

Implementation Challenges to the Adaptive Reuse of a Heritage Building in Tirana, Albania

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ABSTRACT

The present paper focuses on the adaptive reuse of Selim Pashe Toptani Sarajev, a monumental building related to the creation history, ownership and administration of Tirana. The adaptive reuse of the buildings contributes to the sustainability of the urban generation, as it extends the life cycle of the buildings, avoids demolition waste, encourages energy efficient solutions and provides significant social and economic benefits to the society.

Firstly, the study begins with an in-depth literature review of the factors that contribute to the goal of sustainable development in the conservation of built heritage. More importantly, this paper examines the challenges in incorporating a sustainability framework into adaptive reuse of the building. The authors stress that the framework for achieving sustainable, low carbon adaptive reuse should be viewed more holistically, integrating social, economic, environmental, urban and political policies.

KEYWORDS: adaptive reuse, policy, sustainability, economy

1 INTRODUCTION

Rapid changes in terms of scientific and aesthetic values can take place in historical areas. Many traditional values have been preserved and revived, while many others have been lost (Clifford 1998, Korkmaz and Yildirim 2012). Conserving the character of suburbs and districts and reusing the old well-maintained houses by using the new concept of adaptive re-use is the only way to conserve cultural heritage in its context. Heritage conservation, in turn, contributes to ecologically sustainable development (Yildirim and Turan, 2012, Pearson and Sullivan, 1999). The benefit of the adaptive use of the buildings goes beyond those related to climate change and resource efficiency, including positively contributing to the socio-economic agenda driven by heritage and community interests, extending the economic viability of buildings and reducing maintenance costs (Gosling et al. 2013). As such, rehabilitation of the historical buildings has some benefits which are:

- i. Economic benefits; the spaces which are rehabilitated are more easily created than new spaces, unless extensive structural reconstruction is required. In addition, the time needed to rehabilitate, typically takes suggests that rehabilitation typically takes half to three-quarters of the time necessary to demolish and reconstruct the same floor area (Lim, 2007). A such, adaptive reuse avoids the process of demolition and reconstruction (Yildirim and Turan, 2012).

- ii. Environmental benefits ; as the historical buildings are constructed using a range of quality materials (e.g. stone walls, marble floor coverings)the rehabilitation can bring the recycling of materials, reuse of structural elements and the reduction in generated landfill waste. Historical buildings are constructed using a range of quality materials that typically display a useful life well in excess of their more modern counterparts (e.g. use of solid stone walls, marble floor coverings). Furthermore, many older buildings employ massive construction in their external envelope, which can reduce energy consumption in heating and cooling (English Heritage. 2012). This might be considered as an environmental benefit, combined with the energy saving, carbon emissions reduction and the social and economic advantages of recycling (Esther H.K et al. 2012).
- iii. Social benefits; the intrinsic heritage values of the historical buildings are vital. In addition, they represent the memory of the society and they can retrain attractive streetscapes, add character, and provide status and image to an organization through the use of massive and highly crafted materials (Esther H.K et al. 2012).

Many authors have focused on the adaptive re-use of the historical buildings in many aspects. Diamonstein (1978) focuses on creative adaption, creating a link to the past and an opportunity for architectural innovation and problem solving. Langston et al. (2008) proposed physical, economical, functional, technological, social and legal obsolescence criteria to understand the issue. Cevik at al. (2008) addresses the need to re-use the spaces based on the lack of ability of urban space to meet daily needs, economic factors and environmental factors in particular. Cunnington (1988) and Cantacuzino (1989) explore the potential of the old buildings in providing cheap and appropriate structures. For this reason, buildings have been altered, enlarged and adapted for new uses throughout history. Eley and Worthington (1984) focus on the deterioration principles halted through appropriate re-se. Pimonsathean, (2002) explore the potential of the adaptive re-use to extend the life of historical structures by adapting their functions in response to contemporary needs.

The present study will enhance mainly the following aspects of restoration: i) proposed intervention of the historical building, ii) policies of maintenance in order to justify all the proposed adaptive re-use part, iii) the sustainability as a consistence of four components: social, economic, environmental and political-institutional.

One of the main objectives of the study is to focus on an in-depth study of the civil house of Toptans, its history, architectural style and organization to understand the heritage values, the construction and condition of the building fabric. Proposing new functions, restoring the building and find an appropriate energy performance will contribute to preserve the history, culture and architectural style of the monument. Another objective is to develop the social and economic sustainability by incorporating green environmental design with new concept of passive houses. For the referred building there are made two restoration projects, which have had great impact on its architectural style by changing the facade, maintaining the characteristic elements and replacing them with similar. Complete conservation interventions were undertaken for this house in 1987 (Regional Programme for Cultural et al. 2003-2006). Based on the past rehabilitation project-plan made by the local expert of the Institute of Monuments of Culture, there are predicted new adaptive reuse functions. In their project report declare that the second floor of the house was used in the past by the Institute of Geography and the first floor was a Laboratory of Restoration to the Academy of Science. The proposed new uses would create the possibility for new working places, engaged in social services, activities of tourism, business, administration, etc. (Regional Programme for Cultural et al. 2003-2006)

2 APPROACH

2.1 Overview

At first, the study aims to analyse the urban context of the house, by highlighting the surrounding the main cultural and historical features (Figure 1). Then, the in-depth analyses of Toptani house is explored in terms of its characteristic architectural value, the similarities and differences with other building in the region. The study advances with the proposal of the adaptive re-use i) the re-use of the spaces with different functions ii) exploring the restoration methods iii) reconsidering the adaptive use towards a sustainable approach and contemplating measures to enhance the thermal and lighting performance of the house.

2.2 General description

The monumental building is close to the centre of Tirana, in “Murat Toptani” Road (Figure 1) surrounded by the main cultural and historical buildings. The urban pattern where the building is situated is transformed into a cultural zone. Old buildings, part of the Tirana Castle, are being used as restaurants, hotels and entertainment spaces. The House of Toptans is one of the rare well-conserved houses in the town of Tirana built during the XIX century with the influence of ottoman architecture (M.E.C 1982), built inside the Tirana castle, by masters from Dibra region (Voca, 2009). From the past research, the building has been rehabilitated in two phases. Figure 2 and figure 3 show the phases before and after the restoration. During the communism period, the building has functioned as a library, in a state ownership for 50 years. At the moment, the building is used by the owner as a private house. During the post-communism period no restoration has been made. Figure 4 summarizes the general characteristics of the building in terms of i) phases of construction (*plan, façade*), ii) functions iii) materials iv) architectural and construction details. The House is proclaimed Monument of Culture of the first category, by the decision of the governmental bodies.

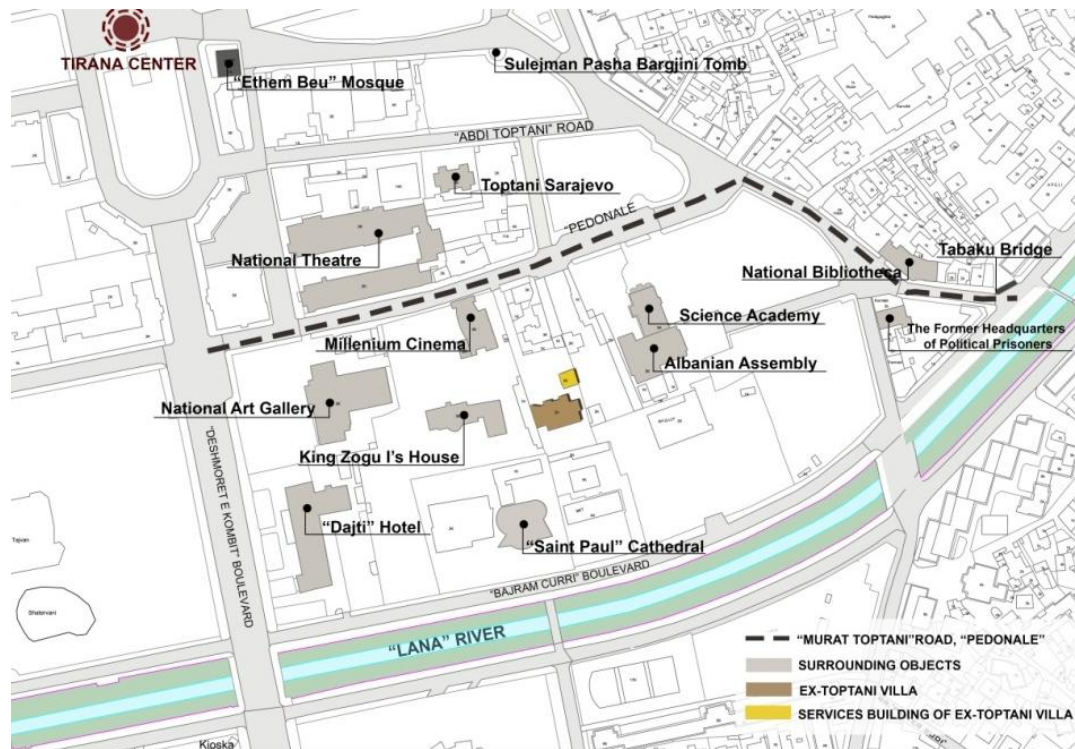


Figure 1: Urban situation nearby the monument



Figure 2: The house before restoration



Figure 3: the House after restoration

Plans / Building phase	Ground floor	First floor
Building phase Legend	<p>Legend</p> <ul style="list-style-type: none"> ■ The first phase of construction ■ The second phase of construction ■ The third phase of construction ■ The fourth phase of construction ■ The fifth phase of construction 	
Functions	<p>XVIII century- Livnigh place of Toptani Family XIX century - Property of Libohova Family 1945- Property of communism state, Bibliotheque</p> <ul style="list-style-type: none"> -Secondhand functions -Auxiliary -Cooking facilities -Warehouses - after: Living place 	<p>1990- Institute of Geography Academy of Science(restoration laboratory) Present- Private inhabited house</p> <ul style="list-style-type: none"> -Living facilities -Reception -Bedrooms -Sanitary facilities -after: Bibliotheque ambients
	Materials	<ul style="list-style-type: none"> -Stone -Plaster -Wood
Architectural and constructive details	<p>Architectural details: - Fine decorative walls Folk motif ceilings Rosette Wooden contour ceiling Wall cabinets</p>	
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Figure 4: The characteristic elements of each floor of the building

2.3 Object analyse: form, function and building phases

The building form is rectangular with the longer sides towards the courtyard. The spatial organization and the composing elements are shown in the figure 5. The main corpus of the house was the *selamljek* (men's residence), while initially it also had the role of the *haremljek* (women's residence) (Regional Programme for Cultural et al. 2003-2006). To reach the apartment one has to pass through two courtyards. The first courtyard (blue colour, see figure 5 and 6), is rectangular and reachable through the great gate part of the fortification wall of the castle and the second courtyard is square shape (purple colour, see figure 5 and 6) positioned near the main entrance (M.E.C 1982). The building has four phases (see figure 4)

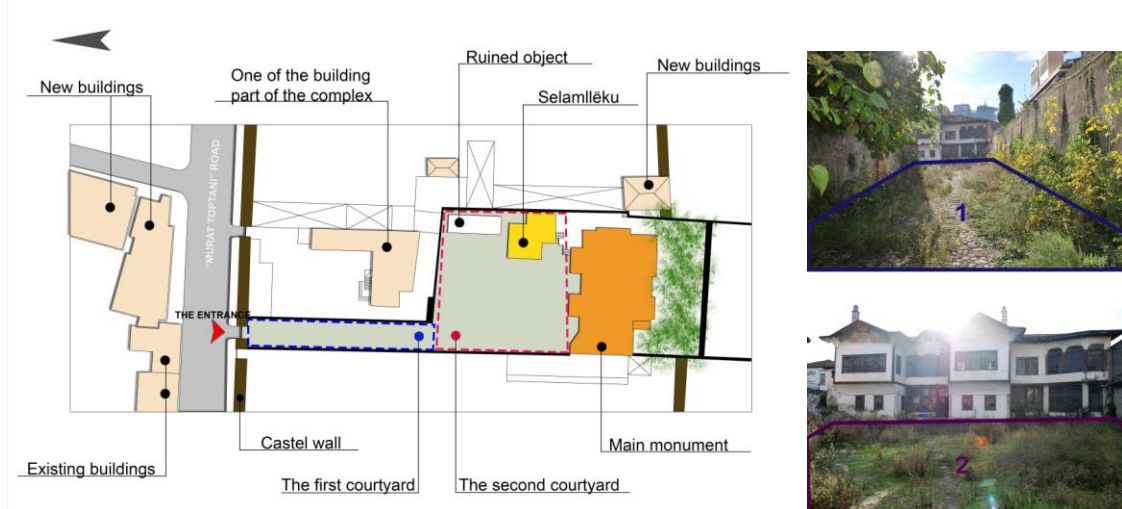


Figure 5: Spatial organization, two main yards

Figure 6: Images of the courtyards

2.4 Architectural style, plan organization, decorative elements

As illustrated in figure 4, in the façade of the building are evident the additions made on different phases, such as the placement of the windows, roof and the second floor treatment. The treatment of the house is different in left and right side; even the effort to associate the parts with the core is obvious. The difference is evident on the composition of the house (Regional Programme for Cultural et al. 2003-2006).

The entrance hall, in polygonal shape, is in the centre of the space surrounding by the other spaces of the house. Figure 4 illustrated the functional organization of the house for the ground and first floor respectively. In addition, the characteristic decorative elements are evidenced. While the ground floor has the main function of the house, the first floor included the auxiliary spaces (e.g. cooking facilities, warehouses). However, after rehabilitating the house, the first floor as well was transformed in living spaces as well. After reconstruction made to the house at the time, they were placed and were transformed in living spaces. The geometry of the spaces is the same as the ground floor, with a central polygonal hall surrounded by the other spaces (Strazimiri, 2000)

The house is enriched with fine decorative walls, folk motif ceilings constructed with wood and plaster. Wall cabinets, musandra, doors, especially those related directly to the central salon of the second floor are carved on wood and panelling with several popular motifs. Even decorative chimneys rooms are decorated with artistic taste (Figure 7 and 8) (Lazimi, 1976).



Figure 7: Illustration of wall cabinets, musandra, doors and furnitures



Figure 8: Characteristic ceiling decorations in different spaces

3 PROPOSED INSTRUMENTS

3.1 Vulnerability/Risk assessment and restoration methods

Deterioration due to natural factors, such as humidity and lack of maintenance work are a present risk even after the restoration interventions of 1987. The building needs to be preserved based on its original shape and architectural elements. Special attention needs to be given to the adaption reuse of the building. The most problematic part of the building is the main facade. The risk of humidity, degradation of plaster, destroyed roof, damages of decorative wood frame, of stone and partial absence of plaster is evident. Figure 9 illustrated the problematic parts of the building. Interventions are in urge to remove the danger of a complete demolition of the house, based on the new functions of the building. Table one illustrates the intervention methodology as solution for the specific damages based on operating manual for the architectural restoration.

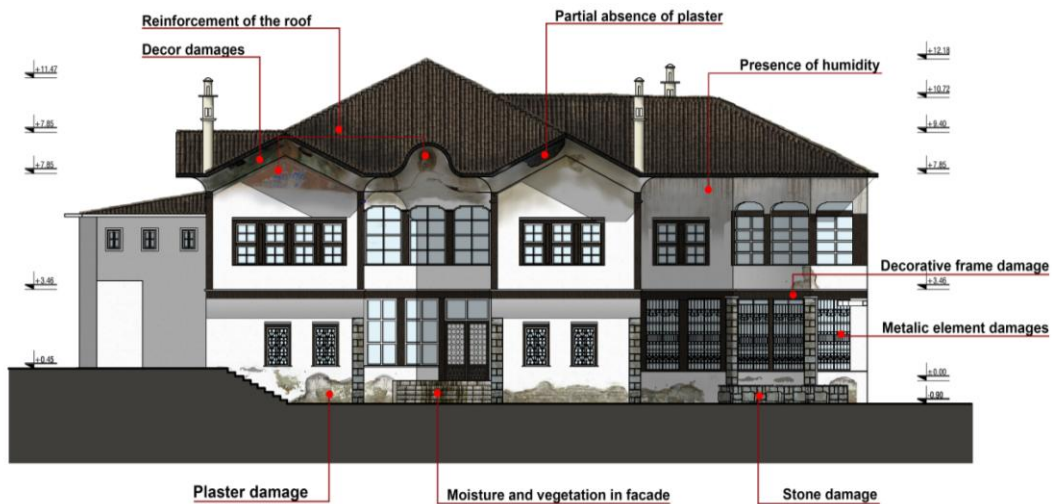










Figure 9: Most problematic part of the main facade

Proposed restoration interventions:

Table 1 Intervention methods

Illustration images	Demages	Method of intervention
	Stone wall restoration	The wall will be restored with the method sew-unpick, which implies the removal of several stones, starting at the bottom, washing with abundant water and placing the stones with seasoned lime-mortar. The process will be repeated until the complete restoration of the wall.
	Partial falling of plaster	The intervention in the fallen part of the plaster demands as a start the injection of a mixture of calcium and acrylic so that it can be tied to the plaster, which can be a mixture of lime and mortar, since it requires longer time to harden.
	Restoration of wooden doors, windows	1.Clean with a coarse brush, until reading the cannelures. In the places where we find lime deposits, they should be cleaned with a scalpel by a specialist. 2.Then comes the washing with abundant water and according to the case the filling with stucco.The completing of the missing parts will be performed according to the model .
	Moisture and vegetation in the facade	This case includes the leaning, consolidation and maintaining by the application of injections to deeply remove the vegetation in the gaps, cleaning with brushes and other tools of the vegetation and sprinkling special lotions.
	The constructive elements of the roof	The constructive parts which are still functional should undergo a cleaning by smooth brushes, thin corundum paper, air brushing and finally be treated with anti-mold and anti-bugs solutions. The placing of the tiles will be by using existing ones which have not been broken and are impervious to water. The rest will be completed with similar new tiles.
	Decorative wood frame	Will be done by cleaning with a coarse brush, until reading the cannelures. In the places where we find lime deposits, they should be cleaned with a scalpel by a specialist. Then comes the washing with abundant water and according to the case the filling with stucco. The completing of the missing parts will be performed according to the model which can be found in the object or after research in the archives.
	Metallic rust	The rusted part should be cleaned with corrosive tools. The metallic element has a lot of decorations and difficult surfaces to reach, in these cases we need smoothing tools and smoothing wires to reach them.
	Restoration of wooden doors, windows	Complete or partial replacement of the missing or broken parts with the same type of wood, seasoned and with dimensions like the existing sections. Planning of all of the deformed parts Filling each crack with an appropriate stucco, the same color as the wood Checking and possibly replacing every hinge or other components Installing the glass panes of the windows

3.2 Functional proposition

For the new proposed function of the building, the authors refer to the legislation “On cultural heritage” to evident the level of intervention in the architectural and functional aspects. The criteria of the proposed spaces are based on i) economic benefit ii) environmental benefit iii) social benefit. The authors propose to use the ground floor (see figure 10 left) for exhibition purposes. The exhibition will be mostly concentrated on the historical part of creational and administration of Tirana (related with the Tirana castle itself and building history). The authors propose to include in the museology the history of Toptani Family together with the most known figures who have lived there (Edith Durham, Libohova Family). In the second floor (see figure 10 right), the authors propose a library. The main purpose is the education of the upcoming generations, revitalization of the building and economical benefit from the tourists.



Figure 10. Proposed functions in each floor

3.3 Passive house refurbishment (Sustainable architecture)

Various models of a Passive House or its composite parts are being developed globally at the micro, meso and macro levels. Such models include the ground heat exchanger, heating system, heating model of the active solar heating system, earth-contact building structures, a regression model of energy efficiency, a computational fluid dynamics model (Kaklauskas et al. 2012). Various components of the Passive House approach can be classified as crucial and necessary. The superinsulation, heat recovery and passive solar gain are crucial to the Passive House concept (Kaklauskas et al. 2012). To fully minimize environmental impacts, the electrical efficiency and meeting remaining energy demand with renewables are necessary or expedient (Kaklauskas et al. 2012)

Transforming the traditional house into a passive one will provide an affordable, effective, comfortable living condition in relation with the proposed functions. Passive House quality ventilation is expected to reduce the operating costs of the building (PHI. 2010). As such, the air quality will be improved and the mould growth will be eliminated. Together with very good insulation of the building envelope and the windows, it is possible to get along with very little heating power and also reduction of the effort for further installations (PHI. 2010).

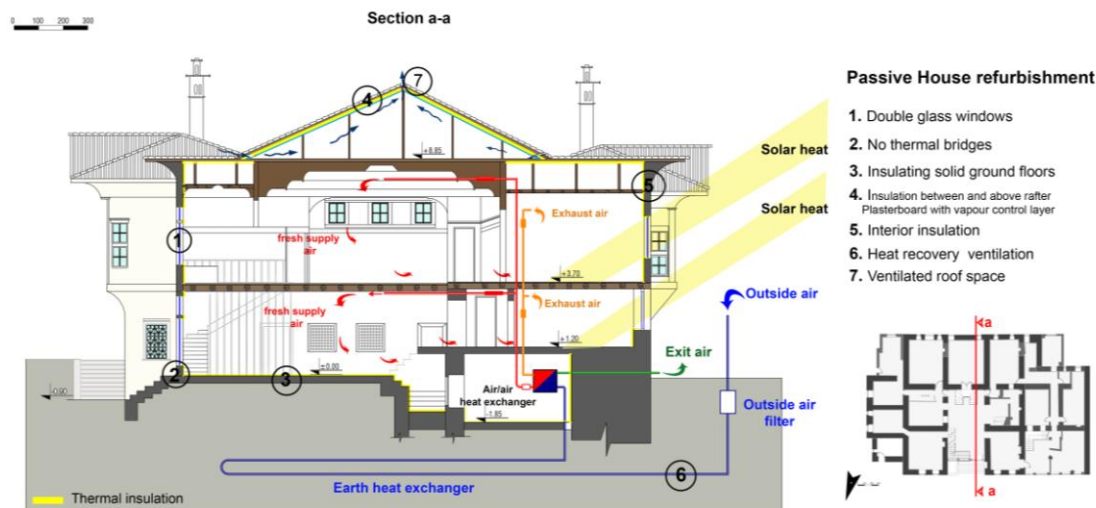


Figure 11: Passive House refurbishment

Figure 11 illustrates the usage of the heat recovery ventilation (drawn in the section a-a, and ground level). The heat recovery exchange will optimize the space ventilation. Due to this principle of directed air flow, the fresh air is optimally utilised by high quality air in the living areas and dehumidifying the humid areas (Vikas et al. 2009). The method of the earth-pipe-air heat exchanger systems uses underground soil as a heat source and air as the heat transfer medium for space heating in winter (Vikas et al. 2009). The thermal insulation of the building envelope, windows and doors (using double-glass windows) is proposed. An important attention is given to avoid thermal bridges and air-tightness of the construction.

4 CONCLUSIONS

The present research focused on the adaptive reuse of Selim Pashe Toptani Sarajev, a monumental building. The adaptive reuse of the Toptani building, as well as historical buildings in general, contributes to the sustainability of the urban generation, as it extends the life cycle of the buildings, avoids demolition waste, encourages energy efficient solutions and provides significant social and economic benefits to the society. The authors focused on the challenges in incorporating a sustainability framework into adaptive reuse of the building. The main contribution of the paper is the conservation the heritage values of the monumental building, enhanceing economic and social sustainability. The proposal for new functions of the building is expected to revitalize the building and inform the younger generation for its presents, history, values related also with the creation history of Tirana. Overall green adaptive reuse of the house will give the chance to make it again the part of the other historical building, already functional. The authors stress that the framework for achieving sustainable, low carbon adaptive reuse should be viewed more holistically, integrating social, economic, environmental, urban and political policies.

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