discuss include for instance, households, blended finance, grants, smart finance and crowdfunding.

2.10 Session 11: Smart Buildings in a Smart System

Smart Buildings are increasingly becoming a reality. The digitalisation of the energy system is quickly changing the energy landscape, from the integration of renewables to smart-ready buildings and smart grids. The decentralised generation of energy from Renewable Energy Sources (RES) is strongly increasing and in order to ensure balance between intermittent energy generation and demand, the development of the energy flexibility in overall smart energy systems is necessary. Smart grids can provide new tools and enable new challenges in grid and energy market management. In this context, Smart Buildings can have a key contribution in decarbonising buildings by providing energy flexibility to match intermittent renewable supply and demand, as well as playing a central role in improving the efficient use of energy.

This joint session was the first on this topic, attended by participants of the Concerted Action EPBD, EED and RES. Of those participants, 75% usually attend EPBD meetings, 31% EED and 15% RES, while a quarter of the attendees follow two or even three CAs. Most participants already had a basic or even a good knowledge of this topic.

The session highlighted that many concepts regarding smart are being discussed. Some of these concepts are smart homes, smart technologies, smart ready systems or smart meters. It appears that there is no clear definition of exactly what smart means which can complicate the definition of the exact scope of the discussions. However, proposals for a definition exist outside the legal framework. The main and most important characteristic of these systems is that they can communicate and exchange information in a digitalized context to optimize the building performance and energy use.

The first keynote by the European Commission gave an overview of the legal references to smart in the three directives, as well as the connection and the possible collaboration areas between the three CAs. The second keynote addressed the topic of the smartness of the built environment on building, district and city scale. A part of the discussion was focussed on the possibility of enlarging the scope of the regulation from the building to the district, or even to the city level, and how this could be done.

The participants generally recognised that smart technologies could be a key element for some aspects of the energy system of the future (22%) or could even be essential platform to make the connection between all levels of this system. 14% of participants thought that the role of smart technologies is not clear yet and should be further investigated.

Furthermore, according to the participants, the primary barriers to the roll-out of smart technologies in the context of the transition to a smart energy system are related to user acceptance (22%), cyber-security and privacy issues (17%) and the interoperability issues (15%).

Finally, the participants identified future possible collaboration areas for the three CAs related to this topic. The most popular collaboration areas were: overcoming barriers for the roll-out of smart technologies, how to integrate the smart aspect into regulations and what can be the role of smart on energy generation, transport, distribution (grid) and consumption including flexibility and vehicle-to-grid aspects.

2.11 Session 12: Multiple Benefits of Energy Efficiency and Renewable Energy and How to Account for Them

A representative from RAP gave a presentation on the importance of multiple benefits (MB). Renewables and energy efficiency (EE) are the main 'decarbonisation weapons' – it's therefore a beneficial relationship that EE helps meet renewables targets and vice versa. The EU28 average shows that the energy grid is becoming cleaner. Renewables and EE also require the support of each other in order to achieve high levels of penetration, particularly in buildings. Electrification of the grid also holds potential benefits – consumers saving money, emissions reducing, and grid benefits. The IEA study is a good source of best practices, tools and examples of assessing MB (<https://www.iea.org/reports/multiple-benefits-of-energy-efficiency>).

A representative from COMBI H2020 (<https://combi-project.eu/>) presented a project overview, practical applications and tools of MBs, the relevance of multiple impacts of decarbonization in policy making and evaluation, an overview of available tools and resources, and how COMBI helps compliance with the directives. COMBI calculates and operationalises the multiple benefits of EE in Europe, using common framework scenarios and extended cost-benefit analysis (CBA). 32 quantified impacts are measured, under the headings of air pollution, resources, social welfare, macro economy and the energy system. The project developed 21 'energy efficiency improvement (EEI) actions', with a focus on buildings, transport and industry, as this is where 80% of EE potential lies. Taking all EEI actions results in 1647 TWh/year energy savings and 360-500 Mt CO₂ eq/year carbon savings, with multiple benefits within the previously mentioned headings. The CBA shows that energy savings alone outweigh the cost of implementation, and multiple benefits add to this. Recommendations are to increase inter-departmental cooperation and include multiple impacts in policy evaluations. Renewables have not been so thoroughly assessed, and the MB linkages between EE and renewables are not currently widely explored – Scotland, who also presented, are endeavouring to do this in their climate action plan. There maybe a follow up COMBI project which will provide tools to account for MB.

There were then discussions and a participant survey exercise.

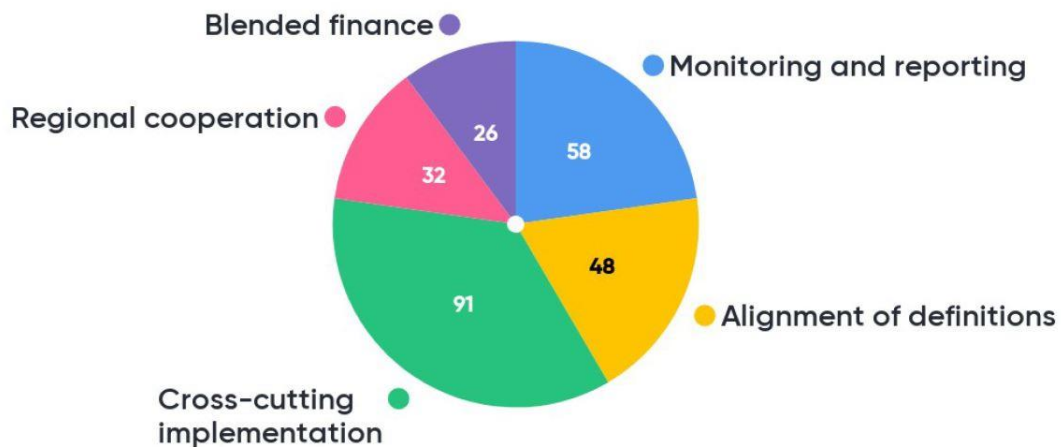
- Two thirds of participants were aware of MB or have experience in addressing them. The majority of MS had not looked at MB, although it was not a large majority.
- When asked to name a MB, common answers were health, comfort, energy savings, productivity, job creation and indoor air quality.
- 18 participants stated they have examples of addressing MB, and 4 specifically have projects addressing MB (Germany, Spain, Ireland, Cyprus).
- When asked what they require to consider MB in policies; methodologies/tools, funding/resources and evaluation mechanisms were common suggestions
- Desired future topics include case studies, methodologies, evaluation, communication, cooperation and good practices. Most MS are aware of the benefits of MB but need support to be able to account for it properly.
- Participants were encouraged to consider MB in their NECPs – a good suggestion from the audience was to consider the one or two extra pieces of data to collect when developing projects/surveys/evaluations/M&V etc. that could enable MB to be accounted for.

3 Closing session

The closing plenary session included concluding remarks from Julien Guerrier, Director of Executive Agency for Small and Medium-sized Enterprises (EASME) and the three Concerted Action Coordinators, Lucinda Maclagan (CA EED), Jens Lausten (CA EPBD) and Leonardo Barreto-Gomez (CA RES), who shared their highlights from the two days and thanked the participating Member States, the external experts and the Commission for their high quality contributions. All welcomed the expansion of the Concerted Action network and hoped that the cooperation continues in the future.

The session ended with a quick online participant survey to identify topics for future cooperation. The results showed that cross-cutting implementation and monitoring and reporting were voted the highest, followed by alignment of definitions, regional cooperation, blended finance.

Common topics were identified for 3CA cooperation?



 120

4 Presentations

A number of presentations were delivered during the sessions from Member States representatives, external experts and the Commission. Some of the presentations are available online and can be downloaded by using the links in this section.

Session 1&4: Zero Energy Communities - Unlocking the Potential of Renewables and Energy Efficiency at District Level

[Zero Energy Communities Session Introduction](#) - Emilie Carmichael, Energy Saving Trust

[Unlocking the Potential of Renewables and Energy Efficiency at District Level](#) – Dinis Rodriguez, EIB

[Zero-energy communities](#) – Eva Hoos, DG ENER

[Community Energy in Scotland](#) - Community Energy in Scotland – Craig Egner, Scottish Government, UK

[Towards Zero Energy Communities](#) - Stephan Krabsen, European Green Cities

[A view to 2050](#) - The fully integrated, optimised and carbon neutral district - Erik Christiansen, REScoop

Session 2: The Governance Regulation and How it Interacts with the 3 Directives: Focus on the Interaction between Provisions that Require Coordination and Promote Better Regulation

[Governance Regulation Session Introduction](#) - Shruti Athavale, Leonardo Barreto, AEA

[The Governance Regulation and how it interacts with the 3 Directives](#) - Johann Duvigneau and Katrin Rosendahl
Federal Ministry for Economic Affairs and Energy, Germany

[Reflections on Interlinkages](#) – Peter Bach, Danish Energy Agency

Interaction between the three Directives under the Governance Regulation - Antonio Lopez-Nicolas, DG ENER

Session3: Changing Consumers' Behaviour through Information, Incentives and Innovative Services

[Changing Consumers' Behaviour Session introduction](#) - Anette Persson, Päivi Laitila, Adrianna Threpsiadi

[The human dimension of the energy transition](#) - Linda Steg, University of Groningen

[Applying Behavioural Economics](#) – Karl Purcell, Sustainable Energy Authority of Ireland

Session 5: National Energy and Climate Plans: Exchange on Implementation, Reporting & Monitoring

NECPs: Implementation, Reporting, Monitoring - DG ENER

Session 6: Energy Poverty

[Energy poverty Session introduction](#) - Anette Persson, Swedish Energy Agency

[Energy Poverty Policies and Measures in 2017 LTRS](#) - Paolo Bertoldi, JRC

[What is energy poverty and how can it be addressed](#) - Paula Rey Garcia, DG ENER

[Measures to combat energy poverty in Flanders](#) - Roel Vermeiren, Flemish Energy Agency, Belgium

Session 7: Heating and Cooling Decentralised & District Level Energy and Waste Heat

[RES Heating and Cooling in building codes Session introduction](#) – Stane Merse, Jozef Stewfan Institute

[Waste heat in the context of REDII, EED and EPBD](#) - Eva Hoos, DG ENER

[New building CODE for NZEB](#) - Jens Laustsen, CA EPBD

[Requirements for waste heat and renewable heat delivered by district heating](#) – Lex Bosselaar, Netherlands Enterprise Agency

Session 8: Long-term Renovation Strategies

[Long-term renovation strategy Session introduction](#) - Martin Pehnt, ifeu

[Advances in the national LTRS](#) - Eduardo de Santiago, Ministry of Transport, Mobility and Urban Agenda, Spain

[Assessment of the 2nd MS Long-term Renovation Strategies](#) – Paolo Bertoldi, JRC

[Recent Long-Term Renovation Strategy experiences](#) – Ivan Jankovic, BPIE

Session 9: Energy Efficiency and Renewable Energy Measures – Synergies between EED/REDII/EPBD Implementation to Achieve Targets

[Synergy of RES and EE measures-Role of RES in EED art 7 target delivery](#) – Vesna Bukarica, Energy Institute Hrvoje Požar, Croatia

Using Synergies Between the Three Directives to Achieve Targets - DG ENER

Session 10: Innovative Financing Solutions to Bridge the Investment Gap for 2030

[Innovative Financing Solutions to bridge the investment gap for 2030 Session introduction](#) - Päivi Laitila, Motiva Oy

[Smart Finance and sustainable investments to achieve climate targets](#) - Joanna Ziecina, Paula Rey Garcia, DG ENER

[Smart Financing possibilities for energy efficiency and renewables](#) – Dinis Rodriguez, EIB

[Boosting investments for sustainable energy use](#) – Peter Sweatman , EEFIG

[Accelerating sustainable home renovation](#) - Kristina Klimovich, EuroPACE

Session 11: Smart Buildings in a Smart System

Smart buildings in a smart system Session introduction - Xavier Loncour

Smart building in a smart system - Pau Garcia Audi, DG ENER

Smartness of the built environment on building, district and city scale - Doris Osterreicher, Boku

Session 12: Multiple Benefits of Energy Efficiency and Renewable Energy and How to Account for Them

[The relevance of multiple impacts of decarbonization in policy making and evaluation](#) - Nora Mzavanadze, Wuppertal Institut

[Reflections on Scotland's Approach](#) - Yvette Sheppard, Scottish Government, UK

[Multiple Benefits of Energy Efficiency and Renewables](#) - Sam Thomas, RAP

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The Concerted Action for the Energy Efficiency Directive (CA EED) was launched in 2013 to provide a structured framework for the exchange of information between the 28 Member States and Norway during their implementation of the Energy Efficiency Directive (EED). Since spring 2017, the CA EED is funded by the European Union's Horizon 2020 in its second phase.

For further information please visit www.ca-eed.eu or contact the CA EED Coordinator Lucinda Maclagan at lucinda.maclagan@rvo.nl



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The Concerted Action to support the implementation of the RES Directive 2009/28/EC (CA-RES) was launched with the participation of the responsible authorities from 30 EU countries and supported by Intelligent Energy Europe (IEE) in July 2010 to provide a structured and confidential dialogue on how to address the cost-effective implementation of the RES Directive 2009/28/EC.

For more information please visit www.ca-res.eu or contact the CA RES Coordinators Leonardo Barreto at Leonardo.Barreto-Gomez@energyagency.at, Anna Kassai at Anna.Kassai@energyagency.at or Shruti Athavale at Shruti.Athavale@energyagency.at.



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The Concerted Action for the Energy Performance of Buildings (CA EPBD) aims to contribute to the reduction of energy use in European buildings, through the exchange of knowledge and best practices in the field of energy efficiency and energy savings between all 28 EU Member States plus Norway. The first phase launched in 2005; the current fifth phase aims to transpose and implement the EPBD amended Directive 2018/844/EU.

For more information please visit www.epbd-ca.eu or contact the CA EPBD Coordinator Jens Lausten at jens.lausten@live.com.



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