New life of old buildings. Longing for change

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The paper describes the contemporary possibilities for adapting and adjusting old facilities to current requirements. Moreover, it shows how such projects are connected to ecology. The paper closes with conclusions related to the positive effects of reusing existing, old facilities on the society and environmental protection.

Recently, there has been a growing trend toward buying and restoring old houses, rural properties, especially near large cities or in areas well-connected to such cities. All this takes place at a time of high rural-to-urban migration. This migration is countered by the abovementioned opposite trend, which seems to be steadily increasing in scale. After some time, many city-dwellers decide to relocate to satisfy their various needs. They escape from noise, smog, and heavy traffic and search for peace and quiet while also taking ecological aspect into consideration.

This breathes a "new life" into many rural, residential, farm and manufacturing buildings. Such a fresh look at these facilities and the ability to use modern building materials and technologies helps the renovation process to run smoothly. With time, old buildings can be restored to their former beauty and enhanced by new functions.

Non-residential buildings, farm buildings, and barns also can also be adjusted to perform a residential function or become part of an agritourist farm.

New life for an old house

In the Polish countryside there are many buildings that can be renovated and adapted to modern requirements, but there are also some that have been decaying for many years and their condition is very poor [fig. 1.].

Modern technologies help to stop the deterioration of wooden and brick buildings, facades and timber roof structures. They provide protection for many more years. High-quality building materials and modern construction methods make it possible to improve the thermal insulaitng power of walls and roofs even in the case of buildings whose wooden or brick facades possess aesthetic values that need to be preserved. [fig. 2.]. If a building cannot be insulated on the external face, it can be insulated on the internal surface, e.g. using mineral insulation boards made from lightweight cellular concrete (density up to 115 kg/m^2), which is characterized by high thermoinsulating power (thermal conductivity coefficient = 0.042 W/(m^{2}K)). Another advantage of this material is high water vapor transmission rate, which eliminates the need for a vapor barrier. The ability to absorb water vapor also reduces condensation on the interior surfaces of the walls and thus the risk of mold growth [1] [2]. Thermal insulation of walls is also enhanced by insulating plasters and paints.

If an old building is effectively protected from moisture and has proper ventilation and airtight roofing, it becomes resistant to weath-

Fig. 1. An abandoned and deteriorating building, 2020

Author's archival drawings

Fig. 2. Building with a half-timbered structure, 2017

ering and can satisfy the current requirements for property conditions. Renovation of wooden buildings consists in protecting its structure and other elements. After the surface is cleaned and chips and cracks are replaced or repaired, the wood is impregnated, and protected against moisture and mold. It is recommended to use ecological technologies and materials which will not have a negative impact on the health of users. Cleaning the wood, for example by soda blasting, which is dry and non-invasive method that does not change the structure of the wood, while removing dirt, stains and moss growth, does not dampen the wood. An ecological method of impregnating wood is varnishing, i.e. coating the surface with linseed oil varnish. This traditional, one-time process of protecting wood from moisture and mold is mainly applied to structural elements. Another natural method of protecting wood surfaces is oiling, which is primarily used for hard surfaces. It is not as strong as varnishing and therefore needs to be repeated every few years.

Owing to modern materials and technologies it is possible to rearrange the interiors of renovated buildings and give them a new look, create large, comfortable spaces, uncover elements of the structure, or introduce large glass surfaces. Buildings are often equipped with modern eco-friendly systems for generating electricity, heating, ventilation and, in locations without sewers, home sewage treatment systems. Simple systems allow rainwater to be collected for domestic use. Photovoltaic or solar panels on the roofs of these buildings are no longer an exception.

These houses include both seasonal homes as well as primary residences which are often used for home-based businesses. Such renovation projects are carried out by people of all ages and often take many years to complete if there is not enough funds. For many people, environmental concerns are at the heart of these decisions. The transformation in how different social groups and individuals think, behave and act is a sign of growing social awareness and sensitivity to issues concerning the protection of the environment and the surroundings in which we live. The rational use of energy, reduction of food waste, reduction of waste production, and segregation and reuse of raw materials are measures that can help to overcome excessive greenhouse gas emissions. A growing number of people, especially young people, who understand the severity of the problem and are concerned about their future, choose sustainable living through respectful and rational use of available resources and reduced consumption of unnecessary goods, which translates into waste minimization. The practice of reusing existing resources applied to buildings whose life can be extended, is consistent with the ideas of sustainability.

Construction is an important part of any economy. Despite the constantly increasing supply of houses, the demand is still not being met. According to quantitative indicators, there are 380 apartments per one thousand inhabitants in Poland, which places our country below other European Union states [3]. According to the CSO, the number of apartments put into use in 2019 was approximately 207 thousand, of which over 130 thousand was built by real estate developers, almost 70 thousand by individual investors, and a total of approximately 7 thousand by housing and worker cooperatives [4]. Although these numbers are increasing, there is still not enough housing. The entire construction process consumes significant amounts of energy, produces huge amounts of waste and thus contributes to environmental degradation. 10-15% of all waste produced globally is construction waste [5]. The production of cement, which is the essential ingredient of concrete, one of today's main building materials, emits 4-8% of carbon dioxide into the atmosphere on a global scale [6].

In light of this, it seems wasteful not to reuse the existing facilities, even if they need renovating. The environmental costs would still be lower than if they were left to deteriorate only to be demolished later, thus producing a huge amount of waste. The vast majority of these buildings are made of healthy, natural materials, such as brick, wood, and natural stone [fig. 3.].

Another advantage of these buildings is their location in a healthy environment, different from today's urban landscape dominated by concrete and steel structures.

Fig.3. Old brick building under renovation, 2020

Summary

In search of a healthy living environment, free from urban noise and air pollution, and a lifestyle that respects the natural environment, city dwellers are willing to abandon the amenities of big cities and replace their current urban lifestyle with the charms of the countryside.

Old country buildings, dwellings and farmhouses, even if no longer in use, can still be attractive. They have many advantages, including their unique construction, simple form, decorative facades, healthy structure made of natural materials, and location on large plots of land.

These buildings usually need to be renovated, especially if they have not been used for a long time or if their original function has been remodeled. Such projects, whether intentionally or not, are in line with pro-environmental activities. Given the effects of constructing new buildings, in particular huge energy consumption and production of waste, the reuse of existing facilities and extension of their life is in line with the concept of sustainable development. According to this principle, through appropriate materials (for renovation) and appropriate us it is possible to help reduce the consumption of energy and natural resources in the present and in the future [7].

Because of the development of information technology and the popularization of communication methods, living away from big-city centers is no longer an obstacle to working or maintaining social relations. It enables people to come up with new ideas for their professional career or business, to have contact with nature and own pets, and to pursue other activities that would not be possible in a metropolitan environment.

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CORRECT QUOTATION FORMAT

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Abstract: Buying, restoring and remodeling old residential and farm buildings is an ongoing phenomenon. It is mainly visible in rural areas, especially near large cities and in areas well-connected to such cities. The aim of this study is to determine what factors influence this process and how the activities resulting from such transformations fall within contemporary principles of construction development.

The chosen research methodology was the analysis of factors that influence the aforementioned activities. The paper describes the contemporary possibilities for adapting and adjusting old facilities to current requirements. Moreover, it shows how such projects are connected to ecology. The paper closes with conclusions related to the positive effects of reusing existing, old facilities on the society and environmental protection.

Keywords: rural buildings, renovation, ecology

Streszczenie: NOWE ŻYCIE STARYCH BUDYNKÓW. TĘSKNOTA ZA ZMIANĄ. Pozyskiwanie, remonty i adaptacje starych budynków mieszkalnych oraz gospodarczych są stale obserwowanymi zjawiskami. Dotyczą one w znacznym stopniu terenów wiejskich, szczególnie w okolicy wielkich miast i obszarów dobrze z nimi skomunikowanych. Celem badań jest określenie, jakie przesłanki wpływają na ten proces, a także jak podejmowane w związku z tą zmianą działania wpisują się we współczesne założenia rozwoju budownictwa.

Metodą naukową, którą zastosowano, była analiza czynników mających wpływ na te działania. W pracy przedstawiono współczesne możliwości adaptacji i dostosowania tego typu starszych obiektów do obecnych wymagań. Przedstawiono także powiązania takiego działania z ekologią. Na zakończenie zaprezentowano wnioski na temat pozytywnych skutków, które wiążą się z wykorzystaniem istniejących wiekowych obiektów dla społeczeństwa i ochrony środowiska naturalnego.

Słowa kluczowe: budynki wiejskie, renowacja, ekologia