

DRAFT THEMATIC GUIDANCE FICHE FOR DESK OFFICERS
ENERGY EFFICIENCY INVESTMENTS¹
VERSION 2 - 06/02/2014

RELEVANT PROVISIONS IN THE LEGISLATION

<i>Regulation</i>	<i>Articles</i>
<p><u>Common Provisions Regulation</u> (CPR) (N° 1303/2013)</p>	<p>Article 8 "Sustainable development"</p> <p>Article 9 – Thematic objective 4 "Supporting the shift towards a low-carbon economy in all sectors"</p> <p>Article 9 – Thematic objectives 1 "Strengthening research, technological development and innovation", 2 "Enhancing access to, and use and quality of ICT", 3 "Enhancing the competitiveness of SMEs, and 10 "Investing in education, training and vocational training for skills and lifelong learning"</p> <p>ANNEX I, Sections 4.3, "Horizon 2020 and other centrally managed EU programmes in the areas of research and innovation", and 5.2 "Sustainable development".</p> <p>ANNEX XI, Ex-ante conditionality 4.1 "Actions have been carried out to promote cost-effective improvements of energy end use efficiency and cost-effective investment in energy efficiency when constructing or renovating buildings", and 4.2 "Actions have been carried out to promote high-efficiency co-generation of heat and power".</p>
<p><u>European Regional Development Fund Regulation</u> (ERDF Regulation) (N° 1301/2013)</p>	<p>Article 5 "Investment priorities" – (4) "Supporting the shift towards a low-carbon economy in all sectors by:"</p> <p>4 (b) "promoting energy efficiency and renewable energy use in enterprises";</p> <p>4 (c) "supporting energy efficiency, smart energy management and renewable energy use in public infrastructure, including in public buildings, and in the housing sector";</p> <p>4 (e) "promoting low-carbon strategies for all types of territories, in particular for urban areas, including the promotion of sustainable multimodal urban mobility and mitigation-relevant adaptation measures";</p> <p>4 (f) "promoting research in, innovation in and adoption of low-carbon technologies";</p> <p>4 (g) "promoting the use of high-efficiency co-generation of heat</p>

¹ This fiche should be read together with the one on renewable energy.

	<p>and power based on useful heat demand".</p> <p>Article 3 – "Scope of support from the ERDF"</p> <p>1. The ERDF shall (...) support:</p> <p>(b) productive investment, irrespective of the size of the enterprise concerned, which contributes to the investment priorities set out in points (1) and (4) of Article 5 (...);</p> <p>(c) investment in infrastructure providing basic services to citizens in the areas of energy, environment, transport and ICT;</p> <p>(e) investment in the development of endogenous potential through fixed investment in equipment and small-scale infrastructure, including small-scale cultural and sustainable tourism infrastructure, services to enterprises, support to research and innovation bodies and investment in technology and applied research in enterprises;</p> <p>2. The ERDF shall not support (...) (b) investment to achieve the reduction of greenhouse gas emissions from activities listed in Annex I to Directive 2003/87/EC.</p>
<p><u>Cohesion Fund Regulation</u> (<i>CF Regulation</i>) (<i>N° 1300/2013</i>)</p>	<p>Article 4 "Investment Priorities" – (a) "Supporting the shift towards a low-carbon economy in all sectors by"</p> <p>(ii) "promoting energy efficiency and renewable energy use in enterprises";</p> <p>(iii) "supporting energy efficiency, smart energy management and renewable energy use in public infrastructures, including in public buildings, and in the housing sector";</p> <p>(v) promoting low-carbon strategies for all types of territories, in particular for urban areas, including the promotion of sustainable multimodal urban mobility and mitigation-relevant adaptation measures;</p> <p>(vi) promoting the use of high-efficiency co-generation of heat and power based on useful heat demand.</p> <p>Article 2 – "Scope of support from the Cohesion Fund"</p> <p>1. The Cohesion Fund shall (...) support (a) investment in the environment, including areas related to sustainable development and energy which present environmental benefits;</p> <p>2. The Cohesion Fund shall not support (...) (b) investment to achieve the reduction of greenhouse gas emissions from activities listed in Annex I to Directive 2003/87/EC.</p>
<p><u>European Territorial</u></p>	<p>Article 6 – "Thematic concentration"</p> <p>Article 7 – "Investment priorities"</p>

Cooperation Regulation

(ETC Regulation)

(N° 1299/2013)

This is a draft document based on the new ESIF Regulations published in OJ 347 of 20 December 2013 and on the most recent version of the relevant Commission's draft implementing and delegated acts. It may still require review to reflect the content of these draft legal acts once they are adopted.

1. INTRODUCTION

This guidance explains issues related to thematic objective 4 “*supporting the shift towards a low-carbon economy in all sectors*” and the related investment priorities for energy efficiency (EE) investments under the European Regional Development Fund (ERDF) and the Cohesion Fund (CF). The main focus in this fiche is on the investments priorities “*promoting energy efficiency and renewable energy use in enterprises*” and “*supporting energy efficiency, smart energy management and renewable energy use in public infrastructure, including in public buildings, and in the housing sector*”, while the other investment priorities under thematic objective 4 also containing EE aspects (listed in the table above) are further developed in the guidance fiche on renewable energy investments.

2. STRATEGIC FRAMEWORK

2.1 Point of departure: The National Energy Efficiency Action Plans and the indicative national energy efficiency targets under the Energy Efficiency Directive

Cohesion Policy funds are a crucial tool for helping Member States (MS) to achieve their Europe 2020 objectives, including the headline target on energy efficiency (EE). Each MS has set an indicative national EE target with a view to achieve the overall EU 20% target. National priorities in terms of reaching the indicative national EE target are indicated inter alia through MS' National Energy Efficiency Action Plans (NEEAPs) and, in the context of implementing the new Energy Efficiency Directive, will be reflected also in the plans to implement obligation schemes and in strategies for buildings renovation, with a targeted focus on public buildings. This should be the basis for determining the nature of support, complemented by the Commission's progress reports, which inter alia identify weaknesses in MS' efforts to implement their plans and thus areas needing further support. Strong coherence is required between the main strategic documents related to EE in the given MS and region on the one hand and the Partnership Agreement (PA) and Operational Programmes (OPs) on the other.

2.2 Energy efficiency as a key component of enterprise competitiveness

Small and medium-sized enterprises (SMEs) are key drivers of growth, job creation and cohesion. Resource efficiency, including energy efficiency (EE), is an important aspect of their cost structure and thus of their competitiveness. Investment in product development and production processes should go hand-in-hand with investment in EE. SMEs' potential to save energy is not higher per se than that of large companies, but Cohesion Policy supports SMEs in particular because they might suffer to a larger extent from information gaps and difficulties to access finance. However, large enterprises are not excluded from support.

2.3 Central role of buildings for EU energy efficiency policy

Buildings are central to the EU's energy efficiency policy, as they are responsible for nearly 40% of final energy consumption and provide a large untapped cost-effective energy savings potential. There are also important co-benefits from making buildings more energy efficient, e.g. in terms of job creation, health and comfort, competitiveness, energy security and alleviating energy poverty, thus contributing to affordable housing. However, there are still

several market failures preventing improvements to the energy performance of buildings, ranging from technical and financial barriers to informational and behavioural hurdles, justifying public support in this area to stimulate the emergence of a well-functioning market.

2.4 Triggering a maximum of private investment with a minimum of public support

As regards support to EE in enterprises, a package of services could be offered, including an energy audit and verification supported by a grant², which would be complemented by a loan or a guarantee mechanism enabling longer-term maturity of investment or lower interest, and also comprise a cash-back incentive related to planned EE savings to address the motivation to invest by the enterprise.

As regards support to EE in buildings, a combination of both market-based instruments (e.g. loans, guarantees, Energy Performance Contracting schemes), possibly with a contribution from the ERDF or the CF (subject to the ex ante assessment) for measures with a shorter payback time and grants for capital intensive measures with a longer payback time should be supported, aiming at “deep renovation” going beyond minimum energy performance requirements to capture all possible energy savings, in particular for public buildings, since most buildings undergo major renovation only every 20 or 30 years. Energy Performance Contracting is a possible way to trigger private investments in the sector, mainly for public buildings, with a relatively small contribution from the public budget, e.g. in the form of a loan or a grant. Any support provided should be conditional to an energy audit and verification of achieved results³, and the intensity of support should ideally reflect the “depth” of the renovation (savings achieved) while observing the cost-optimal principles.

As regards private owners, there is often a lack of awareness regarding EE measures in buildings and a reluctance, or indeed a lack of financial capacity, to invest as the upfront costs can be relatively high. The necessary support instruments will vary from MS to MS, depending on the national or regional circumstances, e.g. ownership structures and social situation, and the design of the schemes will have to be tailor-made on this basis.

2.5 Ensuring an integrated approach

Energy efficiency investments should follow an integrated approach, as renovating residential and non-residential buildings is a necessary but not sufficient condition to guarantee the quality of life in cities. Accordingly, investments in EE in buildings have to be linked to, and coherent with, other elements which ensure the investments' sustainability, such as such as cost-optimal supply and demand plans reflecting the use of high-efficiency co-generation of heat and power and renewable energy (RES), public spaces, shopping areas, schools, accessibility of transport and services, etc. An integrated approach in this context also refers to the fact that buildings in a particular neighbourhood might be selected for renovation as part of an overall integrated plan for urban regeneration, or that if a particular public building is up for renovation at a specific point in time for whatever reason, it makes sense to also address the EE aspects in the same round of refurbishment work.

² However, Cohesion Policy funding should not be used to finance energy audits that are mandatory according to Article 8 of the Energy Efficiency Directive, i.e. for large enterprises.

³ When using Cohesion Policy funding for an EE programme in buildings, a requirement should be stipulated for an energy audit and/or an Energy Performance Certificate; ideally both pre- and post-installation. The complexity of this assessment needs to be adapted to the size and scope of the project. For example, detailed energy audits are required for deep renovation projects.

Furthermore, the Common Strategic Framework (Annex I to the CPR) sets out the obligation for MS and, where appropriate, regions to "*ensure that the interventions supported through the ESI Funds are complementary and are implemented in a coordinated manner with a view to creating synergies*". In addition, MS shall "*take appropriate steps to ensure consistency, at programming and implementation stages, between interventions supported by the ESI Funds and the objectives of other Union policies*".

3. REGULATORY SCOPE OF SUPPORT

In line with the results orientation of the new legislative framework for Cohesion Policy, the ERDF and the CF Regulations distinguish clearly between the scope of support for the ERDF/CF (the activities it may support) and the investment priorities for each thematic objective (objectives to which the ERDF/CF shall contribute)⁴. For an operation to be eligible for ERDF/CF support it must contribute to a specific objective defined for an investment priority and fall within the scope of the fund's activities.

3.1 Scope of support

ERDF

There are two main fields of intervention of the ERDF on energy efficiency (EE): productive investments contributing to the investment priorities set out below, including those carried out by large enterprises, and investments in the development of endogenous potential, through fixed investment and small-scale infrastructure.

Cohesion Fund

The Cohesion Fund, while ensuring an appropriate balance and according to the investment and infrastructure needs specific to each MS, shall support investments in the environment, including areas related to sustainable development and energy which present environmental benefits, in compliance with article 177 of the Treaty.

3.2 Investment priorities

Investments under the thematic objective 4 "Supporting the shift to a low-carbon economy in all sectors" shall contribute to the following investment priorities related to EE:

⁴ Investment priorities "should set out detailed objectives, which are not mutually exclusive, to which the ERDF is to contribute. Such investment priorities should form the basis for the definition of specific objectives within programmes that take into account the needs and characteristics of the programme area" (ERDF Regulation recital number 7; identical text for the CF in recital 12 of the CF Regulation).

ERDF

- (b) promoting energy efficiency and renewable energy use in enterprises;
- (c) supporting energy efficiency, smart energy management and renewable energy use in public infrastructure, including in public buildings, and in the housing sector.

There may also be scope for investment in energy efficiency under:

- (e) promoting low-carbon strategies for all types of territories, in particular for urban areas, including the promotion of sustainable multimodal urban mobility and mitigation-relevant adaptation measures;
- (f) promoting research in, innovation in and adoption of low-carbon technologies;
- (g) promoting the use of high-efficiency co-generation of heat and power based on useful heat demand.

Cohesion Fund

- (ii) promoting energy efficiency and renewable energy use in enterprises;
- (iii) supporting energy efficiency, smart energy management and renewable energy use in public infrastructures, including in public buildings, and in the housing sector.

There may also be scope for investment in energy efficiency under:

- (v) promoting low-carbon strategies for all types of territories, in particular urban areas, including the promotion of sustainable multimodal urban mobility and mitigation-relevant adaptation measures;
- (vi) promoting the use of high-efficiency co-generation of heat and power based on useful heat demand.

3.3. Non eligible operations

Both the ERDF and the CF regulations exclude support to “*investment to achieve the reduction of greenhouse gas emissions from activities listed in Annex I to Directive 2003/87/EC*”, including combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste). The rationale for this exclusion is that ERDF/CF investments would just foster a reduction in the price of emission permits, without achieving additional decreases in the volume of emissions (as the number of permits remains fix, so does the volume of greenhouse gas emissions).

However, recitals (3) and (7) respectively of these same regulations clarify that “*that exclusion should not restrict the possibility of using the ERDF [or the Cohesion Fund] to support activities that are not listed in Annex I to Directive 2003/87/EC even if those activities are implemented by the same economic operators, and include activities such as energy efficiency investments in district heating networks, smart energy distribution, storage and transmission systems and measures aimed at reducing air pollution, even if one of the indirect effects of such activities is the reduction of greenhouse gas emissions, or if they are listed in the national plan referred to in Directive 2003/87/EC*”.

In particular, installations exclusively using biomass are not covered by Directive 2003/87/EC, as well as units which use fossil fuels only during start-up or shut-down of the unit. In parallel, investment in renewable-based co-generation, or combined heat and power (CHP), is possible and not subject to size restriction. As a consequence, when an investment combines renewables and combustion installations with a rated thermal input exceeding 20 MW, the part of the operation relating to combustion installations shall not be eligible.

Moreover, both the ERDF and the CF regulations exclude support to undertakings in difficulty.

It should also be noted that the Commission proposal sought to exclude ERDF support to investments in infrastructure providing basic services to citizens in the area of energy **in more developed regions**, as it is expected that these regions are already sufficiently endowed with this kind of infrastructures, and investments can be financed from user charges and/or national budgets. This exclusion was not endorsed by the co-legislators.

Consequently, the Commission will particularly assess the actual need for support to energy infrastructures in more developed regions, on the basis of the individual programming documents submitted in due course by the MS and managing authorities.

Finally, for the Cohesion Fund, the co-legislators agreed to widen the scope of support to energy efficiency in housing. Accordingly, any proposal in this sense should be subject to particular scrutiny.

4. KEY MEASURES LINKED TO INVESTMENT PRIORITIES

4.1 Indicative Actions of high European added value for the ERDF and the CF

The Commission has identified a number of actions⁵ which can be expected to make a significant contribution to the achievement of the targets and objectives of the Union strategy for smart, sustainable and inclusive growth and which shall act as a reference point in the preparation of programmes.

For the ERDF and the CF, these include:

- investment in the wider use of Energy Performance Contracting in the public buildings and housing sectors
- energy efficiency and renewable heating and cooling in public buildings, in particular the demonstration of zero-emission and positive-energy buildings, as well as deep renovation of existing buildings to beyond cost-optimal levels;
- energy efficiency measures and renewable energy use in SMEs (including information campaigns);
- integrated low-carbon strategies and sustainable energy action plans for urban areas, including public lighting systems and smart grids;
- integrated, sustainable and accessible urban mobility concepts in cities, city-regions and metropolitan areas, leading to reduced greenhouse gas (GHG) emissions, in particular through sustainable urban transport plans, including facilitating use of public transport, cycling and walking.

⁵ SWD(2012) 61 final Part II, 14.3.2012, *Elements for a Common Strategic Framework 2014 to 2020*
http://ec.europa.eu/regional_policy/sources/docoffic/working/strategic_framework/csf_part2_en.pdf

4.2 Promoting energy efficiency and renewable energy use in enterprises

4.2.1 Why should the ERDF and the CF co-finance this kind of investments?

Investment in SMEs has a strong contribution to make to growth, employment and cohesion. Cohesion Policy in particular supports SMEs for these reasons and because they might suffer to a wider extent from both information gaps and difficulties to access finance than larger enterprises. However, large enterprises are not excluded from support⁶. Resource efficiency, including EE, is an important aspect of the structure of costs in an enterprise and thus of its competitiveness. In particular, SMEs can be made aware of their EE potential and be helped in the assessment of which parts of the company promises the best energy savings⁷.

4.2.2 Where should the money go and how to invest?

The pre-condition for support should be an energy audit which is a systematic procedure with the purpose of obtaining adequate knowledge of the existing energy consumption profile of a building or group of buildings, an industrial or commercial operation or installation or a private or public service, identifying and quantifying cost-effective energy savings opportunities, and reporting the findings. Under the new Energy Efficiency Directive (EED), energy audits will be obligatory for large enterprises whereas for SMEs it remains a recommendation, i.e. no legal obligation. However, it should be used as a de facto obligation in order to receive financial public support. The energy audits are mostly done by accredited experts / external companies. In some MS, training might be needed to ensure expertise for energy audits and also for supervision of works (quality assurance).

In general, the EE investments will entail a cost-savings stream for the SMEs, and, when combined with renewable energy (RES) investments, a revenue-generating stream. For this reason, investments should be primarily made by the private sector, i.e. the SMEs themselves. It is up to MS and regions to ensure that public funding does not replace but complements and leverages private investment in accordance with State aid rules.

On the basis of an ex-ante assessment which has established evidence of market failures or sub-optimal investment situations, financial instruments should be used to support investments expected to be financially viable, while grants should be used primarily to support deep renovation of buildings beyond minimum energy performance requirements or to support innovative technologies. Use of market based instruments such as Energy Performance Contracting could also be considered. A complex package of services could be offered to SMEs, in order to increase their appetite to invest and reduce the risk perception at the side of lenders, which will also stimulate the emergence of a well-functioning market for this kind of investments. Such packages could include the energy audit and verification supported by a grant⁸, which would be complemented by a loan or a guarantee mechanism

⁶ In some MS there might be an important energy saving potential also in large enterprises, especially in the field of combined heat and power (CHP) and recovery of waste heat for the use in district heating and cooling networks and industrial processes. This type of investments should also be encouraged, within the limits of the exclusion related to activities falling under the Emission Trading System (ETS). See also the separate thematic guidance fiche on renewable energy investments for further aspects related to such investments.

⁷ The same goes for their possible use of renewable energy (RES), either for heating and cooling of their premises or for their processes. For EE and RES investments in buildings, see also the guidance below for Investment Priority 4 (c). See also the separate thematic guidance fiche on renewable energy investments for further aspects.

⁸ However, Cohesion Policy funding should not be used to finance energy audits that are mandatory according to Article 8 of the Energy Efficiency Directive, i.e. for large enterprises.

enabling longer-term maturity of investment or lower interest, and also comprise a cash-back incentive related to planned EE savings to address the motivation to invest by the enterprise. Such incentives would also allow for effective monitoring of achieved results as the level of support is determined by the results achieved.

Care should be taken that schemes focusing on EE and RES contribute to the overall economic development of the SME, e.g. in terms of added value and employment. Therefore, depending on the context, support for resource efficiency, including EE, and the use of RES in SMEs, might be best endeavoured within broader SME support schemes, addressing several aspects of their competitiveness at the same time.

4.3 Supporting energy efficiency and renewable energy use in public infrastructures and in the housing sector

4.3.1 Why should the ERDF and the CF co-finance this kind of investments?

Buildings are central to the EU's energy efficiency policy, as nearly 40% of final energy consumption is accounted for by houses, offices, shops and other buildings. Moreover, the building sector (i.e. covering both residential and non-residential buildings) provides the second largest untapped cost-effective potential for energy savings after the energy sector itself. At the same time, the share of households living in a situation of energy poverty increases. In particular, social housing has a large potential to contribute to energy savings, representing 12 % of the European housing stock and 20 % of CO₂ emissions. In addition, building renovation results in job creation, mainly in local SMEs in the construction sector (and thus reduced unemployment benefits and increased taxes), health improvements (and thus lower medical costs and increased worker productivity), and better energy security and industrial competitiveness.

The EU has been supporting the improvement of the energy performance of buildings for many years with a range of legislative and financing mechanisms and instruments. However, important barriers hampering further uptake of EE investments in buildings continue to exist, including a lack of awareness and expertise regarding EE financing on the part of all actors (e.g. authorities, local banks and end borrowers); high initial costs, relatively long pay-back periods and (perceived) credit risk associated with EE investments; limited availability of funding due to overall deleveraging by banks; and competing priorities for property owners. Therefore, public support in this area to stimulate the emergence of a well-functioning market is justified.

4.3.2 Where should the money go and how to invest?

Sectoral policy considerations

The new Energy Efficiency Directive (EED) requires MS to establish, by April 2014, a long-term strategy for mobilising investment in the renovation of the national building stock, including policies and measures to stimulate cost-effective deep renovations. Moreover, as from January 2014, MS must ensure that 3% of the total useful floor area over 500 m² of heated and / or cooled buildings owned and occupied by the central government is renovated each year⁹ to meet at least the minimum energy performance requirements set by the MS

⁹ In case MS plan to achieve energy savings in central government buildings by a method other than renovation, they need to notify the alternative approach to the Commission by 1 January 2014.

concerned¹⁰. These actions will contribute to the attainment of the indicative national EE target that each MS has set up in view of the 2020 target. Some MS might wish to allocate Cohesion Policy funding to co-finance some of these investments.

Cohesion Policy investments can contribute also to targets and requirements concerning the exemplary role of new and renovated public buildings, the nearly zero-energy target for new public buildings by 2019 and the target for all new buildings to be nearly zero-energy by 2021, as requested by the Energy Performance of Buildings Directive (EPBD) and the Renewable Energy Directive (RED). Activities could include for example demonstration of zero-emission and positive-energy buildings, which would require combinations of EE and RES solutions¹¹.

There is a strong link to Research, Technological Development and Innovation (RTDI) here: Public authorities are expected to take an exemplary role, engaging in state-of-the-art renovation of public buildings for improved EE and use of RES, thus strengthening the innovation demand side. In doing so, they are invited to build on results from research projects under the Energy-efficient Buildings (EeB) PPP supported by FP7/Horizon 2020 as well as other relevant EU level and national research programmes and projects (e.g. smart cities), including RTDI financed by Cohesion Policy funds in the context of the research and innovation smart specialisation strategies.

As to residential buildings, specific issues arise with blocks of flats with individual owners, whereby owners' associations need to be involved in line with the specific legislation and practises in the MS. This is an important aspect not only for managing authorities or local authorities, but also for banks. A particular attention should be also given to supporting EE improvements as a way to address energy poverty in several MS.

It should be noted that achieving energy savings in multi-apartment buildings with common heating/cooling systems often depend not only on the overall insulation of such buildings but also the behaviour of end-users. It is also important to ensure that such renovations pay due attention to the ventilation systems, maintaining a healthy indoor environment. The EED requires introduction of individual metering and billing information based on actual consumption of heat/cooling/hot water consumption where technically possible and cost-effective by 31 December 2016 in all multi-apartment buildings with a common heating/cooling/hot water source. The effectiveness of such investments may require considering upgrading/insulation of the in-building piping and the installation of thermostats. As such, investments in multi-apartment housing with own or connected to a common heating/cooling/hot water source receiving public funding should always consider the installation of individual heating/cooling/hot water metering with related investments. According to the EED, in all new buildings connected to district heating/cooling and buildings undergoing major renovations as defined by the EPBD¹², individual hot water meters and heat meters must always be installed¹³.

¹⁰ The minimum energy performance requirements have to be set in accordance with Directive 2010/31/EU on the energy performance of buildings (EPBD).

¹¹ See also the separate thematic guidance fiche on renewable energy investments for further aspects related to such investments.

¹² According to the EPBD, MS may choose to define major renovation as either (a) the total cost of the renovation relating to the building envelope or the technical building systems is higher than 25 % of the value of the building, excluding the value of the land upon which the building is situated, or (b) more than 25 % of the surface of the building envelope undergoes renovation.

¹³ This requirement was introduced in Directive 2006/32/EC (with transposition deadline 17 May 2008) and is continued in the EED.

Under the EPBD, MS have to put in place minimum energy performance requirements in line with the related framework methodologies¹⁴, a system of energy performance certification and inspections of air-conditioning and heating systems as well as energy performance requirements for technical buildings systems. The comparative cost optimal methodology developed by the Commission takes into account the economic lifecycle of the building, or building element.

Local energy infrastructure, such as district heating/cooling networks is also an area with large energy saving potential, in particular in the heat/cool distribution systems. Complex and systemic solutions should be supported addressing supply, distribution and demand side starting with the demand side first (buildings renovation). In case of district heating/cooling networks where the supply part is privately owned, synergy with the support suggested in the section on investment priority 4(b) above should be ensured and an appropriate combination of support mechanisms used. In particular, the connection of buildings and local networks for the distribution of heat and domestic hot to industrial sources of waste heat need to be considered.

EE in public infrastructures in the water and waste water treatment sector also needs to be scaled up, as the energy used by this sector usually accounts for a large share of a typical municipality's energy budget. Such energy costs translate into high and sometimes unsustainable operating costs. The main challenges to improve the EE of the water and waste water treatment sector stem from knowledge gaps and financing hurdles.

Finally, another possible area of support is public lighting. If investing in this area, investments should be based on integrated low-carbon strategies/sustainable energy action plans for urban areas and, subject to compliance with the regulatory framework, financial instruments are likely to be the most suitable alternative (see section on financial instruments below).

Territorial policy considerations

In addition to the more technical aspects related to the buildings and housing as such, it is important to take an integrated approach, ensuring also the integrated use of European Structural and Investment Funds (ESIF) as required by the Common Strategic Framework (Annex I to the CPR). Energy efficiency of buildings is important in itself, but has to be linked to and coherent with other elements which ensure the investments' sustainability, such as public spaces, shopping areas, schools, accessibility of transport and services, and a participatory approach involving relevant stakeholders, tenants, etc. An integrated approach in this context also refers to the fact that buildings in a particular neighbourhood might be selected for renovation as part of an overall integrated plan for urban regeneration, or that if a particular public building is up for renovation at a specific point in time for whatever reason, it makes sense to also address the EE aspects in the same round of refurbishment work. The buildings where Cohesion Policy EE investments will be made will thus not be selected on the basis of their EE improvement potential alone. An integrated approach also means that it makes sense to carry out other improvements of a building at the same time as doing EE improvements, which typically also results in more cost-effective projects overall.

¹⁴ The EPBD sets requirements for the framework methodology for the calculation of the energy performance of buildings and for the calculation of cost-optimal levels. MS must use the cost-optimal methodology framework to compare the results with the minimum energy performance requirements which they have adopted and identify significant discrepancies if they exist.

Whilst aiming at deep renovation is not necessarily a pre-requisite to allocate funding, in particular for residential buildings, actions should prioritise moving towards deep renovation. This is particularly the case for public buildings, as buildings are renovated only every 20 or 30 years and the public sector has an exemplary role that impacts the market and stimulates innovative solutions. Deep renovation of buildings will actually be needed in order to meet the EE targets for 2020 and beyond. Deep renovation in this context means investing in EE improvements that go beyond minimum energy performance requirements and result in significant efficiency improvements (typically more than 60%). This kind of refurbishment reduces both the delivered and the final energy consumption of a building by a significant percentage compared with the pre-renovation levels, leading to a very high energy performance. Such deep renovation could also be carried out in stages.

Deep renovation might be valuable in a longer perspective, to generate higher energy savings and to avoid lock-ins and additional works in 5/10/15 years' time, which would make the total investment cost even higher. According to this concept, whenever building renovation takes place, all available energy saving innovative solutions and technologies should be incorporated, beyond the more simple standard measures with a shorter payback period¹⁵. The technical guidance on “Financing the energy renovation of buildings with Cohesion Policy funding” gives further details and explanations on these aspects (link in Annex I below).

Financial instruments

Guidance on the Financial Instruments provisions for 2014-2020 is available in other guidance fiches. A guide on Ex-Ante Assessment of Financial Instruments will be published soon, including specific guidance for instruments set up under thematic objective 4.

In general, EE investments in buildings will entail a cost-savings stream, either for the owner of the building and/or for the tenant, and RES investments may generate a revenue-generating stream. For this reason, investments in privately owned buildings should be primarily carried out by the private sector¹⁶. It is up to MS and regions to ensure that public funding does not replace but complements and leverages this private investment¹⁷. In the EE sector, the option of creating value for energy savings through market mechanisms (energy saving obligations, energy service companies, etc.) should be considered before public funding. Against this background, the possible use of financial instruments with European Structural and Investment (ESI) Funds contribution should be considered if the ex-ante assessment in line with Article 37(2) of the CPR has established evidence of market failure or a sub-optimal investment situation and investments are expected to be financially viable. Grants should be used primarily to support deep renovation going beyond minimum energy performance requirements or to support innovative technologies. In case of multi-apartment housing where the owners/tenants may not be able to make the investments in EE themselves, grants as well as combinations of financial instruments with grants may be considered¹⁸.

¹⁵ Note that there is no real link between the cost optimal minimum energy performance requirements and deep renovation. In fact, the achieved efficiency improvement arising from the minimum energy performance requirements for existing buildings undergoing major renovation (text of the EPBD) would typically depend on the initial energy performance of the renovated building.

¹⁶ With the possible exception of multi-apartment housing.

¹⁷ In accordance with State aid rules in the case of commercial buildings.

¹⁸ Energy service companies (ESCOs) are unlikely to start major investments in multi-apartment housing where the owners/tenants may already now have problems with regular payment of their energy bills. Without grants nothing or very little will be done (if little, this will often entail investments that will be suboptimal).

As a basis for designing schemes as well as individual projects, a financial analysis thus needs to be carried out, ensuring that investments are incentivised and optimally leveraged with the right level of support, thus triggering a maximum of investment with a minimum of public support. In this context, it is also important to take price regulation and deregulation timeframes into account. Moreover, the necessary support instruments will vary from MS to MS. The draft standard terms and conditions for financial instruments pursuant to Article 38.3 (a) of the CPR sets out proposals for an “off-the-shelf” instrument specifically targeting EE in the building sector, known as the Renovation Loan. This would target apartments and houses where significant energy-saving potential exists but owners still need additional technical and financial support to prepare and implement renovation projects. Despite this possibility, taking into consideration some specific national or regional circumstances, e.g. ownership structures and social situation, the design of the schemes might have to be tailor-made (ref. Article 38.3(b) of the CPR).

One of the possible interventions is Energy Performance Contracting (EPC), in particular for public buildings. EPC is a performance-based procurement method and financial mechanism for building renovation, whereby utility bill savings (that result from the installation of new building systems reducing energy use) pay for the cost of the building renovation project, including third party financing in certain cases to cover upfront cost. A "Guaranteed Energy Savings" Performance Contract includes language that obligates the contractor, a qualified Energy Services Company (ESCO), to pay the difference if at any time the savings fall short of the guarantee. A study launched in the framework of the JESSICA initiative on "Energy Focused Urban Development Funds" analyses several framework models, including EPC in the public sector (see link in Annex I below).

As regards private owners, there is often a lack of awareness regarding EE measures in buildings and a reluctance, or indeed a lack of financial capacity, to invest as the upfront costs can be relatively high and there are competing investment options (e.g. a new car or kitchen). Thus, EPC may in certain situations be a way to trigger private investments in the sector with a relatively small contribution from the public budget, e.g. in the form of a loan or a grant.

For public buildings (as well as commercial buildings, see section 4.2.2 above), the combination of grants with support from financial instruments with ERDF or CF contributions (subject to the ex ante assessment), EPC or commercial financing should be encouraged. For residential buildings, the combination with EPC or leveraging grants with commercial financing should also be considered as explained above, but could be modulated with higher grant intensities in cases where improving EE helps in particular to address energy poverty (in general, heating costs higher than 10% of the family income). For all types of buildings, the intensity of support could also be determined by the results in terms of saved energy, RES produced or GHG emissions avoided/reduced. As a general principle, the deeper the renovation is, the higher the grant support intensity that should be made available.

In general, complex deep renovations leading to significant (typically more than 60%) efficiency improvements should thus be encouraged. This can be supported with a combination of both market-based instruments (e.g. loans, guarantees, EPC schemes), possibly with a contribution from the ERDF or the CF (subject to the ex ante assessment), for measures with a shorter payback time (such as replacement of heating systems, lighting efficiency or energy management of buildings) and grants for capital intensive measures with a longer payback time (such as building envelope insulation and replacement of windows), thus going for integrated and systemic rather than partial solutions and aiming at “deep renovation”, beyond minimum energy performance requirements. For the part going beyond minimum energy performance requirements, a cost-benefit analysis can be useful, since additional investment costs can become disproportionate in relation to additional benefits at a

certain point. Again, any support provided should be conditional to an energy audit in tandem with energy performance certificate for the building as such and verification of achieved results. As mentioned above, the technical guidance on “Financing the energy renovation of buildings with Cohesion Policy funding” gives further details and explanations on these aspects (link in Annex I below).

5. LESSONS FROM THE PAST AND RESULT ORIENTATION

Although the investments in EE in buildings are increasing and there are several good examples of measures and financial instruments already in place (both schemes co-financed by Cohesion Policy funding or national schemes), there is still only limited information on the effectiveness of the different support measures, both at EU and national levels. This is basically a new area for Cohesion Policy investments in the 2007-2013 period, and the results of the interventions will be evaluated during the ex post evaluation exercise for the current period.

As to result orientation in view of the 2014-2020 period, once a managing authority has made a decision on which needs should be addressed, it is necessary to formulate a specific objective: the content of an investment priority adapted to the circumstances of the region or the sector under consideration.

Definition of specific objectives:

- What do you want to change in the region and / or MS?
- And how will you know if the need is being addressed? This requires a result indicator with a baseline and a target.

Examples of result indicators:

- Improvement of average heating/cooling demand in certain type of buildings in kWh/m²/year
- Decrease energy intensity in kgoe/EUR1000 (per sector/region)
- Increase energy efficiency in SMEs
- Energy saved in kWh/year (both in SMEs and buildings)
- Decrease percentage of households in energy poverty

However, for sake of clarity the programme should not multiply result indicators. Once the most appropriate indicators have been selected, the programme should provide a baseline, set a target and plan for appropriate monitoring during the lifetime of the programme.

After having answered the question *what* should be changed, the programme needs to answer *how* this change will be achieved, by which actions.

Definition of actions:

Which factors influence the result indicator? Which of these factors will be selected to be influenced by the programme?

What are the actions to do so?

The common output indicators for the ERDF and the CF also need to be included.

As regards buildings, the technical guidance on “Financing the energy renovation of buildings with Cohesion Policy funding” gives further details and explanations on these aspects (link in section 5).

Example:

Country X has a high number of residential properties in lower energy performance classes (result indicator). The actual share of buildings in the two lowest energy performance classes is 65% in 2013 (baseline) and should be brought down to 20% in 2022 (target). The country explains that a low public awareness, an aversion towards new technology and reluctance for investments explain the high number of buildings with a low energy performance classification. It is decided that the country will contribute to an energy audit provided for households living in dwellings in the two lowest energy performance classes with national public funding, while the ERDF will co-finance a combined grant and loan scheme for major renovations in these buildings using energy efficient systems and materials (the action), modulating the support intensity on the basis of household income and the level of energy savings achieved. Based on the characteristics of the national building stock, the country explains that at least 200.000 more households living in a dwelling with improved energy consumption classification will be needed (target for output) in order to achieve the overall target for 2022.

Some horizontal issues, based on the evaluation evidence

Horizontal issues	Evaluations find...	Questions to ask
Demand analysis	It is crucial that the selection of needs to be addressed and consequent projects is based on an analysis of wider objectives and constraints on regional development.	Can it be demonstrated that EE is a constraint to the regional development? Is a demand analysis of good quality available?
Selection of result indicators and setting of targets	For ERDF interventions in the 2000-06 period, there is a limited amount of data available on outputs and results	Do the proposed indicators reflect the specific objective? Where possible, are the indicators used consistently across programmes?
Target setting for output indicators	The comparison of indicators and targets used suggests that overly ambitious and overly cautious target setting is widespread.	Are the targets realistic given the form of intervention, financial input, past performance and targets set for comparable interventions in other programmes? Has the target setting been documented?
Holistic approach	The appropriate means of improving EE in housing should be considered holistically, taking account of demand patterns as well as existing	Have the demand for proposed services been properly analysed?

	services.	
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Annex I: Links and relevant sources of policy know-how in this field

European Commission

- **Cohesion Policy Expert Evaluation Network Report** on the achievements of cohesion policy including a policy paper on renewable energy and energy efficiency in residential housing for every MS:
http://ec.europa.eu/regional_policy/information/evaluations/index_en.cfm#1
- **Technical guidance on “Financing the energy renovation of buildings with Cohesion Policy funding”**:
http://ec.europa.eu/regional_policy/information/brochures/index_en.cfm#5
- **JESSICA Horizontal (thematic) studies**, including
 - Energy Focused Urban Development Funds
 - JESSICA for Smart and Sustainable Citieshttp://ec.europa.eu/regional_policy/thefunds/instruments/jessica_horizontal_en.cfm
<http://www.eib.org/products/jessica/studies/horizontal.htm>
- **Smart Specialisation Platform**:
<http://s3platform.jrc.ec.europa.eu/home>
- **RIS3 Guide: Connecting Smart and Sustainable Growth through Smart Specialisation** – A practical guide for ERDF managing authorities with a chapter on research and innovation for sustainable energy:
http://ec.europa.eu/regional_policy/sources/docgener/presenta/green_growth/greengrowth.pdf
- **Urban development in the EU – Case studies of 50 projects supported by the ERDF during the 2007-2013 period**, of which some including an energy efficiency component:
http://ec.europa.eu/regional_policy/activity/urban/goodpracticemap_en.cfm
- **Housing investments supported by the European Regional Development Fund 2007-2013: Housing in sustainable urban regeneration**
http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/housing/2013_housing_study.pdf
- **Energy Efficiency Directive**:
http://ec.europa.eu/energy/efficiency/eed/eed_en.htm
- **Energy Performance of Buildings Directive**, see also the Report from the commission to the European Parliament and the Council "Financial support for energy efficiency in buildings", COM(2013)225 and the accompanying Staff Working Document SWD(2013)143:
http://ec.europa.eu/energy/efficiency/buildings/buildings_en.htm
- **National Energy Efficiency Action Plans**:
http://ec.europa.eu/energy/efficiency/end-use_en.htm
- **Financing energy efficiency**:

http://ec.europa.eu/energy/efficiency/financing/financing_en.htm

- **Energy Performance Contracting:**
http://ec.europa.eu/energy/efficiency/financing/campaign_en.htm
- **The European Strategic Energy Technology Plan (SET-Plan):**
http://ec.europa.eu/energy/technology/set_plan/set_plan_en.htm
- **Technology and Innovation Strategy 2020 and beyond:**
http://ec.europa.eu/energy/technology/strategy/strategy_en.htm
- **Strategic Energy Technologies Information System – SETIS:**
<http://setis.ec.europa.eu/>

Meetings organised by DG REGIO:

- **Workshop and Conference on Energy Efficiency, November 2011:**
http://ec.europa.eu/regional_policy/archive/conferences/energy2011nov/index_en.cfm
- **COCOF technical meeting on Sustainable Energy, March 2011:**
http://ec.europa.eu/regional_policy/archive/conferences/energy2011/index_en.cfm
- **Regions for Economic Change Conference, May 2010 Energy efficiency workshop (2A):**
http://ec.europa.eu/regional_policy/archive/conferences/sustainable-growth/programme_en.cfm?nmenu=4
- **"From policy to practice....boosting Cohesion Policy's contribution to sustainable energy", June 2009:**
http://ec.europa.eu/regional_policy/archive/conferences/energy2009/index_en.htm

European Court of Auditors

- **European Court of Auditors Special Report No 21/2012 on “Cost-effectiveness of Cohesion Policy Investments in Energy Efficiency”:**
<http://eca.europa.eu/portal/pls/portal/docs/1/20590745.PDF>

External Documents and Links

- **EPEC (EIB) Energy Efficiency web site**, including guidance on energy efficiency in public buildings and energy efficient street lighting:
<http://www.eib.org/epec/ee/index.htm>
- **European Energy Efficiency Fund:**
www.eeef.eu
- **The European portal for energy efficiency in buildings:**
<http://www.buildup.eu/>
- **INTERREG IV C capitalisation report on energy efficiency:**
<http://www.interreg4c.eu/good-practices/capitalisation/energy-efficiency/>

- **INTERREG IV C projects:** http://www.interreg4c.eu/approved_projects.html
Among others:
 - [Power Programme EE Policy Recommendations](#)

- **INTERREG IV B MED Programme:**
Among others:
 - MARIE “Towards Energy Efficiency Improvement in the Existing Mediterranean Buildings”: <http://www.marie-medstrategic.eu/>
 - ELIH-MED “Energy Efficiency of Low Income Housing in the Mediterranean” : <http://www.elih-med.eu/Layout/elih-med/>

- **Intelligent Energy Europe –Projects** (and their outcomes): <http://eaci-projects.eu/iee/page/Page.jsp>
Among others:
 - FRESH: [Financing energy refurbishment for social housing](#)
 - European Energy Service Initiative (Energy Performance Contracting): <http://www.european-energy-service-initiative.net/eu/project.html>
 - PERMANENT Performance Risk Management for Energy Efficiency Projects through Training: http://eaci-projects.eu/iee/page/Page.jsp?op=project_detail&prid=1888
 - Clearsupport Paving Way for Better Energy Performance of Buildings in Europe: <http://www.clearsupport.eu/>
 - CHANGE Training of over 250 representatives in Chambers of Commerce around Europe to provide advice on energy efficiency (11 MS + HR): http://eaci-projects.eu/iee/page/Page.jsp?op=project_detail&prid=1779
 - EuPlastVoltage Setting up a voluntary agreement for energy efficiency in the plastic sector: <http://www.euplastvoltage.eu>
 - CARE+ Developing a tool for energy audits in SMEs in the chemical sector: <http://www.cefic.org/Policy-Centre/Energy/Energy-Efficiency/CARE-/>
 - EINSTEIN II Freeware thermodynamic software for optimising thermal energy use in industrial processes, calculating payback times for cogeneration plants and solar energy use in industrial processes: <http://www.einstein-energy.net/thermal-energy-audits>
 - SF-ENERGY Invest:
 - [Collaborative Actions for Triggering Investments in Sustainable Energy Actions using Regional and Structural Funds](#) (BE, BG, CZ, DE, EE, FR, NL, AT and PT)
 - A Manual for financing RES and EE projects with Structural and Cohesion Funds: http://www.sf-energyinvest.eu/uploads/media/Manual_English_01.pdf
 - A brochure with 10 success stories of projects funded by SF: http://www.sf-energyinvest.eu/uploads/media/sf_energy_invest_brochure_04.pdf
 - Recommendations for better use of SF for EE and RES (coming soon)
 - ENERGY 4 COHESION – E4C:
 - [Energy Actions for Europe's Cohesion](#) (BE, CZ, EE, DE, EL, HU, IT, LV, LT, PL and SK)
 - PROMOSCENE:

- [Promoting the use of Structural Funds and Cohesion Funds for energy investments in New Member States and Candidate Countries](#) (BG, CZ, CY, PL and RO)
 - Smart SPP – Innovation through sustainable procurement:
 - <http://www.smart-spp.eu/>
- **CIP – Lead Market Initiative project** on Sustainable Construction and Innovation through Procurement:
<http://www.sci-network.eu/>
- The **Energy efficient Buildings Public Private Partnership (EeB PPP)** document showcasing the projects related to the EeB PPP funded through the 2011 and 2012 FP7 Work Programmes:
http://www.ecfp.org/enewsportal/index.php?option=com_content&view=article&id=726:eeb-ppp-project-review-2012-has-been-published&catid=73:publications&Itemid=61
- **The European Construction Technology Platform website:**
<http://www.ecfp.org/enewsportal/index.php>
- **Buildings Performance Institute Europe, BPIE:**
<http://www.bpie.eu/>
- **BPIE data hub for the energy performance of buildings:**
<http://www.buildingsdata.eu/>
- **BPIE - Europe's buildings under the Microscope** - a country by country review of the energy performance of buildings:
http://www.renovate-europe.eu/uploads/LR_%20CbC_study.pdf
- **Copenhagen Economics study:**
[Quantifying benefits of energy efficient renovation of buildings](#)
- **Covenant of Mayors** - Committed to local sustainable energy:
http://www.eumayors.eu/index_en.html
- **Pact of Islands** – Sustainable Energy Actions for Islands:
<http://www.islepact.eu/html/index.aspx>
- **Energy Cities – The European Association of Local Authorities Investing in their Energy Future:**
http://www.energy-cities.eu/spip.php?page=index_en