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Supporting urban regeneration and building refurbishment. Strategies for building appraisal and inspection of old building stock in city centres



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ABSTRACT

The University of Coimbra was granted World Heritage Status by UNESCO at the 37th session of the UNESCO World Heritage Committee in June 2013. Situated on a hill, overlooking the city, the University of Coimbra – *Alta and Sofia* grew and evolved over more than seven centuries into the urban area within the old city centre of Coimbra. Therefore, this acknowledgement is indissociable to the old city centre and to its authenticity as well as its integrity overtime. Urban regeneration and refurbishment of old building stock of the city centre of Coimbra is in this case a complex challenge and responsibility, necessarily requiring a master plan strategy for maintaining and improving the building stock to its functional levels, safeguarding its outstanding patrimonial value, resorting to a correct appraisal and inspection tools. The master plan for the urban regeneration of the old city centre of Coimbra is exposed and discussed in this paper, going into detail in respect to diagnosis and appraisal strategy and inspection datasheets with concrete examples. Results from such strategy bring forward a clear image of the conservation state and authenticity issues for the whole old city centre. Inspection and appraisal actions proceeds building pathology reports define retrofitting and conservation activities and aid estimate rehabilitation costs. This case study has been a benchmark for other urban renewal processes.

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1. Introduction and scope

Joint European Support for Sustainable Investment in City Areas (JESSICA) program is an initiative of the European Commission that supports sustainable urban development and regeneration. The program promotes sustainable urban development and regeneration by supporting projects in the areas from urban infrastructure to energy efficiency. Financial engineering instruments such as JESSICA are based on the provision of repayable assistance from the structural funds to investments, which should generate returns and in this way pay back investors. This instrument is a fundamental guidance tool for the urban regeneration process of cities

throughout Europe, characterized by advantages that allow partnerships, expertise, flexibility and leverage (combined sources of funding). This offers a more sustainable alternative to the assistance traditionally given in the past provided through grants. The acknowledgment of the University of Coimbra – *Alta and Sofia* as World Heritage is a strengthening motive for the whole old city centre of Coimbra to embrace a renewal and rehabilitation of the old building stock with respect for original building materials, architectural typologies and construction solutions. These two motivations are the catalyst for the thorough discussion brought to this paper on the strategies for the building appraisal and inspection practice of old buildings in city centres. The case study – old city centre of Coimbra – as could be seen in Fig. 3-1 is a neighbouring area of the UNESCO acknowledged area (*Alta and Sofia*), sharing typological and architectural features, therefore the strategy for preservation, conservation and retrofitting actions of both areas affects inherently and directly the other.

Safeguarding architectural valued building stock requires method, strategy and planning. The urban mesh defined by old buildings beholds historical development, ideological,

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architectural, artistic, material identity of a city. Any conservation, restoration and rehabilitation interventions must make prevail as much as possible the authenticity and compatibility with the original.

Knowledge on past urban renewal and renovation processes are the basis of the definition of a methodology and strategy, since every case has its singularities and necessary adaptations. The need for survey, through building appraisal and inspection is a decisive and guiding factor for the success of the intervention stage of any urban regeneration process. The case study of the old city centre of Coimbra will be presented and discussed at this level of the method and strategy for appraisal and inspection, as well as the inspection sheets used in the process and some results.

2. Rehabilitation and refurbishment of old city centres

2.1. Methodology and strategy basics

There is growing evidence that built heritage conservation carries benefits in many areas of the urban environment. Responsible decision makers, institutions and authorities involved in urban development programs have recognized the urgent need to preserve their cultural resources and assets, and moreover to relate cultural values to development. In the area of construction, it has been estimated that 50% of all building refurbishments in European cities relate in some way to heritage preservation [1]. The physical refurbishment of historic city centres provides the means for social revitalization of communities and neighbourhoods, economical attraction and improvement of the quality of life (see Fig. 1).

The URBAN Community initiative [2], introduced in 1994, using EU structural funds has carried out the URBAN I and presently the URBAN II, URBACT programs, promoting and funding urban regeneration, tackling multi-faceted urban problems in small areas in an integrated approach, maximizing the impact. The Portuguese city of Oporto was one of the 33 UPP (Urban Pilot Projects) launched and approved in URBAN I. In the second phase, Urban II continues to build on the successful framework of the first phase, with several improvements and new objectives and priorities. URBAN II has contemplated the Portuguese cities of Oporto-Gondomar, Amadora and Lisbon. These projects have very widespread objectives: social inclusion and integration, local partnership and cooperation incentive, physical and environmental regeneration, traffic management, information technology, culture and, at the end line, globally exchange experiences of sustainable development in cities over Europe. Basically, a SWOT analysis defines the main guidelines and actions, identifying opportunities, threats and, on another perspective, strengths and weaknesses. Even though the physical building upgrade, renewal and strengthening actions are only one of the objectives of a renewal and regeneration process, they have proven to play an important and crucial part in the process, with direct influence on other objectives. The recourse to construction techniques and architectural knowledge is vital when working to maintain a historic city centre core. The history of the old city centre, the urban fabric and the structure of its buildings, skills on appropriate traditional refurbishment and restoration methods are crucial when upgrading an area. Additional care should be taken where the private sector is involved, very careful analysis of their commitment is essential before the project is launched. The scientific community and research activities have brought to attention the development of methodologies, technologies and tools to guide, appraise, forecast, monitor and assess old buildings, constituting the basis of our understanding of the sustainable approaches and rehabilitation and renewal needs of the built heritage. The research and case study to be presented has been a challenge to

demonstrate that development of an urban intervention plan, by applying appropriate means for building inspection and appraisal, decision-making tools, such as building reports, risk assessment, cost/benefits appraisals and valuations, will lead to a balanced solution between the final purpose and resources used.

2.2. Intervention, implementation and planning

Urban conservation and rehabilitation initiatives are very costly and rarely public funding is available encouraging to meet the great financial demand to be undertaken by old building owners. Some interesting and successful experiences have been the result of singular efforts or private group projects. However, these are small-scale interventions (group of buildings, street front), so a more broader and sustainable approach is needed to define a global strategic model for the case of a city or a large urban zone. Global strategic and planning models allow to define in such a clear manner the means and tools necessary for global and individual approaches to the urban environment and building stock, identifying and evaluating opportunities and objectives at all levels (infrastructures, social, technological, constructive, economical, sustainability, etc). In the of the old city centre of Coimbra, a Urban Rehabilitation Society (SRU), constituted with public funding is the managing and supporting authority of the city/town for the use and attribution of funds, as well as technical approval of interventions within the historical city centre perimeter.

The presented methodology has as main aim to serve as a tool for guiding urban planning and intervention, with particular importance from the building refurbishment and rehabilitation point of view for buildings in urban and historical centres, and also in the definition of maintenance policies and priorities. This methodology contributes to the organization and decision aiding in a more supportive and clearer manner without compromising the nature of the intervention. There exists no standard model, but general principles and major steps, so this methodology needs to be adapted and modified faced to different urban characteristics and features, as for final sub-products, this is other secondary goals. Many other models developed for rehabilitation and maintenance of constructions and buildings are very complete and objective, but they lack the scale of analysis and the broader sense of the renewal and rehabilitation actions. This model intends to present an important and innovative contribution in the orientation and definition of urban strategies, planning and analysing in the extent of the rehabilitation of the buildings of old historical city centres, with the sense of intervention and planning that values the culture of transforming and rehabilitating of building stock that will stimulate partnership. Fig. 2 shows the global layout of the model adopted for this case study.

After defining the project context, definition and aims (1st stage), the principal part of the strategic model is the data processing and treatment. Through this analysis, a qualitative and quantitative characterization of several elements and aspects of the buildings are recorded (2nd stage). It is worth highlighting that these two initial stages are the solid basis of the process, being essential to acknowledge all variables and sensibilities involved. At this point, it is now possible to answer a series of simple questions (number of buildings with roof structure problems, distribution of structural typologies, conservation state of timber floors, etc) through consulting one of the treated variables: aspect, parameter characteristic registered or diagnosed. The database information could also be explored and enhanced by intercrossing and relating results with additional data (exterior data) for more complex analysis (3rd stage). All this information, observed and recorded for each building in the computer database, is a tool to promote and to help on the development of future rehabilitation projects (4th stage), both individually or globally, in a larger scale (city block projects).

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