



Links
Future-proof historic centres

COMMON SET OF PRINCIPLES AND RECOMMENDATIONS

Dec. 2012



Connecting cities
Building successes



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COMMON SET OF PRINCIPLES AND RECOMMENDATIONS

These recommendations form part of the conclusions which the URBACT LINKS partner cities have formulated as a result of almost 3 years of collaboration and exchange. They are summarized here to provide an introduction to the subject matter and points of discussion during the project Final Conference organized in Brussels on the 10 of January, 2013.

Foreword:

Historic centres must evolve to exist.

LINKS partners claim that it is possible to combine heritage and environmental issues and propose to Europe to rely on its network of historic cities to promote a sustainable urban development, which is energy-efficient and resource-conserving, and also presents real opportunities for local economies.

It is therefore necessary to adapt certain modes of governance and the regulatory framework that can constitute obstacles to the urban, social and economic development of historic cities.

Historic centres have presented us with many characteristic principles of what we understand as essential in achieving sustainable cities - space saving, energy and resource efficient urban models, the crucibles of social cohesion and cultural identities.

However, these models have suffered during the past decades from very marked and societal trends throughout Europe. In many cases the old city has lost its attractiveness in comparison to later urban expansions - housing and functional areas on the outskirts which have imposed other ways of living, and which are now in turn challenged by the social, environmental and economic crisis.

To revert to a more virtuous urban model, many European cities are working to reappropriate and revitalise their old centres, but they face conflicting pressures and often confine themselves to sectoral and limited policies. Many issues, and energy efficiency is a particularly striking example, combine to crystallize understanding of the tensions between conservative and modern doctrines.

Therefore URBACT LINKS partner cities would like to focus the attention of actors at the European level on the future of historic centres, calling for a joint effort to again recognise them as key drivers for economic development and social cohesion, while preserving and enhancing their unique environmental urban qualities.

The INS and OUTS of the recommendations:

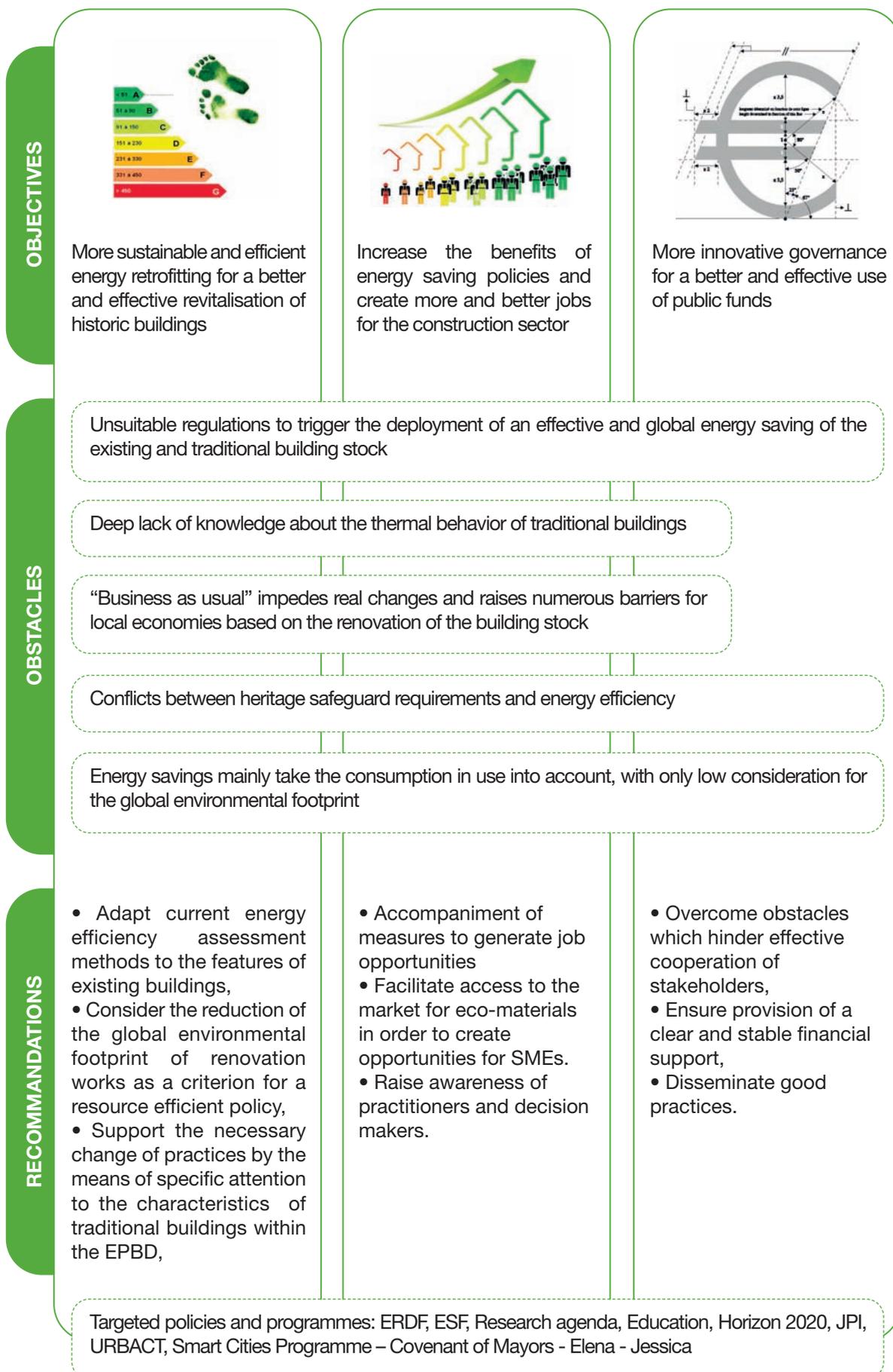
A sound revitalization of the historic centres is a key driver for a resource efficient Europe, an urgent social need, a source of new economic opportunities...

... but requires deep changes in professional practices, as well as a clear and stable financial support.

Table of contents:

More sustainable and efficient energy retrofitting for a better and effective revitalisation of historic buildings	5
Adapt current energy efficiency assessment methods to the features of existing buildings	6
Consider the reduction of the global environmental footprint of renovation works as a criterion for a resource efficient policy,	7
Support the necessary change of practices by the means of specific attention to the characteristics of traditional buildings within the EPBD,	8
More and better jobs for the construction sector, particularly in renovation activity, as real benefits of energy saving policies:	9
Accompaniment of measures to generate job opportunities	10
Facilitate access to the market for eco-materials to create opportunities for SMEs.	11
Raise awareness of practitioners and decision makers:	12
More innovative governance for a better use of public funds	13
Overcome obstacles which hinder the effective cooperation of stakeholders:	14
Ensure provision of a clear and stable financial support	15
Create examples and disseminate good practices	16

A sound revitalization of European historic centres is a key driver for a resource efficient Europe, an urgent social need, a source of new economic opportunities but requires deep changes in professional practices, as well as a clear and stable financial support



Methodology

The partners of the LINKS Network are urban practitioners facing, day in day out, urban challenges at the local level, but also working together with their respective managing authorities on projects co-financed by the EU. Their specific focus is targeted at applying urban development policies for the historic centres in their municipalities, and therefore the following recommendations reflect their concrete experience and wish for a more effective elaboration and implementation of local urban development policies.

The evidence base for these recommendations is provided by the project baseline study and the case studies that were submitted by each partner city at the beginning of the project and since then have formed the subject of study visits and peer reviews during the transnational workshops.

Every local initiative has shown strengths and weaknesses, but it is not the purpose of the project to judge which have been the best practices and which the less successful ones. Both good and bad sides of each case study and pilot project fed the work of the partnership and inspired the main outputs, namely: Local Action Plans and Operational Recommendations.

The following contains a list of proposed recommendations, resulting from the synthesis of an articulated debate between the partners in the last year of the network's activity. The proposed recommendations aim to improve the effects of the current policies to obtain:

- More sustainable and efficient energy retrofitting for a better and effective revitalisation of historic buildings,
- More and better jobs for the construction sector, particularly in renovation activity, as real benefits of energy saving policies,
- More innovative governance for a better and effective use of public funds.



MORE SUSTAINABLE AND EFFICIENT ENERGY RETROFITTING FOR A BETTER AND EFFECTIVE REVITALISATION OF HISTORIC BUILDINGS,

The building sector is one of the key generators of greenhouse gas emissions in Europe, among which the traditional housing – built before the Second World War – is a significant energy consumer because it represents almost 30% of the building stock. Particularly this building segment is generally of a low energy performance and often in need of serious renovation. Moreover, this housing stock increasingly accommodates low-income populations many of whom suffer from the effects of fuel poverty.

But this traditional building stock exhibits many qualities apart from its architectural and cultural values. Thrifty in terms of material and natural resources, these traditional buildings can reach a high level of energy performance on condition that their intrinsic technical behaviour is respected. Many recent studies and several pilot projects of LINKS cities demonstrate that eco-restoration practices are the only compatible and high yield techniques optimally adapted to achieving thermal renovation of traditional buildings – protected or not for heritage reasons.

Indeed eco-materials, for compatibility reasons, are the only ones relevant and efficient when it comes to restoring an old building. Its longevity lies in the ability of materials forming the envelope to facilitate the migration of water. In this way the walls are constantly drying up. This old strategy, typical of preindustrial buildings is opposed to the situation in contemporary buildings. But under the pretext of energy saving, traditional building forms have been mistreated for years by using materials to realize thermal insulation which are designed for post-war constructions. These have so far proven to be under-performing but also harmful for traditional buildings because of their non-capillarity properties. Moreover, eco materials offer as a result of their manufacturing process, generally good performances in terms of global environmental footprint and embedded energy.

Thus a real and deep change in renovation practices is needed based on readapting former techniques to achieve better solutions in respect of modern requirements. This opens huge perspectives for local economies to redevelop local materials, supply chains and skills.

Moreover most energy policy-making across Europe, only focus on final energy demand during the occupation of the buildings whereas a big share of the energy consumption of the building sector nowadays is due to the manufacturing and transport of the materials. Eco materials represent a triple asset: they are high yield, low-carbon products, which also represent interesting opportunities for local SMEs.

RECOMMENDATIONS:

- Adapt current energy efficiency assessment methods to the features of existing buildings,
- Consider the reduction of the global environmental footprint of renovation works as a criterion for a resource efficient policy,
- Support the necessary change of practices by the means of specific attention to characteristics of traditional building within the EPBD,
- Foster the use of renewable energy

Adapt current energy efficiency assessment methods to the features of existing buildings

Issues to be addressed

Current energy performance assessment methods are not fit for purpose in addressing the conditions of traditional and historic buildings. The deficiency of assessment tools, affects every financial, institutional, administrative and legal frameworks. The assessment methods need to be adapted, refined and improved in order to reflect better the reality of the energetic and environmental profile of buildings.

Moreover, they should in particular take into account the embodied energy of traditional buildings as well as their thermal performance in summer which can reduce the need for air conditioning. Their assessment must be balanced out according to their historic and cultural value as individual buildings and as part of the urban landscape.

Recommendation

A sound eco-restoration has to take into account the complexity of issues like history and location of the building, its original use and functioning, optional retrofitting strategies including extension, partial demolition and reconstruction. It is important to avoid legislation that supports only certain specific energy efficient retrofitting systems and materials. Retrofitting needs a solid knowledge background and open minded design approach to grasp the better chances intrinsic in an existing building or neighbourhood.

Evidence base from the LINKS partners experiences

LINKS network case studies and involvement in national research programs show how current energy efficiency assessment methods may become an obstacle to obtain adapted and better traditional housing restoration. To overcome these problems, partner cities have used methods and tools (DUMO method, Thermal Dynamic Simulation...) adapted to their performance expectations.

➤ To read more, please see annex A1

Target policies and tools: Intelligent Energy Europe, Research agenda, Green Public Procurement Directive

Consider the reduction of the global environmental footprint of renovation works as a criterion for a resource efficient policy,

Issues to be addressed

Current regulations (including the recast Energy Performance of Buildings Directive EPBD, recast Eco-design Directive and Energy efficiency Directive) are mainly focused on the energy performance of buildings/components/materials in use, and generally do not take embodied energy and lifecycle considerations into account. This approach penalises existing traditional² and historic buildings whose performance is often better than that of later buildings, but where, because of traditional building typologies and construction techniques, conditions cannot be easily assessed or enhanced. Paradoxically owners and occupiers of traditional or historic buildings are penalised in comparison to people living in or owning modern homes, because they have to pay a higher energy bill, have higher maintenance costs and have probably less comfort. This makes the future of old buildings and historic city centres not only highly uncertain but fails to draw operational conclusions in respect of the full impact of heritage as a component of the carbon footprint, despite the high cultural value and historic relevance that is usually universally recognised.

Recommendation

Energy efficient retrofitting policies must address historic city centres and existing buildings with specific policies, financial tools and assessment methods. European programmes aiming at supporting energy efficient retrofitting of buildings and urban centres should take into account the global environmental footprint of a building/refurbishment project (including its intrinsic historic, cultural and architectural value, embodied energy, waste management in case of demolition etc.) not just energy savings in terms of consumption in use. The basic principle exists in recognising that the most sustainable building is always the existing building.

The EU should adopt and promote a more holistic approach to energy related issues in the building sector e.g. by monitoring implementation of the recast EPBD and Eco-Design Directive 2009/125/EC in order to match retrofitting requirements of traditional buildings in terms of appropriate materials, projects and building techniques. Implementation at national level should be supported by effective capacity building and knowledge dissemination far beyond simply applying an energy rating.

The adoption of the Eco-design Framework Directive has to be strengthened and supported to drive deep changes in the building value chain.

The Ecodesign Directive 2009/125/EC

The buildings must be considered as energy-using products and must be targeted by the Directive 2005/32/E.C. establishing a framework for setting of eco-design requirement. Mandatory requirements must be adopted to foster the procurement of green material for construction and renovation projects.

Evidence base from the LINKS partners experiences

LINKS partners have concluded that traditional buildings need a particular attention, and that energy consumption is not the only environmental concern to be focused on. Taking embodied energy and lifecycle considerations into account, as several cities did for specific rehabilitation project, have proved to be advantageous for an efficient resource Europe.

➤ To read more, please see annex A2

Target policies and tools: Energy Efficiency Directive, ERDF Regulations, EPBD, Smart Cities Programme, Elena, Jessica

² The definition of traditional buildings includes those who have been built before WWII or that are part of historic urban fabrics or rural landscapes, so that their architectural modification (if not appropriate) can cause damage to the fabric itself.

Support the necessary change of practices by the means of specific attention to the characteristics of traditional buildings within the EPBD,

Issues to be addressed

The current building regulations are orientated towards new build situations. In absence of specific regulations, these techniques and standards are commonly applied by professionals for the thermal renovation of traditional buildings. These conventional renovations are often inappropriate and harmful for old buildings.

The performance of old buildings should not just be concerned with simply achieving a certain level of energy rating. In order to address the challenge of renovating the existing building stock and to keep pace with the ambitious aims of the European Union to reduce and “decarbonise” energy consumption, improvements in EU and national frameworks are needed.

Particular attention must be paid to specific criteria that can improve the thermal comfort and energy performances of traditional buildings.

Recommendation

The E.P.B.D. Directive 2010/31/EU:

Any binding targets for energy efficient retrofit should be avoided in the case of traditional buildings, protected or not protected. But binding measures should be specified to ensure compatibility of insulation materials with the original materials of traditional walls. No limit value must be required for the thermal resistance; however, the hygroscopic features of insulation must be carefully framed.

Experiences from the LINKS partners:

The search for appropriate restoration techniques is fundamental for the traditional buildings on penalty of significant damage. LINKS network case studies of 22 rue Bourgneuf Bayonne, Wallstrasse Freiberg, BK City Delft, Veterinary School Anderlecht, Teatro Consorziale Budrio and Chatzikou House Veria are examples of suitable eco-restored buildings.

➤ To read more, please see annex A3

Target policies and tools: Energy Efficiency Directive, ERDF Regulations, EPBD, Smart Cities Programme



MORE AND BETTER JOBS FOR THE CONSTRUCTION SECTOR, PARTICULARLY IN RENOVATION ACTIVITY, AS REAL BENEFITS OF ENERGY SAVING POLICIES:

Improving the energy efficiency and environmental performances of buildings has important macro-economic benefits and can substantially contribute to the Europe 2020 Strategy, as well as to the EU 2050 roadmap targets. All forecasts emphasise positive effects on direct employment in the construction sector, on related industries operating in the materials supply chain and on induced jobs in education, research & innovation, energy services companies, waste management etc.

But to trigger a renovation wave across Europe which would deliver significant societal, economic and environmental benefits, a fundamental change in adopted practices is necessary. In the context of lack of knowledge, only adapted regulation and effective financial support can transform current practices and encourage capacity building and training of employers and a new work force.

Moreover, the creation of a sustainable business sector, and support for a local economic tissue of SMEs involved in the eco-material manufacturing sector, is necessary to stimulate local job creation and develop a more labour intensive sector.

RECOMMENDATIONS:

- Accompaniment of measures to generate job opportunities
- Facilitation of access to the market for eco-materials in order to create opportunities for SMEs.
- Raise awareness of practitioners and decision makers.

Accompaniment of measures to generate job opportunities

Issues to be addressed

There is a strong need to increase skills in the construction industry in Europe particularly in the field of interaction between retrofitting of traditional and historic buildings, and the achievement of environmental sustainability...

Traditional buildings in particular need a workforce with specific skills that understands and is able to implement compatible retrofitting techniques. But this skill level is very difficult to be found. This however represents a great opportunity to tackle unemployment, but there is need for an upfront investment in education and training.

Therefore, training and educational activities should be developed both in the construction sector and in the supply chain industries at the level of basic professional education and long-life learning activities.

The investments in practical education and craftsman must be re-evaluated and facilitated.

Recommendation

Cities need to be supported in the implementation of training and capacity building schemes for the construction sector (handcrafts, professionals, supply chain and industry) to ensure appropriate framework conditions for the Internal market of construction products and services, to improve resource efficiency and environmental performances of construction enterprises and to promote skills, innovation and technological development to meet new societal needs and to mitigate climate risks.

Evidence base from the LINKS partners experiences

The local market demands the presence of specialists in eco-restoration. The involvement of new competences and tackling of local key-challenges presents opportunities (unemployment, environmental issue, integration of minorities etc.) to respond effectively to this need. In the case of Almeria municipality there is an interesting example of a comprehensive approach being applied to the rehabilitation of historic centres. Here job creation is directly linked through the re-focusing of one of the activities developed within the urban project.

➤ To read more, please see annex B1

Target policies and tools: ERDF, ESF, Intelligent Energy Europe, Research agenda, DG INDUSTRY

Facilitate access to the market for eco-materials to create opportunities for SMEs.

Issues to be addressed

Locally sourced and manufactured eco-materials have difficulty in finding access to the market for several reasons: the supply chain is dominated by the global players, eco-materials are the result of a local supply chain (using domestic or industrial production waste), they are often produced on a relatively small scale (limited amounts) and face barriers in the certification process for energy performance, durability etc. The certification process is too long, expensive and centralised and is subject to a heavy pressure from the established large industries. However eco-materials, not least for compatibility reasons, can make a significant contribution when it comes to restoring traditional buildings while at the same time positively impacting on the full carbon equation.

Recommendation

Measures should be adopted to favour/ maximise the use of eco-materials in the retro-fitting process of the built heritage and traditional building typologies. The building material certification process should be made more transparent, taking into account embodied energy, production processes - where do raw materials come from, are they capable of being re-used and how is this achieved. Techniques and materials should also be made more accessible and flexible to fit the end-users needs and expectations according to the definition of “eco-design”³ and “ecological profile”⁴ provided by the Paragraph 23, Article 2 of DIRECTIVE 2009/125/EC.

To make an important contribution to sustainable consumption and production and bring added value to local economies through the production of green/eco materials, the LINKS partners recommend transforming the green public procurement into an EU directive which would take the existing policy from being voluntary to mandatory.

Evidence base from the LINKS partners experiences

Currently, the major part of the eco-materials market of traditional building rehabilitation is represented by small business structures, SMEs that plays an important role in the challenge of local economies. Despite a high potential, eco-material chains struggle to grow for procedural reasons and because of difficulties in obtaining technical assessments from the certification bodies. As part of the LINKS project, the city of Bayonne took notice of the difficulties encountered by OUATECO, a local cellulose wadding producer, with regard to access the market.

➤ To read more, please see annex B2

Target policies and tools: ERDF, ESF, Intelligent Energy Europe, Ecodesign requirements for energy-related products, Green Public Procurement Directive

³ ‘Ecodesign’ means the integration of environmental aspects into product design with the aim of improving the environmental performance of the product throughout its whole life cycle

⁴ “‘Ecological profile’ means a description, in accordance with the implementing measure applicable to the product, of the inputs and outputs (such as materials, emissions and waste) associated with a product throughout its life cycle which are significant from the point of view of its environmental impact and are expressed in physical quantities that can be measured;”

Raise awareness of practitioners and decision makers:

Issues to be addressed

Eco-restoration is a relatively new approach in the protection of built heritage and is generally still an unknown quantity. Public officers in managing authorities and the municipalities have difficulties in facing the rapidly evolving challenges posed by energy efficiency regulations, financial tools, budget restrictions, public procurement rules, etc. especially in small and medium sized cities where it is impossible to have specialised departments devoted to EU funding or PPP which could help to promote dedicated development plans for historic city centres.

Recommendation

The EU could exert an influence on member states and so managing authorities in order to ensure that they are able to promote and manage eco-restoration projects in historic city centres. It would also be useful to provide small municipalities with financial support for the technical expenses to participate to EU call for tenders and elaboration of feasibility studies. This could be done by adapting the Elena Programme to assist small projects and small municipalities, with ERDF or EIB grants to finance LAP actions.

Evidence base from the LINKS partners experiences

For implementing effective and good quality deep renovation it is necessary to improve the skills of the building professionals at the level of both basic professional education and long-life learning activities. Also appropriate restoration techniques for the built heritage are relatively unknown from the general public. In order to lead a suitable rehabilitation campaign, cities realized that raising awareness was the sinew of war. Several examples have been successfully implemented in the LINKS network, such as citizen involvement for La Chanca district in Almeria. This Plan was selected with a qualification as BEST by the United Nations, in the 3rd International Competition of Good Practices in 2000.

➤ To read more, please see annex B3

Target policies and tools: Elena, ERDF, Jessica, Eco innovation (http://ec.europa.eu/environment/eco-innovation/getting-funds/call-for-proposals/index_en.htm), Intelligent energy, CIP-programme and n FP7 programme



MORE INNOVATIVE GOVERNANCE FOR A BETTER USE OF PUBLIC FUNDS

Though important progress has been made to eliminate the conflict between heritage value and energy efficiency, it seems that there is still some distance between the rules and standards promoted by the different legal actors. Therefore, a common frame of methodologies, regulations and technical specifications is needed, requiring agreement by the various legal representations in order to bridge the alternative options and counter possible oppositions. It is essential here to clarify the demands of the different operations, facilitating the smooth course of the procedures and improving the use of a scarce financial resource.

The multiple benefits of energy efficient retrofitting of buildings and urban infrastructure are evident even in the short and medium term, but the current budgetary constraints make it often impossible to kick-start retrofitting. It is a major challenge to close the gap between initial investment and the incremental return which results from immediate and on-going energy savings.

Moreover, poor thermal renovations not only constrain the achievement of the European aspirations but can also generate a “lock-in-effect” in respect of the following years investments in energy saving.

RECOMMENDATIONS:

- Overcome obstacles which hinder the effective cooperation of stakeholders :
- Ensure provision of a clear and stable financial support,
- Disseminate good practices

Overcome obstacles which hinder the effective cooperation of stakeholders:

Issues to be addressed

A strong barrier against the correct implementation of integrated projects for the eco-restoration of historic buildings is the lack of dialogue among the various stakeholders. Sometimes a project can be carried out to reach a certain stage and then at a critical point it faces the opposition of one of the stakeholders or encounters some objective difficulties that were unforeseen until that moment. This can result in delays or even the termination of a project, with all its consequences in terms of loss of all the work done and resources invested.

Recommendation

The EU could exert an influence on member states and managing authorities in order to ensure that they are able to support and manage cooperation among the many and diverse stakeholders concerned in the eco-restoration of historic buildings and city centres. Financial, technical and human resources are needed to implement efficient integrated governance to build a positive synergy across the various levels of competences e.g. avoiding conflicts between heritage conservation ambitions, energy efficiency expectations and the departments of the municipality which need to be involved. On an experiment basis, the setting up of local groups could be an innovative solution to efficiently manage ERDF grants necessary to the achievement of large scale rehabilitation projects in historic city centres. The URBACT local support group is a good example of a cost effective tool fostering good cooperation among stakeholders. Incentives should be provided to encourage the involvement of civil society in the conservation, energy responsible rehabilitation, and re-use of historical city centres, providing bottom-up ideas and contributions, e.g. through the establishment of targeted Local Support Groups.

Evidence base from the LINKS partners experiences

Financial, technical and human resources are needed to implement efficient integrated governance for particularly complex projects that involve diverse stakeholders with different interest. Thanks to public grants for housing rehabilitation, as in the case of Almeria or Budrio, public financial support is capable of playing a leverage role to stimulate private investment. The cases of the district of La Chanca (Almeria) and the 'Consorziale Theatre' are particularly significant.

➤ To read more, please see annex C1

Target policies and tools: ERDF, ESF

Ensure provision of a clear and stable financial support

Issues to be addressed

Energy retrofitting of traditional and historic buildings is normally more expensive than for contemporary buildings, especially when targeting high architectural quality and environmental sensitiveness. Owners and occupiers (private or public) of traditional or historic buildings need support from ad hoc policies in their efforts to implement energy retrofitting. In this they need to be placed in a position to be able to choose the cost optimal solution (compatible materials, compatible techniques, staged deep retrofitting, high quality integrated design etc.) and not simply to apply the cheapest offer on the market.

Solutions must also be proposed to private owners who contribute, at their individual scale, to the collective objectives of energy savings.

Designing a efficient financial scheme for an ambitious renovation of the European building stock, including traditional buildings, is not only key to reach the European climate targets, but would also leverage urgently need economic and social benefits.

Recommendation

It is necessary to preview funds to retrofit traditional and historic buildings, bridging the gap imposed by additional expenses caused by conservation needs. Promotion of eco-design expertise and knowledge and investment in training for craftsman in eco-restoration⁵, can also revitalise the local labour market, tackling unemployment. In order to maintain and enhance the cultural value of historic buildings and to develop local economies we need a revaluation of craftsmanship.

In this framework the LINKS partners call for the European Union to encourage and support Member States to develop innovative financial instruments for an ambitious renovation programme of the European building stock, especially targeting traditional buildings. This is a key to reaching not only the European 2020 targets, but would also work as leverage to realise urgently needed economic and social benefits.

Furthermore the European Union should encourage Member states to facilitate the creation of a sustainable business sector and to support the local economical tissue of SMEs involved in the manufacture of eco-material.

It should be possible to ring-fence part of ERDF and other programmes supporting energy efficiency to allow small and medium sized cities to invest in the historic centre, to retrofit public buildings and to support retrofitting of private housing, which represents the largest proportion of housing in historic centres. It would also be beneficial to allow small municipalities to access sustainable financial tools to by-pass current budgetary restrictions and economic shortages. Such situations inhibit the exploitation of economy saving opportunities, which on the contrary could enable high energy cost savings.

Evidence base from the LINKS partners experiences

Lack of funds and/or inability to secure finance on acceptable terms is generally one of the most cited barriers to investing in energy efficiency measures. This applies at the level of the individual householder, businesses (large or small), social housing providers and the public sector. Even though appliances for energy efficiency will in most cases be cost-effective over the long run, the initial investment costs can be high and this is seen as an obstacle to consumer investment decisions.

➤ To read more, please see annex C2

Target policies and tools: Energy efficiency directive, ERDF Regulations – Smart Cities Programme – Covenant of Mayors - Elena - Jessica

⁵ According to the definitions of “ecological profile” and “eco-design” the LINKS network used of the wording eco-restoration to define the most environmentally sensitive kind of retrofitting of traditional and historic buildings with compatible eco-materials and techniques.

Create examples and disseminate good practices

Issues to be addressed

Decreasing public resources and increasing complexity of urban issues in historic centres make it more and more difficult to make the most effective decisions both for local administrations and stakeholders. Specialised and integrated knowledge is needed to grasp the “golden moment” when a retrofitting project has to be started and the right financial tool is available.

Energy efficient retrofitting has to be comprehensive (deep) to avoid the “lock-in” effect and encompass all aspects of the building, but often available funds are insufficient. So the process has to be thoroughly “staged”, planned in subsequent phases over the years. Specialised knowledge is also needed to face new conflicts arising between heritage conservation and an increasing number of optional energy efficiency solutions; between historic building typologies and new lifestyles; between, traditional and historic values and new technologies. Every retrofitting project of an existing traditional or historic building sets specific challenges and requires individual assessment based on a multidisciplinary knowledge base which cannot be the responsibility of a single professional or public officer.

Recommendation

Exemplary activities can address the barriers concerning eco-renovation/restoration to initiate behaviour changes and support investment in favour of sustainability rather than submitting to short term return considerations.

The public sector has to take a leading role. Public bodies could be required to renovate at least 3% of their floor area with environmental performance requirements.

A shared broad knowledge base is fundamental to make informed decisions in order to make historic city centres future-proof. Dissemination and exchange of good practises among EU cities, establishment of a repertoire of projects, conferences and workshops have to be regularly organised addressing building owners, public officers, professionals and in fact all relevant stakeholders.

Evidence base from the LINKS partners experiences

In many cases, the lack of awareness or lack of interest rather than the lack of funds is one of the most important reasons of bad suitable rehabilitation. Promotional and dissemination activities must be an important part of the deep building renovation programmes. Anderlecht’s and Brasov’s experiences indicate that an important success factor is the share of a broad specific knowledge and implementation techniques, well known and perceived by the market.

➤ To read more, please see annex C3

Target policies and tools: ERDF, ESF, Research agenda, Education, Horizon 2020, JPI, URBACT,

CONCLUSION

Historic centres can become tomorrow's 'eco-districts'

It seems common sense to say that one can find in Historic Centres nearly all the elements that constitute the «eco-district» magic mix most city planners dream to build today. Indeed, their urban forms are incredibly thrifty in terms of use of space, local building materials, closeness of urban services, social and functional mix, etc. Still, the objective evaluation of such characteristics remains to be elaborated.

Towards Future-Proof Historic Centres

The LINKS project's ambition was not to study the environmental virtues of historic centres in all of their constituents: the project has concentrated on the question of the ancient housing environment, its intrinsic qualities, the ways to protect and/or improve them. The urban traffic, the impacts of tourism, or the functional, economic or social balances have been examined as indispensable urban quality factors to have inhabitants come back to and/or remain in historic centres. These elements indeed constitute urban control levers which cities should integrate to validate a holistic urban model before focusing on the validation of specific housing models.

The depletion of energy resources and the greenhouse gas emissions inferred by human activities are among today's top level environmental concerns. These two impacts generally constitute the priority targets of local environmental policies.

This is why the energy performances of ancient buildings and the improvement solutions that have proven to be compatible with the historic character of such constructions were a priority axis for the LINKS project partnership.

The energy dimension has been studied throughout the life cycle of a building, while keeping in mind the need not to aggravate either the other environmental impacts. The notion of eco-restoration developed within the framework of the LINKs project thus refers to the EU frame of reference concerning the Eco-conception of products (European directive 2005 / 32 / CE).

Through the analysis of existing research, legal frameworks and policies as well as the experimentation of concrete local practices, the LINKS partnership wished to build and share a common set of principles and tools that will help European cities to keep feeling the beating heart of their Future-Proof Historic Centres.

ANNEXES : EVIDENCES FROM THE PARTNERS' EXPERIENCE

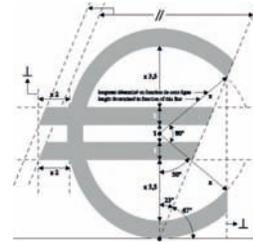
OBJECTIVES



More sustainable and efficient energy retrofitting for a better and effective revitalisation of the historic buildings



Increase the benefits of the energy saving policies and create more and better jobs for the construction sector



More innovative governance for a better and effective use of public funds

RECOMMANDATIONS

A1
Adapt current energy efficiency assessment methods to the features of existing buildings :
 De Witte Roos, Delft
 22, Bourgneuf Bayonne

A2
Consider the reduction of the global environmental footprint of the renovation works as a criteria for an resource efficient policy,
 Red chemistry, Delft,
 22, rue Bourgneuf Bayonne
 Ecole Vétérinaire (Veterinary school), Anderlecht

A3
Support the necessary change of practices by the means of specific attentions within the EPBD,
 Chatzikou house, Veria,
 Factor 4 historic centre, Bayonne
 Eco-restoration in La Chanca, Almeria

B1
Accompany jobs' opportunities
 Professional school of eco-restoration, Almeria

B2
Facilitate the access to the market for eco-materials to create opportunities for SMEs
 Support local supply chain, Bayonne

B3
Raise awareness of practitioners and decision makers
 Meson Gitano, Almeria
 Experience from Kilkenny

C1
Overcome obstacles within cooperation of stakeholders,
 PERI, in Almeria
 Consorziiale Theatre, Budrio

C2
Ensure a clear and stable financial support,
 Partners' discussion in Bayonne, Brasov's example

C3
Dissemination of good practices
 Das blaue Hause, Brasov,
 Ecole vétérinaire Anderlecht



ANNEX A1 - ADAPT CURRENT ENERGY EFFICIENCY ASSESSMENT METHODS TO THE FEATURES OF EXISTING BUILDINGS

“For me sustainability has to do with balance, in fact active balancing. I am not an expert on sustainability, I am a curious architect at TU-Delft Faculty of Architecture looking for interesting ways to search. Like the inspector: who committed the murder, by bits and pieces, to lay the complex puzzle. I am interested in use by people to be conversed in building, re-use even more for its complexity and the interesting time-layers of predecessors. A story of use meeting history, of growing interest in our time, of culture to be handled with care and understanding.

Thus I feel not an autonomous author, I feel like a co-author with time, and I feel also the responsibility to bring further what is or was valuable and may be even place it into new perspectives. Thus, make visible what was forgotten, use its potential with the means of today and tomorrow. To make this into a success is a complex task that asks for a lot of knowledge one person can never have: time for team-work to find the balance in design between past and future in a cultural-driven way. But not only! It should also be a balance for eco and societal drivers.

Because building is about our future and the challenges we meet today are huge. The complex balancing could be compared to a sensitive neurologic system which makes our body function: the result goes without saying.”

Job Roos, architect, professor in Delft T.U.

The restoration of the house ‘de witte roos’ (Delft)

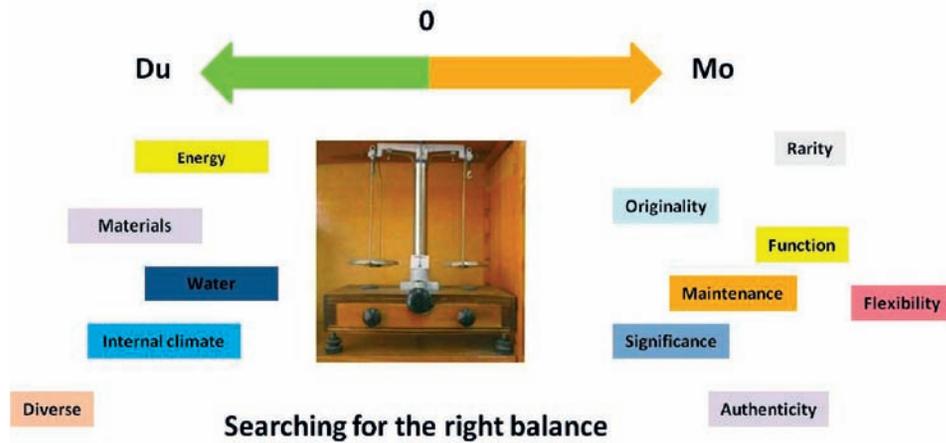
Foundation “de Witte Roos” is situated in a listed monument at Oude Delft 73, on the oldest canal in Delft, an area with high attraction coefficient for both residents and visitors to the city. The sustainability of this building is highly influenced by the type of technical measures taken and this has had a big influence on sustainable building in Delft (especially heritage).

Preparations have been made to make a calculation of the building by applying the system of “dumo-model” (du=duurzaam=sustainable; mo=monument), which combines assessment of the sustainable factors as well as heritage-value by a system of calculations.

De Witte Roos is a foundation for sustainable living (with first focus on cities) and is now working on the eco-restoration of this national listed monument. Energy-use will go down by 80% as a result of applying a range of special measures, without harming the monumental value of the building. Carbon (CO₂) will be reduced by 90%, compared to a conventionally restored monumental building.

The construction is built of thick brick walls, wooden floors and roof structure, ceramic tiles, wooden windows and doors, with single glass.

A part of the roof has been insulated (aesthetic reasons prevented a complete insulation). Walls and glazing are not insulated because of their monumental value, while restoration of the ground floor is achieved by insulation and installation-pipes placed under the floor.

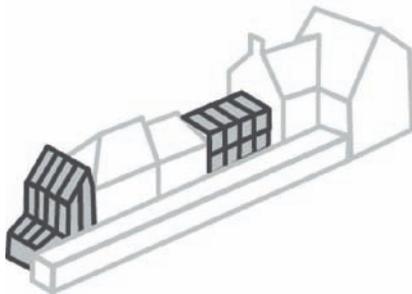


Because of the thick walls the building has a rather high heat-capacity, well suited for low-temperature heating.

At the rear-façade on the 1st floor a veranda has been added (with transparent PV). An inner court-yard is covered with a glass roof, to create extra inner space and connection of rooms. This will also prevent heat-loss and will protect the architecture (facades and windows).

Flexibility in use makes the building more efficient, which prevents any threat of an alternative demolition approach.

Reversibility of materials and component use prevents unnecessary waste.



This building has been chosen to make several calculations on energy use and to test several solutions:

1/ Architecture students are making several design proposals for a sustainable redevelopment of the building. These proposals will be assessed according to the policy of the Delft municipality for maintenance of built heritage and sustainability.

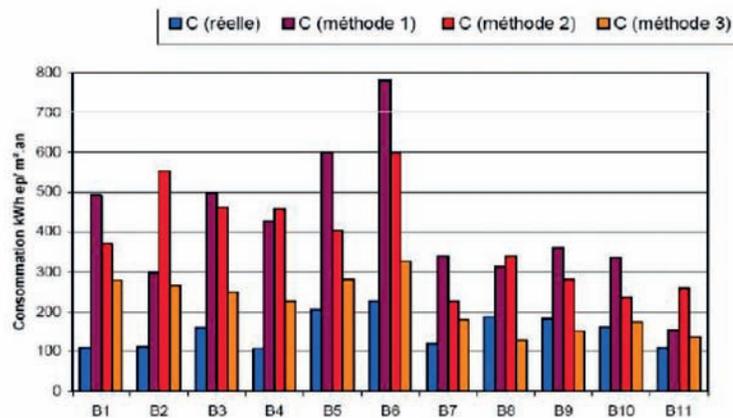
2/ For previous designs, calculations have been made for energy-sufficiency and sustainability. These calculations will be used and refined to analyse the new proposals. ('Dumo - Green-calc+' or 'GPR-bestaand')

3/ After the experimental design studies and the analyses of the proposals, a final design will be made and executed

The restoration of the house '22 RUE BOURGNEUF' (Bayonne)

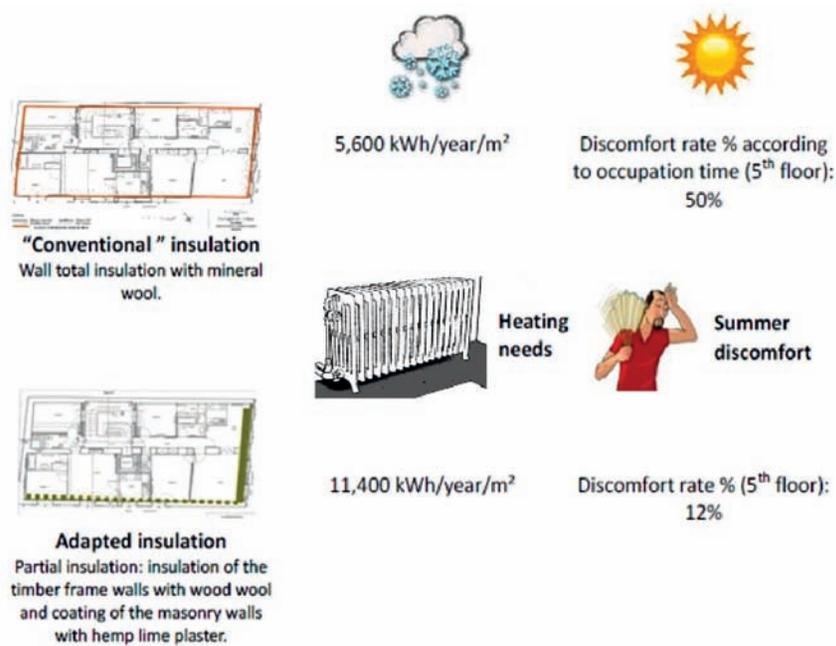
The city of Bayonne has been particularly involved in a national research programme entitled BATAN for BATiments ANciens (old buildings), which aimed to improve the assessment method of the energy consumption of pre-industrial buildings.

3 buildings in the historic centre have been monitored during 1 year.



The diagram above, coming from BATAN's results, shows the considerable discrepancy between the real energy consumption of old buildings in an urban context (B1 to B5) and the outcome from 3 computer simulations. (B6 to B11 are single houses). Therefore, the implementation of a better adapted tool is needed to obtain realistic results: the Thermal Dynamic Simulation.

To go further, the city of Bayonne decided to analyse several technical options to restore one of the buildings of the historic centre: 22, rue Bourgneuf. In order to point out the most energy efficient solution in winter and in summer, several Dynamic Thermal Simulations have been implemented.



The first panel of solutions consisted in a peripheral insulation with mineral wool, The second panel of solutions consisted in a partial insulation (insulation with wood fibre on timber walls, but with just a coat of lime and hemp on masonry walls to keep inertia but get rid of the “cold wall effect”).

For each of these panels, five options have been assessed for windows and ventilation

- 1 = single glass windows + single flow ventilation;
- 2 = double glass windows + single flow ventilation;
- 3 = double windows + single flow ventilation
- 4 = double glass windows + double flow ventilation
- 5 = double windows + double flow ventilation

The results show that with a partial insulation with fibre wood to keep the walls “breathable”, the energy consumption is about 70 kWh/year/m², so an energy label B, which is quite good. But this solution is especially remarkable for the summer comfort of the inhabitants (twice better than for the first panel commonly used).



ANNEX A2 - CONSIDER THE REDUCTION OF THE GLOBAL ENVIRONMENTAL FOOTPRINT OF THE RENOVATION WORKS AS A CRITERIA FOR AN RESOURCE EFFICIENT POLICY,

The re-use from ‘RED CHEMISTRY’ to ‘BK-CITY’ (Delft)

‘Red chemistry’, built in 1920, is re-used and is to be developed as a show case of re-design and innovation in energy reduction. In order to preserve the historic university area new users have to be found for the old buildings. Furthermore the buildings have to be retrofitted to meet modern comfort needs. The project wants to show new solutions for re-use combining the historic value of the buildings, climate and physical behavior of the traditional building and energy saving.

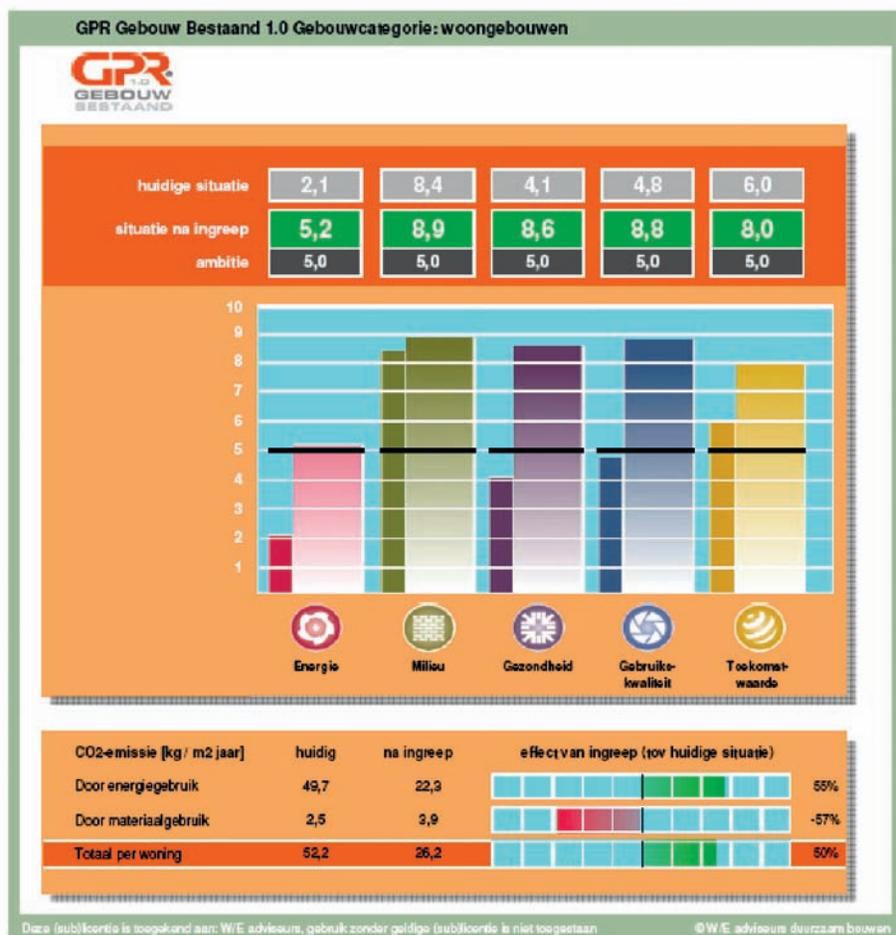
The reuse of the building as a faculty of architecture emerged from the fire that burned down the former faculty building. In a pressurized process the (empty) protected historic building had to be redeveloped as a temporary solution. Out of the positive experience of this process the faculty decided to stay in the building and to use it as a show case of innovative re-use. In this case, there were several phases:

1/ Organisation of the re-use of ‘red chemistry’ building to make it suitable for the faculty of architecture as a temporary solution.

2/ Organisation of a competition to find innovative ideas for the new building for the faculty of architecture and organize a second competition to find innovative ideas to develop a more sustainable solution (BK city stay) out of the initial temporary solution.

3/ The project advocates that innovative buildings can emerge from the re-use of an historic building. Innovative architecture, energy-reduction and progression are not limited to an expressive futuristic design but can be developed within the existing fabric

The redesign is generally acknowledged as a successful example of reuse of a protected building. Although the last phase of the project, finding solutions for energy reduction is not yet finished. In 2011 it was awarded a nomination prize for the Europa Nostra awards in the category of conservation



In the scheme above is a rating of Red Chemistry before and after reuse.

The programme called 'GPR' means municipal practice guideline. It rates the different aspects of intervention on the building, divided into 5 themes, energy (red), environment (green), health (purple), quality of use (blue) and future value (yellow) on a scale from 1 to 10.

The rates show the existing situation and the new situation.



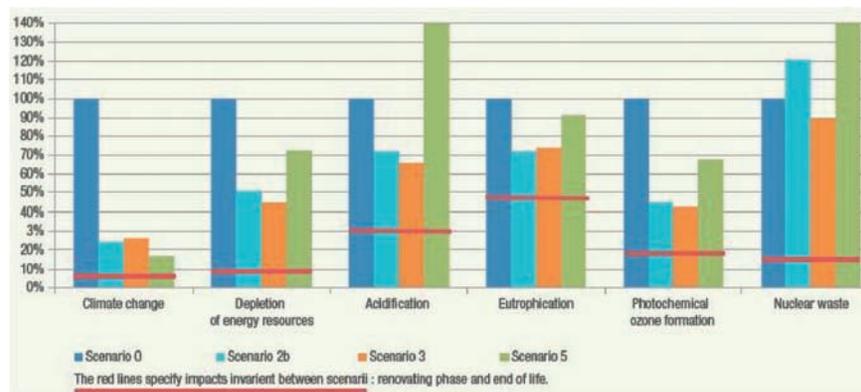
Life Cycle Analysis on a restored building, made by GDF Suez in partnership with the city of Bayonne:

GDF SUEZ assessed in 2009-2010 the relevance of different solutions for the renovation of a building in the historic centre of Bayonne, from an environmental point of view (22, rue Bourgneuf). The Life Cycle Assessment methodology was used, in order to have a complete vision and avoid pollution transfer.

This project was ambitious due to the wide variety of people involved in it, the massive investments required and the very tight time schedule.

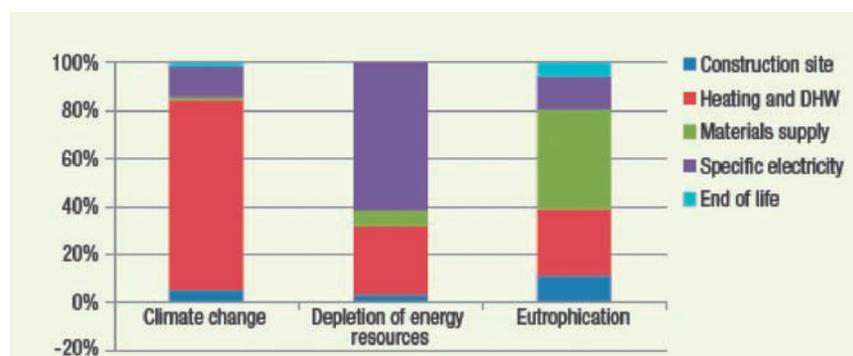


Thus, 5 major scenarii have been evaluated.



The restoration provides an important improvement of the environmental performance, but depending on the impact, the scenario with the lowest contribution changes.

The scenario 2b leads to a good compromise between the various environmental impacts, due to the high efficiency of the condensation boiler used.



L'Ecole Vétérinaire (Veterinary School) in Anderlecht :

This example clearly shows that when it comes to heritage buildings specific attention is needed, and that energy is not the only environmental concern to be focused on.

The economic project "Espace Lumière" (rehabilitation of the administrative building of the Veterinary School to create a Business incubator and conference centre) was selected and financed by ERDF. The Anderlecht administration decided to work on the energy performance of the building. Indeed, with any insulation the building is consuming more than 200 kWh/m²/y. At the beginning, the municipality proposed to reduce the energy consumption by 30kWh/m²/y. Afterwards, with the heritage conservation concerns it was decided to reach the low-energy standard of 60kWh/m²/y. Indeed, the building is listed, so it wasn't possible to insulate from the outside. Therefore, the insulation has to be from the inside. But there were some concerns about the behaviour of the outer bricks and stonework of the façades. A study was conducted by IRPA and highlighted the fact that it wasn't possible to insulate as initially planned.

In the eco-restoration of the Veterinary School (administrative building) project, the Municipality has a strong concern for the waste management before and after the works. Indeed, in this project the Municipality wants to show to private actors and entrepreneurs that it's possible to use the 3 R rules (Reduce, Reuse and Recycle). The administration thinks that the greenest building is the one already built. This is why the municipality contacted Rotor to help her to implement even further the 3 R rules. Founded in 2005, Rotor is a collective of people with a common interest in the material flows in industry and construction. On a practical level, Rotor handles the conception and realization of design and architectural projects. On a theoretical level, Rotor develops critical positions on design, material resources, and waste through research, exhibitions, writings and conference (<http://rotordb.org>).

Here are some example of the waste management project developed in the Veterinary School (Administrative building) project:

- **Reduction of waste:** preserve as much as possible the existing building (including doors, fireplace, tiles, tiling, window frames...) restoring and/or re-using in the building. Creative architecture will allow the reduction of the global footprint and helps to preserve heritage at the same time. In the Veterinary School (Administrative building) project the window frames will be restored and a second window with higher performance will be placed just behind.
- **Re-use as much as possible of the waste components:** If it's not possible to re-use some part of the building maybe other buildings can re-use it. In the Veterinary School (Administrative building) project, the Municipality plan to contact professionals working in the channel of re-use. More or less 60 doors can be reused. The administration also want to ensure that during the works as much as possible of the raw materials will be re-used in or outside of this project.





ANNEX A3 - SUPPORT THE NECESSARY CHANGE OF PRACTICES BY THE MEANS OF SPECIFIC ATTENTIONS WITHIN THE EPBD,

A thermal study of the whole historic centre 'FACTOR 4-PROOF HISTORIC CENTRES' (Bayonne)

In order to guide a large and suitable rehabilitation policy and give back comfort and attractiveness to existing homes, the City of Bayonne carried out a thermal study on the whole of its existing building stock constructed before WWII. This initiative is named "Something new for old districts, factor 4 proof historic centres".

The objective was to validate, from a representative sample of old buildings in Bayonne centre, the most appropriate technical solutions for these types of building by using thermal dynamic simulation. Constructions chosen were representative of the urban form and targeted constructive typologies which used traditional materials.

After analysis of the initial state of the buildings, a range of solutions has been optimized drawing on several technical alternatives. The aim was to validate the most effective combinations in terms of energy performance, hygrothermal compatibility and comfort of the occupants.

Restoration techniques commonly practiced, involving application of mineral wools for instance, have been simulated and then compared to alternative options inspired from eco-restoration.

In every case, findings show that the capillarity of insulation material or coating is necessary in order to ensure the continuity of water migration in the wall. For instance, installation of mineral wool on a half-timbered construction requires, in an oceanic climate, almost 130 days for the drying out process. In other words, walls are constantly humid and moisture can cause serious damage such as the deterioration of material, decrease of insulation, inside air pollution...

Thickness of insulation materials has also to be studied before implementation. In many cases, above 10-12cm, condensation inside walls becomes a risk. Moreover, insulation of walls should not be systematic; solar gains combined with inertial properties justify, for certain configurations, the use of a simple thermal correction.

Studies have shown that it is preferable from all points of view, to restore traditional buildings by using ecological materials. The characteristics of these constructions, namely the heterogeneity of walls, breathability and the inertia of walls discount completely the use of conventional methods. Physical properties: density, heat capacity, conductivity, resistance to water vapour diffusion ... can also justify the choice of a particular insulation technique and material application.

The restoration of the 'CHATZIKOU' house (Veria)

The building, known as the house of Voula Chatzikou dates from the beginning of the 20th century and belongs to the Municipality (Chatzikou donation). It is located at a corner of the central commercial street of the old market area of Veria and preserves a lot of eclectic elements. A three-storey building, it has shops on the ground floor and a house in the upper levels. Its outside walls are built of stone at the ground floor level and brick in the upper levels, strengthened with timber beams. Its floors and roof are timber constructions.

The building remained empty for approximately 5 years. It is preserved however in pretty good condition. Its conversion to a cultural centre to promote and enhance local tradition (everyday life, folk dances, manners and customs, etc), following the donators' will, and its transformation to meet current needs in respect of its historic values was the main challenge of the project. In addition, the building, typical of its period of construction, offered an opportunity to be studied and restored following the rules and techniques of eco-restoration and act as an example for all those interested in the field of eco-restoration.

Indeed, the objective was to make an exemplary eco-restored building by different means:

1. Investigate the current energy performance of the building and recommend methods for its improvement.
2. Apply several tests on its materials to investigate their different characteristics and make recommendations for materials to be used during restoration works
3. Examine its seismic behaviour and propose measures for the strengthening of the building elements
4. Examine, in relation to the values of the building, the possibilities for alterations, for its adaptation to the contemporary needs of its new use
5. Implementation of the project

Materials

The main building materials, their composition and their chemical and mechanical characteristics were investigated. Based on these results, recommendations were made for techniques and new materials to be used compatible to the existing ones. The new materials to be used should be based on lime-pozzolan compositions, traditional materials which have been used for centuries.

Energy performance

Extended investigation was carried out for the assessment of the energy performance of the building in its current condition. Based on this investigation, 3 scenarios were developed for its improvement and simulation models were generated. In all cases, it was considered that insulation from the internal part of the walls is not desirable, as it keeps out all their mass. The different approaches showed that very good insulation of roof and floors and the addition of second high thermal quality glass at the inside part of the windows can give satisfactory results. In addition, in the case that there is the possibility for the replacement of external plasters and use of insulation material can be incorporated in the new covering, the improvement of energy saving could reach a percentage close to 66%.

Strengthening against seismic risks

This part of the project is in progress and is expected to be completed by the end of the year. However, simulation models have shown the need for strengthening the carrying structural building elements. The whole approach is directed towards mild and compatible interventions with eco-materials.

Renovation versus values

The historic and architectural documentation of the buildings identifies the real possibilities we have for alterations. It is seen as a very interesting challenge to achieve the harmonious coexistence of the old structure and the new interventions/additions in a current and high tech way.

The eco-restoration in the district of 'LA CHANCA' (Almeria)

In Almeria, architectural and urban design projects respect proposals that agree with environmental sensitivity. This concept basically considers three aspects: its place, its history and its culture. By way of the architectural and urban design initiatives themselves and taking the proper location, climate, orientation, sunshine... into account, the conditions of negative habitat and energy consumption and pollution are diminished. In this respect, acts of restoration tested in the special conditions of cave-dwellings and experiences gathered, such as in the "renovation of the Cuevas de Pecho" have been transferred to other interventions carried out by the Junta de Andalucía.



Traditional materials and internal organization (such as patios) have been "given to the style of the day" by the architect Ramon de Torres. Inspired by the works of Vitruvius (First century BC), he highlighted the qualities of some thermal hydraulic lime.



ANNEX B1 - ACCOMPANIMENT OF MEASURES TO GENERATE JOB OPPORTUNITIES

In the case of Almeria municipality there is an interesting example of a comprehensive approach being applied to the rehabilitation of Historic Centres. For the city of Almeria, eco-restoration is considered as a means of boosting the construction sector. Here job creation is directly linked through the re-focusing of one of the activities developed within the URBAN project, namely – the launch of a professional school of craftwork and eco-restoration which will help to train workers in the construction sector and empower them by developing new abilities, providing new competences and therefore ultimately new job opportunities.

The local situation is characterized by:



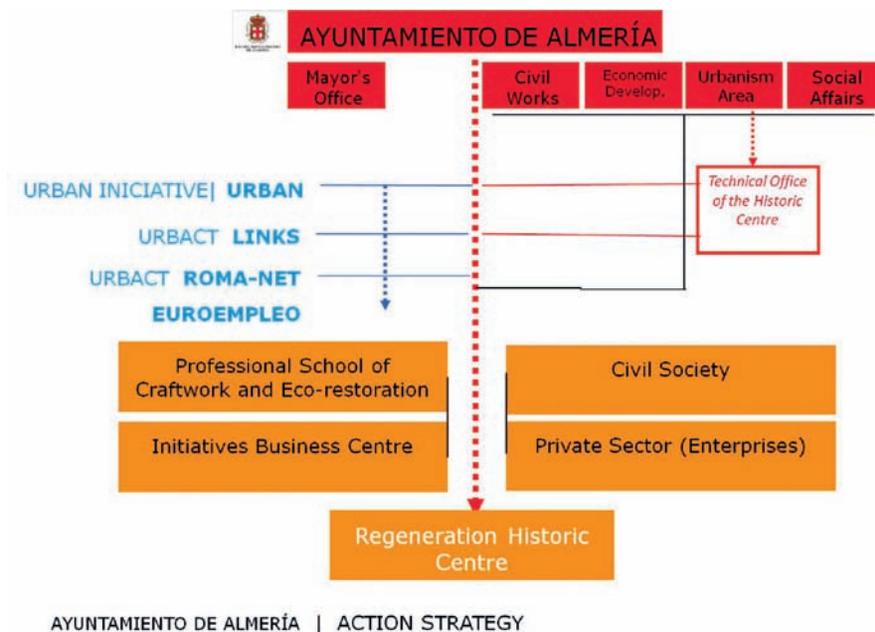
- A weak economic activity rate in the Historic Centre
- A major part of the local economy relies on the construction sector which has been seriously affected by the global crisis
- Need for investment in employment creation and promotion of self-employment, through improving employability and staff qualifications.
- A need for specialists in eco-restoration with the appropriate capacity:
 - TECHNICAL KNOW-HOW
 - THEORETICAL KNOWLEDGE
 - TRANSVERSAL SOCIAL SKILLS

The local market demands the presence of specialists in eco-restoration. The involvement of new competences and tackling of local key-challenges presents opportunities (unemployment, environmental issue, integration of minorities etc.) to respond effectively to this need.

Eco-restoration is a possible pathway to:

- offer job seekers a training course and evaluation for «eco-restorer» technicians
- facilitate the recruitment of new staff to cover a lack of human resources in this sector and engage more groups at risk of social exclusion
- develop the loyalty of employees by giving opportunities to acquire and validate new competences

This statement is deeply rooted in the municipal economic strategy.



The current situation with training in this sector:

- a lack of qualified workers: supply doesn't meet demand
- professional training in eco-construction should be set up in order to meet a specific demand
- the existing training tools are aimed at the design of a capacity building programme addressed towards architects, engineers and decision-makers
- the existing training at European level is dispersed and is often focused on private household owners rather than at companies running businesses in the sector

1. Professional School of Craftwork and Eco-restoration in the eco-restored Caves 'Mesón Gitano'

- To train workers in the field of eco-restoration and stimulate the construction sector
- To promote the inclusion of specific courses in programmes of accredited studies (Trade School, Professional Training...)

This Professional School is set up within the framework of EUROEMPLO, a transnational cooperation project promoting exchanges of experiences in the field of training of workers in the construction sector

2. Initiatives Business Centre.

- To support companies in developing their abilities towards eco-restoration through micro-credit programmes.
- To promote social and labour inclusion of roma population through eco-restoration training and support to SMEs – development of Intermediate Labour Market (ILM)

3. Private Rehabilitation Programme of the municipality of Almería

- To support and grant assistance for the rehabilitation of private buildings in the HC
- To assess positively the use of eco-restoration techniques in these buildings

4. Leading by Example

- To eco-restore public buildings in the HC

More information :

URBAN INITIATIVE 2007-2013. Regeneration of the Historic Centre of Almería (ERDF)

EUROEMPLO (FSE)

PRIVATE REHABILITATION PROGRAMME (local programme)

URBACT PROJECTS: LINKS & ROMA-NET



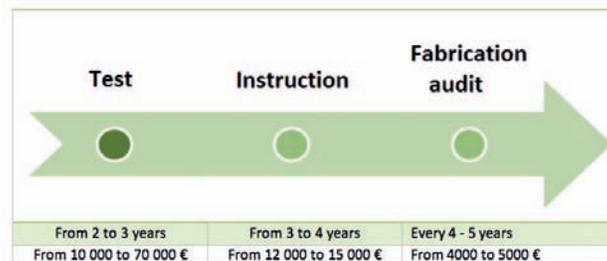
ANNEX B2 - FACILITATE THE ACCESS TO THE MARKET FOR ECO-MATERIALS TO CREATE OPPORTUNITIES FOR SMES.

Experiences from the LINKS partners:

It has been proven so far by thermal studies that the implementations of capillary materials are the only relevant techniques when it comes to the refurbishment of old buildings. For compatibility reasons, these materials are expressly needed by craftsmen to restore correctly the heritage built before WWII. Usually grouped under the term of eco-materials, because the largest part is constituted by vegetal resources, capillary materials are better able to facilitate the migration of water thanks to their fibrous properties.

Currently, the major part of the eco-materials market is represented by small business structures, SMEs... types of enterprise that exploits or recycles a regional resource and operates in a local market where the supply chain is not always in balance with the growing demand. Despite a high potential, eco-material chains struggle to grow for procedural reasons and because of difficulties in obtaining technical assessments from the certification bodies.

Indeed, the major obstacle to their development is the rigidity of the quality system. Obtaining a technical assessment has become mandatory for insurability reasons, for any new product attempting to access the market. But the length, the high cost and complexity of this insurability approach has slowed the growth of eco-material producers.



From 2 to 3 years From 3 to 4 years Every 4 - 5 years
 From 10 000 to 70 000 € From 12 000 to 15 000 € From 4000 to 5000 €

Meeting the supply chain requirement becomes a hard task when the weak offer of available and compatible materials is considered. Regarding the quantity of restoration that has to be undertaken in historic centres, the development of this sector conceals in fact a real opportunity to expand a new market economy. Job creations are essential with a view to diminishing the obstacle effect of these requirements which demand substantial human and financial resources – a situation which a start-up SME cannot easily absorb in developing its activities.

As part of the LINKS project, the city of Bayonne took notice of the difficulties encountered by OUATECO, a local cellulose wadding producer, with regard to obtaining the technical assessment by the CSTB.

A thorough analysis of unexpected administrative evolutions in this case showed that the technical evaluation process impedes the promotion of local materials; and yet this allows for the development of short and responsible chains, generating jobs.

Subject to these regulatory pressures, OUATECO (member of the European cellulose insulation manufacturer association ECIMA) has attempted for several months to make political bodies aware of the unfair treatment they are subject to and which could ultimately lead to bankruptcy.

Cellulose wadding properties

Cellulose wadding is one of the most interesting insulators in terms of its thermal and acoustic performances, its life cycle (fully recyclable material designed from recycled materials), and its universal availability as part of a short circuit and low cost production. Used for more than 70 years in the U.S. and Europe, the insulation has proven its effectiveness and sustainability.

	<p>Winter: Insulation with Ouateco cellulose wadding made it possible to save 26% energy (heating) compared to insulation with glass wool for identical temperature in the buildings,</p>
	<p>Summer: average decrement delay between 9 and 12 hours in summer (a 80cm mineral wool insulation exhibits the same decrement delay as a 20cm cellulose wadding insulation) (Performance obtained thanks to product density)</p>
	<p>Transmission loss of 40db with a 10cm insulation of walls</p>
	<p>Life cycle: Durability: over 70 years life span Recyclable material from recycled material, Very low embedded energy 6kW/h m3 Local supply Transmission</p>
	<p>Other technical features:</p> <ul style="list-style-type: none"> - Non-flammable - Air permeability: 1-2 - Maximum moisture: 15% of dry material - Antifungal, rot-proof



ANNEX B3 - RAISE AWARENESS OF PRACTITIONERS AND DECISION MAKERS:

PERI la Chanca:

The Special Urban Plan of la Chanca (PERI la Chanca), in response to the demands of social evolutions in the neighbourhood of La Chanca district in Almeria, was drafted as an Integrated Urban Programme. This Plan was selected with a qualification as BEST by the United Nations, in The 3rd International Competition of Good Practices in 2000. The remarkable added value of the project is focused on citizens' active participation within the process of rehabilitation and at the same time engagement of all institutional levels – local, regional and national.



An important result has been the eco-restoration of Villa Romero and The House of Cinema: a traditional Spanish Villa has been rehabilitated by using ecological techniques and material in order to give it a new and multi-stage functional vocation.



The creation of the professional school of craftwork and ECO-RESTORATION IN THE COVES MESON GITANO (cave buildings): provides an example of policy- and decision makers' awareness regarding the topic of urban sustainable rehabilitation of historic centres. The idea of the project was conceived within the frame of the URBAN Project of Regeneration of Historic Centre-ERDF (2007-2013). So initially it was simply foreseen to carry out the intervention to create the Professional School of Craftwork Restoration. However after involvement in the URBACT-LINKS project with the further creation of a Local Support Group including members of the URBAN project, the approach to the establishment of Professional School has been changed into ECO, since this is more sustainable and contributes to developing new construction market niches and labour market opportunities (requirement to instigate training of workers in eco-reconstruction).

Eco-restoration of the caves "Maison Gitano" foresees the implementation of a public intervention on the eco-restoration of the caves and the public space "Parque Ramon Castilla" identifying traditional techniques for the eco-restoration and incorporating energy performance systems.

What is Eco Restoration and why is it important?

Experience from Kilkenny



Eco Restoration is a term developed by the LINKS Network based on its main theme of adopting low tech solutions inherited from past construction techniques; the very techniques that produced heritage buildings in the first place. The rationale for this is simply that such techniques are locally applicable, using local materials and crafts people and have stood the test of time through local climatic conditions.

In Ireland the use of thatching, lime rendering, stone masonry and timber sash windows would be considered to be eco construction techniques. Many heritage buildings have suffered through inappropriate restorations or interventions. In some cases this can be as detrimental as neglect.

Over the course of Kilkenny's three year involvement in LINKS, the ULSG has attempted to clarify the definition of eco restoration within the context of this network and to encompass a 'life cycle' approach to materials, techniques, local economic benefit and embodied carbon in products and processes.

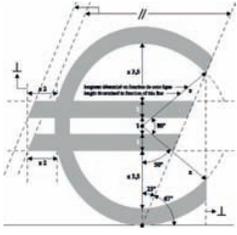
In this regard the ULSG has developed a set of recommendations that could help facilitate a culture of eco restoration and economic activity based on this approach.

Kilkenny is well resourced with skills, training opportunities and natural resources that would enable a culture of ecological construction that could benefit local economies.

'The most significant challenge in the reuse of old buildings is their thermal upgrade without impacting on their heritage value. All buildings, but especially older ones, are in effect ecosystems; a dynamic interaction of heat, light, moisture and microorganism. Adjusting the existing balance between air, moisture and heat is a requisite of any project but must be handled with knowledge and consideration. Much research shows that maximising one aspect over a more balanced approach across a range of aspects causes problems to appear elsewhere in a structure'.
www.solearth.com

Other EU Countries have been exploring this approach. An INTERREG Programme; 'Livinggreen.eu' (www.livinggreen.eu) takes a pilot project approach with nine municipalities. Each participating City has identified a heritage building which will be restored using ecological principles and to a high level of energy performance.

Kilkenny has many fine examples of heritage buildings that have found new uses, new leases of life. This Local Action Plan has no statutory function in planning but it does offer a way forward in enhancing the heritage building stock while maintaining a vibrant, ever evolving city.



ANNEX C1 - OVERCOME OBSTACLES WHICH HINDER EFFECTIVE COOPERATION OF STAKEHOLDERS:

At national level Spain offers a few programmes to benefit citizens within the context of housing rehabilitation with traditional architecture. This is provided by public administrations which can cover total or a partial amount of costs. Generally this contribution on behalf of the administrations is linked to the protection and regeneration programmes of designated urban particular areas (in the case of Almeria municipality: INICIATIVA URBANA DE ALMERIA financed by ERDF and local grants that the municipality has awarded to citizens) and that is why the role of the administration is important for the setting out of specific conditions which are applied to the criteria of physical intervention foreseen.

This role should be understood as a regulating element which in the case of Almeria has been embodied within the process of ECO-rehabilitation, rather than simply rehabilitation, where the entropy of the market or private interests could produce imbalances that impact on the preservation of traditional architectural heritage. Nevertheless thanks to public grants/state aids to rehabilitation, as is the case in Almeria, public financial support is capable of stimulating private investment.

The case of the district of La Chanca is particularly interesting.

Financial, technical and human resources are made available through agreements between the Central, Regional and Local administrations.

The Junta of Andalucía has declared the district of La Chanca a priority action area by the means of a decree (20th July 1993). The contents of such a declaration demonstrate the need of taking integrated action in order to improve social, educational and public health conditions as well as employment and urban development.

Within this context, the agreements set out include the following:

- Agreement between the Junta of Andalucía and the Almeria City council to implement the neighbourhoods of preferential action,
- Agreement Programme between the Junta of Andalucía and the Almeria City council regarding housing, land-use and urban development,
- Agreement between the Almeria City council and E.P.S.A. to develop the PERI-Plan in La Chanca and to obtain, prepare and urbanize property with a budget of 1.200.000 pesetas;
- Agreement of execution and management between the Junta of Andalucía and the Almeria City council for the setting up of a Renovation Office,
- Agreement between the Ministry of Public Works; Transports and Environment and the Junta of Andalucía applying the Royal Decree of 14TH of May 1993 for the action of Integrated Renovation with a total budget of 4.259.240 000 pesetas.

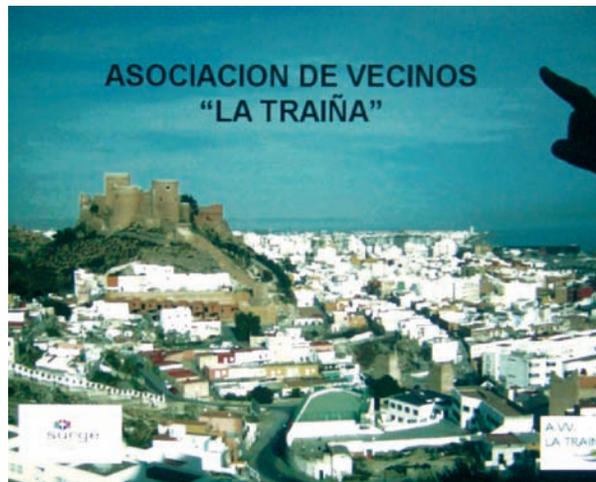
At the start of the 80's, the Director General de Arquitectura y vivienda of the Junta of Andalucía and the Almería City council reached an agreement to draw up the **Special Plan for Interior Improvement (PERI)**.

The local community, assisted by a team of specialists, participated actively in the drafting of the Plan and they provided permanent discussion to establish objectives, strategies and priorities by means of organizing cultural weeks, which were also linked to leisure and cultural activities. These gatherings, still held, always count on the participation of Juan Goytisolo and José Angel Valente, renowned authors in the Spanish and European cultural sphere and honorary members of the residents association, and guests such as Edmond Amram El Maleh, a Moroccan author, which favours engagement with the Maghrebi immigrants living in Almería.

Once the Plan had been passed in 1990 and La Chanca was declared to be a Neighborhood of Preferential Action, the financial, technical and human resources were made available through a series of agreements between the different public administrations (see above)

In 1996, the **Office for the Urban Remodelling of La Chanca (ORUCHA)** was set up, reporting to the Public Company of Andalusian Land Management (EPSA), which is entrusted with the management by the Almería City council and the Junta of Andalucía. This office works as a management unit in charge of developing the Plan through its subsequent stages, the coordination between administrations; land management, urban development, and the implementation of housing policies and social programmes.

The most important problems are the high economic cost of intervention, the fact that social changes, eradication of poverty and the fight against social exclusion need time and systematic work, and that long-term implementation is needed to develop the entire Special Plan. However, the local neighbourhood community have adopted the Special Plan as their own and have been standing united with the team of specialists for more than twenty years. The strength and perseverance of their demands, channeled through the Association are the clue to overcoming weaknesses and threats.



Association of neighborhood La Taiña

Created in the 70's in the district of La Chanca,

Composed of men and women who act for a more equitable world.

- To promote a deep and positive change of the district
- To erase the barrier between La Chanca and the city



Historic pillars of La Traiña in the district of La Chanca – Almeria Feb. 2011

“Consoziale Theatre” Budrio

The building chosen as a pilot project dates back to the 17th century, more precisely 1672. Neo Classical style restoration work was carried out on the interior at the beginning of the nineteenth century. Due to the extensive damage during the first world war, the theatre was completely rebuilt and renovated between 1924 and 1928, enriching the entire building. At present the theatre is in a well-maintained condition. It is designated in the Regional network of the best places for theatrical performances and its success is increasing.

It has generated a progressive audience increasing during recent years and the theatre is often fully booked, also during the summer theatrical season. This stimulated the need to improve internal climatic conditions, in summer above all, in order to guarantee the comfort to public. Usually at the end of June the theatre management were obliged to stop programming performances due to the internal climate being too hot, especially in the gallery, even although public demand is high.

The theatre is protected as a high level historical property and every intervention must be evaluated and approved by the Provincial Cultural Heritage Safeguard Body. It presented a difficult technical problem to be solved, but at the same time Budrio Municipality has a strong will to find a solution, with the aim of no longer limiting the potentiality of the theatre, as “cultural engine” for the revitalisation of the historic centre.

Some years ago a retrofitting project was introduced including insertion of ventilation/air conditioning ducts integrated in the ornamentation. The study was carried out adopting the best principles of integration between technical devices and the ornaments, respecting artistic values. However this proved not to be able to satisfy the requirements of the Provincial Cultural Heritage Safeguard Body.

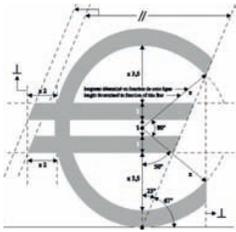
Budrio is carrying out a new project taking the evaluation of the Provincial Body in due consideration. A new project approach has been defined, favouring insulation, and free cooling.

This building was chosen:

- To contribute to a European comparison on the topic of the relationship between Municipalities and Cultural Heritage Safeguarding Bodies, in order to define the criteria aiming to find the best compromise between technical/social needs and artistic elements/style protection.
- To provide public administrators and technicians with new technical solutions to be adopted for interventions in historic buildings, which are able to respect artistic values and functional needs. To provide Provincial Cultural Heritage Safeguard Body with the results of the European investigation, in order to favour a change of approach on this topic.

The URBACT method provided Budrio Municipality with know-how and the motivations to transform the analysis of the theatre and the consequent retrofitting project, exploiting the opportunity of opening the survey to the urban context within which the theatre is located and using the premises for Local Action Plan definition. The Theatre assumed the role of focal point of the Budrio LAP and it is the “driver” of each action aimed at the revitalisation of Budrio historical centre, mainly of Garibaldi street in which the Theatre is situated.





ANNEX C 2 - ENSURE A CLEAR AND STABLE FINANCIAL SUPPORT

From the partners' discussion during their transnational seminar in Bayonne (Oct. 2011)

The inputs and argumentation have been presented by Eric Aaufaure from ADEME (French National Agency for Energy) on the basis of the financial analysis of a thermal renovation case. The example features an apartment of 85 m², on the first floor of a 17th century building (made in stone of 60cm, non-insulated roof, gas boiler, urban context, east / west).

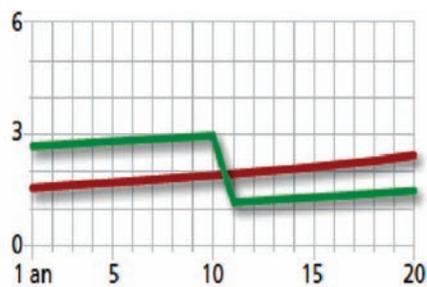
- Initial cost of energy supply: 145 €/month
- Cost of the energy supply after restoration: 94 €/month
- Monthly refunding of the “eco-loan”, without tax credit: 130 €/month
- Monthly refunding of the “eco-loan”, with tax credit: 102 €/month
- With a conventional loan – 5% rate: 165€/month

Evolution of the expenses (energy costs and refunding of the “eco-loan”)

Scenario 1 : (in K€)

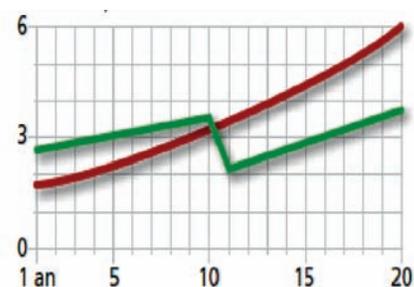
Price of energy supposed constant
price (5%/y)

Without renovation



Scenario 2 : (in K€)

With an increase of the energy



With renovation

Payback : 10 years

The challenge in urban renovation is to innovate and set up new strategies. Mix funding is an opportunity to set up innovative projects such as eco-renovation or eco-restoration.

Though state and local funding possibilities, architectural and economic value, and technical issues are known, long-term financial benefits and healthier living are the main arguments to involve local partners.

LINKS partners have had to consider numerous obstacles involved in implementing this type of sustainable option, the hardest to counter being the short-term thinking of investors and lack of funding programmes adapted to environmental quality (which is not only about thermal performance).

It is generally agreed that funding is not only a problem of financial tools (grants/loans/subsidies) but certainly a question of trust for financial partners in eco-restoration projects.

Partners expressed the idea of highlighting the economic advantages of eco-restoration with arguments such as social return on investment, life cycle cost assessment, pay-back period, and finally green value. These arguments would also contribute in the question of fighting against the current overestimation of eco-restoration cost.

Raising awareness about the economic advantages of eco-restored buildings and proving that refurbishment is a necessary investment is an essential part of the challenge.

Even if there are bank loans with special rates for citizens and city halls for such projects, their management should be more local or at least regional.

To better manage funding and reach a balanced budget, project managers need to be assisted by experts to find the best financial possibilities, E.U. funding and diversified sources. The creation of non-profit organizations or foundations could also contribute to finding financial support for eco-restoration grants.

The role of financial incentives is essential to encourage investment in eco-restoration projects and develop economic activities. Special loans for owners that may result in a better rent rate can be interesting financial incentives. Developing policies to reduce taxes would also stimulate the market.

Finally, EU regulations could be a better support than national regulation.

Example from Brasov:

Inhabitants of Brasov's historic centre are often represented by ageing and low income population groups, therefore they are unable to afford investments to restore their dwellings. Many old buildings, public spaces and streets centre need to be rehabilitated. The political willingness and engagement to do so is clear but meets numerous barriers to be overcome (e.g. the municipality is not allowed to support renovation costs for private buildings, not even for the facades). On the other hand, some of the historic buildings belong (and are to be managed by) to the municipality or to Bra ov County. In 2010 the Municipality has rehabilitated some squares and other public spaces.

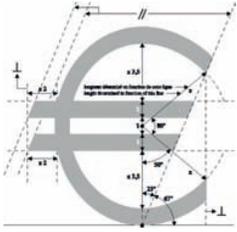
Municipalities of Brasov's Metropolitan Area have been committed to the enhancement of their urban heritage assets since a long time, following European experiences. They try to developed programmes and actions to improve the quality of urban planning and fight against urban dislocation of public spaces or built heritage. To make progress on this work some essential needs have been identified:

An integrated feasibility study and action plan for the restoration and eco-restoration of the historic centre are essential and this is gradually acknowledged at a broader level as the only way to reach successful results. The overall challenge in urban renovation is now to do more with less

It is necessary to lobby to change and improve the legislation: most of the houses in the historic centre are privately owned and the municipality is not allowed to have interventions on them. It is so compulsory:

- To find financial sources for eco-restoration
- To have an integrated policy for eco-renovation and sustainable development, improving energy efficiency of buildings and preservation of architectural quality
- To strengthen the integrated management of activities linked to the sustainable development of the historical city
- To strengthen the interests in the historic city centre.





ANNEX C3 - CREATE EXAMPLES AND DISSEMINATE GOOD PRACTICES

The restoration of the administration office of the Evangelical Church, Brasov (Das blaue Hause)

This case study provides an example of proper restoration practice for the community, public authorities etc

In the proximity of the famous Black Church, the building is positioned on a corner site with one façade opening towards the churches court, the other one towards the town hall square. First documented in 1512 (as the first pharmacy in the town), the building passed through the hands of a series of subsequent owners and also transformations.

The buildings last major transformation (giving the structure as it is seen today) dates back to the end of the 19th century. After being used for multiple purposes, the owner, the Lutheran Church decided to move their offices into the building and for this reason a major restoration process started.

During the construction works the historic structure of the building was restored using traditional materials and techniques. But for proper comfort and for energy efficiency reasons new, contemporary materials (high quality thermal insulation for the roof, thermal resistant windows integrated in the old carpentry elements etc.) were included also without destroying the original look and character of the building.

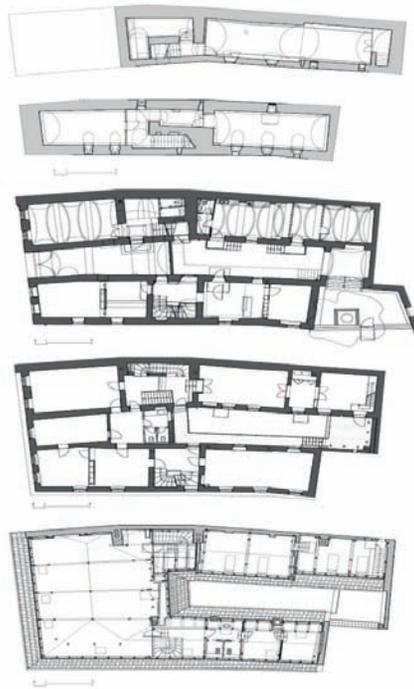
The project advocates that innovative buildings can emerge from the re-use of an historic building.

Supplementary interventions and added elements were designed to be recognizable as contemporary elements added to the old building.

Regarding the carpentry, it respects the rules of composition profiles of existing elements, but is painted in neutral colors, gray, white. The stairs made of metal or masonry are plastered, painted white. In spaces where new partitions were needed (functional reasons) they were made of specially designed furniture fixtures leaving the ceiling line open. Most of the furniture and fixtures were designed specifically for this work.



Today, the building stands as a great example of the combination proper historic monument rehabilitation techniques and the eco awareness of the users and designers.



The Veterinary school, a necessary example

When the eco-restoration of the Veterinary School (administrative building) started, the municipality lacked points of reference (technical information, cases of study, example...). It highlighted the fact that only a few eco-restoration projects are implemented in Brussels. There is a need of knowledge in this complex domain. The Cluster Eco-Build is working on the dissemination of good practices inside its network through conference and site visits. Having the opportunity to count on this organisations participation in the Anderlecht USLG, the municipality hopes to increase exchanges with other such projects. The municipality hopes too that the work which has been done in cooperation with the CRMS (Roya Commission on Monuments and Sites) and the experts will increase knowledge levels in this area. The municipality with the help of the LINKS project, and through the network partners and the conference in Anderlecht hopes to increase the dissemination of good practices.

The building dates from the 19th century. It is situated in Cureghem, near Brussels Midi train station, the archetype of a suburb shattered by the de-industrialisation with a migrant population rate of about 65% . The building presents a timber frame façade on the main street and a stone façade on the side lane. The European Fund ERDF and the Brussels Regional Government have launched an important strategic programme to stimulate Economic competitiveness, employment and urban development. For the Municipality of Anderlecht, this mix funding was the opportunity and incentive to launch an eco-restoration pilot project.

Technical specificities:

First of all a feasibility study has been carried out to assess the environmental impact of the restoration of the building, including the reduction and waste management and use of ecological materials. A panel of alternative technical solutions has been proposed by the municipality to reach a low energy performance (60 kWh/m².year) including innovating systems for heating. The following solutions have been selected according to a cost benefit analysis:

- Dynamic management system to save water.
- Double-flux ventilation with heat exchange will be used.
- Roof insulation.
- Wall insulation respecting old mouldings.
- Doubling windows with new and high performance ones.
- Solar panels on the roof for pre-heating water.
- Innovative lighting concept.

Expected results:

1. The Life Cycle Analysis allowed the architect to choose solutions which were identified as the most efficient, with least negative impact on the environment, not only during the building/restoration phase, but also during the whole life cycle of the building (including uses & consumption),
2. The municipality wishes this restoration to be a flagship example of the restoration of a listed building with all the constraints that this implies.
3. Restoration from the point of view of improvement of the energy performance in the local and regional context. Indeed, in Cureghem alone, there are 866 private residences which had been built before 1919, and 945 between 1919 and 1945. That gives a potential of 1811 residences, in the long term, to be renovated with energy performance techniques.
4. The project will include the waste reduction and management strategy.
5. Increase the economic dynamism and employment in the zone,
6. Support the development and the expansion of companies in key social and economic sectors



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URBACT II

URBACT is a European exchange and learning programme promoting sustainable urban development. It enables cities to work together to develop solutions to major urban challenges, reaffirming their key role facing increasingly complex societal challenges.

It helps them to develop pragmatic solutions that are new and sustainable, and that integrate economic, social and environmental dimensions. It enables cities to share good practices and lessons learned with all professional involved in urban policy throughout Europe. URBACT is 56 projects, 500 cities, 29 countries and more than 7000 active participants.

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