

## **POLICY PAPER**

# **IMPROVING MED TRANSNATIONAL COOPERATION ANSWERS TO ENERGY EFFICIENCY CHALLENGES IN BUILDINGS**

Finalized version prepared by the DTES Generalitat of Catalonia and the  
Mediterranean Institute (France) – 11<sup>th</sup> January 2013



## For readers

MARIE and ELIH-MED strategic projects were approved within the MED transnational cooperation programme early 2011. As strategic projects, they have a key capitalization role to play in order to allow the European community to take benefit of the main experiences, outputs and results of these two projects, as well as of the transnational projects related to energy efficiency in buildings in the Mediterranean area.

After several meetings, MARIE and ELIH-MED decided to develop a common capitalization based on a close collaboration in the elaboration of this policy paper. During several months, projects teams from the Department of Housing of the Generalitat of Catalonia and from the Mediterranean Institute (based in Marseille, France) have gathered data and analyses on energy efficiency of buildings in the Mediterranean. Furthermore, the parallel implementation of their project activities has constituted a substantial resource which has been the basis for the elaboration of the priorities and recommendations presented in this policy paper.

PROFORBIOMED, a strategic MED project also approved in early 2011, and which pursues the promotion of the residual forest biomass for energy, sustains the policy paper engaged by ELIH-MED and MARIE projects. PROFORBIOMED will use their experiences with bio-energy (wooden biomass) and the network of contacts at MED and international level to support the present paper.

A first draft version of the policy paper has been submitted in priority to the partners of ELIH-MED and MARIE projects, who have been invited to bring their contributions. Associated partners, local and regional actors involved in pilots, institutions dealing with energy issues, European projects and cooperation programmes have also been invited to read and comment this draft.

The policy paper was presented at the MEDBEE Forum (Med Buildings Energy Efficiency) in Brussels on the 22<sup>nd</sup> of November 2012. The on-going capitalization workshop cycle and planned conferences (Malaga, Cyprus, Brussels) were the main tools to facilitate the diffusion of the first results of the policy paper.

This is now the finalized version of the policy paper, which will be addressed in priority to the MED programme authorities and European Commission at the beginning of 2013 and, in a second step, largely disseminated throughout the Mediterranean space.

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## 1. INTRODUCTION

This introduction highlights the importance of the improvement of the Energy Efficiency (EE) in the existing buildings in the Mediterranean. It is divided in three points, the scope of the Policy Paper, a consideration of the potential impact of the EE in buildings and finally, a description of the objectives of the Policy Paper with respect to the above.

### 1.1 Scope of the Policy Paper

Economic, social and environmental urgencies are today, maybe more than ever, strongly interrelated. In this stressful context, energy efficiency is a point of convergence. Whereas the economic perspectives are depressing and the invoice of oil importations is increasing for Europe, scientists agree to alert decision-makers on greenhouse gases impacts on climate and environment. In consequence, a broad consensus exists on the necessity of developing new economic models and standards of living based on energy efficiency and the European Union adopted common patterns to achieve the ambitious target of an increase in energy efficiency of 20% up to 2020.

This challenge, common to all the European countries, has a specific resonance in the Mediterranean space, where the economic crisis is stronger than elsewhere in Europe with a greater rate of unemployment. Households, enterprises and also public bodies have little solvability and need to reduce substantially their expenses, including the energy bills.

The second common characteristic is the connection between climatic conditions and an important and ancient existing building stock. Energy efficiency renovation of buildings in the Mediterranean face expensive investments in the context of a lower potential of savings (particularly concerning heating), older building stock and poorest population than in Northern Europe. Moreover, the Mediterranean space faces a specific issue, not taken into account till now: the summer comfort challenge.

In this complex Mediterranean framework, it makes sense to test, at a transnational level, new approaches and tools that may contribute to overcome the main barriers that today prevent from a clear improvement of energy efficiency in buildings. It is one of the topics that have achieved legitimacy as an essential axis of the territorial cooperation, because it requires, more than other topics, a multilevel coordination.

This policy paper will consider both: energy efficiency policies and territorial cooperation, trying to pave the way for an empowerment of them as central topics at the next programming period operational programs.

It also aims to reinforce the linkage between territorial cooperation initiatives on energy efficiency, public policies and access to new sources of funding. A greater cooperation on energy efficiency issues and specific efforts to test, innovate and fundraise ambitious projects and policies are necessary if we want to make the 20% energy efficiency increase objective more realistic.

## 1.2 Potential Impact of energy efficiency in buildings

**Energy efficiency in buildings (EEB) is today a common challenge to all the Mediterranean territories.** As the EU Consultation Paper (Financial support for Energy Efficiency in Buildings, released in February 2012) says, “buildings must be central to the EU energy efficiency policies as nearly the 40% of final energy consumption (and 36% of the greenhouse gas emissions) is in houses, offices and shops”. Now, the increase of the global sustainability of building stock and construction sector will depend on the ability of energy efficiency policies to deal with the diversity of the building stock (residential buildings, shops and commercial buildings, offices, restaurants and hotels, hospitals and health care buildings, schools).

Furthermore, the ancient building stock in the Mediterranean is characterized by low renovation rates (2-3 times lower than the average energy refurbishment rate in north-western EU countries; BPIE and FI 2011). To transform this energy saving potential in real energy and economic savings, the ancient building stock has to become a priority topic in policies and strategies, which have to target all the relevant public and private stakeholders.

In the Mediterranean area, there is energy saving potential in ancient building stock, in low-income housing, but also in tertiary buildings considering the increase of cooling demand. Nowadays, policies mainly impact public social housing, through specific credit lines, ERDF funds and ambitious objectives of renovation. Nevertheless, the low-income housing sector in the MED space is characterized by the importance of the private housing. Now, private owners are “far to reach” by existing policies: a particular effort has to be made, in awareness and financial formulas, as a priority to adapt policies to low-income owners and create innovative incentives.

Apart from the direct impact foreseen in energy and monetary terms for users, large scale energy refurbishment operations should also create positive economic and social externalities. Several studies and analysis from the European Commission and other European institutions have demonstrated the enormous potential of buildings energy efficiency improvement in the MED space economy. The investment needs per year for EU 27 countries, indeed, are valued at 60 billion Euros and the related job creation is estimated at 800.000. However, actually there are important barriers that impede the development of this captive market. The Mediterranean countries should understand how these barriers can be unblocked according to other countries and sectors’ experiences.

Currently, the energy renovation of buildings is considered by investors as a difficult question, with unclear profitability and with a long administrative process to reach public subsidies or grants. More than the context of economic crisis and environmental pressure, the EPBD Directives implementation starts nevertheless to open the mind of the main stakeholders in considering energy efficiency improvement of buildings as an important and mandatory challenge.

However, important gaps still remain between countries and regions in the implementation of the European legal framework. And this framework will not be sufficient to compel all the stakeholders to endorse their responsibilities. In this context, transnational cooperation projects could actively contribute to create a local and regional movement towards a better implementation of this framework and an involvement in EE policies, which could encourage investment, and, on the long run, jobs creation. Moreover, cooperation projects should also facilitate citizens' awareness concerning the importance of energy renovation and buildings opportunities.

Territorial cooperation is a key option to overcome as quickly as possible the enormous barriers that prevent from developing the energy renovation of buildings in MED space. Territorial Cooperation would facilitate:

- Benchmark and comparative analysis between different realities. In this sense, territorial cooperation can facilitate the production of more complete analysis and knowledge of reality.
- Create uniform criteria for assessing the effects of EE measures and evaluation of achieved savings.
- Share of solutions and measures and integration of the achieved experience-based knowledge
- Generation and share of common approaches to overcome common barriers
- Achievement of economies of scale in investment and efforts development
- More dynamic markets in quantitative and qualitative terms

Energy efficiency in buildings could become a strong pilot sector for transnational cooperation in the Mediterranean. This topic is particularly relevant not only because it is in line with the EU2020 strategy and priorities, but also because experience-sharing opportunities are numerous and policy development in this sector is complex and requires pilot action and innovation. In this domain, **multilevel coordination and governance issues are the main barriers and transnational cooperation can facilitate this multilevel dialogue.**

Nevertheless, transnational cooperation is still a marginal source of funding and projects have difficulties to directly innervate policies at local and regional level.

In this sense, preparing, sharing and developing a common MED strategy to improve energy efficiency of buildings is a clear positive example of the usefulness of territorial cooperation approach, even if efforts should be continually done to combine transnational projects with an efficient multilevel governance system able to generate consequent impacts up to the EU2020 objectives. This Policy Paper is a key tool to combine both vertical (multilevel governance) and horizontal (territorial cooperation and policies) approaches and to avoid the usual fragmentation and barriers in EU policies implementation.



### **1.3 Objectives of the Policy Paper on energy efficiency in buildings**

As the ongoing programming period for European territorial cooperation is coming to an end, the preparation of the next programming period for 2014-2020 is currently in discussion. Now, ELIH-Med and MARIE are persuaded that both projects, as well as PROFORBIOMED and others belonging to European programs related to these issues, can bring results and lessons of their experiences as a real added value to the next programming period. This is the object of this Policy Paper that aims to propose to the Managing Authority of the MED programme a consensus-based set of recommendations to contribute to the next programming period preparation, providing answers to the challenges related to energy efficiency in buildings shared by the Northern Med regions and countries.

This document presents a review of the current situation in the Med area, which analyses the gap between the objectives and the real ongoing investments and mutations. Investigations have allowed MARIE and ELIH-MED partners to agree on strategic lines aiming to improve energy efficiency in buildings that are the skeleton of the shared vision both projects advocate for. In addition, the last part of the document focuses on macro regional perspectives for the territorial cooperation process and proposes recommendations on improving cooperation on energy efficiency issues in the Mediterranean area.

PROFORBIOMED, a strategic MED project that pursues the promotion of the residual forest biomass for energy, sustains the present Policy Paper and the conclusions elaborated by ELIH-MED and MARIE projects.

## 2. MED CONTEXT ANALYSIS/STATE OF THE ART

A diagnosis of the situation related to the EE in the Med area is provided with a further definition of the barriers associated to each one of the main strategic lines for improvement.

### **2.1 EEB state of the art in the Mediterranean area and identified barriers to reach the EU 2020 targets**

#### **2.1.1. European level**

The European legislation framework concerning the energy efficiency in buildings mainly consists in the European directive 2002/91/EC on the Energy Performance of Buildings (EPBD) and its recast, directive 2010/31/EU:

- The 2002/91/EC introduces an energy certification scheme, a methodology for the calculation of the energy performance of buildings, applying in the same time minimum requirements on the energy performance of new buildings, and of existing buildings that are subject to major renovation.
- Its recast, directive 2010/31/EU, comes to reduce the large differences between Member States' practices in this sector.

Other relevant directives related with energy efficiency in buildings are the following:

- The co-generation directive 2004/8/EC establishes a general transparent framework to promote and facilitate the installation of cogeneration facilities.
- The directive 2006/32/EC on energy end-use efficiency and energy services aims to make the end use of energy more economic and efficient in Member States: on the one hand by providing mechanisms, incentives and general (institutional, financial and legal) regulations, in order to eliminate current obstacles in the market; and on the other hand by creating the conditions necessary for the development and promotion of an energy services market and for the provision of other energy efficiency improvement measures aimed at final consumers.
- The directive 2009/28/EC could also be a useful instrument for improving energy efficiency in buildings, by promoting the use of energy from renewable sources. According to this directive, each member State should establish national plans including compulsory objectives regarding the use of renewable energy sources in transport, electricity and production of heating and refrigeration for 2020.

The **directive on energy efficiency 2012/27/UE**, in discussion for long months, was adopted in October and published in November 2012. It repeals the directives 2004/8/EC and 2006/32/EC, with the aim to ensure the achievement of the 20% primary energy consumption saving target by 2020 and pave the way for further energy efficiency improvements beyond that date in transport, residential, tertiary sector and industry. The means used are simple but it introduces ambitious measures such as national obligations of energy saving set by member States, initiation of energy efficiency projects from public sector and incentives for the achievement of major energy savings from consumers.

In particular, the directive states that member States will have to “establish a long-term strategy for mobilising investment in the renovation of the national stock of residential and commercial buildings, both public and private”. This roadmap will have to be ready for April 2014. **Nevertheless, the question of financing remains one of the main barriers to the implementation of energy efficiency measures**, and in particular, mobilising the initial up-front capital is a recurring sticking point. Now, even though emphasis is put on cost-effective approaches for renovations, and low and medium households are mentioned as part of potential users of innovative financing mechanisms, the directive does not include any specific provision to address this issue: it can not anticipate any negotiation that will take place during the adoption of the EU Multiannual Financial Framework, although EU’s budget for the 2014-2020 period is expected to be one the main direct sources of public funds to finance energy efficiency in buildings.

The European institutions have adopted a considerable set of common rules and ambitious objectives to encourage energy efficiency schemes. Each national or regional legislation on energy efficiency directly corresponds to the application of this common European legal framework. Nevertheless, delays and distortions in the application of this framework still remain, and particularly in the Mediterranean.

### 2.1.2. National level

In most Mediterranean countries, policies are designed at national level. The decentralised public administration model that applies in some Med countries (like Spain, Italy and to a lesser extent France) is a reason of the existence of various regional/ local laws and regulations. The table below presents a simplified scheme of the decision levels and competences repartition concerning energy efficiency in the Mediterranean countries.

## Policies and Regulation Frameworks Approaches

	Spain	Italy	France	Malta	Cyprus	Slovenia	Greece
<b>Policies</b>							
<i>Legislation adopted directly by EU</i>	✓				✓		✓
<i>Legislation derived by National / Regional Plans</i>	✓	✓		✓			
<i>Other laws (related to the promotion of technology or to economic development)</i>	✓	✓	✓			✓	
<b>Regulation Framework</b>							
<i>Adopted by EU</i>	✓	✓	✓	✓	✓	✓	✓
<i>Technical Rules and Codes</i>	✓	✓	✓	✓		✓	✓
<i>Legislation for the promotion of a specific technology or area of use</i>	✓	✓	✓				

As far as concerns the quantification of results derived from Energy Efficiency policies and regulations, this is limited or inexistent. This may result from the absence or delay in posing specific evaluation targets expressed in a quantified way for many policies through energy or economic indicators. Another reason may be the lack of a methodology for closely monitoring the implementation of a new policy or a new regulation framework. Quantification of results is used at some extent in the financial resources programmes designed to support national policies.

### 2.1.3. Transnational/ transregional level

The table presented above perfectly illustrates the heterogeneity in the application of the common European framework. In this context, cooperation projects are the only existing tools that allow exploring transversally, on a territorialized basis but in a transnational space, the differences in terms of application of the EU directives and initiatives. As a consequence, cooperation projects are accurate means to identify common barriers and good practices, and to draw out recommendations of interest for the policy-making process at European and national levels.

One of the main drivers for the future changes in intervention through EU programs related to EEB should be the improvement of capitalization activities between EU projects and programs. The experience in capitalization during the current period (2007-2013) has been low and in consequence the impact of the funded projects could be increased (an interesting experience in this sense is CESBA, see annex 4). Taking into account the important quantity and quality of EU projects related to EEB, it could be of particular interest to increase as much as possible the

levels of interaction and the capitalization activities between projects and initiatives related to EEB in the new period.

The on-going capitalization call of the MED programme, the generalization of capitalization activities in the application forms and the creation of sustainable capitalization structures is part of this process and could strongly enhance the impact and sustainability of the new funded projects (2014-2020).

The coordination of the funds dedicated to energy efficiency remains the main challenge and till now, administrative constraints and competences compartmentalization at European, national, regional and local levels make difficult this articulation and partly explain the existing gap between the available funding, its execution and the concrete achievements.

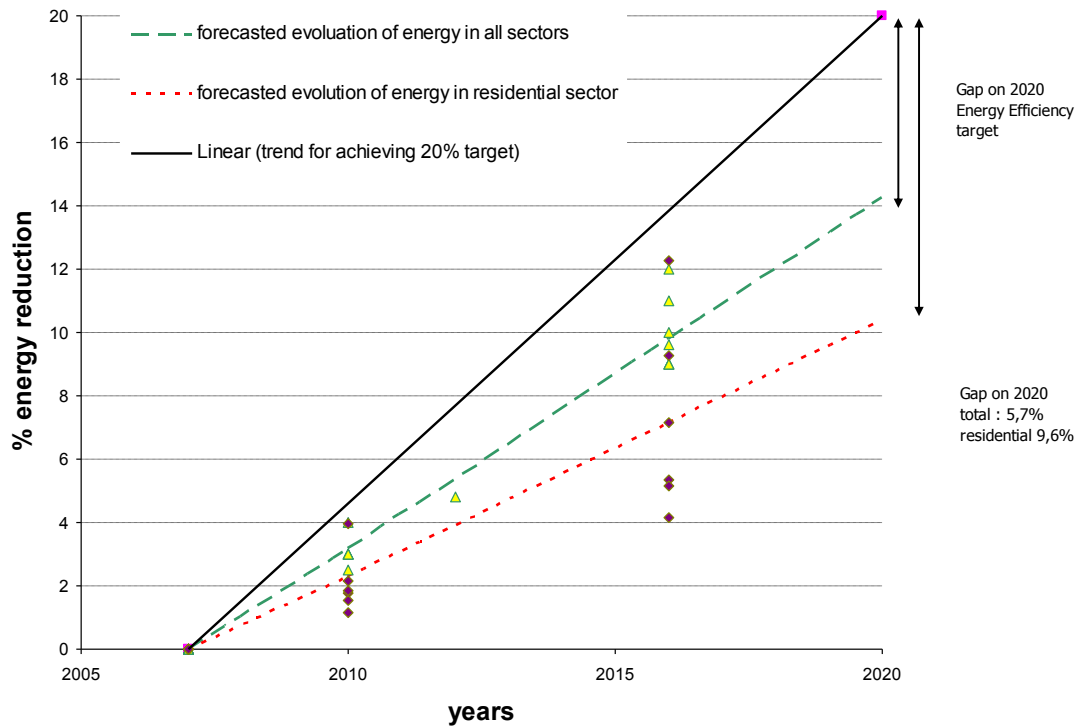
The coordination challenge also consists in establishing strong interdependences between territorial cooperation and competitiveness and cohesion objectives. Today, territorial cooperation remains marginalized. People dealing with cooperation projects are often disconnected from the operational technical services. The definition of priorities at regional level through the operational plans does not integrate the definition of a cooperation strategy on the priority topics. Territorial cooperation projects on energy efficiency still need to demonstrate their accuracy to achieve a strong added value in the regional and local policy making and implementation processes.

#### **2.1.4. Mediterranean level**

##### ***Delays in the achievement of the 2020 objectives***

A trend-setting scenario was developed in the framework of ELIH-Med project, using data available in each project country regarding the energy efficiency targets set during the timeline from 2010 to 2020, and data extracted from the forecasted evolution of the achievement of these targets as described and presented in each country's National Energy Efficiency Action Plan (NEEAP). This scenario portrays the expected gap between the 2020 target set on energy efficiency (20% energy saving according to EU) and the real energy reduction achieved due to the measures adopted in the NEEAP of each country. It must be indicated that the EU 20% target concerns reduction in primary energy use compared with projected levels, while the National Energy Efficiency Action Plans have defined their targets for the final energy use, as indicated in the energy services directive 2006/32/CE. In this study, ELIH-Med partners have applied the same target of 20% for reduction in final energy use. Since EU indicates at least 20% in primary energy saving, ELIH-Med is in line with this objective, since the target of 20% based on final energy use is more ambitious.

Figure 1 presents the gap for energy savings in 2020 for all sectors such as buildings (residential and tertiary), industry and transport as well as for the residential sector specifically.



**Figure 1.** Trend line diagram of the 2020 policy targets evolution and of the on-going energy efficiency programs evolution in project Mediterranean countries

The black trend line in Figure 1, leading to 20% final energy savings, represents the trend that Mediterranean countries must follow in order to achieve the 2020 energy saving targets in all sectors. Since there is no specific target for household sector, it is assumed that the target of 20% savings can be also applicable to the household sector. Green dashed trend line represents the forecasted evolution of final energy savings in all sectors taking into consideration the measures adopted in the NEEAP for each country whereas the red dotted trend line represents the respective forecasted evolution of final energy savings only for the residential sector, which also includes low-income housing.

Gap for all sectors increases from 3.2% in 2016 to 5.7% in 2020 for the Mediterranean countries, while the gap concerning the residential sector increases from 5.9% in 2016 to 9.6% in 2020, when considering that the 20% energy saving target can also be applied for residential sector. Forecasted energy savings may be rather optimistic if the measures (according to NEEAPs) will not be implemented successfully. In that case, the expected gap by 2020 will be larger.

It clearly appears that the 2020 objectives are far to reach on the basis of the actual energy saving trend. Estimations in 2020 show that in the residential sector, half of the 20% energy saving objective will be achieved, on the basis of final energy use. This gap between the

European objectives and the effective energy consumption reduction is a complex challenge that Mediterranean countries and regions are facing.

There are many causes for the projected gap in the residential sector by 2020 and most of them are associated with delays on the implementation of Energy Performance of Buildings Directive (2002/91/EC and 2010/31/EU). Additionally, considering the high percentage of LIH (30 to 40%) in Mediterranean area, lack of available and accessible funding mechanisms designed for end users and especially for LIH is hindering the expected energy savings goals. In most cases, the private-public financing synergies are not enough for all the low-income housing end-users, the Third Party Financing is not developed and supported to a satisfactory degree and the scheme of tax incentives for energy efficiency investment is not followed by the most of users. This is also due to lack of information and awareness by the end-users about the necessity and the environmental and economic benefits of the energy efficiency in households. Energy efficient end-user behaviour is a critical parameter to the success of each national policy and programs.

### ***The Mediterranean specificities***

#### *Low energy efficiency of the buildings*

As compared with the rest of Europe, Med area presents in terms of energy efficiency some specific climatic, physical and social characteristics which require special attention. The climatic conditions have led to a low emphasis on insulation and to a growing use of air conditioning. In most countries, the law on thermal insulation was passed late in the 1970's. Therefore approximately 1/2 -2/3 of low-income housing stock across the participant Med countries are non-insulated buildings, having been built prior to 1980.

#### *Structure of the ownership*

The ageing building stock of low-income households (LIH) especially in urban centres with high energy intensity, the lack of strong and well structures social houses operators and a high proportion of owners are also typical characteristics of LIH at Med area.

#### *Restricted public financial support*

Possibilities of renovation suffer from a limited financial support coming from the public administration.

#### *Low refurbishment rates*

The current energy efficiency refurbishment rates in MED regions range from 0.12% to 0.26%, which corresponds to a 2-3 times slower energy refurbishment rate than the North-Western EU Countries. The very slow spontaneous refurbishment rate in the MED area further demonstrates the need for urgent policy action.

#### *Lack of detailed data*

The lack of data related to buildings in the Med area is a persistent issue for acting on energy efficiency. After one year of compiling data and information from all the MARIE regions and countries, the main conclusion is that there is not complete energy information over the MED building stock. For instance, the majority of information is compiled by national census done in

2001; only Malta (2005) and France (2006) have actualized data. For tertiary buildings, the information related to the energy efficiency and consumption of their stock is poor or inexistent.

Nevertheless, a solid understanding and analysis of the representative low income buildings and groups is performed within ELIH-MED project in order to be used as a base for the identification of effective technical solutions and innovative financial and social practices in the framework of large-scale energy efficiency schemes for LIH.

### ***A multidimensional approach of energy efficiency improvement***

At the different stages of a refurbishing process, several topics particularly complex are at stake. Ownership, behaviours, buildings characteristics offer a mix of configurations that make each energy efficiency refurbishment process a singular operation. As a consequence, the implementation of policies has to deal with this heterogeneity.

The number and diversity of involved stakeholders may hamper the refurbishment process. In many cases, a great variety of entities are involved in the retrofitting of low-income housing: occupiers, the constructor, banks for the loans, and local or national administration for permits. This leads to time consuming and complicated procedures that deter participants, cause delays and increase costs. Difficulties to ensure adequate use and maintenance of the building after the renovation reduced the achieved savings.

In any case, occupiers' behaviour determines refurbishment success. Nevertheless, coordination and mutual efforts of occupiers to improve energy efficiency are made difficult by the lack of tenants' associations and by their inappropriate rules and decision-making process. Furthermore, occupiers may be reluctant towards centralised solutions because of distrust between them, or towards the project itself due to a lack of awareness on the future benefits of the refurbishment. As an example, in some buildings, occupiers cannot control individually the heating system for their dwelling: heating costs are divided between apartments according to their size. Therefore, there is no incentive for occupiers to apply energy efficiency measures.

It is also important to take into consideration user behaviour related to hot water use, thermostat settings, etc. in order to have a comprehensive energy savings measurement.

The active involvement of the entire community in the design of energy efficiency schemes at territorial level via participatory planning procedures is essential. Participation can be facilitated by written communication, online tools and face-to-face communication via individual consultation, group meetings, round tables. A communication policy, adopted by decision makers, residents and all relevant stakeholders should be planned along with motivations to citizens through energy saving competitions, offers of energy saving kits and opportunity for residents themselves to be involved in the implementation of structural works (self-rehabilitation work).



To a general extent, cultural aspects (importance of building energy efficiency, awareness on energy use impacts, etc.) are very important in order to determine final results in energy consumption in buildings.

## 2.2 Identified barriers

ELIH-MED and MARIE investigations and observations have permitted to draw precise conclusions on the real situations in the MED territories. The most operative result of the MED context analysis is the identification and description of the main barriers that make it difficult the achievement of EU 20-20-20 objectives related to MED building stock. These barriers come from the Regional Benchmark Analysis that MARIE partners prepared during 2011 and 2012 and from the analysis of obstacles encountered by ELIH-MED partners within their pilot actions.

From these barriers, ELIH-Med and MARIE partners have proposed strategic lines that should facilitate their overcoming. They are presented below.

Main Barriers	Strategic lines
<p><b>Poor integration and lack of articulated governance of European, National, Regional and Local policies on EE and renewable energy supply and the related administrative bodies</b></p> <p>The gaps and delays in the implementation of European directive in the Mediterranean illustrate the difficulty to develop coherent and multi-sector schemes and incentives able to significantly contribute to the energy consumption reduction. The lack of articulation of EEB policies, designed and implemented by different institutions at several levels, contributes to a dispersion of the EE dedicated funds.</p>	<p><b>SL 1.1 Better articulate EEB policies giving to regional authorities a central role in the coordination at territorial level</b></p>
<p><b>Insufficient adaptation of policies to the diversity of building typologies and residents socio-economic and cultural situation</b></p> <p>Both dwellings typology and socio-economic situation are the central parameters to define efficient policies and planning for energy renovation interventions. Concerning residential housing in the Mediterranean, the existing building stock is characterized by its diversity and age (direct impact on the building efficiency). In this context, it is worth taking into account the specific needs, building characteristic and energy systems to propose triggering incentives (tariffs, tax incentives, ESCOs, etc.) that are today missing in order to launch a massive energy refurbishment movement. The diversity of tertiary buildings (offices, shops, hotels, hospitals, schools, etc.) also requires specific works.</p>	<p><b>SL 1.2 Elaborate, coordinate and implement differentiated policies and planning in targeting the various types of existing buildings and different typologies of occupiers</b></p>

<p><b>Incapacity of conventional financial instruments and institutions to make EE renovations feasible and lack of new/alternative financial models and organizations able to contribute to a significant increase of the EE renovation rate in a financial crisis context</b></p> <p>The Mediterranean space is facing a painful crisis. The proportion of low-income inhabitants is higher in this area than in the rest of Europe, and much more now because of the unemployment rate explosion since 2008. Whereas a lot of people are the owners of their principal residence, they have less and less economic resources to launch the necessary energy efficiency refurbishment workings. Furthermore, public aids to support owners, particularly low-income owners, are not attractive enough to push them into refurbishing their housing. Public authorities are direct victims of the crisis, with reduced available budgets and very limited capacities of investment. The private sector, industries, commerce, services, tourism, is experiencing the same precariousness and investment facilities are limited.</p>	<p><b>SL 1.3 Develop financial engineering capabilities to leverage ERDF and other public funds on private financial resources</b></p>
<p><b>Lack of knowledge on behaviours and know-how on social acceptance and end-users involvement</b></p> <p>Even if all the buildings were refurbished and became high-class energy efficient, energy consumption would always depend on the final users behavior. An efficient building does not imply a mechanic energy consumption reduction (and particularly if it is not well adapted to the users' needs). The involvement of final users (before, during and after the refurbishment measures) will contribute to the successful implementation of energy efficiency in buildings policies and the appropriation of this problematic by all in our daily life. The development of participative methods and inclusive policies is more and more essential in a context of development of smart metering.</p>	<p><b>SL 1.4 Develop inclusive policies, participatory methods and community energy renovation projects involving final users</b></p>
<p><b>Dispersion of the energy efficiency competences and absence of collaborative structuration of the professionals and companies on a multidisciplinary basis able to increase their profitability and quality of offers</b></p> <p>Endogenous development relies on local ecosystems, which integrate all the agents of the value chain in the energy efficiency, in our case, in the building sector: private companies (including energy services, construction, engineering, installation, maintenance, manufacturer, ICT, software, energy management systems, architecture...), research/technological centers and public administration. Through its interdependences at local level, this ecosystem will have a strong positive impact on the economic growth and development of its location place.</p>	<p><b>SL 2.1 Create dynamic energy efficiency economic ecosystems</b></p>
<p><b>Difficulties for quick adaptation of all kinds of professionals to the energy renovation of buildings (ERB) large scale process, lack of adapted skills and know-how.</b></p> <p>New or adapted professional profiles will have to be developed to get the</p>	<p><b>SL 2.2 Promote training for existing and new</b></p>

<p>necessary impact in energy renovation of buildings in MED space. The creation of effective training actions will facilitate the quick adaptation of professionals to the ERB requirements. Profit coming from energy savings can also constitute a triggering element for job creation.</p>	<p><b>professional profiles</b></p>
<p><b>Difficulty to develop incentives to increase the EE building retrofitting rate in a context of reduced public financing</b></p> <p>Evaluation of the 2020 objectives demonstrated the gap between targets and energy efficiency improvement real trend. Whereas budget cut are more and more important in public authorities in the Mediterranean, few possibilities exist to encourage energy efficiency investment. As a consequence, the few remaining public investment funds should systematically promote energy efficiency. In order to increase the quality, innovation and multiplying effect of these funds, a new kind of public procurements, based on evaluation derived from the established Life Cycle Analysis (LCA), has started to be used. This kind of methodology, which is currently under discussion in the process of adoption of the new Directive on Public Procurement, is headed to improve the competitiveness of the local SMEs working in the building sector, helping them in qualifying their products and in providing better and more innovative products, and to use the Public Sector as a driver for technological innovation in the SMEs.</p>	<p><b>SL 2.3 Use public procurements as an energy–efficiency-oriented investment tool</b></p>
<p><b>Misreading of social sector initiatives potential as concrete and useful alternatives to develop EEB</b></p> <p>Several initiatives, launched by entities of the social economy sector, have demonstrated their pertinence in both involving final users in the energy refurbishment process and creating jobs. This sector can propose adapted solutions based on an economic model in which there is no objective of profitability, but only a fair retribution of the work done. This base of small enterprises, insertion companies, associations that work on self-accompanied rehabilitation, offers interesting perspectives for the energy efficiency sector.</p>	<p><b>SL 2.4 Encourage innovative initiatives in the social economy sector</b></p>
<p><b>Absence of an integrated approach of the energy efficiency value chain by traditional economic actors and poor level of technical innovation</b></p> <p>Research and innovation activities that propose to improve the global energy savings of the building stock in Mediterranean regions must be based on an integral vision of the building process - usually called “Life Cycle Assessment (LCA)”: design, building materials, energy equipment, construction process, performance monitoring and management, and end of the building life. Improvement and innovation in each of these aspects taking into account their interdependences will be necessary to obtain an energy efficient building industry.</p>	<p><b>SL 2.5 Encourage and finance research related to ERB</b></p>
<p><b>Complexity and difficulty for end-users and companies to prioritize energy efficiency investments, non-integration of environmental</b></p>	

<p><b>positive impact and comfort increase in the profitability calculation</b></p> <p>Stakeholders are not always aware of the benefits that could result from energy efficiency improvement. Energy efficiency improvement is too often considered as a niche market, in particular by investors, even though awareness has started to rise on opportunities it can bring. Professionals are also not always well trained since training which specifically relates to techniques in energy efficiency has grown at the same time as market, so quite recently.</p> <p>In addition, occupiers and owners of the dwellings are not always aware of the benefits energy rehabilitation can bring them. They would rather invest in aesthetics, bigger space, interior decoration, well-being than refurbishment works perceived as intrusive, complex and annoying, while not being able, also, to estimate the return on investment.</p>	<p><b>SL 3.1 Raise awareness on energy efficiency opportunities among the major stakeholders</b></p>
<p><b>Current energy prices not reflecting the real (environmental and social) cost of energy, rendering energy efficiency less profitable</b></p> <p>The energy market in buildings evolution shows a general increase on prices but there are a lot of external costs (as pollution, climate change, and other environmental and social risks) not enough integrated in the market prices.</p> <p>In this context dwellings' users and owners do not consider the energy cost as something important in their daily decision as consumers.</p>	<p><b>SL 3.2 Create and develop a series of incentives to overcome the market barriers</b></p>
<p><b>Absence of compensation for economic actors that would accept the long-term payback risk</b></p> <p>Energy refurbishment is most of the time profitable only on the long term, which can discourage investors, in particular when dealing with low-income owners. That is the main point for energy service companies (ESCOs), which are remunerated thanks to the energy savings realized during the pay back period. Therefore, when owners do not have the financial capacity to support refurbishment, it is often difficult for them to find other funding resources or loans.</p>	<p><b>SL 3.3 Lower the financial risk through guarantee system and financial facilities</b></p>
<p><b>Incomplete, unshared, unstable, spread or asymmetric information on energy consumption repartition. Lack of tools to orient the complex decision making for multi-owners buildings.</b></p> <p>There is no complete energy information over the MED building stock. The development of reporting methods is more and more essential in a context of development of smart metering.</p>	<p><b>SL 4.1 Improve the available information on energy consumption for users and providers</b></p>
<p><b>Absence of the sufficient infrastructure, skills and commitment to take benefit of large scale intelligent energy management potential</b></p> <p>The most significant barriers that hinder the general introduction of</p>	<p><b>SL 4.2 Develop interconnected intelligent energy management</b></p>

smart metering through mass roll-outs are:

- There remains much uncertainty about the quantification of benefits, especially related to energy savings, because practical experience and historical data are lacking.
- Many parties are involved, and the benefits of smart metering may accrue to other parties than the ones that bear the costs. The effectiveness of savings for the final consumer whereas energy providers have a clear interest in it.
- The cost of installation. Large scale roll outs of smart metering are very long and costly processes, requiring considerable capital expenditures from the responsible market actors.
- The safety and anonymousness of the data transfer.
- There is still insufficient modularity and flexibility of present mass market smart metering products and lack of full interoperability among available commercial AMI systems. This leads to high extra costs when customizing systems to meet the local requirements of demand response, consumer information, energy efficiency automation and services, distributed generation and power quality.
- Lack of Spatial Data Infrastructure for buildings at regional scale in order to facilitate the treatment and use of data for planning, controlling and reporting EU 2020 objectives

It is very crucial to stress that smart metering initiatives come mostly from governments, so the future of smart metering will depend heavily on the policy and decisiveness of the governmental bodies involved and their integration in a global information system for energy efficiency in buildings at all scales.

**systems at all urban scales**

## 3. IMPROVING ENERGY EFFICIENCY IN BUILDINGS IN THE MED SPACE

Main strategic lines point out the critical actions that are needed to overcome the barriers that exist in the way to improve EE in Buildings in the Mediterranean, each of them containing the essential measures that have to be carried out for their global implementation and effectiveness. A final estimate of the resources needed to put all in place gives an overview of this part of the proposal by MARIE and ELIH-Med.

The following strategic lines correspond to the priorities identified by MARIE and ELIH-MED projects to overcome the abovementioned barriers. They represent the structure on which the next transnational operational programme for the Mediterranean should rely on concerning the improvement of energy efficiency in buildings. It is worth mentioning that the energy efficiency is a clear priority to become one of the main lines of financing. Moreover, the introduction of a Common Strategic Framework by the European Commission paves the way for a better coordination and concentration of structural funds, opening opportunities for the elaboration of a Mediterranean macro-regional strategy. In case the Mediterranean macro-region becomes a reality, these strategic lines could be the priorities for this new macro-region concerning the energy efficiency topic.

### **3.1 Main strategic lines to achieve EU 2020 targets in Energy Efficiency in Buildings (EEB) in the Mediterranean**

The MED market does not move towards an increase of the energy efficiency refurbishment of the existing building stock and several barriers are blocking the development of investments in that field; therefore a coordinated common strategy will help putting the Mediterranean space on a better track to achieve the EU objectives in 2020.

According to the above, MARIE and ELIH-MED projects have developed common strategic lines as the general framework on which the development of a macro-regional approach could rely on in the particular domain of energy efficiency.

Four sets of strategic lines have been considered essential to overcome the existing barriers and to organize future interventions in the MED space:

1. Territorial and financial governance
2. Competitiveness, economic activities and employment
3. Market activation
4. Smart energy management systems and services

#### **1. Territorial and financial governance**

##### **Strategic line 1.1.**

**Articulation of EEB policies giving to regional authorities a central role in coordination at territorial level**

A decentralized approach at a multilevel governance of the EEB challenges is needed.

Clarification of the role of local and regional governments and administrations in the implementation of EEB policies should be done under the leadership of regional authorities and regional or local energy agencies. The articulation of EEB policies should be based on a more coherent and efficient use of available funds and on an integrated approach of the EE chain. At regional level, a specific governance system, based in a single entry point, should ensure the coordinated distribution of funds (if possible, private and public, including Energy Emissions Certificates) dedicated to EEB and the harmonization of procedures to facilitate the access to energy efficiency financings.

#### **Mediterranean added value**

Mediterranean area is considered less “advanced” than Northern Europe in the implementation of European directives on energy efficiency. The improvement of EEB policies and governance system in the Mediterranean should be a continuous focal point for stakeholders in order to facilitate the catching up and achievement of the European 20% goals.

#### **Strategic line 1.2.**

#### **Elaboration, coordination and implementation of differentiated policies and plans targeting the various typologies of existing buildings and the different types of owners**

One single EEB policy will not allow to target the different typologies of owners and buildings. So it is necessary to design and implement differentiated territorial policies and planning to different segments of population and types of buildings (i.e: private owned housing, low income private owned housing, private rented housing, students’ residences, social housing, tourism, public equipment and buildings, commerce and services, hospitals, etc). Each segmented policy should be designed to reach the optimum between the global cost of energy efficiency investments and their global benefits, considering the kind of targeted public. Such policies should be part of the regional and/or local energy concepts or strategies. The higher energy performance is not always the ideal objective to globally maximize energy savings and reduce payback periods, even more in a crisis period of low investment capacities.

#### **Mediterranean added value**

The Mediterranean added value relies on common specificities: the first one is the Mediterranean climate. In consequence, EEB stakeholders need to integrate thermal comfort including summer comfort (potentially cooling consumption) and lower potential savings in terms of heating and insulation. The second factor is the high rate of poor owners-occupiers, living in different conditions, “far to reach” with classic and non-segmented public policies. The last point is the importance of tourism and the need for a dedicated policy to tourism facilities and buildings (hotels, commercial, etc.).

The co-financing of the energy renovation of the buildings including the integration of the renewable energy sources is the opportunity to enhance local/regional development and to strength the local economies.

### **Strategic line 1.3.**

#### **Development of financial engineering capabilities to leverage the European Regional Development Fund (ERDF) and other public funds on private financial resources**

In the current economic and financial crisis context, the challenge consists in using limited available funds in an efficient way. Public funds have to create a leverage effect on private funds. The coordination of funding has to become a priority in order to give them a spreading and multiplying effects. The ratio investment/energy savings has to be maximized.

#### **Mediterranean added value**

Coordination of structural funds is a key issue to avoid dispersion. In the Mediterranean area, a stronger integration of territorial cooperation programs and their articulation with regional operational program through a macroregional approach could open new perspectives.

### **Strategic line 1.4.**

#### **Development of inclusive policies involving final users**

Policies often focus on technical and financial issues and final users remain out in the refurbishment process whereas they will be the real decision makers in terms of reduction of energy consumption, which directly concern standards and ways of living. A lot of policies have failed because of the lack of knowledge on behaviors and social acceptance. The design and implementation of inclusive policies, adapted to end users socio-economic situation is an important challenge that requires a systemic approach of energy efficiency retrofitting and the creation of multidisciplinary teams to make EEB inclusive policies successful.

#### **Mediterranean added value**

Since environmental concerns rose on in the 1970s, the Mediterranean area has not been a leader in this domain. Transition towards greener territories was slower than in the Northern Europe. The creation of a shared awareness on environmental issues still remains an on-going long process. Socio-economic priorities also put energy efficiency and environmental issues out of sight. Direct participation of final users will contribute to facilitate the final users understanding of energy efficiency objectives and advantages.

## **2. Competitiveness, economic activities and employment**

### **Strategic line 2.1.**

#### **Creation of dynamic energy efficiency economic ecosystems**

Besides the existing merchant relationships between the economic agents and their business environment, the consolidation of a dynamic ecosystem requires the strengthening of the existing networks or their creation, at local, regional, national and European level. The



reorientation of the building ecosystems towards energy efficiency concern and the development of energy efficiency clusters should be the priority actions.

#### **Mediterranean added value**

In the Mediterranean area, there are existing networks and clusters that could constitute the skeleton of these ecosystems. Territorial cooperation projects have already developed propositions and pilots of transnational clusters. Through these networks, it is today possible to enlarge the number of companies, to facilitate innovation transfer and collaboration, so that the MED agents can be better interconnected and competitive.

#### **Strategic line 2.2.**

##### **Promotion of training for existing and new professional profiles**

The proper definition of these new professional profiles, together with the associated functions and competences (a dynamic combination of attributes in relation to knowledge, skills, attitudes and responsibilities) requires the involvement of the building sector professionals and training centers. The objective is to develop new qualified jobs – “green jobs” – with specialized profiles that should improve the impact of building renovation in terms of energy efficiency, in the MED Countries.

#### **Mediterranean added value**

Job creation is, nowadays, one of the main goals for most countries in the Med area. Energy efficiency actions should also contribute to improve job situation since measures could bring profits related to “double dividend” concept (UNEP/ILO, 2008): the implementation of these measures will not only bring, as a result, an environmental profit but also a reversion of the profit obtained in new jobs creation.

#### **Strategic line 2.3.**

##### **Use of public procurement as an energy–efficiency oriented investment tool**

Till now, public procurements were designed to strictly respond to an identified need. The challenge consists in introducing gradually the above-mentioned methodology (cf. barriers) in a traditionally “conservative” market, particularly in the building sector, helping the private stakeholders to systematically propose these new systemic public tender approaches. As in any procurement, getting the best solution is primarily determined by how well the procurement process itself is carried out and by the terms of reference writers’ skills and competences.

#### **Mediterranean added value**

The application this methodology in MED Area make possible improving the competitiveness of the local SMEs working in the building sector and to qualify products, services and materials more efficient and innovative. In this way the Mediterranean Public Sectors could become a driver for technological innovation.

#### **Strategic line 2.4.**

##### **To encourage innovative initiatives in the social economy sector**

Till now, these initiatives have been considered as marginal and charitable, but never as a concrete alternative to the barriers and failure of energy efficiency in buildings policies and market. The involvement of the social economy actors in the policy-making process, the creation of tools to propose them adapted financings, the development of incentives to promote their multiplication are the first step to take advantage of their strong potential.

##### **Mediterranean added value**

The social economy model could be developed in all the Mediterranean countries, thanks to the support of the existing network of alternative financial institutions (FEBEA). Moreover, it offers perspectives that perfectly match with the needs of territories in crisis (job creation, insertion, social accompaniment).

#### **Strategic line 2.5.**

##### **To encourage and finance the research on integrated energy construction.**

In general, energy efficiency in building is first evaluated at the building design level, without considering the operational phase, i.e. when the building is in use. Despite the energy consumption in the operational phase is between 60 and 80%, without including the consumption at the different steps of construction and destruction of the building gives to us a non-complete picture of the energy consumption in buildings. A life-cycle approach of the building allows integrating all the building industry chain in the global calculation of the energy savings, avoiding counterproductive investments. An important effort needs to be done to improve the phase when the building is in use to reduce the actual energy consumption through control and information and have design tools to predict better the actual energy response, partly dependent of the occupants behavior. New concepts, tools and products, especially adapted to the retrofitting of the building stock, towards an integrated energy vision in all the construction phases are an urgent need to have a breakthrough in this sector.

##### **Mediterranean added value**

The life-cycle analysis can have a positive impact for local economies and products. Revisiting traditional building material, processes and vernacular energy solutions with a new integrated and holistic approach could help to solve the life-cycle equation. In Mediterranean regions the building solutions should consider two aspects in the building stock: reduce the heating demand (in terms of annual energy balance) and minimize the cooling peak power demand, in order to reduce the energy use of the dwellings and improve environmental comfort of the users. Due to the geographic, climatic and geological common characteristics, exchange of experiences and transfer of innovation could spread out all over the Mediterranean.

### 3. Market activation

#### Strategic line 3.1.

##### **To raise awareness of the opportunities on energy efficiency among the major stakeholders**

Stakeholders related to energy efficiency market – professionals as well as occupiers – are often drowned out by a lack of knowledge and confusion on the possibilities brought by energy efficiency. Therefore, it is necessary for main market actors (building users, owners, ESCO, Public Administrations, local/regional energy agencies...) to clarify well the opportunities, difficulties, costs and benefits related to energy efficiency improvement.

##### **Mediterranean added value**

It is therefore important to raise awareness on energy efficiency opportunities among the major targets. As the Mediterranean shares common characteristics – climate with mild winters and warm summers, ancient building stock, high percentage of households suffering from energy poverty – investors as well as enterprises are confronted to the same obstacles which could be overpassed by common incentives. That is why this scale seems appropriate to take common action in order to increase awareness raising.

#### Strategic line 3.2.

##### **Creation and development of incentives to overcome the main market barriers**

Incentives should be developed by public authorities to compensate or overcome the market barriers that impede professionals to invest in energy efficiency refurbishment. The most effective incentives should be designed according to each group of stakeholders. Normally tax incentives would be interesting to be considered but also other kinds of economic and non economic incentives should be generated in order to involve very well all the key actors groups.

##### **Mediterranean added value**

The creation of a market focused on the Mediterranean area makes sense when considering similarities throughout the region, not only in terms of techniques, but also of public addressed. This could generate more economies of scale since performing on a greater region.

#### Strategic line 3.3.

##### **Lower the financial risk through guarantee system and financial facilities**

Creating guarantee funds in order to support ambitious and innovative energy retrofitting programs and cover the risks associated with more disadvantaged groups would permit the inclusion of these groups in the modernisation of the residential sector and progress in EE. The guarantee system could be controlled in a subsidiary way through regional agencies, and it

could support consortiums composed by ESCOs, energy providers and financial institutions in order to encourage their collaboration.

#### **Mediterranean added value**

The Mediterranean area differentiates from Northern regions and justifies the need of a change in the market model in the region. In Mediterranean regions with a warm climate, indeed, the economic savings achieved by performing an energy retrofiting are relatively low, with long repayment periods, and that is why ESCOs are not interested. Therefore, ESCOs are a good choice for cold climates, where the retrofiting generates enough energy savings for short investment returns periods. So, for Mediterranean climate, where the returns periods are too long, investments in energy efficiency should not only be linked to other needed interventions in existing buildings, but also be guaranteed.

## **4. Smart energy management systems and services**

### **Strategic line 4.1.**

#### **Improvement of the available information on energy consumption for users and providers**

Smart meters can give consumers, at an affordable cost, clear and comprehensive information about their energy consumption and, giving them better information, can help consumers become more energy efficient. But it can also improve information given to the providers: smart metering records customer consumption and other parameters with bidirectional communication between utility and its clients. It implies a new relation model between the utility and its clients, using telecommunications to interchange information between the utility and the devices installed in every supply. Smart metering should add value to the service, giving better information to the customers and optimizing the use of the demanded power and consumed energy. The information generated by smart metering systems should be also very useful for planning, controlling and reporting energy efficiency objectives achievement. The storage and treatment of data obtained should be based on interoperability systems as Spatial Data Infrastructures.

Nevertheless, smart meters should be conceived not only according to energy suppliers needs, as it is mostly the case now, but as a tool of information and adaptation of energy consumption addressed to inhabitants.

#### **Mediterranean added value**

Interconnected management systems registering changes and improvements in energy efficiency of buildings could help complete information on energy consumption of buildings, which is very poor in the MED buildings, and which is essential to plan interventions, but also to register the impacts of these interventions. For this reason it is essential to develop a shared information system allowing the EU-MED regions to characterize and compare energy consumption in buildings by end use typology and energy sources. This shared system will also facilitate the development and implementation of smart energy management systems as a priority.

#### **Strategic line 4.2.**

##### **Development of interconnected intelligent energy management systems at urban scale**

Innovation and development of the energy management in buildings has a big saving potential but it is necessary to develop solutions adapted to each typology of buildings. The main challenges are in residential buildings where normally there are several users/owners in each building. The current energy management systems in multifamily buildings are not enough actualized and depend a lot of the user profile and their decisions. Externalise and standardize energy management of collective housing could be an interesting solution to reach savings and energy efficiency improvements at large scales. Another kind of management that should be developed is the interaction between the local renewable energy production, the energy demand by the users and the available energy offer from the utilities. This management can be done at building or district level including new and old buildings with different kind of needs.

##### **Mediterranean added value**

Smart metering implementation depends heavily on the legislation boundaries of energy sector and specific technical conditions of local energy supply. Now, each Mediterranean country has some specific legal and technical boundaries. Nevertheless, the Med area shares common characteristics which for instance hinder some uses of Demand response (space heating and lightning needs are not high) but can concentrate on air conditioning systems which are perfect for DSM. The Med regions have ideal climatic conditions to integrate renewable energy in buildings, for this reason is important developing advanced integration concepts and advanced management systems in order to achieve important progress in that field. In addition Med area lacks gas and district heating grids. Therefore electricity utilities must be involved as much as possible to take advantages of existing electricity grid and utilities infrastructure.

### **3.2 Identification of the Resources needed**

The development of the 4 strategic lines and 14 sub-lines (point 3.1) in the MED space during the period 2014-2020 will produce an important impact in environmental, economic and social terms. This impact will depend on the quantity and quality of public resources used in leveraging private investment. In this sense a first quantification effort has been done in order to plan how much public funding is needed to raise the private investment and achieve the challenging objectives of the EU Strategy 2020 in MED Space.

The MARIE Project and the Catalonia region as lead partner have launched a study to quantify the needed resources. The quantification is calculated with a specific methodology for each strategic line. The final estimates will be reviewed by partner regions in MARIE and ELIH-Med during 2013 (13 regions), in this sense the actual figures are not final.

- Estimations for MED space consider 113.782 Millions of inhabitants living in 49 regions and 1.940 cities with more than 10.000 inhabitants.
- The relationship between investment and impact has been considered a main criteria. For the residential sector the rate considered is: 0.185 ktep/M€, and for the tertiary sector: 0.180 ktep/M€.
- The relationship between public investments to public funds is also a key criteria. In this case estimations consider less than the 1% of EU public funds of total investment raised.
- The global relationship between public and private investment will be 25% for public and 75% for private.

The estimated needs are based in a detailed calculation realized in Catalonia (see annex) and have been extended to the other 49 MED regions according to the number of buildings and population.

**The first hypothesis of needed investment (Investment, management and complementary measures) for the development of the 14 strategic lines in the EU MED space between 2014 and 2020 is of 94 billion Euros (private and public investment) with a contribution from the EU public related programs of 900 million Euros.**

## 4. RECOMMENDATIONS FOR NEXT EU PROGRAMMING IN MED SPACE

The dispersion of the public European Funds among different programmes is one of the main problems to become efficient and obtain results on the EU investments. This is specifically serious in the Mediterranean area. A recommendation is given to concentrate the available resources and to consider the macro-regions, one of the accepted formulas in the EU Commission, as a valid interlocutor and a way to avoid duplicities and facilitate the achievement of economic, environmental and social objectives.

The on-going programming period is characterized by the permanent discussion on how to improve territorial cooperation and make it more efficient. One of the most interesting experiences, already tested in the Baltic Sea region, is the creation of macro-regional strategies. They aim at prioritizing, concentrating and coordinating funds on multilevel-consented strategic actions. In the Mediterranean region, the context is different, mainly because it is a multidimensional geographic and political space and the perimeter of a potential macro-region remains a nagging question. Nevertheless, this consideration does not impede territorial cooperation stakeholders from studying the possibility of a Mediterranean macro-region that could offer the best way to go forward with this new governance of the whole cohesion-policy system.

## **4.1 Coordination between MED program and other EU programs related to EEB**

Everybody agrees on the necessity of a better coordination between programs and funds related to a same topic, in our case, energy efficiency in buildings. Despite the fact that a Mediterranean macroregional approach will be initiated or not, ELIH-MED and MARIE projects have identified the actual lack of coordination as one of the main problems to be solved in the perspective of the next programming period.

The common capitalization process initiated by MARIE and ELIH-MED projects has identified key actors and projects working in the same direction. Their involvement in the MARIE and ELIH-MED joint capitalization process is a strong strength because it offers a larger territorial and multilevel basis to draw out a realistic and powerful diagnosis and allows a debate and an appropriation of common orientations and recommendations.

MARIE and ELIH-MED projects suggest to:

- Identify the actors dealing with EEB in each General Directorate of the European Commission and launch a direct dialogue with the program authorities
- Identify contact points and responsible people of funding programs focused or related with EEB (CIP, FP7, IEE, ICT, EIB, ERDF, etc.) and promote a direct dialogue with the program authorities
- Find synergies in the implementation of programs financed by the Cohesion Policy, the European Neighbourhood Policy and Pre-Adhesion Instruments, as the Commission clearly encouraged it (cf. proposition dated 14/03/12<sup>1</sup>)
- Test the elaboration, launch, monitoring and evaluation of joint calls for projects based on a common framework and priorities, as, for instance, the ones defined in the chapter 3 of this document
- Agree on amounts and coordination modalities to define the shared contribution of the programs to next period transnational cooperation actions related to correspondent strategic sub-lines (defined in chapter 3).

## **4.2 Towards the implementation of a macro-regional approach**

MARIE and ELIH-MED projects are aware that tools are necessary to better articulate programs and mix funds. As mentioned above, in its proposition dated 14<sup>th</sup> March 2012, about the European Territorial Communication, the Commission gives room to the elaboration of new cooperation framework called macroregional strategies, tested in the Baltic, Danube and Adriatic regions, and that could also be developed in the Mediterranean.

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<sup>1</sup> Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on specific provisions for the support from the European Regional Development Fund to the European territorial cooperation goal. 14/03/12  
[http://ec.europa.eu/regional\\_policy/sources/docoffic/official/regulation/pdf/2014/proposals/regulation/etc/etc\\_proposal\\_en.pdf](http://ec.europa.eu/regional_policy/sources/docoffic/official/regulation/pdf/2014/proposals/regulation/etc/etc_proposal_en.pdf)

## Chapter II - Article 6 – Investment priorities

*“In addition to Article 5 of Regulation (EU) No [...] /2012 [the ERDF Regulation], the ERDF shall support the sharing of human resources, facilities and infrastructures across border under the different investment priorities, as well as the following investment priorities within the thematic objectives: (...) under transnational cooperation: development and implementation of macro-regional and sea-basin strategies (within the thematic objective of enhancing institutional capacity and an efficient public administration).”*

## Chapter III - Article 7 – Contents of cooperation programmes

*“A cooperation programme shall set out:  
(...) the contribution to the integrated strategy for territorial development set out in the partnership contract including;  
(...) where appropriate, the contribution of the planned interventions towards macro regional strategies and sea basin strategies; “*

**ELIH-MED and MARIE strongly support the elaboration of a renovated governance framework of cooperation programs in the Mediterranean based on the application of macroregional principles. The following propositions aim to support the implementation of an efficient macroregional approach, articulated with the other existing initiatives and actors.**

### 4.2.1 What will a macroregional approach be useful for?

The macroregion consists in an agreement between the European Commission and Member States representatives about the definition of priorities and flagship projects to be co-funded by the structural funds (territorial cooperation and operational programs) and thematic funds coming from programs directly financed by the Commission, such as the Intelligent Energy Europe programme (IEE). Cofinancing from national governments, local and regional authorities and private sector can also complete the flagship projects financing scheme.

This new macroregional cooperation framework should:

- ensure a simplification and harmonization of cooperation priorities and procedures in the Mediterranean space (MED, South East Europe, ENPI, cross-border programs, etc.)
- mix the structural funds on a multilevel and multi program approach to give sustainability and coherence to cohesion actions initiated by the beneficiary at territorial level
- facilitate the improvement of the efficiency of the European transnational cooperation funding on Mediterranean priorities, give visibility to concrete realizations, encourage a better functioning of the Single Market.

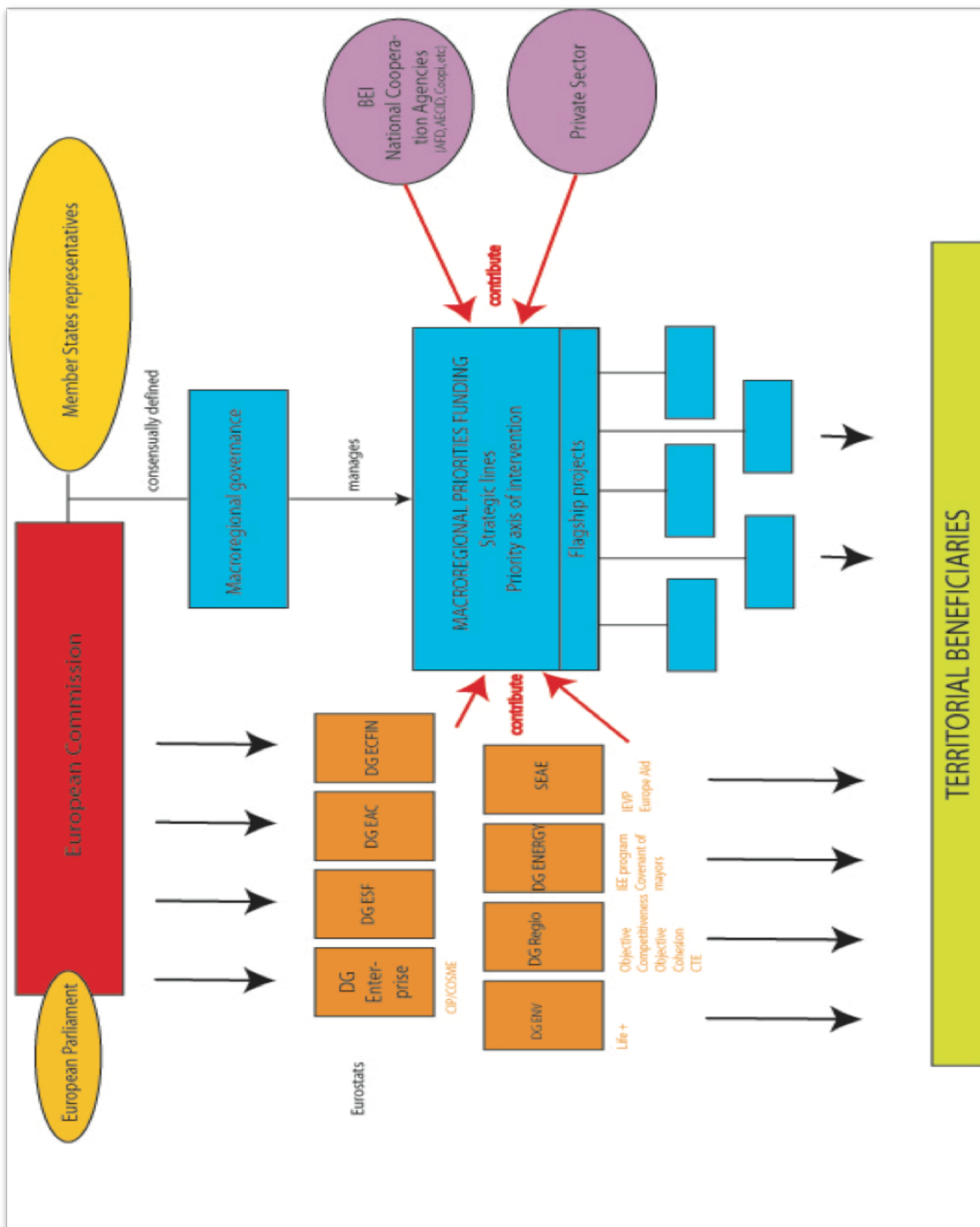
Member States and the European Commission are the final decision-makers concerning the effective creation of a new macroregion. Agreements between Member States are the first requisite to make the macroregional approach a reality.



In this hypothetic process, the strong involvement of territorial cooperation actors is necessary to get the endorsement and commitment by program authorities and Member states representatives in this ambitious project.

#### 4.2.2 Our Mediterranean approach

This macroregional approach presented above and applied to the Mediterranean can be illustrated with the following scheme:



#### 4.2.3 Steps towards a Mediterranean macroregional strategy

The proposed steps to pave the way to a Mediterranean macroregional strategy are:

- The dissemination of this concept through the capitalization activities
- The creation of a large consensus-based movement, joining structural funds beneficiaries, local and regional governments, political representatives at national and European levels, and able to carry out a demand for a Mediterranean macro-region at the European Commission level. MED program authorities could lead this initiative.
- The elaboration of a road map towards a Mediterranean macroregion. Member States representatives, cooperation program authorities and local and regional authorities should be consulted. It will basically identify the modalities to be set up in order to agree on the definition of its objectives, priorities and delimitation, on the identification of the funds to be put in common at a macroregional level and on the governance of the macroregional strategy implementing body.
- Negotiations between stakeholders to establish the principles and legal basis of the transnational governance in charge of leading the macroregional strategy implementation. Negotiations to create a consensus on the strategic lines, taking into account the Mediterranean specificities, which could feed a potential action plan.
- Proposition to the European Commission of a governance system, demonstrating the existing capacities of implementation of this strategy in the Mediterranean.

The present policy paper only deals with energy efficiency in buildings issue and its priorities but this does not mean that other topics such as jobs creation and innovation would not be included in a macroregional approach. These two topics could be developed in the same way to propose a complete set of priority axis of intervention, in line with the 2014-2020 cohesion policy framework.

## 5. EEB priority and cooperation innovations

The Mediterranean area has some critical conditions much different from those of Northern Europe, a lower economic activity, growing unemployment and an energy dependency that does not decrease as it should. Investments in the EEB sector can help to improve those conditions. In addition, to organize more structured objectives on the MED Programme, concentrating the planned investments, would contribute to achieve better results and to be more efficient.

### 5.1 Energy efficiency priority at European level

Besides the fact that a macroregional approach will be implemented or not, it is clear that energy efficiency in buildings topic will be a priority of the next programming period. The EU2020 strategy will be the core reference to reorient the cohesion policy, and climate change and energy objectives one of the five top-priorities of the European agenda. The EU2020

strategy adopted in 2007 the Climate-Energy Plan targets and its objectives: a 20% increase of energy efficiency, a 20% decrease of GHG emissions and a target of 20% of renewable energies by 2020.

In the actual crisis context that particularly affects the Mediterranean area, it is worth underlining that energy efficiency investments correspond to future savings. Moreover, energy efficiency is a particularly relevant issue that fits with the European Commission orientations towards a greener, smarter and more inclusive growth. Energy efficiency investments will allow a decrease of the greenhouse gases emissions, but they also represent potential new jobs and new needs in terms of innovation. Because it could become a territorialized economic reservoir, energy efficiency is even more strategic for Mediterranean territories.

The newly adopted directive on energy efficiency aims to achieve the 20% targets but with some possible adjustments and relaxing. The interesting point is that this directive focuses particularly on the high potential of savings in the building sector (see Section 2.1.1).

Moreover, the Consultation Paper “Financial Support for Energy Efficiency in Buildings” issued in February 2012 by the Directorate-General for Energy pointed out the risk of not reaching the planned savings target of 20% and the relevance of buildings as key sector to achieve this objective:

*“... calculations show that the EU is not on track to realise this goal. Although the latest 'business-as-usual' scenario shows a break in the trend towards ever-increasing energy demand, the reduction in energy consumption is estimated to be only about 9% in 2020 (i.e. a gap of 204 Million tonnes of oil equivalent (Mtoe) in primary energy use. (...)*

*Buildings must be central to the EU's energy efficiency policy, as nearly 40% of final energy consumption (and 36% of greenhouse gas emissions) is in houses, offices, shops and other buildings. Moreover, buildings provide the second largest untapped cost-effective potential for energy savings after the energy sector.”*

In this context, MARIE and ELIH-MED encourage the new authorities in charge of the transnational cooperation in the Mediterranean to transform energy efficiency in buildings in a top priority of the program, regardless the forms and nature of this future program, and to dedicate an ambitious envelope to energy efficiency of buildings projects (In section 3.2 a first estimation of resources needed from EU programs related is around 900 M of €). The increase of funds available for energy efficiency in buildings and their strategic orientations in function of the lever effect they could have on other funds is necessary to achieve the EU2020 target in the MED space.

The attribution of this substantial amount of money through the new program (2014-2020) has to take into account the experience of the ongoing strategic projects, evaluating and capitalizing on their results.

Energy efficiency in buildings topic has the particularity to be strongly interrelated with urban planning and socio-economic challenges. MARIE and ELIH-MED projects stressed the fact that a transverse approach integrating these parameters, has to be encouraged and promoted by the

program authorities. Energy efficiency issues should be an entrance and a strong lever to tackle sustainability challenges in Mediterranean territories.

A particular effort has to be done to coordinate and put in line national and regional operational programs, which will rule the use of European cohesion funds, with the territorial cooperation operational programs. Ideally, territorial cooperation programs should become pilot programs able to bring more innovation and efficiency in the implementation of the competitiveness and cohesion objectives.

## **5.2 Recommendations and propositions regarding the structure and contents of the next period program**

### **Strategic objective**

Achieve EU 2020 targets in Energy Efficiency of Buildings in the Mediterranean

### **General objective**

Improve the implementation and multilevel coordination of energy efficiency in buildings policies and directives in the Mediterranean area, maximize the impacts of European funds and tools on the environment, society and economy.

### **Specific objectives in the Mediterranean area context**

- Develop a specific social approach, taking into account the lower standards of living in the Mediterranean and people's behaviors and degree of awareness on environmental issues.
- Adopt incentives measures able to target the private owned building sector, taking into account the high rate of owners occupiers in the Mediterranean area.
- Develop and disseminate the use of innovative financing to launch refurbishment operations, in a context of economic crisis and reduction of public budgets, and taking into account the longer payback period due to the climatic conditions in the Mediterranean.
- Base energy efficiency in building policies on a segmented approach that will allow to propose specific incentives adapted to different categories of occupiers and buildings
- Develop a targeted approach to reduce energy consumption in the buildings and infrastructures dedicated to tourism.
- Develop a targeted approach to ensure a cost effective refurbishment of old buildings, some of them having particular architectural and patrimonial values.
- Develop methods, material, devices and policies able to lower the energy consumption necessary to ensure a better summer comfort to all the Mediterranean people.
- Develop onsite monitoring to improve the knowledge on Mediterranean buildings and adapt the technical and support measures needed.
- Develop and implement smart energy management of existing buildings as previous condition for investments and refurbishment of buildings.

- Establish realistic objectives for Energy Efficiency improvement, GHG emissions reduction and renewable energy implementation in buildings. The definition of these objectives should be adapted to the new EU Directive.
- The impact reached by projects should be monitored in detail in order to demonstrate at the end of the period (2020) the real effect of the program implementation.

### Priority axis of intervention

The priority axes of intervention correspond to the strategic lines defined in chapter 3.1. For each strategic line, strategic actions are detailed. In some cases, a proposition of flagship project is submitted.

### Flagship projects

#### ➤ **Development of Green procurement approach**

Public administrations at national, regional and local level should agree with European Commission a common assessment system for all building energy renovation projects and measures included in the common MED BEE strategy. The Green Procurement approach could orient this common assessment system but an important effort is needed to discuss and create such assessment tool.

#### ➤ **Creation of a common Mediterranean research program on energy consumption behaviours**

Research centers and universities of all the Med spaces will develop a common protocol to define a sociological study on energy consumption behaviors in the Mediterranean. The protocol should include post-occupancy evaluation based on monitoring data and surveys, in order to relate the behavior of the users with the environmental comfort and the energy consumption. The scientific committee will identify the research axis and define common thresholds and correspondences between existing nomenclatures and sociological categories. The implementation of this research protocol will be done in each country at the same time and each research team will report its results to the scientific committee. One of the main outputs of this research effort should be scientific orientation to develop communication campaigns all over the Mediterranean and to make recommendations for the design and the choices of the refurbishing measures and the support measures needed. Other output should be to create models to predict user behavior in order to be used in design tools and management systems.

#### ➤ **Communication campaigns all over the Mediterranean**

Stress has to be put on communication efforts, notably to modify the expenditure priorities and engage an in-depth mutation in our energy consumption habits. Continuous and targeted awareness campaigns will be launched at different levels in the Med area, sharing a common message with a same focus on the promotion of everyone's responsibility in saving energy. Other communication tools will be used, such as linking webs, messages for different target groups, ICT, social networks. The Mediterranean scale will permit to base on common

specificities (climate, types of buildings, etc.) while adapting the messages to the specificities of each territory.

➤ **Develop a multi-sites experimentation of intelligent energy management**

A consortium of utilities and public authorities (at least one of each per country) will define the needs and conditions for installing an intelligent energy management system, including public and private building energy consumption but also public space consumption (lighting, traffic lights, electrical vehicle and urban furniture). The system should be able to adapt the performance of the building (or buildings) to their necessities, without forgetting the environmental comfort of the users and the purpose of the building. The definition of the perimeters and technical characteristics of the systems will be done at local level in parallel with a transnational exchange of experiences. Adaptation to the Mediterranean specificities will be one of the main transnational subjects discussed at the project level. The installation of this system has to include decentralized renewable energy production at local level if any. Feedbacks from these pilot experiences and energy savings measurement will be the outputs of this project.

➤ **Develop a network of cutting-edge research laboratories**

A network of laboratories in Med space in research center and universities should be created with the objective to assess the development and integration of renewable energy solutions and innovative thermal and electrical equipment that are designed to improve energy efficiency in buildings and energy systems. The laboratory should be provided with cutting-edge technology comprising systems for energy generation, heat and cold storage and state-of-the-art facilities for testing HVAC & electrical equipment and the interaction of energy systems with the grid. The laboratories should be pioneer in addressing the smart integration of electrical and thermal components and aims to become the leading experimental facilities for improving the development of Net Zero Energy Buildings adapted to the Mediterranean context. The research laboratories activities should include: the development and integration of innovative sustainable, renewable building energy supply systems, research in thermal/chemical/electrical storage technologies for using fluctuating renewable energy resources in buildings and the industry and experimental testing of thermal and electrical equipment performance under real-life dynamic conditions, addressing a range of climate zones and thermal building behaviour scenarios.

➤ **Pilot implementation of regional offices in charge of coordinating EE funds and incentives**

A consortium of Mediterranean regional authorities, at least one per MED country, will launch the feasibility study for the creation of a regional bureau for energy efficiency. This office will have transverse competences on energy efficiency and will be in charge of reallocating EE dedicated funds coming from different sources of funding. This Bureau will gather a sample of professional profiles, who will be in charge of implementing regional energy efficiency policies and designing incentives targeting all the segment of the population and economic actors. This Bureau will become the interface between energy end users and policy-makers. Feedbacks on this experimental reorganization aiming at improving EE governance will be shared at transnational level.

➤ **Private-Public partnership addressed to develop and market energy design tools at district and urban level**

Create a private-public alliance with the objective of adapt, develop, market and disseminate energy design and planning tools to be used at planning level with especial consideration of challenges in Mediterranean regions and cities. The final objective should be to create a portfolio of tools, services and companies dedicated to that field which should support local and regional entities to develop projects for both new and existing areas. Initial involvement of public bodies and use of existing or new public information tools is a must, despite the final objective is to create a competitive market on that field.

### Categories of projects

- Experience-sharing projects

It corresponds to the classical projects category. Their objective consists in an experience-sharing process on a specific topic with the involvement of several kinds of partners from all over the Mediterranean space. Diversity of situations, policies, tools and results are valorized. Transferability potential is at the core of the cooperation process.

- Strategic projects

This kind of projects should be focused on the definition and commitment of regional strategies for EEB in MED regions. They would be led directly by regional authorities, complementarily with their energy efficiency policies financed by the cohesion funds they manage. Strategic projects could become large scale pilot projects at regional level, to promote policy innovation in this domain.

- Multi-phase projects

These projects should be focused on the implementation of strategies approved and on development. They would explore opportunities for multiphase financing that would ensure continuity to some successful projects and avoid losing the benefits of the projects once ended. These opportunities would take into account mid-term and long term project dynamics. This system should be based on a strong qualitative evaluation. The coherence and continuity between the different calls of a same period, but also between two periods, should be ensured.

- Experimentation platforms

They would be open projects able to welcome new members during their implementation, with the objective to test and disseminate concrete experimentations and tools. These platforms would be characterized by their flexibility and sustainability on the long run.

- Capitalization projects

Based on identified successful results and deliverables, capitalization projects would aim at disseminating these results and consolidating the project implementation conclusions to improve the ongoing functioning of a programming period and in prevision of the following one.

- Twinning

These specific projects would gather two institutions. They would allow to develop and promote twinning initiatives and peer-reviews to facilitate experience sharing by associating a territorial cooperation usual partner, with high competencies in the implementation of European projects and long experience in energy efficiency promotion, with an entity that has no experience in this domain. All the beneficiaries of the transnational programs could have an agreement with a non-beneficiary entity and elaborate a common exchange of experience plan.

### Transverse dimensions in EEB projects

Every project dealing with energy efficiency of buildings should propose a transverse approach mixing the following dimensions:

- Behaviors and awareness raising innovation
- Skills improvement and job creation
- Technical innovation
- Financial innovation

And also:

- Environment
- Gender equality

### Principles to strengthen governance and generate good quality projects

The recommendations below have been drawn from the specific difficulties pilot projects have experimented in ELIH-Med and MARIE strategic projects: they are therefore of particular relevance for measures aiming to improve the territorial cooperation.

- Introduce in the terms of reference of calls for projects and in their selection criteria a preference for innovative policy-making oriented pilots projects
- Their transnational dimension and added-value
- Capacities to influence public policies at several levels
- Systematically integrate capitalization exigencies in the call for projects
- Simplify the program administrative rules, facilitating the integration of new key partners in the projects partnerships



- Establish new financing and eligibility rules that will facilitate the participation of the private sector to the project and in parallel, ensure that projects keep non-profit objectives and policy-making orientations
- Include new budget categories, such as equipment and infrastructures, in order to initiate a real empowerment and scale change of territorial cooperation, from experience sharing to policy-making oriented pilots projects
- Clarify who are the final beneficiaries and foresee several aid regime possibilities
- Establish a strict evaluation system of the fund considering the relationship between funds and real improvements in EEB (for refurbishment, include a period of monitoring: 3 years of refurbishment + 1 year of monitoring to enhance the capitalization)
- Flexibility: It would be necessary to modify the legal framework of European funds in order to make possible their use in a more flexible way, as tools of financial engineering, meaning as complement and/or guarantee of private funds, loans, microcredit, etc. This would contribute to multiply their leverage effect on private funds
- The final payment of funds should be conditioned to reach and demonstrate results in terms of energy efficiency improvement during at least one-year operation. Also in this case the common assessment system should be developed for the use of the building.

## Indicators

Indicators are essential to assess the impact of the program to reach EU 2020 strategy objectives. In this sense the three main objectives should be measured and monitored in all projects funded by the program. To measure the degree of accomplishment with these objectives, three main indicators can be used:

- Calculated and estimated decrease of GHG in Tones of CO<sub>2</sub> equivalents and in percentage with respect to the previous consumption (before interventions funded) in existing buildings
- Calculated and estimated increase in energy efficiency in kWh/m<sup>2</sup>/year and in percentage with respect to the previous consumption (before intervention funded) in existing buildings
- Calculated and estimated increase in the renewable energy used in buildings in percentage with respect to the previous consumption (before intervention funded)

These indicators can be calculated at building scale but also aggregated at MED scale to evaluate the impacts of the program.

Other indicators that can be used to complement the evaluation of effects are:

- Number of households with improved energy consumption classification
- Decrease of primary energy consumption of public buildings in kWh /year
- Number of additional energy users connected to smart grids

- Estimated decrease of GHG in CO2 equivalents

These indicators are simple and at the same time very relevant to be applied at a wide scale.

The capitalization process ELIH-MED and MARIE are involved in is an ideal forum to define and propose other relevant criteria to be included in future evaluation exercises. At the moment, the following criteria could enrich the Commission list, trying to valorize qualitative policy-making oriented projects looking for long term impact.

- Number of direct jobs created
- Investment raised in Euros
- New energy management systems implemented

The main indicators that the European Commission and entities in charge of programs related to EEB could consider for capitalization are:

- Relationship between the amount of funding and impacts of the project (in energy, economic and social terms)
- Number of projects with similar objectives connected and common outputs produced

Monitoring of projects and works to improve passive and active elements of the building is also a key cross cutting aspect. In this sense and to ensure real positive impact of interventions, a common assessment system should be established.

### Coherence with national, regional and local strategies

Coherence is a key word of this Policy Paper. Municipalities and local governments, regional governments and other public and private institutions at national level can actually access to several EU funds without coherence conditions because there is no coherent and common strategic approach at all scales for EEB improvement.

Nowadays, the main need before programming the next period is to build the basis for such coherence. ELIH-MED and MARIE public institutional partners (3 are national institutions, 13 are regional institutions and 5 are municipalities) are aware of this important lack of coherence and are producing together the basis for a macro-strategy at transnational level that can facilitate the coherence between all the decision scales.

A first proposal of basis for a transnational strategy that will provide coherence to national, regional and local strategies is in chapter 3. This proposal has been discussed in deep and agreed by all institutional and non institutional partners of MARIE and ELIH-MED and can be considered as an advanced output that must be reviewed and tested by the different pilot activities that both projects will develop during 2013 and 2014.

The intensive effort to produce now this proposal has been done to facilitate the incorporation of coherence strategic concepts in the elaboration of next operative EU programs related to EEB.

## 6. Conclusions

After one year of intensive work, MARIE and ELIH-MED projects have produced this Policy Paper that facilitates their collaboration with the MED Management Authority and the European Commission, in order to discuss and agree with European Institutions the strategy proposed by both projects to prepare the next programming period in MED space.

Improving energy efficiency of MED buildings can produce an important impact in terms of energy saving, jobs creation and market activation. The analysis of the MED context related to energy efficiency of buildings (EEB) highlights the main difficulties to implement EU strategic objectives (named 20, 20 and 20) in MED regions and cities. 14 main barriers have been defined and put in relation with 14 strategic lines to overcome them.

Each strategic line has been described considering also the Mediterranean added value. A first estimation of resources needed has been done in order to determine the costs and the possible contributions of the different stakeholders.

ELIH-MED and MARIE propose to the European Commission the possibility to debate the strategy implementation formulas. One option would be the Macroregional approach envisaged in the new ERDF proposal of Regulation.

Finally, ELIH-MED and MARIE propose to the MED Management Authority to consider EEB as a priority for the next MED period and recommend how to consider this priority in the next period program.