

BULETINUL INSTITUTULUI POLITEHNIC DIN IAȘI
Publicat de
Universitatea Tehnică „Gheorghe Asachi” din Iași
Volumul 64 (68), Numărul 3, 2018
Secția
CONSTRUCȚII. ARHITECTURĂ

THE POTENTIAL OF RECONVERTING FUNCTIONS FOR BUILDINGS IN ROMANIA

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Received: August 29, 2018

Accepted for publication: September 28, 2018

Abstract. The existing built patrimony fund represents more than a set of old buildings, castles, palaces; It represents the living testimony of the past, of the culture, crafts, history, a way of life, left as our inheritance by our ancestors, to be kept (maintained/repared) and then given over to future generations. In this way past is kept alive as it adaptable to modern life and to new structural and functional requirements. The issue of functional and structural rehabilitation of old buildings in a derelict state and with an advanced physical and moral wear is a topic of interest for the Romanian society mainly after 1990. In the circumstance of the built fund becoming older and older, with higher maintenance costs, improved comfort and diminished heat losses have become actual and necessary objectives. The directing principle of the rehabilitation of a building is induced by the qualitative and quantitative manifestation of the following factors: building composition, typology and state; the economic role to be played as well as the freedoms and opportunities provided by laws.

Keywords: construction; rehabilitation; sustainable development; reconversion; environment.

1. Introduction

After 1989, the general economic decline and the structuring in the field of constructions led to a stagnation of investments and a reorientation of the

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built fund. The present state of the built fund at national level and especially in Cluj-Napoca with respect to the functional and structural rehabilitation potential has led to the setup of a new field of activity, namely the expertise of old and damaged buildings.

The demolishing of a construction which represents an actual potential from the structural point of view could mean significant waste in: materials, culture, so that one first step would be the reconversion/changing functions of old/disabled buildings.

2. Present Situation and Trends of Reusing Buildings in Cluj – Napoca

Cluj-Napoca Municipium can be seen as a potential case study as it is an interesting mix of challenges for the existing buildings.

A large part of the built fund to be found today in Cluj-Napoca developed during the last century so that today aspects such as sustainable development and energy consumption should be taken into consideration when taking such constructions into discussion. Several examples of buildings whose function has been improved or in the process of changing function in Cluj-Napoca are:

a) *The Banffy Palace of Cluj – Art Museum* located in Piața Unirii no. 30.

The Banffy Palace was erected between 1773–1786. The construction is square shaped of size 66×48 m. On the main façade attic, statues are displayed (Perseus, Apollo, Ares, Pallas Athena, Artemis, Hercules) and eight urns; the family crest with the gryphon is placed at the balcony top. The balcony of the rear façade is supported by three gryphons and the semicircular frames of the first level are decorated with allegorical busts representing the four main elements (Fire, Water, Air, Earth), the four seasons and the four continents (Europe, Asia, Africa, America).

As time went on, various parts of the building took over different functions as follows: in the back court, in the place of the mews, in 1903, a dwelling building body was erected and then rented, the inner court being used as an open/fresh air cinema (1920). At ground level, there were built shops and coffee houses. After 1945, for a short time, the palace was the location of a political party and beginning with 1956, the rooms were refurbished to be used as art exhibitions museum. When the restoration was made in 1962-1965, shops and coffee houses were eliminated and the whole palace was turned into the Art Museum. This building is a symbol for Cluj; however its degradation is visible very easily Fig. 1 (<http://www.macluj.ro/palatul.html>): roof tiles miss, plastering has fallen down, architectural elements are damaged.



Fig. 1 – Banffy Palace Cluj – The Art Museum
(<http://www.macluj.ro/palatul.html>).

b) *The Sebestyen Palace* is situated in University str. no.1, in Cluj-Napoca, and was erected in the interval 1912-1913 (by Sebestyen David) first to be a house with flats to rent. The building has an eclectic style with Secession/Art Nouveau influences; until 1919, there was located the Insurance Hungarian Association, at present being house the University/Diverta Bookshop which bore the name:” The Russian Book Bookshop” for a period, Fig. 2 (<http://www.cniptcluj.ro/obiectiv/view/id/1832>).



Fig. 2 – The Sebestyen Palace – University (Diverta) Bookshop
(<http://www.cniptcluj.ro/obiectiv/view/id/1832>).

c) *The Teleki Palace–A location for the Octavian Goga County Library* (Reading Room) is located in M. Kogalniceanu str. no.7.

The Teleki Palace which today houses the Reading Room of the County Library is U shaped in plane. Initially, the building was designed to have three entrances: the column gate, balcony gate, and the entrance through the inner vaulted gallery. Though impressive, the damaged state of the building is obvious too, Fig.3 (http://ro.wikipedia.org/wiki/Palatul_Teleki_din_Cluj): roof tiles miss, plastering has fallen down, architectural elements are damaged.



Fig. 3 – The Teleki Palace–The Octavian Goga County Library (Reading Room)
(http://ro.wikipedia.org/wiki/Palatul_Teleki_din_Cluj).

3. Impact Upon the Environment of Buildings Refunctionalisation

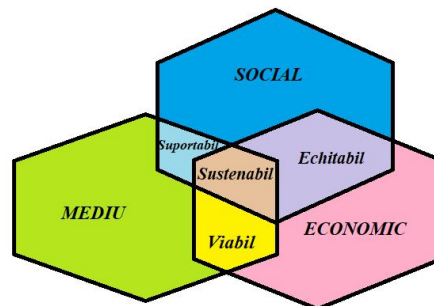
For more than two decades, the international community pays more thorough attention to the concept of sustainable development, first launched in the report of the World Commission for Environment and Development, under the title “*Our Common Future*”, also known as the *Brundtland Report* from 1972 (http://ro.wikipedia.org/wiki/Raport_Brundtland).

In the Rio de Janeiro Conference from June 1992, it was underlined that environment and economic development are compatible, with complementary aims. The international agreement stated in the Rio de Janeiro Declaration and the adoption of Agenda 21 (https://en.wikipedia.org/wiki/Agenda_21#Sustainable_Development_Summit) specified that sustainable development is to be a global strategic option for the following century.

The general significance of the term sustainable development is the capacity to meet the requirements of present-day generation without endangering the capacity of the next generations to satisfy their own needs, economic prosperity and environment conservation being in permanent and mutual support. It is for this reason that today we speak about sustainable development with respect to buildings, sustainable constructions and their impact upon the environment.

The reconversion of a building that applies the principles of sustainable development involves multiple benefits:

- a) economic benefits;
- b) benefits for the surrounding environment;
- c) social benefits;
- d) impact upon construction industry.



The progressive and aggressive reduction of resources brings forth the need to rationally and responsibly use the existing resources.

Huge quantities of materials mined from the natural context (stone from quarries, gravel, sand from pits, wood from forests, etc.) constantly affect the

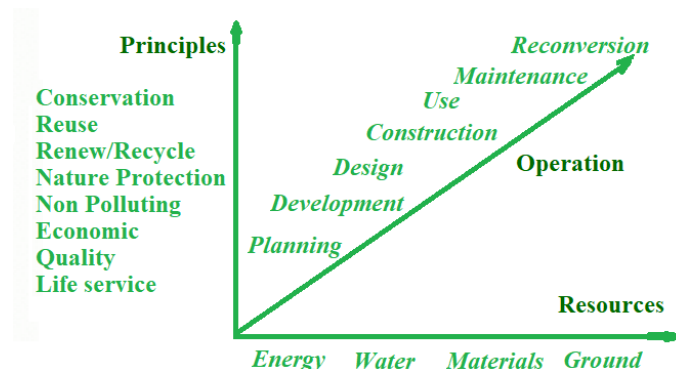
natural environment. These forms of intervention influence humidity, air currents, underground water, the fertile soil layer, etc., and in time will lead to costly repercussions upon the ecosystems upon which they act.

During building service time, new polluting factors come up and they are mainly related to energy consumption and construction linked waste disposal: rubbish from dwelling buildings, industrial, farming, etc. waste which differ in quantity and toxicity.

For as a small impact as possible upon the environment it is recommended to use the following in the process of changing building function:

- a) locally present materials should be used to minimize the energy necessary for transportation;
- b) products of industrial process should be used;
- c) precast materials and systems should be used to reduce the building energy necessary to minimum;
- d) low environment impact materials should be used: natural organic materials (straw, bamboo) or animal origin material (wool), natural or recycled stone, recycled materials (metal, copper), products of low toxicity.

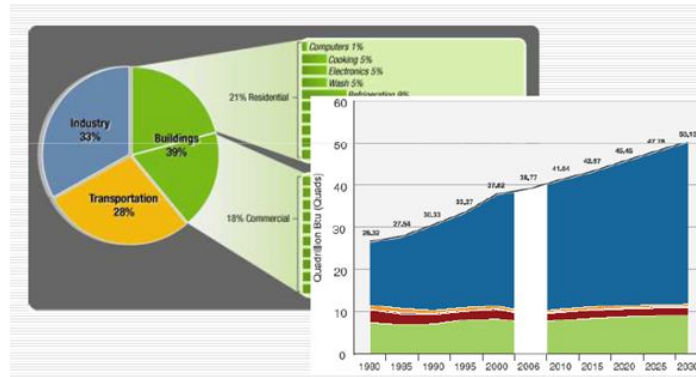
The figure below presents the cycle to be passed through by a building project to provide for sustainable development, the phases of the project and all these in the context of given principles and resources:



The studies carried out highlight the following aspects:

- a) constructions are responsible for the use of about 50% of the overall resources;
- b) about 45% of the generated world energy is used to operate and maintain constructions;
- c) constructions produce 25% of city waste.

It was also found out that heating, lighting and cooling, by means of fossil fuels (methane gas, coal, oil) and by indirect electricity use represent the main source for carbon dioxide and of half of greenhouse effect emissions:



The International Standardisation Organisation issued standard – ISO 21931-1:2010 (SR ISO 21931-1:2010) – that was designed and produced with the aim to improve the environment performance of a construction.

Along the life cycles, constructions incorporate considerable resources and contribute to environment transformation. To understand and to measure the impact of the buildings upon the environment, evaluation methods are put to work to define the environment performance of the constructions and of associated exterior works.

ISO 21931-1:2010, Sustainable development in constructions. Evaluation framework for the environment performance of building works. Part 1: Buildings (SR ISO 21931-1:2010) identifies and describes the aspects to be considered to elaborate and apply methods that aim at assessing the environment performance of new and existing buildings. The evaluations serve at comparing performances and watching over the progress to improvement and sustainable development.

The application of standard ISO 21931-1 constitutes a new and significant step in the reduction of the impact of constructions upon the environment and actually achieving sustainable development in constructions.

The standard present a wide range of uses, is applicable for all stages of construction from design to erection, service, maintenance, rehabilitation, in order to ensure a finite product that is an ecological construction.

4. Conclusions

Old/disabled constructions are left to degrade gradually or are demolished with the purpose of other investments in view. This phenomenon continues even today sometimes because of indifference to the values of our past and other times because of ignorance concerning sustainability, conservation and reuse of resources.

In developed countries, the energy consumption increases dramatically from one year to another and consequently the CO₂ emissions. At present, 20% of the total population on the earth uses 80% of the resources, the construction industry being dependent on them to a large extent as also responsible for about 45% of the energy consumption and gas emissions (Fig. 4).

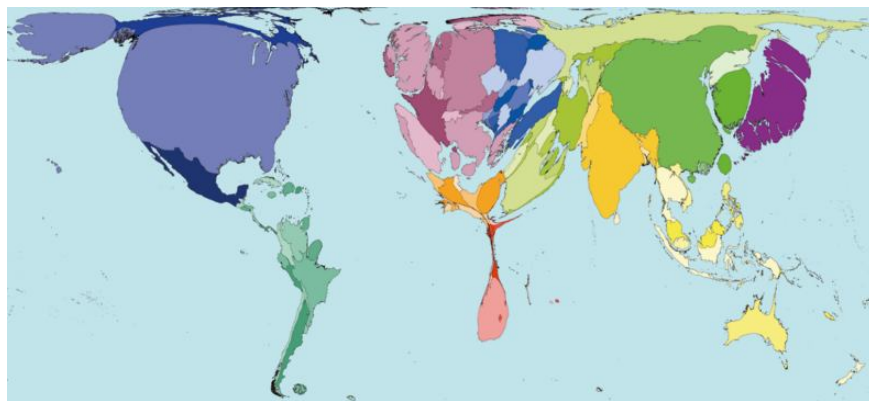


Fig. 4 – World map sees as deformed relative to the greenhouse effect gas emissions (<http://www.worldmapper.org/display.php>).

In today's conditions when materials recycling and the rational use of the natural resources represent important factors for observing sustainable development principles, the recovery and reconversion of the old buildings is an efficient measure as it provides a chance of survival and reintegration in the public circuit and as a factor of reviving the economic and social life of a place.

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POTENȚIALUL DE REFUNȚIONALIZARE AL CLĂDIRILOR DIN ROMÂNIA

(Rezumat)

Fondul construit existent este mai mult decât un ansamblu format din clădiri vechi, castele, palate; reprezintă mărturia vie a trecutului, culturii, meseriilor, istoriei, al unui mod de viață, care ne-a fost lăsat drept moștenire de strămoșii noștri, pentru a fi păstrat (întreținut/reparat) și predat generațiilor viitoare. Astfel, se dovedește că trecutul este viu, pentru că se poate adapta la viața modernă și la noile cerințe de ordin structural și funcțional.

Problema reabilitării funcționale și structurale a clădirilor vechi, aflate într-o stare precară, cu un grad de uzură fizică și morală avansată reprezintă o temă ce a preocupat societatea din România mai cu seamă după 1990.

În condițiile îmbătrânirii fondului construit existent, al majorărilor privind costurile de întreținere, sporirea confortului și diminuarea pierderilor de căldură au devenit obiective reale și necesare.

Principiul director al reabilitării unei clădiri este indus de manifestarea calitativă și cantitativă a următorilor factori: componența, tipologia și starea construcției; rolul economic în cadrul organismului, dar și libertățile și oportunitățile oferite de legislație.