LINKs Network Baseline Study

The LINKs Network

URBACT II
Thematic Network
Thematic Pole « Cultural Heritage & City Development »
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Connecting cities
Building successes

Table

Part A : State of the Art

Foreword

Towards Future-Proof Historic Centres

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 remain to be elaborated.

What are we talking about ?

Looking for heritage-compatible
energy performance solutions
for the restoration of ancient buildings in Historic Centres

Let us leave aside the well researched symbolic, cultural and historic value of urban historic centres, and focus on the environmental value and performances of such districts.

By environmental performance we mean the global balance assessment of infringements imposed to the environment by human activities at district scale (impacts on the climate, on the quality of water and air, and on the conservation of natural resources). Tools such as the Analysis of Material and Energy Flows are frequently used to quantify such impacts, by estimating the effects inferred by different types of urban shapes on human activities (dwelling, moving…), and their induced effects on the environment.

The LINKS project's ambition is not to study the environmental virtues of historic centres in all of their constituents: the project will concentrate 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 will not be analyzed in term of environmental impacts, but will be examined as indispensable urban quality factors to have inhabitants come back to and/or remain in historic centers, which they too often have been brought to leave during the recent decades. These elements indeed constitute urban control levers which cities should integrate to validate a wholistic urban model before focusing on the validation of specific housing models.

The depletion of energy ressources 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 will prove to be compatible with the historic character of such constructions are a priority axis for the LINKs project partnership.

The energy dimension will be 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 will thus refer 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 wishes 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.

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1 – Literature review

11. Improving the energy efficiency and integrating renewable energy sources

The energy efficiency of old buildings becomes a major challenge for historic cities

In Europe, the share of the residential tertiary sector in the field of final energy consumption goes beyond 40% (statistics AIE, 2005). The buildings in historic parts of cities are responsible for a significant part of these consumptions which most of the time leads to highly expensive energy. Improving the energy efficiency of the old buildings and using renewable energies represent a major challenge for the sustainable development of the historical towns. However, the architectural heritage requires a particular attention when renovation works are planned with special focus on the environmental performance. Indeed! The upgrading of the old buildings may face the issue of how to preserve and to protect the historic and architectural identities.

Identifying the main renovation strategies

Only recently we can observe a growing number of European projects dealing with the energy renovation of the old buildings. The program New4Old (New energy for old buildings, 2007-2010) funded by the European Fund Intelligent Energy Europe, is a very successful one. The project was able mainly to establish technical guidelines with regard to energy efficiency and integrating renewable energy into the historical buildings. These guidelines express the main renovation strategies i.e. an adapted insulation, restoring the existing woodwork (instead of replacing them) improving the airtightness, the passive solar heating system and the natural air conditioning. The possibility of a mechanical ventilation and improving the lighting systems are also studied and the use of renewable energies (solar, thermic and photo voltaic panels, innovative micro wind mills, biomass). The exposed technologies are chosen in a way to limit their visual impact when upgraded (external and internal views).

Importance of the hygrometrical behaviour

All the projects proposed (New4Old, BATAN, 2008-2010, Interim Guidance on Building Regulations Part L, 2002) agree on the importance to study the hygrometrical behaviour of the historic building. In fact the main old materials (wood, stones, raw and fired clay) are in general very sensitive and can be easily affected by humidity. It is necessary, therefore, to jointly optimize the insulation, the ventilation and the heating outputs in order to limit the hazards of the water vapour condensation within the walls which might lead to fatally damage the structure of the building. This requires surely the use of materials adapted to preservation materials with “perspiring” characteristics for the walls. Consequently the use of modern industrial products can be found inappropriate for the renovation of told buildings. The recent programme SUSREF (Sustainable Refurbishment of Building Façades and External Walls SUSREF, 2009-2011) focuses mainly to developing renovation technologies to refurbish façades adapted to old constructions integrating local materials.
On the other hand, it has been found that the air renewal in the historic building was usually made by the lack of the wall insulation. The entire proposed projects insist on the importance to plan an adapted system for ventilation when the surrounding airtightness is improved in a way to reduce the concentration of the humidity in the air and to limit health risks.

Impact of users' behaviour on the energetic and environmental performance

The notions of the building' (old and new) energy and environment performances are intimately linked to the notion of use whatever can be the type of use (dwelling or tertiary). Scores of studies led on different building and different social economic stratas have shown that the user's behaviour played an important part on the energy consumption of the buildings. With regard to this special point, the project CEPHEUS (Cost Efficient Passive Houses as European Standards, 2001) shows, through a campaign of measures taken on 14 buildings (located in Germany, France, Austria and Switzerland) within PassivHaus' criteria that there are significant disparities in between consumed energy in the exploitation phase and the energy consumption estimates calculated during the design phase. In amongst the reasons which explain these differences, the human factor is the most important. Scores of studies made in France on the specific use of electricity (household electrical, lighting and software) (Project Technologie de l'Information et de l'Eclairage – Field enquiries in 50 office buildings, 2005) show for example that the reSource: of energy saving in the offices buildings is huge and that prior to establish any onerous solution, it is possible to acquire significant gains through spreading awareness in amongst the users (an automatic turn off, turning off the screens during any break..etc) The recent study EffEnU (Efficacité Energétique par l'Usage, 2009-2010) led on an old 19th century' barrack building reconverted into administration premises showed thanks to the campaign of measures that spreading awareness in amongst the personnel and the ergonomic outputs of the energy management tools were two important factors to increase the building's energy performance and the users' comfort.

Towards a new specific method to assess the old buildings?

The upgrading of the old buildings is a recent preoccupation, and despite the growing numbers of the achievements observed in Europe (cf. belgian project LEHR - Low Energy Housing Retrofit, 2008 , & projects achieved in Switzerland and Austria), the fact is one hardly stands back and undertakes a follow up or monitors these performances after delivery. The estimates based on specific methods (see examples) show that it is possible to reduce the heating needs up to 80%. The French project BATAN, however, shows the limits to apply these conventional methods to calculate the energy consumption and suggests establishing a new specific approach to the old buildings.

Thermic comfort: a correlation proved true, but hindsight still lacking

Concerning the thermic comfort problems, the examples old buildings upgrading in Belgium (programme LEHR) demonstrate an improvement of the inhabitants' comfort as well in winter as in summer. However, there was no monitoring tool to quantify the comfort inputs(temperatures, hygrometry and air speed follow ups) mainly in the summer. A recent study published by the London University (Hong et al., 2008) uses the indicator PMV (Predicted Mean Vote) to distinguish the winter thermic comfort after rehabilitating some 2500 dwellings in England. The study reveals that the internal air temperature is strongly correlated to the occupants' satisfaction level and the same with the presence of humidity and moistures which are important factors of the lack of comfort. The study also shows that the energy rehabilitation can be expressed by a feeling of gain of comfort in winter, without however causing any objective reduction in the heating consumption.

12. Visual and acoustic comfort

A high sensitivity To noise' nuisances

The lack of air tightness in the old buildings and the ordinary presence of a single pane windows make them often more sensitive to external noises, in particular into the urban zones. The double panes windows, wood works and the use of shutters can bring efficient solutions for an acoustic protection vis-a-vis external spaces. On the other hand, we often observe in the old buildings a reverberating sound effect (Feilden, 2003) generally due to the interior walls absorption weakness and to the volumetric of the space. Usually seen in the old constructions, the intermediate wooden floors are Source: of uncomfortable shock noises. Arranging an extra internal absorbing floor may be a solution

to improve the internal acoustic.

A possible compromise between energy efficiency and visual comfort

The visual comfort should be too, a major concern for a rehabilitation project. Studies in this domain show that it is possible to reach a compromise in between energy efficiency and visual comfort. In fact this can be expressed optimizing the surfaces and the luminosity performances of the windows and doors from one hand and from the other through replacing the old lights with high performance fittings (such as low energy bulbs, management systems) form the other.

13. Architectural quality of the external spaces

Conciliating heritage preservation with social & economic development

The revaluation of the historic towns seen from the angle of sustainable development must necessarily take into consideration the social, economic and environmental dilemmas.

The awareness and the involvement of the local authorities elected representatives are essential. Indeed, their commitment towards sustainable development is often key to the success of any enterprise. The brand “Qualicities” awarded to historic towns and established within the frame work of a European Project (Quality Brand of Sustainable Cultural Cities, INTERREG IV C, 2005-2007) contributes to mobilizing the elected representatives throughout Europe. Obtaining the brand is subject to a multi-disciplinary commitment in the sustainable management of the cultural heritage (commitment in the Agenda 21 approach, skills competency, rules, protecting the environment, etc.)

The urban zones made of old buildings are impregnated with historical and cultural heritage which are important to preserve. The project HerO (Heritage as Opportunity, 2008-2011) designed within the URBACT II programme has an objective to develop management strategies and new urban development policies in order to conciliate the preservation of the cultural heritage and the social economic development adapted to future challenges. Preserving the cultural imprint consists in particular to preserve “the visual integrity” of the built and landscape heritage and can be expressed through protecting the special urban sights (such as the classified façades) and through the integration of a new architecture which respects the historical, space and landscape identity of the existing buildings.

The LINKs cooperation project, is a continuity of the political and social economic strategies approach of the development to which Qualicities and HerO tend. LINKs targets to complete these sustainable approaches through integrating environmental concerns and through finding a compromise in between preserving the historic heritage of the buildings and improving its environmental performances.

14. Quality of life in the urban spaces

A methodology to design urban public spaces combining environmental quality and users’ satisfaction

In urban zones, the external spaces affect largely the users' standard of living. The project RUROS ((Rediscovering the Urban Realm and Open Spaces, 2001-2004) is mainly concerned with developing a methodology to design public urban spaces combining physical environment (micro climate, human activities and urban morphology) focusing on the users' satisfaction standards. The physical properties of the urban micro-climate (heating pockets, wind conditions, sunshine) have been studied and the influence of the micro climatic conditions on the users' thermic comfort have been analysed. The visual comfort (view from the skies, dazzle) have also been taken into account. It has also been noted and in particular within open spaces, that the visual comfort has globally improved (view from the sky, reduced sensitivity to colours and the materials used in surrounding façades) With regard to the acoustic comfort, the impact of external covers (such as vegetation) on the acoustic diffusion and absorption has also been analysed within the framework of RUROS. This study however doesn't deal with the special characteristics of the old buildings. LINKs could contribute to define strategies to improve the external comfort which can be applied to historic heritage.

2. Key policy documents of reference

21. European Union

Directive 2002/91/CE
Energy Performance of Buildings Directive

The directive 2002/91/CE dealing with **Energy Performance of the buildings** demands from member states to apply minimal requirements with regard to energy performances for the new or existing buildings, ensure the certifying of the energy performance of the buildings and impose a constant inspection of water' boilers and air conditioning systems in the buildings. This guideline concerns the residential sector and the tertiary sector (offices, state buildings, etc.) Certain buildings however are not included by the dispositions regarding the certification, (as an example the historic buildings and the industrial sites, etc.) The mentioned directive concerns every aspect of the buildings' energy efficiency in order to establish an effective integrated approach.

ENPER-EXIST: Applying the EPBD to improve the Energy Performance Requirements to Existing Buildings

The Energy Performance of Buildings Directive (EPBD) set a series of requirements specifically dedicated to existing buildings. But the Member States were facing difficulties to implement some of them. The main objective of the ENPER-EXIST project was to support the take off of the EPBD in the field of existing buildings. This was achieved by working on three main issues which were faced by Member States in the application of the Directive:

- *lack of coordination of technical work on existing buildings*
- *lack of coordination of work on non-technical issues especially the impact of certification on the market, the human capital and the national administration*
- *insufficient knowledge of the building stock*

ENPER-EXIST used an intensive networking of existing national and international projects to defragment efforts to solve these three issues. In addition the project defined a roadmap for future actions regarding existing buildings. ENPER-EXIST worked in close coordination with the Concerted Action set up by Members States to support the application of the EPBD.

Directive 2006/32/CE
Energy Efficiency in the final use and energy services

The directive 2006/32/CE dealing with the **Energy Efficiency in the final use and energy services**, aims to reinforce the energy efficiency in the final use in a profitable way within the member states, with the objective to master the energy demand and to encourage the production of renewable energies.

Plan of Action for Energy Efficiency (2007-2012)
- 20% energy consumption from now to 2010

The European Commission adopted a plan of action with an objective to reduce the energy consumption up to 20% from now to 2010. This plan of action includes measures to improve the energy performance of the products, buildings and services, to improve the outputs of the production and the distribution of the energy, to reduce the impact of the transport on energy consumption, to facilitate the funding and the investments in this very domain, to encourage and to reinforce a reasonable behaviour vis-a-vis energy consumption and to reinforce the international action with regard to the energy consumption.

The objective of this plan of action is to mobilize the public at large, the political decision makers and the market actors and to transform the internal energy market in a way that the citizens of the European Union (EU) may profit from infrastructure (including buildings) products (equipments and cars inter alia), methods and energy services offering the best energy efficiency in the world.

The plan of action aims at mastering and reducing the demand for energy and to act in a targeted manner with regard to the consumption and supplies in order to save up to 20% of the annual consumption of primary energy from now to 2020 (with comparison with the energy consumption projection for 2020) This objective corresponds to saving some 1.5% per year and until 2020.

To achieve significant and steady energy saving, implies from one hand, to develop low energy techniques, products and services and from the other to change the behaviours in order to consume less energy while keeping the same quality of living. The Plan exposes a series of short and middle terms measures to achieve this objective.

In order to drastically reduce the heat losses in the buildings, the plan of action stipulates the extension field of the guideline to apply on the energy performances of small buildings also and to develop performance minimal norms to implement on new or renovated buildings and to promote "passive" dwellings so to speak.

22. Other stake-holders

European Construction sector
Vision 2030 : European Construction Technology Platform

The European Construction sector is well aware of the necessity to innovate. The European Council for Construction Research Development and Innovation (ECCREDI) launched the European Construction Technology Platform (ECTP), which is a technological platform for the European construction sector. This technological platform aims to elaborate a vision and a strategic agenda for research and development in the European construction sector.

The cultural heritage and the collective memory are considered key elements in terms of development and imply :
improving the preservation, rehabilitation and the integration of the cultural heritage in the urban and rural environment to attain a better appraisal of the collective memory.
Using forefront technologies and optimizing practices to develop cities while respecting and getting inspired from their cultural heritage and other human and social economic aspects.

23. International specialized organizations

Preservation of heritage
« Every case is a particular case »

Scores of solutions, charts and declarations have been adopted these last years aiming directly at developing historic urban zones. The preservation of heritage is governed by recognized doctrines and principles by the international scientific community and consigned in some main charts of the ICOMOS and in the convention and recommendations of the UNESCO and the Council for Europe. Practically every "case is a particular case" and should be examined in its historic and geographic context.

The 1931 Athens' Conference organized by the International Office for Museums has established fundamental principles for an international code of good practices for the preservation of heritage. The second international congress which gathered architects and technicians dealing with historic monuments and held at Venice in May 1964, approved the text of an International Chart for the preservation of the monuments and sites (Venice Chart) which replaced the Athens Chart. The Venice chart is an important milestone for the contemporary preservation movement. It underlines the importance of the creativity, the respect of the original materials, the importance of the contributions of every era to the character of the edifice and the maintenance of the historic buildings for socially useful ends.

The Venice Chart was followed by a plethora of other norms, charts, formal recommendations, and conventions relating to the building conservation. These provide precious day to day indications for those who work in the domain of construction and preservation and are considered an essential framework for a good practice to protect and to improve the historic milieu. In amongst these , we can

pinpoint the 1987 Washington Chart, the resolution dealing with the preservation of the small towns in 1975. The UNESCO encouraged the various conventions and other tools to preserve the cultural heritage, and in particular the recommendations to safeguard the beauty and the character of landscapes and sites(1962) these concerning the preservation of the cultural properties endangered by government or private works (1968); the Convention to protect the world cultural and natural heritage(1972) introduces the concept or World Heritage.

More recently, the A.V.E.C. Network Has adopted in October 2000 at Pécs (Hungry) a "European Chart for culture and heritage towns and territories." Following this adoption, a working group has been set to study a method to implement the principles articulated in the Chart in a Plan of Action articulated around specific objectives and indicators for every member town.

The World Heritage Towns' management guide established by the World Heritage Towns Organization WHTO, has an objective to incite the steady exchanges in amongst those who are in charge of managing a day to day requirements of the urban life inside the historic towns and preserving at the same time, their own qualities and values. It stars with presenting the available means on the international level for the preservation of historic towns, and secondly helping those in charge of the towns through giving them concrete examples in the form of case studies [3].

The international charts and norms provide key principles

The charts and norms can be considered as providing key principles to define an appropriate answer to specific cases and not at all as some immediate and exhaustive prescriptions. The following factors can be considered as the base of most of these documents : a thorough analysis of the location, the minimal intervention in the historic fabric, a precise documentation and the respect of the contribution of every era, the safeguard of the authenticity, and the requirement to have a global vision of the historic environment.

24. National policies

The initial review we made of the national policies regarding the Eco-restoration of old buidlings in Historic Centres (see annex) shows a contrasted situation.

If all 9 countries[1] where the LINKs partners are situated have transposed EU directives, only ihalf of them have passed more constraining national or regional regulations.

All but one (Spain) have set specific regulations targeted at renovation of buildings.
Existence of specific regulations targeted at historic sectors/buildings

Historic and/or protected buildings are or can be exempted from energy saving regulations in Belgium, France, Greece, Italy and Portugal.
In the Netherlands, concerning listed buildings, the law gives the possibility for an exception to the rules concerning the degradation of monumental values.
The Irish regulation gives guidance to the owners/ custodians of historic buildings in developing energy conservation measures. Germany puts the emphasis in disseminating « good examples » of eco-restoration of historic buildings among municipalities and encourages innovative technological approaches.
In Almeria (Spain), the city has produced a Municipal Regulation of the public grants for the promotion of the rehabilitation of buildings by private owners (protected and not) in the historic center. It concerns two types of actions: 1. Works of repairs of the facades ; 2. Works of rehabilitation: conservation, consolidation and restoration (co-financed with regional -Andalusian- funds), in sharp contrast with the situation of Romanian municipalities for which a financial support to private owners is illegal today, and where any intervention historical buildings needs the approval of historical monuments departments at local or county level.

[1] Belgium, Eire, France, Germany, Greece, Italy, Netherlands, Romania, Portugal, Spain

In Italy, as in Spain, Energy efficiency interventions in Historical buildings are regulated by Municipal Rule (or the new RUE – Municipal Urbanistic and Building Rule, adopted by several Municipality on the basis of the new Urbanistic Law). Every intervention in historical buildings must also be approved by the Provincial Heritage safeguard Body.

National regulations may be seen as a constraint, but they also permit to set a common context for all the actors and particularly for the real estate market ; their absence may leave local authorities in a difficult situation when willing to foster Eco-renovation in their historic centres.
Indeed, if old buildings are excluded from the common law, maintening their comfort, attractiveness, energy performance and market value may become a difficult challenge. Not in all countries cities and/or regions have the possibility to pass specific laws that will helptem acheive such goals.

The future of the whole Historic Centre may be hampered by this additional problem at a time when the cost of energy is considered as a decisive factor of domestic budget unbalance by more than 60% european families. It is one of the important themes on which LINKs partners will exchange experiences and expect to come up with policy recommendations.

3. A review of urban practices throughout Europe

31. Energy behaviour

The old buildings
and their energy behaviour

The existing old building stock is characterized by a complex thermic behaviour. The ageing of these buildings is at both a Source: of assets and weaknesses. The energy consumption of these is relatively high, and the interior comfort for the inhabitants is variable.

As an average, the buildings before 1950 consume less than the buildings erected between 1950 and 1975. The report which followed the project (*BATAN*, 2008-2010) evaluates the consumption for the first to 200kWh/m² per year for the heating and the SHW (Sanitary Hot Water) while it is more than 350kWh/m².for the second.

Actually, the old buildings are characterized by walls of consequent thickness with better performance in thermic terms than structures with less thick walls of the 50s, 60s, 70s buildings and have relatively smaller windows and glazed surfaces. The presence of non heated spaces such as barns and undergrounds floors (*caves*) and the fact they are situated within the premisses, imply that comparatively to an isolated building there is no doubt less heat loss than for an equivalent habitable surface.

Concerning its envelope, it is important to note that the rate of air infiltration is high, in particular at the level of windows and other openings. There can be found, therefore an important natural but not controlled renewal of air. This air renewal which is superior to hygienic flows, induces an overconsumption in winter hence, increasing the energy invoice.

The walls are in general thick and heavy, made with heterogeneous local materials. Despite that the value of the thermic resistance, considered as a representative behaviour in a permanent regime, is weak for the mentioned walls, the one which phases out the heat wave, changing the walls behaviour into a dynamic regime, is higher. Their thermic behaviour is therefore better than in lighter walls, with equal thermic resistance. Also these heavy materials (such as stones, limestones, sandstones..) ensure inertia at the walls' level, an inertia which plays an important role in summer comfort thanks to its great capacity to absorb and return heat. For these buildings it is impossible to differentiate the thermic study from the hydric aspect and ventilation where humidity is often very high : the old walls can absorb a great deal of water from infiltration capillary points at the level of foundations or by

humidity related internal usage. These walls however have a a specific behaviour towards water to a point to put up with high quantities of water and evacuate their surplus. Many historic buildings include soft, weak or permeable materials, e.g. mortars, plasters, renders and paints. These cause the fabric to respond in fundamentally different ways to air, moisture and structural movement from the hard, strong, impervious materials and membranes widely used in modern construction). (Building Regulations and Historic Buildings (2004)).

This is the perspiring aspect (often wrongly named “respiring”) which allows the water vapour to diffuse from the indoor to outdoor. The transfer is made by plasters and mortar often used in old walls and which have low resistance to diffuse water vapour.

The difficulty to achieve an energy diagnostic

The first step before undertaking renovation works on buildings, is to establish a diagnostic whereby to evaluate the typology of the building, the composition of its walls, the glazings, the ventilation systems, ECS heating and also the building energy consumption, and the users' comfort. The diagnostic enables to define the pertinence of the renovation and the different planned solutions.

The achievement of this diagnostic is however complex for the old buildings. The project BATAN demonstrates that exisiting French diagnostic methods for collective dwellings were not adapted to old buildings. Two methods in particular have been tested, one concerns the Thermic Regulation using ClimaWin software and the other of Energy Performance Diagnostic (issued by the European directive on Building Energy Performance published in January 2003 which aims to give a European framework to the national policies to reduce energy consumption within existing or future buildings) with the software 3CL. For a representative panel of buildings located in different towns in France, it has been demonstrated that the average relative gap in between measured consumption and the calculated one is 90%. (*BATAN, 2008-2010*); the real consumption being inferior to the calculated one.

The reasons to explain these gaps are numerous. The first one is linked to the difficulty to take into account the air infiltration. Then the weak importance given to the passive external inputs (heat and light). This one depends on the orientation of the building : hence, a building which has a unique façade oriented towards south will have far lower consumption than the building facing north.

Then, as mentioned earlier, the compositions of walls are actually heterogeneous: it is difficult to know the thermic conductivity of a mortar made out of construction waste and which evolved with the years ; these walls can be also of a variable geometry and thicker at their foundations for structural reasons. To evaluate the thermic resistance of such a wall becomes therefore complex.

It is necessary for this very reason to resort to thermic dynamic simulations which represents a longer and hence a more expensive study. The energy behaviour of these buildings is complex and rethinking the renovation solutions should be holistic taking into consideration at the same time, thermic insulation, heating systems and ventilation.

32. Searching for new techniques compatible with the aesthetic character, the urban integration and the original constructive dispositions.

Humidity : a permanent Source: of concern

Concerning the renovation of historic buildings, some solutions can be more interesting than others for reasons of specific differences between these constructions. Prior to any thing else, it is important to set a before hand study of the building' characteristics. Actually, an old wall which resisted throughout centuries without suffering can suddenly be badly affected following a renovation. Changing the wall characteristics can lead to problems and in particular those of humidity which didn't exist earlier on. Indeed! When a wall represents persisting signs of humidity (moisture, plaster degradation, salpetre ..) it must be prohibited to lay insulation materials before identifying the causes of the disorders and before undertaking any works. Humidity can come either from capillary risings from the soil, water infiltration or gutters' leaks, or from humidity contained in the external or internal air. Used without precaution, the insulation of a humid wall can be of poor efficiency, taking into consideration that the life of these materials is limited.

The rebuilding of the envelope

Various solutions can be considered in the domain of the renovation of the envelope. Concerning the historic buildings, the insulation of the roofs can be found particularly interesting. Sure! Intervening at the roof level requires full fledged technical competencies. Moreover almost 30% of the thermic loss goes through the roof, justifying an urgent solution to the problem.

An other measure to increase the energy performance is to improve the existing glazing. The simple glazing is the most common in the old buildings and transformation of the windows can lead to dividing by three the losses by conduction. One of the most adapted solution to the historic building is the implantation of a double windows indoor. This has the advantage of not modifying the external aspect and to improve the thermic and the sound properties of the openings. In case the double glazing solution is chosen (the best thermic solution but with poor acoustic properties), new windows should integrated in the best possible way with the façade. Improving the windows' performance avoids the feeling of cold surrounding walls.

The insulation of the vertical walls has a more complex character. Two types of repair can be put into place each having advantages and drawbacks. External insulation lead to an important inertia, considered as interesting for permanently occupied buildings. This allows also to strongly reduce the thermic bridges. On the other hand, its implementation in the historic buildings may be a problem for it requires works on the external façades. Solutions can be found, but you must “rebuild” the façade when laying the external thermic insulation and a arrange a decorative over coating to reproduce the original façade. The second technique is to insulate the walls from the inside which preserves the external aspect of the building façades. A highly performant internal insulation is not always the most desirable for it cancels the inertia effect of these walls. This type of insulation can in particular reduce the interior air heating time. It is interesting to observe that this solution is well adapted to historic buildings for it doesn't require any work on the external façades. On the other hand, it doesn't help correcting every thermic gaps (bridges) and reduces the habitable space. For this problem, there exist also solutions, using in particular insulation panels under vacuum. For example, for the renovation of a floor, 30mm are sufficient (including cement coating) instead of the normal 10 cm.

It is also important to have under control jointly with the mentioned measures above, the ventilation and the airtightness. Controlling the building airtightness can reduce heating consumption and uncomfortable feeling due to cold air drought and limits external air entries. This also helps avoid structural damages on the building envelope and reduces the condensation phenomenon provided it is done at the exterior.

Taking into account the external environment

Whenever it is possible, the use of surrounding vegetation can modulate the sunshine inputs for each season. These natural assets are interesting because their annual vegetation rhythm accompanies the building' needs. Their shades are refreshing during summer times and the absence of foliage in winter allows the sun to spread its rays on the façades. Concerning the disadvantages, they require a steady maintenance and eventually necessary public works to plant vegetation in the urban space.

Energy Systems

Increasing the energy efficiency is undertaken also through improving the energy systems. The gas condensation boilers are usually used by individual or collective systems. A low temperature heating system could profit from the condensation latent heat (coming from the floor). This system can improve the production outputs (reducing the heating bill by 30 to 40% with regard to a 15 years old model) and reducing also the exploitation cost and the energy consumption. It should be noted that in the case of preserving the same energy source, the technical intervention is easy and fast.

The heat pumps may also be of interest. They are used to develop the sustainable Source: of energy such as (air, water, soil and residual heat) to a heating level temperature in the buildings using a compressor (electric). They can produce heating, air conditioning and hot waters either in the dwellings or in commercial premisses. Concerning historic buildings it is important to use them in ventilated underground floors which can increase their performance' inputs and at the same time keeping them away from sight.

Last, recuperating heat at the level of mechanical ventilation systems whose out coming air is used to pre heat the incoming air, can be also of interest. Sure! It can reduce the energy bill and also improve the indoor air quality which is an advantage not only for the inhabitants. It can also, for example avoid the humidity's attack against the buildings. Solutions exist, using for example a 15 to 25cm thick air to air exchanger which can easily be integrated along the walls or in the attics. This system to be efficient, the buildings should be airtight

The ecological impact's evaluation tools of the building/restoring act

There are diverse tools used in environmental analysis, by those in charge of the buildings such as architects, entrepreneurs, researchers and projects' chiefs to evaluate the the environmental impact described here below according to their use at different phases of the project.

The existing Diagnostic Tools

At this stage, it is necessary to pinpoint the existing buildings and to underline their weak points. The energy diagnostic can be achieved through collecting and analysing the energy consumption invoices of a given building or of the various dwellings of the said building. It can also be made through evaluating this consumption by regulated methods. But as we mentioned earlier, this diagnostic can be difficult to achieve on old buildings.

The infra red thermography corresponds to measuring this consumption from a distance. The components irregularities of a building internal envelop affect the temperature variations on the surface' structure. Hence analysing the superficial temperature help detect an insulation gaps, and thermic air infiltration bridges. The infra red thermography is a non intrusive diagnostic tool, which helps uncover the invisible irregularities with the naked eye.

As mentioned above, the airtightness problems are amongst the main actors with regard to the diminution of the building energy efficiency. Measuring the envelop' humidity of the air (metrics of infiltration) helps to carry out energy simulations closer to the building real performances. The norm EN 13829 gives the measure protocol used with the BlowerDoor' material.

Monitoring the building consists of measuring the different configurations such as temperatures, relative humidity, light, the presence of … in different locations of a building in use.. This informs us of the real use of the building and on the building thermo hydric response to the weather conditions and internal inputs.

Design and optimization
of the renovation operations

The environmental impact can be evaluated by **calculation and simulation tools**:

The steady thermic calculation which will be in accordance of the rules of each concerned country.
The Dynamic thermic Simulation (DTS) helps evaluate the building thermic behaviour : calculating the internal temperatures for each zone, needs in water boiling and cooling, heat outputs distribution, zones of less comfort

The solar radiation simulation : 3D view : distribution of the radiation on each façade. It quantifies the passive solar inputs an gives informations on the analysis of a possible photovoltaic integration for example, and also for solar protection levels and the optimisation of the building orientation.
The acoustic simulation : the calculation of a parameter of an acoustic comfort according to the materials' volumetrics.
The CFD simulation (Computational Fluids Dynamics) simulates the natural ventilation.
Underlining the hygrometrics of the walls, in order to pinpoint humidity- related problems such as condensation, moistures, degradation of the thermic performances.

The simulation of natural and artificial lighting : The indicator used is the day light factor. It optimises the visual comfort.

The Life Cycle Analysis (LCA) of a building helps assess the environmental impacts during all the phases of a building life' time : since the extraction of the raw materials, its use and until its demolition.

Various impacts are expected to be evaluated based on specific indicators (Possible climate warming, acidification, eutrophation, eco toxicity..) The LCA helps also compare and chose in amongst various building materials for the most environment friendly possible solution.

A thorough analysis of the building can be done through undertaking approachs such as HQE (Environment High Quality) in France and BREAM in the United Kingdom. They use tools proven efficient in the past and in approaches of a *benchmarking* type. This can be a qualitative approach with regard to non quantifiable aspects, such as the respect of biodiversity , and to reducing impact on the environment..

The management of the project can be apprehended from the angle of the **global cost** ; it takes into consideration, the investments and the maintenance. The global cost helps add the economy criteria to the environment approaches on how to chose the energy systems, and renewable energy...
It is possible to use evaluation tools for designing public spaces : evaluation of the acoustic comfort, study of the sunshine, winds simulation, modelling of the movements fluxes.

Monitoring the performance
after completion of the works

Heritage follow up and management tools help control the building performances over the time. These procedures provide steady controls and inspections over the building and the renovated sites. Hence monitoring a building before and after its renovation, directly indicates the changes as far as its behaviour is concerned.

Some follow up procedures produce immediate performance indicators, with a synthetic appraisal; their greatest interest lies in their easy use. In amongst these tools we can note EcoWeb and Gikime. Ecoweb is an (internet dash board) service for energy, water, and waste' follow ups and consumption analysis. The programme EPS Coach is another of the same. Gikime is an on line environment maintenance guide for private users and maintenance personnels to help them choose materials, means and methods implying low energy consumption.

33. Public policies and local realities

Additional policies for
energy preservation and heritage

Two large regulation categories dealing with the renovation of the historic urban centres have been implemented in European countries. On the one hand we can see the thermic regulations which incite, since the end of the 70s, to build and to renovate in more and and more performant way, and on the other hand, the regulations dealing with the protection of the historic heritage from the other. Some European countries enjoy an inventory tool of historic heritage since the end of XIX th century.

In a context of historic urban centres' rehabilitation, these two policies often contradict each other, where the thermic renovation of the buildings requires to transform the building itself.

This is the case in France. The May 3 2007 Decree concerning the thermic characteristics and the energy performance of the existing buildings clearly indicates in its articles 6 and 15 that requirements in the domain of insulation or the changes of woodwork can't be fulfilled if they are in contradiction with *“the established protection measures in the safeguarded and protected heritage zones of architectural, urban, landscape of importance; the surroundings of historic monuments, the listed and the classified sites, the sites inscribed on the UNESCO world heritage list and any other preservation policy ruled by the territorial authority, and with the buildings enjoying the brand of XX century heritage and the buildings designated by the paragraph 7 of the article L. 123-1 of the code de urbanism. “*

The English regulation convenes a different approach. When it comes to preserving fossil energy and electricity. It recognizes the potential conflicts in between energy preservation and heritage preservation and looks for a solution to reduce them through adopting a flexible approach.
It authorises the research of a reasonable trade-off in order to take in account the specific characteristics of each building.

The dilemmas of policies concerning the research of resource and heritage preservation have been approached in complementarity and adjustments were planned for thermic rehabilitation with regard to the outstanding monuments. The challenge hence is to find the best energy performance while preserving the cultural heritage monuments, among which the old buildings in the historical centres.

One can say that, at this stage, the available experience in the field of thermic renovation for old buildings is recent but developing fast. Moreover, many projects at the European level deal with this very subject.

Introducing the Community dimension : The SECHURBA project
Sustainable Energy Communities in Historic Urban Areas

This project (planned over 2008-2011) is still in progress. It intends to consider historic buildings from the community angle. The partners*[2] want to develop ways to encourage the energy efficiency and the renewable energy systems within the community and examples of good practices in order to stimulate the other communities, local actors, decision makers and elected representatives to follow the government's targets.

In amongst other objectives, it wishes to acheive a 40% CO2 reduction in the buildings and communities concerned by the studies, the elaboration of financing guidelines and the guarantee to commitment to the financing, and establishing a road map for the policy makers use, called 'Strategies for the climatic change' in the historic community. The partners shall on the other hand set a guide for good practices and a programme which helps to choose the most appropriate intervention in the historic buildings.

An example of integrated approach at territory level:
OPATB : Programmed operations to improve the thermic and energy outputs of the Buildings

Launched in France in 2002, the POITEB aim at acting at local level in residential and tertiary buildings in order to limit their energy consumption and their CO2 outputs. They consist of a large programme of activities and subsidies to achieve low energy works, encourage the control and the use of electricity and promote the use of renewable energies.

They cover all the residential and tertiary, private and public buildings, in a given area, villages, agglomerations, a group of villages or district as well as in low density zones. They are led by local authorities which want to confront the environment challenges, to reduce the energy consumption and the green house effects gas' outputs. They are advised and financially helped by the State and two national agencies, the ADEME, and ANAH.

In the Aquitaine region, two pilot operations have just assessed their work. The Siphem, rural territory, like the agglomeration of Pau, have obtained very good results with regard to energy works on their priority target : the private dwelling. More than 600 dwellings have been concerned with thermic works within Siphem and 1750 in the agglomeration of Pau.

The Siphem has given a special attention to renovating buildings with historic characters. The concerned buildings have required a total rehabilitation, taking into account the patrimonial demands inherent to protected sectors: preserving the half-timbering work, the woodwork, as well as the old doors and windows in particular the commerce section (cf. [5])

[2] PARTNERS: University College Dublin, Irland - Alesa, Italy - CRES, Greece – City of Athens, Greece - Cenergia, Danemark - ÉMI, Hungry - Szentendre Város Önkormányzata, Hungry - Union of Bulgarian Black Sea Local Authorities, Bulgaria - Provincia di Chieti, Italie - Viveca SRL, Italy - Shropshire County Council, United-Kingdom - Istituto Tecnologie Applicate ai Beni Culturali ITABC – Labein Technalia.

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Part B : Partner Profiles

Part B Partner Profiles

The profiles of the partners (in alphabetical order)

- City of Almeria (Spain)
- City of Anderlecht (Belgium)
- City of Bayonne (France)
- Brasov Metropole Association (Romania)
- City of Budrio (Italy)
- City of Delft (Netherlands))
- City of Freiberg (Germany)
- City of Kilkeny (Eire
- City of Veria (Greece)
- City of Evora (Portugal)

Each partner profile is structured as follows :

1 City data
- Population
- Size
- Key characteristics
- Main challenges
- Project coordination team

2- Local State of the art
- 2.1. Nature of the problem in our city
- Problems relating to the city's Historic Centre that require an integrated Local Action Plan
    - Experience of tackling the problem so far
    - Lessons learnt from the experience
- 2. 4 Potential good practices already observable in the city
- 2. 5 Needs of the city in relation to the project topic
- 2. 6 Focus of the city's Local Action Plan
- 2. 7 The Operational Programmes and your Local Action Plan
- 2. 8 The stake-holders and your LINKS project's Urbact Local Support Group
    - stakeholder analysis
    - Members of your City's Local Support Group
- 2. 9 Relationship of the city to the LINKS project
    - Expectations
    - Concerns
    - Needs
    - Role in the project

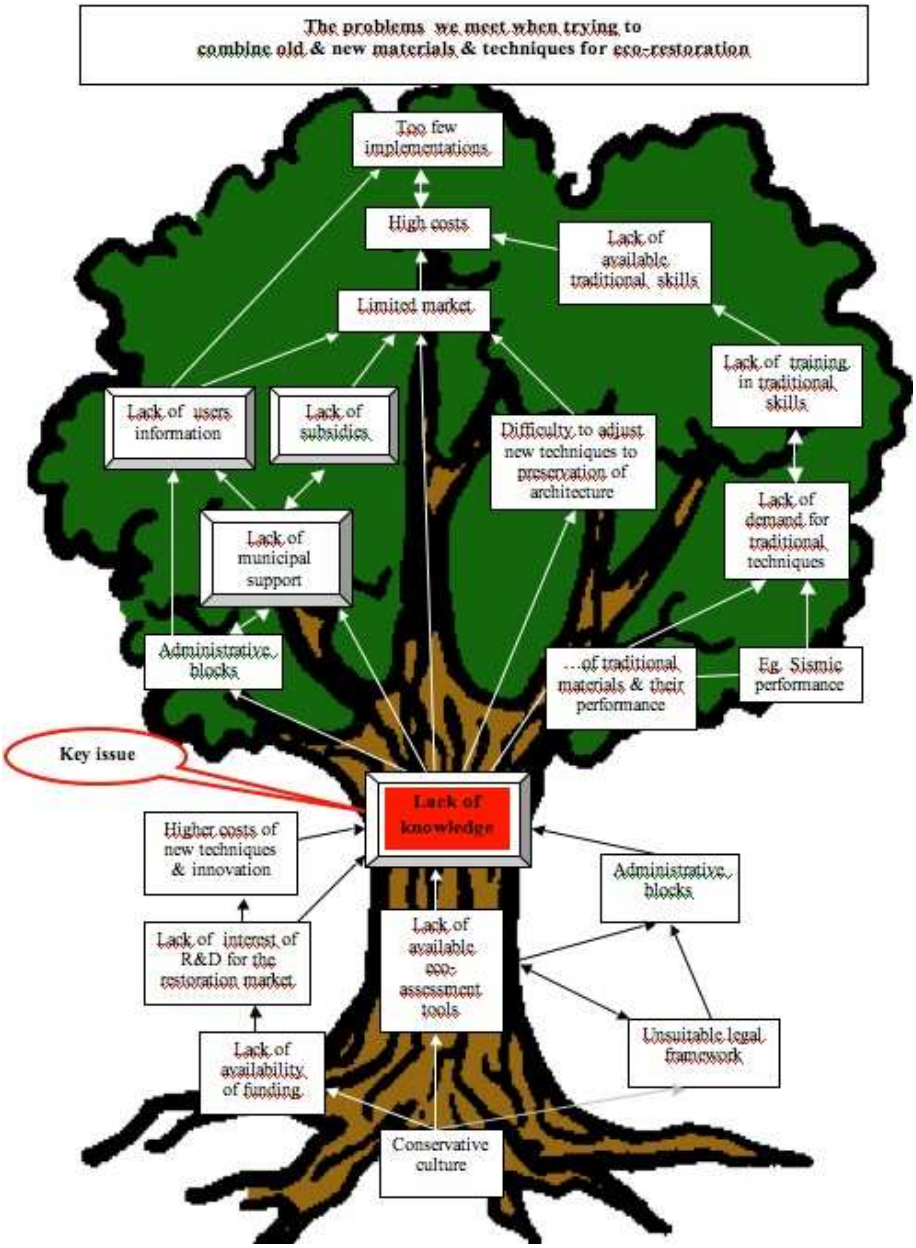
Part C : Synthesis

Synthesis

Reality check

« European and national bodies certainly need to make serious efforts to educate and persuade local officials. Yet at the same time, we need to ensure that new policies correspond to needs and that there are local capacities to implement them. There is a very large gap to fill, which globalization and the crisis seem to be deepening. » Jean-Loup DRUBIGNY [3]

This quote encapsulates Urbact projects' challenge as far as exchange and learning are concerned : the proposed approaches must bring new concepts to local officials while making sure our projects and proposals are rooted into partners' everyday reality. This is why the project team adopted a twofold approach : each new top-down proposal is field-tested before the project adopts it ; and the project activities are built around and on the basis of partners' actual local initiatives and projects.



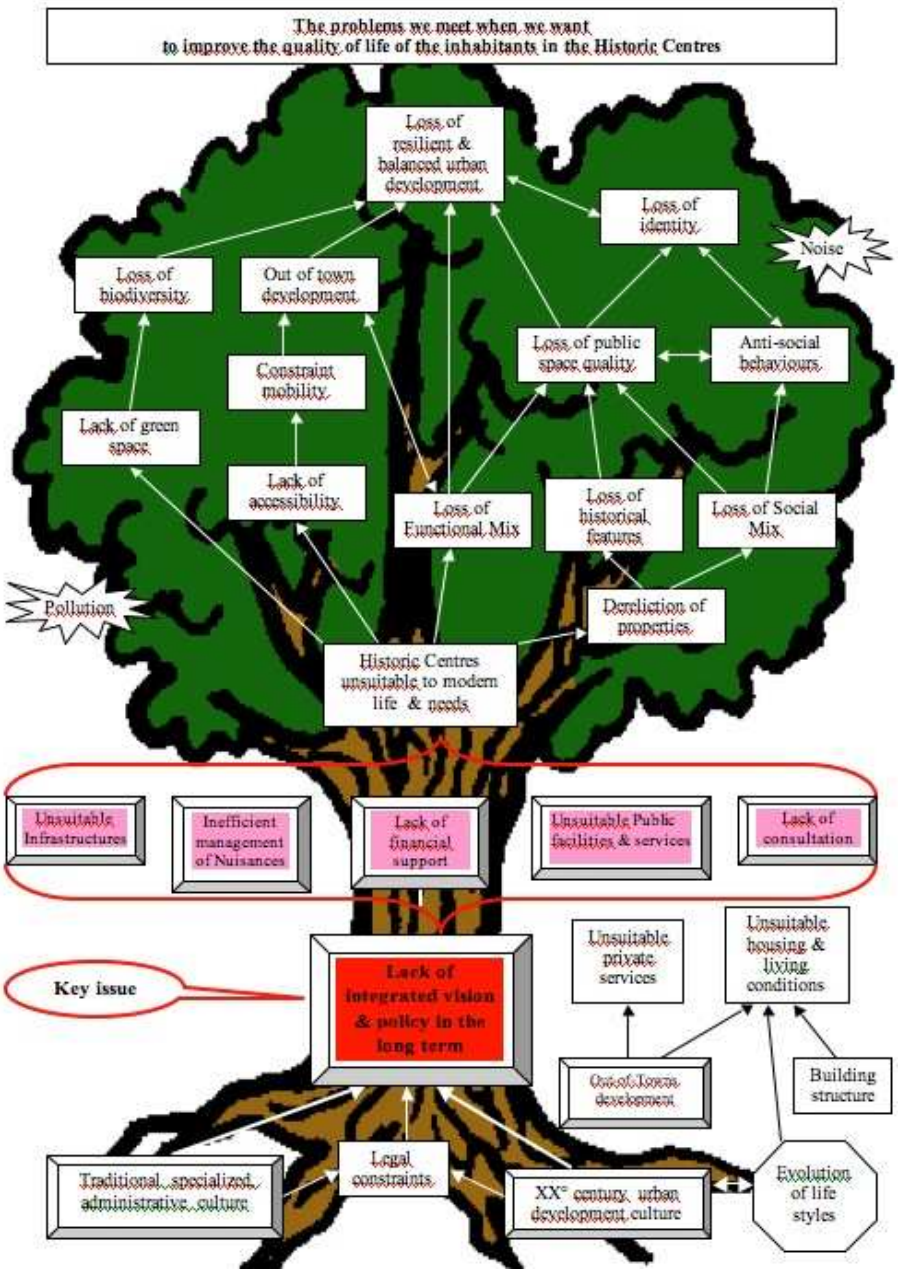
C1 Building a team & a common culture

Indeed, since phase 1, all key decisions (image and logo, budget, choice of work-groups themes, places and dates of meetings, roles & responsibilities…) have been taken by partners on a collegial basis, either during the Steering committe meetings or through mail discussions ; and all key documents or elements are discussed and validated by the partners. This contributes to create the necessary sense of community.

C2 Reaching a shared understanding of the problems and opportunities

[3] Urbact Newsletter, N° 8 -May 10 2010

We also have spent, and will keep spending time making sure the terms we use make sense to all partners ; and to build a common vision of the problems we choose to face together.



Some « problem tree » sessions already permitted the group to come to an agreement on the wording and the understanding of two initial issues : *« The problems we meet when we want to improve the inhabitants' quality of life the Historic Centre »,* and *« The problems we meet when we trying to combine old & new materials and techniques for eco-restoration ».*

61.3 Defining a main common theme & complementary elements : A both integrated and hierarchised approach

The project's specific and innovating starting point was identified from the beginning as a rather technical one : The problems generated by the need to apply Eco-restoration to ancient buildings in historic centres.

But the everyday local reality shows us that the eficiency of any policy in this field is linked to the quality of the weakest segment of the proposed answer : We need to take into consideration and evaluate our municipalities' ability to bring in effective results in each dimension of the problem: social, technical, urbanistic, economic, and governance). This emerged clearly from the answers to the questionnaires sent to the partners by the lead expert, as well as from the two european meetings held during the 1st phase.

Indeed, for Historic centres to become sound & attractive eco-districts, and deserve LINKs motto (Future-Proof Historic Centres »), it interestingly enough appears that they must manage to reach Sustainable Development four targets: social/cultural, environmental, economic, and sound governance.

This being said, we clearly keep in mind the hierarchy of themes we want to deal with during the project. We neither will have the time nor the resources to develop detailedly all of these aspects. We will therefore put more emphasis on exploring the technical challenges to eco-restoration. But we will also consider their interactions with the 4 other identified fields (social, urbanistic, economic,

governance), and point out key challenges, and recommendations as well as the best practices that will have appeared during the process.

The choice made by the LINKs partners for the selection of their local « Pilot Projects » shows clearly that this agreed hierarchy also corresponds to their local team's concrete needs.

LINKs' five key challenges to create « Future-proof Historic Centres »

Work Group 1: Eco-restoration in historic centres, the social challenges

If the old European cities show some advantages to aspire to be tomorrow's eco-districts - urban density, high architectural quality and thrifty constructions in natural resources, diversity and proximity of urban functions as well as economical, cultural and educational development potential – they also suffer from many liabilities to meet moderns needs. Buildings decay, tightness and discomfort of housing, noise pollution, commercial specialisation, pauperization and/or gentrification, tourism excess…

This quest for a sustainable city and revitalization of ancient quarters ought to take in account the human factor. Aren't the main actors of the city and « user experts » the inhabitants themselves? Inhabitants' involvement in transforming their living environment will allow a better appropriation of those areas and will guarantee their longer-term quality and social cohesion. Inhabitants must be considered as stakeholders and associated during every stage of the urban project.

Acceptance and success of a sustainable city vision depends on the way social expectations are understood and met. LINKS will dedicate the first chapter of its works programme to identify present inhabitants' needs, and the successful ways to secure an active citizens' participation.

Work Group 2: Eco-restoration in historic centres, the urbanistic challenges

Town planners in charge of historic centres must permanently keep a sound balance between heritage protection and demands for change. They have to imagine a new urban fabric, rooted in the past tracks, but open to future needs. This requires to precisely understand which are today's needs (in terms of publics spaces, equipments, services, customers habits…), how they keep evolving and to define how these expectation can be compatible with sustainable development requirements.

Two important questions today's town planners have to face are on the one hand, the compatibility of the historic centre with cars, and on the other hand the "cost of fame"; how can historic centres deal with the liabilities generated by the success of tourism and cultural leisure activities. If mobility has been successfully dealt with in many cities (although the quality of the public answers varies with the size and context – predominantly urban or rural - of the city and the traditional relationship of citizens with their cars (wich can be a strong cultural and regional factor), the conflict between activities and proximity services remains an issue in most historic cities. The balance to keep or to recover is always a subtle one.

One key paradox is the fact that short term decisions often generate unforeseen and sometimes negative long term impacts. How can cities learn to better monitor urban planning strategies in a way that will preserve the desired balance in the long term or, when needed, restore it along the path?

Work Group 3: Eco-restoration in historic centres, the technical and financial challenges

To improve their attractiveness, city centres must offer credible alternatives to suburban housing. To repopulate city centres, one needs to offer healthy, comfortable and energy-efficient housing. If suburban housing remains an important grey energy consumer generating urban transports, it now requires less domestic energy, due to technical improvements and tighter standards. Historic areas are still exempted from greenhouse gas emissions directives, but the conjunction of the climate

change emergency and a gloomy economic context creates a double threat for fragile Historic heritage: normalisation and standardisation of technical solutions.
LINKs partners will have to define their protected architecture intrinsic environmental qualities: adaptation to the site (both in terms of urban and of architectural shapes and constructive modes), energy behaviour (using various methods, the reliability and limits of which will be studied), relevance of local material, resistance to earthquakes…

The partners will make an analysis of ancient buildings heritage's situation faced with the different standards to check if their implementation fosters the intrinsic qualities or destabilizes them.

Then, the partners will identify the different solutions for eco-restoration. The analysis will determine, in a given context, energy performances' objectives as well as opportunities for restorations respectful of building heritage and environment. The panel of technical solutions will be established in a way to emphasize the resources of traditional architectures (the part of the low-tech: natural, local and organic materials – passive climates) as well as the perspectives given by innovation (part of the high-tech).

Each partner will establish an inventory of financial tools which can be mobilized (national and local) to make eco-restoration a feasible solution. These financial tools will be submitted to a critical analysis to determine their adequacy to qualitative objectives (patrimonial and environmental), to define their limits and to point out possible perverse effects (indirect prescriptions, works or helped products' costs increase).

Work Group 4: Eco-restoration in historic centres, the economic challenges

All the work done on eco-restoration solutions would be useless if the emerging demand cannot be met by the local economic market.

Once eco-restoration's methods will be more precisely defined, local professional networks able and interested and associated in the different U.L.S.G. (architects, engineering consulting firms, tradesmen trained or to be trained, suppliers' networks in adapted building materials …) will
closely examine the economic viability of eco-restoration. In particular, the local resources and lacks (material, skills, training needs) will be clearly identified and the Local Actions Plans will be elaborated to foster the potentials and build the synergies that can contribute to fill in the lacks.

Work Group 5 : Eco-restoration in historic centres, the governance challenges

The question of governance will be the general methodological framework overshadowing the project. Each of the other theme (social, technical, economic challenges), will be questioned along sound governance lines: citizen involvement, assessment of publics policies (this question will be attentively developed during the project due to the – stimulating Vs inhibiting – impact of public subsidies to private owner on local markets), relationships with other levels policy makers, synergies with stake-holders (PPPs…), etc
Also, existing good practices in terms of governance will be exposed and assessed in the frame of this Work Group.

C3 Identifying local expertise, « Good Practices » and « Pilot projects »: A treasure in your backyard

- Local Expertise

Valuing local resources is indeed in line with our main objective. So when looking for expertise at project level, we have first looked into the local technical and academic resources associated to the ULSGs, which often proved to be pertinent and qualified. Their advantage, too, is that their language may be more easily accessible to the project's target population: their peer local politicians, civil servants & stakeholders.

This also permitted us, among other things, to identify qualified keynote speakers for 4 amongst the 6 scheduled european meetings.
An interesting way to identify local expertise is to ask partners to look for their cities' own good practices, alongthe project's criteria. This is a first step in the evaluation process conducted by the lead expert with each partner (through questionnaire, visit, european meetings).

Themes	Bayonne	Veria	Delft	Almeria	Budrio	Kilkenny	Evora	Freiberg	Brasov	Anderlecht
Living better in the HC										
. Citizens participation	XP	D	D	XP	D	D	D	XP	D	XP
Town planning		D	XP	D	D	XP	XP	XP		XP
Eco-restoration										
. Technical	XP	XP	XP	D	D	XP	XP	XP	D	XP
. Economic	XP	D		D	D					D
Governance										
Governance					D	D	XP		D	XP

XP	Partners with high expertise in the field
D	Partners interested in receiving expertise

The LINKs partnership expertise matrix

- « Good Practices » : highlighting local solutions, in view of exchanging experiences
On each proposed theme, once the problem is clearly set, the lead expert first asks the partners to look for existing local practices that do or may bring usefull answers to other partners. This research began during phase 1, and will continue during the 1st half of phase 2, particularly for the new partners. The identified Good Practices will then be assessed & compared and may later become Best practices, when so validated by the partnership. They then will be uploaded in the online LINKS data base.

At the end of phase 1, the partners, assisted by the lead expert, had already identified a first series of 12 local Good Practices[4]:
. 4 social challenges : Charters & applied methods fostering citizen participation
. 3 governance challenges : 2 quality for integrated management, 1 project financing approach
. 3 urban planning challenges : historic centre management & redevelopment plans
. 2 technical challenges : eco-restoration of 1 ancient buidlings, 1 evaluation of energy solutions

This was meant to help each partner in defining both their level of expertise and their own offers and demands as far as exchange of experiences is concerned.

- Bilateral cooperations
Several bilateral cooperations on specific topics were born from the first exhanges on local expertise, which will be implemented during Phase2. For instance, Veria plans to send their future eco-restoration Counselling officer for a training visit at their counterparts' offices in Bayonne and Kilkenny.

C4 ULSG, OPMA & project work : Local stake-holders also welcome at European level
The partnership decided to invite one ULSG member from each partner city to each european meeting and to the final conference. They will be chosen on the basis of each meeting's theme and be asked to actively prepare and contribute to the seminar, aprticularly those in charge of keynote speaches.
This way, no less than 54 ULSG members (9 persons x 6 meetings) will be invited to travel to LINKs european meetings.

All partners' OPMAs will also be invited to european meetings. Indeed, we will particularly insist on the importance of their presence at the 5th seminar (about OPs) and the final conference.

[4] see annex

From the identification of existing local « Good Practices »…

Social challenges GP-11. Charter for Citizens participation GP-12. Citizens participation GP13. Charter / La Chanca GP-14. Charter for Citizens participation – Upper Market		**Urban Planning challenges** GP-21. Redevelopmt strategy of the Historic Centre GP-22. Historic Centre Management Plan Pilot Operation Severim De Faria' GP-23. Planning - Upper Market
	Technical challenges GP-31. Research on pilot private building eco-restoration solutions 22, rue Bourgneuf GP-32 Pilot Publi Building ecorestoration : Casa del Cine Romera	
GP-51. Integrated management : Implementing the Qualicities approach GP-54: Jessica 4cities GP-53. Integrated management : Implementing the Qualicities approach **Governance challenges**		**Economic challenges**

…to the design & implementation of Phase-2 « Pilot Projects ».

Social challenges PP-12. Building renovation Counselling office for citizens PP-13. Integral policy towards inhabitants		**Urban Planning challenges**
	Technical challenges PP-30. Energy Efficiency Guidelines for Historic Buildings eco-restoration PP-31. Pilot public building eco-restoration : 229 Kentrikis street PP-32. Pilot public building eco-restoration "Red chemistry" Julianalaan 132-134 PP-33. Pilot public eco-restoration of "La Casa del Poeta José Angel Valente" PP-34. Pilot public eco-restoration : Town Hall. PP-35. Pilot public eco-restoration "Ecole des vétérinaires" PP-36. Pilot public building eco-restoration : 14 Patriarchou Ioakeim street PP-37. Pilot public eco-restoration : Saint Mary Church PP-38. Eco-restoration "Mesòn Gitano" Coves PP-39. Pilot public eco-restoration of 05, 07, 09, Talsstrasse	
PP-51- Commercial & cultural promenade in the Historic Centre PP-55. Investigation of administrative blocks & financial opportunities for Eco-Restoration **Governance challenges**		PP-41. Network of Eco-Restoration businesses PP-42. Feasibility Study on Economic Potential of Eco-Restoration PP45- Eco-Business Centre PP-46. Professionnal Eco-restoration School at "Mesòn Gitano" **Economic challenges**

Expertise : Fishing for complements

As the baseline study shows, many initiatives exist around Europe and beyond, that can inspire our local policies and actions. We have proposed to several international, national & local specialised institutions and city networks to contribute to our work and later disseminate it, which they agreed to do. No need to say they are sources of expertise both for the project and local levels.

Research at all levels

Expertise –both local & european- will be used at different levels :

- Project level :

. All european projects will prepared & accompanied by at least one specialized expert. Also common technical researches will be developed jointly, mainly on the technical solutions for eco-restoration (assessment and comparison of different techniques and associations of materials/techniques used to eco-restore old buildings in different climatic and urban contexts).

. Also a common research will be made on the situation and potential opportunities & recommendations for a better integration of issues related to eco-restoration in historic centres.

- Local level : Each partner may use, in the frame of their own ULSG budget, expertise to deal with local challenges (eg. modification of legal frameworks, funding schemes (eg. PPP), technical issues).

All these specific studies will be reported, shared and eventually disseminated

C5 5 Permanent project-level « Work Groups »

One Work Group will focus on each of the 5 themes.

1 central theme :

. Technical challenges to eco-restoration in historic centres

& 4 complementary themes :

. Social challenges to eco-restoration in historic centres
. Urban planning challenges to eco-restoration in historic centres
. Economic challenges to eco-restoration in historic centres
. Governance challenges to eco-restoration in historic centres

Themes	Bayonne	Veria	Delft	Almeria	Budrio	Kilkenny	Evora	Freiberg	Brasov	Anderlecht
Living better in the HC										
. Citizens participation	P	P	P	L	L	P	P	L	P	P
Town planning	B	P	P	P	P	L	B	L	B	B
Eco-restoration										
. Technical	P	P	L	P	P	P	B	P	B	L
. Economic	L	P	B	L	P	B	B	B	B	P
Governance										
Governance	B	B	B	B	B	P	L	B	P	L

L	Work Group co-Leader
P	Work Group active Participant
B	Beneficiary

The LINKs partnership Work Groups leadership matrix

Eack WG will be leadered by a team of two to three highly motivated partner cities that have received that mission from the 2nd steering Committee. For each work group, the other partners have either decided to join it as « active participants » (participating in the life of the WG) or to consider themselves only as « beneficiaries » of the outputs of the group.

This system allows each partner to contribute to the project life while concentrating on their own priorities.

It may occur that a partner chooses not to invest time in the animation of a WP, but has a recognized experience in the field. They then can be asked to contribute when needed as « expert ».

Each WG will have & manage their own agenda, under the supervision of the lead expert and with the support of specialized experts :
- organization fo the WG's tasks and life
- preparation of the european seminar dedicated to their own theme (one thematic seminar per semester see calendar) : seminar preparation, key-note speach/expert, PPs & GPs presentations, synthesis & report),
- preparation of the presentation of their theme at the final conference
- preparation of the outputs to be uploaded to the projects' minisite and on line data base.

C6 European meetings: a 4-steps approach to optimize their productiveness

Short international meetings always set a productiveness challenge when participants come from different places and professional backgrounds, not mentioning the fact that several participants will not be used to intensive work in a foreign language.

To make it both more efficient, nice and easy, all 6 european meetings will be based on the following sequence :
Receiving inputs => Integration => Discovering local field reality =>Focusing back on one's own needs => exchanging on self-chosen themes.

. Day 1 : Plenary session & World Café workshops

<u>- 1/Receiving inputs</u>

Each european seminar will be introduced by a nearly one day long plenary session with presentations on the selected theme : key-note speach(es); presentations of pilot projects and/or good practices.

<u>- 2/Integration</u>

We will use for this, at the end of the plenary, a *World Café* approach (see annex), thus permitting each participant to ramble through the day's inputs in an informal though efficient setting (small groups around meeting café tables, with specific assignments) and synthetize what was useful/striking to them.

. Day 2 : Field visit & Open Space technology group work

<u>- 3/ Discovering local field reality</u>

The morning of the 2nd day will be dedicated to a visit of one or several local pilot projects and/or good practices; prior to the visit, the participants will be handed a questionnaire which will help them focus their attention during the visit. A debriefing session in small groups will allow the expression and collection of feedbacks to the local partner in a Peer Review spirit.

<u>- 4/ Focusing back on one's own needs and exchanging on self-chosen themes</u>

For this last sequence, we will use a very efficient and motivating methodology : the Open Space Technology (see annex), which helps any community to self-organize a series of small groups focused on questions expressed by the participants themselves, rather than a pre-established agenda; the printed synthesis of each of the groups is made available to all by the end of the day.

The seminars will end with a short plenary session for conclusions

. Day 3 : Backstage management

- 1/ morning : Meetings of all 5 work Groups (follow up on the work accomplished and preparation of future steps, pending questions) ; reports to the plenary.

- 2/ afternoon : Meeting of the LINKs interegional Steering Committee (all partners represented, decision-makers being the political representatives; strategic, administrative & financial follow-up ; decisions)

European meetings' calendar: One theme at a time
As we just exposed, each European meeting will be the occasion to highlight one of the projects themes. And the final conference will sum it all up.

28-30 September 2010, Freiberg (Ge) : « Governance challenges to eco-restoration in historic centres »

15-17 February 2011, Almeria (Sp) : « Social challenges to eco-restoration in historic centres »

17-19 May 2011, Delft (Nl) : « Technical challenges to eco-restoration in historic centres »

09-10 November 2011, Bayonne (Fr) : « Economic challenges to eco-restoration in historic centres »

15-17 May 2012, Veria (Gr) : « & Eco-restoration & Sustainable Urban Planning of historic centres, an issue for EU Operational Programmes ? »

28-30 September 2012, Anderlecht & European Parliament (Be) : Final Conference « Eco-restoration, an asset for Historic centres' sustainabe l development »

C7 Group work methodologies:

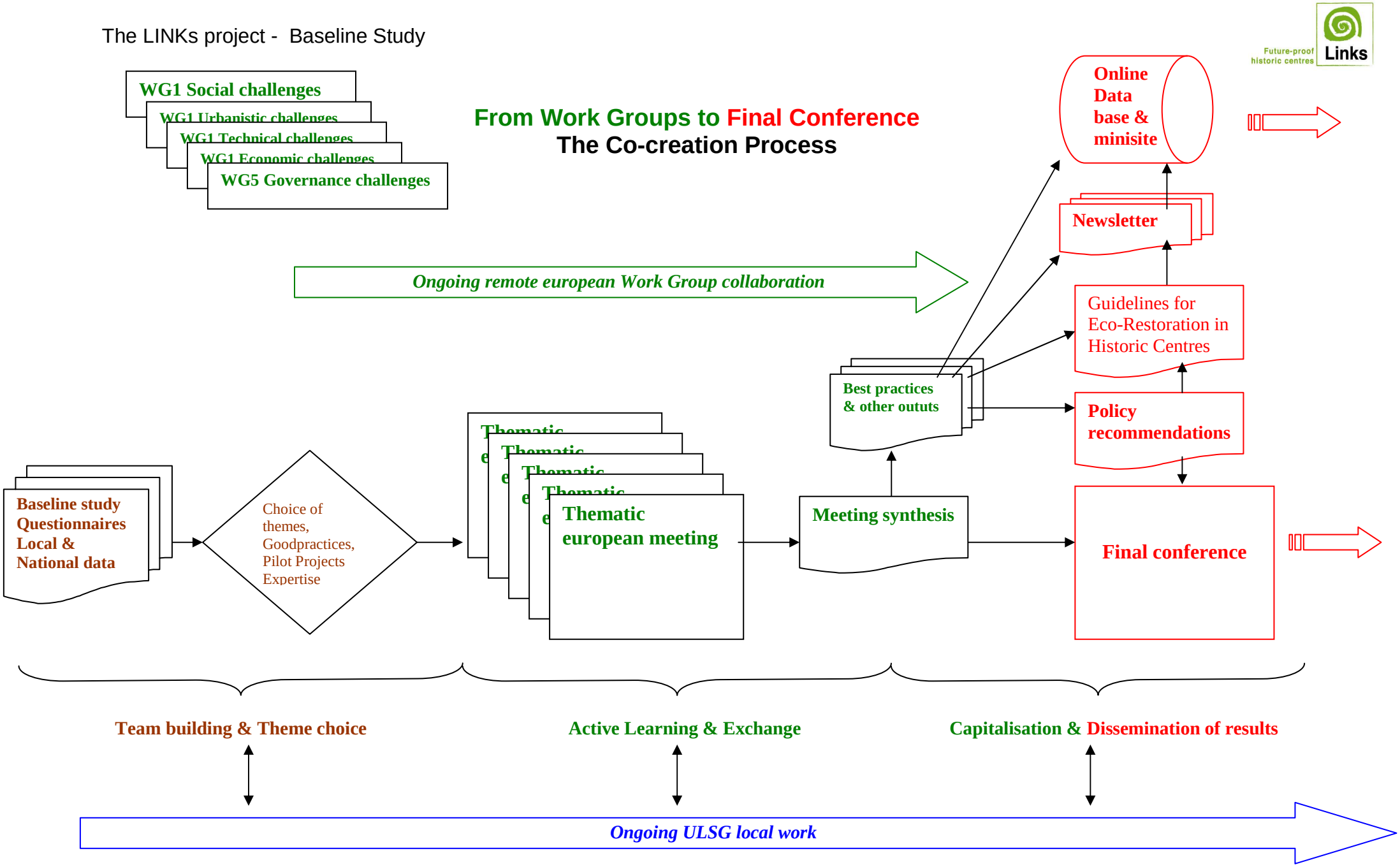
- Learning by doing
All proposed methodologies for group work and animation are designed to be used not only during the european sessions but also to be brought back home by each partner to eventually use them in their own environment. This for, they are presented with support documents and practiced several times during the LINKs meetings. Eg. Problem tree & Perr Review were already used in phase 1, World café and Open Space Technology will be used extensively during phase 2 (see annex).

- Remote group work : Online networking
The partnership has created an intranet platform to facilitate direct exchanges among the project's members, which should be transfered to the Urbact intranet at the beginning of the 2nd phase.
It plans to extend it to permit all ULSG members to work as a european community of local actors.

Conclusion

I would like to conclude expressing my thankfulness to the highly motivated members and local partners of this incredible LINKs european team, who, in their own city daily work, as well as during all the –direct & remote- occasions of interaction offered by URBACT, have contributed in a very professional way to achieve this first step of the journey we all expect to keep sharing, in search of the keys to Future-Proof Historic Centres.

Raphaël Souchier
Lead expert, the LINKs Network


WG1 Social challenges
WG1 Urbanistic challenges
WG1 Technical challenges
WG1 Economic challenges
WG5 Governance challenges
From Work Groups to Final Conference
The Co-creation Process
Online Data base & minisite
Newsletter
Ongoing remote european Work Group collaboration
Guidelines for Eco-Restoration in Historic Centres
Best practices & other oututs
Policy recommendations
Baseline study Questionnaires Local & National data
Choice of themes, Goodpractices, Pilot Projects Expertise
Thematic european meeting
Meeting synthesis
Final conference
Team building & Theme choice
Active Learning & Exchange
Capitalisation & Dissemination of results
Ongoing ULSG local work

Part D : Annex

Annex

1. Good Practices
2. Pilot Projects
3. National, regional & local policies

Annex 1 : Good practices

A first selection of quality local practices contributing to the exchange of experiences and future identification of best practices.
Some additional Good practices may be identified to this list during the 1st part of the 2nd phase.

Annex 2 : Pilot Projects

A series of projects that will be researched and implemented locally by LINKs partner cities during and after the project. They will constitute a concrete basis for the LINKs action-learning experience.
Some additional Pilot projects may be added to this list during the 1st part of the 2nd phase.

Annex 3 – National, regional & local policies and Eco-restoration in the 10 countries of the LINKs project

Country	State of transposition of EU directives at national level	Existence of more constraining national/regional regulations	Existence of specific regulations targeted at renovation of buildings	Existence of specific regulations targeted at historic sectors/buildings
France	EU directive 2002/91/CE has been transpose in french regulation throught the Climat Plan 2004, mainly with RT 2005 (Décret n°2006-592 du 24 mai 2006)	None.	« RT 2005» can be globally implemented on existing building (order of 3rd may 2007) for the renovation of existing building > 1000 m², built after 1948 and for thermal renovation exceeding 25% of the value of the building. For other existing building (except heritage buildings) the regulation is implemented element per element.	Protected historic buildings are not concerned by thermal regulations.
Greece	Law 3661/2008 which implements the European Directive 2002/91. Applied to all new buildings and old while rehabilitated.	None for energy consumption	All buildings to be renovated follow the law 3661/2008 as well	Historic buildings are excluded from energy saving regulations
Netherlands	For new houses only an energy label is obligatory when owners buy the house.	The Dutch building regulation (Bouwbesluit 2003) sets rules for the required isolation level, ventilation, daylight, security etc.	Bouwbesluit 2003 also sets rules for the required level of renovation of existing buildings or historic buildings.	For listed buildings (according to the Monumentenwet 1988) the Bouwbesluit 2003 gives the possibility for an exception to the rules concerning the degradation of monumental values.
Eire	Buildings Energy Rating (BER) legislation introduced in 2009 requires BER certification for all public buildings, buildings for sale or rent. Building Regulations 2005 (Department of Environment, Heritage and Local Government 2005)govern efficiencies in all buildings including conservation buildings. They also partially transpose EU Directive 2002/91 into Irish Law. The Planning and Development Act (amended) 2010 will complete this process.	None	Technical Guidance Document L of the 2005 Planning Regulations give guidance to the owners/ custodians of historic buildings in developing energy conservation measures.	Part IV of the Planning and Development Act 2001
Spain	The Directive 2002/91/CE, integrated in: ROYAL DECREE 314/2006, March 17st, TECHNICAL BUILDING CODE (Código Técnico de la Edificación) The Directive 2006/32/CE, was integrated in: ACTION PLANS FOR THE STRATEGY OF SAVINGS AND ENERGY PERFORMANCE IN SPAIN, aimed at achieving an energetic national saving of 9% in 2016: 4 ACTION PLANS OF ENERGY EFFICIENCY (PAEE)2005->2016 PLAN OF ENERGY SAVING: (31 indicators)	None	None	Municipal Regulation of subsidies to the private rehabilitation (co-financed with regional -Andalusian- funds, ORDER of November 10th, 2008, of development and processing of the actions in housing and soil of the Compound Plan of Housing and Soil 2008-2012.) Regulation of the public grants by the municipality of Almeria for the promotion of the rehabilitation of buildings (protected and not) in the historic center. Types of actions: Works of repairs of the facades 2. Works of rehabilitation: conservation, consolidation and restoration.
Germany	Transposition into Energy Conservation Regulations (EnEV)	VwV Städtebauliche Erneuerung (BMVBS) State supporting Programme « Beschäftigungssicherung durch Wachstumsstärkung » 2009-2011	Investment pact to improve the energy efficiency of schools, kindergartens, gymnasiums and other social buildings in municipalities (BMVBS)	„Good Examples Gute Beispiele im Städtebaulichen Denkmalschutz 2006 Heritage Saving Act (Denkmalschutzgesetzt) Verwaltungsvorschrift Städtebauliche Erneuerung - VwV (StBauE)
Romania	Transposition into national law of EU directives – Law no.372/2007	We have a national methodology for buildings energetic performance calculation	We have national law – law no.10/1995 The buildings energetic reabilitation solutions are given by professionals having national attestation.	For historical buildings any intervention needs the approval of historical monuments departments at local or county level.

Annex 4 – National, regional & local policies and Eco-restoration in the 10 countries of the LINKs project (Ctd.)

Country	State of transposition of EU directives at national level	Existence of more constraining national/regional regulations	Existence of specific regulations targeted at renovation of buildings	Existence of specific regulations targeted at historic sectors/buildings
Italy	The EU Directive 2002/91/CE was integrated in the D.L (Legislative Decree) 19/08/2005 n. 192 , and in the subsequent D.L. 29/12/2006 n. 311, "Corrections and integrations to the D.L 19/08/2005 n. 192", in force since 02/02/2007. The EU Directive 2006/32/CE was integrated in the D.L. 30/05/2008, n. 115/2008 .	The D.A.L. (Resolution of the Legislative Assembly) n. 156/2008 of the Region Emilia Romagna strengthens the national legislation regarding summer air-conditioning and renewable energy sources. Emilia Romagna is currently one of the few Italian regions with specific regulations on the Energy Certification of Buildings.	The regulation requirements apply entirely to the following intervention typologies: Demolition and reconstruction of existing buildings; Total renovation of existing buildings with habitable surface > 1000 sq metres; Extensions with heated volume > 20% of the existent. There are specific requirements concerning the renovation of existing buildings for the following intervention typologies : Extensions with heated volume < 20% of the existent; Total or partial renovation of existing buildings with habitable surface < 1000 sq metres; Major maintenance of the building fabric; Loft conversions; New heating systems or renovation of existent. National Fiscal Act 2008 introduces 55% fiscal deduction for building retrofit investments (double glazed windows, solar thermal, panels, ground heating, condensing boilers, geothermal heat pumps, …)	The requirements of the national and regional regulations do not apply to listed buildings (of historical-architectural value), according to the D.L. 22/01/2004 n. 42, and the appendix to the L.R. (Regional Law) 20/2000 of the Emilia Romagna Region. Energy efficiency interventions in Historical buildings are regulated by Municipal Rule (or the new RUE – Municipal Urbanistic and Building Rule, adopted by several Municipality on the basis of the new Urbanistic Law). Every intervention in historical buildings must also be approved by the Provincial Heritage safeguard Body.
Belgium	PEB directive was transposed in brussels law (PEB ordinance). It creates a new reglemntation to obtain more energetically performing buildings offering also a better inner climate. Its concetrns both new buildings. And renovations.	None	Plan régional pour l'innovation: environnement Plan de Développement International Contrat économie et emploi, création du Centre de Référence pour stimuler l'offre de formation en éco-construction PRAS (plan régional d'affectation du sol) PRDD (en cours de préparation) Plans environnementaux (eau, climat, déchets, bruit) et initiatives (PEB, toitures vertes) Objectif: Bruxelles - Capitale écologique de l'Europe Ordonnance et arrêtés PEB Plan pluie RRU :Toitures vertes obligatoires pour nouvelles constructions avec toiture plate inaccessible > 100m2 50% de surface perméable minimum (zone cours et jardin) pour constructions neuves Zone de recul aménagée en jardinet et plantée en pleine terre. Citerne récup.eau de pluie obligatoire pour toute construction neuve (avec capacité minimum) NEHAP (plan santé national) et ambulances vertes régionales Volonté de certaines communes de réaliser leur propres projets en éco-construction Déclaration gouvernementale et engagements des pouvoirs publics (passif/basse énergie en 2015)	None
Portugal	The Directive 2002/91/CE, integrateted in DL 78/2006 and DL 79/2006 (regulation of Energetic Systems of climatisation of buildings)	None.	The regulation of Energetic Systems of climatisation of buildings only specifies great works of rehabilitation.	None - Buildings in Historic areas and listed buildings can be exempted in the regulation of Energetic Systems of climatisation of buildings.