Workshop in VERIA
24th-26th of Mai 2011

Thematic workshop dedicated to the technical aspects of eco-restoration

Synthetic report

24-26th of May the partners of the LINKS network gathered in VERIA (Greece) for the third thematic workshop of the implementation phase. After a workshop dedicated to urban challenges in European historic centres (Freiberg – Sept 2010) and a thematic workshop dedicated to citizen participation (Almeria – Feb 2011), this workshop was dedicated to the technical issues of eco-restoration of the built heritage and to the necessary balance between conservation and evolution.

Introduction — The INS & OUTS of the meeting

Conservation, restoration and reuse of the urban heritage can play a key role in the sustainable development of our cities provided that historical buildings meet the challenges of future needs, in particular regarding their energy performance… Indeed, it is time to solve the conflict between heritage conservation and sustainable development. To do so, it is necessary to understand :

- the **characteristic and intrinsic qualities of historical buildings**
- the **relevant strategies and tools** to enhance these qualities
- the **best technical solutions to improve their energy efficiency**
- the role that can be played by **technology in the eco-restoration processes**
- if it is appropriate to introduce micro generation of **renewable energies in protected buildings**

These are the issues on which partners of LINKS exchanged their experiences and illustrated their good practices trying to establish a common platform for their future Local Action Plans.




During this workshop, the LINKS partners had the opportunity to benefit from the knowledge and experience of guest experts: **Professor Job Roos** from the Technology University of Delft, **Professor Ioanna Papayanni** from the Thessaloniky University and **Professor Aris Tsangrasoulis** from Thessaly University. Their participation provided the workshop and the discussions additional experience, new perspectives and valuable feedbacks on the work done so far.

Workshop in VERIA
24th-26th of Mai 2011

Future-proof historic centres Links

Content | **Agenda, preparation and context**

24th of May "KNOWLEDGE"	25th of May "SHARING KNOWLEDGE"	26th of May "ACTION"
What do we have to know about ancient buildings to restore them and to improve their energy efficiency, respecting their intrinsic qualities, both cultural and environmental?	**What are the lessons of the different case studies carried out by LINKS partners?**	**Local Support Groups and Local Action Plans, the core of URBACT II methodology.** What is the current state of play of the network partners activity at a local level
Nicolaos Mavrokefalidis, President of the Municipal Council – Welcome speech *Nikolaos Ousoultzoglou,* representative of the Chamber of Small and Medium Size enterprises of Imathia, Welcome speech *Kalogirou Artemis and Stella Sidiropoulou: introduction to the premises of the workshop "The Sarafoglou Mansion" -* *Vilma Mavromatidou*, Architect, representative of the Association of Architects of Imathia Prefecture, Introduction to the workshop *Frédérique Calvanus*, Lead Partner Heritage "Conservation and eco-restoration: a chance for one another." *Kleopatra Theologidou*, Architect, LINKS Coordinator in Veria, "LINKS and the challenges for VERIA." Prof. *Job Roos* (TU Delft) : Key note speech "Looking for balance", *Antonio Borghi,* Lead Expert, "Methodological introduction for the analysis of historical building needs" Dimitris Trochopoulos, architect, Update on the activities at local level "What do the citizens think about the historic centre of Veria". Presentations of the results of a questionnaire *Prof. Ioanna Papayianni* : University of Thessaloniki): "The pathology of the historic structures in Veria in the context of a holistic approach for eco-restoration and the work programme within the frame of LINKs" Prof. A.*Tsangrassoulis, K. Drakou, architect,* University of Thessaly: "Investigation of the occupants' behaviour and satisfaction with the indoor environmental conditions in typical historic buildings in Veria.	Field visit in the historic centre of VERIA *Kleopatra Theologidou: Presentation of case study "Transformation through History: the Markou Watermill in Veria and its conversion to Byzantine Museum"* *George Oursouzidis, Presentation of case study "The restoration of the Ractivan building and its transformation into the City Hall of Veria"* *What are the lessons of the different case studies carried out by LINKS partners?* *Analytic presentation of different case studies :* • Budrio (Water Tower and Theater), • Anderlecht (Rue du Pretoire), • Bayonne (22, rue Bourgneuf), • Freiberg (Nullenergiehaus), • Delft (De Witte Roos) • Almeria (Cinéma House) *Parallel roundtables on the above presentations and the problems of a balance between the values of the historic buildings and the modern needs with focus on their energy performence*	Site visit at the Ancient city of Aigai Exchanges of methodology and local experiences. ***Antonio Borghi "Guidelines for drafting your Local Action Plan"*** ***Presentation and discussion of Local Support Groups and activities carried out so far by the partner cities*** ***Report on external activity by Lead Expert Antonio Borghi "Value Creation and New Business Models by Energy Efficiency measures in Historic Buildings" International expert seminar on May 13, 2011 in Koblenz in Fortress Ehrenbreitstein***

Workshop in VERIA
24th-26th of Mai 2011

Future-proof historic centres Links

Primary results of air tightness test in Chatzikou House"
Pouria Shoeibi: Presentation of the case study "Ecole Vétérinaires in Anderlecht"

Preparation and context of the meeting

The workshop was preceded by an intensive preparation carried out by the ad-hoc "Work group techniques" lead by the city of Delft and supported by the cities of Veria, Bayonne and Anderlecht.

To introduce the Case study "Red Chemistry" and support the workshop with its professional experience, the city of Delft invited prof. Job Roos, who participated with interest and engagement to every phase of the workshop.

The workshop took place in the **mansion house Sarafoglou** in the heart of Veria's historical city, a building that has turned out to be exemplary both for its historical value and low-tech modern comfort. The experience of the mansion house Sarafoglou, with its semi-open mezzanine floor, the green court and the many different uses that it hosted over the centuries played a significant role to establish what prof. Roos defined "*the positive chemistry of our meeting* ".

Workshop in VERIA
24th-26th of Mai 2011

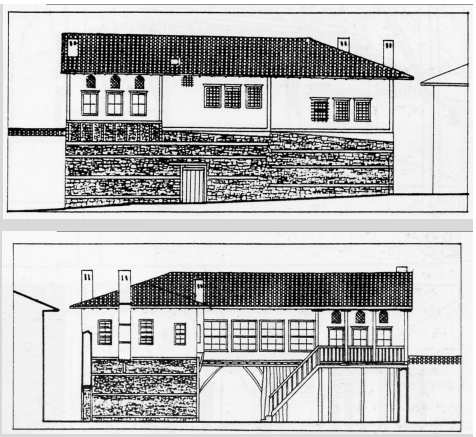
Future-proof historic centres Links

Content Subjects, discussion and first conclusions

Day 1 - ***What do we have to know*** ***about ancient buildings to restore them and to improve their energy efficiency, respecting their intrinsic qualities, both from cultural and environmental point of view?***

Welcome speeches by the organizers and local stakeholders were more that just a formality: they described extensively the situation of **a city with great heritage asset and dramatic lack of means to preserve them adequately**. Reasons for this situation are to be found, among others, in the general economic situation and lack of funds and motivations and in the bureaucratic burden connected to restoration works rather than in the technical challenges. Nevertheless a number of well restored historical buildings were visited, showing a great deal of efforts in preserving cultural property on one side and a lack in information and proper assessment methods regarding their energy performance on the other.

Ground floor of the Sarafoglou Mansion house during a guided visit by school pupils



Elevation on the street and on the courtyard

To read the welcome speeches and the introductions to the workshop,

Nicolaos Mavrokefalidis, President of the Municipal Council,

Nikolaos Ousoultzoglou, representative of the Chamber of small and medium enterprises of Imathia,

Vilma Mavromatidou, Architect, representative of the Association of Architects of Imathia Prefecture,

Kalogirou Artemis and Stella Sidiropoulou: introduction to the premises of the workshop "The Sarafoglou Mansion"

Workshop in VERIA
24th-26th of Mai 2011

Future-proof historic centres Links

How can we solve the conflict between heritage conservation and sustainable development?

For a long time, heritage conservation and energy efficiency have been considered conflicting objectives. Stakeholders of heritage conservation were very reluctant to implement thermal regulations, because, implemented without discernment, they can lead to an irreversible loss of authenticity and historic value.

Nevertheless, the demands of citizens today, in particular in terms of the thermal comfort and energy efficiency of their dwellings are increasing. Considering the importance of these social expectations, opposition to evolution could also lead to a loss of cultural heritage and identity, loss of attractiveness and economic stagnancy.

The question partners are committed to address within the project LINKS is : **How can we manage the right balance between the preservation of built heritage and the sustainable, future proof development of historic towns ?** An abundant and recent literature pointed out how eco-restoration practices can be a chance for the conservation of ancient buildings, thanks, among others to their natural hygroscopic and breathability qualities.

The maintenance and reuse of the historic fabric, in particular of historic buildings contribute to the efficient handling of natural resources through:

1/ Reducing the need and consumption of new materials,
2/Reducing land consumption
3/ Securing the compact city (th city of short way,sreducing transport ways and less commuting)

In addition, recent studies have proved the fact that **many historic buildings already feature a high energy-efficiency profile.** This is not a surprise to some experts, but quite unexpected for many people and above all, it remains difficult to be scientifically assessed, due to the deficiencies of current assessments methods

What still recently was considered as conflicting values, conservation of heritage and environmental sensitiveness, are now seen as two faces of a same coin and matchingtogether to contribute to the sustainable future of historic centres.

Workshop in VERIA
24th-26th of Mai 2011

Future-proof historic centres Links

LINKS and the challenges for VERIA ?

Why does Veria participate in LINKs program? Which is the added value and which are the benefits?

In Veria, there is not anymore a distinct and coherent historic center. There are small parts, neighborhoods, maintaining their traditional character, which are scattered and disconnected from each other. But like in all historic centers, the municipality has also to face problems related to private car's circulation and accessibility issues, problems associated with safety, quality of public space, and in general problems related to the quality of life of citizens. **The challenge is to transform the city centre into an attractive place where everybody would like to live and work.**.

A proposal of environmentally friendly interventions to restore the continuity, taking advantage of the knowledge and experience developed during the collaboration with LINKS'partners could be based on different options, such as:

- The creation of a network of pedestrian zones that will connect these areas
- The creation of green walks-routes with appropriate plantings
- The creation of water routes, in a symbolic way, inspired by the role the water played in the daily life of the citizens in the past and the strong relationship of the city to the water in general
- Or maybe even the combination of all measures above in a balanced relationship

A second key issue, which has already been dealt in LINKS' previous meeting in Almeria, is citizen's and mainly resident's participation. It has been a common problem as all partners believe that active participation of residents and their consensus is a prerequisite for the effectiveness of any interventions and actions. In this context, the municipality of Veria has already started a first attempt to discuss with residents in listed areas. Mr. Trohopoulos is expected to present and analyze the first results of this contact, which is planned to continue and involve a larger number of people with different characteristics, including citizens, potential residents or users of the historic center, in the aim to mobilize local forces. In this effort tools and experiences gained through the cooperation and participation in the LINKs project.

Coming to the main theme of the meeting in Veria, associated with the techniques, the difficulties to balance conservation requirements and evolution needs have been experienced and have led, in conjunction with other factors, equally important, to the contemporary form of the historic centers in the country, the **devastation of a large number of listed buildings** and their **poor state of preservation** today, which involves extensive reconstruction and **loss of authenticity**.

To use knowledge and best practices that could result in recommendations and guidelines, which will ensure comfortable living conditions in the historic buildings and at the same time will protect and preserve their values, values that differ from building to building, is a challenge the results of which could have an important impact not only locally but in a wider geographic area with buildings of common characteristics to ours.

How is the situation today in Veria?

Just a few decades ago, Veria had a completely different image with a completely different potential. Its image today varies and we could characterize it disappointing when referred to its architectural heritage.

Workshop in VERIA
24th-26th of Mai 2011

The historic buildings in Veria could be classified into 2 main categories: The older ones which follow traditional patterns and the later influenced by different architectural styles at a European level. Of course, in between, there are many variations and transitional types.

The current state of preservation of these buildings, their thermal behavior and needs are very different from one category to another.

Typical traditional house of the historical city centre

Well renovated building complex

Dilapidated building in the city center

The knowledge we have about their energy performance, comes mostly from experience by living in them – the sense of comfort - and is not scientifically documented. We are planning to work on these issues in the context of LINKs, and promote relevant techniques that will respect their character as historic buildings and at the same time will improve their energy behavior. To achieve this, we are also collaborating with two universities, the Aristotle's University of Thessaloniki and the University of Thessaly.

The transmission of knowledge, one more important theme of LINKs, is also one of the central issues of our participation to the Program. Among other actions in the context of Veria's participation, the creation of an Office for the information and support of citizens will be proposed as a pilot project- an action for which the Association of Architects of Imathia showed particular interest for collaboration. Veria is also examining the possibility to elaborate actions that will mobilize the whole pyramid of the construction sector and also examining dissemination tools, which are themes to be included in LINKs program.

By participating to the LINKs program, the municipality of VERIA seek to produce an action plan for the eco-restoration of the historic center that will transform the problem into an asset, that will convert Veria to an exemplary city, a city of innovation, like some of our partners already have launched, in the context of the characteristics and the potential of their historic center. A city, environmentally friendly as well as friendly to its citizens, thus contributing to the improvement of the quality of life, local development and the revitalization of the local economy.

Workshop in VERIA
24th-26th of Mai 2011

Future-proof historic centres Links

Methodological introduction for the analysis of historical building needs in their context
by Antonio Borghi

Our cities and our buildings never remain the same. The very fact that their context is changing changes the buildings and their meaning as well. In a sense conservation of heritage and sustainable development are two faces of the same coin.

We have to look after historic buildings and urban fabrics like we have to do for natural resources: not only for ourselves but for those who come after us. Built heritage and historical urban fabrics are one of the most important assets of our cultural heritage, they are our cultural footprint on heart.

Before we start thinking about the restoration project, we have **to learn as much as possible about the building**. What is its history? How has it changed over time? Later alterations or even damages may be important too and evidence that the building has had hard times, it has been cared for and adapted over the years with each generation adding its own layer.
Having a respectful and thoughtful approach, the outcome of the restoration project can be very different. (a) Maintaining the building as much as possible as it is, with its damages witness of the times (see as examples the Neues Museum in Berlin and Palais de Tokyo in Paris). Bringing the building back to its original status (as it was done for theTeatro La Fenice in Venezia and Frauenkirche in Dresda). Transforming the existing building or urban fabric into something radically different (the case of the Opera House in Lyon and the Grazer Kunsthaus).

Neues Museum in Berlin (Friedrich August Stüler 1851, David Chipperfield 2009)

Palais de Tokyo in Paris (Dondel, Aubert, Viard and Dastugue, 1937, Lacaton & Vassal, 2001)

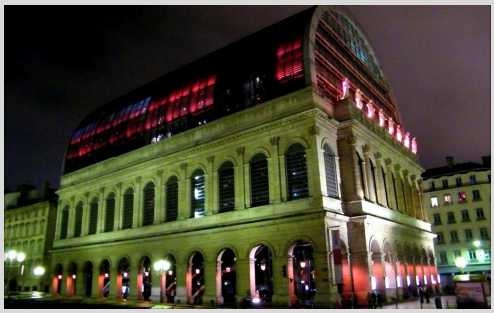
La Fenice di Venezia (2003)

Frauenkirche in Dresda during DDR times 1945-1990

Frauenkirche in Dresda rebuilt in 1996

Workshop in VERIA
24th-26th of Mai 2011

Future-proof historic centres Links



Operahouse in Lyon (1831-1993)

Grazer Kunstahaus (2003)

Different steps to be taken by the owner/responsible of the building can be discussed and fine tuned:

a. Do understand and double-check the reasons for the problems to be solved before undertaking any kind of repairs.
b. Do repair the parts of the building that need it - do not replace them unless they can no longer do the job they were designed to do.
c. Do make sure the right materials and repair techniques are used and that even the smallest changes you make to the building are done well.
d. Do use techniques that can be easily reversed or undone. This allows for any unforeseen problems to be corrected in future without damage to the special qualities of the building.
e. Do record all repair works for the benefit of future owners.
f. Do use expert technicians and skilled workers - get independent advice from the right people and double-check the references - you can't go wrong!

Architects, engineers and technicians involved should:

1) Consider the micro-climate and respond as appropriate: take advantage of the sun, create protection from the wind and keep buildings well-maintained and dry.
2) Ensure the nature of use is suitable for the building as a whole or for particular rooms within a building. In some cases, it may be appropriate to re-arrange the locations of activities within a building.
3) Control the impact of the renovation works: make clear what's new and be sure that it fits to the existing building or hide it in a clever way.
4) Evaluate the energy requirement in the context of embodied energy and life cycle costs.
5) Understand why and where heat is lost. Recognize energy-efficient design features in traditional buildings and endeavour to retain and improve these features.

Common mistakes to be avoided by the owner/responsible of the building are:

a. Do not exaggerate - only do as much work to the building as is necessary and as little as possible
b. Do not look at problems in isolation - consider them in the context of the building as a whole.
c. Do not use architectural elements or materials from elsewhere unless you are certain that the taking of the materials hasn't caused the destruction of other buildings or been the

result of theft.

The principle of minimal intervention should apply when undertaking works to upgrade the energy efficiency of a historic building. Retain and repair the existing fabric of the building rather than replace it.

Prioritise the order in which building elements are to be upgraded, taking into consideration both the character of the historic fabric and the upgrading works which will provide the greatest energy savings when compared to the investment costs.

"Planning energy efficiency improvement for existing buildings should be made according to a priority list, where the simplest measures with the lowest consequences should be implemented first." (Terje Nypan)

In general, for a traditional building, the priority order will be as follows:

1. Draught proofing of existing windows and doors
2. Repair of shutters and fitting of curtains
3. Installation of one more layer of windows inside or outside (instead of replacing the existing windows)
4. Insulation between heated space and cold loft
5. Insulation between heated space and cold basement.
6. Replacement of outdated services with high efficiency units and updated controls
7. Wall insulation

Follow the principles of passive design when making any modifications. If constructing an extension to an existing building, take full advantage of passive design using this new addition to incorporate elements such as micro-renewable, which can serve both the new and old parts of the building. However, bear in mind that it may not always be appropriate or practical to add to the older building.

To read ***Antonio Borghi,*** Lead Expert, Methodological introduction, click here.

"Looking for Balance" *by Professor Job ROOS from the Technical University of DELFT*

For Professor ROOS, sustainability has to do with balance, in fact active balancing. As an architect, Job ROOS does not feel as an autonomous author, but like a co-author with time, and he feels 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 fulfill this complex task that requires so much knowledge that one single person can never have, it is time for team-work to find the balance in design between past and future in a cultural-driven way.

But not only! It should be also a balance between eco and social drivers. Because building is about our future and the challenges we meet today are huge. The complex balancing could be compared to a sensitive neural system which makes our body function: the result goes without saying. For a thorough re-use applied sciences are needed for an integral approach.

Technology should be explained in terms of underpinning the design task. Pr ROOS prefers to the definition of technology to: "the total of processes needed in knowledge and processes resulting in

products and services for societal needs". So we should leave the one-sided and hard technical side and choose for the approach in which both alpha and beta processes are involved such as culture and ecology.

For Pr Roos, ecology has to do with balance, now still often neglected in the design process often disturbed over the various scales, like F.I. on the urban scale only where inner cities just remain as tourist's focus. Ecology is the science that matters about balance between living organisms (people) and their environment or the mutual relationship between biological and a-biological elements on different scale.

This is a pretty subtle and even a nice metaphor for architecture, if you add at least social and cultural aspects.

Main question: **How can we be on control in the transformation processes, to weigh and balance social, cultural and ecological needs?**

What are the incentives and constraints, what are the opportunities?

In his book "Discovering the Assignment", Pr ROSS made an attempt for a theoretical framework on methodology, which resulted in a model of thought.

To illustrate the approach developed in *"The discovery of the assignment through an integral approach""* Pr ROOS presented the story of BK-CITY, the name of the new accommodation of the Faculty of Architecture of the TU Delft in the "red Chemistry", a huge listed monument in the heart of the former campus". This required a tremendous transformation of the building, in a complex design task to balance social needs and eco-needs. An extremely interesting and original project which is still in progress.

The faculty of Red Chemistry

Birds eye BK-City

Workshop in VERIA
24th-26th of Mai 2011

"The pathology of the historic structures in Veria in the context of a holistic approach for eco-restoration and the work programme within the frame of LINKs" by *Prof. Ioanna Papayianni* (University of Thessaloniki, Dept. of Civil Engineering)

The historic buildings of Veria could be categorized (according to their style) into these of vernacular architecture, which have been developed in the recent past in South East Europe and in those of neo classicism or eclectic architecture (Fig. 1).

Fig. 1. Typical old structures in Veria

Most of historic buildings have been abandoned and destroyed by overloading and earthquake vibrations, as well as by the ageing effects due to moisture and other deterioration factors of the environmental conditions. Some of them have been repaired and retrofitted with concrete, very often without any respect to their characteristics of traditional structures.

The importance of the proper repair and maintenance, as well as their revival and incorporation into the modern city, for the benefit of historic buildings, society and local economy has been well defined in the frame of URBACT project.

Therefore, developing a strategy for the repair, maintenance and upgrading of historic buildings, which will be based on the well established principles of restoration is of first priority, for their incorporation into the contemporary plan of the city (Veria). Furthermore, an estimation of their energy efficiency is required to make them habitable again. As known [1], **the old buildings are inherently green,** because they were designed to be climatically appropriate. However, climate has changed, especially in urban regions and energy efficiency of an old building is questionable.

Pathology of historic buildings

The survey reveals that they often suffer from (Fig. 2):

-Intensive cracking because of their inadequacy to overloading or earthquake vibrations.

-Bulking damages or detachments of external or internal walls from the roof level.

- Inadequacy of horizontal wooden frames by which the walls are connected.

It should be mentioned that moisture is the main deterioration factor in particular for earth buildings. Wet-dry cycling results in swelling and pulverization of earth blocks or renders.

Fig. 2 Common damages of old structures in Veria

The diagnosis of the pathology of an old building

To record the pathology, the following steps should be followed:

Visit the building and make a survey of the pathology symptoms by taking photos, making visual observations and non destructive measurements. It's very useful to fill a specific card with which a data base will be fed.

Pieces of information taken from survey:

- Recognition of the bearing skeleton and description of the structural system of the building
- Problematic areas which need urgent support
- Main damages and problems of neighbor areas
- Draft estimation of the sources of the problem
- Description of the original materials and materials used in previous repairs

The analysis of materials

For repairing with compatible materials it is necessary to [2]:

- Sampling materials following specific instructions (Fig. 3)
- Analyzing materials and making measurements of their mechanical characteristics in order to find their compositions and their residual mechanical characteristics
- Estimating the strength capacity of the structural elements. Sometimes, measurements concerning the ground stability may be necessary
- Selecting the suitable software and feeding with the existing strength characteristics
- Analyzing the building to find the static stability of it, taking into account the defined (in the relevant Code) seismic coefficient of the area

Fig. 3 Taking samples from an old building in Veria

Repair of old buildings

Apart from the existing materials other parameters also play role in repairing:

- Decide about retrofitting of the building taking into account the reuse of it

- Recording the pathology on the designs and give priority to necessary intervention works (Fig. 4)
- Select repair material for a compatible intervention based on the characteristics of the existing structural materials.

The selection, design and application of repair materials for the intervention on historic buildings are still a problem, because:

- Traditional Materials are not easily found at the market
- Contractors and technicians are not familiar with these materials
- There are no regulations
- Testing these materials is also difficult

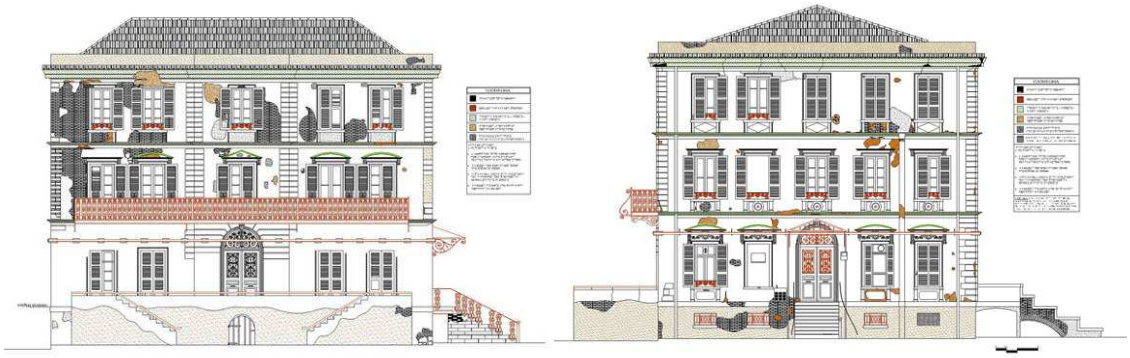


Fig. 4 Indicative map of pathology of a historic building in Thessaloniki

Pathology of Historic Buildings in eclectic architecture

The structural system is consisted of (Fig. 5-6):

- Foundation: stone masonry
- Basement: stone masonry with or without renderings.
- Masonry mortar: lime based mortar
- Floors: A frame of wooden or metallic beams with ceramic or wooden material.
- Walls: Fired brick masonry with lime based mortars compact or hollowed bricks.
- Roof: Usually wooden net covered with tiles.

They are characterized by their thick renderings and decorative elements made with mortars of specific technology.

Fig. 5 Details of old structures in Veria

Fig. 6 Structural members of old building in Veria

The most common damages are:
- Settlements of foundations and cracks of the upper structure (Fig. 7)
- Transverse cracks at the corners of openings in the masonry walls due to inadequacy to previous loads
- Damages of the floors due to the deterioration of the wooden beams, so as they do not work like a diaphragm
- Detachments of the corners of the masonry due to many reasons such as corrosion of metal beams (Fig. 8)
- Detachments of renderings and plasters

Fig. 7 Damages of external walls of an eclectic old house in Veria

Fig. 8 Detachments in old building due to corrosion of metallic element

Characteristics of building materials

The Laboratory of Building Materials AUTH, has created a data base in which all analyzed materials have been uploaded. It is useful to present some values concerning the materials:

- Stones (often shaped at the corners): Local stones from nearby deposits. Chiseled or not are connected with mud or lime based mortar
- Bricks: Compact or hollowed. dimensions: 5x10x21-25cm Strength capacity: 15-20MPa
- Masonry mortars: Lime-based or lime + mud mortars (joints about 1 cm). Compressive strength around 0.5-1.0MPa
- Renderings: Very thick lime based mortars with coarse sand which have been applied in layers with specific technique (travicto). Skillful technicians managed to produce facades and pillars resembling marble.
- Plasters: Lime-based mortars with fine sand and addition of nature fibers (chopped straw, wooden fibers, animal hair)

Fig. 9 Brick and mortar from an old building of eclectic architecture

Fig. 10 Characteristics of materials of old neo-classic building

Pathology of Earth block structures

Although there was long term experience in constructing with earth in the past (Fig. 11), this tradition has been lost and the revival of existing earth block buildings seems to be very difficult, unless the strength capacity of earth blocks is improved.

Fig. 11 Earth block buildings in Greece

The structural system consists of:

- Stone masonry foundation and basement
- Wooden bearing system
- Mud brick masonry walls reinforced with wooden beams (tsatmas)
- Wooden floors
- In upper structure bagdati type walls are often projected
- Roof: Net of wooden beams covered with tiles

Fig. 12 Structural members of earth buildings

Fig. 13 Structural members of earth buildings (floor and bagdati)

The materials found in earth block structures are:

- Compacted earth blocks
- Mud mortar joints: made with local soils
- Plasters: mud mortars or lime-based mortars reinforced with natural fibers (Fig. 14)
- Renderings: usually lime-based or mud mortars (Fig. 14)

Fig. 14 Coverings of earth buildings

The common damages of mud-brick masonries (thickness 50 – 100cm) can be said that are of two types. These which concern the surface of the walls such as:

- detachments of plasters or renderings due to moisture
- scratching or loss of materials due to abrasion
- pulverization of the surface due to the action of frost or salts crystallization
- presence of insects

Investigation of the occupants' behaviour and satisfaction with the indoor environmental conditions in typical historic buildings in Veria. Primary results of airtightness test in Chatzikou House by Katerina Drakou and prof. Aris Tsangrasoulis, (University of Thessaly)

Under the scope of the improvement of the energy performance of traditional houses, providing at the same time thermal comfort to the occupants**, it was considered necessary to evaluate first their current indoor environmental conditions from the occupant's perspective.** As building occupants interact with the building envelope and its systems in order to satisfy their needs for comfort, this interaction can either benefit the maximum from the sustainable design techniques of the building or result in higher energy consumption due to lifestyle choice. Moreover, user behaviour significantly affects energy consumption simulation estimates which in their turn influence the building design decisions. It is, therefore, important to take occupant behaviour into account when designing buildings, as different building construction techniques may be incompatible with regional behavioral patterns.

Since there is a lack of studies about user behavior in residential buildings in Greece, subjective surveys with the use of a questionnaire were carried out to investigate the behavior of occupants of traditional houses in Veria. The aim of the survey is to analyze the pattern use of manual control of windows, shading and air condition units and to investigate occupant's sensation, preference and satisfaction with regard to the indoor environmental conditions. The questionnaires were filled in during an interview with the occupant and they consisted of sections about building typology, ventilation, window size, view, indoor air quality (IAQ), thermal comfort, shading, daylight and use of cooling systems.

View of Chatzikou House

Interior of Chatzikou House

Workshop in VERIA
24th-26th of Mai 2011

To read Katerina Drakou's and prof. Aris Tsangrasoulis full presentation, click here

---

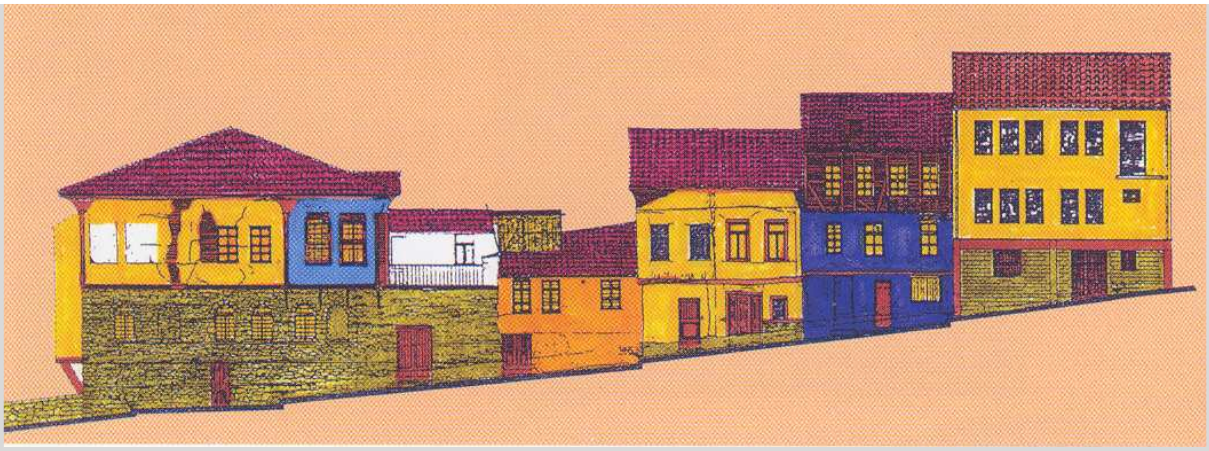
Case Study "Ecole des Vétérinaires in Anderlecht" by Pouria Shoeibi

Situated in Cureghem, near Brussels Midi train Station, the building of l'Ecole des Vétérinaires is the archetype of a suburb shattered by the de-industrialisation. This building dated from the 19th century presents a timber frame façade on the main street and a stone façade on the side lane. The European Fund ERDF and the Brussels 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 to incentive an eco restoration pilot project.

Day 2 - ***What are the lessons of the different case studies*** *visited in Veria and introduced by LINKS partners?*

The morning of the second day was dedicated to the visit and comprehension of Veria urban fabric with its numerous historical buildings of high symbolic value. Orthodox churches are so perfectly included in the urban fabric that in many cases you can hardly distinguish them, also due to the fact that most of them are in very simple forms and also not accessible (open to the public). Also many beautiful mansion houses, as well as vernacular houses of different building typologies are not accessible (what do you mean not accessible? Because they are private or due to their bad condition?), but the few visible give a clear picture of the eco-restoration needs and potential of Veria.

Workshop in VERIA
24th-26th of Mai 2011



Site survey drawing of a typical street front in the historical city centre of Veria

Anastasiou mansion house before and after restoration

Regarding Veria's specific issues the partners agreed on the impression that a lot of work has to be done to preserve the urban heritage and its cultural and artistic features, enhancing its potential for high quality residential environment and public space. The urban fabric is the result of the juxtaposition of the historical plan and buildings in time (often to be found at a lower level than the modern road level), on top of which a heavy layer of modern constructions have been realized since the sixties. The result is a fragmented and scattered urban landscape where the modern buildings prevail in quantity and volume in the urban landscape to the detriment of the overall quality of life of citizens. To achieve a new balance between old and new parts of the city a long term and integrated urban development strategy is necessary, promoting various action at the same time in a coordinated matter.

Transformation through History: the Markou Watermill in Veria and its conversion to Byzantine Museum *by Kleopatra Theologidou*

The field visit has also been for the partners the opportunity to examine a very inspiring case : the conversion the Markou Watermill in Veria to Byzantine Museum **by Arch. Kleopatra Theologidou**

Workshop in VERIA
24th-26th of Mai 2011

Future-proof historic centres Links

Transformation through history and adaptation of ancient buildings to new uses is a necessary procedure for their preservation in time. Different approaches are observed at an international level, relevant to the alterations made for their reuse. The complete respect to the fabric with minimum alterations on one hand and facadism on the other, define the borders between which these approaches are fluctuated. Detailed documentation of the building and its history is the necessary procedure in order to define the values of the building and determine the possibilities of alterations. Especially history, when dealing with buildings without obvious significance, is proved a precious methodological tool during the whole process of the conservation project. This procedure is described through a case study which regards the conversion of a watermill to Byzantine museum.

The internal space before the restoration works

The transformed mill to a museum

During the site visits and workshop many times the Links partners discussed with local stakeholders measures that seem necessary to improve the urban quality and accelerate the regeneration process. Summarizing the steps to be taken can be listed as follows:

(1) Survey and technical assessment of the present situation of historical buildings in a detailed map and data base of the historical city center.

(2) Avoid new construction both in the city center and at the edge of town and conversely encourage restoration and reuse of existing buildings by providing incentives and reduce administrative burdens.

(3) Improve quality of public space, lowering traffic load at least in the city center, increasing attractiveness for pedestrian and cycling in order to re-built connections among different parts of town that nowadays seem not to belong together.

4) Find new ways to disclose and exploit the enormous values hidden the historical city centers with a creative management of heritage.

(5) Reactivate traditional craftsmanship which is necessary to rehabilitate old buildings and boost local economy.

(6) Decrease administrative burden (and time) needed for approval of each rehabilitation project, without lowering quality standards.

(7) Use the chance of eco-restoration to increase economic value of historical buildings attracting investment with eco-incentives.

Workshop in VERIA
24th-26th of Mai 2011

Future-proof historic centres Links

Workshop *on the technical aspects of* ***eco-restoration*** of historical buildings

The afternoon of the second day of the workshop was dedicated to the discussion of technical aspects of eco-restoration of historical buildings. During the preparation the ad hoc working group Technical issues prepared and distributed a checklist of technical aspects to be dealt with and a case study format, an adaptation of the URBACT case study format specific for sustainable refurbishment and energy upgrade of historical buildings. Meanwhile during the first day the discussion was focused on the two main projects of BK City (Delft) and Ecole Veterinaire (Anderlecht), in the second day further case studies were introduced with short presentations by the representatives of the cities to feed analytic examination in 3 parallel roundtables.

Conclusions of the round tables can be summarized as following.

(1) The variety of context and approaches shown in the case study reminds us that **there can be no standard recipes for eco-restoration of heritage buildings**.

(2) Each project has to be carefully prepared according to a clear and shared methodology and take into account historical, architectural, technical, social, economic, financial and environmental features of the building in a **holistic approach**.

(3) Problems **cannot be dealt in isolation, but always in context**, since every single decision has manifold consequences also in other fields.

(4) The examination of the building in its complexity can only be made by technical experts **working together** with building owners or users and public authorities.

5) Lack of coordination between the actors (owner, public authority, professionals, end user etc) can only lead to higher costs and poor results.

(6) A good eco-restoration project **is the result of an iterative process** trying to achieve the balance between heritage conservation, contemporary and future needs following a comprehensive concept of sustainability that takes into account social, economical, environmental and cultural aspects.

Day 3 – ***From Local action to European exchanges … and vice versa***

Presentation of local processes of LINKS and basis for Local Action Plans

The morning od the third day has been dedicated to the visit to the exceptional archaeological site of Aigai, a treasure of stunning beauty and unique cultural value (UNESCO World Heritage Site) including Royal Tombs, among which the Grave of Philipus II, the father of Alexander the Great, and to a press conference chaired by the Major of Veria Mrs Charikleia Ousoultzoglou Georgiadi.

The press cutting following the press conference are available (in greek) here.

Workshop in VERIA
24th-26th of Mai 2011

The afternoon working session was dedicated to a survey of Local Support Groups activity and a presentation about guidelines for drafting the Local Action Plans. The activities of ULSG in the different cities showed a great variety of approaches to the given problematic and a large number of ongoing activities. The chance to put all these activities in the same format and discuss them in a peer review was welcomed by the partners who agreed to do it at the earliest possible stage on the basis of the first drafts of Local Action Plans. In the full report is included a synthesis of the ongoing activities by ULSG and in some cases a first draft of the Local Action Plan.