PROJECT FINAL REPORT

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1.1. Executive summary

In the construction sector, the progress in technologies and solutions to improve Energy Efficiency (EE) in buildings do not reach small and medium-sized enterprises (SMEs). The ee-WiSE Project studied the main barriers which are hindering Energy Efficiency in Mediterranean countries. Such barriers include: the need of training of construction professionals in retrofit technologies, occupant's necessity of financial support in order to invest in retrofit technologies, the requirement of traditional craftsmen trained on EE retrofitting innovations, etc. The origin of these needs relies on the lack of a correct knowledge transfer between agents in the building retrofitting value chain.

The analysis of the agents' behaviour and their knowledge transfer needs has conducted to the development of the ee-WiSE Knowledge Transfer Framework (KTF). The tool promotes the sharing of EE knowledge amongst agents and is designed as an interactive platform where users can find this EE content classified by topic. The topics include: skills and awareness, knowledge management, Research and Development approach, as well as financial, institutional and administrative matters. Detailed guidelines provide registered users with information on the best examples of EE material and how to share it. The published content can be filtered and rated. The KTF has been tested in validation workshops in seven Mediterranean countries and was well received by all the different profiles.

The research and analysis undertaken in these 2 years seeking for the optimal Mediterranean Framework has disclosed an apparently well-known reality for the construction sector in our countries. Some weaknesses were already expected, but the ee-WiSE experience has provided the overall insight, impact and strengths with the most suitable solutions for this region.

Summarizing, the work developed has untapped the profile of the value chain agents pointing the most relevant communication breakpoints, and has identified the main strategies to start closing the gaps existing between them. We highlight the need of building bridges of knowledge, encourage new business models in the EE market, and promote certification and intersectorial cooperation between the different agents of the value chain. The result is the online KTF tool that can become an important dynamic element between the different agents in the value chain towards an effective EE building retrofitting sector.

1.2. Project context and objectives

1.2.1. Context

The reasons for the project align with three key questions: why retrofitting, why the Mediterranean, and why now.

The EE sector will experience a big impulse by increasing the retrofitting activity, as rehabilitation of the buildings stock can develop more energy efficiency benefits rather than proceeding on new buildings. Existing buildings' energy impact must be reduced in order to make a difference in the final CO2 emissions resulting of the buildings energy consumption. This project will promote the EE Market through the retrofitting sector's enlargement.

In the Mediterranean scope, this project will improve communication among the agents of the different countries. As a result, best practices and activities will be developed for a common climatology throughout a successful knowledge transfer process. The knowledge created for years, on Energy Efficiency for existing buildings' retrofitting, by the agents involved in each country is not managed correctly and doesn't even exist among countries. This will be the main issue to work out.

Concerning the reason that shows why is now the best time to act, the previous review through the sector's crisis has already given the answer. It's late to avoid the crisis to affect millions of people, but it's not late to change the sector and make it better. Now is the time to get involved for a better world, to correct mistakes that threaten the environment and people's health, and improve what is done before. Is time for union, for invention, for innovation and knowledge sharing.

ee-WiSE assists the transformation of the EE Market and promote the transfer of good practices. It will also achieve coordination between the Mediterranean and the EU, and knowledge transfer activities will expand the Market through dissemination of energy efficiency solutions. This project guides new business models in the EE Market by boosting knowledge transfer in building retrofitting. The resulting strategy of the project in the Mediterranean will serve as a model for other areas where retrofitting can turn the building stock to be more sustainable and agent's knowledge transfer will provide the sector a quality label.

The Mediterranean's building sector need to be rescued and get involved with the EU Energy Market, so ee-WiSE introduces a Knowledge Transfer methodology focused on building retrofitting within the value chain, to enhance the Energy Efficiency's Market in this area.

From an analysis of the current situation in the energy efficiency sector in buildings, some questions arise: Why knowledge and energy efficiency policies applicability do not flow to all Value Chain Agents? Why most companies operating in the field of building retrofitting ignore such policies, and even worse, don't respond to the demand from users in terms of improving energy efficiency in their homes?.

It is the great risk of not identifying the knowledge transfer flows breakpoints between these agents what will lead to failure the purpose to meet the challenge of 20% energy consumption reduction by 2020. It could even be possible that the sector could be unable to meet the expectations of a society that every day is more aware of the need for energy savings, with the added difficulty that there are already on the market technological solutions developed enough to be applicable in houses and other existing buildings.

It is vital to determine where system failures or weakness are, that prevent existing knowledge, both from a technical and an economic-social point of view, to come to the companies so these can take the important role they deserve to encourage energy efficiency improvements in buildings. Furthermore, relevant knowledge is currently being generated and developed on the existing buildings energy performance, where retrofitting becomes a key action and where SMEs plays the principal role. The main problem is that most SMEs in the Mediterranean area are unaware of this knowledge.

ee-WiSE aims were to identify, through the methodology described in the work program, the critical points of this knowledge transfer flows, to act on its breakpoints. The combination of a phase of analytical work and another of Framework design and validation provides the industry a valuable tool to overcome some of the difficulties listed above, in order to improve EE market:

- It improves the knowledge flow throughout the Value Chain, thus ensuring that the companies participate in the current research knowledge, providing a solution to what the user requires through designers and prescribers.

- Moreover, it enhances value of tested functional and cost-effective constructive solutions/materials already offered by producers.

- It offers a validated methodology that serves as a guarantor to financial entities that will provide funding to companies to develop their activities.

- It offers a tool for the different administrations that they can use to coordinate the development of regulations in their competence levels and control mechanisms of compliance with uniform and objective criteria.

- By including certification bodies in this project, it has taken into account an agent that just validates building companies' accomplishment in terms of energy efficiency to the administration authorities, financial institutions and of course the end user.

Finally, the end user and the general public may be aware of the advantages in terms of cost savings that energy efficiency measures for existing buildings provide, promoting the eradication of the knowledge lack that now is functioning as a barrier.

1.2.2. Objectives

The main objective of ee-WiSE was to develop a Framework for Knowledge Management and Transfer within the value chain of energy efficiency sector in building retrofitting with special attention to SMEs in the Mediterranean Area.

To realize this objective, a set of specific objectives were identified:

1. Identify the breakpoints in the flow of knowledge transfer within the value chain of energy efficiency sector in retrofitting and design of mechanisms and tools to overcome them in benefit of the SMEs, disclosing the role-relative information of all EE sector's players to identify every stakeholder and foster sector's interaction.

2. Develop practical guidelines to foster implementation of energy saving measures in existing buildings in the Mediterranean through relevant knowledge sharing, encouraging good practices and coordination among all levels of stakeholders.

3. Develop unexplored business models between actors in the EE building retrofitting value chain, mainly SMEs and independent professionals, to optimize multi-disciplinary skills and provide knowledge to create stable structures that generate new opportunities, ensuring the cost-effectiveness and reducing the investment risk.

4. Contribute to develop measures for up-taking society's latent demand by transferring to the final user the advantages and benefits of investing in energy saving.

5. Enhancing new ways to foster the recovery of a strategic economic sector in crisis, promoting the creation of quality employment and wealth through the green economy in the Mediterranean, boosting investment and suitable financing tools.

1.2.3. Approach

In order to assure the achievement of objectives, a methodology designed in four types of work has been established:

Methodology: work on concepts, definitions and mechanisms for collecting and processing information. This ensures the overall integrity and consistency in the work to be performed by the Consortium

Analysis: Phase of collecting, processing and joint analysis of data and relevant information for the sector and knowledge transfer, from the value chain's agents and other relevant stakeholders' point of view. This guarantees a complete vision of the knowledge transfer current state (with a demand and supply perspective) and its associated problems, targeting possible best practices and other unexplored options for solving them.

Design, implementation and validation: Based on previous analytical study, work of knowledge transfer framework and tools design, implementation and validation. This ensures the validity of the framework and its adjustment to the real needs of the sector.

Dissemination: This work aims to reach the targeted community and relevant stakeholders, and share the project.

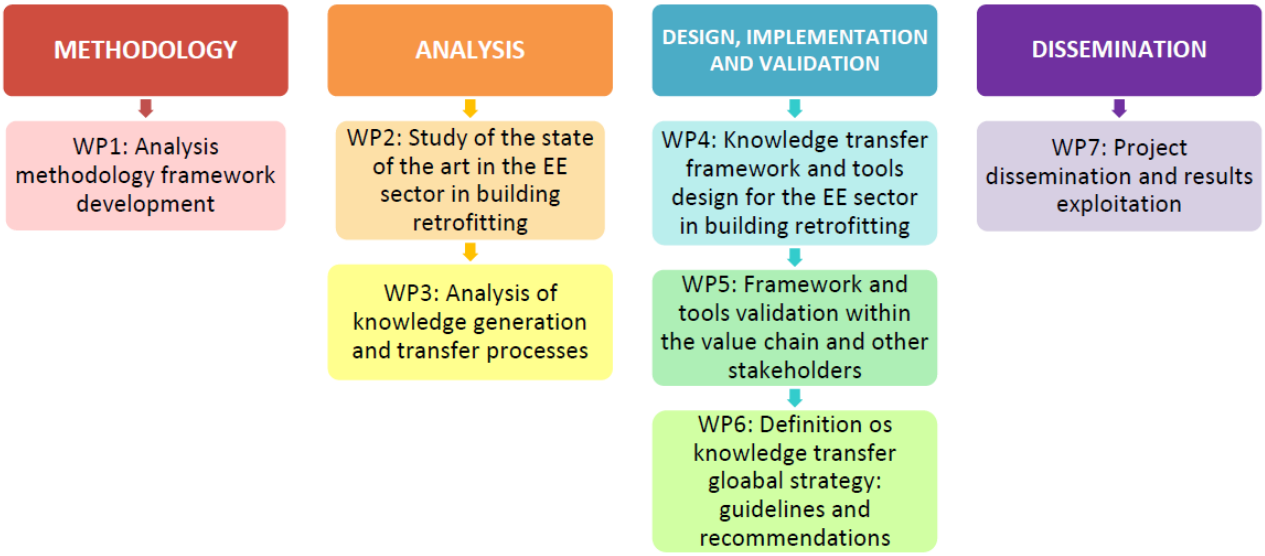

Image 1: Workpackage structure

1.3. Scientific and technological results

1.3.1. Overview

The ee-WiSE project started in October 2012 and has as objective to develop a Framework for Knowledge Management and Transfer within the value chain of the energy efficiency sector in building retrofitting with special attention to SMEs. As such it aims to improve communication flows in the value chain in order to boost economic growth and to support new business opportunities for SMEs, while achieving environmental goals.

The project analyses the Energy Efficiency (EE) knowledge level in society and the sector's value chain, as well as the use of EE measures in retrofitting. Also, from the particular point of view of every partner, knowledge transfer personal experiences were analysed. The on-going work of the project with respect to the situation of the EE sector for retrofitting in the Mediterranean revealed: the lack of attention on the final user's real needs and lack of awareness on these users, the lack of training of the agents in the value chain, the lack of tools to share knowledge, and a widespread implementation of northern-European technologies in the Mediterranean climate.

One of the main activities of ee-WiSE was to identify breakpoints in the knowledge transfer flows and design tools to overcome these in benefit of SMEs; develop practical guidelines to foster the EE measures' implementation; develop new business models; communicate the final user about benefits and advantages of investing in energy saving; and promote the recovery of a strategic sector in crisis by creating quality jobs and wealth through green economy.

One of the main results of ee-WiSE is the development of a knowledge management tool, which will include guidelines for business models, market up-take, inter-sector cooperation, and certification and tendering. The project will thus provide solutions to overcome the barriers and to give impetus to the energy efficient outcomes in one climatic area— the Mediterranean. This will result into specific and targeted knowledge about energy efficiency across the whole value chain.

The collected, created and systemized information will be delivered to the stakeholders through the project website. Technologies, materials, approaches, business models will be accessible at several clicks, providing swift answers to the questions evolving.

The activities developed in the first year of ee-WiSE focussed on the State of the Art analysis on the knowledge transfer processes and practices in the EE sector between the different agents and stakeholders of the value chain. Based on this analysis, best practices and other possible solutions to overcome knowledge transfer problems detected have been defined, and the most appropriate tools and techniques selected to support the knowledge transfer processes in the EE building retrofitting sector identified.

The work during the second period was a continuation of the work of the first period where the Energy Efficiency (EE) knowledge level in society and the sector's value chain, as well as the use of EE measures in retrofitting were analysed, and the main knowledge breakpoints in the value chain identified.

The work on the knowledge breakdowns and best practices and other possible solutions to overcome knowledge transfer problems detected, and the most appropriate tools and techniques selected to support the knowledge transfer processes in the EE building retrofitting sector fed into the development of the knowledge transfer framework model and tool. The main weight and effort of the second period was dedicated to the design and development of the Knowledge Transfer Tool (KTF).

The tool was subject to a validation processes based upon a threefold iteration process, integrating the necessary improvements and modifications after each stage. After the development of the first version of the tool, the first iteration for validation was realised by the consortium members, and focused on identifying use problems and bugs. In the second iteration round, country validation workshops were held in Spain, Greece, Malta, Italy, Cyprus, Bulgaria and Turkey, where representatives of the value chain provided feedback and input on the tool. A third iteration was again realised by the consortium and focussed on the fine-tuning of the tool and improvements related to flow of use and visual identity.

The ee-WiSE knowledge management tool was complemented by a set of guidelines for business models, market up-take, inter-sector cooperation, and certification and tendering, which were developed using the business canvas model approach to ensure a value proposition which is of interest to the different value chain agents.

The project thus provided solutions to overcome the barriers and to give impetus to the energy efficient outcomes in one climatic area— the Mediterranean. This will result into specific and targeted knowledge about energy efficiency across the whole value chain.

The collected, created and systemized information has been delivered to the stakeholders through the project website. Technologies, materials, approaches, business models will be accessible at several clicks, providing swift answers to the questions evolving

Overall, ee-WiSE provided useful tools about state of the art practices, technologies, materials, and services on the retrofitting sector and support them towards being more competitive. The final users will be equipped with knowledge and be more demanding, to receive high quality services.

1.3.2. Analysis Methodology Framework Development

The aim of the work (WP1) on the development of the framework was to provide a solid methodology to find the best procedures to conceptualize energy efficient retrofitting in the Medditerreanean; develop a set of optimal tools to undertake the analysis of each designed concept, and a methodological frame which constituted an integrated tool which contained all the data captured during the analysis phase.

The work started with the with the analysis of the EE retrofitting process in a Mediterranean scope, and lead to the identification of those groups that describe the different agents in the value chain that interact throughout this process among other agents, as represented below

Figure 1: EE retrofitting process in the Mediterrenean

Parallel the project made a compilation of all the different terms with its definitions that are related to the EE retrofitting sector, and the concepts were sorted and classified in two groups: Definitions related to Energy and Energy Efficiency of Buildings, and Definitions related to Energy Retrofitting of Buildings.

Based upon these analysis the Methodological Framework was developed in the last task (Task 1.3) undertaking a previous analysis of the ee-WiSE methodology, laying the foundations for the consecutive compilation, analysis and production activities throughout the project.

The Methodological framework included tools for data collection of relevant information and provided a systematic set of procedures for the scientific and technical coordination and management of the project. The work is represented in a confidential deliverable which integrates the description of the value chain, as well as the related concepts with respect to the value chain and energy efficiency in a Mediterranean climate. The Value Chain definition contains all players involved and its functions and other relevant stakeholders that, without being part of the Value Chain, may influence it.

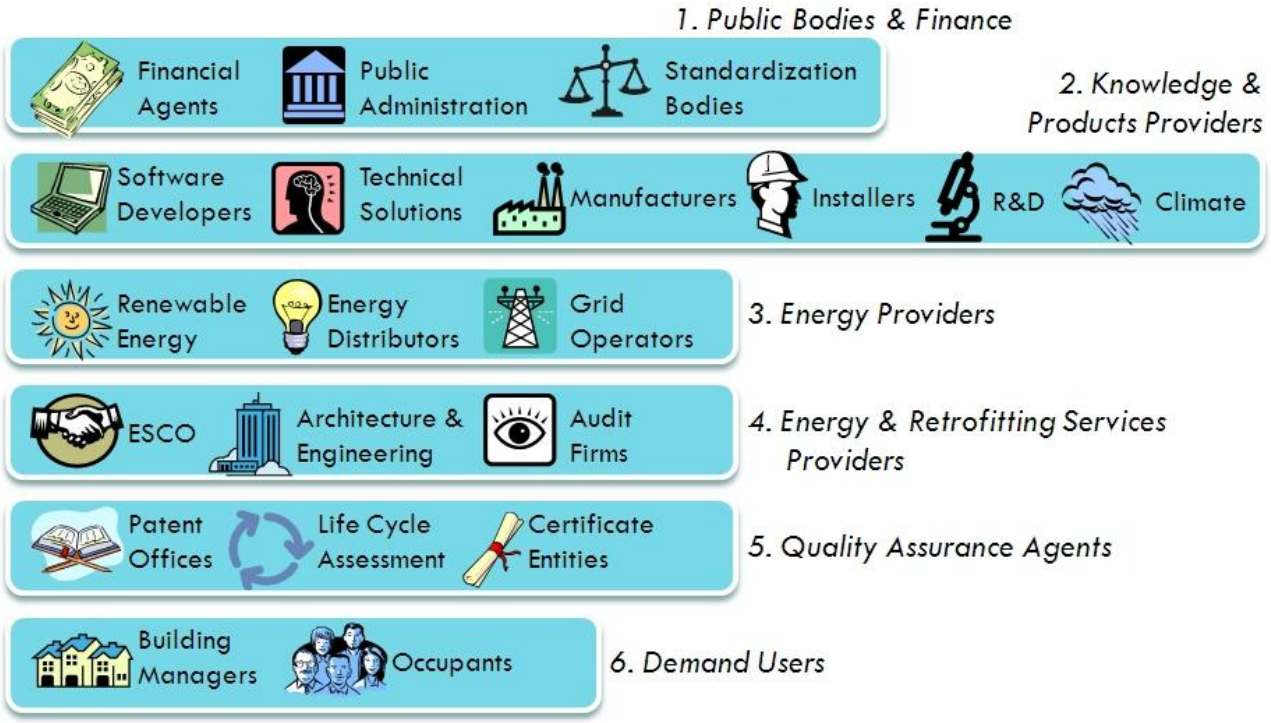

Figure 2: ee-WiSE EE retrofitting value chain

1.3.3. Study of the state of the art in the EE sector in building retrofitting

Within the framework of the project the state of the art of the EE sector with respect to building retrofitting was analysed (WP2). The analysis tool into addressed the following aspects:

- Current situation in knowledge transfer processes and practices in the EE sector in building retrofitting with special attention to aspects concerning SMEs..

- Identification of current underlying knowledge transfer processes, between agents of the value chain, detecting existing gaps.

To establish a framework for the analysis the countries of the consortium were considered as reference points. For this, a questionnaire was developed and completed by the partners. European, Mediterranean and Regional information were made available and provided a comprehensive picture about the situation of the building sector in the target area of the project. The data recollected by the questionnaires, which generated over a 1000 replies by key actors, were taken into account in the elaboration of the State of the Art Base report (Deliverable 2.1), which addresses the relevant issues with respect to the knowledge and practices identified for: EE business models, EE solutions and techniques, building stock analysis, market uptake measures, energy efficiency promotion measures, cross-sectorial cooperation and certification processes.

The report also includes, and additional section, which was integrated after the interaction with the stakeholders and agents of the value chain in WP3, showed that the following two aspects are of interest to them:

- Analysis of tendencies of the EE retrofitting market in Mediterranean area during the last years: A feedback throughout partners has been carried out, researching different experiences in Mediterranean countries.

- Extension of good practices in energy efficiency retrofitting in buildings: This section has completed the list of projects, promotion measures, energy efficiency encouragement or additional EE solutions.

The analysis of the underlying knowledge transfer processes, between agents of the value chain, allowed to identify the knowledge transfer flows throughout the chain, and to detect gaps and breakpoints. This lead to the development of a very intuitive flows map which graphically represents the transfer details, relationships between agents and level of communication flows throughout the building sector. Additionally a SWOT was developed, identifying the crucial internal and external factors necessary to achieve in transfer knowledge of EE retrofitting

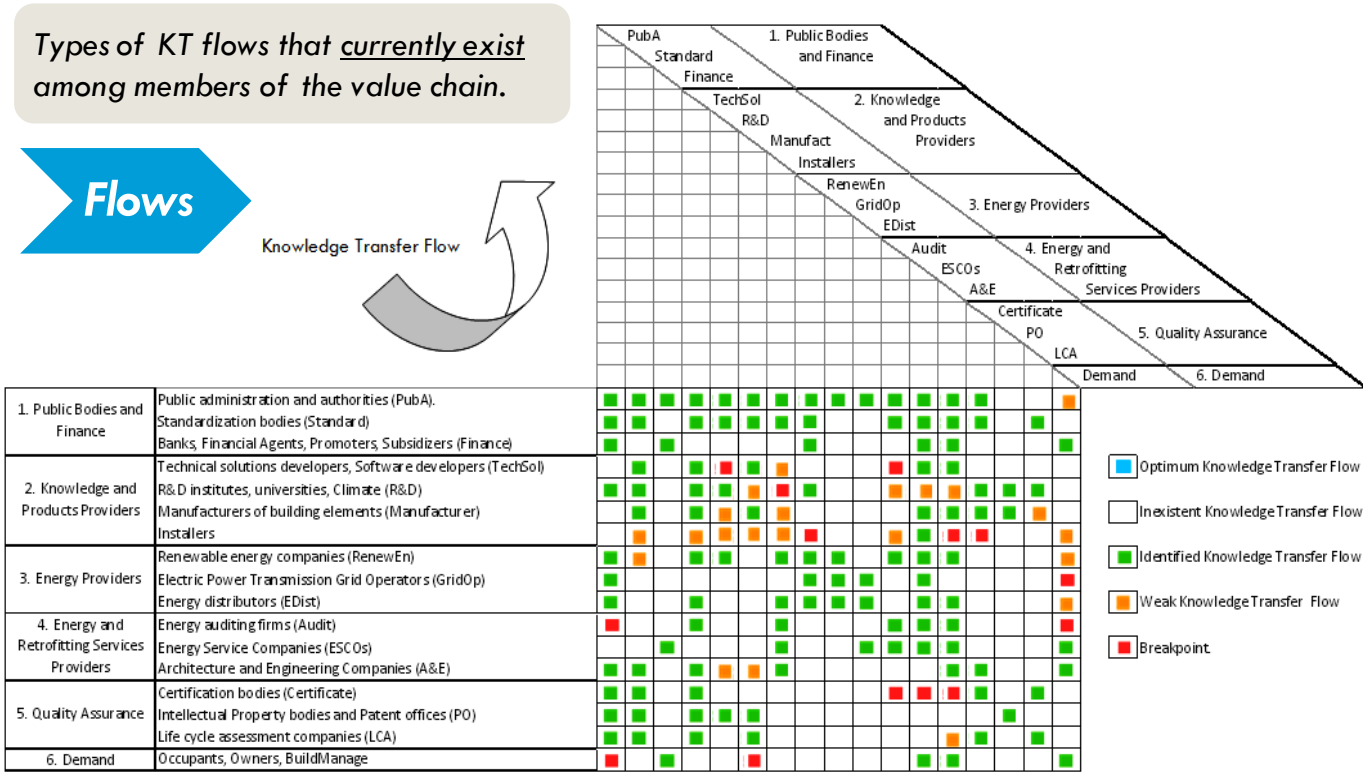

Figure 3: Knowledge transfer flows

1.3.4. Analysis of knowledge generation and transfer processes

Based upon the results of the knowledge transfer flows, the real EE needs of the sector and society were analysed, in order to assess the knowledge and transfer state of the two merging communities that meet in the EE Market: the EE sector and its value chain, and society in general and other stakeholders. And to identify best practices and other possible solutions to overcome knowledge transfer problems detected.

The work followed a 3-phased methodology:

Phase 1. Research and documentation reviews of other knowledge transfer studies, projects and experiences of other value chains that are applicable to the Retrofitting EE Value Chain.

Phase 2. Collection of replies to a questionnaire from agents both in and out of the value chain leading to an identification of their needs, sources of knowledge and description of any known best practice scenarios. The data collection exercise was done through an online and face-to- face questionnaire, telephone survey and during workshops, depending on the agent group and their availability.

Phase 3. Analysis of the needs as identified in Phase 2. These needs were classified and prioritised according to their importance and relevance leading to proposals for tools to help meet the needs of the various agents and the knowledge gaps, thus fostering effective knowledge transfer within the retrofitting EE value chain.

Phase 1 successfully carried out an identification of the needs for knowledge transfer at different levels of the ee-WiSE value chain, resulting in the detection of the framework conditions and specific support agents required to successfully activate the sector. In addition, the most important needs and barriers hindering or enabling knowledge transfer were identified for each individual group in and out of the value chain, as well as for the communication processes between them. Work during this phase involved an academic desk research and a review of related studies, projects and experiences of the value chain in the retrofitting sector, and in related sectors in order to assess the theoretical frameworks that are typical of knowledge transfer flows.

Following the desk research on other non-retrofitting value chains and the studies pertaining to them and to other studies related to knowledge transfer, phase 2 mainly conducted an exercise of filtering out those needs that might be relevant for information transfer flow surrounding the various groups in the retrofitting value chain were compiled. This activity was mainly related to the collection of information from the value chain members themselves via an online questionnaire that was designed and made accessible via various channels, e.g. the project website, email correspondence, and newsletters. To facilitate the collection of data between people with different levels of knowledge, the survey was translated into 6 languages, Bulgarian, English, Greek, Italian, Spanish and Turkish. A total of 1057 surveys were collected and analysed, of which 817 were considered valid and useful for the analysis. In the following step the analysis of the survey results identified the major stumbling blocks and required solutions to overcome the lack of knowledge transfer flow in the retrofitting value chain.

The results of the survey were analysed, prioritized and segmented (report on "Segmentation and prioritization of the demand detected" included as annex in deliverable 3.1). This report presents the results of statistical analysis of the questionnaire responses provided by the EE sector stakeholders in the different Mediterranean countries. The analysis also presented a study of three key criteria (frequency, potential and feasibility) and a global classification in order to document and prioritize the demands of value chain stakeholders detected. The analysis takes into account variations amongst the several countries that have participated and the nature of the agents forming the value chain to identify the most important barriers to knowledge transfer.

Parallel to this, best practices with a high potential to overcome knowledge transfer breakdowns were identified and additional solutions to gaps in the knowledge transfer flows and needs detected were proposed, with the aim of creating a classification of existing best practices in the EE market out of the information gathered. Knowledge transfer flow maps, together with their breakdowns and knowledge transfer needs fed into the formulation of best practices.

The main result is the Knowledge generation and transfer processes Report (D3.1). The report identifies the major stumbling blocks and required solutions to overcome the lack of knowledge transfer flow in the retrofitting value chain, and includes a detailed inventory of best practices. It analyses the needs for effective knowledge transfer for the various agents in, and out, of the value chain with regards to energy efficient retrofitting techniques and solutions. The needs of each agent were detected, classified and investigated leading to solutions for best practice proposals. The deliverable also includes an inventory of general knowledge transfer tools and techniques, with an evaluation of the most suitable features for a knowledge transfer framework in the EE sector.

Needs

KNOWLEDGE TRANSFER NEED RANKING	TOTAL ASSESSMENT
Training of construction professionals (including architects, civil engineers, building services engineers, project managers, building designers, etc) in retrofit technologies.	9,43
Occupants need financial support to invest in EE retrofitting technology.	9,29
Training of traditional craftsmen on EE retrofitting innovations.	9,10
Increase business motivation through public R&D initiatives and innovation funding.	9,04
Industry needs financial support to take up results of scientific innovation.	8,93
When communicating research results, more focus needs to be given to practical benefits of the retrofit technology.	8,81
Real-life evaluation of research results.	8,22
Evaluation of publicly funded research projects via it's applicability to the end-user.	8,09
Scientists need to have increased contact with the end-users in order to understand the applicability of their research.	7,74
Training the business society to access the knowledge stock.	7,71
Establishing network organisations that will coordinate knowledge transfer from innovation groups and assist in implementing innovation into daily building practice.	7,57
R&D to divert their activity rapidly in response to changes in the market.	7,52
EC guidelines for knowledge dissemination from the research institutions.	7,35
Increased interaction amongst research institutions.	7,26
The business society needs to be aware of tools to manage intellectual property.	7,10
Clustering within the retrofit market to provide integrated solutions.	6,22
Exposing the end users to the technological results of the research organizations.	5,97
Connecting technical commercial advice to EPBD - energy performance and requirements of the actual buildings.	5,57

Figure 4: Knowledge transfer Needs assessed by impact

1.3.5. Knowledge Transfer Framework and Tools Design for the EE sector in building retrofitting

The activity (WP4) focussed on the design and development of the Knowledge Transfer Framework Tool (KTF) which will be the technological solution offering functionalities to ensure maximum flow of knowledge among all actors. It address the needs identified in during the analysis of the knowedge generation and transfer processes upon the concepts as they were laid out in the Methodological Framework and State of the Art Base report.

A web platform for allowing users to upload content as providers and search and view content as receivers was designed, and include User Registration; Content sharing; Content Search and view; Interactive visualisation integration of the knowledge needs, best practices and solutions; Integration of the information with the effect of both the portal and tool are operating over the same information.

The KTF tool is implemented as a web application integrated with the ee-WiSE portal. Through-out this process an iterative approach was followed to provide an answer to needs and challenges coming up throughout the work.

Some Technology facts: The overall platform is based on open-source technologies and open standards. The tool also makes use of some advanced searching functionalities with the following benefits.

- Information Indexing: Information uploaded to the tool is either local (the information itself is provided in some format or remote content whose URL is provided and some sort description). This information as uploaded is indexed in near real time. The content no matter if it is local or remote and also regardless its format, it is parsed, analysed and a keyword based index is generated over it. The core engine of this functionality is the open source license framework.

- Information searching and retrieval: As the user enters a description of what he would like to find, his text is analysed and compared against the index of the the document base. This result in terms of relevant articles is returned.

- Integration with social media is also provided in the sense that users can use their linked in profile to register on the portal.

- A platform with the Content Management System integrated with the tool. All portal information is manageable via an admin platform implemented for the project. This provides a unified management platform for both the web site content and the tool content what is actually contributed to the maintenability capabilities of the platform.

The design of the KTF tool was described in the Virtual Knowledge Transfer Tool Design document (D4.2), which reflects the architectural design on the tool and reflects the design of information for the material and for the material sharing templates. This work also highlights and a methodological framework for developing additional information in the future.

The web application for the KTF Tool (D4.1) was provided in order to be tested by the validation activities (WP5) and the final version after the incorporation of suggestions. This implementation is actually the materialisation of the work realised before. The final result is a complete information

portal with information regarding knowledge transfer retrofitting, brought to users in a uniform and easy to find perspective and making possible the evolution of this information with the expected outcome to be a main information source for this domain over the Mediterranean counties.

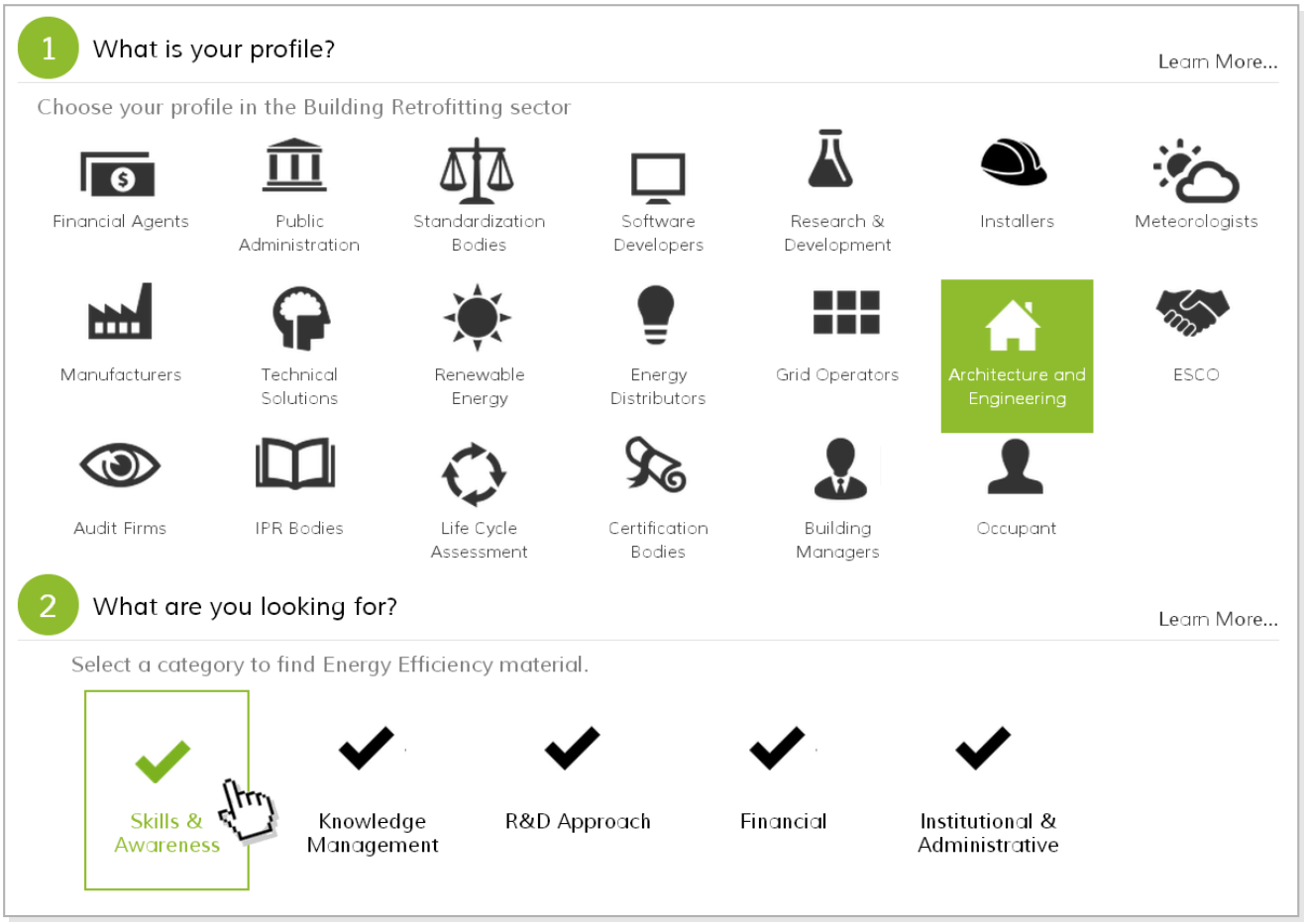

Figure 5: ee-WiSE Knowledge Transfer Framework Tool

How does it work?

The KTF Tool will offer the user 2 options, Find and Share EE knowledge.

- FIND: The FIND option helps the user looking for the most relevant material according to their profile.

    1. Choosing a profile: Between 20 different agent profiles of the EE-Building Retrofitting sector, the users can pick the role they fit better in. There is at least a role to play for everyone.

    2. Browsing the categories: The content shared in the tool is classified in different categories to help the user filter the search criteria. Each category contains different topics and the tool will highlight the most relevant for each profile.

3. Checking the results: The results will show all the material contained within the selected topic, where the user will be able to add more filters (language, profile...) or change the search criteria.

- SHARE: The SHARE option allows the user publishing in the portal, relevant material for the EE building community.

    1. Selecting a category: If the user knows interesting Energy Efficiency material to be shared in the KTF, a category must be selected first. The chosen topic will be the most suitable to the material being shared.

    2. Sharing knowledge: The tool will assist the user with key knowledge, tips and examples. Then, the user can introduce the details of the material and publish it to the community.

1.3.6. Framework and tools validation within the value chain and other stakeholders

The KTF tool validation (WP5) aimed to obtain feedback from the representatives of the value chain in order to validate the adequacy of the knowledge transfer framework and knowledge management tools developed.

As a first step the Framework and Knowledge Management Tools Validation Plan (deliverable 5.1), was developed, which sets out the methodology and planning for validation activities, as well as the Monitoring plan to measure the impact and effectiveness of the validation actions on the target group.

The ee-WiSE Knowledge Transfer Framework Tool, lesson guidelines and ICT tools were validated using a two-level approach, where the validation actions were implemented on a country level, as well as on a consortium level. On the first level, the validation was performed by presenting the developed KTF, guidelines and Tools to the target audience – agents of the value chain – in workshops in all partner countries. Different aspects of KTF were evaluated: adequacy for the target groups, accessibility, visceral appeal, functionality, understanding/ comprehension, usability, innovation, cost of use/ application, and applicability in other sectors of the building industry and/ or other European regions.

The partners responsible for validation selected knowledge transfer guidelines and tools to be tested in their regions; a complete coverage of developed knowledge transfer guidelines was ensured – each guideline was tested in at least 2 regions. A plan was developed that specified which tools would be tested by whom, and how and when it would be done.

A methodology for the validation workshops was developed was included as part of the Validation Plan. The validation workshops took place in Bulgaria, Cyprus, Greece, Italy, Malta, Spain and Turkey in February-March 2014. Validation workshops were organised as multi-company events, in-company workshops and individual consultations, or as a combination of different types. Independent of type(s) of workshop(s) chosen, the validation activities involved multi-agent audience in each partner country.

Validation participants' feedback was collected through questionnaires that were included in the Validation Plan (in total 164 questionnaires) and interviews. The respondents represent the whole EE retrofitting value chain: Knowledge and Product Providers, Energy and Retrofitting Services Providers,

Public Bodies and Finance, Quality Assurance, Energy Providers and Demand (occupants and building managers).

The collected feedback was presented in country-level reports (one report per country except of Spain where 2 partners performed validation activities in 2 different regions and produced 2 regional reports) using the template provided in the Validation Plan and were translated into recommendations to be used to improve the developed Framework and Tools. The regional workshops were followed by the consortium-level workshop, which was held on 27 March 2014 aimed to validate the developed Knowledge Transfer Framework.

The partners have also performed internal validation of the KTF as agents of EE retrofitting value chain during the last stages of KTF development and preparation for country-level validation workshops, and their comments and suggestions for improvement have either been implemented before the country-level validation workshops or were included in country-level validation reports.

In general, the participants of the validation activities were positive about the KTF developed and thought it could become a valuable tool to improve exchange of knowledge in the area of EE retrofitting. A list of suggestions for improvement was included in the Consortium workshop report and Validation Report and Conclusions (deliverable 5.2).

The recommendations provided in the Validation Report, lead to a new upgraded version of KTF, which was then submitted to a second round of internal validation by the partners (in their capacity of value chain agents)

A number of indicators to measure the impact and effectiveness of validation actions on the EE retrofitting value chain were defined, for the monitoring of the impact and effectiveness of the validation actions on the target group.

In general, the developed KTF has received a positive evaluation. Most respondents agreed that the KTF gave them a clear idea about how knowledge on EE retrofitting can be shared; they learned about some new tools of Knowledge Transfer and something new about EE retrofitting; using the KTF could make their work easier; they would recommend the ee-WiSE KTF to others. Most comments concerning the KTF were related to the need to improve the design/ visual appeal and the help system.

The Enhancement Plan included in Validation report presents the recommendations for improvement divided into 4 main improvement areas (visual design, functionality, quality of KTF and its contents, and tools to facilitate development of EE retrofitting community), and sets responsibilities and timeline. In addition to recommendations for improvement, a number of participants stressed the need for strong promotion of the KTF, aiming to attract Knowledge Providers as well as users, so that the amount of quality content is increased and the portal becomes a reference point for everybody interested in EE retrofitting in the Mediterranean.

The practical based evidences obtained through the validation experiences have lead to the formulation of the guidelines and recommendations (WP6).

1.3.7. Definition of the Knowledge Transfer Global Strategy: Guidelines and Recommendations

The goal of the definition of the Knowledge Transfer Global Strategy (WP6) was to bring together all the results of project, and is based upon: the theoretical know-how gained from the State of the Art analysis and the identification of the Knowledge Transfer needs (WP2 and 3) and on the development of KTF Tool (WP4) and on the practical based evidences obtained through the validation experiences.

The strategy defines a set of Knowledge Transfer Processes regarding the main milestones in Knowledge management, according to the sector's needs and situation, to enhance contact and communication between agents of the value chain and develop their intellectual capital for productive knowledge sharing and usage. It also addresses the uptake of tacit knowledge implicit within the sector's value chain.

Four Practical procedures, recommendations and guidelines report were developed:

- D6.1: Business Models: Practical procedures, recommendations and Guidelines Report. A business model" describes the method or means by which the different value chain agents will transform the knowledge gathered into business. Business models are an essential part of strategy formation – they provide the fundamental link between product markets within the industry, and the markets for the factors of production. A business model may be based on many different aspects of the accumulated knowledge while concentrating on value creation

- D6.2: Promoting Market up-taking measures: Practical procedures, recommendations and Guidelines Report. Market Up-Take" is the rate or extent to which EE Retrofit technologies are implemented in a country or region. A successful market up-take depends on how well the building owners and building managers respond to the retrofit technologies showcased to them. It involves a change in the society's behaviour and readiness to learn about and implement new technologies into their everyday life.

- D6.3: Enhancing Cross-Sectorial Cooperation: Practical procedures, recommendations and Guidelines Report. Cross-sectorial cooperation as applied to the EE retrofitting sector is the interaction between the professional agents of the value chain that are involved in technical and innovative developments. A good cooperation amongst agents will lead to an effective knowledge sharing, dissemination or generation, and thus a promotion of the competitiveness of the sector

- D6.4: Standardization, Public Procurement and Certification: Practical procedures, recommendations and Guidelines Report. "Standardization, public procurement and certification" are the processes that Public Bodies are directly involved in within the energy retrofitting sector. These agents range from Administration and Regulation Organisms, to Certifying Entities being responsible for the development of the legal framework and the creation of other type of requirements which can affect the market.

Each of the reports, focussing on their particular area, answers the following questions: 1. Knowledge Generation: How to generate new knowledge; 2. Knowledge Sharing: How to effectively share this knowledge and 3. Knowledge Dissemination: How to disseminate and use the knowledge with maximal effect. The four reports address these issues from a perspective of all agents with special attention to: policy recommendations concerning the promotion and support for sustainable business models and the successful development of multi-skilled SMEs' partnerships.

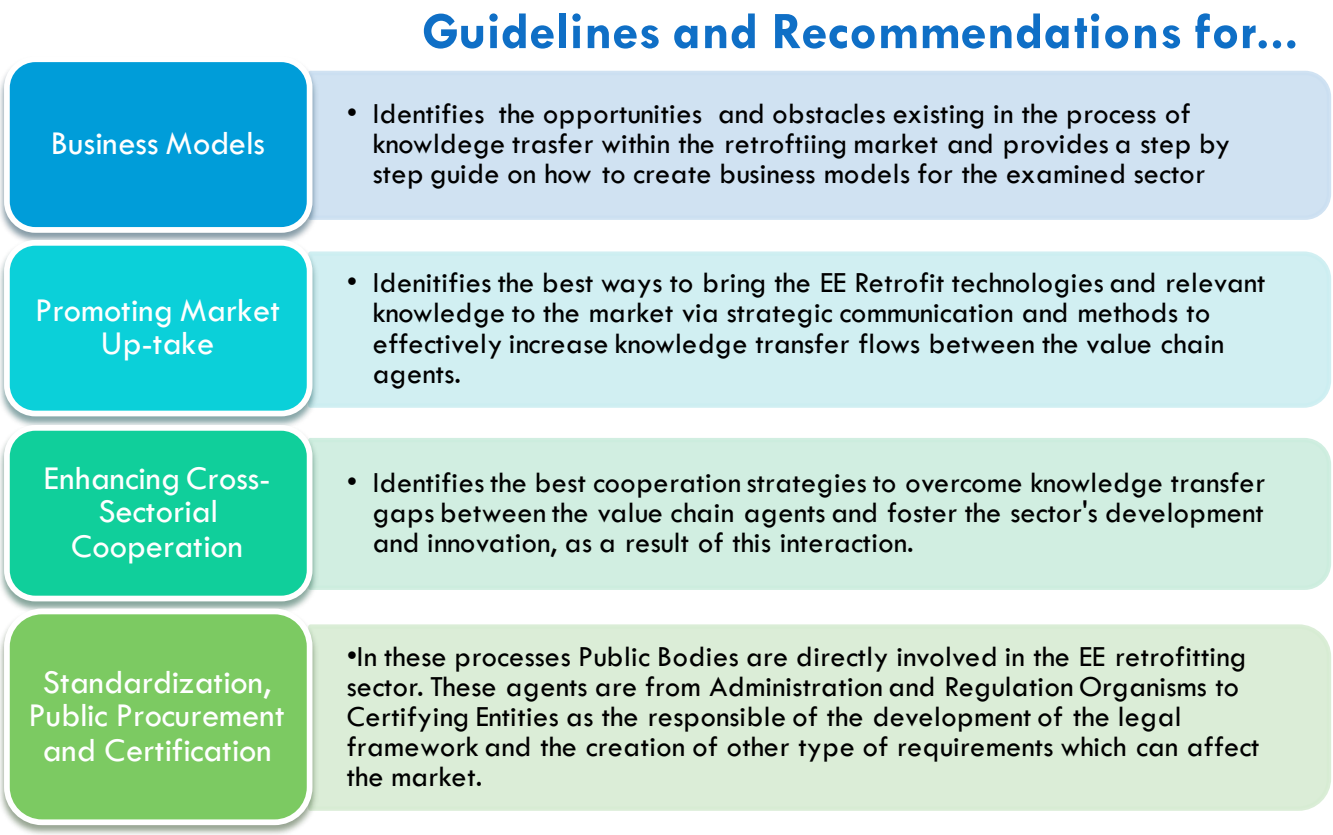

Figure 6: ee-WiSE guidelines and recommendations strategy

1.4. Impact, dissemination and exploitation

1.4.1. Potential impact

The impact expected and determined at the initial stage of the project per specific target group has been identified according the project final results.

SPECIFIC TARGET GROUP	EXPECTED PROJECT IMPACT	POTENTIAL IMPACT DETECTED
SMEs and independent professionals involved in the value chain	Effective exchange of knowledge and best practices among SMEs.	The KTF tool will become the instrument of knowledge exchange that will suit best on the SMEs objectives.
	To encourage new business models and inter-sectorial cooperation.	Guidelines provided through the analysis of the building retrofitting sector will assist the professionals of the value chain interested in upgrading to a new business model strategy.
R&D institutions (public, private o companies)	Energy-efficient solutions will be provided for one homogenous climatic area.	R&D representatives will take advantage of the guidelines and material shared to focus the Mediterranean approach for specific valid solutions throughout the countries.
Public administrations and certification bodies	To provide evidence-based recommendations in support of policymaking on public procurement rules, regulations and standards.	The guidelines specifically addressed to these agents will provide the insight of the certification/ standards problem identified in WP3, providing solutions and best practices as proper alternatives for the Med. region.
Householders, building managers and society in general	To raise awareness about EE issues in order to boost EE market.	The openness of the project results and the facility to access material in the KTF in a friendly way reaches also end users and provides the necessary guidelines to other agents to reach them as well and achieve the society awareness claimed so far.

1.4.2. Dissemination

ee-WiSE's main aim with regards to the dissemination activities was to create public and scientific awareness on project achievements in order to:

- ensure proper know-how exchange and collaboration among the ee-WiSE consortium and other related European initiatives, through a set of clustering activities;
- present the project's progress, make the results accessible outside of the scope of the ee-WiSE consortium and project reviewers, ensuring large awareness of the academic society, through scientific and research publications (journals and magazines) and participations in relative events (conferences, workshops, symposiums and exhibitions), including external actors to maximize the impact;
- provide valuable feedback to relative standardization bodies and consortiums with regard to the integration of the respective technologies, their applicability, completeness, optimization and their future development;
- develop and maintain the official project's website throughout the project lifecycle;
- organize and deliver a set of promotional, dissemination events;
- ensure commitment of all partners in the Consortium in the dissemination activities.

Based on the objectives and approach described in the dissemination plan, the materials and tools were developed, and the messages to be conveyed to the target public defined. Among the dissemination materials and tools used were the following: project website, press releases, standard project presentation; e-leaflet; e-newsletters, and a Linkedin group. A large set of dissemination activities were realised by the consortium, which are reflected in table A2.

1.4.3. Exploitation

Future sustainability and viability of the results of the project beyond the lifetime of the EU funding is an important part of the project. The Exploitation plan, will describe partners' different means towards exploiting the project results; to support the partners' own activities or to sustain different value chain members in their business.

After initial identificaÅtion of the potential exploitable results the consortium realised an Exploitation Strategy Seminar. It is a service provided by the EC and helps NMP projects to bridge the gap between research outcomes and exploitation providing a series of tailored services[2]. One of the services is the Exploitation Strategy Seminars (ESS) which is to brainstorm on how a consortium can address the risks and potential obstacles identified in the project risk analysis (which identifiesdentify the risks and potential obstacles to the future exploitation of project results).

As results of the ESS seminar and further analysis and development by the consortium an exploitaiton strategy was defined for the five results which were considered most appropriate for exploitation:

- Business models: Practical procedures, Reccomendations and Guidelines report
- Promoting market up-take measures: Practical procedures, Reccomendations and Guidelines report

[2] http://ec.europa.eu/research/industrial_technologies/assessment-and-exploitation_en.html

- Enhancing Cross-Sectorial Cooperation: Practical procedures, Reccomendations and Guidelines report
- Standardization, Public procurement and Certification: Practical procedures, Reccomendations and Guidelines report
- KTF Tool

As the first 4 Exploitable Results are all public deliverables and within the spirit of knowledge sharing will be made widely and freely available to the value chain agents and the wider constituency, the underlying business cases for exploitation are thus to be based on providing complementary activities, such as consultancy, training, services, etc. by the consortium members.

Regarding the KTF Tool, One of the exploitation means is to position it as a KTF tool for European projects in the field of EE retrofitting or other projects, where they can share their results and deliverables in an easy manner, and thus contributing to the transfer of knowledge. Currently there is no one-stop-shop were EU funded projects in the field of Energy Efficiency and Retrofitting can share their results and deliverables, projects have their own websites where the information on their own projects can be accessed. The information and relevant knowledge is thus dispersed. This provides a great opportunity for the KTF Tool, by extending its vision to a wider scale and extending the geographical area to go beyond the Mediterranean area it can provide a reference place where interested parties can gather relevant knowledge generated by EU funded projects (as well as access other knowledge in the field of EE retrofitting) and share their own knowledge.Several projects have mentioned it is an interesting initiative during a coordination meeting with other projects, as it would allow them to extend their dissemination reach and impact, while at the same time, the results and deliverables would remain accessible even finalisation of a particular project and the closing of their website.

The positioning of the KTF tool in this sense is not excluding the positioning as a specific tool for knowledge sharing and generation for the value chain, in fact it ads a dimension and an added value by integrating more types of knowledge and information than initially foreseen (i.e. those coming from EU funded projects).

As the objetive of the project was to create the KTF tool and methodology, not a full-fledged and densely propulated framework. During the project consortium members and some third parties (through the validation workshops and through the cooperation with other projects) uploaded and initial set of knowledge and related materials. However at this stage the contents have not yet reached a sufficient critical mass to implement any of many scenarios and models, such as the abovementioned model. During the months after finalisation of the project the partners interested in exploitation will maintain jointly the KTF tool either with own resources/funds or either by submitting requests for public funding on regional, national and/or European level. Priority will be on own resources in this period, as additional public funding, though sought, cannot be guaranteed. Once the exploiting partners agree that a sufficient critical mass has been reached, they will design the operational business plan,

In order to implement and take forward the approach the consortium has agreed to set up an association under Spanish law, which will include all the partners of the original consortium. The mission of this association is to monitor and implement the abovementioned approach. In order to secure the resources to do this, all partners will provide staff time for the association.