HABITABILITY OF HISTORIC URBAN AREAS

Rationale

The growing importance of culture is closely linked to recent economic development trends. Firstly, the increasing importance of CH in Europe is related to the evolution of societies away from traditional industries towards the service sector. Secondly, changes in lifestyle and growing leisure time create more demand for leisure activities, including culture. At the same time the human comfort is one of the main goals of the life. Both trends tend to encourage economically viable aspects of culture.

The city and village are probably one of the most important working places for the Construction Industry and an addressable market. Their urgent need for restructuring and re-qualification has already been observed everywhere in Europe. Knowing that these territories contain a significant quantity of existing buildings and monuments, the necessity arises to re-use them systematically as a basic support for restructuring the place. Re-use, upgrading and adaptation to new functions of historic buildings are a pre-requisite for sustainable development and for conservation of the historic environment.

The need to save energy and reduce CO2 emissions make it necessary to adapt our cities to mixed use (housing, services and working places in the same area), so that traffic movements are reduced. This means the historic centres of European cities have to be transformed to a better place to live, work and visit. This concept is also linked to the concept of improving the level of accessibility of our cities, as retail activities are literally flowing outside city centres, which threatened the sustainability of historic centres.

Many building assignments take place within the historic context of existing buildings, urban structures or cultural landscapes. Building in the historic context requires an attitude of architects and planners to be conscious of existing qualities in their plans and designs.

Apart from conservation of monumental values, the necessity of saving natural resources, without renounce of the reached human comfort, in general leads to a better re-use of existing infrastructures and buildings. Already approximately 80% of the buildings and structures of the future city are already constructed [reference?]. As a consequence of that, it is expected an increase of the activities of refurbishment and rehabilitation, representing, nowadays, about 40 % of construction activities. Historic buildings, c.q. monuments may perform an exemplary role. Research closely related to the process of intervention and transformation is necessary.

Further, Cultural Heritage is closely related to other economic activities, as tourism. As the conservation and transformation of CH buildings may be considered very knowledge intensive, the effective implementation of new and innovative

technologies will lead to an important economic impact, mainly related to the creation of new jobs. Further, a general change of the local image and the increase of visitors and activities related to them are economically important. Cultural Heritage is a key to the economic competitiveness of Europe, with €340 billion annual turnover and 8 million workers.

To promote the importance of the historic centres as key areas to improve sustainability, it is crucial now to ensure that the present requirements demanded by the citizens, in terms of habitability, that are usually achieved in new housing, are also reached by transformation of historic buildings and centres in historic areas. These requirements mostly refer to energy efficiency, accessibility, new functions and infrastructures.

In spite of the need to fulfil these requirements, the integrity and authenticity of Cultural Heritage buildings of these areas should be preserved, and, therefore, most of the solutions designed and used for normal buildings can not easily be applied in rehabilitation and/or refurbishment of historic buildings. On top of that, historic buildings are excluded from the Energy Performance of Buildings Directive 2002/91, and often any new opportunities for sustainable technologies to be included are constrained by legislative, social, technical and economic barriers. Nevertheless the conservation, modification, intervention and transformation of architectural and urban heritage in a broad sense need to become an important aspect of the architectural practice.

These old solutions and new discoveries developed mainly in a civil contest aimed to save energy and preserve our environment needs to be modified, improved and adapted for the particular needs of the immoveable and moveable Cultural Heritage.

The necessity to solve this conflict is restraining the potentiality of the historic areas as an ideal place to live, work and visit, and urgent research is needed to establish the means to determine habitability requirements and to design new (transformation) solutions able to reach them.

Technical content/scope

- Development of criteria and methodologies for the diagnosis and study of the accessibility and energy efficiency of historic buildings in historic cities. Analysis of the feasibility and identification of the barriers to undertake actions and include accessibility and energy saving solutions. The starting point for interventions is a sound assessment of the state of conservation of the building and its composing materials. The last implies also the possibility of a diagnosis of degradation processes taking place, as well as the availability of instruments to support this diagnosis
- Identification and design of new technologies, products, systems and solutions, compatible with immoveable Cultural Heritage requirements, to achieve efficient energy and accessibility rehabilitation of historic cities and

buildings. This includes façade architectural elements, windows, internal walls, tiles and roofs, renewable installations, etc..

- Modification, adaptation and improvement of the most recent discoveries (e.g. new materials) and technologies (renewable energy systems) applies to immoveable Cultural Heritage, to achieve at the same time a better conservation of moveable Cultural Heritage and a reduction in dependence on fossil fuels by re-using and recycling materials and installation of renewable energy systems
- Design new effective solutions for the use of renewable energies in Cultural Heritage buildings and historic cities, including green electricity, solar systems, etc.
- Development of new directives for the refurbishment and construction of conservation/exhibition buildings devoted to a better conservation of CH and at the same time the human comfort and a higher energy saving.
- Development of sustainability indicators and specifications to fulfil environment, energy and cultural requirements, in terms of energy efficiency and accessibility of historic urban areas.

Please contact us in:
Hellenic Construction Technology Platform
Emails: amoropul@central.tee.gr; amoropul@central.ntua.gr; akonsta@mail.ntua.gr