

BEST PRACTICES ON QUALITY SCHEMES AND EPC IN RENOVATION

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Project Request Disclaimer

Executive Summary

The largest cost-effective energy saving potential of final energy use in buildings lies in renovation and refurbishment: the feasible total potential for energy savings by renovation and refurbishment is estimated at 55-80% depending on the building type and region (IEA)¹. The Energy Performance of Buildings Directive (EPBD) has been implemented by Member States (MS), creating the national institutional and regulatory framework for taking action on energy retrofit. Moreover the recast of the EPBD in 2010 will increase its impact by lowering the current threshold for major renovations in public buildings also increasing the role foreseen for Energy Performance Certificates (EPC). EPCs are already mandatory when major renovations are carried out and during property sale or rental. The recast seeks to turn them into “real active energy labels for houses” strengthening the information given to the owner or tenant that can stimulate action on improvement and effectiveness. National Energy Efficiency Action Plans also enforce implementation of measures in existing buildings and many actions and programs have already been undertaken. However the relationship between such implementation, the certification process and the quality of the installation of recommended measures is still to be investigated and quantified. In the last few years, new construction trades have appeared on the market to respond to the integration of energy efficiency and RES in low carbon renovation. Their qualification and work organisation requirement on the building sites are still to be analysed and optimised.

In this context, the REQUEST project aims to enhance the uptake of EPC recommendations and of low carbon renovation measures in residential buildings. The main objective of the project is providing national and regional EU agencies with a set of tools and techniques useful to foster the uptake of energy efficiency measures, enhancing satisfaction and confidence of the owner and to create awareness and optimize interfaces between the trades involved in the renovation process.

Within the early phases of the REQUEST project in 2010, the ‘Review and Research’ work stream established an inventory of tools, techniques and schemes for promoting action on EPC recommendations and access to an integrated supply chain for low carbon renovation. Information was collected on 95 tools/schemes in 27 Countries: the REQUEST countries (AT, BE, BG, DE, DK, UK, EL, IT, PL, PT, SK)², 12 EU non-participating countries (including CZ, EE, FR, NL, SI, ES, SE, IE, FI) and, 4 non EU Countries: HR, NO, CH, and US. The survey was performed through two different questionnaires, completed by the partners in September 2010 and by a few non-participating countries in December 2010, and through research using publications and on the web.

The present report summarises the analysis of all the tools appraised as exemplary cases in 2010 and lessons learned from the survey (Chapter II). Afterwards it describes and comments on meaningful **Best Practice cases** selected for more detailed analysis (Chapters III, IV) , so highlighting the mechanisms that can be interesting for replication by agencies and policy makers and for the following REQUEST activities:

- Developing tools & strategies for stimulating action on EPC recommendations
- Providing a new, replicable, mechanism for promoting quality assured low carbon renovations.

The report was updated (Chapter V) at the end of the project in October 2012, and additions to the analysis are:

- the description of 7 additional best practice cases that were subsequently identified during the project
- some highlights on the those tools/schemes addressing up-skilling, education, qualification and engagement of trades people involved in the construction/operation phase of the renovation process
- the REQUEST Pilots, developed using key experience on EPC promotion and quality in the supply chain gained within the project and evaluated according to the methodology used for identifying existing best practice.

¹ http://www.iea.org/Papers/2008/cd_energy_efficiency_policy/2-Buildings/2-Building_Codes.pdf

² See at the end of the document (VI-ss) for a list of abbreviations

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CHAPTER I Introduction

The initial “Review and research” phase of REQUEST performed an analysis of 95 tools for promoting access to an integrated supply chain for low carbon renovation: 77 tools in the 11 REQUEST Partners' countries and 18 tools in non-participating countries.

Most of the survey was carried on through a questionnaire that was completed by the project partners. The 35 questions focused on the role of EPCs in EPBD implementation³, the main national programs on low carbon renovation⁴, communication topics and incentives, participation and surveys on problems perceived by the stakeholders in the domain of REQUEST. This allowed us to describe the context where such tools are used, to identify trades involved in building renovation⁵ and to highlight the tasks of energy agencies in this domain. A simpler questionnaire was kindly filled in by the French and Croatian energy agencies. For the remaining non-participating countries, the survey was completed on the basis of information available in recent publications and on the web.

With reference to the main objectives of the REQUEST project, the tools are distinguished as:

- Tools for communicating and promoting implementation of **EPC recommendations**
- Tools for fostering **Quality** in the supply chain of energy renovation

All available information acquired in the survey is organised and managed in an inventory⁶ containing, at present, 21 tools promoting the uptake of EPC recommendations and 84 tools on quality in the supply chain for renovation⁷. 10 tools promote both aspects. The tools and schemes are described by a variety of attributes:

1. Territorial level and validity period
2. Main Objective (key area): communication, education, incentives, participation
3. Targeted stakeholders groups: decision makers, ownership, agencies and professionals, trades-people, managers, investors
4. Stage of the renovation and certification process
5. Type of ownership: social housing or private dwellings/homes
6. Quality requirements for people and products
7. Control/Inspection procedures
8. Energy Efficient Measures (e.g. thermal insulation, windows and HVAC replacement and renewal, etc.)

The questionnaire also asked for indicators on the impact and effectiveness of the tools and on eventual appreciation and feedback from target groups. No comparison was predicted in this sense but this allowed us to

³ REQUEST deliverable D 2.4, EPC in EPBD implementation, October 2010, REQUEST internal use.

⁴ See 0 to the report.

⁵ REQUEST deliverable D 2.5, *Trades involved in the renovation of residential buildings*, October 2010, REQUEST internal use.

⁶ REQUEST deliverable D 2.1, *Database of tools, schemes and methodologies to enhance quality renovation and uptake*.

⁷ See the list of all the tools in 0.

reveal a general lack of systematic evaluation of the tools. Appreciation and impact assessment results, when available, are not easily accessible and very seldom published.

An overview of all these tools has been set out in this report. For a selection of 29 tools appraised as meaningful best practices, a detailed description is provided later on in the report (Chapters III and IV, and 0).

Table 1 shows the geographical localisation of the 29 most relevant Best Practices:

	AT	BE	BG	DE	DK	EL	IT	PL	PT	SK	UK	HR
EPC recomm.	-	-	-	1	1	1	2	1	1	1	3	-
Quality	1	1	1	1	-	-	1	2	1	-	9	1

Table 1 - Overview of the Best Practices described in detail in 0

The survey also asked about the main barriers to increasing the uptake of low carbon renovations and the results are outlined below, where some of these barriers are interrelated:

- Low level of qualification, no certification of trades in building energy renovation (8 countries)
- Weak work organisation/coordination and a lack of communication between the design (detailing) and the construction phase (6 countries)
- Need for networking between different stakeholders in the renovation supply chain (6 countries)
- Availability and penetration of products and techniques in the local market (4 countries)
- Lack of institutional oriented policies fostering quality and combating low trust in investment in the specific sector (6 countries).

During the REQUEST project the inventory was expanded to include 8 other existing tools and 12 tools developed by the 11 partners within the REQUEST Pilots.

Chapter V updates the first version of the Report (January 2011) and depicts new tools and pilots.

Due to the current European-wide challenge to improve the human capital basis and foster opportunities in the construction sector, a part of Chapter V also highlights those tools from the survey addressing training, qualification and networking of installers and workers involved in renovation, resuming content of the REQUEST Report on Trades people.

CHAPTER II Analysis of the schemes

The most relevant information and statistics on the tools/schemes that we collected through the REQUEST survey are shown below, according to the two types of tools (EPC uptake and quality in the supply chain) and whether they are encompassed in a wider policy programme. Quality and quantity of the available information generally limited the analysis to those tools that were described in the questionnaires (nearly 80% of the totality).

1. Territorial Level

Tools are often included in wider national policy packages, such as: Klima:aktiv Programme 2004-2012 (Austria), National Programme for Renovation of Residential Buildings in the Republic of Bulgaria 2006-2020 (Bulgaria), Renovation Fund 2009-ongoing (Denmark), KfW CO2 Building Rehabilitation Programme 2001-ongoing (Germany), Carbon Emissions Reduction Target 2008-2012 (UK).⁸ Moreover, even when not included in such programs, the analysed tools are mainly applied at national level.

- Tools for **Quality**: of the 84 Tools, 76 are applied at national level, 45 refer to national programs and 8 are regional.
 - Tool on **EPC recommendations**: of the 21 tools, 15 refer to National Programs and 6 are regional.
-

2. Main objective

Besides a favourable legislative context, effective success of energy renovation practices depends on many factors: type of ownership, existence of financial instruments incentivising renovation works in the given period and area, quality of the renovation project and its realisation, participation of the owners/users and of the different stakeholders in the supply chain. The main problems for not achieving the whole improvement potential and therefore compromising the quality of the renovation are:

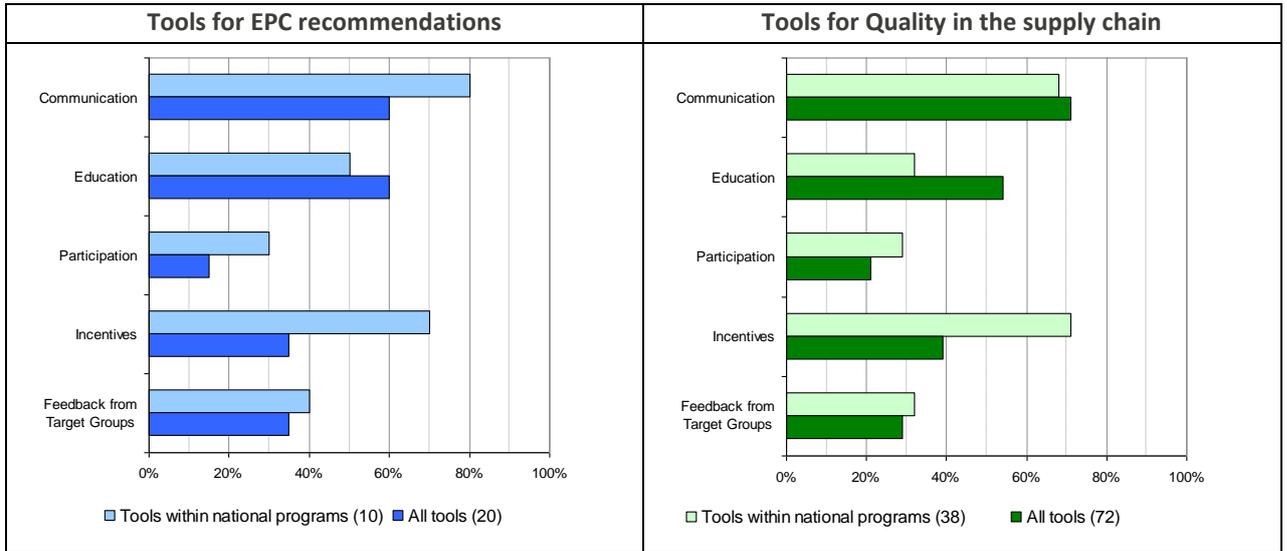
- Lack of information sharing between the relevant group of stakeholders/investors and planners
- Insufficient measures installed due to inadequate consulting or to financial reasons in the decision making
- Low quality of work and cooperation due to insufficient qualification of trades-people
- Lack and low participation of owners or other key actors in decision making

So the tools from the REQUEST Survey have been described according to the following objectives (or key areas):

Communication, Education, Incentives, Participation.

⁸ Other Major renovation programmes in non-participating Members States include: National Environmental Fund: "Green to Savings" 2009-2012 (Czech Republic), "No interest loans for Energy retrofits" (ECO PTZ) and "Grenelle" (France), "National Energy Conservation Programme" 2002 ongoing (Hungary), "More with Less" 2008-2020 (The Netherlands), "Programs for the thermal rehabilitation of multi-level residential buildings" 2002 ongoing (Romania), "Financial stimulation for Energy efficiency renovation" 2008-2016 (Slovenia), "Support for Energy Efficiency in Buildings" 2008-2012 (Spain).

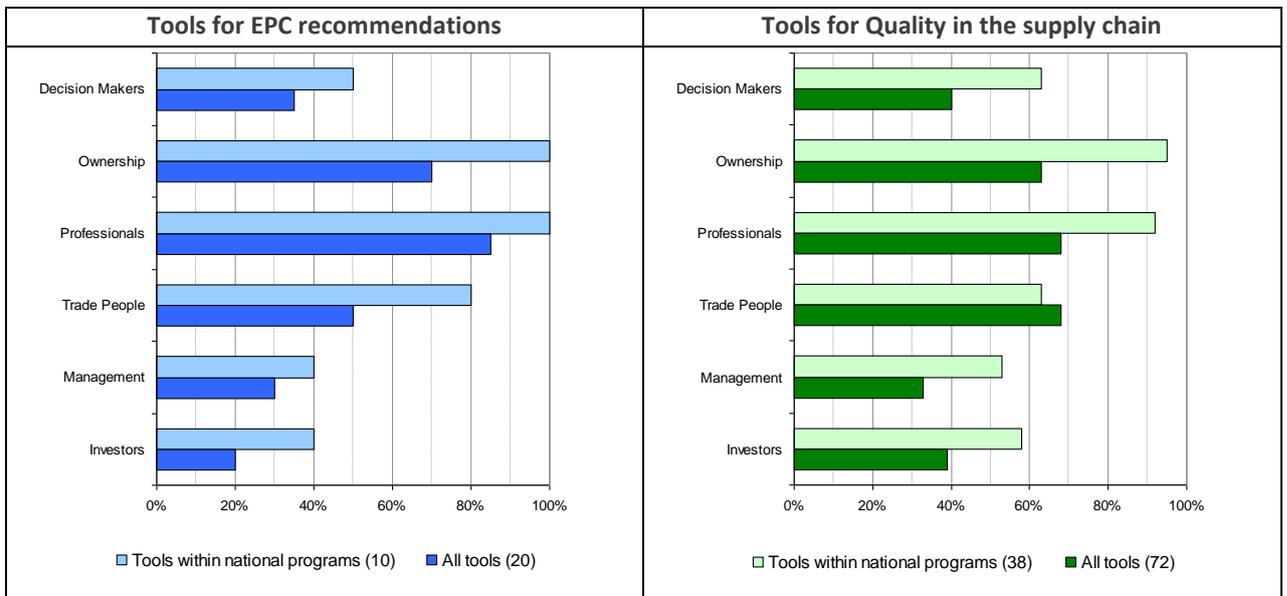
Graph 1 below shows the distribution of the tools according to each key area, but tools largely cover more than a key area (typically: incentives + communication). Tools that are part of a wider national program usually imply a more holistic approach including incentives, communication and, more rarely, participation.



Graph 1 - Objective of the Tools and evidence of existing feedback from Target Groups

3. Targeted Stakeholders groups

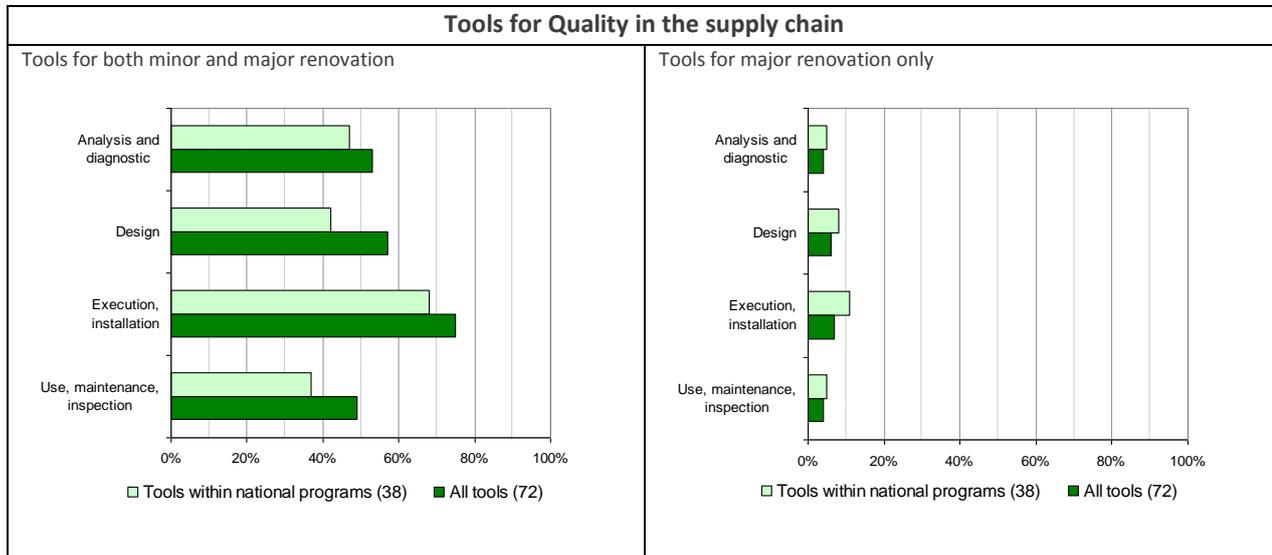
Graph 2 below shows the percentage of tools targeting each stakeholder group, but several groups are generally the target of a given tool or scheme. Various types of trades are involved in most of tools, nevertheless networking between different actors across the complete spectrum of the supply chain and collaborative work are practised in only a few tools, notably in the UK.



Graph 2 - Stakeholders groups the tools target

4. Stage of the Renovation process

Graph 3 below shows the stage of the renovation process where the tools aim to integrate quality requirements.



Graph 3 - Stage of the Renovation process according to the type of renovation

5. Type of Ownership

Almost all tools focus on privately owned property, some tools focus on both private and social housing and only a few tools (4) exclusively focus social housing (the three European projects SQUARE, ACT2 and ROSH and Italian ITACA).⁹

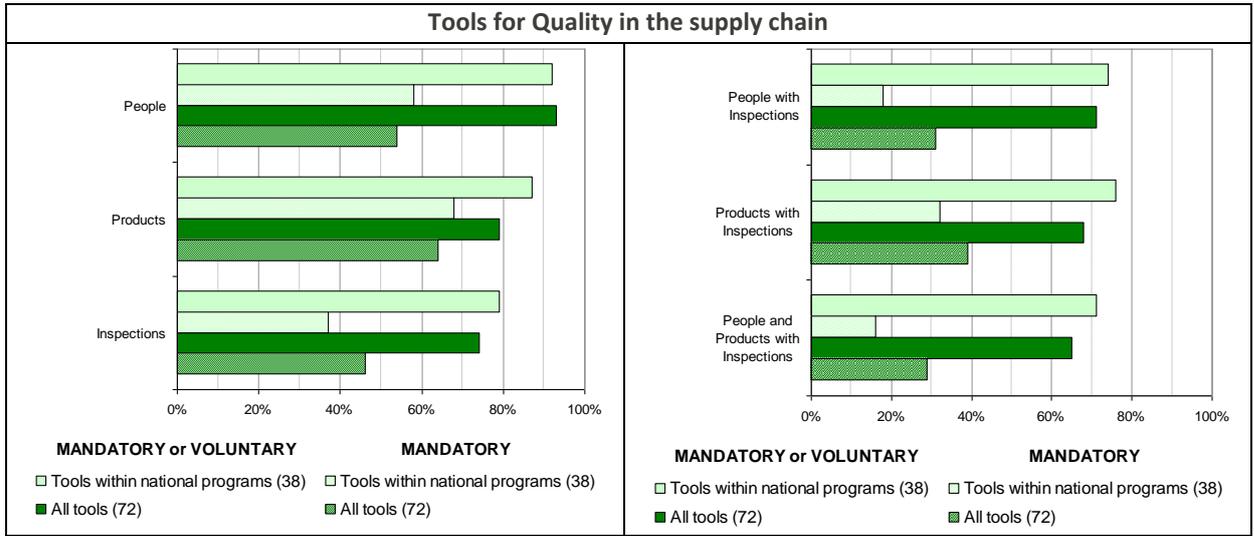
6. Quality requirements

Graph 4 shows the percentage of tools with quality eligibility requirements in the supply chain, distinguishing:

- Requirements for people: they concern expert's qualification/certification and the work approach to realize renovation measures: training courses for categories of builders/installers, lists of qualified experts/labelled people, agreements on codes of conduct, but also certification of the construction enterprise.
- Requirements/standards for renovation products and equipment and the way they are installed/put into practice. They include reference to energy and energy-related eco-labels.

⁹ See 0.

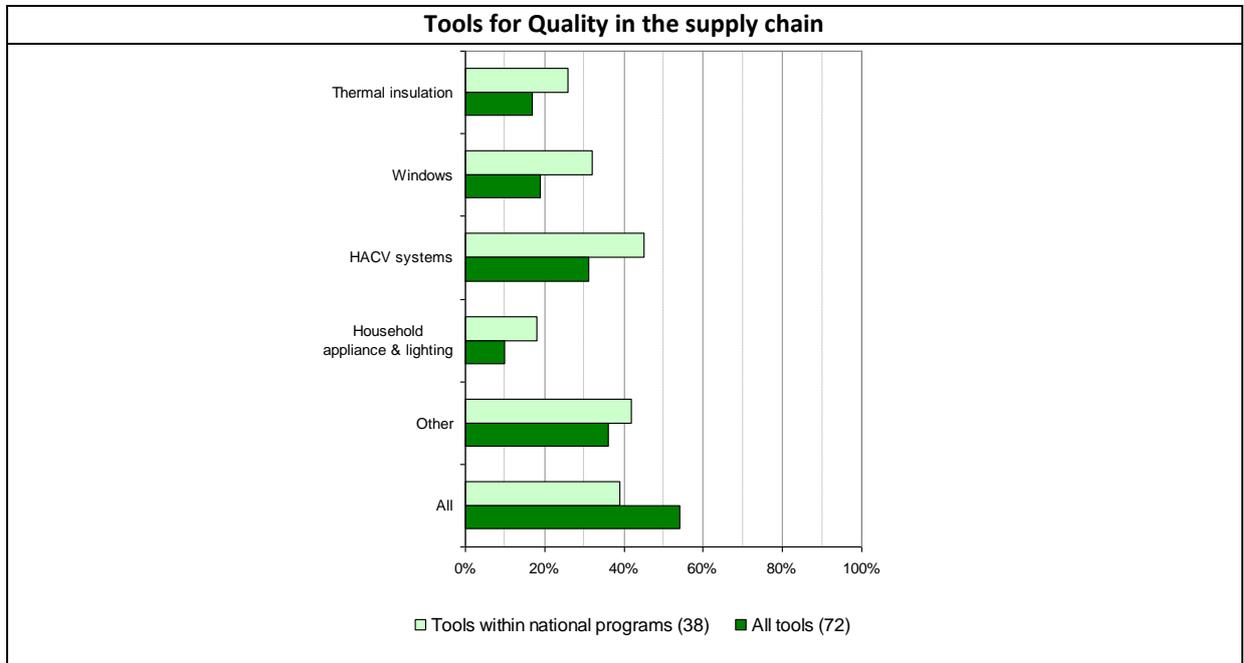
The graphs distinguish the cases where requirements are both mandatory and voluntary and where requirements are exclusively mandatory (discontinuous colour). The graph on the right shows combination with inspection procedures.



Graph 4 - Percentage of tools with quality eligibility requirements for people and products in the supply chain (discontinuous colour indicates mandatory requirements) and percentage of tools encompassing inspection

7. Energy Efficient Measures

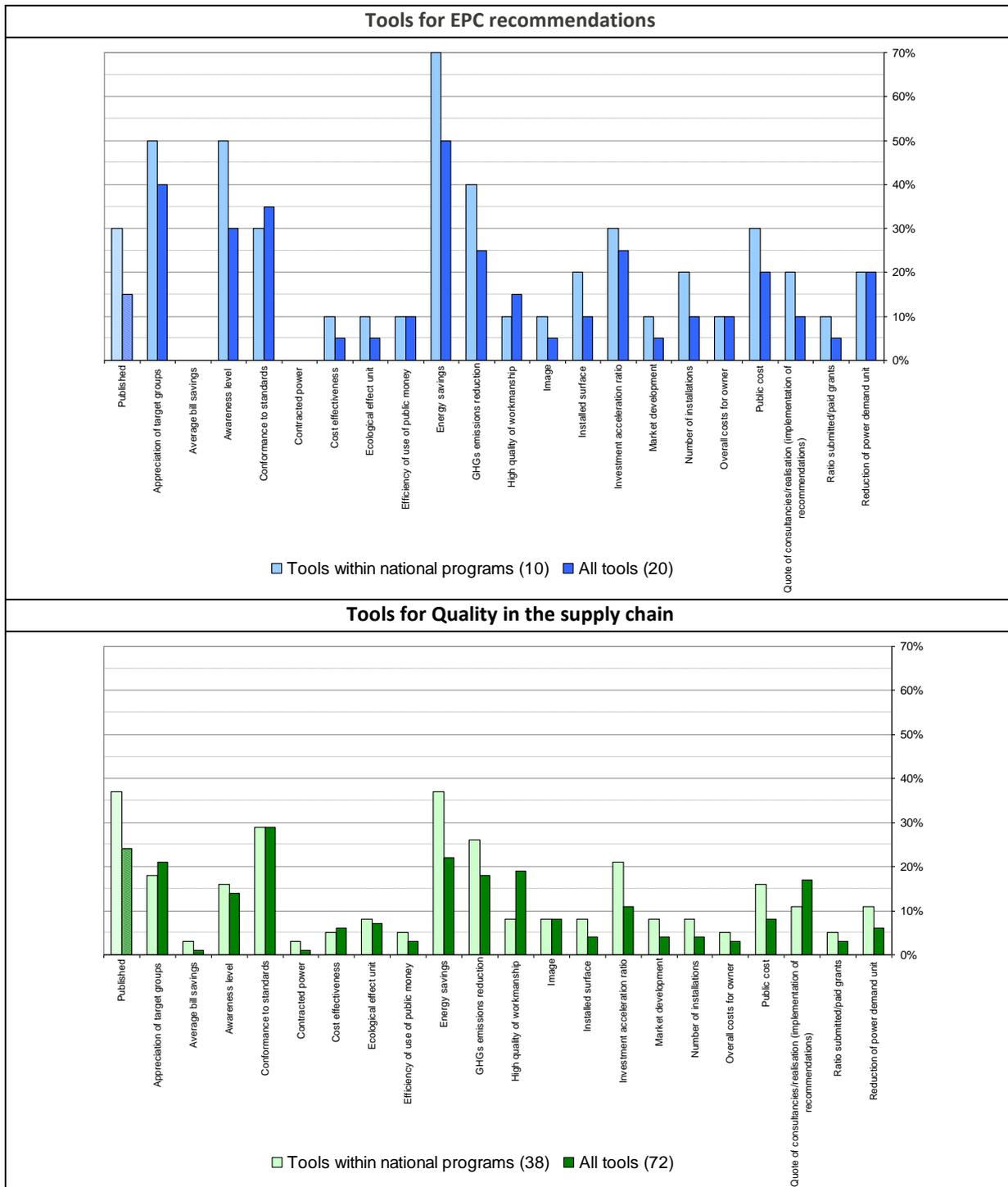
Graph 5 below evidences the type of energy efficiency measures the tool deals with.



Graph 5 - Type of EE measures the tool for Quality address

8. Success Criteria

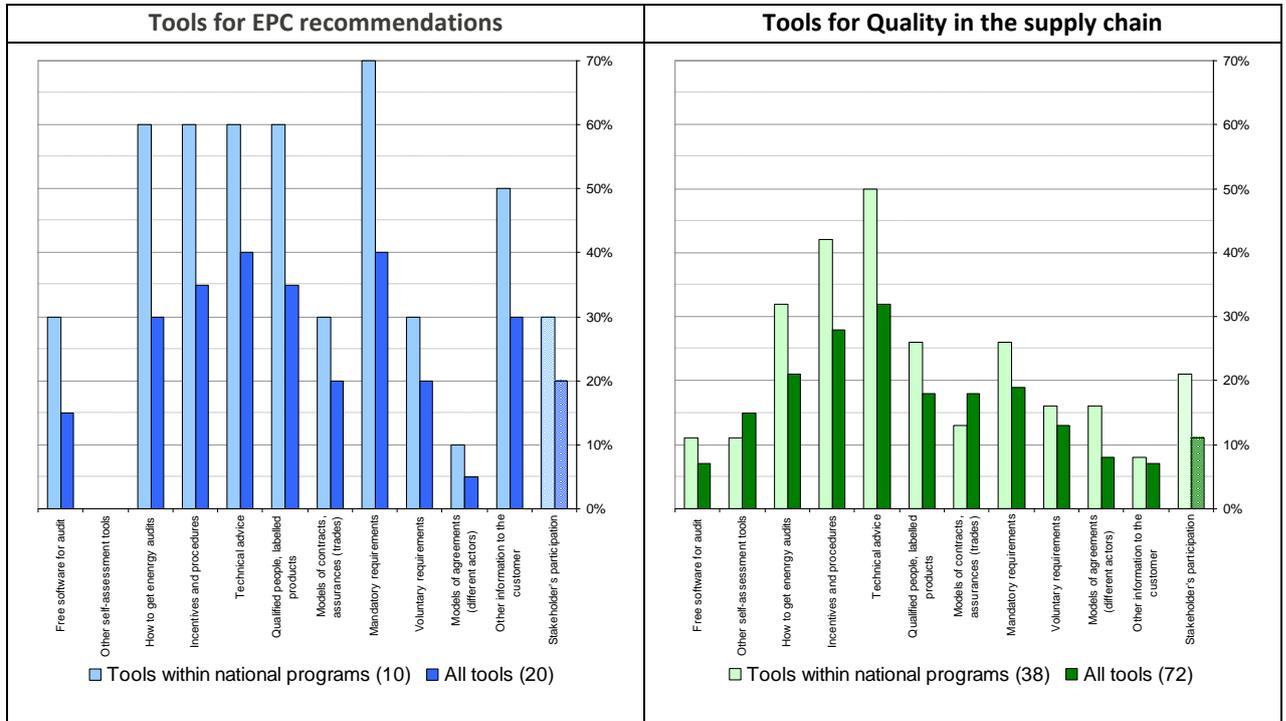
Participants in the survey were asked to mention what indicators were used to evaluate the impact of the tools. This allowed us to list a series of success criteria. Graph 6 below shows the percentage of tools for each success criterion declared by the respondents to the questionnaires. The discontinuous column on the left indicates the percentage of cases when a survey on impact or appreciation from target groups is available and published.



Graph 6 - Percentage of the tools according to success criteria (indicators) declared in the questionnaire

9. Communication mechanisms

Graph 7 shows the percentage of tools according to the type of communication topics and mechanisms encompassed, i.e. how to get energy audits, information on incentives and procedures, technical advice, reference to mandatory requirements, etc. It is always higher within wider national programme packages.



Graph 7 - Percentage of tools according to the type of communication topics and mechanisms

10. Stakeholder participation

Graph 7 above also shows the number of tools that include stakeholder participation.

Three tools for promoting EPC recommendations and 24 tools/schemes for promoting quality in the supply chain make use of participation processes. The majority of such tools are included in a national programme that promotes communication and incentives.

CHAPTER III **Best Practices for improving the uptake of EPC recommendations**

1. **Overview from the Survey**

Experience gained from energy performance certification is still limited. The twenty-one schemes¹⁰ appraised in the survey as best practices to take action on EPC recommendations provide Incentives (8 tools) and Education (12 tools), mainly involving the professionals (certifiers and assessors) and the owners. Few exemplary cases (PT, UK, FR) promote and take advantage of participation of stakeholders.

Several EU Member States have already accomplished national information campaigns to foster acceptance of the EPBD (according to art. 12). The national communication programs and schemes evidenced in the survey generally involve ownership, professionals and trades-people stakeholders simultaneously (DE, IT, PL, FR), but also decision makers (DE, DK, UK, PT, HR), managers and investors (PL, HR). The implementation competence for EPCs lies with regional bodies in some Member States (AT, BE, IT) and campaigns can be supported by structural funds (PL, IT) with a significant role for national and local energy agencies. Nevertheless, networking between the various actors of the supply chain and strengthening mutual recognition of their role is still an area where few best practices exist at national level (UK, DE).

Financial instruments (subsidies, revolving funds, green mortgages, structural funds, tax reduction, and soft loans) can play an important role to convince the owner to install energy saving measures. They were deeply investigated within other IEE projects and CA EPBD (2009). A high rate of financial instruments is linked with energy certification: in 14 MS (source: CA EPBD 2009) and in 6 REQUEST Partners Countries (AT, BG, EL, DE, IT, PT), according to the REQUEST questionnaire.

Education for energy assessors and consultants also contributes to national implementation (DE, IT, PL, FR) and targeted training is provided by most of the respondents to the survey (Energy agencies in AT, BG, DE, PL, FR, HR and the two REQUEST partner institutions in BE, DK).

Moreover almost all best practices encompass further information tools to foster EPC implementation: how to access incentives and associated procedures (UK, EL, IT, PT, UK, FR, CH), reference to lists of qualified people and products (AT, DE, UK, IT, PT, FR, CH), reference to mandatory and voluntary requirements for energy saving measures (DE, DK, UK, IT, PT, FR, CH) and technical advice (AT, DE, DK, EL, IT, PT, FR, CH).

Generally the tools are valid both for minor and major renovation. As a common barrier to enhancing action on EPC recommendations, the survey revealed few participating energy agencies (and countries, with the exception of Bulgaria) to have a monitoring system in place registering quantity and quality of energy efficiency measures implemented, e.g. following public incentives or certification.

¹⁰ See List in 0. The list also includes a non EU country. Switzerland introduced a voluntary cantonal energy performance certificate system in 2009. It is similar to EPC in EPBD and it includes rating and recommendations for improvement. It is voluntary even in major renovations and in case of market transactions.

2. Selected Best Practices

In order to identify meaningful best practices that encourage uptake of EPC recommendations for the REQUEST objectives, we took into account the following ‘cold’ criteria of choice amongst the different attributes resulting from the survey:

- Execution of EPC recommendations is clearly addressed beyond audit and design
- Proved appreciation from target groups and/or available indicators on implementation (rate consultancy/implementation, number of installations, installed surface, and measured data on energy savings)
- Networking between different actors in the supply chain (measured by the number of stakeholders’ groups)

The criteria mentioned above are encompassed in 10 Best Practices selected among the 21 tools and listed in Table 2 below:

No.	C.	Tool/Scheme	Key Area*	Feedback
1	DE	dena Quality Seals for Energy Performance Certificates and Efficient Homes	C E	
2	DK	Building energy certification scheme	C I	
3	EL	Energy Saving at Home	I	
4	IT	Casa Clima	C E	X
5	IT	ICMQ Building System	C E	
6	PL	Nationwide educational program “Friendly House”	C E	
7	PT	Solar Thermal Collectors	C P I	
8	UK	Standard Assessment Procedure (SAP) for EP calculation	C E	X
9	UK	T-Zero	C E	X
10	UK	Energy Saving Trust Home Energy Check Tool	C P E	

Table 2 - Best Practices for uptake of EPC recommendations, related key area and availability of feedback from target groups (*Key Areas : C = Communication, P = Participation, E = Education, I = Incentives)

3. Characteristics and mechanisms of Best Practices

As mentioned, the main barriers to action on EPC recommendations lie in communication to the owners, education of assessors and trades-people, guarantee of quality of the implemented measures. In response to these topics, relevant Best Practices encompass the following mechanisms and strategies to overcome these barriers: (Id. numbers refer to Table 2)

Consulting with the owner:

- 1, 4, 5, 8, 10 The owner is provided with standardized or customised additional information on energy efficient renovation measures (technical features of planned energy modernisation measures)
- 1, 4, 10 The owner is guided in the choice of quality/labelled products and qualified experts and networks of companies for the installation of the measures and, when applicable, on access to incentives for renovation

- 1, 2, 3, 4, 5, 8, 10 The EPC issued contains clear information on cost-effectiveness of measures distinguishing between lower-cost measures and higher-cost measures

Qualification of the assessor and trades involved in the certification process:

- 1, 4, 5, 10 The scheme supports networks of qualified trades/companies for installation of energy efficiency measures
- 1, 3, 4, 5 High level of qualification of assessors (accreditation, certification) including continuous training. The assessors are also provided with tools for energy audits and trained on how/what tailored information to hand out to the owner during onsite visits
- 1, 4 Includes education of experts to use standardised audit-tests (thermography/thermal imaging, blower-test)

Communication & Promotion:

- 1, 4 The scheme includes a Quality Seal for the most efficient homes (based on an EPC) that can be also used to promote and prove the quality of a renovation and other building performance criteria
- 3, 4, 6, 7 Communication of the scheme reaches general public and the wider range of stakeholders (through website, expositions, participation in fairs, articles and publications).
- 1, 4, 5 Examples of Best Class certified buildings are publicized (through website, fairs, etc.)
- 1, 4, 7, 10 A wide range of decision makers, producers, companies, procurement operators, owners, tenants, category associations are involved in promoting the scheme.
- 2 EP certificate is displayed in all (housing) market announcements and published on the web.

Quality and Contracting:

- 1, 4, 5 The owner receives detailed and clear information before signing the certification/renovation contract and is provided with contract models and informed on guarantees or insurance of trades.
- 4, 5 The scheme includes complimentary quality requirements, e.g. construction methods, high level of indoor comfort (acoustic, thermal, lighting) and water saving
- 5 Beyond the EPC, the scheme supplies technical inspection reports from on-site audits and certification of quality of the design or/and of the construction phase (based on ISO 9000)
- 4, 5, 7 It embraces people (installer's) certification and product labels including requirements on safety, durability, air and water permeability, indoor quality and comfort beyond energy performance. E.g. 3 year valuable window label, 4 year window guarantee (4), window installers certification (4), certification of specialized installers for envelope insulation, roofs, walls (5), mandatory maintenance contracts for solar collectors (7)

Inspection/Control:

- 1, 4, 5 During the certification process, the scheme includes on-going inspection of the building site and final inspection, at the end of renovation.
- 3, 4, 8 For major renovation or particular measures a minimum class upgrade proved by an EPC issued after renovation is mandatory (e.g. 1 category upgrade, minimum C class or fixed % of avoided CO₂)
- 3 The scheme includes this incentive mechanism: the preliminary loan (before renovation) is granted after issuing of a mandatory EPC that includes recommended measures and estimated energy saving. After the completion of the refurbishment, a new EPC is to be issued giving the EP Class upgrade and actual uptake of measures, so

as for the rest of the loan to be approved.

- 2 In public buildings, energy saving proposals indicated in the EPC with a pay-back time less than 5 years must be implemented within the next 4 years

As described above, some of these tools (1, 2, 3, 4, 5, 6, 7) also contain quality eligibility requirements for people and products, so responding to both goals of the REQUEST project: enhancement of the supply chain and action on EPC recommendations.

Best Practices for quality in the supply chain

1. Overview from the survey and research

Below is an overview of the tools resulting from the REQUEST survey¹¹ that improve quality in the supply chain. The tools described are equally linked to wider national governmental programs and to private industry initiatives. The tools supported by institutional policies generally take advantage of wide communication and incentives.

All tools investigated in the review generally focus both minor and major renovation, with the exception of BG, IT - ITACA, DE - Quality Seal and the three Best practices within international EU Projects for social Housing renovation, ROSH, SQUARE, ACT2,¹² which are only applied to major renovations.

Beyond professionals and trades, the tools target not only owners but also authorities and managers. A few tools include good networking between different actors (AT, BG, IT, PT, SK, UK, FR, NL, HR, CH, US and the 3 EU Project above mentioned) therefore fostering client's satisfaction and market acceptability.

Many tools enforce mandatory quality requirements (57% for people, 83% for products); and in the majority of these cases inspection is also performed (EL, PT, SK, UK, HR).

Over 52% of the tools focus on all types of energy efficiency measures, and nearly 40% focus on HVAC systems. Over 35% of the tools involve the introduction of RES equipment and 13% focus on household appliances and lighting (see graph 6 above).

Tools that specifically encompass mandatory or voluntary labelling for windows were identified in DK, EL, IT, PL, SK, UK; and ones targeting quality of thermal insulation in PL, SK, UK. Mandatory requirements for products and people are included in the majority of tools related to RES equipment installation (IT, PL, SK, UK, PT, CZ, HR) or to subsidies and grants.

Quality-based membership within trades associations is widespread in all the countries (and particularly in the UK). Associations are committed to supporting the experts both in making their jobs easier and in ensuring the general public is properly informed and able to get a quality installer when needed. The building industry, in fact, often promotes communication campaigns to encourage the phasing out of old components (e.g., traditional double glazing) and the use of new energy efficient ones. This is generally linked to schemes promoting qualified trades, that may contain useful information including audits, benchmarks and tools to calculate the savings (DK, IT).

As regards quality of products, criteria for environmental certification that focuses on energy as well as the construction phase – these are included in Klima:Activ (AT)¹³. Quality energy topics related to the building and product sustainability after renovation are considered in ITACA, CasaClima, and the Guidelines for sustainable buildings adopted by Italian Regions (IT), LenSE and Valideo (BE), BREEAM eco-Homes (UK) and Swan Eco-labelling (DK).

¹¹ See list in 0.

¹² See the project website at: www.rosh-project.eu, www.iee-square.eu, www.concerto-act2.eu.

¹³ as in other schemes in non participating countries: HQE (FR), iisBE (Canada), LEED Home (US).

2. Selected Best Practices

In order to highlight the most meaningful Best Practices for development of the REQUEST quality standards, the tools in the REQUEST database were filtered through the following further “cold” criteria¹⁴:

- Tools focusing on the installation phase including trades with voluntary or mandatory requirements for people and products and final inspection.
- Tools that can prove conformance to standard requirements, high quality of workmanship, and appreciation from target groups
- Tools that include information to the owner about qualified people, quality and labelled products
- Tools that include high qualification and commitment of trades for work organisation, quality, and client’s satisfaction.

The above mentioned criteria are encompassed in the selected Best Practices listed in Table 3 below¹⁴:

No.	Country	Tool/Scheme	Key Area*	Feedback
1	AT	klima:aktiv - national climate protection programme	C P E I	X
2	BE	Cerga Certificate	E	
3	BG	National Program for renovation of Multifamily buildings	C P E I	
4	DE	Low Carbon Modernisation of Buildings Programme (KfW)	I	X
5	IT	ITACA Protocol	C P E	X
6	PL	State grants for partial repayment of solar collectors	I	X
7	PL	Act on support for thermal refurbishment and renovations	P E I	
8	PT	Renewables in time 2008-2023	C P I	
9	SK	Licensing scheme for thermal insulation (TSÚS)	C P	
10	UK	Cavity Insulation Guarantee Agency	C E	
11	UK	British Board of Agreement (BBA)	C E	
12	UK	Trustmark & Federation of Master Builders	C E	X
13	UK	CORGI	C E	
14	UK	ELECSA*	C E	
15	UK	NICEIC	C E	
16	UK	HETAS (Solid fuel appliances design, installations)	C E	X
17	UK	Microgeneration Certification Scheme	C E	
18	UK	Energy Saving Trust Recommended	C P I	
19	HR	CROSSSF program	C P E I	

Table 3 - Best Practices for fostering Quality in the supply chain of energy renovation

(*Key Areas : C = Communication, P = Participation, E = Education, I = Incentives)

¹⁴ Beside the 3 EU Demonstration Projects (see details in deliverables available on the related websites (note 3))

3. Characteristics and mechanisms of Best Practices

With reference to the main issue of quality in the supply chain, the following mechanisms and strategies define the Best Practices (Id numbers refer to Table 3):

Information/communication to the owner:

- 1, 4, 18, 19 The owner/consumer is provided with subsidised consultancy on energy efficiency measures and integration of renewable energy systems from a network of qualified, experienced energy consultants. The owner/consumer is directly supported in implementation (of measures) through an advice network and website, or indirectly through work with partner organisations participating in the scheme. The owner can take advantage of a dedicated tool producing automatic recommendations and saving potentials on the web.
- 1, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 The owner/dweller is guided in the choice of quality/labelled products (or ecological products), local qualified experts and networks of companies (e.g. through a partner company's map) for renovation measures. Skilled trades are promoted to homeowners through quality-based memberships. Models for contracts are also available.

Qualification/certification of people involved in the supply chain:

- 1, 4, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19 The scheme supports networks of qualified trades for execution of energy efficiency measures. Lists of qualified trades and companies are available (e.g. by the web, DVD, publications).
- 9, 16 The construction company demonstrates, by license, competence in installation of certified components following a fixed installation methodology and guaranteeing design parameters and lifetime. The company can be removed by the list of licensed companies (e.g. following negative inspections).
- 2, 11, 15 Trades are given a label after having attended proper qualification courses/training. The label is periodically (e.g. annually) renewed.
- 11 Installers (e.g. of micro-generation systems) undergo an office inspection to evaluate the technical competence of their staff, confirmation of training requirements, record keeping and a witnessed installation in progress.
- 12 Membership of the scheme requires inscription in the National Register of Warranted Builders: The Company has to offer bond insurance (this tells clients that the company has been inspected and approved for quality standards and undergoes regular performance checks), a license accorded by the scheme, and 3 years trading and accounts. It requires the company to sign a Code of Practice (which covers transparency in quotations and contracts, communication, etc), and to be covered by a dispute resolution and a complaints procedure.
- 14 The scheme, providing inspection, assessment and certification services to member trades (e.g. electrical installers in private dwellings), and enables contractors to self certify their work (declaration of compliance with regulations).
- 13, 15 The scheme provides its members with technical manuals, books, magazines, warning labels, tools and insurance and allows them to attend specific exhibitions and events. Members are also supported with marketing functions as well as the ability to broker and deliver a wide range of similar products and services.

Communication topics:

- 1, 2, 5, 18 The scheme supports existing policy packages and measures in the trade sector through information, communication, and networking between decision makers, producers, trades companies and procurement operators. Communication of the scheme reaches general public and the wider range of stakeholders.
- 1, 5 Best practices are published and shown on websites and at expositions and fairs.

Quality Products:

- 1, 11 The scheme is integrated with an holistic network-based standard which defines quality criteria for sustainable buildings
- 2, 5, 6, 7, 9, 11, 16, 17, 19 The scheme encompasses mandatory or voluntary adoption of approved/labelled materials and products. E.g. in PT (6): RES products complying with the national low voltage decree and having the CE label, in PL (7): solar heating installations nationally certified (PN EN-12975-2) or having EU certification SOLAR KEYMARK; In SK (9): certified thermal insulation components; in UK (11): BBA (British Board of Agreement) ecological certified products, certified solid fuel appliances (16), labelled micro generation products and services (17)
- 18 The scheme recommends products that are the top 20% most efficient on the market through a logo. Only market products that meet strict criteria on energy efficiency can be awarded the logo. The criteria are set by an independent panel and reviewed annually. It endorses products in categories where there isn't a statutory EU energy label.
- 18, 19, and many others The scheme gives financial support (subsidies, tax reduction, etc.) for the purchase and installation of energy efficient heating systems or building components, establishing clear eligibility criteria for products and installers.
- 11 The scheme includes Environmental Profile Certification of construction products that allocates eco-points per functional unit of a building element. Certification is issued, for example, to manufacturers of renewable energy micro-generation systems that demonstrate that their product meets the standard requirements. As part of this the company has to undergo an examination of their manufacturing processes.

Inspection/Control:

- 2, 9, 11, 12 The quality of the trade-work is periodically checked via an internal inspection procedure.
- 4, 8 A financial incentive (e.g. 1.000 € in DE) is offered for construction site supervision of major renovations that is carried out only by qualified/accredited energy consultants or authorized issuers. Contracts are checked within the scheme. On-going supervision may include (4): on-site building inspection of thermal bridges before plastering; control of ventilation and air-tightness as well as blower-door-testing, control and supervision of handover of building services (to the owner/tenant).
- 5 In the case of sustainable building certification (including energy considerations), an independent body registers the audited buildings. The final certificate is issued by an international alliance made of several actors: e.g. international non-profit organisations, local government, banks, building research institutes, associations of the building industry.
- 6, 8 After the installation is completed (installers may have no particular requirements) control of compliance is made by certified inspectors. In the case of a positive inspection a compliance certificate is issued.

After renovation restrictive energy efficiency requirements have to be guaranteed.

- 8 Financial mechanism: the optimisation of thermal modernisation undertakings (e.g. thickness of additional wall, roof, floor insulation, heat parameters of new windows, etc.) is based on economic criteria covering comparison of investment costs and energy cost savings related to energy audits. The financing bank verifies all energy audits before the payment is awarded, and keeps a data base of audits. The payment is granted after the investment is fully completed according to the energy audit statements. The compliance of the construction works with the energy audit statement is checked on random statistical basis (1%).
- 12 Deposit protection insurance is available for consumers in the event that a firm should cease trading. If there are any problems or disagreements with the firm, there will be a clear and user-friendly complaints procedure to help resolve the issue

Guarantees:

- 10 The scheme provides an independent, 25 year guarantees (for cavity wall insulation) with stringent technical standards for installation by a registered installer. It is governed by a council of "system designers" (who supply the insulation material) and registered installers, with support from trade associations and Government bodies. Before installation begins, a registered installer will carry out a pre-installation assessment to ensure that the property is suitable that particular measures (i.e. cavity wall insulation)

Participation:

- 1 Once or twice a year a network meeting gathers planners, architects, builders together. Additionally, once a year all program managers meet too. Information workshops occur several times a year: the target group (Planners, architects, builders, property managers) is informed about news, tools, requirements, guidelines, legislation, further projects etc. in the field of energy efficiency. Building owners and professionals are invited to an annual workshop.
- 3 Major renovations of multifamily buildings are planned and financed at the municipal level and encompass an interesting participation mechanism: Municipalities actively participate in the renovation process. A Municipal Association (MA) is established as a legal person to support the organization and implementation of investment projects. The municipality, condominiums (apartment blocks), legal persons, energy service companies, banks and other interested persons take part in the process. An inter-administrative Working Group, decided by the Minister of Regional Development and Public Works and involving key national administrations and NGOs, professional chambers and housing associations, takes place regularly (e.g. 5 times in 2010)
- 5 The scheme is part of an international network (iiSBE). National and federal networking is carried out through committees and working groups made of various stakeholders, regional technicians and representatives of local governments. This allows comparison and sharing of results related to sustainable buildings.

CHAPTER V 2012 Update and some more highlights from the survey

After the initial survey in 2010 and during the REQUEST project the inventory on tools and schemes to promote the uptake of EPC recommendations and quality in the supply chain was expanded with 8 additional existing tools added plus 12 tools developed by the 11 partners within the REQUEST Pilots, giving a final total of 115 tools in 28 Countries in October 2012.

This chapter integrates the initial analysis and the report published in 2011 with:

1. the description of some more best practice cases that was subsequently identified during the project
2. some highlights on the those tools/schemes addressing up-skilling, education, qualification and engagement of trades people involved in the construction/operation phase of the renovation process
3. the REQUEST Pilots, developed using key experience on EPC promotion and Quality in the supply chain gained within the project.

1. Some more best practice cases

The REQUEST partners identified some more interesting **best practice cases**. The table below lists such tools, showing key areas, specifying if containing mandatory or voluntary requirements for people and products, and energy efficiency measures addressed.

C.	Title	Level	Key Area	EE measures				RES	Requirements		
				Thermal insul.	Winds	HACV	Hous. appliances Light.		PEOPLE	PRODUCT	CONTROL/INSPECTION
DE	Casa-Bauen	N	C, P	X	X	X		X	Mandatory	Voluntary	Voluntary
EU	COMPENER	N	C, P, E			X		X	Voluntary		Voluntary
IT	CNA	L	C, E	X	X	X		X	Mandatory	Voluntary	Voluntary
IT	EME Secem	N	C, E	X	X	X	X	X	Mandatory		Mandatory
IT	Lombardy Region EPC - Cened	R	C, E, I	X	X	X	X	X	Voluntary	Voluntary	Voluntary
PT	CasA+ Energy Performance Simulator for Households	N	C, P, E	X	X	X	X	X			
UK	Home Energy Performance UK /Home Energy Performance Pro UK Apps.	N	C, E	X	X	X		X	Voluntary		

Table 4 - More recent tools in the survey: key areas (Communication, Education, Incentives, Participation), EE measures addressed, requirements

- 3 tools mainly focused on increasing the **uptake of EPC recommendations** (IT Cened, PT Casa+, UK EPC Pro Apps)

- 4 tools addressed **quality in the supply chain** (CasaBauen, Request quality instruments, Compener, CNA, EME Secem)

Most of the tools comply with some of the key mechanisms identified in the first part of the survey:

- Consultation to the owner by the assessor (Casa+, UK EPC Pro Apps)
- Reference to further information to assist the owner in the EPC and in guidelines for renovation (Casa+, UK EPC Pro Apps)
- Qualification/certification of assessors and trades (Casa+, IT Cened)
- Communication instruments (All)
- Quality requirements for people (All, some of them embrace mandatory requirements (IT EME Secem and CNA, DE CasaBauen)
- Inspection/Control (Voluntary with the exception of EME Secem)
- Participation and Networking (CasaBauen, Request quality instruments, Compener, Casa+)

According to the methodology in the Chapter III, the following tools can be considered **best practice cases** to promote the **uptake of EPC recommendations**:

Lombardy's certification **CENED** system is managed by an accreditation body (CESTEC) for building certification processes. CESTEC developed the certification software, manages the energy register, manages the quality assurance system comprising quality controls, collects energy certifications and offers information to the public and to all professionals and interested parties. EP Certification is mandatory for major renovation (>25%), attic renovations, volume increases (>20%), or for all public buildings with a surface >1000m². An EPC is also mandatory in order to access regional grants/incentives for renovation and for new contracts for technical system management when the client is a Public Body. The priority, new class and energy reduction due to potential "uptake of recommendations" are clearly provided to the client. Sanctions are in place to punish faulty assessors. Using the EPC database for monitoring energy policies are being trialled.

Casa+ Energy Performance simulator is designed to inform home owners about the Portuguese certification system for buildings, and uses a simulator to show consumers, in a very clear and direct way what the energy class of a building is, including the heating, cooling, hot water production and also CO₂ emissions. To use the simulator the consumer has to answer to 10 questions about the building, location, number of rooms, year of construction, type of construction (if known), type of equipment/appliances. The simulator uses a default value in the case the user doesn't know the answer. In the final screen the consumer is presented with the energy class of the building and is asked to try solutions to improve the energy efficiency of the home and gives the energy class of the building now and if the suggested measures are carried out. Results are sent via e-mail.

The **EP Home Energy Performance Pro UK Apps** is an iPhone app which gives anyone the ability to assess and generate a A-G rated report of any home. The report gives the EPC rating for the UK, the US home energy audit score and the A to G graph under the 2002/91/EC European directive. It can be used to help reduce energy bills and the CO₂ footprint or improve an asset or advise a client or help to buy a home wisely.

According to the methodology in Chapter IV, the following tools can be considered **best practice cases to promote quality in the supply chain**:

CASA-bauen, within the German national initiative INQA-Bauen, aims to help construction companies (SMEs) to make the transition towards innovative services, new working methods and products. It addresses customer focus, health and safety and avoiding errors. Companies can make a voluntary self-assessment and document this in a self-declaration. The documentation sets out the areas for action and the associated measures required. The quality of the organisation and the quality of the work is checked. The scheme results in improvements being introduced into working practices, best use of existing resources and development of specific strengths. Checklists, manuals, guidelines are provided to the companies.

COMPENER, an EU project funded by the Leonardo Da Vinci Programme involving 3 Member States: Italy, Spain and Romania, that aims at developing qualification and certification schemes for professional skills in the energy sector, in line with the provisions of the Directive 2009/28/EC and with the EPBD 2010/31/EC. It addresses certification or

equivalent qualification schemes for installers of building-integrated RES and HACV systems. It stimulates innovation through qualitative e-learning contents and expertise. It does not focus on training but it aims to enhance the quality and attractiveness of e-learning material for sustainable energy sector developed by previous European projects and initiatives, creating a network of innovative training that can be transferred to the industry. Personnel requirements are defined and specified in competence paths according to the different categories of installers.

Local CNA (National Confederation for the Craft Sector and Small & Medium Enterprises) in Rome has launched the "Rete della Green Economy" (network). The project is aimed at stimulating enterprise networking, creating and issuing a quality label to all those members (SMEs) that are engaged in environmental and energy sustainability. Labelling and qualification cover workmanship and installers engaged in: energy renovation of buildings, retrofit of Heating Systems and gas systems, installation of small RES equipments, supply and installation of solar thermal systems. The network "Rete Green Economy" label will prove and guarantee competence and quality and is based on: Qualification paths, respect of rules (Code of conduct), continuous control, qualification courses which are mandatory for issuing the label. After qualification the label will be attributed to those SMEs that sign a code of conduct recognised by the Roman Chamber of Commerce. A proper independent committee is established for the duration of 3 years, controlling the respect of the code of conduct or verifying the correct use of the Label on demand. Qualified people and enterprises are displayed on the web, in magazines and socialized portals. Assistance and marketing are provided.

SECCEM, Energy Management European Certification System, is a voluntary certification scheme targeted to certify *Experts in Energy Management* (EME) according to ISO EN 16001, recognized by national quality systems. The EME proposes action plans and verifies its application, collaborates with other managers responsible for specific productive sectors in order to identify and solve identified inefficiencies and can cover an important coordination role within important major renovation projects.

2. Some highlights on tools/schemes addressing up-skilling of trades in the supply chain

Achieving the 2020 objectives for the construction sector relies on cost-effective energy renovation of existing residential buildings, offering high energy performance and fulfilling the energy saving potential after their retrofit.

This calls for a major effort to increase the number of qualified workers on the market along with measures that facilitate decision-making for building-owners and the development of appropriate framework conditions for the market of construction products and services.

Promoting skills and improving the human capital basis is a current priority in Europe and one of key challenges of the recent 2012 *Strategy for the sustainable competitiveness of the construction sector and its enterprises*¹⁵

The BUILD UP Skills initiative carried out under the Intelligent Energy Europe Programme, is the main short term measure to achieve this target. It aims at adapting the vocational education and training (VET) system to skills and qualifications needed in terms of energy efficiency and renewable energy sources. Build Up Skills focuses on the continuing or further education and training of craftsmen and other on-site construction workers and systems installers in buildings and will allow the definition of national qualification roadmaps to 2020, supporting the setting up of large-scale training and certification schemes.

¹⁵ *Strategy for the sustainable competitiveness of the construction sector and its enterprises*, Communication from the commission to the European Parliament and the Council COM(2012) 433 final, Brussels, 31.7.2012

With regards to workforce qualification and market development opportunities embraced in the EC 2012 *Strategy* mentioned above, the REQUEST project focused on policies and tools promoting quality in the supply chain, hence targeting professionals and trades involved in low-carbon renovation. The project did not directly focus on training and long-life learning and on existing Vocational Education and Training provisions.

Nevertheless, the **REQUEST survey identified and analyzed a number of relevant tools/schemes and various policy instruments** (nearly 50) that can be considered best practice cases addressing education and qualification of workers and installers, participation of trades associations and networking of key stakeholders in the endorsement of such tools.

The REQUEST report “Trades involved in the renovation of residential buildings” (Chapter II and Annex I) provides an overview of these tools from the REQUEST review and describes successful mechanisms (D2.5, Chapter III) according to the following areas:

- Training, qualification, certification of trade-people
- Inspection/control
- Information/Communication
- Guarantees
- Participation/Networking

Some of these tools and schemes are encompassed in **national governmental policies and strategies** to contribute to the EU 2020 energy targets in buildings (AT, BG, DE, DK, EL, IT, PL, PT, SK, FR, NL). Others are developed, at national, regional and local level, by private associations and federations and non-governmental bodies (BE, IT, SK, and a large number in the UK). Many tools enforce mandatory quality requirements for people (57%); in the majority of these cases inspection is also performed, also mandatorily (BE, DE, PT, SK, UK, HR)

With regards to trades and professionals, the following workforce categories are specifically targeted by tools and schemes (regulatory and policy instruments, governmental or non-governmental programmes, private initiatives) in the REQUEST inventory¹⁶:

workforce involved in retrofitting of windows

- SK** SLOVENERGOOkno voluntary labeling scheme
- DK** Campaign to phase out traditional double glazing, Voluntary certification scheme for windows
- IT** CasaClima (KlimaHaus)
- UK** FENSA windows and doors

workforce involved in retrofitting of walls (thermal insulation)

- SK** Licensing scheme for thermal insulation of buildings (TSÚS)
- UK** National Insulation Association, Cavity Insulation Guarantee Agency

workforce involved in maintaining, tuning and replacing HACV installations and energy systems (including RES systems)

- BE** Cerga Certificate
- DK** Replacement of boilers, Boilers inspection scheme, Inspection of ventilation and A/C systems
- PT** Solar Thermal collectors - National Plan for Energy Efficiency
- IT** CNA
- UK** CORGI, Gas Safe Register, BESCA (Service Accreditation HVACR), ELECSA (Electrical Installations), NICEIC (Electrical contractors and other trades), HETAS (Solid fuel appliances design, installations), Microgeneration Certification Scheme (products and installers)

¹⁶ D2.1 Database, already mentioned. Also see analysis in D2.5.

Beyond best practice cases addressing specific energy efficiency measures (insulation, windows, HACV and RES) described in Chapter IV and Annex 1 the following cases are worth being mentioned:

FENSA in the UK is the industry gold standard for replacement windows and doors - a proven brand trusted and demanded by consumers and local authorities". FENSA is a wholly owned company of the Glass and Glazing Federation. EST is a partner organisation. FENSA has TrustMark operator status, meaning that any installer registered with the FENSA self-certification scheme can apply to become registered with TrustMark too.

The **Slovakian SLOVENERGOOkno** voluntary labelling scheme is based on activities of the civic association of main manufacturers of windows and doors, window and door frame profiles and glazing including installation. It awards 2 voluntary quality labels – ENERGOOkno (product rating - energy properties of products) and SLOVOKNO (installation rating – assessment of windows/doors properties including installation work). For both labels the assessment methodology (with criteria based on technical standards, structure of products, requirements for technology and installation approach), requirements for identification of manufacture and selling of the products are available. It includes required training for manufacturers and installers; it promotes, publishes and organizes events; it represents and promotes products to standardisation bodies, public administration and customers in general. Members of the scheme are regulated by a code of conduct of the civic association. In the case of customer complaints it is possible to check the results and if the claim is substantial, to exclude the involved member from the association.

The **National Insulation Association in the UK** is an independent agency for the insulation industry that offers advice and support to consumers, manufacturers and installers. They have signed the "Trade association forum member declaration of climate change" that acknowledges climate change is having an impact on society, economy and the environment and welcome programmes that target the reduction of greenhouse gas emissions. Members of the NIA are required to adhere to a "Code of professional practice" that covers: marketing customer contracts/agreement, technical training, assessment and Installation, customer care/complaints, guarantees, health & safety.

Businesses need to supply NIA with substantial evidence to prove their credentials and that they meet the requirements of membership. Members then display the NIA logo on their website as a marque of quality and competency. Consumers seeking insulation work on their homes use the NIA website to search for registered installers in their area code.

Denmark has a statutory **inspection of boilers and heaters for existing installations**, which focuses on plant efficiency. A statutory energy **inspection of ventilation and air conditioning systems** include registration of basic information about the installation, inspection of the plant operation mode and a measurement program. The measurements relate to fan the absorbed electric power plant and volume flows, pressure and temperatures. The measurements assess the plant's energy efficiency, a series of tips and real energy savings are proposed indicating the amount of energy and monetary savings they would bring which is all summarized in a report to the plant owner / user.

Other tools/schemes (see Chapter IV and Annex I in this report) address all kinds of energy efficiency measures and are described in Chapter IV and Annex I.

Also worth mentioning is the **More with less programme in the NL**, that concerns Third Party Financing, providing subsidies for private owners and housing associations, which is a joint voluntary initiative from the Dutch government, energy retailers, social housing providers, construction and installation companies. It stimulates real estate owners to renovate "badly labelled buildings" to achieve a green label and includes ESCOs' market by certification. The entire process, from receiving certified energy advice, up to installing the required energy efficiency measures, is taken care of by the contact person of the building owner (contractor, energy counselor, installer, architect as one-stop contact point who arranges various aspects: subsidies, energy label, offers, finance, etc.) Collaborative working is a key part of the programme, which itself is a joint initiative. The programme is supported by home owners and consumer representative organisations and targets specific groups: home owners, tenants, housing companies and building owners, ensuring that all market parties involved participate and send out the same message (Communication is performed by a Sustainable Real Estate Newsletter)

A list of key trade categories involved within best practice cases to create skilled workforce and foster compliance and control in the renovation supply chain is detailed in the REQUEST report on Tradespeople involved in the renovation of residential buildings - Chapter II.1. The same report lists workforce categories for whom the REQUEST partners currently hold training courses (Chapter II.3 and Annex II).

From the REQUEST survey the **poor organisation** of work and problems with the interaction between different contractors was highlighted by AT, BG, DE, IT, PL, SK, BE. The review revealed that just a few best practices that involved innovative **collaborative working** were clearly highlighted by the project partners (AT, BG, UK). These included insurance arrangements (spreading risk between designers and consultants, contractors and suppliers) and procurement management. There is still a need for standardised models of guarantees and contracting systems to attribute responsibilities and roles in the renovation process and in the construction phase, in particular. No detail was provided in the survey on **interfaces related to these issues**.

The **Lean management** methodology which focuses on benchmarks, cost, qualitative services and delivery is rarely practised (examples are the *CLIP programme* in the UK and *CasaBuen* in DE).

Moreover, from the 'review and research' desk analysis, a few tools focus on good **networking** between key stakeholders and really care for client satisfaction proved by appreciation surveys. Quality-based membership within trade associations is widespread in all countries and particularly in the UK. Some networking mechanisms trying to match the offer and the demand side for quality in the supply chain were adopted in the development of most of the REQUEST Pilots (particularly in Italy with the *Tavoli di Lavoro 4E* mechanism).

For large-scale renovation investments, **project management practices** take into account complexity, interaction between the trades, contract management, competitive bid process, inspection, warranty and risk management (BG, UK). Such tasks can be carried out by ESCOs, like in the *Bulgarian Program of renovation of multifamily buildings*, where Municipal Associations with various stakeholders (ESCOs, condominiums, investors, other interested players) manage a comprehensive renovation process.

Quality management and certification according to the international ISO system (series 9001 and 16001) can serve as a starting point for developing simplified and less expensive labels. ISO EN 16001 establishes a person in charge of the energy management system and certified Experts for Energy Management (EME *SECEM*) could be reference figures for a comprehensive management in very important low-carbon renovation projects.

The "person responsible" predicted in the *REQUEST instruments for quality assured renovation*¹⁷ can contribute to bring together trades and other actors involved in renovation and guarantee organisation and quality.

¹⁷ The REQUEST project delivered **quality assured renovation process instruments** for Craftsmen or planning experts: a REQUEST quality renovation building process diagram and checklists. The general process diagram has been developed on the basis of the conclusions of the trades workshops, as well as market analysis of existing best practices of standards for the energy efficiency of buildings. The diagram is structured according to four defined stages within renovation processes, namely diagnosis, planning, construction, handover, followed by the use phase. The diagram explicates tasks within the renovation process and related legal and recommended documentation requirements. The diagram then links to quality checklists developed for the various process stages, intended for on-site use and stating minimum requirements and further recommended measures. With the checklists the person in charge for the quality assurance will be led through the whole building process in a structured way (see the Quality Standard page on the REQUEST website: <http://www.building-request.eu/info/request-quality-assurance-instruments-housing-renovation-processes>)

3. Analysis of the REQUEST pilots according to the key attributes used to identify best practice

The REQUEST pilots aimed at removing one or more of the barriers to an effective role of the EPC and to quality in the execution of energy efficient retrofit measures outlined by REQUEST partners in REQUEST survey:

- Inadequate consulting and assistance for decision making
- Lack and/or poor level of engagement of homeowners and key stakeholders in developing and implementing projects and schemes
- Low level of knowledge and / or qualifications of trades-persons energy efficient building renovations
- Weak project / process management and lack of communication between actors in the supply chain.

The REQUEST partners were asked to describe their pilot projects through a *template* classifying tools according to the attributes used in the REQUEST survey (like the ones describing Best Practices in Annex 1). All data contained in the templates were collected in the REQUEST Tools Database.¹⁸ Level, key areas (Communication, Education, Incentives, Participation) and energy efficiency measures the Pilots focused on are displayed in the following table:

C.	Title	Level	Key Area	EE Measures				
				Thermal insul.	Windows	HACV systems	Household appliances lighting	Other: specification
AT	Building typology as a basis for EPC recommendations	N, R	C	X	X	X	X	Renewable Energy Systems
BG	EPCinfo.be - Tailor made advice for EPC recommendations	N	C, P, I	X	X	X	X	
BE	Increasing home owners awareness for the energy renovation of large scale residential buildings	R	C, I	X	X	X		
DE	Major renovation to KfW Efficiency House 55 Standard	R	I	X	X	X	X	
DK	Knowledge Centre for Energy Savings in Buildings	N	C, P, E, I	X	X	X		Solar thermal, PV
EL	Green Neighbourhood	R	C, P, I, E	X	X	X	X	PVs, Solar Collect., Geothermal Pumps
IT	Monitoring and integrating Social Housing Renovation	L	C, P	X		X		
IT	Network TAVOLI DI LAVORO 4E - EE in Existing Buildings	N	C, P, E	X	X	X		
PL	Thermomodernisation Fund, EPC scheme	L	E, I	X	X	X		solar thermal
PT	Improvement of EPC recommendations and energy renovation in Lisbon	L	C, P	X				Solar Thermal Collectors
SK	Energy "minder" for the major renovation of buildings	N	C, E	X	X	X		RES
UK	Energy efficiency guidance and training material for a room-by-room energy refurbishment	N	C, P, E	X	X		X	

Table 5 - Pilots: key areas (Communication, Education, Incentives, Participation), EE measures addressed

¹⁸ The “Database of tools, schemes, techniques & methodologies” is a deliverable but can be available for energy agencies and universities and experts on request filling the [form on the REQUEST website](#)

According to the description provided by the REQUEST partners in the review template:

- **3 Pilots** mainly focused on increasing the **uptake of EPC recommendations** (AT, PL, BE)
- **1 Pilot** addressed **quality in the supply chain** (DE)
- **7 Pilots** comprised **both aspects** (BG, DK, EL, IT, PT, SK, UK) but with different levels of emphasis on increasing the impact of EPCs and improving supply chain working in each pilot

Breaking the projects down using the same attributes to identify best practice within the REQUEST project:

National or Regional level: Pilots were developed at all levels national (7), regional (3) and local (3) level.

Related National Programmes: 8 pilots were linked to national programmes:

- BG, BE, PL, PT, UK developed tools aimed at promoting the uptake of EPC recommendations to strengthen the national certification system and renovation programs.
- DE, EL and PL pilots tested instruments promoting quality in the supply chain within existing national financial schemes, DK developed their pilot within the existing Danish Energy Saving Trust.

Key Area and target groups: Almost all pilots performed a communication campaign towards owners, trades and/or other stakeholders, as a basic requirement for successful impact. Some of them were linked to an existing national incentive / support programme (BG, BE, DE, DK, EL, PL). Half the pilots involved the active participation of different key stakeholders. Nearly all of the pilots were aimed at different target audiences (9 Pilots involved more than 3 different stakeholder groups). Unsurprisingly, given the aims of the REQUEST project, the main target groups were homeowners, and the main goal was to catalyse this group to take action on the recommendations provided in their EPC. 7 Pilots (DE, DK, EL, IT, PL, PT, UK) explicitly targeted trades people, providing them with information or tools to enhance their knowledge and skills with regards to energy renovation and engaged them directly in the project. 4 (DK, PL, SK, UK) of these pilots also provided trades with specific training. Half of the pilots were targeted to decision makers and managers.

Energy efficiency measures addressed: Most of the pilots promoted the design and uptake of all kind of EE measures (shell insulation, windows, HVAC systems, RES equipments). 4 also promoted the use of energy efficient household appliances. The pilots generally focused on both minor and major renovation, with the exception of BG, DE, EL, IT (local) and PL, pilots which were addressed exclusively to major renovation. In BG, EL, IT PL the focus was on Social Housing.

Quality Requirements: All of the pilots established or specified quality requirements for trades people, that were mandatory in 3 cases (BE, DE, IT local social housing pilot). Most (8) also developed or specified requirements for products, mandatorily in 5 cases (BG, EL, IT, PT, PL, UK).

Control and Inspection: 8 pilots also included inspection/control mechanisms (DE, EL, IT, PL, PT, UK).

Communication topics and tools: The communication component was fulfilled by all of the pilots.

For most of the pilots targeted information was provided, beyond technical advice, on qualified certifiers and auditors, incentives / support available (BG, DK, PT, SK, UK) and eligible requirements for products and techniques. In BG, EL, PT, UK information on approved / qualified installers was also supplied. See recurrence and distribution of communication tools adopted, developed or delivered within pilots in the table below:

		assessment tools	how to get energy audits	incentives and procedures	technical advice	qualified people, labelled products	contracts, mandatory requirements	voluntary requirements	agreements	other information to the customer	participation
EPC	AT										X
EPC & Q	BG	X	X	X	X	X	X	X			X
EPC & Q	BE				X			X			
Q	DE				X	X	X	X	X		X
EPC & Q	DK		X	X			X		X		X
EPC & Q	EL				X	X	X	X		X	X
EPC & Q	IT			X	X	X	X		X		X
EPC	PL				X		X			X	X
EPC & Q	PT	X	X	X	X	X				X	X
EPC & Q	SK		X	X	X		X	X			
EPC & Q	UK			X	X	X	X			X	X

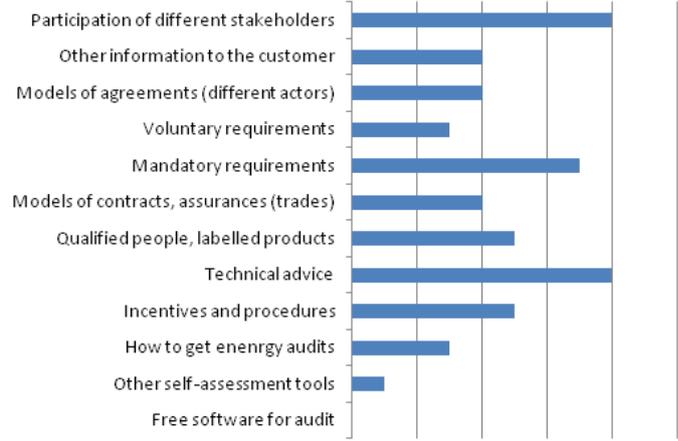
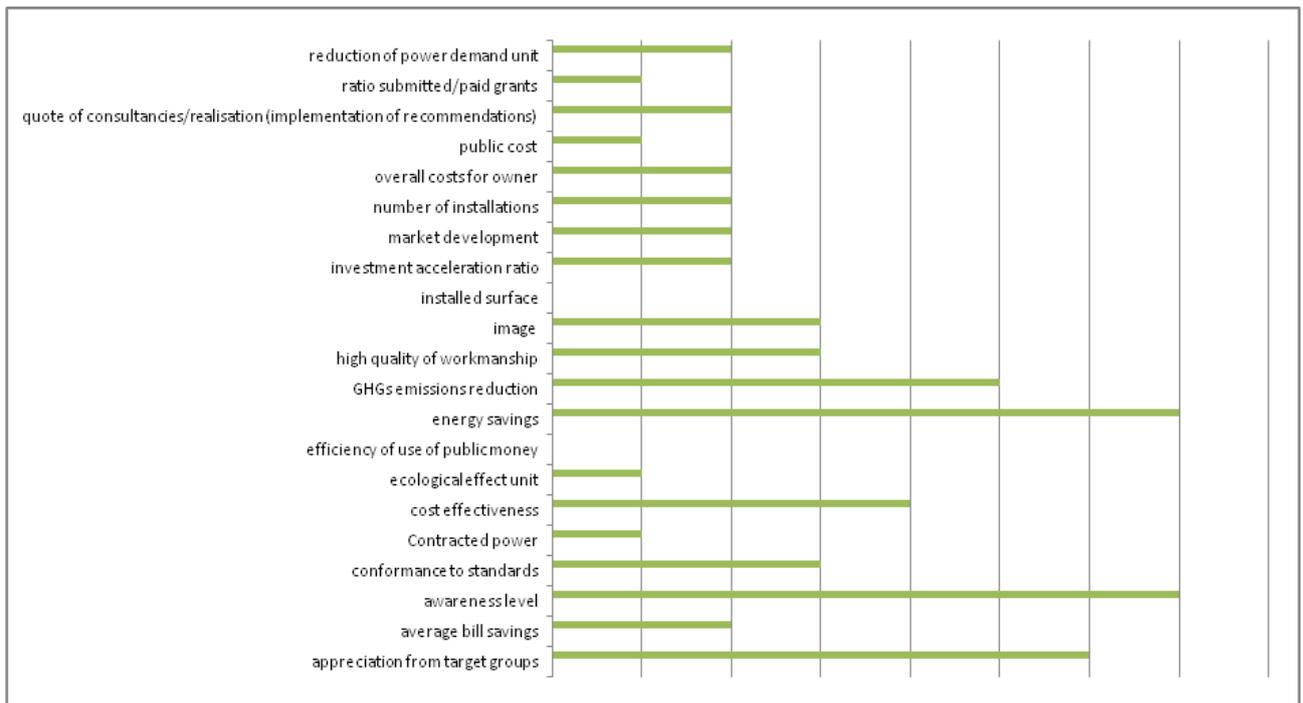


Table 6 - Communication tools within REQUEST pilots

Criteria of success: The following indicators were used to determine the impact of the various pilots (see D5.7 and 5.9 for details):



Graph 8 - Success indicators used to determine the impact of tools

BEST PRACTICE encompassed in the REQUEST Pilots:

The success criteria used in the first phase of the project to select best practice (in Chapter IV) were fulfilled by the following REQUEST Pilots:

Criteria to select best practice for promoting the uptake of EPC recommendations:

BE, DK, EL, IT, PT, UK	Execution of EPC recommendations was clearly addressed beyond audit and design
Most of pilots, see D. 5.7	Demonstrable appreciation of target groups and available indicators on implementation
AT, BG, DE, DK, EL, IT, PL, PT, UK	Networking between different actors in the supply chain
BE, DK, PT, SK, EL, UK	The owner/user is provided with standardised or customised additional information on energy efficient renovation measures (e.g. technical features, quality/labelled products and qualified experts, incentives)

Criteria to select best practice for fostering Quality in the supply chain:

All	Execution/installation phase clearly addressed
All	Clear eligibility criteria for products and installers/ assistance to the owner
DE, DK, EL	Commitment of trades for quality, <u>work organisation</u> and <u>client satisfaction</u>
BE, DK, PT, SK, EL, UK	The owner/user is provided with standardised or customised additional information on energy efficient renovation measures (e.g. technical features, quality/labelled products and qualified experts, incentives)
DE pilot proved all indicators	Indicators: Conformance to standard requirements (all), high quality of workmanship (DE) and appreciation from target groups (most)

Hence the REQUEST pilots **developed by partners in DK, EL, PT, UK** fulfil all the success criteria for promoting the **uptake of EPC recommendations** (highlight for WP3 and WP6).

Even if most of the REQUEST pilots delivered tools and products to improve the knowledge and skills of the building workforce and improve quality in the supply chain, only the German pilots focused on (on-site) work organisation and coordination fulfilling all the success criteria for **fostering Quality in the supply chain**.

Hence, as a general result from this analysis, all project addressed at least one of those criteria and nearly half of the pilots can be defined Best Practice cases:

BEST PRACTICE aim:	Country	Title	Level	Key Area
Quality in the supply chain	DE	Major renovation to KfW Efficiency House 55 Standard	R	I
	DK	Knowledge Centre for Energy Savings in Buildings	N	C,P, E, I
Uptake of EPC recommendations	EL	Green Neighbourhood	R	C, P, I
	PT	Improvement of EPC recommendations and energy renovation in Lisbon	L	C, P
	UK	Energy efficiency guidance and training material for homeowners and tradesmen for a room-by-room energy refurbishment approach	N	C, P, E

Table 7 - Best practice tools (Pilots) developed within the REQUEST project

Conclusion: Best practice mechanisms encompassed in the REQUEST Pilots

In order to achieve the REQUEST projects target we can conclude that the pilot projects included and implemented most of the mechanisms that were highlighted as successful in the Review and Research phase:

- Consultation to the owner by the assessor BG, BE, DK, EL, PT
- Reference to further information to assist the owner in the EPC and in guidelines for renovation (BG, BE, DK, IT, PT, SK, UK)
- Qualification/certification of assessors and trades DE, PT, UK
- Communication instruments (All)
- Quality requirements for people (All)
- Models for agreements and contracting DE, DK, EL, IT, PL, PT
- Inspection/Control (BG, DE, EL, IT, PL, PT, UK)
- Participation and Networking AT, BG, DE, DK, EL, IT, PL, PT, UK

CHAPTER VI **Lessons learnt**

A summary of the exemplary mechanisms highlighted in the report is provided below:

- Tools should be comprised in wider policy programs that include communication and participation, in order to guarantee the higher impact.
- As it was noticed in the REQUEST survey, a systematic assessment of the impact of the tools has only been carried out in a few rare cases. Monitoring and evaluation, including appreciation from target groups, should be integrated from the beginning of the action.
- The communication component is essential for success of the tools. Effective communication carried out by skilled energy assessors, (by convincing owners to make the investment), also stimulates the market. A subsidised campaign for advising the owner on how to take action on renovation measures should be an opportunity for monitoring effective implementation. Simple logos, labels, highlighting of demonstrative best practices may be persuasive practical instruments.
- Regular inspection should be integrated into certified and comparable renovation procedures, especially in major renovation, therefore assuring quality and reducing risks.
- Insurance arrangements and enhanced contracting could solve common customer complaints about poor quality of work and lack of compliance of the final product with the manufacturer's specification. Therefore creating the necessary conditions to allow collaborative working among the many trades involved in renovation is needed.
- Financial incentives can make a relevant contribution when they are connected to the results of audits, to mandatory uptake of measures and to certified improvements after renovation (i.e. an increase in energy performance class). Real implementation and related effectiveness should require a control system, allowing monitoring benefits, that should be planned since the beginning of the action.
- Agencies can play an essential role in supporting authorities in policy making to develop, implement and improve some of the exemplary mechanisms mentioned in this study. They should also have a strategic role in education programmes for trades, assessors and energy experts, where higher standardisation and certification are required, and in monitoring the effectiveness of actions and tools.
- Agencies and research organisations can contribute to creating networking to disseminate and implement **best practice**, by taking advantage of the multiplier effect of agreements with the building sector associations. In particular they can support the building renovation industry in integrating some of the mechanisms outlined in REQUEST so they can better align themselves with EU and national energy policy. As shown by a variety of tools examined in this survey, building industry associations, through requirements and services connected to their membership, can encourage the low-carbon renovation market to achieve a higher quality.
- Acceptability of the tools should be achieved through comprehensive participation of stakeholders, with a promotion and coordination role by authorities and governments.

Best Practices

Best Practice for the uptake of EPC recommendations		1
NAME OF THE TOOL	COUNTRY	LEVEL
<i>dena Quality Seals for Energy Performance Certificates and Efficient Homes</i>	Germany (DE)	<input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local
RELATED NATIONAL PROGRAM		VALIDITY PERIOD
<i>dena Quality Seals for Energy Performance Certificates and Efficient Homes</i>		From 2008/2009
STAKEHOLDERS INVOLVED		KEY AREAS - OBJECTIVE
<input checked="" type="checkbox"/> Decision makers <input checked="" type="checkbox"/> Ownership <input checked="" type="checkbox"/> Agencies and Professionals	<input checked="" type="checkbox"/> Trades people <input checked="" type="checkbox"/> Managers <input checked="" type="checkbox"/> Investors	<input checked="" type="checkbox"/> Communication <input type="checkbox"/> Participation <input checked="" type="checkbox"/> Education <input type="checkbox"/> Incentives
DESCRIPTION		
<p>dena offers a Quality Seal for Energy Performance Certificates that includes listing of qualified experts (authorized issuers according to the German Energy Saving Directive 2009 plus an additional qualification like certification of advanced training), guidelines for the procedure of collecting data and for information to hand out to the owner as well as random inspections of certificates. A Quality Seal for Efficient Homes guarantees a high energy performance of a building based on the Energy Performance Certificate with dena-Quality Seal of the building. The Quality Seal for Efficient Homes can be used to promote homes but also to prove good qualification of trades people.</p>		
ENERGY EFFICIENCY MEASURES ADDRESSED		
<input checked="" type="checkbox"/> All		
QUALITY REQUIREMENTS		
PEOPLE	PRODUCTS	CONTROL/ INSPECTION
<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary
<p>Possession of a qualification required that exceeds the minimum legislative requirements. Requested qualification is based on well-established energy consulting programme (BAFA). This will enable numerous issuer (i.e. architects, engineers, craftsmen) to apply for the seal of quality with their present qualification. The system is flexible and open to add further training programmes</p>	<p>Recommendations for the building envelope and heating system are provided. The issuer has to give written explanations if recommendations are not reasonable. Provides the owner with additional information (energy performance of building parts and planned modernisation) generated automatically by dena software. Qualified customer advice: the issuer should answer questions personally Discussion of further steps towards modernisation</p>	<p>Information to the owner: - before signing a contract the owner gets an information flyer about the seal of quality and the standards - local Information and clearing centres Obligatory electronic check of all certificates: - Completeness - Plausibility Quality check of selected certificates: - samples are selected randomly or in case of reasonable doubts (e.g. frequent errors or compliance to binding standards) dena can impose sanctions against issuers</p>

TYPE OF RENOVATION			
<input checked="" type="checkbox"/> Private Housing	<input type="checkbox"/> Social Housing	<input type="checkbox"/> Minor renovation	<input checked="" type="checkbox"/> Major renovation
TOOLS/MECHANISMS TO PROMOTE THE UPTAKE OF EPC RECOMMENDATIONS			
<p>dena Quality Seal for EPCs encourages experts to explain sets of measures in standardised forms: a low-cost set of measures and an extensive set of measures for a major renovation. The Quality Seal aims to improve quality of EPCs and recommendations. The Quality Seal for Efficient Homes aims to improve implementation of recommendations for a major renovation by offering an efficiency certificate and a sign that can be installed at the entrance of the energy efficient building. It guarantees a high energy performance of a building based on the Energy Performance Certificate with dena-Quality Seal of the building. The Quality Seal for Efficient Homes can be used to promote homes but also to prove good qualification of trades people working on Efficient Homes.</p>			
SMALL RESIDENTIAL BUILDINGS		MULTIFAMILY BUILDINGS	
<input type="checkbox"/> Mandatory	<input checked="" type="checkbox"/> Voluntary	<input type="checkbox"/> Mandatory	<input checked="" type="checkbox"/> Voluntary
		Public Housing BUILDINGS	
<input type="checkbox"/> Mandatory		<input type="checkbox"/> Voluntary	
Tools/mechanisms for COMMUNICATION/EDUCATION			
<p>The customer is also provided with:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> How to get energy audits <input checked="" type="checkbox"/> How to access incentives and associated technical procedures : Guidelines for modernisation in general, Guidelines for achievement of Quality Seal for Efficient Homes. <input checked="" type="checkbox"/> Technical advice: Guideline for modernisation in general for owners, standard recommendations with easy colour scale information (red-yellow-green) for each building part. <input checked="" type="checkbox"/> Information to lists of accredited and qualified trades people (installers, contractors), labelled products and processes, maintenance and user guidelines: Experts database with quality assurance of the experts' qualification; standard procedure for issuing EPCs with Quality Seal, random inspections. <input checked="" type="checkbox"/> Reference to minimum mandatory requirements for mandatory measures: Mandatory requirements concerning efficiency of building to achieve voluntary dena Quality Seal for Efficient Homes. <p>The trades involved in the renovation supply chain are also provided with:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Simple guides, factsheets, manuals for execution <input checked="" type="checkbox"/> Simple guides, factsheets, manuals for work organisation, managing interfaces with other trades 			
SUCCESS INDICATORS			
<input checked="" type="checkbox"/> Appreciation of target groups (feedback available)	<input checked="" type="checkbox"/> Image	<input checked="" type="checkbox"/> Awareness level	<input checked="" type="checkbox"/> Investment acceleration ratio
<input checked="" type="checkbox"/> Conformance to standards requirement	<input checked="" type="checkbox"/> Quote of consultancies/realizations	<input checked="" type="checkbox"/> Energy savings	<input checked="" type="checkbox"/> Reduction of power demand unit
WEBSITES			
http://www.zukunft-haus.info/en/			

Best Practice for the uptake of EPC recommendations		2
NAME OF THE TOOL	COUNTRY	LEVEL
<i>Building energy certification scheme</i>	Denmark (DK)	<input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local
RELATED NATIONAL PROGRAM	VALIDITY PERIOD (in the last 5 years)	
<i>EPBD implementation</i>	1997 – current	
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
<input checked="" type="checkbox"/> Decision makers <input checked="" type="checkbox"/> Ownership <input checked="" type="checkbox"/> Agencies and Professionals	<input type="checkbox"/> Trades people <input type="checkbox"/> Managers <input type="checkbox"/> Investors	<input checked="" type="checkbox"/> Communication <input type="checkbox"/> Participation <input type="checkbox"/> Education <input checked="" type="checkbox"/> Incentives

DESCRIPTION		
Denmark has had an energy certification scheme for single family houses and owner occupied flats since 1997. Furthermore there has been a certification scheme for large buildings (+1500 m ²) with annual certification based on measured energy consumption. Both schemes were mandatory and replaced by the current schemes due to the EBPD in 2006.		
ENERGY EFFICIENCY MEASURES ADDRESSED		
x All		
QUALITY REQUIREMENTS		
PEOPLE	PRODUCTS	CONTROL/ INSPECTION
x Mandatory _ Voluntary	x Mandatory _ Voluntary	_ Mandatory x Voluntary
There is a general requirement for authorization when interfering with the public supply systems (i.e. electricity, sewage, water, and gas) and when there is a potential hazard for the occupiers of the building. This kind of regulation ensures that the best available implementation will be achieved – and it is thus to be considered being best practice.		
TYPE OF RENOVATION		
x Private Housing.	x Social Housing.	x Minor renovation
		x Major renovation
TOOLS/MECHANISMS TO PROMOTE THE UPTAKE OF EPC RECOMMENDATIONS		
Since 2010 it has been mandatory to show the EP certificate in all announcements for real estates. Since 2010 the EP certificate was made publicly available at the Internet at www.ois.dk . In public buildings, energy saving proposals indicated in the EPC with a pay-back time less than 5 years, must be implemented within the next 4 years.		
SMALL RESIDENTIAL BUILDINGS	MULTIFAMILY BUILDINGS	Public Housing BUILDINGS
x Mandatory _ Voluntary	x Mandatory _ Voluntary	x Mandatory _ Voluntary
SUCCESS INDICATORS		
x Investment acceleration ratio		
WEBSITES		
http://www.ois.dk		

Best Practice for the uptake of EPC recommendations		3
NAME OF THE TOOL	COUNTRY	LEVEL
<i>Energy Saving at Home</i>	Greece (EL)	x National _ Regional _ Local
RELATED NATIONAL PROGRAM	VALIDITY PERIOD	
<i>National Programme 'Energy Saving at Home'</i>	2010	
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
x Decision makers x Ownership x Agencies and Professionals x Trades people x Managers x Investors	_ Communication _ Participation _ Education x Incentives	
DESCRIPTION		
Programme of incentives to promote EPCs and action on Energy Efficient measures. The implementation will start in 2011. Eligibility criteria for funding will be based on the energy upgrade, by at least one category of the EPC, and for buildings that		

before the refurbishment will be rated D or lower.

To define the Energy Performance category, before implementation, an energy audit should be carried out and the EPC will be applied to the bank. The EPC will include measures proposed by the auditor, energy saving estimated, cost and pay-back period. Part of the required loan is approved before the initiation of works.

After the completion of the refurbishment, a new EPC has to be issued and applied, so as for the rest of the loan to be approved. The cost of the Energy Certificates issued will be subsidised by 100%.

ENERGY EFFICIENCY MEASURES ADDRESSED

<input checked="" type="checkbox"/> Thermal insulation	<input checked="" type="checkbox"/> Windows	<input checked="" type="checkbox"/> HVAC
--	---	--

QUALITY REQUIREMENTS

PEOPLE	PRODUCTS	CONTROL/ INSPECTION
<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary

Quality requirements will actually be the 'eligibility criteria' for funding by the banks. These refer to the obligations of the applicant to provide:

- An Energy Certificate of the current energy performance of his property (house, flat), which will include recommended measures for energy upgrade, accompanied by cost – benefit data.
- The EPC should be issued by a registered Energy Auditor
- The measures to be undertaken should ensure upgrading of the building by 1 category
- After the refurbishment a new EPC should be issued by a registered auditor and should prove upgrade by 1 category
- The new EPC should be provided to the funding organization (bank), for the loan to be reimbursed (only part of the requested budget is provided in advance)
- Quality assurance of the EPCs issued will be carried out by the relative Ministry on a 'random check' basis.

Energy audits will be carried out by registered Auditors in the central data base of the Ministry of Environment, Energy and CC. Auditors (free lance professionals) will be selected by the building owner interested to participate in the Programme

TYPE OF RENOVATION

<input checked="" type="checkbox"/> Private Housing.	<input type="checkbox"/> Social Housing	<input checked="" type="checkbox"/> Minor renovation	<input checked="" type="checkbox"/> Major renovation
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TOOLS/MECHANISMS TO PROMOTE THE UPTAKE OF EPC RECOMMENDATIONS

Manuals of Energy Audit processes for Building shell, Boilers/Heating systems, AC systems, have been issued and will be used by the auditors, during the implementation of the Programme.

The Energy Certificates Form included in the new Building Energy Efficiency Regulation (approved in April 2010), includes recommendations for the improvement of the building performance. Funding provided by the Programme (described in A2), will be based on the EPC recommendations and cost estimates.

SMALL RESIDENTIAL BUILDINGS	MULTIFAMILY BUILDINGS	Public Housing BUILDINGS
<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary	<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary	<input type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary

Tools/mechanisms for COMMUNICATION/EDUCATION

The customer is also provided with:

- How to get energy audits
- How to access incentives and associated technical procedures
- Technical advice (guidelines/factsheets on advantages of partial or complete renovation, information on cost effectiveness of measures, etc.)

The trades involved in the renovation supply chain are also provided with:

- Simple guides, factsheets, manuals for execution

SUCCESS INDICATORS

Public cost

STAKEHOLDERS' PARTICIPATION

Public Administrators and funding institution. Frequency to be fixed.

WEBSITES

http://www.cres.gr/kape/index_eng.htm

Best Practice for the uptake of EPC recommendations		4
NAME OF THE TOOL	COUNTRY	LEVEL
<i>CasaClima (KlimaHaus)</i> <i>Bozen province</i>	Italy (IT)	<input type="checkbox"/> National <input checked="" type="checkbox"/> Regional <input type="checkbox"/> Local
RELATED NATIONAL PROGRAM	VALIDITY PERIOD	
(local EPBD implementation)	From 2002	
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
<input type="checkbox"/> Decision makers <input checked="" type="checkbox"/> Ownership <input checked="" type="checkbox"/> Agencies and Professionals	<input checked="" type="checkbox"/> Trades people <input type="checkbox"/> Managers <input type="checkbox"/> Investors	<input checked="" type="checkbox"/> Communication <input type="checkbox"/> Participation <input checked="" type="checkbox"/> Education <input type="checkbox"/> Incentives
DESCRIPTION		
<p>Casaclima (KlimaHaus, Klimahouse) is an energy label characterizing high insulation and compact constructions, also for existing and renovated buildings. CasaClima includes optimised construction methods, careful execution and a high level of comfort. Beside Energy performance indexes and U values for components, building details and adopted material certificates and data are required.</p> <p>There are three EP classes in CasaClima certification. The highest certification CasaClima plus and it's awarded to residential buildings distinguished not only by energy-saving construction, but also by ecological construction methods and use of renewable energy for heat production. To qualify for CasaClima plus certification, a building must fulfil the following criteria:</p> <ul style="list-style-type: none"> - Heating energy consumption under 50 kWh/m²a - Heating fuelled by Renewable Energy Sources and inclusion of at least one of the following measures: A photovoltaic system, solar panels for water heating and/or integrated with heating system, rainwater usage, green roof - Use of environmentally and health friendly building materials. <p>As an independent and competent authority, KlimaHaus/CasaClima conducts detailed inspections of every building and issues a certificate. All buildings certified with categories Gold, A or B may display the corresponding KlimaHaus/CasaClima plaque directly at the entrance, testifying to its low energy class. The plaque is provided by an independent authority, namely the KlimaHaus/CasaClima Agency. All documentation to apply for the certification (preferably before) is listed on the website:</p> <p>The independent certification organization CasaClima Agency offers:</p> <ul style="list-style-type: none"> • Training and education to Planners, Craftsmen, Maintainers, builders, blower-test and thermography experts • Certification and regular inspection in the building yard during and after the works • Consulting, coordination, contracting • Periodical (fairs) and continuous communication (website, magazine). Examples of certified houses are also on the web. <p>A particular label "Quality CasaClima windows" is both related to energy performance and product quality (safety, durability, air and water permeability, indoor quality and comfort) of windows. The scheme also takes into account quality of the installation (more control than in EC label).</p>		
ENERGY EFFICIENCY MEASURES ADDRESSED		
<input checked="" type="checkbox"/> Thermal insulation	<input checked="" type="checkbox"/> Windows	<input checked="" type="checkbox"/> HVAC Systems
<input checked="" type="checkbox"/> Others (Renewable Energy Systems)		
QUALITY REQUIREMENTS		
PEOPLE	PRODUCTS	CONTROL/ INSPECTION
<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary	<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary
The Agency cooperates with externally trained Certifiers enrolled in their own technical register. Within the label "Qualità CasaClima windows", to be registered in the list of qualified experts for windows installation, the expert has to attend basic (windows	The CasaClima windows have a 4 years' guarantee. The Label has 3 years' validity. He label also comprises a declaration of compliance to the climatic zone where the window is installed.	-

energy standards) and advanced (installation) courses (5 days total) and undergo a final examination.		
TYPE OF RENOVATION		
<input checked="" type="checkbox"/> Private Housing	<input checked="" type="checkbox"/> Social Housing	<input checked="" type="checkbox"/> Minor renovation <input checked="" type="checkbox"/> Major renovation
TOOLS/MECHANISMS TO PROMOTE THE UPTAKE OF EPC RECOMMENDATIONS		
<p>The CasaClima is the official scheme for EPBD implementation in Bozen autonomous Province. The Bozen district energy Law requires Class C Energy performance for renovated buildings if the intervention encompasses an envelope surface > 50%. For the renovation EPC and eventual permit are required.</p> <p>The Agency has also a monitoring of building permits for renovation and effective implementation of recommendations.</p> <p>An EP Calculation tool (Pro CasaClima) is associated to the scheme and other accepted tools are listed.</p>		
Tools/mechanisms for COMMUNICATION/EDUCATION		
<p>The customer is also provided with:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Free software for simplified audit <input checked="" type="checkbox"/> How to get energy audits <input checked="" type="checkbox"/> How to access incentives and associated technical procedures <input checked="" type="checkbox"/> Technical advice (guidelines/factsheets on advantages of partial or complete renovation, information on cost effectiveness of measures, etc.) <input checked="" type="checkbox"/> Information to lists of accredited and qualified trades people (installers, contractors), labelled products and processes, maintenance and user guidelines <input checked="" type="checkbox"/> Models for contracts, codes of conduct, assurances for trades-people <input checked="" type="checkbox"/> Reference to minimum mandatory requirements for mandatory measures <input checked="" type="checkbox"/> Reference to minimum voluntary requirements for voluntary measures <input checked="" type="checkbox"/> Other information provided to the customer: <p>The trades involved in the renovation supply chain are also provided with:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Simple guides, factsheets, manuals for execution <input checked="" type="checkbox"/> Simple guides, factsheets, manuals for work organisation, managing interfaces with other trades 		
SUCCESS INDICATORS		
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Appreciation of target groups (feedback available) <input checked="" type="checkbox"/> Awareness level <input checked="" type="checkbox"/> Conformance to standards requirement <input checked="" type="checkbox"/> Cost effectiveness 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Energy savings <input checked="" type="checkbox"/> GHGs emissions reduction (CO2 emission reduction) <input checked="" type="checkbox"/> High quality of workmanship <input checked="" type="checkbox"/> Quote of consultancies/realizations 	
WEBSITES (please provide relevant website addresses):		
http://www.agenziacasaclima.it/ http://www.casaclima.info/it/casaclima/finestra-qualita-casaclima.html		

Best Practice for the uptake of EPC recommendations		5
NAME OF THE TOOL	COUNTRY	LEVEL
<p>ICMQ Label</p> <p>Sistema Edificio (Building System)</p>	<p>Italy</p> <p>(IT)</p>	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local
RELATED NATIONAL PROGRAM	VALIDITY PERIOD	
-	From 2002	
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Decision makers <input checked="" type="checkbox"/> Ownership <input checked="" type="checkbox"/> Agencies and Professionals 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Trades people <input checked="" type="checkbox"/> Managers <input checked="" type="checkbox"/> Investors 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Communication <input type="checkbox"/> Participation <input checked="" type="checkbox"/> Education <input type="checkbox"/> Incentives

DESCRIPTION								
<p>The voluntary certification scheme Sistema Edificio®, in compliance with EPBD and consistent with the national implementation legislation evaluates the energy performance of buildings - also renovated or existing - enriching it with the certification of other building quality requirements: acoustic, thermal, lighting comfort and water saving. Sistema Edificio® certifies the performances of a construction since the design phase, issuing a first certificate that constitutes a useful indication for the ownership and the designer. It performs then verifications of conformity to the design in construction phase, issuing a second certificate that updates the energy performance on the basis of characteristics and real quality observed in the yard. Moreover it performs energy evaluations on existing buildings in management phase.</p> <p>ICMQ delivers to the buyer, together to the certificate, technical inspection reports that carry the data and the considered documents, the processes of performance calculation carried out, the consequential observations from the audits in yard and suggestions of the performance improvement related both the building envelope and the plants. ICMQ makes use of an own calculation software, realized and constantly updated in collaboration with the department of Energy of the faculty of Engineering of the Polytechnic in Milan.</p> <p>ICMQ also manages the qualification process of specialized installers for envelop insulation, roofs, walls, etc. also dealing with coordination aspects of these works. Qualified people are registered in a public list.</p>								
ENERGY EFFICIENCY MEASURES ADDRESSED								
x All								
QUALITY REQUIREMENTS								
PEOPLE		PRODUCTS		CONTROL/ INSPECTION				
x Mandatory _ Voluntary		_ Mandatory _ Voluntary		x Mandatory _ Voluntary				
TYPE OF RENOVATION								
x Private Housing		_ Social Housing		x Minor renovation		x Major renovation		
TOOLS/MECHANISMS TO PROMOTE THE UPTAKE OF EPC RECOMMENDATIONS								
Complies with EPBD and with the national implementation legislation and the technical rules in force								
SMALL RESIDENTIAL BUILDINGS			MULTIFAMILY BUILDINGS			Public Housing BUILDINGS		
_ Mandatory x Voluntary			_ Mandatory x Voluntary			_ Mandatory x Voluntary		
Tools/mechanisms for COMMUNICATION/EDUCATION								
<p>The customer is also provided with:</p> <ul style="list-style-type: none"> x How to get energy audits x How to access incentives and associated technical procedures x Technical advice (guidelines/factsheets on advantages of partial or complete renovation, information on cost effectiveness of measures, etc.) x Information to lists of accredited and qualified trades people (installers, contractors), labelled products and processes, maintenance and user guidelines x Reference to minimum mandatory requirements x Reference to minimum voluntary requirements <p>The trades involved in the renovation supply chain are also provided with:</p> <ul style="list-style-type: none"> x Simple guides, factsheets, manuals for execution x Simple guides, factsheets, manuals for work organisation, managing interfaces with other trades 								
SUCCESS INDICATORS								
N.A.								
WEBSITES (please provide relevant website addresses):								
http://www.icmq.it/en/buildings_sistema_ed.php								

Best Practice for the uptake of EPC recommendations		6
NAME OF THE TOOL	COUNTRY	LEVEL
<i>Nationwide educational program 'Friendly House'</i>	Poland (PL)	<input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local
RELATED NATIONAL PROGRAM	VALIDITY PERIOD	
<i>Nationwide educational program "Friendly House"</i>	From 2002	
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
<input type="checkbox"/> Decision makers <input checked="" type="checkbox"/> Ownership <input checked="" type="checkbox"/> Agencies and Professionals	<input type="checkbox"/> Trades people <input checked="" type="checkbox"/> Managers <input checked="" type="checkbox"/> Investors	<input checked="" type="checkbox"/> Communication <input type="checkbox"/> Participation <input checked="" type="checkbox"/> Education <input type="checkbox"/> Incentives
DESCRIPTION		
<p>The scope of the program is designing, modernization, exploitation, and certification of buildings. The program targets private and corporate investors (housing cooperatives, owners associations, housing managers, etc.), local authorities' officers, key professional groups, and the media, manages a communication platform.</p> <p>The target is providing awareness raising actions as well as enhancing knowledge and skills of professionals involved in refurbishment process. The following information material was published so far:</p> <ul style="list-style-type: none"> - Low energy house (2002), - detached houses - Thermo-modernization of buildings (2003) - Energy-saving apartment exploitation (2003), targeted at tenants and other users; on ventilation systems, rational water and energy usage, guidelines for proper functioning of gas-devices, modernization and renovation of elevators - Single-layer wall house (2003) - Multi-layer wall house (2004) - Building superstructures and modernization of detached houses (2004) - Building superstructures and modernization of apartment buildings (2004) - New systems of buildings energy certification (2005), leaflet –presenting the new responsibilities of property owners and managers related to EU directive 2002/91/EC. - Modernization of heat supply system in dwelling houses (2006) - Thermo-modernization and upgrading of public buildings (2006) - Using the EU funds for modernization of buildings (2007) - Thermo- and anti-humidity isolation of buildings' foundations (2007) 		
ENERGY EFFICIENCY MEASURES ADDRESSED		
<input checked="" type="checkbox"/> All		
QUALITY REQUIREMENTS		
PEOPLE	PRODUCTS	CONTROL/ INSPECTION
<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary	<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary	Mandatory <input type="checkbox"/> Voluntary
TYPE OF RENOVATION		
<input checked="" type="checkbox"/> Private Housing	<input checked="" type="checkbox"/> Social Housing	<input checked="" type="checkbox"/> Minor renovation
<input checked="" type="checkbox"/> Major renovation		
Tools/mechanisms for COMMUNICATION/EDUCATION		
<p>The customer is also provided with:</p> <input checked="" type="checkbox"/> Technical advice (guidelines/factsheets on advantages of partial or complete renovation, information on cost effectiveness of measures, etc.)		
SUCCESS INDICATORS		
<input checked="" type="checkbox"/> Awareness level		
WEBSITES		
http://www.domprzyjazny.org/index.php?i=english		

Best Practice for the uptake of EPC recommendations		7	
NAME OF THE TOOL	COUNTRY	LEVEL	
Solar Thermal Collectors	Portugal (PT)	<input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local	
RELATED NATIONAL PROGRAM	VALIDITY PERIOD		
<i>National Plan for Energy Efficiency</i>	from 2008		
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE		
<input checked="" type="checkbox"/> Decision makers <input checked="" type="checkbox"/> Ownership <input checked="" type="checkbox"/> Agencies and Professionals	<input checked="" type="checkbox"/> Trades people <input checked="" type="checkbox"/> Managers <input checked="" type="checkbox"/> Investors	<input checked="" type="checkbox"/> Communication <input checked="" type="checkbox"/> Participation <input type="checkbox"/> Education <input checked="" type="checkbox"/> Incentives	
DESCRIPTION			
<p>Portuguese Government supports the acquisition of solar thermal systems worth € 1641,70. Taxation of VAT to 12% and tax of 30% of the cost of investment on tax return up to € 796. The scheme is targeted to private aiming to implement solar thermal collectors in their houses. To operate this programme the Portuguese government establishes a protocol with some banks. The owners have to purchase solar collectors through a bank loan. After talking with the bank the owner has to choose the brand of solar thermal collector and the installer from an existing list. After the realisation of the installation a maintenance contract 6 years long is needed. A short Guideline is available on-line. ADENE produces the guidelines for the experts.</p>			
ENERGY EFFICIENCY MEASURES ADDRESSED			
<input checked="" type="checkbox"/> Others: RES – Solar Collectors			
QUALITY REQUIREMENTS			
PEOPLE	PRODUCTS	CONTROL/ INSPECTION	
<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	
The installers have to be qualified and have to celebrate a maintenance contract for minimum 6 years.	All the products have to be certified with CE label.	The companies that make the control inspections have to be certified by the national directorate for energy.	
TYPE OF RENOVATION			
<input checked="" type="checkbox"/> Private Housing.	<input checked="" type="checkbox"/> Social Housing	<input checked="" type="checkbox"/> Minor renovation	<input checked="" type="checkbox"/> Major renovation
Tools/mechanisms for COMMUNICATION/EDUCATION			
<p>The customer is also provided with:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> How to access incentives and associated technical procedures <input checked="" type="checkbox"/> Technical advice (guidelines/factsheets on advantages of partial or complete renovation, information on cost effectiveness of measures, etc.) <input checked="" type="checkbox"/> Information to lists of accredited and qualified trades people (installers, contractors), labelled products and processes, maintenance and user guidelines <input checked="" type="checkbox"/> Models for contracts, codes of conduct, assurances for trades-people <input checked="" type="checkbox"/> Reference to minimum mandatory requirements for mandatory measures <p>The trades involved in the renovation supply chain are also provided with:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Simple guides, factsheets, manuals for execution 			
SUCCESS INDICATORS			
<input checked="" type="checkbox"/> Ecological effect unit <input checked="" type="checkbox"/> Energy savings	<input checked="" type="checkbox"/> Installed surface (collectors, PV) <input checked="" type="checkbox"/> Public cost		
WEBSITES			
http://www.paineissolares.gov.pt			

Best Practice for the uptake of EPC recommendations		8
NAME OF THE TOOL	COUNTRY	LEVEL
Standard Assessment Procedure (SAP) for EP calculation	United Kingdom (UK)	<input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local
RELATED NATIONAL PROGRAM	VALIDITY PERIOD	
<i>EPBD implementation</i>	From 2005 (version 2009 will be used from 2011)	
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
<input checked="" type="checkbox"/> Decision makers <input checked="" type="checkbox"/> Ownership <input checked="" type="checkbox"/> Agencies and Professionals	<input type="checkbox"/> Trades people <input type="checkbox"/> Managers <input type="checkbox"/> Investors	<input checked="" type="checkbox"/> Communication <input type="checkbox"/> Participation <input checked="" type="checkbox"/> Education <input type="checkbox"/> Incentives
DESCRIPTION		
<p>Standard Assessment Procedure (SAP) measures the energy performance of a building to comply with the Part L building regulations. A SAP is carried out at the design stage of a new build of a residential property. A SAP calculation produces a Projected Energy Assessment (PEA) which details how much energy a new home will use. This is translated into a more user-friendly Energy Performance Certificate (EPC), which forms one part of the government's new Home Information Pack (HIP). The SAP is the single method of compliance with Part L Building Regulations (2006) and takes the notional carbon footprint calculation of a house from the 2002 Part L regulations and specifies that a new build house must achieve a 25% reduction in carbon use to comply with current regulations. So, if a house emitted 100 tonnes of CO₂ in 2002, a house built after the introduction of Part L 2006 must emit 75 tonnes at the most to receive a SAP certificate. This is known as the Target Emission Rate (TER).</p> <p>Upon completion of construction of the building, a SAP assessor will review the property to ensure that products and techniques specified at design stage have been incorporated into the build. They will then calculate the carbon footprint of the building to ensure the TER has been met. The reading recorded in the building upon completion is known as the Dwelling Emission Rate (DER), and should this be lower than or equal to the TER, the building will receive a SAP certificate.</p> <p>A SAP assessment can also be carried out on existing properties to enable the development of detailed strategies to ensure the refurbishment project can achieve the desired aim. For example a 60% reduction on CO₂ compared against the identified base case</p>		
ENERGY EFFICIENCY MEASURES ADDRESSED		
<input checked="" type="checkbox"/> All	<input checked="" type="checkbox"/> Others (e.g. Renewable Energy Systems)	
TYPE OF RENOVATION		
<input checked="" type="checkbox"/> Private Housing	<input checked="" type="checkbox"/> Social Housing	<input checked="" type="checkbox"/> Minor renovation
		<input checked="" type="checkbox"/> Major renovation
TOOLS/MECHANISMS TO PROMOTE THE UPTAKE OF EPC RECOMMENDATIONS		
A SAP report produces a report for the consumer highlighting the energy cost of running the measured dwelling, profiles the dwelling into the ratings band which is also used for standard EPC's, and the CO ₂ emitted.		
Tools/mechanisms for COMMUNICATION/EDUCATION		
The customer is also provided with:		
<input checked="" type="checkbox"/> Technical advice (guidelines/factsheets on advantages of partial or complete renovation, information on cost effectiveness of measures, etc.)		
SUCCESS INDICATORS		
N.A.		
WEBSITES		
http://www.bre.co.uk/sap2009/page.jsp?id=1642		

Best Practice for the uptake of EPC recommendations		9
NAME OF THE TOOL	COUNTRY	LEVEL
T-Zero	United Kingdom (UK)	<input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local
RELATED NATIONAL PROGRAM	VALIDITY PERIOD	
-	On-going	
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
<input checked="" type="checkbox"/> Decision makers <input checked="" type="checkbox"/> Ownership <input checked="" type="checkbox"/> Agencies and Professionals	<input checked="" type="checkbox"/> Trades people <input checked="" type="checkbox"/> Managers <input type="checkbox"/> Investors	<input checked="" type="checkbox"/> Communication <input type="checkbox"/> Participation <input checked="" type="checkbox"/> Education <input type="checkbox"/> Incentives
DESCRIPTION		
<p>T-ZERO provides an interactive web-based tool that puts energy and environmental performance expertise in the hands of the householder, housing stock manager, designer or builder. T-ZERO is a free web-based tool that identifies the optimal low-carbon solutions tailored to specific house types. Define the dwelling enables T-ZERO to establish its (dwellings) fuel bill and carbon footprint, then identify optimal insulation, heating, and renewable energy options, based on budget and refurbishment goals. The T-ZERO Marketplaces connect consumers with local suppliers and installers of the recommended measures. Users can also upload their experiences of projects, products and services to create a directory of case studies of practical benefit to others.</p> <p>Homeowners: User-friendly, interactive guide containing actual costs of improvements. Pay-back, financing, technical guidance and supplier and installer details provided.</p> <p>Housing managers: Assists housing providers and asset managers to address the Decent Homes Standard, climate change, tenants' energy security and welfare and to develop refurbishment and disposal strategies.</p> <p>Building professionals: One-stop shop for costs, technical guidance and suppliers and installers in your area. A rapid assessment of achievable environmental improvements based on clients' criteria.</p> <p>Suppliers, installers and retailers: T-ZERO can put you in touch with informed homeowners and building professionals that need your products or services.</p>		
ENERGY EFFICIENCY MEASURES ADDRESSED		
<input checked="" type="checkbox"/> All <input checked="" type="checkbox"/> Others (e.g. Renewable Energy Systems)		
QUALITY REQUIREMENTS		
PEOPLE	PRODUCTS	CONTROL/ INSPECTION
<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary	<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary	<input type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary
TYPE OF RENOVATION		
<input checked="" type="checkbox"/> Private Housing	<input checked="" type="checkbox"/> Social Housing	<input checked="" type="checkbox"/> Minor renovation <input checked="" type="checkbox"/> Major renovation
TOOLS/MECHANISMS TO PROMOTE THE UPTAKE OF EPC RECOMMENDATIONS		
The T-ZERO Marketplaces connect consumers with local suppliers and installers of the recommended measures.		
SMALL RESIDENTIAL BUILDINGS	MULTIFAMILY BUILDINGS	Public Housing BUILDINGS
<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary	<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary	<input type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary

Tools/mechanisms for COMMUNICATION/EDUCATION
<p>The customer is also provided with:</p> <ul style="list-style-type: none"> x Free software for simplified audit x Technical advice (guidelines/factsheets on advantages of partial or complete renovation, information on cost effectiveness of measures, etc.).
SUCCESS INDICATORS
N.A.
WEBSITES
http://www.tzero.org.uk/

Best Practice for the uptake of EPC recommendations		10
NAME OF THE TOOL	COUNTRY	LEVEL
Energy Saving Trust Home Energy Check Tool	United Kingdom (UK)	<ul style="list-style-type: none"> x National _ Regional _ Local
RELATED NATIONAL PROGRAM	VALIDITY PERIOD	
<i>EST- Energy Saving Trust</i>	1993 - present	
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
<ul style="list-style-type: none"> x Decision makers x Ownership x Agencies and Professionals 	<ul style="list-style-type: none"> x Trades people x Managers x Investors 	<ul style="list-style-type: none"> x Communication x Participation x Education _ Incentives
DESCRIPTION		
<p>Energy Saving Trust: Helps people to save energy and reduce carbon emissions by directly supporting consumers to take action through an advice network and website, or indirectly through work with partner organizations. EST also helps local authorities and communities to save energy, and provide quality assurance for goods and services so people know which products will save the most energy. Guidance for housing professionals helps improve the quality of the supply chain.</p> <p>The Home Energy Check tool allows home occupiers to generate a list of energy saving measures that could be implemented to the particular house type that they are resident in. The tool provides an EPC chart style graphic showing where the home is currently and where it could be potentially following implementation of the measures defined by the tool.</p> <p>The cost savings in CO2 are also identified.</p>		
ENERGY EFFICIENCY MEASURES ADDRESSED		
<ul style="list-style-type: none"> x All x Others (e.g. Renewable Energy Systems) 		
QUALITY REQUIREMENTS		
PEOPLE	PRODUCTS	CONTROL/ INSPECTION
<ul style="list-style-type: none"> _ Mandatory x Voluntary 	<ul style="list-style-type: none"> _ Mandatory x Voluntary 	<ul style="list-style-type: none"> _ Mandatory _ Voluntary
	Encompasses the tool 'Energy Saving Trust Recommended' (ESTR, formally ESR) for the most energy efficient products.	
TYPE OF RENOVATION		
<input checked="" type="checkbox"/> Private Housing	<input checked="" type="checkbox"/> Social Housing	<input checked="" type="checkbox"/> Minor renovation <input checked="" type="checkbox"/> Major renovation

TOOLS/MECHANISMS TO PROMOTE THE UPTAKE OF EPC RECOMMENDATIONS

The tool provides an EPC chart style graphic showing where the home is currently and where it could be potentially following implementation of the measures defined by the tool.

SMALL RESIDENTIAL BUILDINGS		MULTIFAMILY BUILDINGS		Public Housing BUILDINGS	
<input type="checkbox"/> Mandatory	<input checked="" type="checkbox"/> Voluntary	<input type="checkbox"/> Mandatory	<input checked="" type="checkbox"/> Voluntary	<input type="checkbox"/> Mandatory	<input type="checkbox"/> Voluntary

Tools/mechanisms for COMMUNICATION/EDUCATION

The customer is also provided with:

- x Free software for simplified audit: The Energy Saving Trust’s home energy check can be done online, over the phone or by post to give a personalised energy audit. The carbon cutter tool is a more comprehensive audit tool including travel.
- x How to access incentives and associated technical procedures: The Energy Saving Trust has a grants and incentives information database, our advisors will refer people on to insulation schemes in their area.
- x Technical advice: The Energy Saving Trust produces technical information for the housing industry and consumers looking for more detailed information for a wide range of energy efficiency renovations including cost information. It provides information reports containing cost savings and CO2 savings for the various measures proposed.
- x Information to lists of accredited and qualified trades people (installers, contractors), labelled products and processes: The Energy Saving Trust provides details of how to find accredited installers for energy efficiency and microgeneration measures where such schemes exist. It also runs Energy Saving Trust Recommended (ESTR, formally ESR) for the most energy efficient products.
- x Reference to minimum mandatory requirements: Technical housing guidance meets building regulations.
- x Reference to minimum voluntary requirements

SUCCESS INDICATORS

- x Energy savings
- x GHGs emissions reduction (CO2 emission reduction)
- x Number of installations

STAKEHOLDERS’ PARTICIPATION

Stakeholders are engaged in the programme. EST participates too.
 (The UK government has set up an organisation which brings together stakeholders involved in the delivery of energy efficiency and low carbon products and services – The Energy Efficiency Partnership for Homes. Members collaborate to ensure the effective delivery of the Government’s energy policies and targets)

WEBSITES

<http://www.energysavingtrust.org.uk/proxy/view/full/165/homeenergycheck>

Best Practice for Quality in the supply chain		1
NAME OF THE TOOL	COUNTRY	LEVEL
<i>klima:aktiv</i>	Austria (AT)	<input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local
RELATED NATIONAL PROGRAM	VALIDITY PERIOD	
<i>klima:aktiv – National Climate Protection Programme</i>	From 2004	
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
<input type="checkbox"/> Decision makers <input checked="" type="checkbox"/> Ownership <input checked="" type="checkbox"/> Agencies and Professionals	<input checked="" type="checkbox"/> Trades people <input checked="" type="checkbox"/> Managers <input checked="" type="checkbox"/> Investors	<input checked="" type="checkbox"/> Communication <input checked="" type="checkbox"/> Participation <input checked="" type="checkbox"/> Education <input checked="" type="checkbox"/> Incentives
DESCRIPTION		
Supports existing policy packages and the sector measures through information, communication, networking and advice. Its broad scope is structured along two general lines: - Traditional approach: encompassing basic information and initial advice for private households, public authorities and companies - Innovative communicative approach: involvement of decision makers, producers and companies with relevant influence on investment decisions, e.g. master builders, plumbers, property developers and managers, manufacturers of (prefabricated) houses, and procurement operators. Combining energy efficient technologies and emphasis on quality assurance and network-based standard setting make klima:aktiv an outstanding information campaign in Europe.		
ENERGY EFFICIENCY MEASURES ADDRESSED		
<input checked="" type="checkbox"/> All		
<input checked="" type="checkbox"/> Others (e.g. Renewable Energy Systems)		
QUALITY REQUIREMENTS		
PEOPLE	PRODUCTS	CONTROL/ INSPECTION
<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary	<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary	<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary
Subsidised consultancy also for renewable energies is offered by networks of qualified experienced energy consultants. There are regular network meetings where they are informed about current news. There are special klima:aktiv education programmes for builders, architects (in refurbishment, solar energy, heat pumps, bio energy, saving electricity). Qualified persons (e.g. klima:aktiv solar energy installers) are then shown on a klima:aktiv partner map and building owners can find professionals nearby. Also qualified companies can become a klima:aktiv partner and can also be seen at the partner map.	Furthermore there is the klima:aktiv standard which defines quality criteria for sustainable buildings. Depending on the number of reached points the building owner can reach a klima:aktiv house or a klima:aktiv passive house and receives a certificate.	
TYPE OF RENOVATION		
<input checked="" type="checkbox"/> Private Housing.	<input checked="" type="checkbox"/> Social Housing.	<input checked="" type="checkbox"/> Minor renovation
		<input checked="" type="checkbox"/> Major renovation

Tools/mechanisms for COMMUNICATION/EDUCATION

The customer is also provided with:

- x Free software for simplified audit: klima:aktiv offers a consumption data collection sheet – available at <http://www.klimaaktiv.at/article/archive/26988/> (“Verbrauchsdatenerfassung”). There is also a quick check and a professional check to see where electricity can be saved.
- x Other self-assessment tools: <http://www.eigenheim-modern.klimaaktiv.at>. At this website, the user can see a house. By touching with the cursor, automatically recommendations and saving potentials are shown.
- x How to get energy audits: The klima:aktiv building standard defines quality criteria for planning and building. Reference to other Certification schemes and labels for ecological products in Austria are mentioned at the website.
- x How to access incentives and associated technical: There is information at the klima:aktiv website www.klimaaktiv.at and information is also given by telephone.
- x Technical advice: There are different guidelines on how to plan a building, which measures are available and what is their effect, how to save energy with household appliances using electricity efficiently, brochures about renewable energies (biomass, solar energy, photovoltaic etc.) information on where to get support, information on the EPC (All available at <http://www.klimaaktiv.at/article/archive/26988/>, <http://www.klimaaktiv.at/article/archive/17169>), Energy efficient products: www.topprodukte.at There is also a best practice database: www.klimaaktiv-gebaut.at
- x Information to lists of accredited and qualified trades people (installers, contractors), labelled products and processes, maintenance and user guidelines
- x Reference to minimum voluntary requirements: Meeting the klima:aktiv building standard is voluntary. The standard supports in reaching high quality building. Within the standard there are mandatory requirements and voluntary requirements with which points can be collected. If the building reaches 700 points at minimum, it is a klima:aktiv house. If it reaches 900 points, it is a klima:aktiv passive house. The maximum number of points is 1000.

The trades involved in the renovation supply chain are also provided with:

- x Simple guides, factsheets, manuals for execution

SUCCESS INDICATORS

- | | |
|--|---------------------------------------|
| x Appreciation of target groups (feedback available) | x Image |
| x Awareness level | x Market development |
| x GHGs emissions reduction (CO2 emission reduction) | x Quote of consultancies/realizations |
| x High quality of workmanship | |

STAKEHOLDERS' PARTICIPATION

klima:aktiv network meeting (Planners, architects, builders): Once or twice a year
 klima:aktiv information workshops: The target group is informed about news, tools, requirements, guidelines, legislation, further projects etc. in the field of Energy efficiency (Planners, architects, builders, property managers): Several times a year
 Presence at the big fair “Energiesparmesse Wels” (Building owners, professionals): Once a year

ASSESSMENT OF THE IMPACT

A study was carried out at AEA on the implementation of measures recommended by klima:aktiv consultants (how many measures, which, why, why not etc.). Furthermore there was a survey on the image, communication, awareness level, assignment of klima:aktiv professionals, engagement for undertaking measures etc.

WEBSITES

<http://www.klimaaktiv.at>

Best Practice for Quality in the supply chain		2
NAME OF THE TOOL		COUNTRY
CERGA Certificate		Belgium (BE)
		<input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local
RELATED NATIONAL PROGRAM		VALIDITY PERIOD
-		From 2004
STAKEHOLDERS INVOLVED		KEY AREAS - OBJECTIVE
<input type="checkbox"/> Decision makers <input type="checkbox"/> Ownership <input checked="" type="checkbox"/> Agencies and Professionals		<input checked="" type="checkbox"/> Trades people <input type="checkbox"/> Managers <input type="checkbox"/> Investors
		<input type="checkbox"/> Communication <input type="checkbox"/> Participation <input checked="" type="checkbox"/> Education <input type="checkbox"/> Incentives
DESCRIPTION		
Quality label for contractors of natural gas and propane installations. The contractor can acquire this label by completing courses and using approved materials and products. The quality of his work is checked by samples every year. The contractor has to renew his Cerga-certificate every year. The specific products and quality requirements are only available for Cerga certified contractors.		
ENERGY EFFICIENCY MEASURES ADDRESSED		
<input checked="" type="checkbox"/> HVAC Systems <input checked="" type="checkbox"/> Others (natural gas and propane installations)		
QUALITY REQUIREMENTS		
PEOPLE	PRODUCTS	CONTROL/ INSPECTION
<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary
Quality label for contractors of natural gas and propane installations. The contractor can acquire this label by completing courses. The contractor has to renew his Cerga-certificate every year.	Use of approved materials and products. The specific products and quality requirements are only available for Cerga certified contractors	The quality of contractors' work is checked by samples every year.
TYPE OF RENOVATION		
<input checked="" type="checkbox"/> Private Housing.	<input checked="" type="checkbox"/> Social Housing.	<input checked="" type="checkbox"/> Minor renovation
		<input checked="" type="checkbox"/> Major renovation
Tools/mechanisms for COMMUNICATION/EDUCATION		
The trades involved in the renovation supply chain are also provided with:		
<input checked="" type="checkbox"/> Simple guides, factsheets, manuals for execution		
SUCCESS INDICATORS		
<input checked="" type="checkbox"/> High quality of workmanship		
<input checked="" type="checkbox"/> Quote of consultancies/realizations		
WEBSITES		
http://www.cerga.be/ (French or Dutch)		

Best Practice for Quality in the supply chain		3
NAME OF THE TOOL	COUNTRY	LEVEL
National Program for renovation of Multifamily buildings	Bulgaria (BG)	<input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local
RELATED NATIONAL PROGRAM	VALIDITY PERIOD	
<i>National Program for renovation of Multifamily buildings in Republic of Bulgaria</i>	2006-2015	
STAKEHOLDERS INVOLVED	KEY AREAS – OBJECTIVE	
<input checked="" type="checkbox"/> Decision makers <input checked="" type="checkbox"/> Ownership <input checked="" type="checkbox"/> Agencies and Professionals	<input checked="" type="checkbox"/> Trades people <input checked="" type="checkbox"/> Managers <input checked="" type="checkbox"/> Investors	<input checked="" type="checkbox"/> Communication <input checked="" type="checkbox"/> Participation <input checked="" type="checkbox"/> Education <input checked="" type="checkbox"/> Incentives
DESCRIPTION		
<p>The Program priority is the panel residential buildings. The Programme foresees within the 2006 – 2020 period 684 683 dwellings to be renovated. The State will support the panel dwelling owners by means of direct subsidy of 20% from the renovation total value. In the Ministry of Regional Development and Public Works (MRDPW), a specialized unit will be created to allocate to municipalities the adopted budget subsidies for residential buildings renovation, based on adopted respective investment projects, submitted by the municipalities. Municipalities actively participate in the residential buildings renovation process. With decision by the respective Municipal Council is created Municipal Association (MA) as a legal person, to support methodically and technically the activity on the organization and implementation of investment projects for residential buildings renovation, with participation of: the Municipality, Condominiums – legal persons, energy service companies, banks and other interested persons. MA elaborates proposals for project areas (districts in the residential complexes) for implementation on the Municipality territory of investment projects for residential buildings renovation; assigns projects by means of competition; finances the project implementation and is responsible for spending the State subsidy for every specific project</p>		
ENERGY EFFICIENCY MEASURES ADDRESSED		
x All		
QUALITY REQUIREMENTS		
PEOPLE	PRODUCTS	CONTROL/ INSPECTION
<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary	<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary	<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary
TYPE OF RENOVATION		
<input type="checkbox"/> Private Housing.	<input type="checkbox"/> Social Housing.	<input type="checkbox"/> Minor renovation
		<input checked="" type="checkbox"/> Major renovation
Tools/mechanisms for COMMUNICATION/EDUCATION		
The customer is also provided with: N.A.		
SUCCESS INDICATORS		
N.A.		
STAKEHOLDERS' PARTICIPATION		
Inter-Administrative Working Group (Key National Administrations and NGOs, Professional Chambers and Housing Associations: 5 meetings / 2010		
WEBSITES		
http://www.mrrb.government.bg , http://www.SEEA.government.bg		

Best Practice for Quality in the supply chain		4
NAME OF THE TOOL	COUNTRY	LEVEL
Low Carbon Modernisation of Buildings Programme (KfW) – construction supervision	Germany (DE)	<input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local
RELATED NATIONAL PROGRAM	VALIDITY PERIOD	
<i>Low Carbon Modernisation of Buildings Programme (KfW)</i>	From 2001	
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
<input type="checkbox"/> Decision makers <input checked="" type="checkbox"/> Ownership <input checked="" type="checkbox"/> Agencies and Professionals <input checked="" type="checkbox"/> Trades people <input type="checkbox"/> Managers <input type="checkbox"/> Investors	<input type="checkbox"/> Communication <input type="checkbox"/> Participation <input type="checkbox"/> Education <input checked="" type="checkbox"/> Incentives	
DESCRIPTION		
KfW offers financial incentive (1.000 €) for construction supervision of major renovations to reduce energy consumption in residential buildings to ensure quality on the construction site. A short Guideline is available on the web (in German).		
ENERGY EFFICIENCY MEASURES ADDRESSED		
x All		
QUALITY REQUIREMENTS		
PEOPLE	PRODUCTS	CONTROL/ INSPECTION
<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary
Only architects and engineers who meet minimum requirements (Energy consultants listed in the register of the Federal Office of Economics and Export Control or authorized issuers according to the German Energy Saving Directive 2009) concerning their qualification may carry out the supervision.	- Planning of special building details such as for a ventilation system or the heating system - Controlling the contract specifications - Control of invoices, only	- On-site building inspection before the plastering including inspection of thermal bridges, realization of ventilation and air-tightness concept as well as blower-door-test. - Control and supervision of handover of building services plus hydraulic alignment
TYPE OF RENOVATION		
<input checked="" type="checkbox"/> Private Housing.	<input type="checkbox"/> Social Housing.	<input type="checkbox"/> Minor renovation <input checked="" type="checkbox"/> Major renovation
Tools/mechanisms for COMMUNICATION/EDUCATION		
The customer is also provided with: <input checked="" type="checkbox"/> Technical advice (guidelines/factsheets on advantages of partial or complete renovation, information on cost effectiveness, etc.) <input checked="" type="checkbox"/> Information to lists of accredited and qualified trades people (installers, contractors), labelled products and processes, maintenance and user guidelines <input checked="" type="checkbox"/> Reference to minimum mandatory requirements for mandatory measures <input checked="" type="checkbox"/> Reference to minimum voluntary requirements for voluntary measures		
SUCCESS INDICATORS		
<input checked="" type="checkbox"/> Average bill savings <input checked="" type="checkbox"/> Awareness level <input checked="" type="checkbox"/> Conformance to standards requirement <input checked="" type="checkbox"/> Cost effectiveness <input checked="" type="checkbox"/> Energy savings <input checked="" type="checkbox"/> GHGs emissions reduction (CO2 emission reduction) <input checked="" type="checkbox"/> High quality of workmanship	<input checked="" type="checkbox"/> Image <input checked="" type="checkbox"/> Investment acceleration ratio <input checked="" type="checkbox"/> Market development <input checked="" type="checkbox"/> Overall costs for owner <input checked="" type="checkbox"/> Quote of consultancies/realizations <input checked="" type="checkbox"/> Ratio submitted/paid grants <input checked="" type="checkbox"/> Reduction of power demand unit	

WEBSITES
http://www.kfw-foerderbank.de/DE_Home/KfW-Formul26/PDFDokumente/6000001641_M_431_EES_Sonderfoerderung.pdf http://www.kfw.de/DE_Home/Research/Evaluationen/PDF-Dokumente_Evaluationen/Gutachten_Effekte_des_CO2-Gebaeudesanierungsprogramms_2008_2.pdf

Best Practice for Quality in the supply chain		5
NAME OF THE TOOL	COUNTRY	LEVEL
ITACA Protocol	Italy (IT)	<input type="checkbox"/> National <input checked="" type="checkbox"/> Regional <input type="checkbox"/> Local
RELATED NATIONAL PROGRAM	VALIDITY PERIOD	
<i>(Conference of Regions and Autonomous provinces)</i>	From 2004	
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
<input checked="" type="checkbox"/> Decision makers <input checked="" type="checkbox"/> Ownership <input checked="" type="checkbox"/> Agencies and Professionals <input checked="" type="checkbox"/> Trades people <input checked="" type="checkbox"/> Managers <input checked="" type="checkbox"/> Investors	<input checked="" type="checkbox"/> Communication <input checked="" type="checkbox"/> Participation <input checked="" type="checkbox"/> Education <input type="checkbox"/> Incentives	
DESCRIPTION		
<p>The ITACA Protocol, "Standards for Sustainable Building", is an energy-environmental certification tool including quality of the building and building components. So far it has been integrated within the EPBD implementation system in region Marche, Basilicata, Friuli Venezia Giulia, Lazio, Puglia, Toscana. Moreover 13 regions (of the 20 in Italy) use it for assess the building at design stage (competitions, call for tenders for residential public building mainly). The ITACA certification allows benefits as incentives for renovation and urbanization burden reduction, volumetric bonuses, controlled loans (for new buildings mainly). Since 2007 the Conference of Regions and Autonomous Provinces has approved the draft regional law that refers to the protocol, as a common reference for regions to take up shared actions and initiatives in:</p> <ul style="list-style-type: none"> • defining and developing procedure for the management and / or award of contracts including quality systems inspired by EN ISO; • Promoting and disseminating good sustainability practices in services, supplies and public works; • To use eco-friendly, certificated building materials. <p>The final certification of sustainability also internationally recognized: iiSBE (Italy) established a written agreement with ITACA in order to support the Italian Regions to define and apply the assessment and certification system.</p> <p>The Federal activity is carried out through committees and working groups made of various stakeholders, regional technicians and representatives of local governments. This has allowed comparison and sharing of projects results.</p>		
ENERGY EFFICIENCY MEASURES ADDRESSED		
x All		
QUALITY REQUIREMENTS		
PEOPLE	PRODUCTS	CONTROL/ INSPECTION
<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary	<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary	<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary
An Accreditation Scheme guarantees Evaluating Team's competences. The training process of the evaluation team is designed in order to develop and maintain the competences and practice since it includes periodic requalification process	The tool allocates a score of eco-sustainability and provides a set of requirements with minimum thresholds. Performance and characteristic parameters of particular aspects are contained in nearly 100 factsheets. Credits are assigned for 12 criteria divided in 2 evaluation areas: Sources consumption (winter energy and summer consumption, sanitary hot water, natural lighting, electric energy from re, eco-friendly materials, drinking water, maintenance) and Environmental loads (carbon	An independent Certification Body performs the assessment process of sustainable built environment evaluation and registers the audited buildings. An auto-evaluation from the designing group is validated by a certification body (as ICMQ) through accredited auditors. The final certificate "ITACA Protocol" is issued by the SB Council (SBC,

	emissions, solid waste, liquid waste, soil permeability). The evaluation process ends up with a rating of the performance of the building, so providing a common base of reference for all stakeholders, such as decision makers, professionals, owners, trades-people, investors. Zero rating represents the minimum acceptable performance in compliance with Italian technical standards and legislation. 3 represents the best available constructive practice, 5 the excellence).	sustainable Building Alliance made of iiSBE, Italian Regions, a Bank, several building research institute, the Italian national association of builders that manages the Protocol ITACA, coming from a simplification of the SBC tool)
TYPE OF RENOVATION		
<input type="checkbox"/> Private Housing.	<input checked="" type="checkbox"/> Social Housing.	<input type="checkbox"/> Minor renovation <input checked="" type="checkbox"/> Major renovation
Tools/mechanisms for COMMUNICATION/EDUCATION		
<p>The customer is also provided with:</p> <ul style="list-style-type: none"> x How to access incentives and associated technical procedures x Technical advice (guidelines/factsheets on advantages of partial or complete renovation, information on cost effectiveness of measures, etc.) x Models for contracts, codes of conduct, assurances for trades-people x Reference to minimum mandatory requirements for mandatory measures x Reference to minimum voluntary requirements for voluntary measures x Other information provided to the customer 		
SUCCESS INDICATORS		
<ul style="list-style-type: none"> x Awareness level x Conformance to standards requirement x Ecological effect unit x Energy savings x GHGs emissions reduction (CO2 emission reduction) 		
STAKEHOLDERS' PARTICIPATION		
The Federal activity is carried out through committees and working groups made of various stakeholders, regional technicians and representatives of local governments. Frequency: N.A:		
WEBSITES		
http://www.itaca.org/ http://www.icmq.it/en/buildings_itaca.php		

Best Practice for Quality in the supply chain		6
NAME OF THE TOOL	COUNTRY	LEVEL
<i>Act on support for thermal refurbishment and renovations</i>	Poland (PL)	<input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local
RELATED NATIONAL PROGRAM	VALIDITY PERIOD	
<i>Act on support for thermal refurbishment and renovations (for buildings, local heat sources and local DH distribution networks)</i>	1999 – (2008 – amended)	
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Decision makers <input checked="" type="checkbox"/> Ownership <input checked="" type="checkbox"/> Agencies and Professionals <input type="checkbox"/> Trades people <input checked="" type="checkbox"/> Managers <input checked="" type="checkbox"/> Investors 	<ul style="list-style-type: none"> <input type="checkbox"/> Communication <input checked="" type="checkbox"/> Participation <input checked="" type="checkbox"/> Education <input checked="" type="checkbox"/> Incentives 	
DESCRIPTION		
<p>The scheme is based on the act as well as on specific technical requirements for energy audits and its verification precisely defined in adequate ordinances. The scheme is based on special credits given by commercial banks and provides incentive for each investment in the form of financial premium paid the Bank of National Economy. Thermal Renovation of buildings (housing, public, and service), local DH distribution networks and local DH boiler stations have to be optimised and in all cases calculated</p>		

and confirmed by an energy audit performed ahead. Some minimum energy consumption reduction levels (depending on type and scope of investment) have to be achieved and additional energy efficiency economical efficiency requirements have to be met. Economical efficiency requirements concern maximum amount of commercial credit can taken for investment and depending on it amount of premium grant paid from state budget. The amount of premium grant also depends on the annual energy cost savings and can not be higher than annual energy cost savings multiplied by two. Also the optimisation of thermal modernisation undertakings (e.g. thickness of additional wall, roof, floor insulation, heat parameters of new windows, etc.) is based on economic criteria covering comparison of investment costs and energy cost savings). The premium is granted after the investment is fully completed according to the energy audit statements. This has to be confirmed and accepted by the professional allowed to pursue independent technical functions in the building industry in the Republic of Poland (according the Building Law) that investment is made in accordance with specific regulations from Polish Building Law. The Building Law regulates almost all questions regarding quality assurance for construction and installation works as well as for materials and all building components allowed to be used on Polish commercial construction market by obtaining technical approval documents. According to the act, the buildings, after thermal refurbishment process is performed, have to meet more restrictive partial energy efficiency requirements than requirements for new buildings stated in Building Law. The system is regularly controlled by Polish Supreme Chamber of Control which checks formal and administrative questions related operation of the scheme but also the quality of energy audits and compliance of construction works with the statements of energy audits. It is statistical verification because only statistically chosen part of audits and investments (less than 1%) are deeply controlled and verified. There are no specific regular feedback mechanisms implemented and there is also no monitoring schemes introduced for energy and CO2 results. Other checks and assessments made by independent organisations and professionals confirmed that energy efficiency effects were in most cases higher than these estimated in energy audits. All energy audits are verified by The Bank of National Economy (BNE) before the premium (as a part of commercial credit repayment) is granted. BNE is obliged to keep the data base for all energy audits approved and granted by premium.

ENERGY EFFICIENCY MEASURES ADDRESSED							
<input checked="" type="checkbox"/> Thermal insulation	<input checked="" type="checkbox"/> Windows	<input checked="" type="checkbox"/> HVAC Systems	<input checked="" type="checkbox"/> Others (e.g. Renewable Energy Systems):				
QUALITY REQUIREMENTS							
PEOPLE		PRODUCTS		CONTROL/ INSPECTION			
<input type="checkbox"/> Mandatory	<input checked="" type="checkbox"/> Voluntary	<input type="checkbox"/> Mandatory	<input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory	<input type="checkbox"/> Voluntary		
TYPE OF RENOVATION							
<input checked="" type="checkbox"/> Private Housing.		<input checked="" type="checkbox"/> Social Housing.		<input checked="" type="checkbox"/> Minor renovation		<input checked="" type="checkbox"/> Major renovation	
Tools/mechanisms for COMMUNICATION/EDUCATION							
The customer is also provided with: <input checked="" type="checkbox"/> How to get energy audits <input checked="" type="checkbox"/> How to access incentives and associated technical procedures <input checked="" type="checkbox"/> Technical advice (guidelines/factsheets on advantages of partial or complete renovation, information on cost effectiveness of measures, etc.)							
SUCCESS INDICATORS							
<input checked="" type="checkbox"/> Conformance to standards requirement		<input checked="" type="checkbox"/> Investment acceleration ratio		<input checked="" type="checkbox"/> Efficiency of use of public money		<input checked="" type="checkbox"/> Public cost	
<input checked="" type="checkbox"/> Energy savings		<input checked="" type="checkbox"/> Reduction of power demand unit					
STAKEHOLDERS' PARTICIPATION							
Forum of energy Auditors (Energy Auditors and governmental administrators): Once a year							
WEBSITES							
http://www.bgk.com.pl							

Best Practice for Quality in the supply chain		7
NAME OF THE TOOL	COUNTRY	LEVEL
State Grants for Partial Repayment of Solar Collectors	Poland (PL)	<input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local
RELATED NATIONAL PROGRAM	VALIDITY PERIOD	
<i>Grants for partial repayment of loan for solar collectors</i>	From 2010	
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
<input type="checkbox"/> Decision makers <input checked="" type="checkbox"/> Ownership <input checked="" type="checkbox"/> Agencies and Professionals	<input type="checkbox"/> Trades people <input checked="" type="checkbox"/> Managers <input checked="" type="checkbox"/> Investors	<input type="checkbox"/> Communication <input type="checkbox"/> Participation <input type="checkbox"/> Education <input checked="" type="checkbox"/> Incentives
DESCRIPTION		
<p>The National Fund's money derive from the following sources: fees paid for use of the environment for economic activity, penalties paid for violation of the ecological law - which is closely connected with the Environmental Protection Law; utilization and concession fees collected under the Geological and Mining Law, fees determined under the Water Management Law, and also the act on recycling of decommissioned vehicles.</p> <p>Since co-financing mostly takes the form of loans, the National Fund constitutes a "renewable source of financing" for environmental protection projects. In 2010 top priority has been given to investments related to improving energy efficiency in public buildings and using renewable energy sources. Grants for partial repayment of loan for solar collectors pays 45% of the loan taken in commercial bank cooperating with National Fund. Loan is taken for purchase and installation of collectors for the residential purpose.</p>		
ENERGY EFFICIENCY MEASURES ADDRESSED		
<input checked="" type="checkbox"/> HVAC Systems <input checked="" type="checkbox"/> Others (Solar Collectors)		
QUALITY REQUIREMENTS		
PEOPLE	PRODUCTS	CONTROL/ INSPECTION
<input type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary
-	Solar collectors used for realization of the whole installation within this scheme have to fulfil at least quality requirements for solar heating installations defined in Polish standard PN EN-12975-2, confirmed by accredited research laboratory and have adequate certificate awarded by the accredited certifying unit or have to have EU certificate "SOLAR KEYMARK" awarded by the EU accredited certifying unit.	When the whole solar heating installation is completed, its compliance with quality requirements and specific technical law regulations must be confirmed by the inspector which is certified based on Building Law and is associated in Regional Chambers of Construction Engineers.
TYPE OF RENOVATION		
<input checked="" type="checkbox"/> Private Housing.	<input checked="" type="checkbox"/> Social Housing.	<input checked="" type="checkbox"/> Minor renovation <input checked="" type="checkbox"/> Major renovation
Tools/mechanisms for COMMUNICATION/EDUCATION		
<p>The customer is also provided with:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> How to access incentives and associated technical procedures <input checked="" type="checkbox"/> Technical advice (guidelines/factsheets on advantages of partial or complete renovation, information on cost effectiveness of measures, etc.) <input checked="" type="checkbox"/> Models for contracts and agreements for the different actors involved 		

SUCCESS INDICATORS	
x Conformance to standards requirement x Energy savings	x GHGs emissions reduction (CO2 emission reduction)
STAKEHOLDERS' PARTICIPATION	
Information events: All stakeholders participate 1-2/times per year	
WEBSITES	
http://www.nfosigw.gov.pl	

Best Practice for Quality in the supply chain		8
NAME OF THE TOOL	COUNTRY	LEVEL
<i>Renewables in time</i>	Portugal (PT)	x National _ Regional _ Local
RELATED NATIONAL PROGRAM	VALIDITY PERIOD	
<i>National Plan for Energy Efficiency</i>	2008 - 2023	
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
x Decision makers x Ownership x Agencies and Professionals x Trades people x Managers x Investors	x Communication x Participation _ Education x Incentives	
DESCRIPTION		
<p>Microproduction of electricity became effective on April, 2008, covering renewable energy sources as solar, wind, hydro, biomass, and fuel cells using hydrogen from renewable energy micro-production and cogeneration.</p> <p>The legislation provides a simplified licensing process, subject to technical compliance inspection, for any involved player with a contract for purchasing low-voltage electricity (the producers register their installations through an electronic platform).</p> <p>All the installations have an engineer responsible for the system. After the realisation of the installation, the technical compliance is carried out with the presence of the engineer responsible for the system and an engineer from the regional entity responsible for the inspection of the electrical installations. If everything is ok, this entity delivers a compliance certificate. There are not specific requirements for the Technicians that make the installation. All the products have to comply with the low voltage directive (Decree law 7/2008 from 10th January). All products must have EC label. The inverter must have a certificate issued through the standards EN50438 and DIN VDE0126-1-1. The micro-generation installations are limited to half of the installed rate power in the households, with a maximum limit of 5,75 kW in the general regime and 3,68 kW in the improved regime (except in the case of installations for condominiums).</p>		
ENERGY EFFICIENCY MEASURES ADDRESSED		
x Others (Renewable Energy Systems)		
QUALITY REQUIREMENTS		
PEOPLE	PRODUCTS	CONTROL/ INSPECTION
x Mandatory _ Voluntary	x Mandatory _ Voluntary	x Mandatory _ Voluntary
The company that makes the installation must have at least one technician with recognized technical capabilities in accordance with the stipulations in a decree law. The project of the installation	All the products have to be certified with CE label.	The companies that make the control inspections have to be certified by the national directorate for energy. The control inspection must be carried out on, at least, 1% of the installations

has to be made by an engineer			
TYPE OF RENOVATION			
<input checked="" type="checkbox"/> Private Housing.	<input checked="" type="checkbox"/> Social Housing.	<input type="checkbox"/> Minor renovation	<input type="checkbox"/> Major renovation
Tools/mechanisms for COMMUNICATION/EDUCATION			
The customer is also provided with:			
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> How to access incentives and associated technical procedures <input checked="" type="checkbox"/> Technical advice (guidelines/factsheets on advantages of partial or complete renovation, cost effectiveness of measures, etc.) <input checked="" type="checkbox"/> Information to lists of accredited and qualified trades people (installers, contractors), labelled products and processes, etc. <input checked="" type="checkbox"/> Models for contracts, codes of conduct, assurances for trades-people <input checked="" type="checkbox"/> Reference to minimum mandatory requirements for mandatory measures 			
The trades involved in the renovation supply chain are also provided with:			
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Simple guides, factsheets, manuals for execution 			
SUCCESS INDICATORS			
<input checked="" type="checkbox"/> Contracted power	<input checked="" type="checkbox"/> Ecological effect unit	<input checked="" type="checkbox"/> Energy savings	<input checked="" type="checkbox"/> Installed surface (collectors, PV) <input checked="" type="checkbox"/> Number of installations <input checked="" type="checkbox"/> Public cost
STAKEHOLDERS' PARTICIPATION			
N.A.			
WEBSITES			
http://www.renovaveisnagrada.pt			

Best Practice for Quality in the supply chain		9
NAME OF THE TOOL	COUNTRY	LEVEL
<i>Licensing scheme for thermal insulation of buildings (TSÚS)</i>	Slovakia (SK)	<input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local
RELATED NATIONAL PROGRAM	VALIDITY PERIOD	
<i>Licensing scheme for thermal insulation of buildings (TSÚS) (ETICS, roof)</i>	2009	
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Decision makers <input checked="" type="checkbox"/> Ownership <input checked="" type="checkbox"/> Agencies and Professionals 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Trades people <input checked="" type="checkbox"/> Managers <input checked="" type="checkbox"/> Investors 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Communication <input checked="" type="checkbox"/> Participation <input type="checkbox"/> Education <input type="checkbox"/> Incentives
DESCRIPTION		
<p>Building Testing and Research Institute (TSÚS) gives a licence to construction companies installing the ETICS for performing of thermal insulation work with particular ETICS. Construction company demonstrate by licence that is able to perform such kind of work, that their quality connected with the certified components of ETICS guarantees design parameters and lifetime of installed thermal insulation system. The licences are based on certified thermal insulation system components, inspection mechanism is based on internal rules of accredited inspection body of TSÚS which is able to remove the licence and remove the company from the list of licensed companies. The company is obliged to report realized buildings. There is a methodology and defined construction approaches for performing quality work which have to be fulfilled. The list of licensed companies a licensed ETICS components are published on TSUS website.</p>		
ENERGY EFFICIENCY MEASURES ADDRESSED		
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Thermal insulation 		

QUALITY REQUIREMENTS					
PEOPLE		PRODUCTS		CONTROL/ INSPECTION	
<input checked="" type="checkbox"/> Mandatory	<input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory	<input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory	<input type="checkbox"/> Voluntary
TYPE OF RENOVATION					
<input checked="" type="checkbox"/> Private Housing.	<input checked="" type="checkbox"/> Social Housing.	<input checked="" type="checkbox"/> Minor renovation	<input checked="" type="checkbox"/> Major renovation		
Tools/mechanisms for COMMUNICATION/EDUCATION					
<p>The customer is also provided with:</p> <p><input checked="" type="checkbox"/> Information to lists of accredited and qualified trades people (installers, contractors), labelled products and processes, maintenance and user guidelines</p> <p>The trades involved in the renovation supply chain are also provided with:</p> <p><input checked="" type="checkbox"/> Simple guides, factsheets, manuals for execution</p>					
SUCCESS INDICATORS					
<input checked="" type="checkbox"/> Appreciation of target groups (feedback available)					
STAKEHOLDERS' PARTICIPATION					
In general, approximately 15 – 30 different events organized yearly with different stakeholders' participation					
WEBSITES					
http://www.tsus.sk/					

Best Practice for Quality in the supply chain		10
NAME OF THE TOOL	COUNTRY	LEVEL
<i>Cavity Insulation Guarantee Agency</i>	United Kingdom (UK)	<input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local
RELATED NATIONAL PROGRAM	VALIDITY PERIOD	
-	-	
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
<input type="checkbox"/> Decision makers <input type="checkbox"/> Ownership <input type="checkbox"/> Agencies and Professionals	<input checked="" type="checkbox"/> Trades people <input type="checkbox"/> Managers <input type="checkbox"/> Investors	<input checked="" type="checkbox"/> Communication <input type="checkbox"/> Participation <input checked="" type="checkbox"/> Education <input type="checkbox"/> Incentives
DESCRIPTION		
<p>The Cavity Insulation Guarantee Agency was established in consultation with the Government's Energy, Environment and Waste Directorate (a division of DETR) to provide householders with an independent, uniform and dependable guarantee covering defects in materials and workmanship. They provide independent 25 year guarantees for Cavity Wall Insulation fitted by registered installers in the UK and Channel islands. It is governed by a council of "System Designers" (who supply the insulation material) and registered installers, with support from trade associations and Government bodies. Before installation begins, a CIGA registered installer will carry out a pre-installation assessment to ensure that the property is suitable for Cavity Wall Insulation. The installation of the insulation will then be completed to stringent technical standards laid down by CIGA.</p> <p>The CIGA website can be used to find registered installers within the consumer's area code.</p>		
ENERGY EFFICIENCY MEASURES ADDRESSED		
<input checked="" type="checkbox"/> Thermal insulation		

QUALITY REQUIREMENTS			
PEOPLE	PRODUCTS		CONTROL/ INSPECTION
<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory	<input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary
TYPE OF RENOVATION			
<input checked="" type="checkbox"/> Private Housing.	<input checked="" type="checkbox"/> Social Housing.	<input checked="" type="checkbox"/> Minor renovation	<input checked="" type="checkbox"/> Major renovation
Tools/mechanisms for COMMUNICATION/EDUCATION			
<p>The customer is also provided with: N.A.</p> <p>The trades involved in the renovation supply chain are also provided with: <input checked="" type="checkbox"/> Simple guides, factsheets, manuals for execution</p>			
SUCCESS INDICATORS			
<input checked="" type="checkbox"/> High quality of workmanship			
WEBSITES			
http://www.ciga.co.uk/			

Best Practice for Quality in the supply chain		11
NAME OF THE TOOL	COUNTRY	LEVEL
<i>British Board of Agreement</i>	United Kingdom (UK)	<input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local
RELATED NATIONAL PROGRAM	VALIDITY PERIOD	
-	-	
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
<input type="checkbox"/> Decision makers <input type="checkbox"/> Ownership <input type="checkbox"/> Agencies and Professionals	<input checked="" type="checkbox"/> Trades people <input type="checkbox"/> Managers <input type="checkbox"/> Investors	<input checked="" type="checkbox"/> Communication <input type="checkbox"/> Participation <input checked="" type="checkbox"/> Education <input type="checkbox"/> Incentives
DESCRIPTION		
<p>The BBA is the UK's major authority offering approval of construction products, systems and installers. The BBA's role is to protect the consumer by providing reassurance to users through issuing Agreement Certificates to manufacturers of construction products and systems and assessing the competency of the installers. Consumers can use the Certificate and Installer Search to find details of BBA approved products and installers. It runs a injected cavity wall insulation approved installer scheme. BBA Approved Installers are under regular surveillance and assessment and there is a regular Review process. The BBA recognises the increasing awareness of environmental issues within the construction industry, including increasing legislation, a demand for independent and authoritative confirmation of manufacturers' claims and declarations of environmental performance of products. In response to this, the BBA is expanding its environmental activities:</p> <p>BBA Environmental Profile Certification: this consists of environmental certification of construction products that allocates eco-points per functional unit of a building element.</p> <p>Microgeneration: the Microgeneration Certification Scheme (MCS), was introduced by the Government to independently certify renewable energy technologies, microgeneration products and installers in accordance with documented standards. The BBA offers the MCS Certification service to both product manufacturers and installers of Solar Heating Collectors (thermal solar systems), Solar PV (photovoltaics), Micro and Small Wind Turbines, Heat Pumps and Biomass technologies. To gain MCS certification, manufacturers must demonstrate to the Certification body that their product meets the requirements of the relevant performance standard and an examination of their manufacturing processes. Installers undergo both an office</p>		

inspection, to evaluate the technical competence of their staff, confirmation of training requirements and record keeping and a witnessed installation in progress. Successful completion of either process allows the manufacturer or installer use of the scheme logo and listing on both the MCS and BBA websites.

ENERGY EFFICIENCY MEASURES ADDRESSED		
<input checked="" type="checkbox"/> All <input checked="" type="checkbox"/> Others (Renewable Energy Systems, micro-generation)		
QUALITY REQUIREMENTS		
PEOPLE	PRODUCTS	CONTROL/ INSPECTION
<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary
TYPE OF RENOVATION		
<input checked="" type="checkbox"/> Private Housing.	<input checked="" type="checkbox"/> Social Housing.	<input checked="" type="checkbox"/> Minor renovation
<input checked="" type="checkbox"/> Major renovation		
SUCCESS INDICATORS		
<input checked="" type="checkbox"/> Conformance to standards requirements		
WEBSITES		
http://www.bbacerts.co.uk/		

Best Practices for Quality in the supply chain		12
NAMES OF THE TOOLS	COUNTRY	LEVEL
Trustmark & Federation of Master Builders	United Kingdom (UK)	<input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
<input checked="" type="checkbox"/> Decision makers <input checked="" type="checkbox"/> Ownership <input checked="" type="checkbox"/> Agencies and Professionals	<input checked="" type="checkbox"/> Trades people <input type="checkbox"/> Managers <input checked="" type="checkbox"/> Investors	<input checked="" type="checkbox"/> Communication <input type="checkbox"/> Participation <input checked="" type="checkbox"/> Education <input type="checkbox"/> Incentives
DESCRIPTION		
<p>TrustMark is a quality mark which operates a framework under which 30 plus scheme operators work in the RMI (repair, maintenance and improvement) sector, including trade associations, local government trading standards teams, and independent scheme operators. These schemes are approved to carry the TrustMark logo and recruit reputable and trustworthy tradesmen. This enables the TrustMark scheme operators to promote improved RMI sector standards, and tackle related issues such as better enforcement. All of these scheme operators are audited annually by TrustMark, to ensure processes, standards and complaint procedures are being maintained.</p> <p>Trustmark mechanism:</p> <ul style="list-style-type: none"> • A firm's technical skills are independently checked through regular on-site inspections, as well as checks on their trading record and financial status; • Firms have to sign up to a code of practice that includes insurance, good health and safety practices and customer care; • The approved scheme operator has checked and will continue to monitor the firm's quality of work, trading practices and customer satisfaction; • Firms are able to offer an Insurance Backed Warranty; • Deposit Protection Insurance is available for consumers in the event a firm should cease trading; • If there are any problems or disagreement with the firm, there will be a user-friendly complaints procedure. <p>The scheme is fully supported by Government, the building industry and consumer protection groups</p> <p>The Federation of Master Builders is a trade association established over 60 years ago to protect the interests of small and medium-sized building firms and to promote professionalism and high quality workmanship. It is the largest trade association in</p>		

the UK building industry, with around 12,000 members. There are 3 levels of membership: FMB & National Register of Warranted Builders (NRWB) – part of the Trustmark scheme, FMB and Affiliate.

The first is the hardest to achieve, and requires being able to offer Masterbond Insurance (this tells clients that the company has been inspected and approved for quality standards and undergoes regular performance checks throughout your membership), the Trustmark license, and 3 years trading and accounts (among other things). All levels require signing the FMB Code of Practice (which covers transparency in quotations and contracts, communication, guarantees that are offered are given in writing, communication throughout the project etc), and being covered by the FMB’s Dispute Resolution and Complaints Procedure.

ENERGY EFFICIENCY MEASURES ADDRESSED			
x All			
QUALITY REQUIREMENTS			
PEOPLE	PRODUCTS	CONTROL/ INSPECTION	
x Mandatory _ Voluntary	x Mandatory _ Voluntary	x Mandatory _ Voluntary	
TYPE OF RENOVATION			
x Private Housing.	x Social Housing.	x Minor renovation	x Major renovation
SUCCESS INDICATORS			
x High quality of workmanship			
WEBSITES			
http://www.trustmark.org.uk/			

Best Practice for Quality in the supply chain		13
NAME OF THE TOOL	COUNTRY	LEVEL
CORGI	United Kingdom (UK)	x National _ Regional _ Local
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
_ Decision makers _ Ownership _ Agencies and Professionals	x Trades people _ Managers _ Investors	x Communication _ Participation x Education _ Incentives
DESCRIPTION		
<p>The CORGI brand is known by 8 out of 10 people in the UK, and historically has stood for safety, expertise and trust. Born out of the Gas Board as a membership of leading gas installers. CORGI went on to run the mandatory gas scheme for government for many years. Although best known as the gas scheme registrar, CORGI has offered other products and services into the heating industry for many years. Gas installers have been able to obtain technical manuals, books, magazines, warning labels, tools and insurance as well as attend specific exhibitions and events from CORGI. Today CORGI continues to support its members and to promote them to homeowners through the addition of a new quality-based membership. The CORGI team provides an enviable mix of world-leading technical expertise and support for its members, years of experience running registration schemes, national sales and marketing functions as well as the ability to broker and deliver a wide range of affinity products and services into the heating industry.</p> <p>CORGI is committed to supporting the gas expert, both in making their jobs easier and in ensuring the general public are properly informed and able to get a quality gas installer when they need one.</p>		
ENERGY EFFICIENCY MEASURES ADDRESSED		
x HVAC Systems	x Gas installations	

QUALITY REQUIREMENTS			
PEOPLE	PRODUCTS		CONTROL/ INSPECTION
<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary		<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary
TYPE OF RENOVATION			
<input checked="" type="checkbox"/> Private Housing.	<input checked="" type="checkbox"/> Social Housing.	<input checked="" type="checkbox"/> Minor renovation	<input checked="" type="checkbox"/> Major renovation
Tools/mechanisms for COMMUNICATION/EDUCATION			
<p>The customer is also provided with:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Other self-assessment tools (e.g. check lists on age/maintenance of buildings components, visual check, fault detection, etc.) <input checked="" type="checkbox"/> Models for contracts, codes of conduct, assurances for trades-people <p>The trades involved in the renovation supply chain are also provided with:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Simple guides, factsheets, manuals for execution 			
SUCCESS INDICATORS			
<input checked="" type="checkbox"/> High quality of workmanship			
WEBSITES			
http://www.trustcorgi.com/Pages/default.aspx			

Best Practice for Quality in the supply chain		14	
NAME OF THE TOOL		LEVEL	
ELECSA		<input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local	
STAKEHOLDERS INVOLVED		KEY AREAS - OBJECTIVE	
<input type="checkbox"/> Decision makers <input type="checkbox"/> Ownership <input type="checkbox"/> Agencies and Professionals	<input checked="" type="checkbox"/> Trades people <input type="checkbox"/> Managers <input type="checkbox"/> Investors	<input checked="" type="checkbox"/> Communication <input type="checkbox"/> Participation <input checked="" type="checkbox"/> Education <input type="checkbox"/> Incentives	
DESCRIPTION			
<p>ELECSA provides inspection, assessment and certification services to contractors working with electrical installations in private dwellings. ELECSA is authorised by Communities and Local Government to deliver a competent persons scheme to enable contractors to self certify domestic electrical work under Part P of the building regulations. The scheme has also recently been awarded UKAS accreditation, which means that contractors can be assured of a consistent, objective and fair assessment with ELECSA. ELECSA's core principle is to operate a straightforward certification scheme that provides a friendly and easy to use service. Approved contractors on the ELECSA scheme enjoy the benefits of being with a scheme that is run by electricians.</p>			
ENERGY EFFICIENCY MEASURES ADDRESSED			
<input checked="" type="checkbox"/> Electrical installations			
QUALITY REQUIREMENTS			
PEOPLE	PRODUCTS		CONTROL/ INSPECTION
<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary		<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary
TYPE OF RENOVATION			
<input checked="" type="checkbox"/> Private Housing.	<input type="checkbox"/> Social Housing.	<input type="checkbox"/> Minor renovation	<input type="checkbox"/> Major renovation

Tools/mechanisms for COMMUNICATION/EDUCATION
<p>The customer is also provided with:</p> <ul style="list-style-type: none"> x Other self-assessment tools (e.g. check lists on age/maintenance of buildings components, visual check, fault detection, etc.) x Models for contracts, codes of conduct, assurances for trades-people
SUCCESS INDICATORS
<ul style="list-style-type: none"> x Conformance to standard requirements
WEBSITES
http://www.elecsa.co.uk/

Best Practice for Quality in the supply chain		15
NAME OF THE TOOL	COUNTRY	LEVEL
NICEIC	United Kingdom (UK)	<ul style="list-style-type: none"> x National _ Regional _ Local
RELATED NATIONAL PROGRAM	VALIDITY PERIOD	
-	-	
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
<ul style="list-style-type: none"> _ Decision makers _ Ownership _ Agencies and Professionals 	<ul style="list-style-type: none"> x Trades people _ Managers _ Investors 	<ul style="list-style-type: none"> x Communication _ Participation x Education _ Incentives
DESCRIPTION		
<p>NICEIC is the UK electrical contracting industry's independent voluntary body. We offer leading certification services, Building Regulations Schemes, products and support to electrical contractors and many other trades within the construction industry. Over 25,000 contractors are registered with us and take advantage of our products and services.</p> <ul style="list-style-type: none"> • Listing on the NICEIC Roll of Approved Contractors • Competent Persons Schemes, including Part P • Industry recognised training • Unrivalled technical support • DVDs and publications • Contractor insurance • Customer and industry support • Products including test equipment, tool bags and certificates. <p>NICEIC registration not only demonstrates to customers and specifiers your skills and professionalism, it also gives you peace of mind that our products and services are the best in the industry.</p>		
ENERGY EFFICIENCY MEASURES ADDRESSED		
<ul style="list-style-type: none"> x Electrical installations 		
QUALITY REQUIREMENTS		
PEOPLE	PRODUCTS	CONTROL/ INSPECTION
<ul style="list-style-type: none"> x Mandatory _ Voluntary 	<ul style="list-style-type: none"> x Mandatory _ Voluntary 	<ul style="list-style-type: none"> x Mandatory _ Voluntary
TYPE OF RENOVATION		
<ul style="list-style-type: none"> x Private Housing. 	<ul style="list-style-type: none"> X Social Housing. 	<ul style="list-style-type: none"> X Minor renovation x Major renovation

Tools/mechanisms for COMMUNICATION/EDUCATION
<p>The customer is also provided with:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Other self-assessment tools (e.g. check lists on age/maintenance of buildings components, visual check, fault detection, etc.) <input checked="" type="checkbox"/> Models for contracts, codes of conduct, assurances for trades-people <p>The trades involved in the renovation supply chain are also provided with:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Simple guides, factsheets, manuals for execution
SUCCESS INDICATORS
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Conformance to standards requirements
WEBSITES
http://niceic.com/

Best Practice for Quality in the supply chain		16
NAME OF THE TOOL	COUNTRY	LEVEL
HETAS	United Kingdom (UK)	<input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
<ul style="list-style-type: none"> <input type="checkbox"/> Decision makers <input type="checkbox"/> Ownership <input checked="" type="checkbox"/> Agencies and Professionals 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Trades people <input type="checkbox"/> Managers <input type="checkbox"/> Investors 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Communication <input type="checkbox"/> Participation <input checked="" type="checkbox"/> Education <input type="checkbox"/> Incentives
DESCRIPTION		
<p>HETAS is the official body recognised by Government to approve solid fuel domestic heating appliances, fuels and services including the registration of competent installers and servicing businesses. Its work in approving products covers boilers, cookers, open fires and stoves and room-heaters. It also lists in its Official Guide, factory made chimneys and carbon monoxide detectors and alarms suitable for use with solid fuel.</p> <p>HETAS collaborates with the National Association of Chimney Sweeps (NACS) (http://www.chimneyworks.co.uk/) in supervising a solid fuel orientated course for chimney sweeps which results in successful candidates being "HETAS Approved". We also work with the Guild of Master Sweeps (GMS); and the Association of Professional and Independent Chimney Sweeps (APICS) HETAS operates a registration scheme for heating engineers with special skills in the installation and maintenance of solid fuel heating systems.</p> <p>One of HETAS' roles is to liaise with industry and we work closely with the National Fireplace Association (NFA) and with the Stove Industry Alliance a manufacturers marketing organisation co-founded by HETAS, SFA and representatives of manufacturers of appliances, chimneys and other products.</p> <p>HETAS represents the industry with Government in matters such as Building Regulations and in the setting of standards both in the UK and Europe where our staff manages and chairs committees drafting new British and European Standards. Its "three tick" Logo is the Approval mark to be looked for in solid fuel domestic heating products and services.</p>		
ENERGY EFFICIENCY MEASURES ADDRESSED		
<input checked="" type="checkbox"/> HVAC Systems	<input checked="" type="checkbox"/> Other: Solid fuel appliances design, installations	
QUALITY REQUIREMENTS		
PEOPLE	PRODUCTS	CONTROL/ INSPECTION
<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary
TYPE OF RENOVATION		
<input checked="" type="checkbox"/> Private Housing.	<input checked="" type="checkbox"/> Social Housing.	<input checked="" type="checkbox"/> Minor renovation <input checked="" type="checkbox"/> Major renovation

Tools/mechanisms for COMMUNICATION/EDUCATION
<p>The customer is also provided with:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Other self-assessment tools (e.g. check lists on age/maintenance of buildings components, visual check, fault detection, etc.) <input checked="" type="checkbox"/> Models for contracts, codes of conduct, assurances for trades-people <p>The trades involved in the renovation supply chain are also provided with:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Simple guides, factsheets, manuals for execution
SUCCESS INDICATORS
<input checked="" type="checkbox"/> Conformance to standards requirements
WEBSITES
http://www.hetas.co.uk/ http://www.hetas.co.uk/page4.html

Best Practice for Quality in the supply chain		17
NAME OF THE TOOL	COUNTRY	LEVEL
<i>Microgeneration certification scheme</i>	United Kingdom (UK)	<input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
<input type="checkbox"/> Decision makers <input type="checkbox"/> Ownership <input type="checkbox"/> Agencies and Professionals	<input checked="" type="checkbox"/> Trades people <input type="checkbox"/> Managers <input type="checkbox"/> Investors	<input checked="" type="checkbox"/> Communication <input type="checkbox"/> Participation <input checked="" type="checkbox"/> Education <input type="checkbox"/> Incentives
DESCRIPTION		
<p>The Microgeneration Certification Scheme (MCS) is an independent scheme that certifies micro generation products and installers in accordance with consistent standards. It is designed to evaluate micro generation products and installers against robust criteria providing greater protection for consumers.</p> <p>The MCS is the only certification scheme to cover all microgeneration products and services, and has support from the Department of Energy and Climate Change, industry and non-governmental groups as a prime method for making a substantial contribution to cutting the UK's dependency on fossil fuels and carbon dioxide emissions.</p>		
ENERGY EFFICIENCY MEASURES ADDRESSED		
<input checked="" type="checkbox"/> HVAC Systems	<input checked="" type="checkbox"/> Other: Microgeneration installations and services	
QUALITY REQUIREMENTS		
PEOPLE	PRODUCTS	CONTROL/ INSPECTION
<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary
TYPE OF RENOVATION		
<input checked="" type="checkbox"/> Private Housing.	<input checked="" type="checkbox"/> Social Housing.	<input checked="" type="checkbox"/> Minor renovation
		<input checked="" type="checkbox"/> Major renovation
Tools/mechanisms for COMMUNICATION/EDUCATION		
N.A.		
SUCCESS INDICATORS		
<input checked="" type="checkbox"/> Conformance to standards requirements		
WEBSITES		
http://www.greenbooklive.com/page.jsp?id=117 http://www.greenbooklive.com/page.jsp?id=118		

Best Practice for Quality in the supply chain		18	
NAME OF THE TOOL	COUNTRY	LEVEL	
<i>Energy Saving Trust Recommended</i>	United Kingdom	<input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local	
RELATED NATIONAL PROGRAM	VALIDITY PERIOD		
<i>EST- Energy Saving Trust</i>	From 1993		
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE		
<input checked="" type="checkbox"/> Decision makers <input checked="" type="checkbox"/> Ownership <input checked="" type="checkbox"/> Agencies and Professionals	<input checked="" type="checkbox"/> Trades people <input type="checkbox"/> Managers <input type="checkbox"/> Investors	<input checked="" type="checkbox"/> Communication <input checked="" type="checkbox"/> Participation <input type="checkbox"/> Education <input checked="" type="checkbox"/> Incentives	
DESCRIPTION			
<p>Energy Saving Trust: Helps people to save energy and reduce carbon emissions by directly supporting consumers to take action through an advice network and website, or indirectly through work with partner organizations. EST also helps local authorities and communities to save energy, and provide quality assurance for goods and services so people know which products will save the most energy. Guidance for housing professionals helps improve the quality of the supply chain.</p> <p>EST recommended products that meet strict criteria on energy efficiency can carry the EST logo. The criteria is set by an independent panel and reviewed annually. It endorses products in categories where there isn't a statutory EU energy label like glazing, televisions and boilers. The idea is that whatever the product, whichever the is a guarantee of energy saving.</p>			
ENERGY EFFICIENCY MEASURES ADDRESSED			
<input checked="" type="checkbox"/> All <input checked="" type="checkbox"/> Others (e.g. Renewable Energy Systems)			
QUALITY REQUIREMENTS			
PEOPLE	PRODUCTS	CONTROL/ INSPECTION	
<input type="checkbox"/> Mandatory <input checked="" type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	
Recommended retailers are indicated on the web, too	Whatever the product with EST LOGO, whichever the is a guarantee of energy saving.	The criteria to be attributed EST LOGO is set by an independent panel and reviewed annually	
TYPE OF RENOVATION			
<input checked="" type="checkbox"/> Private Housing.	<input checked="" type="checkbox"/> Social Housing.	<input checked="" type="checkbox"/> Minor renovation	<input checked="" type="checkbox"/> Major renovation
Tools/mechanisms for COMMUNICATION/EDUCATION			
<p>The customer is also provided with:</p> <input checked="" type="checkbox"/> Free software for simplified audit <input checked="" type="checkbox"/> How to access incentives and associated technical procedures: The Energy Saving Trust has a grants and incentives information database, our advisors will refer people on to insulation schemes in their area. <input checked="" type="checkbox"/> Technical advice: The Energy Saving Trust produces technical information for the housing industry and consumers looking for more detailed information for a wide range of energy efficiency renovations including cost information. <input checked="" type="checkbox"/> Information to lists of accredited and qualified trades people, labelled products: The Energy Saving Trust provides details of how to find accredited installers for energy efficiency and microgeneration measures where such schemes exist. It also runs Energy Saving Trust Recommended (ESTR, formally ESR) for the most energy efficient products. <input checked="" type="checkbox"/> Reference to minimum mandatory requirements: Technical housing guidance meets building regulations. <input checked="" type="checkbox"/> Reference to minimum voluntary requirements			
SUCCESS INDICATORS			
<input checked="" type="checkbox"/> Conformance to standards requirement <input checked="" type="checkbox"/> Energy savings		<input checked="" type="checkbox"/> GHGs emissions reduction (CO2 emission reduction) <input checked="" type="checkbox"/> Number of installations	

WEBSITES
http://www.energysavingtrust.org.uk/ http://www.energysavingtrust.org.uk/Home-improvements-and-products/About-Energy-Saving-Trust-Recommended-products

Best Practice for Quality in the supply chain		19
NAME OF THE TOOL	COUNTRY	LEVEL
<p><i>CROPSSF program</i> <i>List of eligible materials and equipment</i></p>	Croatia (HR)	<input checked="" type="checkbox"/> National <input type="checkbox"/> Regional <input type="checkbox"/> Local
RELATED NATIONAL PROGRAM	VALIDITY PERIOD	
-	2010-2012	
STAKEHOLDERS INVOLVED	KEY AREAS - OBJECTIVE	
<input checked="" type="checkbox"/> Decision makers <input checked="" type="checkbox"/> Ownership <input checked="" type="checkbox"/> Agencies and Professionals	<input checked="" type="checkbox"/> Trades people <input checked="" type="checkbox"/> Managers <input checked="" type="checkbox"/> Investors	<input checked="" type="checkbox"/> Communication <input checked="" type="checkbox"/> Participation <input checked="" type="checkbox"/> Education <input checked="" type="checkbox"/> Incentives
DESCRIPTION		
<p>EBRD financing program through commercial banks in Croatia – currently in development.</p> <p>Program includes technical support to investors and building owners, development of List of eligible materials and equipment, final evaluation of energy consumption and CO2 emissions reduction, incentives for adequate increase in energy efficiency.</p> <p>The program is to be fully implemented by the end of 2010.</p>		
ENERGY EFFICIENCY MEASURES ADDRESSED		
<input checked="" type="checkbox"/> All <input checked="" type="checkbox"/> Others (e.g. Renewable Energy Systems)		
QUALITY REQUIREMENTS		
PEOPLE	PRODUCTS	CONTROL/ INSPECTION
<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary	<input checked="" type="checkbox"/> Mandatory <input type="checkbox"/> Voluntary
TYPE OF RENOVATION		
<input checked="" type="checkbox"/> Private Housing.	<input checked="" type="checkbox"/> Social Housing.	<input checked="" type="checkbox"/> Minor renovation
		<input checked="" type="checkbox"/> Major renovation
Tools/mechanisms for COMMUNICATION/EDUCATION		
<p>The customer is also provided with:</p> <input checked="" type="checkbox"/> How to get energy audits <input checked="" type="checkbox"/> How to access incentives and associated technical procedures <input checked="" type="checkbox"/> Information to lists of accredited and qualified trades people (installers, contractors), labelled products and processes, maintenance and user guidelines		
<p>The trades involved in the renovation supply chain are also provided with:</p> <input checked="" type="checkbox"/> Simple guides, factsheets, manuals for execution		
SUCCESS INDICATORS		
<input checked="" type="checkbox"/> Conformance to standards requirements		
WEBSITES		
http://www.cropssf.hr		

National programmes

In order to give an overview of the contexts where the described Best Practices are set, main national programmes promoting housing renovation and energy upgrade, as listed by the REQUEST Partners in the WP2 Questionnaire, are reported below.

According to the same questionnaire, it is interesting to notice that lack of institutional oriented policies fostering quality is perceived as a relevant barrier by actors involved in the renovation process in seven of the 11 Partners' Countries. Few results from surveys on appreciation and impact have been published so far. That is the case for KlimaHouse (AT), kfw and BAFA (DE); Energy Saving Trust (UK).

Programme (current or valid in the last seven years)	Key Area ¹⁹	Period
AUSTRIA		
klima:aktiv - national climate protection programme	C P E I	From 2004
State subsidy systems for refurbishment and use of renewable energies	I	2010 - 2012
Klima- und Energiefonds (Climate and energy fund)	I	2010
Österreichisches Umweltzeichen (Austrian label for ecological products)	C	From 1990
BELGIUM		
Action plan of the Energy renovation plan 2020 (Flemish housing stock)	C P I	2006 - 2020
Climate change action plan (Walloon region)	C P	2001 -2010
Structural plan for improving air quality and combat global warming , (Brussels-Capital Region)	C P	2002 - 2010
Service obligation of the grid managers to support rational energy use (Brussels & Flanders)	E I	From 2007
Energy Portal Wallonia to support rational energy use	E I	From 1993
Flemish renovation grant (partially energy related)	I	From 2007
BULGARIA		
National Program for renovation of Multifamily buildings	C P E I	2006-2015
GERMANY		
Low Carbon Modernisation of Buildings Programme (KfW)	I	From 2001
dena Quality Seals for Energy Performance Certificates and Efficient Homes	C E	From 2009
Market Stimulation Programme for Renewable Energies in Buildings (BAFA)	I	From 2000
Financial Incentive Programme for Energy-Saving Consulting for Owners of Residential Buildings (BAFA)	I	From 1998
DBU Energy Saving Check (German Environmental Foundation), Energy-Saving Consulting of consumer advice centers	C E	From 1999

¹⁹ Key Areas : C = Communication, P = Participation, E = Education, I = Incentives

Programme (current or valid in the last seven years)	Key Area ¹⁹	Period
DENMARK		
Building energy certification scheme	C I	From 1997
Replacement of boilers	C I	current
Campaign to phase out traditional double glazing	C I	From 2006
Information campaign about "Heat pumps to replace the individual oil burners"	C I	2008-2010
Knowledge centre for energy savings in existing buildings	C I	2008-2011
Scrapping Scheme for oil burners	C I	From 2010
Energy saving trust (EST)	C I	From 2010
Feed in Tariff	I	From 2008
GRECE		
Energy Saving at Home	I	From 2010
ITALY		
55% income tax deduction scheme for Energy Efficiency in buildings	C I	From 2007
36% tax deduction for building renovation	I	From 1998
Conto Energia (Electricity from Photovoltaic)	I	From 2007
White certificates (EE credits for electricity and gas suppliers) in NEEAP 2007	I	From 2005
Different regional programmes funded by EU Structural Funds	C E I	Until 2013
POLAND		
State grants for partial repayment of solar collectors*	I	From 2010
Act on support for thermal refurbishment and renovations	P E I	1999-2008
Nationwide educational program "Friendly House"		From 2002
Green Investment Scheme – Energy management in public buildings	C E	From 2009
Operational Programme Infrastructure and Environment – EU Funds	I	From 2007
Loans by Bank Ochrony Środowiska S.A.	I	From 1991
PORTUGAL		
National Action Plan for Energy Efficiency - NEEAP	C P I	From 2008
SLOVAKIA		
SLOVSEFF facility	I	From 2007
Programme of higher utilization of biomass and solar energy in households	C P I	2009
State programme for thermal insulation of buildings	I	2009-2010
Programmes of State fund for building development	I	current
UNITED KINGDOM		
Energy Efficiency Commitment (EEC)/ Carbon Emission Reduction Target (CERT)	C I	From 2008
Community Energy Saving Programme (CESP)	C I	From 2009
Energy Saving Trust	C P I	From 1993
Decent Homes Standard	P	From 2001
Boiler Scrappage Scheme	C I	2010
Feed in Tariff	I	From 2010
Landlords Energy Saving Allowance	I	current
Retrofit for the Future	E	2009-2013

List of all the tools analysed

Best Practices for the uptake of EPC recommendations

AT - Austria	EPC calculation software (GEQ)
BE - Belgium - Flanders	Flanders EPC software: EPACT
BE - Belgium - Walloon	EPC calculation software (GEQ) - Walloon EPC software: PACE
DE - Germany	Financial Incentive Programme for Energy-Saving Consulting for Owners (BAFA)
DE - Germany	dena Quality Seals for Energy Performance Certificates and Efficient Homes
DK - Denmark	Building energy certification scheme
EL - Greece	Energy Saving at Home
IT - Italy	55% income tax deduction scheme
IT - Italy	Regional incentives (e.g. Emilia Romagna)
IT - Italy	Sicenea (Sicily region- Structural Funds)
IT - Italy	ICMQ
IT - Italy	CasaClima
PL - Poland	Nationwide educational program "Friendly House"
PT - Portugal	Solar Thermal Collectors
UK - United Kingdom	Standard Assessment Procedure (SAP) for EP calculation
UK - United Kingdom	T-Zero
UK - United Kingdom	Energy Saving Trust Home Energy Check Tool
UK - United Kingdom	Passivhaus Planning Package (PHPP)
CH - Switzerland	Building Programme
FR - France	Diagnostic de Performance Energétique
EC - MS	ENERBUILDING-(& ENFORCE)

Best Practices for Quality in the supply chain

AT - Austria	klima:aktiv - national climate protection programme
AT - Austria	Education for energy consultants
BE - Belgium	Cerga Certificate
BE - Belgium	BUTgb - ATG
BE - Belgium	Contractor registration
BE - Belgium	Valideo
BE - Belgium	STS-documents
BE - Belgium	Vibe-Label
BE - Belgium	energy-conscious architect
BE - Belgium	Sustainable Construction Pact 2020
BG - Bulgaria	National Program for renovation of Multifamily buildings in Republic of Bulgaria
DE - Germany	Low Carbon Modernisation of Buildings Programme (KfW) – construction supervision
DE - Germany	Financial Incentive Programme for Energy-Saving Consulting for Owners (BAFA)

Best Practices for Quality in the supply chain

DE - Germany	dena Quality Seals for Energy Performance Certificates and Efficient Homes
DE - Germany	Multitude of regional and local initiatives and corporate incentives
DK - Denmark	Building energy certification scheme
DK - Denmark	Boiler inspection scheme
DK - Denmark	Replacement of boilers
DK - Denmark	Inspection of ventilation and A/C systems
DK - Denmark	Voluntary certification scheme for windows
DK - Denmark	Campaign to phase out traditional double glazing
DK - Denmark	Information campaign about "Heat pumps to replace the individual oil burners"
DK - Denmark	Knowledge centre for energy savings in existing buildings
DK - Denmark	Scrapping Scheme for oil burners
DK - Denmark	Energy saving trust (EST)
DK - Denmark	Feed in Tariff
GR - Greece	Energy Saving at Home
IT - Italy	55% income tax deduction scheme
IT - Italy	CasaClima (KlimaHaus)
IT - Italy	Guidelines for sustainable Buildings (Tuscany region)
IT - Italy	ITACA Protocol (Conference of Regions and Autonomous provinces)
PL - Poland	Act on support for thermal refurbishment and renovations
PL - Poland	Energy Auditing Training Scheme for Communal Sector
PL - Poland	Nationwide educational program "Friendly House"
PL - Poland	Green Investment Scheme – Energy management in public buildings
PL - Poland	Grants for partial repayment of loan for solar collectors
PL - Poland	Loans by Bank Ochrony Środowiska S.A.
PL - Poland	Operational Programme Infrastructure and Environment – EU Funds
PL - Poland	Regional Operational Programmes – EU Funds
PT - Portugal	Renewables in time 2008-2023
PT - Portugal	Solar Thermal Collectors
SK - Slovakia	SLOVENERGOOkno voluntary labelling scheme
SK - Slovakia	Licensing scheme for thermal insulation of buildings (TSÚS)
SK - Slovakia	Programme of higher utilization of biomass and solar energy in households
UK - United Kingdom	Construction Lean Improvement Programme (CLIP)
UK - United Kingdom	Trustmark
UK - United Kingdom	Federation of Master Builders
UK - United Kingdom	National Federation of Builders
UK - United Kingdom	National House Building Council
UK - United Kingdom	National Insulation Association
UK - United Kingdom	Cavity Insulation Guarantee Agency
UK - United Kingdom	British Board of Agreement
UK - United Kingdom	FENSA windows and doors
UK - United Kingdom	CORGI

Best Practices for Quality in the supply chain

UK - United Kingdom	Gas Safe Register
UK - United Kingdom	BSI Group
UK - United Kingdom	BESCA (Service Accreditation HVACR)
UK - United Kingdom	ELECSA (Electrical Installations)
UK - United Kingdom	NICEIC (Electrical contractors and other trades)
UK - United Kingdom	HETAS (Solid fuel appliances design, installations)
UK - United Kingdom	NAPIT
UK - United Kingdom	Feed-In-Tariffs
UK - United Kingdom	Microgeneration Certification Scheme (products and installers)
UK - United Kingdom	Energy Saving Trust Recommended
UK - United Kingdom	BFRC (windows, windows installation)
UK - United Kingdom	Household EE Skills Project
CH - Switzerland	Building Programme
CZ - Czech Republic	Green Saving Programme
EC - MS	Square
EC - MS	Concerto - act2 project
EC - MS	ROSH – Retrofitting of Social Housing
EE - Estonia	Renovation Loan of Apartment Buildings
ES - Spain	Support for Energy Efficiency in Buildings
FR - France	Diagnostic de Performance Energétique
FR - France	Green Loan for Social Housing
HR - Croatia	Info Telefon Energetske Učinkovitosti
HR - Croatia	Info Center for Energy Efficiency
HR - Croatia	ISGE
HR - Croatia	CROPSSF program
HR - Croatia	Energy performance of buildings certificate
NL - Netherlands	More with less
NO - Norway	Incentives for low energy housing
SI - Slovenia	Scheme of efficient use of energy for households with low incomes
US - United States of America	USGBC's LEED

Other tools and schemes (update October 2012)

DE - Germany	Casa-Bauen
EU	REQUEST quality assurance instruments for housing renovation
EU	COMPENER
IT - Italy	CNA
IT - Italy	Lombardy Region EPC - Cened
IT - Italy	EME Secem
PT - Portugal	CasA+ Energy Performance Simulator for Households
UK - United Kingdom	Home Energy Performance UK /Home Energy Performance Pro UK Apps.

REQUEST Pilot projects (update October 2012)

AT - Austria	Building typology as a basis for EPC recommendations
BE - Belgium	EPCinfo.be - Tailor made advice for EPC recommendations
BG - Bulgaria	Increasing home owners awareness for the energy renovation of large scale residential buildings
DE - Germany	Major renovation to KfW Efficiency House 55 Standard
DK - Denmark	Knowledge Centre for Energy Savings in Buildings
EL - Greece	Green Neighbourhood
IT - Italy	Monitoring and integrating Social Housing Renovation
IT - Italy	Network TAVOLI DI LAVORO 4E - Energy Efficiency in Existing Buildings
PL - Poland	Thermomodernisation Fund, EPC scheme
PT - Portugal	Improvement of EPC recommendations and energy renovation in Lisbon
SK - Slovakia	Energy "minder" for the major renovation of buildings
UK - United Kingdom	Energy efficiency guidance and training material for homeowners and tradesmen for a room-by-room energy refurbishment approach

References

EuroACE, Report, "Making Money Work for Buildings", September 2010, available on <http://www.euroace.org/>
IEA Policy Pathway, "Energy Performance Certification of Buildings", OECD/IEA, 2010
<http://www.eceee.org/>
<http://www.buildup.eu/>
<http://www.epbd-ca.org/>
<http://www.managenergy.net/>
<http://www.ecobuildings.info/events.html>

Related IEE projects:

FRESH - <http://www.fresh-project.eu>
ROSH - <http://www.rosh-project.eu>
IDEAL EPBD - <http://www.ideal-epbd.eu/>
SQUARE - <http://www.iee-square.eu>
CONCERTO Act2 - <http://www.concerto-act2.eu>
ENFORCE - <http://www.adiconsum.it/index.php?pagina=scheda&idscheda=349>
QUALICERT - <http://www.qualicert-project.eu/>
BUY-SMART - <http://www.buy-smart.info>
GREEN-IT <http://www.green-it.eu>
ENERBUILDING - <http://www.enerbuilding.eu/>
REFUND+ - <http://www.energies-renouvelables.org/refund/results.asp>
COMPENER - <http://www.compener.enea.it/>
BUILD-UP SKILLS - <http://www.buildupskills.eu/>

AUSTRIA

AEA - Austrian Energy Agency <http://www.energyagency.at>
Federal programme: "Building of Tomorrow" : <http://www.hausderzukunft.at>
Energy efficient products: <http://www.topprodukte.at>
Certification of products: <http://www.ibo.at>, <http://www.baubook.at>, <http://www.umweltzeichen.at>

BELGIUM

VITO - Flemish Institute for Technological Research <http://www.vito.be>
Flemish energy grid managers: <http://www.eandis.be/>
Regional energy agencies: <http://www.energiesparen.be/>, <http://energie.wallonie.be/fr>
Sustainability label Valideo - <http://www.valideo.org/>
Sustainable construction pact <http://www.cstc.be/>

BULGARIA

EEA - Energy Efficiency Agency <http://www.seea.government.bg>
Ministry of Regional Development and Public Works - <http://www.mrrb.government.bg>

GERMANY

DENA - German Energy Agency <http://www.dena.de>
Financial Incentive Programme for Energy-Saving (BAFA) - <http://www.bafa.de/>
Federal Ministry of transport, building and urban development , <http://www.bmvbs.de>

Federal Ministry of environment <http://www.erneuerbare-energien.de>;
VZBV Federation of German Consumer Organisations - <http://www.vzbv.de>

DENMARK

AAU/SBi - Danish Building Research Institute, part of Aalborg University <http://www.en.sbi.dk>
Knowledge centre for energy improvements in existing buildings: <http://www.byggeriogenergi.dk>
Danish Enterprise and Construction Authority: <http://www.ebst.dk>
Danish Energy Agency: <http://www.ens.dk>
Danish Energy Saving trust: <http://www.savingtrust.dk/>
<https://www.ois.dk>
Inspection of ventilation and A/C systems <http://www.energivinduer.dk>

GRECE

CRES - Centre for Renewable Energy Sources and Saving <http://www.cres.gr>
Ministry of Environment, Energy and Climate Change - <http://www.ypeka.gr>

ITALY

ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development
<http://www.enea.it>
ENEA Technical Unit for Energy Efficiency – <http://www.ufficienzaenergetica.enea.it/>
Observatory of regional energy policies:
<http://enerweb.casaccia.enea.it/enearegioni/UserFiles/Efficienza/Edifici/Edifici.htm> (it)
Network of local energy agencies: <http://www.renael.net/>
Regulatory Authority for Electricity and Gas:
Ministero dello sviluppo economico: <http://www.sviluppoeconomico.gov.it/>

POLAND

KAPE - Polish National Energy Conservation Agency <http://www.kape.gov.pl>
Bank Ochrony Środowiska (loans for EE and RES measures) <http://www.bosbank.pl>
Bank of National Economy <http://www.bgk.com.pl>
Ministry of Infrastructures – <http://www.mi.gov.pl>
Polish Association of Energy Auditors – <http://www.zae.org.pl>
Polish Foundation for Energy efficiency - FEWE – <http://www.fewe.pl>

PORTUGAL

ADENE - Portuguese Energy Agency <http://www.adene.pt>

SLOVAKIA

SIEA - Slovak Innovation and Energy Agency <http://www.sea.gov.sk>
State Housing Development Fund <http://www.sfrb.sk>,
SLOVENERGOKno voluntary windows and doors labelling scheme <http://www.slovenergookno.sk>
Slovak Energy Efficiency and Renewable Energy Finance Facility - SLOVSEFF II <http://www.slovseff.eu>
Ministry of Economy - <http://www.economy.gov.sk>

UNITED KINGDOM

EST - Energy Saving Trust <http://www.energysavingtrust.org.uk>
Construction Lean Improvement Programme (CLIP) - <http://www.bre.co.uk/>
National House Building Council <http://www.nhbc.co.uk/>
British research establishment <http://www.bre.co.uk/>
Decent Homes programme - <http://www.homesandcommunities.co.uk/decenthomes>
Service accreditation for HVACR - <http://www.besca.org.uk/>

National Energy Services (NES) - <http://www.nesltd.co.uk/>
National Association for Professional Inspectors and Testers NAPIT - <http://www.napit.org.uk/>
HETAS (Solid fuel appliances design, installations) - <http://www.hetas.co.uk/>
Household Energy Efficiency Skills Project - <http://www.eeph.org.uk/>

COUNTRIES NON PARTICIPATING TO REQUEST:**CROATIA**

EIHP - Energy Institute Hrvoje Požar - <http://www.eihp.hr/>
CO2 Calculator - <http://www.undp.hr/show.jsp?page=100914>
ISGE (information system for energy management) - <http://www.isge.hr>
North-west Croatia Regional Energy Agency - <http://www.regea.org>

CZECH REPUBLIC

Green Saving programme – <http://www.zelenausporam.cz/sekce/582/about-the-green-savings-programme/>

ESTONIA

Renovation Loan Of Apartment Buildings - <http://www.kredex.ee/1534>
(http://re.jrc.ec.europa.eu/energyefficiency/pdf/Proceedings_Istanbul_2009/10_ADLER.pdf)

FRANCE

ADEME - French Environment and Energy Management Agency <http://www2.ademe.fr/>
CSTB - Evaluation, certification - Avis Technique (ATec) et DTA - <http://www.cstb.fr/>
Round Table grenelle - <http://www.legrenelle-environnement.fr/>
Diagnostic de Performance Energétique (DPE) Energy performance audit - <http://www.logement.gouv.fr/>

NORWAY

Incentives for low energy houses - <http://www.husbanken.no/>
<http://www.lavenergihus.no/>

SPAIN

IDAE - Public commitment to energy efficiency and renewable energy sources <http://www.idae.es/>
Support for Energy efficiency in Buildings -
http://www.odyssee-indicators.org/publications/country_profiles_PDF/esp.pdf
Ministry of Housing: <http://www.mviv.es>

THE NETHERLANDS

SENTERNOVEM NL Agency <http://www.senternovem.nl/english/>
<http://www.vrom.nl/energielabel>
Advice on EE measures: <http://www.milieucentraal.nl/>
<http://www.Energiebesparingsverkenner.nl>

SLOVENIA

http://www.isisrome.com/data/mure_pdf/SLO23.PDF
Building and Civil Engineering Institute - <http://www.gi-zrmk.si/>
Ministry of the Economy - Energy Directorate <http://www.aure.si/>

SWITZERLAND

<http://www.bfe.admin.ch/energie/>
<http://www.endk.ch>
<http://www.ilprogrammaedifici.ch>

U.S.A.

Weatherization and Intergovernmental Program - <http://www1.eere.energy.gov/wip/contacts>

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List of acronyms

Country	Code
Austria	AT
Belgium	BE
Bulgaria	BG
Croatia	HR
Czech Republic	CZ
Denmark	DK
Estonia	EE
France	FR
Germany	DE
Greece	EL

Country	Code
Ireland	IE
Italy	IT
Netherland	NL
Norway	NO
Poland	PL
Portugal	PT
Romania	RO
Slovakia	SK
Slovenia	SI
Spain	ES
Sweden	SE
Switzerland	CH
United Kingdom	UK
United States of America	US

Full Text	Abbreviation
Intelligent Energy Europe	IEE
Energy Efficiency	EE
Concerted Action on Energy Performance of Buildings Directive	CA EPBD
Energy Performance Certificate	EPC
Green House Gas	GHG
Heating Air Conditioning and Ventilation	HACV
Renewable Energy Systems	RES

This is a public report.

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P *Project Details*

Duration: April 2010 – November 2012

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Austrian Energy Agency, AEA, Austria

German Energy Agency, dena, Germany

**Italian National Agency for New Technologies,
Energy and Sustainable Economic Development
ENEA, Italy**

**Polish National Energy Conservation Agency,
KAPE, Poland**

Aalborg University, AAU/Sbi, Denmark

**Slovak Innovation and Energy Agency, SIEA,
Slovakia**

**Flemish Institute of Technological Research,
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**Centre for Renewable Energy Sources and
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