CONCERTED ACTION
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1. Introduction

The implementation of core EPBD requirements has been supported by a range of national policies and measures, such as awareness raising and information programmes, energy advisory services, training and up-skilling programmes for various professional profiles, financial incentives, and advanced financial mechanisms. The MSs' long-standing experience in implementing such measures shows that many support policies work best when combined into policy packages. This is why the EPBD focusses on a holistic policy approach through its articles on finance and on information (Articles 10 and 20).

The policies supporting the EPBD's central articles address the implementation of minimum requirements in new and existing buildings, energy performance certification and recommended cost-effective measures, cross-linking of certification and inspections, as well as financial incentives for the major renovation of existing buildings and for the construction of NZEB.

This report covers the various policy packages that MSs have put in place over the period of 2015-2016 to support the EPBD implementation. These are often developed around financial incentives from EU and national funding, with the common target to increase the comprehensive renovation of existing buildings (at cost-optimal level or beyond) and to facilitate early construction of NZEB. Equally, information programmes are an important EPBD policy support measure, dedicated to owners and tenants of buildings in order to help them better understand and benefit from the EPCs and inspection reports, improve building energy performance in cost-effective ways, and have better access to financial instruments.

2. Objectives

2.1 Financial incentives as part of EPBD implementation

Article 10 of the EPBD states that MSs shall take appropriate steps to consider the most relevant financing and other instruments to catalyse the energy performance of buildings and the transition to NZEB. MSs shall take into account the effectiveness of use of structural funds, EIB and other public funding, as well as coordinated EU and national funding. Cost-optimal levels (or beyond) must be considered when incentives for construction and major renovation are provided. The objective of the Cross Cutting Team Policies and Implementation is to look into different experiences of MSs having successfully implemented such financing mechanisms; in particular the ones supported by a holistic set of policies addressing the main market barriers to the deployment of investments in buildings energy renovation and early compliance with NZEB standards.

2.2 Information Activities

Article 20 requires MSs to take the necessary measures to inform the owners or tenants of buildings and building units of different methods and practices leading to enhanced building energy performance. This includes the effective sharing of the information available in EPCs and inspection reports, as well as provision of the information on cost-effective ways to improve the energy performance and available financial instruments for energy renovation. The objective of the Cross Cutting Team Policies and Implementation is to identify best practices in MSs in holistic information policy packages for building owners and tenants, as well as to collect ideas for more effective measures in this field. Guidance and training of relevant stakeholders in MSs is also part of Article 20, in particular regarding the optimal combination of improvements in energy efficiency, the use of energy from RES, and the use of district heating and cooling when planning, designing, building and renovating industrial or residential premises. Cross Cutting Team Policies and Implementation's objectives are to collect and evaluate MSs' experience in the above fields and stimulate the development of new ideas based on the exchange of opinions from MSs.

3. Analysis of Insights and Main Outcomes

3.A. Analysis and insights

3.A.1 Financing based on structural funds

The analysis of financial incentive programmes from EU and national sources, and their effective implementation for increased building energy efficiency in MSs was a complex process that required the involvement of the national representatives with a holistic view on the implementation of the EPBD and its connections to building related provisions in the EED (Directive 2012/27/EU). The European Structural and Investment Funds (ESIF) are financial tools for the implementation of the European Cohesion Policy. The aim of the Cross Cutting Team Policies and Implementation was to create an insight into the use of these funds in MSs for the improvement of the energy performance of the EU building stock. The European Commission indicated that this type of financing is not being used equally in all MSs to leverage the

potential for energy efficiency actions in the building sector, though the overall investment in the low carbon economy under the Cohesion Policy financing for the period 2014 – 2020 has doubled compared to the 2007 – 2013 period. Access to funds requires compliance with the EPBD and technical guidance documents linked to EPCs and to these funds.

After an evaluation of the success of the 2007 – 2013 programme period, 2014 – 2020 marks the transition from grants to investment-based mechanisms. The Cohesion Policy exists to ensure better access to existing funding (mobilisation of investment). MSs select and implement projects with private co-funding. This has not always led to successful results in all MSs, as there are wide ranging needs and challenges that are different in each country. Against this background, the aim of the analysis carried out by the Cross Cutting Team Policies and Implementation was to get an insight into the situation and see why financing based on structural funds is not used more often. MSs representatives discussed the following topics:

- types of buildings (i.e., public, social housing, other non-residential) that are subject to financing from structural funds in a particular MS;
- criteria and awarding methodology in the calls for tenders (for optimum use of available funding for energy efficiency in buildings);
- capacity of the public and private investors to apply for funding (of projects in the pipeline);
- monitoring of the achieved results (actual vs. planned building energy performance after renovation).

MSs delegates indicated that the Cohesion Policy funding is a very complex system and that it is difficult to obtain a comprehensive overview of the financial instruments at national level. In general, there was low awareness of other available sources of EU funding. EPBD experts from MSs stressed the importance of permanent sharing of information about funding options, financing criteria and funding rules in a particular MS. Capacity building of public and private investors is essential for the successful applying for funding from ESIF, and for the correct implementation of building energy renovation projects. It was felt that there was often a high degree of complexity involved during the tendering process. Tenders may be of a variable quality, and conditions for funding can restrain potential investors. Overall, professional support to public authorities seems necessary for a successful application.

Monitoring was a topic that engaged most of the participants during the Cross Cutting Team Policies and Implementation sessions, i.e., the advantages of different types of monitoring, reasons for non-compliance, e.g., change and variation in use, occupants' behaviour and the rebound effect. Penalties for not achieving savings as planned were discussed, but a general opinion was that such rigorous measures would not lead to the desired outcomes, while some other activities may act as motives for meeting the expected energy savings (i.e., exchange of best practice, neighbourhoods competitions in energy savings, retrocomissioning, etc.). Checking that the works have been carried out to an agreed standard was seen as valuable by all participants and would be more straightforward to implement and regulate.

Highlights of 3.A.1	• Capacity building of the public and private investors is essential for successful application under ESIF. • Call for tenders procedures are demanding (for developers and applicants) and need professional support. • Further coordination is needed between different national administration levels distributing public funds for energy efficiency.

3.A.2 Policy packages for existing buildings

Policy packages supporting the implementation of EPBD provisions on investments in energy renovation and early NZEB differ for public and residential buildings. Each group of buildings is characterised by specific needs and opportunities that must be considered in the development of MSs tailored policies and measures.

3.A.2.1 Public Buildings

Public buildings are required to meet ambitious energy efficiency targets and are subject to a 3% annual renovation objective if owned and used by central governments, as defined in the EED[1]. As such, they should play the role of best practice examples for other sectors, in particular as regards the obligation to display EPCs. In addition, they are eligible for Cohesion Policy funding in many MSs.

The focus of MSs delegates in the Cross Cutting Team Policies and Implementation was to look for national examples of policy packages, to discuss and compare them, as well as point out their successful elements, related to risks and threats, and mitigation actions.

A change of ownership (and/or use) in existing public buildings occurs less frequently than in residential and other tertiary sector buildings; therefore, effective policy packages address existing public building owners, building managers and users. Policy packages in public buildings aim to stimulate investments in deep/NZEB renovations and to generate more effective building operation (including enhanced energy efficiency). MSs representatives gave special attention to schools and heritage buildings, and discussed relevant strategies through presentations of case studies:

- The Croatian case combined the use of the European Regional Development Fund (ERDF) and Cohesion Fund for the renovation of public buildings. To facilitate the use of the funding schemes, two pilot projects were developed, one for the preparation of detailed design documentation for energy efficiency and RES measures in buildings, and the other for the investment in energy renovation of school buildings. Two specific pilot projects were launched in 2015 and, out of 240 applications, 12 pilot projects were selected for funding (5 for design documentations and 7 for investments in schools).
- The Slovenian approach consists of a positive discrimination for public heritage buildings in the screening of applications for funding under the Cohesion Policy. Namely, heritage public buildings are numerous and have a large energy savings potential. On the other hand, they are usually treated as exceptions under the EPBD and, if the energy efficiency measures are acceptable from a conservation point of view, such buildings may not easily meet technical and economic thresholds for support under EU structural funds. The Slovenian policy package covers guidelines for energy renovation of heritage buildings (technical recommendations for conservators and designers), and includes positive discrimination that enables heritage buildings to qualify for EU funding and implementation of a demonstration project on energy renovation of a heritage building.

For better insight into the application of policy packages for public buildings, MSs representatives discussed the framework conditions for school and heritage buildings. The findings are summarised in Table 1.

Building Type	Schools	Heritage buildings
Characteristics of the approaches in presented case studies	• Limited budgets • Predictable usage patterns/energy consumption • Intensively used	• Preserving historic value is important • All are individual/unique; many types of owners and occupants • Old and often in need of repair
Strengths	• Extensive holiday periods allow renovations to be planned • Often a hub for the neighbourhood; they offer opportunities to raise awareness on energy efficiency in the community, educate and inspire pupils and involve teachers and parents • Renovation offers improved learning conditions and can be combined with measures to improve acoustic and visual comfort, etc. • High energy savings potential	• Long lifetimes expected therefore money invested gives better value • Opportunities for tourism • High energy savings potential
Risks	• Subsidies can cause market inflation/distortion • Expensive/long payback times • Low visibility of works • Lack of skilled craftsmen • Compliance with high health and safety requirements	• High costs • Lack of skilled craftsmen • Permits needed from other agencies • High risk of technical issues once work starts
Solutions	• Energy management • Better information for owners, stakeholders, educational staff • Training for craftsmen • Expert advisors	• Provision of technical guidelines (Slovenia gives a good model) • Training for craftsmen • Expert advisors • Different approach used to judge financial eligibility
Other approaches/policy packages	• Standard packages • Energy Performance Contracts with guarantees	

Table 1. Framework for the development of policy packages in schools and heritage buildings

The high interest of MSs delegates in this field is reflected in the topics proposed for future discussion:

- In-depth analysis of appropriate solutions for heritage buildings.
- Management of energy systems in heritage buildings.
- Energy Performance Contracting – in general, for schools, and for heritage buildings.
- Technical guidelines for heritage buildings.
- Innovative public procurement.
- Pre-commercial procurement.

Highlights of 3.A.2.1	Pilot projects are important in holistic policy packages for the facilitation of energy renovation of public buildings.

3.A.2.2 Residential buildings

The locked-in potential of residential buildings demands subtle policies for the mobilisation of private investments into energy efficiency actions to achieve anticipated savings. Policy options can cover different legislative, technical, social and financial categories and have a variety of influences at many levels. A large range of policies in the residential sector have already been put in place, however in order to make a step forward and trigger comprehensive energy renovation with use of RES in buildings, there is a need to design even more comprehensive policy packages particularly tackling:

- financial and economic barriers;
- fuel poverty;
- awareness-raising;
- information and knowledge gap;
- missing workforce skills as well as skills of staff operating and managing the building and of those installing energy efficiency and RES technologies;
- differences in urban and rural framework;
- investment motivation for single-family and multi-apartment buildings.

Thus far, two holistic policy packages were discussed within the Cross Cutting Team Policies and Implementation: the Danish initiative “BetterHouses” and the UK’s “Green Deal” policy. Both programmes support homeowners in planning and financing the energy renovation of their buildings with the implementation of various policies that offer a comprehensive support.

- “BetterHouse”[2] is a one-stop-shop initiative to accelerate energy renovation in private homes in Denmark, where trained consultants help homeowners throughout the entire renovation process. The scheme is voluntary and, to some extent, market driven with an initial 7 million € funding from the Danish government, mostly spent on training consultants and on television advertisement. After 2016, the scheme will be purely market driven. BetterHouse consultants offer:

	1. screening of the building with a mapping of the potential; 2. a plan for energy renovation that covers dialogue with the client, mapping of the energy savings potential, a plan for investment including calculation, recommendations and budget planning, documentation for the bank, and 3. a project design, tendering, construction process management, hand over and follow up.
	The BetterHouse's consultants are from a wide variety of backgrounds (e.g., architects, engineers, craftsmen and current EPC assessors) and are approved by the Danish Energy Agency. Calculations are based on actual consumption and data from an existing EPC, and can be used as a basis for a renovation plan. Conversely, a BetterHouse's plan can be used to create an EPC. A plan costs around 800 €, which is comparable to the cost of an EPC assessment in Denmark, and is paid for by the building owner. By the end of 2015, approximately 400 plans were undertaken and 20% of clients are expected to start refurbishment.

- The "Green Deal" is a UK Government initiative that provides finance to homeowners for energy efficiency improvements. A Green Deal Advice Report (GDAR) is created by an accredited assessor based on the building's EPC and additional occupancy data. Suitable improvement measures are suggested in this report together with expected savings. The householder can then choose what to have installed. A loan is taken out via a Green Deal finance company and paid back through the household energy bills. The finance available depends upon the "Golden Rule" calculation, which ensures that repayments do not exceed the amount of money saved through the installed energy efficiency improvements. In this way a household can have improvements installed with no upfront cost; they continue to pay the same for their energy while their actual energy use decreases and the excess pays for the loan. Over the last 2.5 years, approximately 15,000 Green Deal assessments have been carried out. In mid 2015, the new government decided to discontinue the scheme. The reasons were that the Green Deal loan was considered to be a barrier in case of property sale as it is tied to the property rather than to the person who took out the loan; the loan repayments could exceed savings and endanger the Golden Rule principle. Additional obstacles included non-competitive interest rates due to profitable interest of accredited companies providing finance to the scheme, the ineffective operation and complexity of the scheme (high costs and numerous assessments, difficulties and delays with carrying out the investments) and, finally, the lack of consumers' confidence and awareness.

Highlight of 3.A.2.2	• The costs for the implementation of complex policy packages can exceed the rent ability threshold. • There are many stakeholders involved which may reduce transparency and blur the real motivation of those involved. • A balance between "free" and "full price" services for consumers may be an important success factor for the long-term operation of the scheme. • Advice for investments were given based on measured consumption while EPCs were used as an additional source of information.

3.A.3 Financing from cohesion and other funds – Support for deep renovation

The topic under consideration related to policies stimulating investors to go for more comprehensive, deep renovation of buildings, while at the same time complying with the cost-effectiveness principle. MSs representatives in the Cross Cutting Team Policies and Implementation were looking for policy solutions that would trigger such investments.

The absence of an adequate, financially supportive environment and the lack of competent experts involved in the renovation process were identified as the biggest obstacles in today's market. The challenge is twofold. On one hand, to prepare a simple and easily accessible financial mechanism for substantial or nearly zero-energy renovations, as the lack of sufficient financial resources often means that the scope of the implemented measures is limited to actions with a relatively short payback time. On the other hand, to ensure that building owners with sufficient or available financial resources recognise the full potential of improving their building's energy efficiency.

Examples from Bulgaria, Poland and Germany were presented with a view to identify the policy elements that stimulate holistic energy renovation projects. Although their approaches and financial arrangements were different, the common denominator was that a key component for success was to keep the process simple. The application process and paperwork should be minimised and the burden of responsibility for management should be taken away from the homeowner.

- In the Bulgarian case, the funding of an energy renovation is up to 100% and the targeted class after renovation is C, which involves a straightforward list of measures. Due to the high level of funding, homeowners are not actively involved in the technical solutions applied. Once funding is reduced and the target class increased, solutions are likely to be more complex and homeowners will have a greater involvement. The renovation process in Bulgaria is closely controlled, regular check-ups are done at all steps, so there is a very small risk for non-compliance with energy saving targets, however if this occurs, penalties are foreseen for contractors.
- Polish funding under the "thermomodernisation programme" is very straightforward, as the scope of the renovation is determined by an energy audit. The thermomodernisation fund is operated by a national bank whereby the loan applications are similar to other available loans. The loan must cover 100% of the renovation costs (no lower and upper limit), 20% subsidy is paid upon completion of the project.
- The German *KfW* programme involves a sliding scale to determine the refund corresponding to the energy savings achieved. Special focus is placed on quality assurance of the scheme and the need to follow the results of renovation and achieved savings. Based on experiences, *KfW* concluded that the more transparent and simple the promotional scheme is, the better it is to understand and the easier to distribute. The mandatory involvement of an energy expert is very important to provide comfort to the investor regarding his energy efficiency project and to assure a high degree of quality and reliability regarding energy savings as well as to assure target-oriented use of public funds and the promotional impacts.

MSs representatives share the common impression that deep energy renovation of existing buildings is more frequently undertaken in residential buildings (no big differences between housing and apartment buildings), while only two countries reported significant achievements in non-residential buildings, regardless of whether they are public of private (Figure 1).

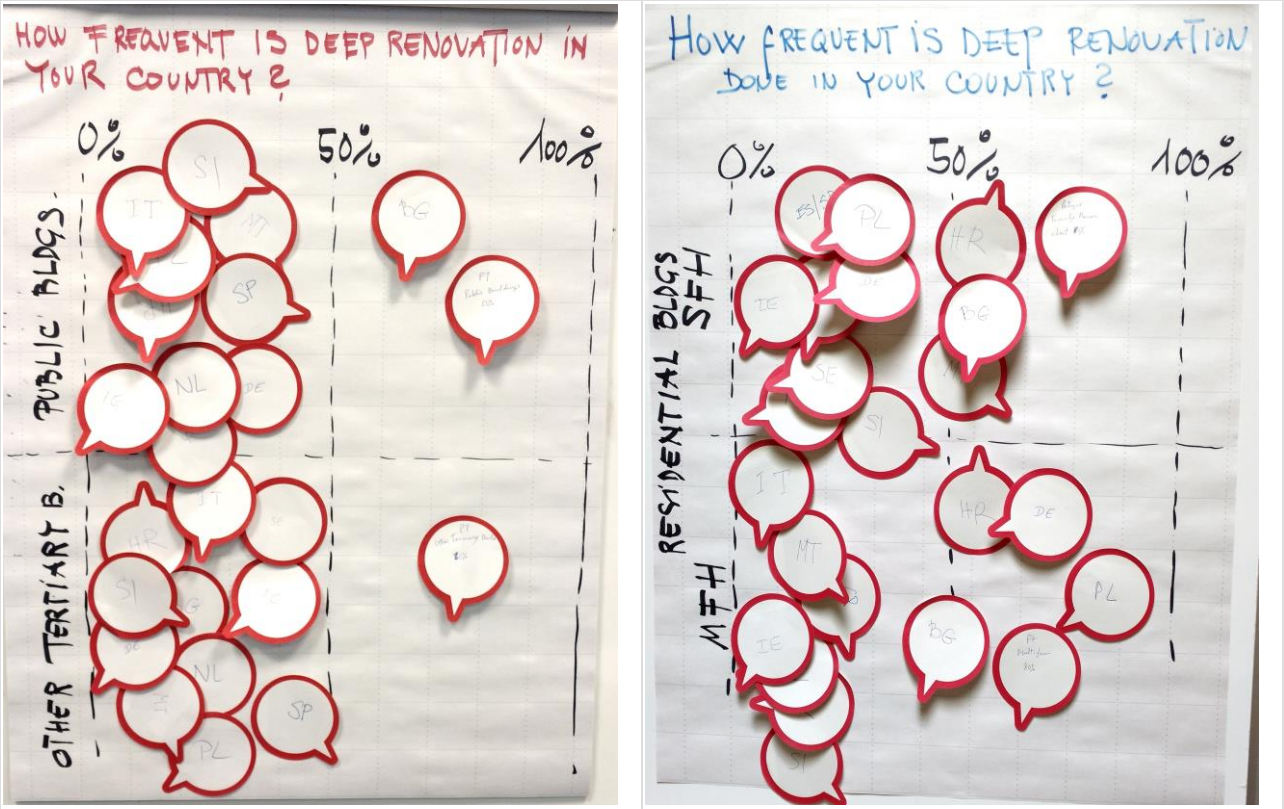

Figure 1. Countries impression on how frequently deep renovation takes place in investments in various building types.

Highlights of 3.A.3	• Allow for progressive funding for projects with better achieved savings. • Keep the process as simple as possible. • Make the involvement of an energy expert mandatory. • Ensure that monitoring takes place.

3.B. Main Outcomes

The work of MSs in the Cross Cutting Team Policies and Implementation focused on financing from structural funds and, moreover, on the smooth national application of Cohesion Policy funding. Countries found the system very complex and pointed out the need for capacity building of all stakeholders, and in particular of public and private investors, for the successful application and implementation of the projects. The challenge of investing in energy renovation is to stimulate deep renovation. This may be done by progressive financial incentives for a number of cost-effective measures implemented in the renovation. Examples from MSs showed how deep renovation is organised and financed. Two possible solutions were exposed: strict and well-defined rules for the energy performance of funded renovation projects, and permanent quality control or progressive financial incentives for more comprehensive renovation investment. Further recommendations showed the necessity of keeping financing systems as simple as possible, the need to involve an energy expert in the deep renovation project, and the obligation to establish energy monitoring. Further discussions led to some additional topics for consideration: measuring of energy savings and what makes a building renovation programme successful (percentage of refund or

loan, state vs. privately managed financing scheme, long vs. short-term programme, other types of motives for deep renovation).

Policy packages for public and private buildings were studied based on presented best practice cases. A common point was the need to include pilot projects on investment. The major topics of discussion focused on success factors of policy packages developed around financing of energy renovation projects from EU and national funding, diversified for public (non-residential) buildings and residential buildings. Policy packages for existing buildings pointed out the benefits of well-balanced support for investing in renovation.

Topic	Main discussions and outcomes	Conclusion of topic	Future directions
Financing based on structural funds	• Capacity building for public and private sector investors to be able to apply for Cohesion Policy funding. • Which types of buildings are subject to ESIF financing? • Criteria and awarding method in calls for tenders • Monitoring of results	• The Cohesion Policy funding is a very complex mechanism. • High degree of complexity involved in the tender process. • Public authorities need professional support to prepare successful applications.	• Discuss, optimise and introduce the monitoring of impact – checking energy savings after renovation is completed. • Effective capacity building of stakeholders in Cohesion Policy funded renovation projects.
Policy packages for existing buildings – public buildings	• National examples of policy packages in public buildings. • Highlight the particular successful elements related to risks and threats, and mitigation actions. • MSs representatives put most attention into schools and heritage buildings and discussed the relevant strategies based on case studies.	• Cohesion Policy funding is complex and involves many stakeholders. • Demonstration projects are very important to facilitate the uptake of this funding. • Heritage building policy packages have demonstrated big savings potential in other MSs.	• In-depth analysis of appropriate solutions for heritage buildings. • Management of energy systems in heritage buildings. • Energy performance contracting in general. • Innovative procurement and pre-commercial procurement for development of service.

Topic	Main discussions and outcomes	Conclusion of topic	Future directions
Policy packages for existing buildings – residential buildings	• Main barriers are financial and economic, fuel poverty, gaps in information, skills and knowledge. • Holistic package of policies are needed as illustrated by Danish and UK case. • Advice on investments is planned based on actual energy use and calculated data from EPCs.	• The Danish "BetterHouse" scheme is a voluntary programme, initially supported by the state (training of consultants, marketing). The support can be obtained for planning and implementation of the investment. Consumers pay the cost of advice. • The UK "Green Deal" provided advice reports free of charge for the end user, but loans from financing institutions in the scheme were not competitive enough compared to other bank offers. Management of the scheme was expensive.	• A holistic set of policies to be used as a basis for successful long-term schemes that support renovation of existing buildings. • How to make companies involved in the financing scheme and ensure a win-win project (transparent motives and benefits for all).
Financing – support for deep renovation	• Learning from financial schemes in other countries. • Policies stimulate the investors to undertake in more comprehensive and deep renovations.	• EU MSs representatives' opinion is that investments in deep renovation have so far been more successful in residential than in public buildings. • Progressive funding is a successful policy initiative to mobilise deep renovation potential.	• Keep the process of funding deep renovation as simple as possible. • Involve a mandatory energy expert in a system. • Ensure that monitoring takes place.

4. Lessons Learned and Recommendations

The following lessons learned have been identified with regards to the development and implementation of financial incentives and information measures as part of the EPBD implementation:

- Cohesion Policy funding rules are considered to be complex and are often seen as a large administrative burden.
- Capacity building for public authorities on how structural funds work is necessary for the successful application of these funds.
- Public authorities need professional support from an energy expert in the management of a renovation project.
- The precondition to successful use of EU and national public funding and other financial mechanisms is to have a reliable assessment of energy performance measures.
- Monitoring of energy savings achieved in a renovation project supported by Cohesion Policy funding is often not implemented in a comprehensive way, as the indicators might not include energy savings but rather the amount and quality of implemented work, such as renovated m^2. Results in savings should always be required.
- Funding programmes need to be combined with other policies addressing soft measures – both in the preparatory phase and in the post-implementation phase– to fully support the investment in deep renovation.
- Financial incentive rules need to be complemented with the tools for the determination of cost-optimal building energy renovation scenarios.
- Demonstration projects are valuable in supporting the successful implementation of renovation to cost-optimal or NZEB level.
- Some MSs use a relatively high share of Cohesion Policy funding, while others combine the incentives with financial instruments (e.g., soft loans, energy performance contracting).
- Main stakeholders may be interested in participating in policy packages like “one-stop-shop”, however too many market actors with different economic aims may endanger the project economics.
- A holistic set of policies is a basis for a long-term successful scheme supporting renovation of existing buildings.

Endnotes

1. Article 5 of Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC Text with EEA relevance (http://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex%3A32012L0027)
2. http://sparenergi.dk/forbruger/vaerktoejer/bedrebolig

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