



European Rental Housing Framework for the Profitability
Calculation of Energetic Retrofitting Investments

649656 — RentalCal — H2020-EE-2014-2015/H2020-EE-2014-3-MarketUptake

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I. Project synopsis

Objectives of the project

The EU directive 2010/31 on the energy performance of buildings (recast) of 19th May 2010 (EPBD recast)¹ sets out requirements regarding the energy performance of new buildings, as well as minimum requirements for the energy performance of existing buildings, building units and building elements that are subject to major renovation (Art. 1 No. 2 (c)). These minimum requirements shall not prevent any member state from maintaining or introducing stronger measures. As a minimum requirement, a “cost optimal level” shall be reached (Art. 14, Art. 2 No.14). The EPBD recast directive establishes the calculation for the “cost-optimal level” of minimum energy performance requirements including a comparative methodology framework, distinguishing between new and existing buildings and between different categories of buildings. Unlocking the barriers to proven economic saving potentials offered by energy efficiency investments in the existing building stock are considered crucial for meeting European energy efficiency targets. This is especially important for rental housing, which represents the majority of the multifamily housing stock in most participating countries.

Although the calculation methodology established within the EPBD framework suggests that in general, retrofitting investments are financially viable within given cost conditions, there is no sufficient energy investment.

One reason is the limitation of the methodology framework to the financial perspective of the owner-occupier, thus neglecting other relevant stakeholder groups such as the rental housing sector.

A set of market failure mechanisms summarised under “split incentives’ barriers” are obstacles for investment in the rental housing sector. Split incentives may not only arise from the factual separation of investor and beneficiary (landlord-tenant disincentive), but also from asymmetrical risk exposition during the refinancing period (temporal disincentives) or from free rider problems (landlord-landlord dilemma) within owners’ associations.

¹ http://www.eceee.org/policy-areas/buildings/EPBD_Recast/EPBD_recast_19May2010.pdf

Article 19 of the EU directive 2012/27 on energy efficiency of 25th October 2012 states, that “Member States shall evaluate and if necessary take appropriate measures to remove regulatory and non-regulatory barriers to energy efficiency, without prejudice to the basic principles of the property and tenancy law of the Member States, in particular as regards the split of incentives between the owner and the tenant of a building (...)” with a view to ensuring that these parties are not deterred from making efficiency-improving investments that they would otherwise have made by the fact that they will not individually obtain the full benefits or by the absence of rules for dividing the costs and benefits between them (...).²

Therefore, the essential challenge for improving the attractiveness of investments within the rental housing industry will be the removal or mitigation of investment barriers. To date there is no standardised methodology for calculating the profitability of refurbishment investments, not even within the property valuation standards of individual countries.

Objective I: profitability assessment in the rental housing sector

RentalCal’s first objective is to develop a comparable methodology for the profitability assessment of energy efficient retrofitting investments in the rental housing sector. This methodology needs to incorporate given national cost levels (investments and operational costs) and efficiency improvements on the one side. On the other side it needs to consider returns (rental and appreciation returns of “green value”) as well as technical, legal and financial framework conditions (construction costs, capital costs, taxation e.g. depreciation allowances, legal status of contract rents etc.).

Objective II: Improving the transparency of investment conditions

Due to a lack of supranational competencies in the housing sector, there is a lack of systematic and comparable assessment of the level of current investment barriers in EU countries and their impact on the renovation rate in the rental housing stock. Moreover, satisfactory information is not even available on the level of a mere qualitative assessment

² <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:315:0001:0056:en:PDF>

of specific issues like the handling of landlord-tenant-disincentives within national rental statutes.

Therefore, the second objective of RentalCal is to provide comparable and transparent information on the profitability of energy efficiency investments that can be used both for the assessment of investment decisions, and for the comparative analysis of existing barriers in the private rental housing stock of participating countries. Within this objective, the technical, legal, financial and institutional framework conditions for energy saving investments in the rental housing sector of selected European member states will be analysed. Furthermore, the project emphasises the cross-national comparative analysis of the profitability calculation of energy retrofitting investments. In this context, RentalCal aims to contribute to a harmonisation of the methodologies and calculation standards in the field of profitability assessments for energy retrofitting investments in the existing housing stock.

Objective III: disseminate knowledge on green value issues in the rental housing industry

RentalCal specifically aims to prepare the ground for investment in the existing rental housing stock. In this sense, the development of a theoretical framework can ultimately help change the behaviour of property investors and ought to have great impact for climate change adaptation in the real estate industry. The immediate beneficiaries of our output are landlords and property investors who will be better informed regarding the feasibility of a proposed investment. With this approach RentalCal is significantly targeting the business case for energy efficiency retrofitting which is extremely important. In doing so, the proposed project provides insights into the pricing of energy efficient buildings that stakeholders can use to assess the enhancement of asset values and understand the market mechanisms. This will ultimately strengthen the financing and attractiveness of sustainable energy investments.

The RentalCal Consortium

RentalCal is an international research project funded by the European Union under the H2020 framework that links together eleven partner organisations - universities, public research institutes, and practitioners in the field of real estate economics, housing policy and energy efficiency.

The RentalCal consortium partners represent housing markets from eight EU member states (Czech Republic, Denmark, France, Germany, Great Britain, Poland, Spain and the Netherlands), each with a distinct regulatory and socioeconomic framework for housing provision. RentalCal's consortium members cover a majority share of EUs largest rental housing markets with a total of about 33 million dwellings in the private rental sector, with about 46 % of it built in 1980 or earlier.

II. The scope of WP 5 in the general project context

The core objective of WP5 is to compile, interpret and discuss the empirical evidence on the market pricing of energy-efficient features and buildings (market framework conditions). In addition to carrying out econometric analyses in selected European markets, this work package conducts a comparison of the relevant national, regional and local trends in the take-up of energy-efficient buildings and the potential constraints for pricing energy-efficient building features. Based on this information, policy recommendations for the removal of existing market barriers are derived in conjunction with the results of WP3 (legal framework) and made ready for communication and dissemination activities related to policy makers in WP9.

This work package has also the objective of analysing and outlining existing subsidies and financing mechanisms for investments in energy efficiency in the private rented sector of the participating countries (financial framework conditions). Particularly, the focus is on compiling information on availability of green mortgages and other debt financing instruments with favourable rates and conditions.

Work package 5 results are presented in the following deliverables:

- D5.1: Report with 8 country specific sections, containing a description of packages of measures and best practice approaches for reducing/removing market barriers for increased willingness to pay.
- D5.2: Report with 8 country specific sections, containing a description of “green-premiums”, i.e. energy efficiency related value drivers (rental premiums, sales price premiums, higher occupancy rates) and operation costs.

- D5.3: Report with 8 country specific sections, containing a description of grants and other subsidies for each partner country.
- D5.4: Report with 8 country specific sections, containing a description of financing conditions (Interest rate, durations, conditions) for each partner country.
- D5.5: Report featuring the results of four country specific empirical studies (hedonic pricing models of green premiums)

III. Interrelation with other work packages

The setting of WP 5 within the project is presented in Figure 1. Both market and financial framework conditions will be made available in WP5 for using the generated data as input parameters for profitability calculations in WP6. All information collected will be analysed and aggregated in the form of comprehensive country specific fact sheets (brief descriptive summary and basic statistics/analysis of collected data).

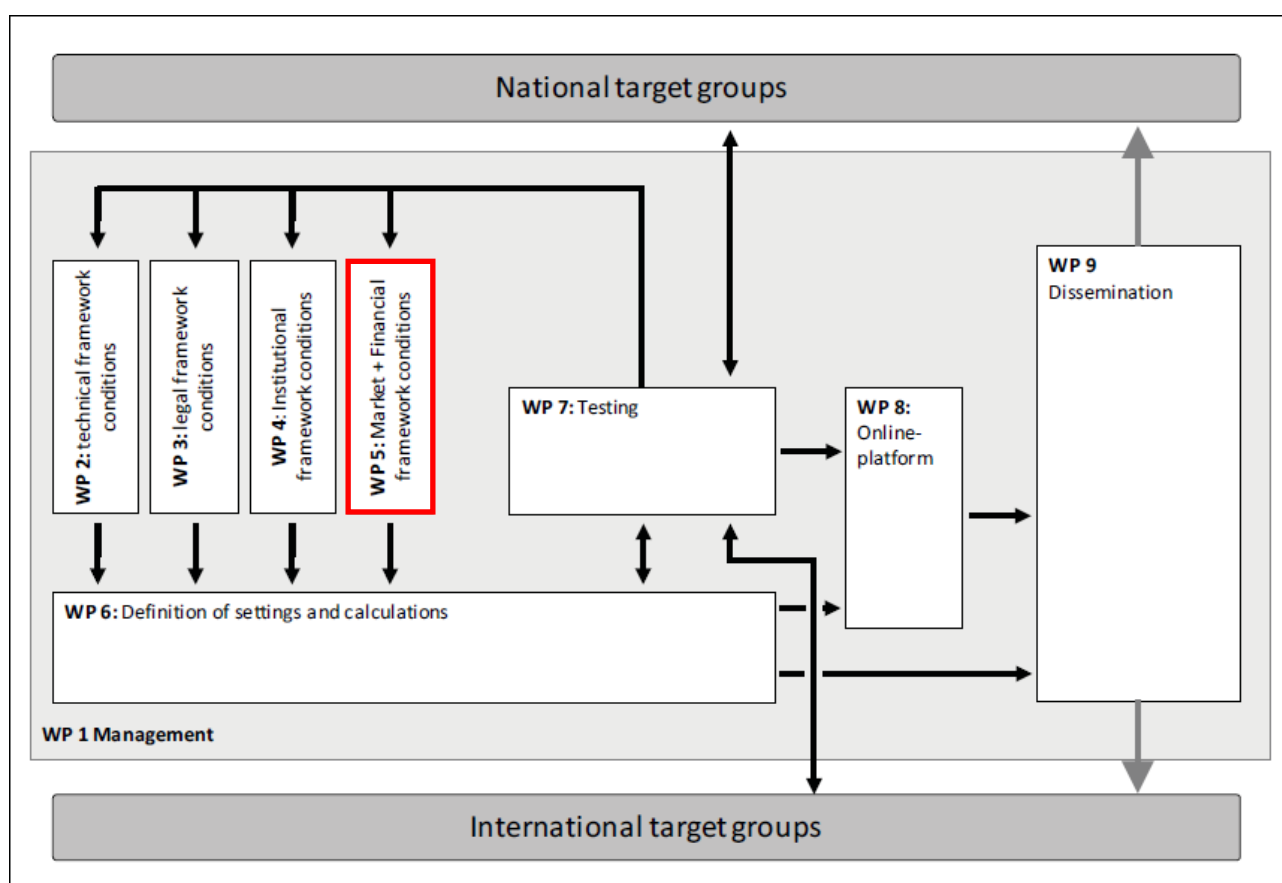


Figure 1: Work package flow chart

1 Overview of research efforts of deliverable 5.3

1.1 Current state of research

In combatting climate change, numerous policies and measures have been identified and initiated across the EU. Findings from the Buildings Performance Institute Europe (BPIE) identified a series of barriers which work against the attractiveness of energy efficiency investment initiatives. Among the major barriers, finance related challenges were ranked the highest, as alternative investments are currently perceived as more attractive than energy saving measures (BPIE 2011). With regards to policy initiatives, the main policy driver behind energy efficiency in the EU building stock, is the Energy Performance of Buildings Directive (EPBD, 2002/91/EC). After its initiation in 2002, the Directive has been recast in 2010 (EPBD recast, 2010/31/EU). This included a more stringent and ambitious outlook, from which requirements for certification, inspections, training or renovation are now obligatory in Member States (BPIE 2011). Much of the change in policy and regulation revolve around the implementation of Energy Performance Certification (EPC) across the EU. However, this has not yet been fully implemented for all the required building typologies in five countries (BPIE 2011). To ensure the continuation towards a more energy efficient EU, from which the energy efficiency of its building stock plays a fundamental role, time is required for the regulatory framework to display its effectiveness and value. Over time, the evaluation results of implemented policy initiatives will generate a database of information, from which a feedback loop of best practice will be widely available (Lewis & Smith 2013). Combined with sound and innovative programmes to provide financial support, this will drive the success and future acceptance.

1.2 Central questions to be answered in D 5.3

This deliverable compiles and compares information associated with available grants and subsidies for energy efficiency retrofits across the eight RentalCal consortium countries. The objective of this report is focussed on providing information on current developments of financial initiatives, directed primarily at energy efficiency retrofits, to combat climate change across national borders. Finally, it aims to provide insights for future policy considerations.

1.3 Procedure

Chapter 1 contains an overview on the project, the current state of research associated with energy efficiency policy, regulator and financial initiatives in the building sector; it concludes with suggestions for future policy initiatives as well as an outline of the work to follow. Chapter 2 contains the results and cross country comparison fact sheets of grants, subsidies and policy goals across the eight RentalCal consortium countries. Chapter 3 contains the individual country report sections for all eight countries; each with a comprehensive discussion of the country specific situation and their country specific fact sheets.

2 Results

2.1 Grants and subsidies: A comparison of institutions, policies and goals

A comprehensive and comparative outline of the major initiatives and their respective objectives across the eight RentalCal consortium countries are summarised in the Table 1 fact sheet. The vast majority of the existing grants and subsidies across the RentalCal consortium are available from public institutions. From the three programmes available in the Czech Republic, the objective of the grant giving institutions revolve around the implementation of the housing policy to support the housing sector and the protection of the environment. Initiatives from Denmark revolve around support for energy supply companies' contribution to energy savings and to improve the attractiveness of housing areas. Finally, there also exist initiatives that support low income groups and the improvement of the general national economic activity. Goals and objectives in France include the renovation of the existing housing stock and the promotion of energy efficiency in multi-family buildings. Furthermore, financial initiatives are in place to support the renovation of low and medium income homes and ensure the quality of renovation works. In Germany, four energy efficiency initiatives are available via the government-owned development bank (KfW) and serve as either credit subsidies or cash allowances for refurbishment, investment or planning support of national green investments. The goals of the initiatives revolve around improving the affordability of energy efficiency retrofits to homeowners, the renovation of fossil fuel based heating systems and the provision of informational support from professionals. There are a variety of green initiatives available in the Netherlands. Primarily, the objectives of the respective initiatives aim to facilitate national energy savings and CO₂ reductions, whilst also stimulating the attractiveness of renewable energy. Further goals revolve around improving the energy efficiency of the rental market and movements towards sustainability. Existing Polish initiatives are directed at the restoration of the existing national building stock and the reduction of both CO₂ emissions and the demand for energy.

In doing so, much of the goals are associated with the implementation of new energy efficiency technologies, thermo-modernisations and the production of renewable energy. Similar to Poland, Spanish national objectives are directed at the provision of common energy facilities and renewable energy sources, thermal insulation and the reduction of ener-

gy consumption. Furthermore, the country aims to improve building quality, sustainability and the reduction of CO2 emissions by providing incentives to renovate the national existing building stock. Finally, the availability of financial products, grants and subsidies in the United Kingdom are not comprehensive. With the failure of the Green Deal initiative, limited national investment in energy efficiency retrofits remain widespread. In this regard, existing goals include the reduction of the risk of consumer overpayment due to fluctuating electricity prices and the uptake of renewable energy technologies and heat alternatives.

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Cross country comparison: major subsidy and grant policies
Fact sheet name	Cross country comparison - subsidies for energy efficiency investments: institutions and goals

Table 1: Cross country comparison - subsidies for energy efficiency investments: institutions and goals

Variable	Exact name of major policy/programme	Name of major policy/programme	Grant giving institution	Type of grant giving institution	Scope of business of grant giving institution & Subject of subsidy/grant	References
Czech Republic (1)	Nová zelená úsporám	New Green Savings	State Environmental Fund of the Czech Republic	Public	Government Agency – Decrease energy demand of existing homes; construction of low-energy houses and efficient use of energy sources.	(State Environmental Fund of the Czech Republic 2016; State Housing Development Fund 2014a; State Housing Development Fund 2013)
Czech Republic (2)	Programme150	Programme 150	State Housing Development Fund of the Czech Republic	Public	Government Agency – Repair or modernisation of houses or flats.	Ibid.
Czech Republic (3)	Panel 2013+	Panel 2013+	State Housing Development Fund of the Czech Republic	Public	Government Agency – low-interest long-term credits for repairs and modernisations of multi-dwelling buildings	Ibid.
Denmark (1)	Byfornyelsesstøtte	Urban Renewal	Ministry of Energy, Utilities and Climate/Municipality (cooperation)	Public	Government Agency – Financial support for improvement of buildings and areas.	(Ministry of Immigration Integration and Housing 2016; ENS 2011; ENS 2014a; ENS 2014b; Skatteministeriet 2015; Danish Ministry of Taxation 2016)
Denmark (2)	Grøn byfornyelse	Green Urban Renewal	-	Public	Energy efficiency improvements	Ibid.
Denmark (3)	Boligydelse/boligsikring	Rent Support	Ministry of Energy, Utilities and Climate	Public	Government Agency- Financial support (rent) for low income groups. Not subjected to energy efficiency retrofits.	Ibid.
Denmark (4)	Energisparetilskud fra energiselskaberne	Support from Energy Supply Companies	Energy Supply Companies (ESC)	Private	Private Energy Supply Company- A range of energy efficiency projects.	Ibid.
Denmark (5)	BoligJobordning	Residence Job Scheme	Ministry of Taxation	Public	Government Agency – Energy efficiency improvements	Ibid.
Denmark (6)	(BedreBoliger)	Better Homes	-	-	Better Homes and energy efficiency improvement.	Ibid.
France (1)	Eco-prêt à Taux Zero	Subsidised Credit programme (eco loan 0% interest rate)	La Caisse des Dépôts - State owned Bank; distributed by 21 private banks.	Public / Private	Government-owned bank for the production of the eco-loan / private banks for its distribution – Energy efficiency works; (i)Insulation of roofs and facades; (ii) replacement of external doors and windows; (iii) replacement of heating and DHW systems using either renewable or non-renewable energy systems.	(Ministry of Economy 2014; ANAH 2016b; Ministère du Logement et de L'habitat Durable 2016b; QuelleEnergie.fr 2016; Department of Environment Energy and the Sea 2016d; Department of Environment Energy and the Sea 2016b; Department of Environment Energy and the Sea 2016a; Ministère du Logement et de L'habitat Durable 2016a)
France (2)	Crédit d'impôts Transition Énergétique	VAT rate reduction and Tax Credits (relief)	Ministry of Finance	Public	Government Agency – Idem.	Ibid.
France (3)	Prime renovation énergétique 1350 €	Premium "Energy Renovation" € 1350	ANAH	Public	Government Agency – Idem.	Ibid.
France (4)	TVA 5,5% à taux réduit pour les travaux d'efficacité énergétique	VAT reduced rate (5,5%) on energy efficiency works	Ministry of finance	Public	Government Agency – Idem.	Ibid.
France (5)	Aides financières ANAH	ANAH individual subsidies	ANAH	ANAH State Public Agency	Government Agency – Idem.	Ibid.

Variable	Exact name of major policy/programme	Name of major policy/programme	Grant giving institution	Type of grant giving institution	Scope of business of grant giving institution & Subject of subsidy/grant	References
Germany (1)	151 - Energieeffizient Sanieren – Kredit	Energy-efficient refurbishment – credit programme (151)	KfW	public	Government-owned Development Bank – Credit for single measures or refurbishments to KfW Efficiency Home standard.	(KfW 2016f; KfW 2016d; KfW 2016e; KfW 2016a; KfW 2016b)
Germany (2)	167 - Energieeffizient Sanieren – Ergänzungskredit	Energy-efficient refurbishment – supplementary credit programme (167)	KfW	public	Government-owned Development Bank – Replacement of heating systems with renewable energy sources.	Ibid.
Germany (3)	430 - Energieeffizient Sanieren – Investitionszuschuss	Energy-efficient refurbishment – Investment grant (430)	KfW	public	Government-owned Development Bank – Single measures or refurbishments to KfW Efficiency Home standard.	Ibid.
Germany (4)	431 - Energieeffizient Bauen und Sanieren - Zuschuss Baubegleitung	Energy-efficient refurbishment – monitoring programme (431)	KfW	public	Government-owned Development Bank – Planning and consulting by external experts.	Ibid.
Netherlands (1)	ISDE (Investeringssubsidie duurzame energie)	Investment Allowance Sustainable Energy	RVO (NL Government, subsidy)	Public	Government Agency- Private households and business who want to generate renewable energy can apply for subsidies for solar water heaters, heat pumps, biomass boilers and pellet stoves.	(RVO 2016b; RVO 2016c; RVO 2016a; Milieu Centraal 2016; Belastingdienst 2016)
Netherlands (2)	BTW op zonnepanelen terugvragen	VAT return for Solar panels	Belastingdienst (NL Government, policy)	Public	Government Agency- An individual who buys solar panels can reclaim VAT on purchase and installation.	Ibid.
Netherlands (3)	BTW tarief 6% voor arbeidskosten schilderen, stukadoeren en isoleren van de woning.	VAT reduction initiatives.	Belastingdienst (NL Government, policy)	Public	Government Agency- The 6% VAT rate is applicable to painting and plastering of houses older than two years and applying insulation in these homes.	Ibid.
Netherlands (4)	VvE Energiebespaarlening	HOA Energy Saving Loan	SVn (foundation)	Public/private	Foundation – Allows HOA's to finance at an attractive interest rate, energy-saving investments in apartment complexes.	Ibid.
Netherlands (5)	Energiebespaarlening	Energy Saving Loan	SVn (foundation)	Public/private	Foundation – homeowners can take a loan at a favorable interest rate for energy saving measures	Ibid.
Netherlands (6)	STEP (Stimuleringsregeling energieprestatie huursector)	Incentive Scheme Energy Efficiency in the Rental Sector	RVO (NL Government, subsidy)	Public	Government Agency – EE measures in the regulated rental sector	Ibid.
Netherlands (7)	FEH (Fonds energiebesparing huursector)	Fund Energy Saving Rental Sector	RVO (NL Government)	Public	Government Agency – Landlords can qualify for a loan when they renovate at least five homes to highly energy-efficient homes.	Ibid.

Variable	Exact name of major policy/programme	Name of major policy/programme	Grant giving institution	Type of grant giving institution	Scope of business of grant giving institution & Subject of subsidy/grant	References
Poland (1)	Fundusz termomodernizacji i Remontów	Thermo-modernisation and Renovation Fund (BGK)	BGK (Bank of National Economy)	Public	Development Bank – Thermo-renovation; Structural repairs; Decreasing the losses in district heating networks; Change of heat source.	(BGK 2016; BOS 2016; NFOŚiGW 2016; WFOŚiGW 2016b; WFOŚiGW 2016a; WFOŚiGW 2016c; Fundusze Europejskie 2016)
Poland (2)	Kredyt Eko Inwestycje	Credit Eco Investments (BOŚ)	BOŚ Bank/National Fund for Environmental Protection and Water Management (NFEP&WM)	Public	State (department) Agency- (i) Investments in new technologies and equipment reducing energy consumption (LEME list); (ii) Projects in the area of Energy Efficiency, Renewable Energy and Thermo-renovation of buildings.	Ibid.
Poland (3)	Kredyt Energia na Plus	Credit 'Energy on the plus (BOŚ)	BOŚ Bank/(NFEP&WM)	Public	State (department) Agency - Thermo-modernisation of buildings; (ii) Replacement of lighting, (iii) the use of RES, (iv) modernisation or replacement of equipment, (v) the use of cogeneration, (vi) modernisation of local heating networks.	Ibid.
Poland (4)	Prosument	PROSUMENT (BOŚ)	BOŚ Bank/(NFEP&WM)	Public	State (department) Agency - Purchase and installation of micro-installations of RES	Ibid.
Poland (5)	RPOWM 4.3.1 Ograniczenie zanieczyszczeń powietrza i rozwój mobilności miejskiej	Regional Operational Programme of Masovian Voivodship Measure 4.3.1 - Reducing air pollution and the development of urban mobility	European Regional Development Fund/Cohesion Fund/State/Private partners	Public/private	Mixed. (i) replacement of the heating medium; (ii) Connecting to the district heating / cooling.	Ibid.
Poland (6)	Ograniczenie emisji zanieczyszczeń do powietrza	Reducing emissions of air pollutants"(WFOŚ Warsaw)	Regional Fund of Environmental Protection and Water Management	public	State (department) Agency - Tasks bringing ecological effect for the protection of the atmosphere.	Ibid.
Poland (7)	Wspieranie instalacji wykorzystujących odnawialne źródła energii	Supporting installations using renewable energy sources"(WFOŚ Warsaw)	Regional Fund of Environmental Protection and Water Management	public	State (department) Agency - Undertaking consisting of RES purchase and installation.	Ibid.
Poland (8)	Wspieranie zadań z zakresu termomodernizacji oraz związanych z odzyskiem ciepła z wentylacji	Supporting the tasks of thermo and associated heat recovery ventilation"(WFOŚ Warsaw)	Regional Fund of Environmental Protection and Water Management	public	State (department) Agency - (i) Comprehensive thermal modernisation of buildings; (ii) the use of heat recovery / heat recovery ventilation.	Ibid.

Variable	Exact name of major policy/programme	Name of major policy/programme	Grant giving institution	Type of grant giving institution	Scope of business of grant giving institution & Subject of subsidy/grant	References
Spain (1)	Ley 8/2013, de 26 de junio, de rehabilitación, regeneración y renovación urbanas	Ley 8/2013 of June 26th for Rehabilitation, Regeneration and Urban Renovation.	The Autonomous Community (Regions) by agreement with central Government	public	Government Agency – (i) Thermal isolation of building envelope (ii) Installations of bioclimatic devices in facades or roofs, (iii) Provision of common energy facilities or any renewable energy sources (iv) Any work or installations to reduce 30% of energy consumption (Art 10.4)	(IDAE 2011; IDAE 2016; REE 2015; PEFAV 2013; RRRU 2013)
Spain (2)	Plan Estatal de Fomento del Alquiler de Viviendas, Rehabilitación edificatoria y regeneración y renovación urbanas, 2013-2016'	Royal Decree 233/2013 of April 5th of State Plan for improving the Rental market, building rehabilitation and urban regeneration and renovation.	The Autonomous Community (Regions) by agreement with central Government	public	Government Agency – Improving building quality and sustainability by improving; (i) Thermal envelop, (ii) heating, refrigeration or ACS installations with better efficiency; (iii) Installing power generators using renewable energy and (iv) improving energy efficiency of the current installations (arts 19 and beyond).	Ibid.
Spain (3)	Rehabilitación Energética de Edificios (Programma PAREER-CRECE), Plan de Acción 2014-2020 para la rehabilitación Energética de Edificios existentes	Programme PAREER-CRECE, Action Plan 2014-2020 for Energy rehabilitation of existing buildings (REE,2014)	The Autonomous Community (Regions) by agreement with central Government	public	Government Agency – Promote repairs and refurbishments which aim is reduce energy consumption, improve energy efficiency, implement renewable energies and reduce the CO2 emissions, in existing buildings 4 types: Type 1; Improve energy efficiency in the thermal envelope. Type 2; Improve energy efficiency in thermal facilities and lighting. Type 3; Substitution of conventional energy by biomass system in thermal facilities. Type 4; Substitution of conventional energy by geothermal energy.	Ibid.
United Kingdom (1)	Contract-for-Difference (CfD) scheme	Contract-for-Difference (CfD) scheme	UK Government (policy/law)	public	Government Agency – Private law contract which requires suppliers to sell generated energy at a pre-agreed "strike price". It is aimed at reducing risks resulting from fluctuating electricity prices and thereby protects consumers from overpayment.	(Energy Saving Trust 2016; DECC 2016a; DECC 2016b)
United Kingdom (2)	Feed-in-tariffs (FITs)	Feed-in-tariffs (FITs)	UK Government (policy)	public	Utility/Government Agency – Allows the receipt of money from energy supplier when energy generating technologies are installed.	Ibid.
United Kingdom (3)	Renewable Heat Incentive (RHI)	Renewable Heat Incentive (RHI)	UK Government (policy)	public	Utility/Government Agency - To encourage the uptake (remove barriers) of renewable heating alternatives.	Ibid.
Remarks						

2.2 A comparative analysis of grants and subsidies

The cross country comparison fact sheet (Table 2), summarises the comparison of subsidies and grants available across the eight consortium countries. The fact sheet specifically emphasise type, target groups and the impact of the national support available. The Czech Republic support programmes proved to be successful in generating widespread knowledge and information. However, the Programme 150 initiative had a limited impact, which is ascribed to the fact that the initiative is limited to a specific demographic group. Information on the implications and evaluation of support initiatives were found to be rather limited in Denmark. Yet, the Urban Renewal Scheme proved to have a significant impact from which it's success is ascribed to the change in focus towards energy efficiency. In France, many of the existing initiatives are associated with financial support, the majority of which were found to have a valuable impact on the movement towards energy efficiency. The success of the initiatives can be ascribed to the affordability of financial support nationally available, which takes the form of zero percent interest loans and cash allowances that covers roughly the average cost of green investments. The four KfW programmes in Germany were found to be very popular and remain available to residential properties. The attractiveness of the initiatives is mainly financial; characterised by significant cash allowances, low interest rates and the subsidisation of professional support services available to consumers. Initiatives in the Netherlands provide a range of alternatives that improve the financial attractiveness of energy efficiency retrofits. These range from investment allowances for sustainable energy initiatives to tax incentivised home improvement works and energy saving loans primarily directed at the rental sector. However, the implications of the support practices proved to be relatively average. However, with the Investment Allowance for Sustainable Energy (ISDE) initiative still in its infancy (starting in 2016), a significant portion of the available budget (5.5 million EUR) has already been allocated to 1758 applicants, which shows significant interest.

Similar to Denmark, information about the evaluation and effectiveness of financial support practices in Poland are limited. Yet, the initiative available via the Thermo-modernisation and Renovation fund (TM&RF) and provided by the Bank of national Economy (BGK), distributed over 2 billion PLN in subsidies until the end of 2015, which reduced energy costs to up to 0.8 billion PLN. This initiative was found to have the most significant impact. The

initiatives in Spain were all expected to have a significant impact on restoration, yet evaluations suggest a marginal effect due to the deprived national economic situation. Finally, financial support in the UK is still in its infancy. However, a commendable take-up is associated with the Renewable Heat Incentive from which the government confirmed the extension of the programme to 2020/2021 and a budget increase from £430 million to £1.15 billion by that time (IEA 2016). A comprehensive outline and comparison of the national practices are displayed in Table 2.

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Cross country comparison: major subsidy and grant policies
Fact sheet name	Cross country comparison - subsidies for energy efficiency investments: comparison of national practices

Table 2: Cross country comparison - subsidies for energy efficiency investments: comparison of national practices

Variable	Policy goals	Type of subsidy	Target groups	Target housing stock	Impact	Evaluation of the existing national programmes	Reasons for success/failure	Remarks
Czech Republic (1)	Renovation of the housing stock	Cash allowance	Owner, developer, landlords	Houses, multi-story houses	Very large impact at national level	high	Widespread public knowledge of the programme	
Czech Republic (2)	Help young people to modernise their dwellings	Credit subsidy	Owner	Individual flats, house	Low impact	low	Limited to a very specific demographic	
Czech Republic (2)	Renovation of the housing stock, specifically large multi-story residential buildings	Credit subsidy	Owners, developer, landlords	Multi-story houses	Very large impact at national level	high	Widespread public knowledge of the programme	
Denmark (1)	The direct subsidization of the private rental market (both tenants and landlords). Objective to improve attractiveness of housing areas; support low income groups and to improve economic activity.	Both cash allowance and credit subsidy (subjected to evaluation).	Private rental housing.	Multi-story housing.	2014 - CPH municipality used 91.6 million DKK to renovate 46 buildings with 2890 flats. A portion of the funds are allocated to area renewal).	High. Socially - average, but increasing with regards to energy efficiency.	(i)The focus has changed. (ii)in 2016 the "Green Urban Renewal" has been established by government	
Denmark (2)	Social support for low income groups to stay in their homes.	The municipality can provide rent support to tenants (the same rules as for the urban renewal scheme applies).	-	All	-	-	-	
Denmark (3)	Promote energy efficiency in the existing housing market.	An agreement with the ESC has to be made, before work starts. The ESC "buys" energy savings.	Private rental housing.	.	-	-	-	
Denmark (4)	Promote energy efficiency in the existing housing market.	Tax deduction	All - but mainly single-family homes	All - but mainly single-family homes	-	-	-	
Denmark (5)	Promote energy efficiency in the existing housing market.	-	All - but mainly single-family homes	All - but mainly single-family homes	-	-	-	

Variable	Policy goals	Type of subsidy	Target groups	Target housing stock	Impact	Evaluation of the existing national programmes	Reasons for success/failure	Remarks
France (1)	Related to the national Plan for the energetic renovation of the existing housing stock aiming at retrofit annually 500.000 dwellings (380.000 in the private owned stock and 120.000 in the social housing stock).	Subsidised Credit	Owner occupiers and Private natural landlords	All types	high	In 2014, a large impact except for the private rental stock (i) 33.000 eco loan, but only 1/10 for private rental landlords; (ii) 66.000 social eco loan for social housing companies.	Zero interest is an attractive rate. The period up to 15 years is appropriated. The process and its counterpart in terms of energy efficiency is simple and clear.	
France (2)	Promote household energy efficiency retrofits	Tax credit	Owner-occupiers and private natural landlords	multi-storey housing in co-ownership lots	high	Essential. In 2015, A state guarantee fund is created to guarantee the eco-loan subscribed by low incomes families. To be implemented in 2016.	its absence until 2014 is one of the principal reasons which explains the very low level of the renovation of large housing estates in co-ownership lot	
France (3)	To support low and medium incomes households in the renovation of their main residence	Cash Allowance	Owner-occupiers & tenants	All	Large impact for owner occupiers, zero impact for tenants	Good.	The amount for a couple (16.000 €) is well adjusted and covers almost the average amount of the energy efficiency works	
France (4)	To decrease the level of the black economy in the building sector and guarantee the quality of the renovation works.	Tax credit	Low and medium incomes owner-occupiers	All	low	the level of eco loan subscribed by the low income households remains marginal despite this bonus	Half success (medium incomes) / half failure (low incomes). With the economic crisis the low incomes household are poorer.	
France (5)	To support very low-incomes and low-incomes households in the energy retrofitting of their main residence	Cash Allowance	Owner Occupiers	All	Large impact	high	More financial support provided by the French State	

Variable	Policy goals	Type of subsidy	Target groups	Target housing stock	Impact	Evaluation of the existing national programmes	Reasons for success/failure	Remarks
Germany (1)	Provide affordable energy efficiency refurbishments to homeowners.	Credit subsidy (including possible repayment grant as cash allowance)	private	Residential properties	The programmes have become vital elements of each energy efficiency retrofit in residential housing and have evolved as central best practice. They increased retrofitting activities significantly. Provisions against the programme that restrict the impact are limited to (i) timely alignment of individual and property life cycle considerations and (ii) as well as administrative burdens.	high	The 151 programme offers interest rates below the market rates (very cheap). However, the repayment bonus is based on the KfW efficiency level and the maximum of 27.500 EUR are only granted for the highest level of efficiency what goes along with the highest requirements and the most bureaucracy. Interest rates are only fixed for ten years, afterwards there is an ongoing interest-change risk.	
Germany (2)	Renovation of fossil fuel based heating systems.	Credit subsidy	private	Residential properties	The impact of the law on achieving policy goals on renewable energy is not researched or disclosed, yet. It can be assumed, however, that due to the current changes on heating-related funding programmes of KfW, the public awareness for such support will increase in the future and support the motivation to perform these kinds of retrofit measures.	high	The 167 programme also offers low interest rates for the renovation of heating systems. In contrast to the 151 programme, there is no interest-change risk, as the credit has to be repaid within ten years.	
Germany (3)	Improve the affordability of energy efficiency retrofits directly.	Cash allowance	private	Residential properties	The programmes have become vital elements of each energy efficiency retrofit in residential housing and have evolved as central best practice. They increased retrofitting activities significantly. Provisions against the programme that restrict the impact are limited to (i) timely alignment of individual and property life cycle considerations and (ii) as well as administrative burdens..	High	The 430 programme is a suitable way to support the energy-efficient renovation of a housing property; the amount depends on the level of efficiency and the maximum of 30.000 EUR is only granted for the highest level of efficiency (KfW55) whereas single renovation measures are only subsidised with up to 5.000 EUR in general or 7.500 EUR for heating systems.	
Germany (4)	Close experience gaps of private homeowners.	Cash allowance	private	Residential properties	The transparency generated is very high overall. Several competitors have entered the market on energy consulting and are backed by this and other funding institutions. The impact of the programme can be expected to be high; although a contribution of own equity is required by those who use the programme.	high	The 431 programme offers a grant for professional support before, during and after efficiency renovation measures. However at least 50% of these costs have to be borne by the household itself and a maximum amount of 4.000 EUR applies.	

Variable	Policy goals	Type of subsidy	Target groups	Target housing stock	Impact	Evaluation of the existing national programmes	Reasons for success/failure	Remarks
Netherlands (1)	Energy saving and CO2 reduction	Cash allowance	Homeowners, business	All	Between the start of the subsidy, January 4 th of 2016 and 29 th of February 2016, 1758 applications have been made, worth near 5.5 million.	Average, but increasing	Subsidy scheme has just started and already used a significant amount of available budget.	
Netherlands (2)	Stimulating renewable energy and CO2 reduction	other	Homeowners	<i>House /Detached house/Semi-detached house</i>	No VAT will increase the likelihood of taking EE measures.	average	Based upon finding under the 6% VAT effect.	
Netherlands (3)	Stimulating construction and housing market	Other	All	All	The lower VAT rate will increase the likelihood of taking EE measures.	Average	Stimulant when known in decision making, but 6% VAT 'automatically' applied when applicable.	
Netherlands (4)	EE, comfort, sustainability	Credit subsidy	VvE (HOA's)	Multi-story housing	Unknown	none	Research on the effects of specific policy instruments have to be strengthened.	
Netherlands (5)	EE, comfort, sustainability	Credit subsidy	Homeowners	<i>House /Detached house/Semi-detached house, Individual flats</i>	Unknown	none	Research on the effects of specific policy instruments have to be strengthened.	
Netherlands (6)	Improve EE of rental dwellings in the regulated sector	Cash allowance	Housing corporation, private landlord (in the regulated sector)	All	Unknown	None	Research on the effects of specific policy instruments have to be strengthened.	
Netherlands (7)	Improve EE of (liberalised/non-regulated) rental sector	Credit subsidy	Housing corporation, private landlord	All	Unknown	none	Research on the effects of specific policy instruments have to be strengthened.	

Variable	Policy goals	Type of subsidy	Target groups	Target housing stock	Impact	Evaluation of the existing national programmes	Reasons for success/failure	Remarks
Poland (1)	Renovation and repair of existing buildings.	other (prize)	All investors, regardless of legal status: legal persons (e.g. housing associations and company law), government entities, community housing, natural persons, including the owners of single-family homes.	All	large	high	Long-term legislative background, repetitive character, clear rules, big distribution network based on apex banking structure.	
Poland (2)	Investments in new technologies and thermo-modernisation.	cash allowance	(i) Micro, small and medium enterprises; (ii) housing cooperatives, employing up to 250 employees and reaching a turnover of EUR 50 million.	All	-	-	-	
Poland (3)	Reduction of CO2 emissions and energy demand.	cash allowance	Small and Medium-sized Enterprises	All	-	-	-	
Poland (4)	Reduction or avoid CO2 emissions by increasing energy production from renewable sources	both cash allowance and credit subsidy	(i) Individuals who have the right to dispose of a single-family residential building or a single-family residential building under construction; (ii) Communities and housing associations managing multi-family residential buildings.	All	-	-	-	
Poland (5)	Improving of energy efficiency, including reduce of CO2 emissions	cash allowance	(i) Local government units, their unions and associations; (ii) Organisational units of local government with legal personality; (iii) Enterprises.	All	-	-	-	
Poland (6)	(i) Reducing emissions of air pollutants; (ii) Reducing the exposure of the population to pollution.	both cash allowance and credit subsidy	(i) Local government units (LGUs), their relations and their subordinate units; (ii) Other legal entities; (iii) Entrepreneurs.	All	-	-	-	
Poland (7)	(i) Increasing the participating of renewable energy sources in final energy consumption to a minimum of 15% in 2020 and an increase in this ratio in subsequent years; (ii) The promotion of renewable energy sources; (iii) Dissemination of new technologies to reduce emissions low.	both cash allowance and credit subsidy	(i) Local government units (LGUs), their relations and their subordinate units; (ii) Other legal entities; (iii) Entrepreneurs.	All	-	-	-	
Poland (8)	Reducing the heat demand of buildings.	both cash allowance and credit subsidy	(i) Local government units (LGUs), their relations and their subordinate units; (ii) Other legal entities; (iii) Entrepreneurs.	All	-	-	-	

Variable	Policy goals	Type of subsidy	Target groups	Target housing stock	Impact	Evaluation of the existing national programmes	Reasons for success/failure	Remarks
Spain (1)	(i) Thermal isolation of building envelope (ii) Installations of bioclimatic devices in facades or roofs, (iii) Provision of common energy facilities or any renewable energy sources (iv) Any work or installations to reduce 30% of energy consumption (Art 10.4)	<i>both cash allowance and credit subsidy. Defined in the plans</i>	Private landlords, Housing companies and cooperatives, firms.	All housing stock. Detached house; Semi-detached house (if they are built before 1981); Individual flats; Multi-storey housing.	Average due to demographic factors.	<i>average, but increasing</i>	Due to the economic situation, this law has not had strong effect.	
Spain (2)	Improving building quality and sustainability by improving; (i) Thermal envelop, (ii) heating, refrigeration or ACS installations with better efficiency; (iii) Installing power generators using renewable energy and (iv) improving energy efficiency of the current installations (arts 19 and beyond).	<i>both cash allowance and credit subsidy compromise</i>	Private landlords, co-owners communities, Housing companies and cooperatives, firms.	Aged stock (built before 1981), need for rehabilitation and energy efficiency adaptations. Be primary homes (at least 70% of total houses).	Average due to demographic factors.	poor	Due to the economic situation, results were poor.	
Spain (3)	Promote repairs and refurbishments which aim is reduce energy consumption, improve energy efficiency, implement renewable energies and reduce the CO2 emissions, in existing buildings 4 types: Type 1; Improve energy efficiency in the thermal envelope. Type 2; Improve energy efficiency in thermal facilities and lighting. Type 3; Substitution of conventional energy by biomass system in thermal facilities. Type 4; Substitution of conventional energy by geothermal energy	<i>both cash allowance and credit subsidy</i>	Private landlords, co-owners communities, Housing companies and cooperatives, firms.	All housing stock. Detached house; Semi-detached house (if they are built before 1981); Individual flats; Multi-storey housing.	Average due to demographic factors.	Very poor	Due to the economic situation, results were poor.	
United Kingdom (1)	Reducing risks resulting from fluctuating electricity prices and thereby protects consumers from overpayment.	<i>other</i>	Low carbon energy suppliers.	-	Success. Renewed	<i>average, but increasing</i>	Still in its infancy in the UK.	
United Kingdom (2)	Replace grants from UK government to encourage the uptake of renewable energy technologies.	<i>other</i>	All	All	Increase in renewable technology implementation.	<i>average, but increasing</i>	Long contract agreements (20 years).	
United Kingdom (3)	Implemented to encourage the uptake of renewable heating alternatives.	<i>other</i>	Land lords, Homeowners, social landlords, self-builders.	All	Increase in renewable technology implementation.	<i>high</i>	Long contract agreements (20 years).	
Remarks								

2.3 Conclusions and recommendations for policy makers

The findings of this report highlight significant gaps in financial support initiatives across the eight consortium countries. The ability to evaluate and compare national support practices are hampered by a lack of information available on best practice. Continuous evaluation of existing programmes is essential to establish a framework for future policy considerations. This is in line with the suggestions of the Building Performance Institute Europe (BPIE). From the acquired national information, suggestions include increased stringency of the existing EU legislation, continuously evaluating achievements of national objectives and the establishment of a national roadmap which is tailored towards demographic specific capabilities. Effective policy initiatives will favourably affect demand, but take-up will be ineffective if national affordability issues are not considered.

Sound financial incentives will spark action, which is evident from national findings in France (the availability of the zero percent eco loans) and Germany (very low interest rates for green investment initiatives). The structuring of green financial products and the demand of energy efficiency retrofits will gain traction if all EU countries obtain EPC certification for all buildings. This will ensure that green value is capitalised into property value and improve the negative perception of green investments by reducing uncertainty. It is fundamental for policy and regulatory measures to communicate the intention and long term outlook of the initiative to further combat uncertainty. In addition, policies should be directed towards mandatory whole house retrofits, but remain affordable for all national income groups. Finally, the establishment of EU Deep Renovation Fund can potentially support national funding initiatives and diversify risk to ensure more flexibility to investors (BPIE 2011).

3 Country report section

3.1 Czech Republic - Grants and subsidies: Institutions, policies and goals

The original Green Savings programme was established in April 2009 (until December 2012) and later extended until December 2014. The scheme, administered by the State Environmental Fund, revolved around financing through the sale of emission credits under the Kyoto Protocol on greenhouse gas emissions and national funds (State Environmental Fund of the Czech Republic 2016). This included energy savings in heating by the use of renewable energy sources for heating and hot water preparation for family houses, apartments and public buildings. There was also a subsidy bonus for selected combinations of measures employed. The New Green Savings programme was established in 2014 (until 2020). Direct subsidies are still available through the State Environmental Fund. It takes the form of non-refundable financial assistance and applies to: (A) Reducing energy performance in existing family houses, (B) Building family houses with very low energy performance and (C) Efficient use of energy resources. There are however, a set of conditions that apply: (i) improving energy performance in existing family houses, (ii) building family homes with very low energy performance and (iii) efficient use of energy resources (State Environmental Fund of the Czech Republic 2013). There are however, a set of conditions that apply; (i) achieving non-renewable primary energy class EpN.A, (ii) facilitate a perpetual decrease of calculated specific non-renewable primary energy EpN.A compared to pre-renovation levels and (iii) in the case of partial replacement in the building envelope, specific U values are required. The Panel/New Panel programme was established in July 2001 (until December 2011) for reconstruction, modernisation and thermal insulation of multi-dwelling buildings. Credits were provided to municipalities for repairs and modernisations of their dwelling stock (State Housing Development Fund 2013). The programme contained three tools of support; (i) a state grant for interest, (ii) a bank guarantee for payment of the credit and (iii) professional technical support and consulting. Support was provided in the form of a grant to cover interest payments, corresponding to a reduction in interest by a maximum of 4 percentage points. The bank guarantee for the credit payment was intended for credit applicants with insufficient finances to secure it.

It was provided for up to 80% of the unpaid principal sum of the credit, provided by the credit-granting bank or building and loan association³. It continued in 2013 with the Panel 2013+ programme. The Panel 2013+ programme provides low-interest long-term credits for repairs and modernisations of multi-dwelling buildings (State Housing Development Fund 2013). Credits were provided to municipalities who could apply for low-interest (3%) credits with a maximum repayment period of 10 years. The finance, obtained in the form of these credits, could be used by individual municipalities to cover the costs spent on repairs and modernisations of their dwellings' stock. However, at least 20% had to be provided for the same purpose and under the same conditions to owners of the dwelling stock in the territory of the given municipality⁴. Programme Jessica (2013 - 2015), revolved around the renovation and reconstruction of apartment blocks for owners in urban territories with approved Integrated Urban Development Plans (State Housing Development Fund 2014b). It did so by the provision of soft loans arranged with the Commercial Bank (KB) for owners of residential buildings and cities where the JESSICA programme can be implemented. There are 41 cities in the Czech Republic with IPRM areas, where the programme is available. Concessional loans for the repair and modernisation of apartments and houses are also available through Programme 150 which is available for young home owners (State Housing Development Fund 2014a).

³ Panel/New Panel programme was implemented from governmental directive No. 299/2001 Coll.

⁴ Panel 2013+ programme was according to governmental directive No. 468/2012 Coll. and No. 468/2013 Coll.

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 1: major subsidy and grant policies
Fact sheet name	Czech Republic - subsidies for energy efficiency investments: policies, institutions and goals

Table 3: Czech Republic - subsidies for energy efficiency investments: policies, institutions and goals

Variable	Exact name of policy/programme	Grant giving institution	Type grant giving institution	Scope of business of grant giving institution	Regional availability	initiation year	Duration of programme
New Green Savings	Nová zelená úsporám	State Environmental Fund of the Czech Republic	Public	Protection of the environment	National	2014	2021
Programme 150	Programme150	State Housing Development Fund of the Czech Republic	Public	Implementation of the national housing policy and support for the housing sector	National	2013	2016
Panel 2013+	Panel 2013+	State Housing Development Fund of the Czech Republic	Public	Implementation of the national housing policy and support for the housing sector	National	2013	2016
Data source and reference year	(State Environmental Fund of the Czech Republic 2016; State Housing Development Fund 2014a; State Housing Development Fund 2013)	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.
Remarks							

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 2: Characteristics of grant and subsidies
Fact sheet name	Czech Republic - subsidies for energy efficiency investments: characteristics

Table 4: Czech Republic - subsidies for energy efficiency investments: characteristics

Variable	Subject of subsidy	Type of subsidy	Subsidy credit conditions	Subsidy credit duration	Subsidy cash allowance conditions	Minimum efficiency standards of the programme after investment	Prerequisites for participation	Tax deductibility of subsidy	Rent influence	Cumulative subsidies
New Green Savings	Decrease energy demand of existing homes; construction of low-energy houses and efficient use of energy sources.	Cash allowance	-	-	Limit on the allowance in relation with the area of the renovation. Minimum allowance request of 1,800 EUR.	Yes, minimum EPC ratings, U values and reduction of calculated primary energy requirements according to the type of grant requested.	House owners or house builders	-	<i>no</i>	<i>no</i>
Programme 150	Repair or modernisation of houses or flats.	Credit subsidy	150,000 CZK (5k EUR) at 2% interest.	10	-	-	Age of applicants must be less than 36 years and own the property.	-	<i>no</i>	<i>no</i>
Panel 2013+	low-interest long-term credits for repairs and modernisations of multi-dwelling buildings	Credit subsidy	Applicable EU reference rate, minimum 0.75%	30	-	-	Reinsurance according to the amount of the loan.	-	<i>no</i>	<i>no</i>
Data source and reference year	(State Environmental Fund of the Czech Republic 2016; State Housing Development Fund 2014a; State Housing Development Fund 2013)	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.
Remarks										

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 2: Characteristics of grant and subsidies
Fact sheet name	Czech Republic - subsidies for energy efficiency investments: evaluation of the practice

Table 5: Czech Republic - subsidies for energy efficiency investments: evaluation of the practice

Variable	Policy goals	Target groups	Target housing stock	Volume of subsidy programme	Impact	Evaluation	Reasons for success/failure
New Green Savings	Renovation of the housing stock	Owner, developer, landlords	Houses, multi-story houses	-	Very large impact at the national level.	high	Widespread public knowledge/awareness of the programme.
Programme 150	Support young people to modernise their dwellings.	Owner	Individual flats, house	-	Low impact	low	Limited to a very specific demographic group.
Panel 2013+	Renovation of the housing stock; specifically large multi-story residential buildings	Owner, developer, landlords	Multi-story houses	-	Very large impact at national level	high	Widespread public knowledge/awareness of the programme.
Data source and reference year	(State Environmental Fund of the Czech Republic 2016; State Housing Development Fund 2014a; State Housing Development Fund 2013)	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.
Remarks							

3.2 Denmark - Grants and subsidies: Institutions, policies and goals

To reduce CO₂ emissions, the Danish government has established a goal in which Denmark aims to be independent of fossil fuels by 2050. In 2015, 25% percent of final energy consumption consisted of renewable energy. It is aimed to increase this share to 50% by 2030 and 100% by 2050. The Danish energy goals also require that at least 10% of energy consumption in the transport sector come from renewable energy by 2020. Energy efficiency is a key element in Denmark's energy policy, with the need for significant energy efficiency improvements and energy savings in all areas (Energistyrelsen 2016). To reach the energy saving goals, there is a range of alternatives in Denmark that provide various subsidies for promoting energy efficiency. The Urban Renewal Scheme (Immigration Integration and Housing Ministry 2016) grants subsidies to selected maintenance and improvement tasks in private rental housing (retrofitting) and provide support for the renewal of depressed urban areas as well as newer housing areas with social issues. The target group for this initiative include old and worn down buildings, built before 1950, or buildings that are subjected to minimal modern heating systems or toilet facilities. In addition, targets include private rental housing with poor energy labels, which can apply for grants regardless of age. The Green Urban Renewal Scheme (Ministry of Immigration, Integration and Housing 2016) creates the opportunity for private homeowners (or landlords) to negotiate rent increases beyond the ordinary rent increase process, which arise due to energy efficiency improvements, with the occupying tenants. A total of 50 million DKK has been allocated annually for the purposes of the green urban renewal for rental buildings. This is estimated at around 150 DKK/100m² flat per year, or between 1 and 2% of the annual heat energy bill. The housing benefit scheme subsidises tenants' rent costs for households with relatively low incomes. Eligibility and the amount of the grant are based on the cost of rent, size of the house, household composition and income from assets. The subsidies take the form of a housing allowance. The rules for housing allowance (boligyldelse) are less stringent than for rent subsidies (boligsikring).

With the so called BoligJobordning 2015-2017 (Residence Job Scheme 2015-2017), a deduction of up to 12,000 DKK per person (18 years old or more) for craft services is possible. This includes energy efficiency improvements to homes (Skatteministeriet 2015). This scheme is however only available for private landlords as the deduction is per person and

social housing associations acts as an umbrella organisation. It is possible to sell energy conservations to the large energy companies for a price of 0.4 - 0.7 DKK/kWh, which is around 5% of the investment required for energy conservation. Some possibilities for free energy consultancy exist, as municipalities have an opportunity to subsidise energy conservation activities. The government has initiated an energy advisor education and certification of consultants called Better Homes (ENS 2014b). The Better Homes advisors sell their consultancies on market conditions. But at the evaluation in 2014, there were many complaints that revolved around The Energy Agency using 15 Million DKK for advertising, but nothing for support (ENS 2014a). The main focus of Better Homes is on private owners of single family houses who will have to pay between 2000 and 3.000 DKK for a report. This is difficult to promote and sell.

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 1: major subsidy and grant policies
Fact sheet name	Denmark - subsidies for energy efficiency investments: policies, institutions and goals

Table 6: Denmark - subsidies for energy efficiency investments: policies, institutions and goals

Variable	Exact name of policy/programme	Grant giving institution	Type grant giving institution	Scope of business of grant giving institution	Regional availability	Initiation year	Duration of programme
Urban Renewal	Byfornyelsesstøtte	Ministry of Energy, Utilities and Climate/Municipality (cooperation)	Public	The direct subsidization of the private rental market (both tenants and landlords). Objective to improve attractiveness of housing areas; support low income groups and to improve economic activity.	Ministry of Energy, Utilities and Climate/Municipality (cooperation)	Yearly - law decided originally in the parliament 1939	Yearly - law decided originally in the parliament 1939
Green Urban renewal	Grøn byfornyelse		Public	State - energy policy	Ministry of Energy, Utilities and Climate	2015	2016
Rent support	Boligydelse/boligsikring	Ministry of Energy, Utilities and Climate	Public	See above - urban renewal	Ministry of Energy, Utilities and Climate	Annually - law decided in parliament 1966	Annually - law decided in parliament 2015
Support from Energy Supply Companies	Energisparetilskud fra energiselskaberne	Energy Supply Companies (ESC)	Private or cooperative	As an element in the 2050 goals the ESCs have to contribute to energy savings. Yearly income for the state: 50 billion DKK.	Energy Supply Companies (ESC)	2007	2016 - (To be Continued)
Residence Jobs Scheme	BoligJobordning	Ministry of Taxation	Public	State - energy policy	Ministry of Taxation	2011	2017
Better Homes	(BedreBoliger)	-	-	-	-	2016	-
Data source and reference year	(Ministry of Immigration, Integration and Housing 2016; ENS 2011; ENS 2014a; ENS 2014b; Skatteministeriet 2015; Danish Ministry of Taxation 2016)	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.
Remarks							

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 2: Characteristics of grant and subsidies
Fact sheet name	Denmark - subsidies for energy efficiency investments: characteristics

Table 7: Denmark - subsidies for energy efficiency investments: characteristics

Variable	Subject of subsidy	Type of subsidy	Subsidy credit conditions	Subsidy credit duration	Subsidy cash allowance conditions	Minimum efficiency standards of the programme after investment	Prerequisites for participation	Tax deductibility of subsidy	Rent influence	Cumulative subsidies
Urban renewal	Financial support for improvement of buildings and areas.	Both cash allowance and credit subsidy (subjected to evaluation/prioritisation).	Municipal annual prioritisation. Subsidy obtained in the form of rent support (over 10 years to 2/3 of the rent exceeding 155 DKK/m ² (2004-price level).	10	Municipal annual prioritisation.	Subjected to national building regulations on the type of improvement.	The state guarantees for the credit subsidy.	No taxation applies to the financial support.	Tenants will be supported over 5 years to pay only 1/3 of the increased rent - stepping down to 1/1 after 5 years..	Yes
Green Urban renewal	Energy efficiency improvements	Has to be agreed between the owner and the tenants, but then the municipality can provide rent support to tenants (the same rules as for the urban renewal scheme applies).	The amount depends on how much energy can be saved.	10	-	Subjected to national building regulations on the type of improvement.	Co-financing between state, ESC and the owner.	No taxation applies to the financial support.	The total amount of maintenance and improvements can facilitate a rent increase.	Yes
Rent support	Financial support (rent) for low income groups. Not subjected to energy efficiency retrofits.	-	-	-	-	-	-	-	-	-
Support from Energy Supply Companies	A range of energy efficiency projects.	An agreement with the ESC has to be made, before work starts. The ESC "buys" energy savings.	The amount depends on how much energy can be saved.	Project Specific.	E.g. The owner receives 626 DKK for new 12m ² A-windows.	The more energy you save, the more money you receive.	no	No taxation applies to the financial support.	no	yes
Residence Jobs Scheme	Energy efficiency improvements	Tax deduction	12.000 DKK per person (in the household)	Annually(to be continued after 2016-2017)	12.000 DKK per person (in household)	Whole building or building components	yes	-	no	yes
Better Homes	Better Homes and energy efficiency Improvement.	-	-	-	-	-	-	-	-	-
Data source and reference year	(Danish Ministry of Energy 2016; Danish Ministry of Taxation 2016; Immigration Integration and Housing Ministry 2016)	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.
Remarks										

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 2: Characteristics of grant and subsidies
Fact sheet name	Denmark - subsidies for energy efficiency investments: evaluation of the practice

Table 8: Denmark - subsidies for energy efficiency investments: evaluation of the practice

Variable	Policy goals	Target groups	Target housing stock	Volume of subsidy programme	Impact	Evaluation	Reasons for success/failure
Urban Renewal	The direct subsidization of the private rental market (both tenants and landlords). Objective to improve attractiveness of housing areas; support low income groups and to improve economic activity.	Private rental housing.	Multi-story housing.	218 million. DKK equals 50 % - the municipalities pay 40-50%.	2014 - CPH municipality used 91.6 million DKK to renovate 46 buildings with 2890 flats. A portion of the funds are allocated to area renewal).	High. Socially - average, but increasing with regards to energy efficiency.	(i)The focus has changed. (ii)in 2016 the "Green Urban Renewal" has been established by government
Green Urban renewal	Private homeowners (or landlords) can negotiate rent increases due to energy efficiency improvements, with the occupying tenants.		All	50 million. DKK.	-	-	-
Rent support	Social	Rental housing.	Social	-	-	-	-
Support from Energy Supply Companies	The energy supply companies (ESC) contribute to energy efficiency - CSR	Private housing, social housing, office buildings and industry	All		-	-	-
Residence Jobs Scheme	Promote energy efficiency in the existing housing market.	All - but mainly single-family homes	All - but mainly single-family homes	-	-	-	-
Better Homes	Promote energy efficiency in the existing housing market.	All - but mainly single-family homes	All - but mainly single-family homes	-	-	-	-
Data source and reference year	(Danish Ministry of Energy 2016; Danish Ministry of Taxation 2016; Immigration Integration and Housing Ministry 2016)	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.
Remarks							

3.3 France - Grants and subsidies: Institutions, policies and goals

General policy goals correspond to the European directives and objectives (20/20/20) with 2010 as starting year. The goals set out to achieve a 20% reduction of CO₂ emissions and energy consumption in 2020. The law on the energy transition (Loi de transition énergétique) voted in August 2015, has specified the annual objectives for the housing sector; (i) 500 000 housing units retrofitted each year, from which 380 000 retrofits assigned to privately owned stock and 120 000 ascribed to social housing stock, (ii) positive energy buildings to be the standard in 2020 for new developments, (iii) average energy performance of the overall housing stock to equal 80 kWh/m²/year by 2050, which is the present average standard for new constructions (Department of Environment Energy and the Sea 2016c). There is a series of grants and subsidies which directs institutional goals. Subsidised credit, in the form of a zero interest rate eco loan, was initiated in 2009 by the State owned bank, La Caisse des Dépôts in France, and is distributed by the local agencies of 21 private banks. This is available to all investor types, with the exception of pure profit institutional investors, for a period up to 15 years and a maximum amount of 30.000 € for energy efficiency works (Department of Environment Energy and the Sea 2016a). In 2014, there were roughly 100 000 loan subscriptions from which 3% were ascribed to private natural landlords, 30% to private owner-occupiers and 66% to social housing companies. Given the significant number of subscriptions, a new collective eco-loan for estates in co-owned lots has been available since 2014, but it is too early to measure its impact. Another adjustment, which also came into effect in 2014, is a fund that provides guarantees for low and middle income households, as it was found that the eco-loan was mainly subscribed to by higher income groups. Confirmed in 2012, a reduced VAT rate of 5.5% is applied to energy efficiency works and a reduced rate of 10% is applied to other building works for modernisation. The reduced rate is available for all investor types, but mainly directed at social housing organisations and natural private landlords and owner-occupiers (Department of Environment Energy and the Sea 2016d).

Another incentive revolves around tax credits (Crédit d'Impôts Transition Energetique), which is only available to natural owners occupying their main residence. The maximum amount is set at 16.000 € for a couple of adults and 400 € per child (Department of Environment Energy and the Sea 2016d). Individual cash allowances are available to low and very low income households. This is distributed by the State Agency (Agence Nationale

pour l'Amélioration de l'Habitat). The cash allowance is available in two forms. Either (Option A) the cash allowance is directly provided to the household or (Option B) in the form of private landlords asking for social reduced rent as a counterpart of its financial support (ANAH 2016b). Both options are summarised below:

- A. This option (Programme *Habiter Mieux*) exclusively targets owner-occupiers. Very low income households can be allocated up to 10.000 €. A bonus amount, equating to 10 % of the total amount of the works, can also be allocated but it is limited to a maximum amount of 2.000 €. Low income households can be allocated an amount up to 7000 €. The same bonus features apply, but with a slightly lower maximum amount of 1.600 €
- B. This option exclusively targets private natural landlords. There is also a series of requirements. Firstly, a minimum energy performance of class D is required. Secondly, after renovations have been made, the landlord must apply social housing level rents over the next 9 years. The subsidies may represent up to 25 % of the amount without VAT of the work undertaken. The subsidies given by the ANAH is limited to 187.5 € per m², with a total limit of 15 000 € per dwelling. The level of social rent to be asked varies from 6.62 € per m² per month (Zone A - Paris and the Parisian suburb) to 5.40 € per m² per month (Zone C - Rural areas). The cash allowance is limited to 1000 €. This option creates the possibility to claim tax deductions (relief) over the 9 year period. However, with the low levels of social rent and the limitations attached to the regulation of social rents, this is not perceived as attractive by private landlords.

Further support is available via Prime Energie cash allowances. This is based on the certificates of energy savings collected by the energy providers (QuelleEnergie.fr 2016). This bonus has been extended to private natural persons in 2014, which includes private natural landlords. A report published by the French ministry of the Economy in 2014, critiques the efficiency of the Prime Energie system as the I.R.R. of the different subsidised energy efficiency measures is not clearly proved (Ministry of Economy 2014). New adjustments are to be made in 2018 for the next certification period. The French system with regards to subsidies and grants are mainly directed at the owner-occupier market. Only 3% of the total eco-loan subscriptions are subscribed to by private natural landlords who own 95% of the total private rented housing stock. The absence of grants and subsidies, apart from the

VAT reduced rates in France, partly explains the withdrawal by private institutional investors from the housing sector towards their preference of investing in commercial assets which guarantees higher profits.

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 1: major subsidy and grant policies
Fact sheet name	France - subsidies for energy efficiency investments: policies, institutions and goals

Table 9: France - subsidies for energy efficiency investments: policies, institutions and goals

Variable	Exact name of policy/programme	Grant giving institution	Type grant giving institution	Scope of business of grant giving institution	Regional availability	Initiation year	Duration of programme
Subsidised programme Credit	Eco-prêt individuel à Taux Zero (individual eco-loan 0% interest rate)	La Caisse des Dépôts - State owned Bank; distributed by 21 private banks.	Public/Private	Support of the State policy for the Caisse des Dépôts (Private banks)	National/Local	2009	Valid until 2018
Subsidised programme Credit	Eco-prêt copropriétés à Taux Zero (collective eco loan 0% interest rate)	La Caisse des Dépôts - State owned Bank; distributed by 21 private banks.	Public/Private	Support of the State policy for the Caisse des Dépôts (Private banks)	National/Local	2014	Valid until 2018
VAT rate reduction and Tax Credits (relief)	Crédit d'impôts Transition Énergétique (CITE)	Ministry of Finance	Public	State policy	national	2015	Validated each year in the law of Finance
Prime renovation énergétique	Prime renovation énergétique	ANAH	Public	Government Agency	national/ Local	2014	Replaced by the CITE in 2015
VAT reduced rate on energy efficiency works.	TVA 5,5% à taux réduit pour les travaux d'efficacité énergétique	Ministry of Finance	Public	State policy	national	2011	Validated each year in the law of Finance
Energy bonus	Prime Energie	Heating and energy suppliers.	Private	Utility energy providers	National/local	2005 as based on certificates on energy savings. Between 2010 and 2015 only social housing companies and municipalities were eligible. Since 2014 natural persons are also eligible.	Valid until 2018
ANAH individual subsidies	Aides financières ANAH	Agence Nationale pour l'Amélioration de l'Habitat	Public	Government Agency	National / local	2011	Validated each year in the law of Finance
Data source and reference year	(Ministry of Economy 2014; ANAH 2016b; Ministère du Logement et de L'habitat Durable 2016b; QuelleEnergie.fr 2016; Department of Environment Energy and the Sea 2016d; Department of Environment Energy and the Sea 2016b; Department of Environment Energy and the Sea 2016a; Ministère du Logement et de L'habitat Durable 2016a)	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.
Remarks							

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 2: Characteristics of grant and subsidies
Fact sheet name	France - subsidies for energy efficiency investments: characteristics

Table 10: France - subsidies for energy efficiency investments: characteristics

Variable	Subject of subsidy	Type of subsidy	Subsidy credit conditions	Subsidy credit duration	Subsidy cash allowance conditions	Minimum efficiency standards of the programme after investment	Prerequisites for participation	Tax deductibility of subsidy	Rent influence	Cumulative subsidies
Subsidised Credit programme (Eco-prêt individuel à Taux Zero)	Energy efficiency works; (i)Insulation of roofs and facades; (ii) replacement of external doors and windows; (iii) replacement of heating and DHW systems using either renewable or non-renewable energy systems.	Subsidised credit	0% interest rate for up to a maximum of 30.000 €	Up to 15 years	-	whole building or building components. (Class D EPD for the global performance of the building)	none	-	no	Yes.(Since the 1.3.2016 for the eco-prêt + CITE)
Subsidised Credit programme (Eco-prêt copropriétés à Taux Zero)	idem	Subsidised credit	0% interest rate for up to a maximum of 30.000 €	Up to 15 years	-	idem	None	-	no	Yes. (Since the 1.3.2016 for the eco-prêt + CITE)
Crédit d'impôts Transition Énergétique (CITE)	idem	Tax credit	-	-	8.000 € per adult maximum 16.000 € + 400 € per child).	idem	Owner-occupiers only.	Yes 100%	no (n/a)	Yes. (Since the 1.3.2016 for the eco-prêt + CITE)
Prime rénovation énergétique 1350 € (bonus available only for owner-occupiers	idem	Cash Allowance	€ cash	-	1350 €	idem	Owner-occupiers only.	-	no (n/a)	yes
Prime energie	idem	Cash Allowance	-	-	Up to 2500 € subjected to the type of work undertaken.	idem	None	-	no	yes
VAT reduced rate on energy efficiency works.	idem	Tax credit	5.5% on energy efficiency works.	-	-	idem	-	-	no	-
ANAH individual subsidies	As above	Cash Allowance	-	-	(i)Very low income homes; 10.000 € max + Bonus 10% of the total (up to max of 2000 €). (ii) Low income homes; 7.000 € max + Bonus 10% of the total (up to max of 1600 €).	idem	Owner-occupiers only.	-	no (n/a)	yes
Data source and reference year	(Ministry of Economy 2014; ANAH 2016b; Ministère du Logement et de L'habitat Durable 2016b; QuelleEnergie.fr 2016; Department of Environment Energy and the Sea 2016d; Department of Environment Energy and the Sea 2016b; Department of Environment Energy and the Sea 2016a; Ministère du Logement et de L'habitat Durable 2016a)	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.
Remarks										

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 2: Characteristics of grant and subsidies
Fact sheet name	France - subsidies for energy efficiency investments: evaluation of the practice

Table 11: France - subsidies for energy efficiency investments: evaluation of the practice

Variable	Policy goals	Target groups	Target housing stock	Volume of subsidy programme	Impact	Evaluation	Reasons for success/failure
Credit programme (Eco-prêt à Taux Zero)	Related to the national Plan for the energetic renovation of the existing housing stock aiming at retrofit annually 500.000 dwellings (380.000 in the private owned stock and 120.000 in the social housing stock).	Owner occupiers and Private natural landlords	All types	542.7 € (average amount of an eco loan = 17 398 €).	high	In 2014, a large impact except for the private rental stock (i) 33.000 eco loan, but only 1/10 for private rental landlords; (ii) 66.000 social eco loan for social housing companies.	Zero interest is an attractive rate. The period up to 15 years is appropriated. The process and its counterpart in terms of energy efficiency is simple and clear.
Credit programme (Eco-prêt copropriétés à Taux)	To promote the energy efficiency EPD classes ABCD) in multi-family buildings in co-ownership lots.	Owner occupiers + Private natural landlords	Housing in co-ownership lots	-	Only 288 eco loan (0.9%)	Poor but too early in 2014 as this type has been created this year. Data 2015 not available	Modernisation process in multi-story buildings is too complex, the lack of coordination between the stakeholders has been compensated partly by the development of local platform of the energy renovation at the local level
Crédit d'impôts Transition Énergétique (CITE)	To incent then households to order energy efficiency works.	Owner occupiers	All types	No data	high	Essential. In 2015, A state guarantee fund is created to guarantee the eco-loan subscribed by low incomes families. To be implemented in 2016.	its absence until 2014 is one of the principal reasons which explains the very low level of the renovation of large housing estates in co-ownership lot
Prime renovation énergétique 1350 € (bonus available only for owner-occupiers)	To support low and medium incomes households in the renovation of their main residence	Owner occupiers	All types	No data	Large impact for owner occupiers, zero impact for tenants	Good.	The amount for a couple (16.000 €) is well adjusted and covers almost the average amount of the energy efficiency works
Prime Energie	Energy suppliers promote energy efficiency buying certificates of energy savings to institutional investors and households	Owner occupiers + landlords	All types	-	-	average, but increasing	The analysis of the I.R.R. of the investments made by natural persons shows a great heterogeneity from minus 10% to +15%. The programme « Prime énergie » should be better oriented.
VAT reduced rate on energy efficiency works.	To decrease the level of the black economy in the building sector and guarantee the quality of the renovation works.	All investor types	All housing stock types	No data	low	the level of eco loan subscribed by the low income households remains marginal despite this bonus	Half success (medium incomes) / half failure (low incomes). With the economic crisis the low incomes household are poorer.
ANAH individual subsidies / programme "Habiter Mieux"	To support very low-incomes and low-incomes households in the energy retrofitting of their main residence	Owner occupiers	All housing stock types	In 2014, 573 millions of euros (average cash allowance per dwelling = 11460 euros)	Large impact	high	More financial support provided by the French State
Data source and reference year	(Ministry of Economy 2014; ANAH 2016b; Ministère du Logement et de L'habitat Durable 2016b; QuelleEnergie.fr 2016; Department of Environment Energy and the Sea 2016d; Department of Environment Energy and the Sea 2016b; Department of Environment Energy and the Sea 2016a; Ministère du Logement et de L'habitat Durable 2016a)	Ibid.	Ibid.	(Bilan eco prêt 2014; Bilan 2014; ANAH 2016a)	Ibid.	(Bilan 2014)	Ibid
Remarks							

3.4 Germany - Grants and subsidies: Institutions, policies and goals

Public authorities developed a variety of regulations to meet goals and achieve retrofit diffusion. The 2007 Integrated Climate and Energy Programme was designed to ensure a modern energy supply that considers energy friendly production and distribution. In its 2010 Energy Policy and Energy Concept for 2050, the Federal Government demands high energy efficiency for the future and the expansion of renewable energy. In addition, climate-neutral building stock appears to be strongly relevant for the German real estate industry. In the German Adaption Strategy, a number of measures were collected, which combine improvements in the building stock with contributions to climate protection. The 2011 parliamentary resolution to phase out nuclear power by 2022, further emphasise national energy-related goals. As a central mechanism for real estate, the EnEV ordinance⁵ has increased building standards and requirements significantly from 2009 onwards (EnEV 2016). In addition, the 2013/2014 standards were further tightened as a fundamental step towards the goal of climate-neutral buildings (almost zero energy) by 2050. In this regard, collaboration with stakeholders and improving awareness within different interest groups and across the German population are imperative. An acceptable solution to the split-incentive problem (user-investor dilemma) was found in the regulation of rent increases according to the BGB (Civil Code). Further policy specifics, following documentation of the Federal Ministry of Economic Affairs and Energy, include the reduction of carbon emissions by 40% by 2020 and 80% by 2050. This is relative to 1990 levels with an intended path of a 55% reduction by 2030, 70% by 2040 and 80% by 2050. The intended path of renewable energy (gross energy use) is set at 18% by 2020, 30% by 2030, 45% by 2040 and 60% by 2050. Primary energy consumption aims include a reduction of 20% by 2020 and 50% by 2050, relative to 2008 levels (Federal Ministry for Economic Affairs and Energy 2010).

With regards to housing, the aim is focussed at doubling the rate of building renovation and upgrading energy performance from approximately 1% to 2% per annum. It also includes the provision of grants to building owners that exceed energy efficiency require-

⁵ EnEV is short for Energieeinsparverordnung and depicts the central element of the local application of the Energy Performance Building Directive (EPBD).

ments. The KfW⁶ Financing is the central tool for granting high-volume financial support for energetic retrofits in Germany providing KfW-investment-subsidies of up to 30.000€ per apartment. Specifically, this includes (i) 0.75% per annum for up to 100.000€ per apartment, (ii) a grace period for up to 5 years, (iii) repayment grants for up to 27.5% and (iv) KfW-subsidy availability for planning and professional ecological construction support for up to 50%.

KfW financing consist of low interest rates as well as a partial exemption of liability to the commercial bank providing the financing. The KfW financing is extensive, as it does not exclude certain types of owners. As the OECD points out, the German Energy Efficient Construction and Rehabilitation (EECR) programme enables owners to have general access to the funding available (Pfliegner et al. 2012). The decision for the KfW, to support an energy saving investment, is subjected to a special reference model called the KfW-Effizienzhaus (KfW-efficiency-house). This is a technical standard defined by the KfW for energy-saving homes based on the Energy Savings Ordinance (EnEV). It is used to decide whether a home has a better energy performance relative to what is demanded by the EnEV. In this regard, the KfW introduced levels of energy efficient homes; (i) KfW55, (ii) KfW70, (iii) KfW85, (iv) KfW100 and KfW115. The lower the level, the more efficient the home (KfW 2016f). The level also indicates the percentage of energy consumed by the home relative to the EnEV reference (e.g. a KfW100 home has a 100% energy consumption level relative to the EnEV standard). Based on these ratings, the KfW offers four programmes for energy-efficient refurbishments, which is graphically displayed in Figure 2. Programme 1507 aims to improve energy-efficiency renovation affordability for homeowners by providing a long-term fixed, low interest rate of 0.75% per annum.

⁶ The KfW is a government owned development bank in Germany.

⁷ 151 - Energieeffizient Sanieren – Kredit (Energy-efficient refurbishment – credit programme)

Overview				
Name of the program	151	167	430	431
Description	- Credit for energy-efficiency refurbishments according to the KfW-defined standards	- Credit for specific renovations (heating)	- Subsidy for energy-efficiency refurbishments	- Subsidy for owners who need professional energy consultants

Figure 2: Germany - KfW energy efficiency refurbishment support programmes

The support is limited to 100.000€ per housing unit or 50.000€ for a single measure (insulation, replacement of windows and front doors, replacement or optimisation of heating systems, installation of ventilation systems). Additional building costs, restoration costs and planning and consulting expenses can also be taken into account. Purchases of newly renovated homes are also eligible. Finally, a repayment bonus of up to 27.500€ is included in the 151 programme. Homes built before February 2002 are required to obtain support from the programme as well as all vacation homes. These homes are also required to install photovoltaic panels⁸. Any debt restructuring or refinancing activities are excluded from the programme (KfW 2016d). Programme 1679 offers financial support for the replacement of fossil fuel heating systems with renewable energy heating systems such as; (a) thermic solar systems (up to 40 square meters), (b) biomass systems (e.g. woodchip heating, pellet heating, wood carburetor) or (c) heating pumps and combined heating sys-

⁸ The KfW offers an additional special programme for PV-systems (#274) that does not recommend any other refurbishments (KfW 2016g).

⁹ 167 - Energieeffizient Sanieren – Ergänzungskredit (Energy-efficient refurbishment – supplementary credit programme)

tems. The volume is limited to 50.000€ per housing unit at a fixed interest rate of 1.16% for up to ten years.

With regards to subsidies, two programmes support home owners when refurbishing their homes. The 430 programme¹⁰ is a subsidy programme for private home owners of single or double family homes as well as condominiums and those who purchase a newly renovated property. Eligibility criteria for the programme include; (i) properties built before February 2002 and (ii) individual refurbishment measures that improve the energy performance of the asset and lead to a KfW-efficient home (insulation of walls, roofs and ceilings; the replacement of windows and exterior doors; the optimisation of heating systems and the replacement or installation of ventilation systems). The programme offers up to 30000€ of financial support per housing unit and is freely combinable with the other aforementioned programmes, with the exception of programme 151 (KfW 2016e). Finally, programme 431¹¹ is unique, as it offers a subsidy to all owners who plan on undergoing energy efficiency refurbishments and need specialist advice from experts. The KfW will cover 50% of the consultancy costs, but is limited to a maximum of 4000€ per housing unit and include (i) costs incurred during the planning process, (ii) support for tendering and the selection process, (iii) the cost of construction monitoring and (iv) the technical acceptance cost after the measure is installed.

In addition, from April 2016, it will also cover the costs for new constructions of a KfW-efficient home or subsidise the certification process of recognised sustainability certifications. In this regard, a combining programmes 151 or 430 with programme 431 is mandatory (KfW 2016a). Restrictions may apply to buildings of historical architectural importance (KfW 2016c). KfW has also been a founding member of the German Energy Agency (DE-NA) that operates as an independent company to promote energy efficiency. Their programmes provide information and motivation for (i) consultants and owners, (ii) the training of experts, (iii) transparency on standards and (iv) the communication of best-practice examples.

¹⁰ 430 - Energieeffizient Sanieren – Investitionszuschuss (Energy-efficient refurbishment – Investment grant).

¹¹ 431 - Energieeffizient Bauen und Sanieren - Zuschuss Baubegleitung (Energy-efficient refurbishment – monitoring programme)

Traditionally, German funding pools have been well-equipped with government support for existing buildings and provided up to 500 million Euros of funding, between 2009 and 2012, as required by the German Energy Concept 2050 (Power & Zulauf 2011). Its subsidised energy consulting is free for low-income households in addition to further BAFA subsidies for renewable energy¹² and BAFA-grants for consulting, planning and investments in renewable energy. The IEE programme (Intelligente Energie – Europa) subsidise local, regional and national initiatives to promote the implementation and utilisation of renewable energies (Federal Environmental Agency 2007). There are also numerous subsidy programmes at the state level, from which many improve on the preferential loans by KfW; (i) reduced interest, e.g. 0.6% from the Investment Bank Berlin (IBB 2016) and (ii) repayment grants, e.g. 5% from the Investment Bank of the State of Brandenburg (ILB 2016). In addition, direct subsidies for heat insulation measures are also available; (i) up to 17€/m² (Bremen Office for Environment Construction and Traffic 2016) and (ii) up to 20€/m² and 120€ for windows (IFB Hamburg 2016). Finally, and in addition to reduced interest rates and subsidies, there exist independent preferential loans, e.g. in Lower Saxony, for up to 65% of modernisation cost interest-free for 20 years (NBank 2016) and independent investment subsidies that cover 10% of modernisation costs for up to 2.500€ per apartment in multi-family homes (Schleswig-Holstein Investment Bank 2016).

¹² (i) Pellet heating between 2.000 EUR and 3.500 EUR depending on capacity; (ii) BAFA Solar Basic: 50 EUR per sq.m. solar collector area, min. 500 EUR. Solar with Cooling Functionality or Heating Network: 140 EUR per sq.m. minimum 2000; (iii) Electrical Heat pumps (Air) up to 40 EUR per kWh capacity, at least 1,300 EUR (iv) from Water or Earth 100 EUR per kWh capacity, at least 4,000 EUR.

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 1: major subsidy and grant policies
Fact sheet name	Table 12: Germany - subsidies for energy efficiency investments: policies, institutions and goals

Table 12: Germany - subsidies for energy efficiency investments: policies, institutions and goals

Variable	Exact name of policy/programme	Grant giving institution	Type grant giving institution	Scope of business of grant giving institution	Regional availability	Initiation year	Duration of programme
Energy-efficient refurbishment – credit programme (151)	151 - Energieeffizient Sanieren – Kredit	KfW	public	government-owned development bank	national	-	unlimited
Energy-efficient refurbishment – supplementary credit programme (167)	167 - Energieeffizient Sanieren – Ergänzungskredit	KfW	public	government-owned development bank	national	-	unlimited
Energy-efficient refurbishment – Investment grant (430)	430 - Energieeffizient Sanieren – Investitionszuschuss	KfW	public	government-owned development bank	national	-	unlimited
Energy-efficient refurbishment – monitoring programme (431)	431 - Energieeffizient Bauen und Sanieren - Zuschuss Baubegleitung	KfW	public	government-owned development bank	national	-	unlimited
Data source and reference year	(KfW 2016f; KfW 2016d; KfW 2016e; KfW 2016a; KfW 2016b)	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.
Remarks							

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 2: Characteristics of grant and subsidies
Fact sheet name	Germany - subsidies for energy efficiency investments: characteristics

Table 13: Germany - subsidies for energy efficiency investments: characteristics

Variable	Subject of subsidy	Type of subsidy	Subsidy credit conditions	Subsidy credit duration	Subsidy cash allowance conditions	Minimum efficiency standards of the programme after investment	Prerequisites for participation	Tax deductibility of subsidy	Rent influence	Cumulative subsidies
Energy-efficient refurbishment – credit programme (151)	Credit for single measures or refurbishments to KfW Efficiency Home standard.	Credit subsidy (including possible repayment grant as cash allowance)	0.75 % p.a. (currently), up to 100,000 € per unit (50,000 € for single measures)	(i) Up to 30 years, with up to 5 years initial repayment pause. (ii) up to 10 years fixed rate	Up to 27,500 € repayment grant.	KfW-efficient home level 115 or certain levels below.	Application necessary through partner bank and property built before Jan 1, 2002.	100 % of interest payments; generated assets can be depreciated according to standard tax regulations.	11 % of energy-related investment costs can be added to net rent p.a. No specific limitation due to subsidies, but a general cap limit of 15 % above market rent must be considered.	Partially – cannot be combined with 430.
Energy-efficient refurbishment – supplementary credit programme (167)	Replacement of heating systems with renewable energy sources.	Credit subsidy	1,16 % p.a. (currently), up to 50,000 € per unit	Up to 10 years	-	Heating with renewable energy carriers	Application necessary through partner bank, heating system older than Jan 1st, 2009.	Generated assets can be depreciated according to standard tax regulations	idem	Partially (combination with BAFA grants possible).
Energy-efficient refurbishment – Investment grant (430)	Single measures or refurbishments to KfW Efficiency Home standard.	Cash allowance	-	-	Up to 30,000 € depending on achieved energy standard or 10,000 € for single measures	KfW-efficient home level 115 or certain levels below	Application necessary through partner bank, property built before Jan 1, 2002	Generated assets can be depreciated according to standard tax regulations,	idem	Partially – cannot be combined with 151.
Energy-efficient refurbishment – monitoring programme (431)	Planning and consulting by external experts.	Cash allowance	-	-	50 % of consulting costs, up to 4,000 € per action		Application necessary through partner bank	No	No rent increase	Needs to be combined with either 151 or 430.
Data source and reference year	(KfW 2016f; KfW 2016d; KfW 2016e; KfW 2016a; KfW 2016b)	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.
Remarks										

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 2: Characteristics of grant and subsidies
Fact sheet name	Germany - subsidies for energy efficiency investments: evaluation of the practice

Table 14: Germany - subsidies for energy efficiency investments: evaluation of the practice

Variable	Policy goals	Target groups	Target housing stock	Volume of subsidy programme	Impact	Evaluation	Reasons for success/failure
Energy-efficient refurbishment – credit programme (151)	Provide affordable energy efficiency refurbishments to homeowners.	private	Residential properties	2.7 billion Euros for energy efficiency retrofits (between January 1st and September 30th, 2015). For the whole funding year 2015, 3.8 billion Euros were provided by the programmes, a major increase to 3.2 billion Euros on a comparable per annual basis.	The programmes have become vital elements of each energy efficiency retrofit in residential housing and have evolved as central best practice. They increased retrofitting activities significantly. Provisions against the programme that restrict the impact are limited to (i) timely alignment of individual and property life cycle considerations and (ii) as well as administrative burdens.	high	The 151 programme offers interest rates below the market rates (very cheap). However, the repayment bonus is based on the KfW efficiency level and the maximum of 27.500 EUR are only granted for the highest level of efficiency what goes along with the highest requirements and the most bureaucracy. Interest rates are only fixed for ten years, afterwards there is an ongoing interest-change risk.
Energy-efficient refurbishment – supplementary credit programme (167)	Renovation of fossil fuel based heating systems.	private	Residential properties	-	The impact of the law on achieving policy goals on renewable energy is not researched or disclosed, yet. It can be assumed, however, that due to the current changes on heating-related funding programmes of KfW, the public awareness for such support will increase in the future and support the motivation to perform these kinds of retrofit measures.	high	The 167 programme also offers low interest rates for the renovation of heating systems. In contrast to the 151 programme, there is no interest-change risk, as the credit has to be repaid within ten years.
Energy-efficient refurbishment – Investment grant (430)	Improve the affordability of energy efficiency retrofits directly.	private	Residential properties	-	The programmes have become vital elements of each energy efficiency retrofit in residential housing and have evolved as central best practice. They increased retrofitting activities significantly. Provisions against the programme that restrict the impact are limited to (i) timely alignment of individual and property life cycle considerations and (ii) as well as administrative burdens..	High	The 430 programme is a suitable way to support the energy-efficient renovation of a housing property; the amount depends on the level of efficiency and the maximum of 30.000 EUR is only granted for the highest level of efficiency (KfW55) whereas single renovation measures are only subsidised with up to 5.000 EUR in general or 7.500 EUR for heating systems.
Energy-efficient refurbishment – monitoring programme (431)	Close experience gaps of private homeowners.	private	Residential properties	-	The transparency generated is very high overall. Several competitors have entered the market on energy consulting and are backed by this and other funding institutions. The impact of the programme can be expected to be high; although a contribution of own equity is required by those who use the programme.	high	The 431 programme offers a grant for professional support before, during and after efficiency renovation measures. However at least 50% of these costs have to be borne by the household itself and a maximum amount of 4.000 EUR applies.
Data source and reference year	(KfW 2016f; KfW 2016d; KfW 2016e; KfW 2016a; KfW 2016b)	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.
Remarks							

3.5 Netherlands - Grants and subsidies: Institutions, policies and goals

Policy specific goals in the Netherlands to combat Climate Change include (i) a 20% reduction in CO₂ by 2020 and 40% by 2030 (relative to 1990), (ii) 20% renewables by 2020 and (iii) 2% per year improvement in energy efficiency in households (Ministry of Infrastructure and the Environment 2013). With the built environment contributing 30% to the total energy consumption in the country additional policy goals include; (i) contributing to the European objective of 20% CO₂ reduction in 2020 by means of energy savings in the built Environment, (ii) using energy savings as a means to allow people more control of the increase in living expenses and (iii) energy saving as a boost for the construction industry (Ministry of the Interior and Kingdom Relations 2011).

There are a number of subsidies, grants and VAT exemptions available in the Netherlands. Landlords are able to pay 6% VAT on labour for painting, plastering and insulation of the property, opposed to the usual 21% (Belastingdienst 2016). Private landlords pay 0% VAT on the total cost, i.e. purchase and labour cost, of the PV investment (Milieu Centraal 2016). The ISDE programme is a subsidy scheme in supporting private households and business in generating own renewable energy (RVO 2016b) and the STEP programme allows housing corporations or private landlords, in the regulated rental sector, a maximum subsidy of € 7 500 000 per application. The size of the grant is based upon the improvement of the Energy Index (EI) of a dwelling (RVO 2016c). The FEH programme consists of loans targeted on landlords who run very ambitious retrofit projects for a minimum of five dwellings. The loan amount depends on the improvement in the EE using the EI (RVO 2016a). The FEH loans, similar to the STEP allowance, are provided to improve energy efficiency in the rental market. Apart from public grants and subsidies, banks provide discounted interest on mortgages, but are subjected to how energy efficient a dwelling is. The mortgage loan amount can also be higher for more energy efficient dwellings.

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 1: major subsidy and grant policies
Fact sheet name	The Netherlands - subsidies for energy efficiency investments: policies, institutions and goals

Table 15: The Netherlands - subsidies for energy efficiency investments: policies, institutions and goals

Variable	Exact name of policy/programme ¹³	Grant giving institution	Type grant giving institution	Scope of business of grant giving institution	Regional availability	Initiation year	Duration of programme
Investment Renewable Energy (ISDE)	Investeringssubsidie duurzame energie (ISDE)	RVO (NL Government, subsidy)	Public	Government agency	National	2016	2020
VAT Reclaims on Solar Panels.	BTW op zonnepanelen terugvragen	Belastingdienst (NL Government, policy)	Public	Government agency	National	2013	ongoing
VAT Reduction initiatives	BTW tarief 6% voor arbeidskosten schilderen, stukkadoeren en isoleren van de woning.	Belastingdienst (NL Government, policy)	Public	Government agency	National	2015	ongoing
VvE Energy Savings Loan	VvE Energiebespaarlening	SVn (foundation)	Public/private	Foundation	National	2015	ongoing
Energy Savings Loan	Energiebespaarlening	SVn (foundation)	Public/private	Foundation	National	2014	ongoing
Rental Market Incentives (STEP)	Stimuleringsregeling energieprestatie huursector (STEP)	RVO (NL Government, subsidy)	Public	Government agency	National	2014	2017
Fund for Energy Saving in the Rental Market (FEH)	Fonds energiebesparing huursector (FEH)	RVO (NL Government)	Public	Government agency	National	2014	ongoing
Green Mortgage	Groen hypotheek	Banks	Private	Bank	National	-	ongoing
Data source and reference year	(RVO 2016b; RVO 2016c; RVO 2016a; Milieu Centraal 2016; Belastingdienst 2016)	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.
Remarks							

¹³ These initiatives are very recent and lack a firm track record.

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 2: Characteristics of grant and subsidies
Fact sheet name	The Netherlands - subsidies for energy efficiency investments: characteristics

Table 16: The Netherlands - subsidies for energy efficiency investments: characteristics

Variable	Subject of subsidy	Type of subsidy	Subsidy credit conditions	Subsidy credit duration	Subsidy cash allowance conditions	Minimum efficiency standards of the programme investment	Prerequisites for participation	Tax deductibility of subsidy	Rent influence	Cumulative subsidies
Investment Renewable Energy (ISDE)	Private households and business who want to generate renewable energy can apply for subsidies for solar water heaters, heat pumps, biomass boilers and pellet stoves.	Cash allowance	-	-	The amount of the grant depends on the type of device and energy performance; (i) For a pellet stove you will receive € 50 per kW of power, with a minimum of € 500, (ii) For heat pumps between € 500 and € 2,500, (iii) For solar water heaters between € 500 and € 1,870, (iv) For a biomass boiler you will receive € 80 per kW with a minimum of € 3,200.	-	-	-	no	yes
VAT Reclaims on Solar Panels.	An individual who buys solar panels can reclaim VAT on purchase and installation.	other	(21%) VAT refund, no VAT	-	-	-	-	-	no	yes
VAT Reduction initiatives	The 6% VAT rate is applicable to painting and plastering of houses older than two years and applying insulation in these homes.	Other	6% VAT instead of regular 21%	-	-	-	-	-	no	yes
VvE Energy Savings Loan	The HOA Energy Saving Loan allows HOA's to finance at an attractive interest rate, energy-saving investments in apartment complexes.	Credit subsidy	The loan has a volume of at least € 25,000 and a maximum of € 5,000,000. Interest between 2.4% - 2.8%.	10 - 15	-	Minimum standards per available measure (extensive list).	The HOA is made up of at least 10 apartment rights	-	no	yes
Energy Savings Loan	homeowners can take a loan at a favorable interest rate for energy saving measures	Credit subsidy	The loan has a volume of at least € 2,500 and a maximum of € 25,000. Interest between 2.1% - 2.8%.	7 - 15	-	Minimum standards per available measure (extensive list).	Loan only available for measures on a (extensive) list.	-	no	yes
Rental Market Incentives (STEP)	EE measures in the regulated rental sector	Cash allowance	The allowance is between € 2,000 and € 4,500 per dwelling. With a maximum allowance of € 7,500,000.	-	2,000 – 4,500 per dwelling. Max. 7,500,000.	EPC rating jump, specified for housing corporations (foundations) and for other landlords.	-	-	no	yes
Fund for Energy Saving in the Rental Market (FEH)	Landlords can qualify for a loan when they renovate at least five homes to highly energy-efficient homes.	Credit subsidy	The loan can finance lessors max. 25% of the project cost, with a total minimum loan amount of € 75,000. The maximum loan amount per house is € 15,000. The rent for housing corporations (foundations) under the liberalization cap (regulated market) is 0.5%. The rent above the cap is 1.9% for corporations and 1.9% for other landlords.	15	-	The homes of other landlords must have a minimum energy label A, after renovation and improved at least three energy steps. The EPC-rating jump to be accomplished is specified for corporations and other landlords.	-	-	no	yes
Data source and reference year	(RVO 2016b; RVO 2016c; RVO 2016a; SVn 2016b; SVn 2016a; Milieu Centraal 2016; Belastingdienst 2016)	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.
Remarks										

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 2: Characteristics of grant and subsidies
Fact sheet name	The Netherlands - subsidies for energy efficiency investments: evaluation of the practice

Table 17: The Netherlands - subsidies for energy efficiency investments: evaluation of the practice

Variable	Policy goals	Target groups	Target housing stock	Volume of subsidy programme	Impact	Evaluation	Reasons for success/failure
Investment Renewable Energy (ISDE)	Energy saving and CO2 reduction	Homeowners, business	All	70 million per year	Between the start of the subsidy, January 4 th of 2016 and 29 th of February 2016, 1758 applications have been made, worth near 5.5 million.	Average, but increasing	Subsidy scheme has just started and already used a significant amount of available budget.
VAT Reclaims on Solar Panels.	Stimulating renewable energy and CO2 reduction	Homeowners	House /Detached house/Semi-detached house	-	No VAT will increase the likelihood of taking EE measures.	average	Based upon finding under the 6% VAT effect.
VAT Reduction initiatives	Stimulating construction and housing market	All	All	-	The lower VAT rate will increase the likelihood of taking EE measures.	Average	Stimulant when known in decision making, but 6% VAT 'automatically' applied when applicable.
VvE Energy Savings Loan	EE, comfort, sustainability	VvE (HOA's)	Multi-story housing	Policy 4 and 5: in total 300 million. Principal and interest are used to replenish the fund.	Unknown	none	Research on the effects of specific policy instruments have to be strengthened.
Energy Savings Loan	EE, comfort, sustainability	Homeowners	House /Detached house/Semi-detached house, Individual flats	Policy 4 and 5: in total 300 million. Principal and interest are used to replenish the fund.	Unknown	none	Research on the effects of specific policy instruments have to be strengthened.
Rental Market Incentives (STEP)	Improve EE of rental dwellings in the regulated sector	Housing corporation, private landlord (in the regulated sector)	All	395 million.	Unknown	None	Research on the effects of specific policy instruments have to be strengthened.
Fund for Energy Saving in the Rental Market (FEH)	Improve EE of (liberalised/non-regulated) rental sector	Housing corporation, private landlord	All	58 million reserved for housing corporations. 14.5 million reserved for private landlords	Unknown	none	Research on the effects of specific policy instruments have to be strengthened.
Data source and reference year	(RVO 2016b; RVO 2016c; RVO 2016a; SVn 2016b; SVn 2016a; Milieu Centraal 2016; Belastingdienst 2016; Vringer et al. 2014)	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.
Remarks							

3.6 Poland - Grants and subsidies: Institutions, policies and goals

As part of its environmental protection commitments, the European Union set quantitative objectives for 2020 which include; (i) reducing greenhouse gases emission by 20% relative to 1990 levels, (ii) reducing energy consumption by 20% of the projected 2020 levels, (iii) increasing the share of renewable energy to equal 20% of total energy generation and (iv) increasing the use of renewables in transport to 10%. There is a series of national schemes in Poland that support green investment initiatives. The Thermo-modernisation and Renovation Fund (TM&RF), provided by the Bank of National Economy (BGK), is a fund based on the Act on Supporting Thermo-modernisation and the Restoration of Derelict Buildings of 21 November 2008 (OJ 2014 pos. 712). Its primary objective revolve around the provision of financial support to investors, which implement projects associated with thermal-modernisation, repair and renovation of single-family and multi-family dwellings; with loans obtained from commercial banks. It is referred to as (i) Thermo-modernisation, (ii) Premium overhaul and (iii) Bonus compensation. This serves as a source of partial repayment of the loan for the project or renovation (BGK 2016). Since its formation, the fund has produced and distributed over 2 billion PLN in subsidies by the end of 2015. In total, the subsidised induced a reduction of energy costs of over 0.8 billion PLN. The Credit Eco-Investment alternative is a loan combined with a subsidy from the National Fund for Environmental Protections and Water Management for small and medium-sized enterprises. It is produced by the Bank of Environmental Protection (BOS) and is designed to finance; (i) up to 100% of the costs and (ii) up to 15% of the eligible repayment cost of a loan (BOS 2016). Eligible projects include; (i) investments in equipment and solutions from the LEME list which will reduce energy consumption by at least 20% and (ii) large scale projects in the area of energy efficiency, renewable energy and building renovation. Target groups of the initiative include micro-, small- and medium enterprises, as well as housing cooperatives which employ up to 250 employees, and produce a turnover of up to 50 million EUR.

The duration of the loan period is set at up to 15 years, with a period of 10 years for small- and medium sized enterprises. The maximum loan value varies according to investments from the LEME list (up to 250 000€) and large scale investments (up to 1 000 000€). The loan amount may exceed the eligible costs covered by the subsidy. Other support, also produced by the Bank of Environmental Protection, includes Energy on the Plus loans,

which is aimed at supporting the reduction of energy consumption within companies. A beneficiary can obtain financial support, in the form of a subsidy, of up to 12% of the loan value. This amount is limited to 120 000€. Funding is allocated to projects that reduce CO₂ emissions and energy consumption; associated with industrial and residential buildings as well as projects within the industrial infrastructure. The loan may also cover the construction and installation of renewable energy sources (BOS 2016). Programme Prosument, initiated by the National Fund for Environmental Protection and Water Management (NFOŚiGW), is aimed at the provision of financial support for the purchase and micro-installations of renewable energy sources. Its objective revolves around the reduction of CO₂ emissions by increasing the production of electricity and heat with renewable energy sources for individuals, communities and housing. The programme promotes; (i) new technologies, (ii) renewable energy and (iii) environmental awareness. It further aims to improve the development of the supplier market and the creation of jobs within the renewable energy sector. Support is granted to investors intending to purchase and install small- or micro installations for the production of renewable energy for single- or multi-family residential dwellings. This include; (i) a biomass-fired heat source, with an installed capacity of 300 kW thermal; (ii) heat pumps, with an installed capacity of 300 kW thermal; (iii) solar panels, with an installed capacity of 300 kW thermal; (iv) photovoltaic systems, with installed power up to 40 kWp; (v) small wind turbines, with an installed capacity of electricity to 40 kWe and (vi) micro-cogeneration. The beneficiaries of the programme include natural persons, housing associations, housing communities and local government units. The programme budget is 800 million PLN between 2014 and 2022, with the possibility of obtaining loan agreements (credit) and subsidies for up to the year 2020 (NFOŚiGW 2016).

Recently, the rules for support from the programme have undergone significant revision.¹⁴ There also exist a series of local support schemes in Poland, which is primarily directed at energy efficiency improvements. For instance measure 4.3.1 of the Regional Operational Programme of the Mazovia Province; the transition to a low carbon economy, is aimed at promoting energy efficiency, intelligent energy management and renewable energy in both

¹⁴For more information see: <https://www.nfosigw.gov.pl/oferta-finansowania/srodki-krajowe/programmey-priorytetowe/prosument-dofinansowanie-mikroinstalacji-oze/aktualnosci/art.22.zapraszamy-do-konsultacji-zmian-programmeu-prosument.html>

public buildings and the housing sector. The initiative specifically revolves around aimed at the replacement of heating devices and the connection of buildings to district heating or cooling (Fundusze Europejskie 2016). It is directed at a wide range of target groups; (i) local government units, their unions and associations; (ii) organisational units of local government units with legal personality and (iii) enterprises. This initiative is a single example from the 16 regional operational programmes (one for each province), which applies a mix of funds comprised of co-financing from European Structural and Investment Funds. Further initiatives include schemes developed by Regional Funds for Environmental Protection and Water Management (WFOŚiGW), which are allocated by Marshal Offices of all of the 16 capital cities in Polish provinces. The variety and magnitude of their support is subjected to the annual budgets of these funds. Example of these local initiatives include; (a) Reducing emissions of air pollutants (WFOŚiGW 2016a), (b) Supporting installations using renewable energy sources (WFOŚiGW 2016b) and (c) supporting the tasks of thermal-modernisation and associated heat recovery ventilation (WFOŚiGW 2016c). Financial support of these local initiatives can take the form of subsidised medium-to-long-term loans, or just a bridging-loan intended to maintain the liquidity of projects co-financed by the European Union. The fund also allows for granting financial assistance for the same tasks on the basis of separate agreements not co-financed by the EU. Projects revolving around the investment, modernisation or purchase of fixed assets and equipment may not exceed 100% of the eligible cost of the task.

When loans are co-financed by grants from the EU, the support is set at up to 100% of the difference between the eligible costs and the financing grant for the project. The final level of support provided is subjected to the conditions of the EU programme.

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 1: major subsidy and grant policies
Fact sheet name	Poland - subsidies for energy efficiency investments: policies, institutions and goals

Table 18: Poland - subsidies for energy efficiency investments: policies, institutions and goals

Variable	Exact name of policy/programme	Grant giving institution	Type grant giving institution	Scope of business of grant giving institution	Regional availability	Initiation year	Duration of programme
TM&RF	<i>Fundusz termomodernizacji</i>	BGK	private/public	Development bank	national	-	unlimited
Eco Investments	<i>Kredyt Eko Inwestycje</i>	BOŚ Bank/National Fund for Environmental Protection and Water Management (NFEP&WM)	private/public	Government agency	national	-	unlimited
Energy on the Plus	<i>Kredyt Energia na Plus</i>	BOŚ Bank/(NFEP&WM)	private/public	Government agency	national	-	unlimited
PROSUMENT	<i>Prosument</i>	BOŚ Bank/(NFEP&WM)	private/public	Government agency	national	2016	5
Measure 4.3 of RPOWM	<i>4.3. Wspieranie efektywności energetycznej, inteligentnego zarządzania energią i wykorzystywania odnawialnych źródeł energii w budynkach publicznych i w sektorze mieszkaniowym</i>	European Regional Development Fund/Cohesion Fund	public	European Structural Funds	regional/state	-	2020
Reducing emissions of air pollutants	<i>Ograniczenie emisji zanieczyszczeń do powietrza</i>	WFOŚiGW Warsaw	public	Regional governmental fund	regional/state	-	unlimited
Supporting installations using renewable energy sources	<i>Wspieranie instalacji wykorzystujących odnawialne źródła energii</i>	WFOŚiGW Warsaw	public	Regional governmental fund	regional/state	-	unlimited
Supporting the tasks of thermal modernisation and associated heat recovery ventilation	<i>Wspieranie zadań z zakresu termomodernizacji oraz związanych z odzyskiem ciepła z wentylacji</i>	WFOŚiGW Warsaw	public	Regional governmental fund	regional/state	-	unlimited
Data source and reference year	(BGK 2016; BOS 2016; WFOŚiGW 2016; WFOŚiGW 2016a; WFOŚiGW 2016c; Fundusze Europejskie 2016)	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.
Remarks							

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 2: Characteristics of grant and subsidies
Fact sheet name	Poland - subsidies for energy efficiency investments: characteristics

Table 19: Poland - subsidies for energy efficiency investments: characteristics

Variable	Subject of subsidy	Type of subsidy	Subsidy credit conditions	Subsidy credit duration	Subsidy cash allowance conditions	Minimum efficiency standards of the programme after investment	Prerequisites for participation	Tax deductibility of subsidy	Rent influence	Cumulative subsidies
TM&RF	Thermo-renovation; Structural repairs; Decreasing the losses in district heating networks; Change of heat source.	other (prize)	-	-	(i) Up to 20% of credit amount (ii) up to 16% of total project amount (iii) up to 200% of annual savings on energy costs.	Not set - Required min 25% of energy savings.	Loan granted by accredited commercial bank.	no	no	no
Eco Investments	(i) Investments in new technologies and equipment reducing energy consumption (LEME list); (ii) Projects in the area of Energy Efficiency, Renewable Energy and Thermo-renovation of buildings.	cash allowance	-	Up to 15 Years/micro and small business up to 10 years.	Remission of up to 15% of the loan capital	-	-	no	no	yes
Energy on the Plus	Thermo-modernisation of buildings; (ii) Replacement of lighting, (iii) the use of RES, (iv) modernisation or replacement of equipment, (v) the use of cogeneration, (vi) modernisation of local heating networks.	cash allowance	-	3 - 10 years (Up to 15 years for renewable energy sources).	Remission of up to 12% of the capital (max 120k Euro).	-	-	no	no	yes
PROSUMENT	Purchase and installation of micro-installations of RES	both cash allowance and credit subsidy	-	15 years.	Up to 40% of eligible cost	-	-	no	no	-
Measure 4.3 of RPOWM	- replacement of the heating medium; - connecting to the district heating / cooling.	cash allowance	-	-	Up to 80% of eligible costs	20% CO2 emission reduction.	-	no	no	no
Reducing emissions of air pollutants	Tasks bringing ecological effect for the protection of the atmosphere.	both cash allowance and credit subsidy	Preferential interests.	Up to 15 years.	Remission from 15 up to 40%.	-	Min. 50% of points available in this category of tasks.	no	no	yes
Supporting installations using renewable energy sources	Undertaking consisting of RES purchase and installation	both cash allowance and credit subsidy	Preferential interests.	Up to 15 years.	Remission from 15 up to 50%.	-	Min. 50% of points available in this category of tasks.	no	no	yes
Supporting the tasks of thermal modernisation and associated heat recovery ventilation	(i) Comprehensive thermal modernisation of buildings; (ii) the use of heat recovery / heat recovery ventilation.	both cash allowance and credit subsidy	Preferential interests.	Up to 15 years.	Remission from 15 up to 40%.	-	Min. 50% of points available in this category of tasks.	no	no	yes
Data source and reference year	(BGK 2016; BOS 2016; NFOŚiGW 2016; WFOŚiGW 2016b; WFOŚiGW 2016a; WFOŚiGW 2016c; Fundusze Europejskie 2016)	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.
Remarks										

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 2: Characteristics of grant and subsidies
Fact sheet name	Poland - subsidies for energy efficiency investments: evaluation of the practice

Table 20: Poland - subsidies for energy efficiency investments: evaluation of the practice

Variable	Policy goals	Target groups	Target housing stock	Volume of subsidy programme	Impact	Evaluation	Reasons for success/failure
TM&RF	Renovation and repair of existing buildings.	All investors, regardless of legal status: legal persons (e.g. housing associations and company law), government entities, community housing, natural persons, including the owners of single-family homes.	All	Distributed over PLN 2 billion of subsidies (ca. EUR 0.5 billion); the value of loans granted at a premium until 2014 is 8658 million PLN (ca. EUR 2 billion).	large	high	Long-term legislative background, repetitive character, clear rules, big distribution network based on apex banking structure.
Eco Investments	Investments in new technologies and thermo-modernisation.	(i) Micro, small and medium enterprises; (ii) housing cooperatives, employing up to 250 employees and reaching a turnover of EUR 50 million.	All	-	-	-	-
Energy on the Plus	Reduction of CO2 emissions and energy demand.	Small and Medium-sized Enterprises	All	-	-	-	-
PROSUMENT	Reduction or avoid CO2 emissions by increasing energy production from renewable sources	(i) Individuals who have the right to dispose of a single-family residential building or a single-family residential building under construction; (ii) Communities and housing associations managing multi-family residential buildings.	All	PLN 0.8 billion (for entire period till 2020)	-	-	-
Measure 4.3 of RPOWM	Improving of energy efficiency, including reduce of CO2 emissions	(i) Local government units, their unions and associations; (ii) Organisational units of local government with legal personality; (iii) Enterprises.	All	EUR 50 million (for entire period till 2020)	-	-	-
Reducing emissions of air pollutants	(i) Reducing emissions of air pollutants; (ii) Reducing the exposure of the population to pollution.	(i) Local government units (LGUs), their relations and their subordinate units; (ii) Other legal entities; (iii) Entrepreneurs.	All	-	-	-	-
Supporting installations using renewable energy sources	(i) Increasing the participating of renewable energy sources in final energy consumption to a minimum of 15% in 2020 and an increase in this ratio in subsequent years; (ii) The promotion of renewable energy sources; (iii) Dissemination of new technologies to reduce emissions low.	(i) Local government units (LGUs), their relations and their subordinate units; (ii) Other legal entities; (iii) Entrepreneurs.	All	-	-	-	-
Supporting the tasks of thermal modernisation and associated heat recovery ventilation	Reducing the heat demand of buildings.	(i) Local government units (LGUs), their relations and their subordinate units; (ii) Other legal entities; (iii) Entrepreneurs.	All	-	-	-	-
Data source and reference year	(BGK 2016; BOS 2016; NFOŚiGW 2016; WFOŚiGW 2016b; WFOŚiGW 2016a; WFOŚiGW 2016c; Fundusze Europejskie 2016)	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.
Remarks							

3.7 Spain - Grants and subsidies: Institutions, policies and goals

The policy goals in combatting climate change in Spain revolve around; (i) reducing energy dependence through diminishing energy consumption; (ii) adaptation of the existing housing stock and new constructions to improve energy efficiency (use and consumption in buildings) and (iii) reduce emissions. Goals on energy savings include reducing energy consumption, in 44 million petrol barrels, across (i) the transport sector (40% of final energy consumption), (ii) industry (30% of energy consumption), (iii) the housing sector (17% of energy consumption), (iv) the service sector (9%) and (v) the agricultural sector (4%). With regards to transport and mobility, action will take the form of (i) electric vehicle introduction (1 million in 2014, rated as A); (ii) 20% of these with biofuels and (iii) reduced the general average speed. Action to be taken with regards to buildings include; (i) building interior temperature regulation (min 26° in summer and no more than 21° in winter) and (ii) public building refurbishments to improve and promote energy saving and energy ratings of buildings. The overall objective of the initiative is to reduce between 5.8 and 6.4 million equivalent tons of petroleum (ecp). The support for the entire programme is 245 million €. The Action plan for saving and energy efficiency (Plan de Acción de Ahorro y Eficiencia Energética 2011-2020), the objectives include the reduction of; (i) 4800 ktep/year in buildings, (ii) 130 ktep/year in public lighting, (iii) 7500 ktep/year in road transport and (iv) to invest 45985 million € in sustainable investments (IDAE 2011)¹⁵. The housing refurbishment and rehabilitation plan is based on several plans captured by the Plan de Acción 2014-2020 para la rehabilitación Energética de Edificios, which distinguishes between actions on buildings and in individual houses (REE 2015). A subsidy of 2000€ can be obtained by homes for refurbishment, quality improvements and sustainability initiatives. In the event that the energy demand is reduced by 50%, the subsidy can be increased to 5000€ for a 100m² building. The quality of historical buildings or buildings subjected to special protection can be increased by 10%.

¹⁵ This is the second Spanish Energy Efficiency Action Plan which directs the Spanish regulation - Directive 2006/32/CE of European Parliament of 5 April, 2006.

In 2012, the plan prevented an increase in the subsidy from 5000€ to 6500€ if the building was primarily used as a rental for 5 years (PEFAV 2013). The programme PAREER-CRECE, supporting the energy refurbishing in existing buildings (REE 2015), captures several initiatives to reduce energy consumption and emissions; it primarily applies both subsidies and grants as measures. This ranges between 20% and 30% of the total refurbishing costs, depending on the type of measure, and provides credit at a preferential rate of euribor + 0%, over a period of 12 years, for 60% to 70% of the remaining eligible costs (IDAE 2016). From 2013, the Spanish system promoted green retrofit investments in energy capacity (Photovoltaic and other green energies) for energy production, personal consumption and network dumping. The incentives were ascribed to the differences in tariffs, with a positive subsidy realising from the difference between the dump tariff and the network tariff. A new regulation was approved in 2015, from which the tariff cost are covered only when the consumer receive or dump electricity to the network. A charge for personal consumption is also compulsory in every electricity bill in order to cover the services required to maintain the network and previous investment made in renewable structure, both updated and built using credits. The savings are estimated to range between 15€ to 40€ (MWh) for the consumer. Estimated saving for the network (of a 10MW photovoltaic plant with 1600 hours) is 30€/MWh in Balearic Islands and 100€/MWh in Canary Islands.

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 1: major subsidy and grant policies
Fact sheet name	Spain - subsidies for energy efficiency investments: policies, institutions and goals

Table 21: Spain - subsidies for energy efficiency investments: policies, institutions and goals

Variable	Exact name of policy/programme	Grant giving institution	Type grant giving institution	Scope of business of grant giving institution	Regional availability	Initiation year	Duration of programme
Rehabilitation, Regeneration and Urban Renovation (RRRU)	Ley 8/2013, de 26 de junio, de rehabilitación, regeneración y renovación urbanas	The Autonomous Community (Regions) by agreement with central Government	public	government agency	Regional/Municipal	2013	Unlimited but with budget determined yearly
Royal Decree 233/2013 of April 5th of State Plan for improve Rental market, building rehabilitation and urban regeneration and renovation (PEFAV)	Plan Estatal de Fomento del Alquiler de Viviendas, Rehabilitación edificatoria y regeneración y renovación urbanas, 2013-2016'	The Autonomous Community (Regions) by agreement with central Government	public	government agency	Regional/Municipal	2013	2016
Programme PAREER-CRECE (REE)	Rehabilitación Energética de Edificios (Programmea PAREER-CRECE), Plan de Acción 2014-2020 para la rehabilitación energética de Edificios existentes	The Autonomous Community (Regions) by agreement with central Government	public	government agency	Regional/Municipal	2014	2020
Data source and reference year	(IDAE 2011; IDAE 2016; REE 2015; PEFAV 2013; RRRU 2013)	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.
Remarks							

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 2: Characteristics of grant and subsidies
Fact sheet name	Spain - subsidies for energy efficiency investments: characteristics

Table 22: Spain - subsidies for energy efficiency investments: characteristics

Variable	Subject of subsidy	Type of subsidy	Subsidy credit conditions	Subsidy credit duration	Subsidy cash allowance conditions	Minimum efficiency standards of the programme after investment	Prerequisites for participation	Tax deductibility of subsidy	rent influence	Cumulative subsidies
Rehabilitation, Regeneration and Urban Renovation (RRRU)	(i) Thermal isolation of building envelope (ii) Installations of bi-climatic devices in facades or roofs, (iii) Provision of common energy facilities or any renewable energy sources (iv) Any work or installations to reduce 30% of energy consumption (Art 10.4)	<i>both cash allowance and credit subsidy. Defined in the plans</i>	-	Min 3 years Max 12 years	(i) Minimum reduction of 30% on energy consumption (ii) The house should be a principal home (iii) in rental buildings, tenants have the right to be relocated.	Developed in the plans.	Several institutions and societies have been listed for co-finance possibilities. Developed in the plans.	Developed in the Plan.	Developed in the Plan.	Developed in the Plan.
Royal Decree 233/2013 of April 5th of State Plan for improve Rental market, building rehabilitation and urban regeneration and renovation (PEFAV)	Improving building quality and sustainability by improving; (i) Thermal envelop, (ii) heating, refrigeration or ACS installations with better efficiency; (iii) Installing power generators using renewable energy and (iv) improving energy efficiency of the current installations (arts 19 and beyond).	<i>both cash allowance and credit subsidy compromise</i>	(i) Maximum of 2000 euros per house if the improvement is in quality and sustainability; (ii) 5000 € if the reduction of energy demand is 50%; (iii) 10% extra benefit if the building is historical; (iv) max 11000€ per house (12100 € if it is declared historical) (v) Max 35% of eligible cost for the building.	Depends on the Regional support. Programme PAREER-CRECE.	Art 23: (i) Maximum 1s1100€ (100m ²) flat or house; (ii) max 35% of eligible cost; (iii) If rented 10 years as minimum (iv) have a technical evaluation report (v) household income lower than 6.5 IPREM* (vi) for developers in public houses (for rent), max 250€/flat and max grant = 30% of eligible cost with a max of 22500 €/flat.	-	(i) Built before 1981 for rehabilitation grants, (ii) used as permanent home, (iii) Be dedicated to rent (building) by a minimum of 10 years, (iv) Min 8 flats in the building (or less if homeowners are older than 65 years old)	It is taxable in income tax for both households and firms.	no	Yes. With subsidies for rental market improvements (30% of eligible cost max or 22500 €/flat) but limit is that total grant cannot exceed the total eligible costs. No. Incompatible with subsidies from Regeneration and urban renovation programme and the programme for sustainable cities.
Programme PAREER-CRECE (REE)	Promote repairs and refurbishments which aim is reduce energy consumption, improve energy efficiency, implement renewable energies and reduce the CO2 emissions, in existing buildings 4 types: Type 1; Improve energy efficiency in the thermal envelope. Type 2; Improve energy efficiency in thermal facilities and lighting. Type 3; Substitution of conventional energy by biomass system in thermal facilities. Type 4; Substitution of conventional energy by geothermal energy.	<i>both cash allowance and credit subsidy</i>	(1) (i) 60% for improvement building envelop, (ii) Improvements in energy efficiency in installations of 70%, (iii) substitution of conventional energy for biomass of 65% and (iv) substitution conventional energy for geothermal energy of 60%. (2) Euribor +0%. Loan Guarantees: 20% of the loan quantity in a bank endorsement, insurance or deposit in the public CGD. Can be co-financed by FEDER funds in the programme of sustainable growth	Subsidy: 1 time. Credit: 1 to 12 years	Maximum grant determined by maximum eligible costs %: (i) 30% for improvement building envelop, (ii) Improvements in energy efficiency in installations, 20%, (iii) substitution of conventional energy for biomass, 25% and (iv) substitution conventional energy for geothermal energy, 30%	(i) Actions improving the energy label to A or B in the CO2 scale or, (ii) improve energy qualification with 2 levels from the initial qualification.	(i) Be a building landlord both persons or firms, (ii) co-ownership communities, (iii) owners-landlords of buildings in a community, (iv) real estate firms (building owners) and (v) energy service firms.	No. Subsidies in cash allowance should be taxed by income tax both to persons and firms	no	Yes. Idem.
Data source and reference year	(IDAE 2011; IDAE 2016; REE 2015; PEFAV 2013; RRRU 2013)									
Remarks										

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 2: Characteristics of grant and subsidies
Fact sheet name	Spain - subsidies for energy efficiency investments: evaluation of the practice

Table 23: Spain - subsidies for energy efficiency investments: evaluation of the practice

Variable	Policy goals	Target groups	Target housing stock	Volume of subsidy programme	Impact	Evaluation	Reasons for success/failure
Rehabilitation, Re-generation and Urban Renovation (RRRU)	(i) Thermal isolation of building envelope (ii) Installations of bioclimatic devices in facades or roofs, (iii) Provision of common energy facilities or any renewable energy sources (iv) Any work or installations to reduce 30% of energy consumption (Art 10.4)	Private landlords, Housing companies and cooperatives, firms.	All housing stock. Detached house; Semi-detached house (if they are built before 1981); Individual flats; Multi-storey housing.	One payment depending on the cost of rehabilitation.	Average due to demographic factors.	<i>average, but increasing</i>	Due to the economic situation, this law has not had strong effect.
Royal Decree 233/2013 of April 5th of State Plan for improve Rental market, building rehabilitation and urban regeneration (PEFAV)	Improving building quality and sustainability by improving; (i) Thermal envelop, (ii) heating, refrigeration or ACS installations with better efficiency; (iii) Installing power generators using renewable energy and (iv) improving energy efficiency of the current installations (arts 19 and beyond).	Private landlords, co-owners communities, Housing companies and cooperatives, firms.	Aged stock (built before 1981), need for rehabilitation and energy efficiency adaptations. Be primary homes (at least 70% of total houses).	(i) Maximum 11000 €/ flat or house (total duration), max 35% eligible costs. (ii) Maximum 2000-5000 €/flat for improvements in quality and sustainability.	Average due to demographic factors.	poor	Due to the economic situation, results were poor.
Programme PAREER-CRECE (REE)	Promote repairs and refurbishments which aim is reduce energy consumption, improve energy efficiency, implement renewable energies and reduce the CO2 emissions, in existing buildings 4 types: Type 1; Improve energy efficiency in the thermal envelope. Type 2; Improve energy efficiency in thermal facilities and lighting. Type 3; Substitution of conventional energy by biomass system in thermal facilities. Type 4; Substitution of conventional energy by geothermal energy	Private landlords, co-owners communities, Housing companies and cooperatives, firms.	All housing stock. Detached house; Semi-detached house (if they are built before 1981); Individual flats; Multi-storey housing.	No quantity defined. Grants and credits are defined in a percent bases of eligible cost for renovation in energy efficiency and renewables	Average due to demographic factors.	Very poor	Due to the economic situation, results were poor.
Data source and reference year	(IDAE 2011; IDAE 2016; REE 2015; PEFAV 2013; RRRU 2013)						
Remarks							

3.8 United Kingdom - Grants and subsidies: Institutions, policies and goals

The United Kingdom has a series of goals and objectives to combat climate change in the long run. This includes a 2% reduction in CO₂ by 2010 relative to 1990 levels and a 60% reduction by 2050. In addition to CO₂ reductions, the national aim is 15% renewables by 2020 (IEA 2016). Household specific goals include a 20% improvement in energy efficiency or a 5mtC reduction by 2020 (Greenpeace 2015). Further goals and objectives encompass zero carbon homes by 2011 in Wales and 2016 in England, with advanced Scandinavian-inspired standards in Scotland (FMB 2015). However, it is projected that the UK will miss its 2020 target (IEA 2016). There has been significant policy changes in policies aimed at combatting climate change with renewable energy initiatives. These changes were directed at improving policy frameworks to improve the control of future consumption and costs. However, these changes also increased the uncertainty and thereby the attractiveness of energy efficiency retrofits in the United Kingdom (IEA 2016). We briefly discuss the energy efficiency initiatives, adopted in the UK, as well as the changes in the existing policies. There is a range of alternatives in the UK that provide support for energy efficiency retrofits. The Feed-in Tariffs (FIT) scheme (Energy Saving Trust 2016), allows consumers to receive money from energy suppliers, when energy generating technologies are installed from renewable sources. It replaced grants from the UK government to encourage the uptake (reduce the barriers) of renewable technologies. The energy regulator and administrator for the scheme is Ofgem and the energy provider is required by law to provide the FIT payments. Technologies that qualify for the scheme include; (i) solar electricity (PV) (roof mounted or standalone), (ii) wind turbines (building mounted or free standing), (iii) hydroelectricity, (iv) anaerobic digesters and (v) micro combined heat and power (CHP). There are 3 ways to benefit from FITs. Firstly, the energy supplier pays users a fixed rate for every unit (kWh) of electricity they generate and once the system has been registered, the tariff level that was agreed upon are guaranteed for the period (up to 20 years) and are index linked (Inflation and Retail Price Index). This benefit is referred to as Generation Tariffs.

Secondly, the user receives a further rate from the energy supplier for each unit the user exports back to be sold (unused units). Smart meters are installed to measure what is exported and is estimated to be 50% of the electricity generated. This is referred to as Export Tariffs. Finally, there is saving associated with energy bills. This includes the savings as-

sociated with the user generating their own electricity compared to how much is required to be supplied by the provider if the user does not (Energy Saving Trust 2016). Changes in the FIT initiative include quarterly limits assigned to different technologies with the aim to keep overall costs to £100 million per year by April 2019 (Energy Saving Trust 2016).

The Renewable Obligation scheme, initiated in 2002, is a support initiative for renewable electricity projects, which requires UK electricity suppliers to generate a portion of their electricity from renewable sources (Ofgem 2016). However, this initiative will completely terminate in April 2017 (IEA 2016). It is being replaced by the Contract-for-Difference (CfD) scheme, which is a private law contract between a low carbon electricity supplier and the government owned company (Low Carbon Contracts Company -LCCC). This initiative requires suppliers to sell their generated energy to the market at a pre-agreed “strike price”. It therefore reduces the exposure to risks associated with fluctuating electricity prices and thereby protect consumers from overpayment (DECC 2016a). The Renewable Heat Incentive (RHI) was launched on the 9th of April 2014 to encourage the uptake (remove barriers) of renewable heating alternatives and is open to domestic dwellings, homeowners, landlords, social landlords and self-builders (DECC 2016b). The tariffs have been calculated according to the level that reflects the expected cost of renewable heat generation over 20 years and payments are made on a quarterly basis. The domestic RHI will pay the following tariffs per unit of heat generated for 7 years; (i) air-source heat pumps 7.3p/kWh, (ii) ground and water-source heat pumps 18.8p/kWh, (iii) biomass-only boilers and biomass pellet stoves with integrated boilers 12.2p/kWh, (iv) solar thermal panels (flat plate and evacuated tube for hot water only) 19.2 p/kWh (DECC 2016b).

The government confirmed the extension of the scheme to 2020/202, with a budget increase from £430 million in 2015/16 to £1.15 billion in 2020/2021 (IEA 2016). Recent changes in the initiative include; (i) ineligibility of solar thermal installations from 2017 and (ii) a reduction in the claimable heat demand, to reduce the amount of RHI that can be claimed by larger properties (IEA 2016).

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 1: major subsidy and grant policies
Fact sheet name	The United Kingdom - subsidies for energy efficiency investments: policies, institutions and goals

Table 24: The United Kingdom - subsidies for energy efficiency investments: policies, institutions and goals

Variable	Exact name of policy/programme	Grant giving institution	Type grant giving institution	Scope of business of grant giving institution	Regional availability	Initiation year	Duration of programme
Contract-for-Difference (CfD) scheme	Contract-for-Difference (CfD) scheme	UK Government (policy/law)	public	Government agency	National	2014	ongoing
Feed-in-tariffs (FITs)	Feed-in-tariffs (FITs) Scheme	UK Government (policy)	public	Utility/Government agency	National	Announced 2008 (effective in 2010)	ongoing
Renewable Heat Incentive (RHI)	Renewable Heat Incentive Scheme (RHI)	UK Government (policy)	public	Utility/Government agency	National	April 2010	ongoing
Data source and reference year	(Energy Saving Trust 2016; DECC 2016a; DECC 2016b)	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.
Remarks							

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 2: Characteristics of grant and subsidies
Fact sheet name	The United Kingdom - subsidies for energy efficiency investments: characteristics

Table 25: The United Kingdom - subsidies for energy efficiency investments: characteristics

Variable	Subject of subsidy	Type of subsidy	Subsidy credit conditions	Subsidy credit duration	Subsidy allowance cash conditions	Minimum efficiency standards of the programme after investment	Prerequisites for participation	Tax deductibility of subsidy	Rent influence	Cumulative subsidies
Contract-for-Difference (CfD) scheme	Private law contract which requires suppliers to sell generated energy at a pre-agreed "strike price". It is aimed at reducing risks resulting from fluctuating electricity prices and thereby protects consumers from overpayment.	other	The spread between the reference price (GB market price) and the redefined strike price (of the low carbon technology).	Ongoing (unspecified)	-	-	Private law contract to be signed between the low carbon electricity supplier and the Low Carbon Contracts Company – LCCC (Government owned company)	-	-	-
Feed-in-tariffs (FITs)	Allows the receipt of money from energy supplier when energy generating technologies are installed.	other	-	20	Fixed rate cashback from supplier when own energy is generated.	-	Certification requirements, metering standards and date of installation prior to July 2009.	FITs is tax free in UK	-	yes
Renewable Heat Incentive (RHI) Scheme	To encourage the uptake (remove barriers) of renewable heating alternatives.	other	-	20	Fixed rate cashback from supplier when own renewable heat is generated.	-	Recent changes in the initiative include; (i) ineligibility of solar thermal installations from 2017 and (ii) a reduction in the claimable heat demand by larger properties.	Tax free	-	yes
Data source and reference year	(Energy Saving Trust 2016; DECC 2016a; DECC 2016b)	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.
Remarks										

Report	D 5.3: Fact Sheets regarding financing, subsidies and grant programmes
Section of report	Country section 2: Characteristics of grant and subsidies
Fact sheet name	The United Kingdom - subsidies for energy efficiency investments: evaluation of the practice

Table 26: The United Kingdom - subsidies for energy efficiency investments: evaluation of the practice

Variable	Policy goals	Target groups	Target housing stock	Volume of subsidy programme	Impact	Evaluation	Reasons for success/failure
Contract-for-Difference scheme (CfD)	Reducing risks resulting from fluctuating electricity prices and thereby protects consumers from over-payment.	Low carbon energy suppliers.	-	-	Success. Renewed	<i>average, but increasing</i>	Still in its infancy in the UK.
Feed-in-tariffs (FITs)	Replace grants from UK government to encourage the uptake of renewable energy technologies.	<i>All</i>	<i>All</i>	Limits assigned to different technologies with the aim to keep overall costs to £100 million per year by April 2019.	Increase in renewable technology implementation.	<i>average, but increasing</i>	Long contract agreements (20 years).
Renewable Heat Incentive (RHI)	Implemented to encourage the uptake of renewable heating alternatives.	Land lords, Home-owners, social landlords, self-builders.	<i>All</i>	The government confirmed the extension of the scheme to 2020/2021, with a budget increase from £430 million in 2015/16 to £1.15 billion in 2020/2021.	Increase in renewable technology implementation.	<i>high</i>	Long contract agreements (20 years).
Data source and reference year	(Energy Saving Trust 2016; DECC 2016a; DECC 2016b)	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.	Ibid.
Remarks							

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