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Original Research Article

SPECIFICS OF FORMAL AND LEGAL ISSUES IN PROCESSES OF REVITALIZING POST-INDUSTRIAL BUILDINGS

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Abstract

The article deals with issues from the initial phase of the investment process connected with revitalizing postindustrial buildings: planning and programming investments in the functional and financial scope, as well as designing. The described formal and legal aspects are the result of a study of a few projects concerning the adaptation of buildings to serving a new function in Zielona Góra and Żaganie. The conclusions drawn from an individual view into each of the described problems are no different than when designing new buildings. It is not until we look into the whole preparation and design process, and gathering all experiences from the formal-legal sphere, that allows us to notice that, in the case of revitalizing postindustrial buildings and their adaptation to serve modern-day functions, a multifaceted but also specific approach is required.

Keywords: revitalization, post-industrial buildings

1. INTRODUCTION

The revitalization of postindustrial buildings in Poland is one kind of investment process strictly connected with the construction industry. That is why, as is the case with all construction, it is subjected to building regulations in the formal sphere: statutory, executive and technical.

The process of revitalizing a postindustrial building, basically speaking, should not differ from a building investment in the category of, e.g. "building

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modernization". Such a conviction still functions in a large circle of society, also among some representatives of the building industry. However, practical experience from the last few dozen years shows that the revitalization of postindustrial buildings is characterized by its own specifics, both in the sphere of preparing the investment and during its later realization.

The entire revitalization process of a building which had been used for industrial production, from the initial thought of its purchase or takeover, up to its completion and availability for use, can be divided into four main stages:

1. Planning and programming the investment in the functional and financial scope.
2. Designing.
3. Completion and turning it over for use.
4. Exploitation by target users.

The present article touches on issues from the first two stages, which in light of Polish building law are not yet considered the building process. They precede, describe and define it, but as of yet, do not pose any social consequences or negative effects on the environment. What is more, at this stage the investment can be remodeled, redesigned or even completely stopped without significant social harm. Such action in the course of carrying out an investment that has already been commenced results in many damages, can be very costly and poses a risk to spatial order.

2. SPECIFICS OF FORMAL AND LEGAL ISSUES IN PROCESSES

A specific approach to building investments connected with the adaption of what used to be a building used for industrial production already begins the moment a decision is made to purchase or by other means acquire such a building by the investor interested in the undertaking. If in the case of preparing to assume an investment connected with the construction of a new building on an undeveloped property, the main issue is developing a business model based on the calculation of the price of the new cubature of the building, the issue in the case of post-industrial buildings at this stage of planning an investment is much more complex.

The investor along with the designers must diagnose the existing building substance in terms of:

- the capacity and power of existing connections to utilities,
- its technical state and strength of the construction,
- the necessity and scope of carrying out necessary demolition work,
- the capacity and power of the existing technical installations,
- the connection of the building with the modern urban fabric.

Another parallel and equal route must be taken by works connected with the formal-legal possibility of introducing a new function to buildings. The basic decisions regarding formal issues must be solved, above all, by the area development plan (ADP) or in an obtained legally binding decision regarding land development conditions - (LDC). Each of these two planning documents has its advantages and drawbacks. There is a general opinion that the lack of a land development plan for a given parcel of land is, from the viewpoint of the investor, more beneficial. He must then apply for a decision regarding land development conditions to be granted, in which he can specify his intentions in great detail. The application can also be more provident, flexible and universal in its nature. The drawback of such a solution is a long period of waiting for the application to be looked into and a decision to be granted. This can take anywhere from a month to three years. Sometimes, the time of carrying out the investment is shorter than that taken to obtain the decision on LDC.

In the case when an ADP is approved for a given location, the decision regarding the conditions of the investment is almost immediate. However, it can happen that the provisions of the plan are unfavorable, even to the point that the investment in the intended scope becomes unprofitable or even impossible. Changing unfavorable ADP provisions is an arduous and time-consuming process. The result is also not 100% predictable, as the proposed changes to the records can be protested, denied or ultimately not approved by the gmina (municipality) or city council.

The provisions of the ADP can exclude the planned function or significantly limit it. This often stems from the fact that planners preparing the plan a few years earlier or the former owner had a different idea for how the building should be used. The functions anticipated by the ADP for the building are often described in great detail, with a small margin for so-called permissible or accompanying functions. The individual provisions are described illogically, contradicting or excluding each other. The most common mistake in ADP provisions which were prepared a few years ago is leaving manufacturing as the basic function for buildings located in the center of the city. Modern-day industry, but also free production, currently requires locations in the suburbs, in industrial areas with easy access to transportation and not in a neighborhood to which it could pose a nuisance connected with, e.g. noise or air pollution.

Another problem connected with post-industrial objects are records regarding the percentage share of greenery in the surface area of a plot of land and the number of planned parking places. This is of particular importance in the case of buildings which are currently found in central districts of modern-day cities.

The above issues can be additionally „strengthened" by provisions connected with environmental and cultural protection of the area, or protection of the building if it is entered in the register of historic buildings. If the designers are planning the

expansion, adding on, or demolition of parts of the buildings from the post-factory complex, they must check if such activities are allowed by the ADP. Each time, the building project has to be approved by the conservator, even in the scope of the designed technical installations on the inside of the building, which must replace old worn ones, oftentimes installed over 100 years ago.
Obtaining permission to tear down a building in a building complex which, as a whole, is entered in the register of historic monuments becomes a bigger problem in the formal-legal sense; even the tearing down of a building without much cultural value but comprising a part of the complex must be approved by the conservator. Removing a building from the register is treated as an exception. It takes place at the request of the voivodeship (province) conservator, on the grounds of a decision issued by the appropriate minister for matters dealing with cultural heritage protection.
This decision is issued upon carrying out preliminary investigation, which is to establish the actual cultural value of the building. It must be noted that making a decision regarding the application to remove a building from the register can be a very time-consuming process and often influences project decisions, even resulting in the investment being abandoned altogether.

3. POST-INDUSTRIAL BUILDINGS

In the case of listed post-industrial buildings, adapting the designed function to the spacing, number and size of window openings in the outside walls becomes a problem. This problem often takes on even more importance if the elevation of the historic factory was created completely of brick, along with details of the façade, or is plastered and ornamental in appearance, with window casings, cornices, corbels, etc. Designers must then look for solutions which will satisfy the conservation doctrine, as well as fall into agreement with laws on the thermal protection of buildings and designed energy pattern. The size of the windows is of significance in ensuring adequate amounts of daylight in rooms for the permanent stay of people. Very often, the size of the window openings does not fulfill technical regulations. The surface of the windows is too small in relation to the surface area of the room. In this situation, one ought to apply for permission to derogate from this provision, granted the State Provincial Sanitary Inspectorate in consultation with the Regional Labor Inspectorate.
In the case of a designed function where the rooms will be people's worksites, the cubature of, e.g. office rooms, is also important, with work safety and hygiene regulations additionally regulating the minimum cubature of office accommodation per a single worker. Correlating these two issues, i.e. the surface area of windows and cubature, is a rather problematic matter in the case of listed postindustrial buildings.

When mentioning the cubature of buildings, one ought to take a longer look at the issue of room height in old factory buildings. In most cases, it is higher than the minimum required by current laws. However, if a situation occurs where the height is lower, such rooms cannot be designed for the permanent stay of people. It is very often technically impossible to increase their height, e.g. by lowering the floor, and the raising of ceilings is impossible or unprofitable. Problems also arise in the case of rooms the height of which is much higher. Leaving the ceiling so high is not cost effective due to the price of heating and discomfort of using such rooms (echo, noise, etc.). It is not always possible to add an intermediate floor, both due to technical reasons (lack of windows) or because of the provisions of the ADP regarding the permissible number of storeys. A common solution which often provides a solution to the given situation is designing etresols, though this is also characterized by its own formal and technical restrictions.

In the last year, laws regarding the so-called energy requirements of buildings have changed radically. Stricter laws regarding the thermal protection of building partitions and the amount of energy delivered to the building have significantly changed how designing new sanitary, heating, ventilation and air-conditions systems is approached. In this case, post-industrial buildings are treated as newly designed ones, since the replaced installations are completely new. Problems which occur after revitalizing such buildings in terms of their energy requirements are connected, firstly, with the choice of heating system. There are often large difficulties with designing boiler-houses for gas furnaces. Firstly, one should analyze if there is a source of cogenerated district heating, since such a solution is first to be accepted by building law. Applying a different source of heat must be supported by an audit, which will unequivocally prove the economic advantage of such a solution. In the case of post-industrial buildings, preparing such an audit is often considered, since such buildings usually contain boiler-houses equipped with smokestacks which cannot be taken apart (historical monument). Providing heat from the local electrical power and heating station which has a certificate of cogenerated energy requires creating a district heating substation, and sometimes quite a large segment of a heating pipeline through dense city center development. Modern heating, ventilation and air-conditioning systems, which make it possible to most effectively save energy, have their own specifics based on increasingly more advanced equipment which no longer fits in rooms inside buildings. Such equipment must be installed outside. In the case of buildings with interesting elevations, they are installed on roofs, which are first adequately reinforced. In the case of historical buildings their location on rooftops, on the fifth floor of a building, requires the approval of the conservator and fulfilling many technical regulations regarding the distance from the edge of the roof, windows, intake and exhaust vents, etc.

The revitalization of old factory buildings must also bring about improving the insulation properties of the building partitions. As mentioned earlier, this issue requires a specific approach in the case of historical post-industrial buildings. The interesting architectural elevation of such buildings (e.g. face brick, rich detail), does not make it possible to use commonly applied styrofoam or mineral wool insulation from the outside. Insulating walls from the inside of the building is a solution which, from the viewpoint of the theory of physics, is faulty, or at the very least, not very efficient. That is why more technologically advanced solutions are applied, with the necessity of applying materials with higher parameters. This results in increased costs of the investment, which are not carried over onto the energy balance of a building. Insulating buildings from the inside also leads to a significant decrease in the surface area of a building, as well as the amount of light reaching the room, as a result of increasing the thickness of the walls on the inside.

A much smaller problem is ensuring the required heat transfer coefficients for sloped and flat roofs. Here, the thickness of insulation can be hidden in the thickness of the construction or within the plane of flat roof.

A separate issue is ensuring the insulation of windows and door openings. In most cases, old windows and doors in former factory halls were made with steel frames and contained single panes of glass. Of course such a solution is unacceptable today, both, due to laws regarding the thermal protection of the building and exploitation costs. Modernization projects for such buildings call for changing the windows to modern ones with very good thermal insulation parameters. However, in the case of historical buildings the current conservatory practice, once again, allows for wooden or aluminum windows and doors to be installed while maintaining the historic divisions. These are solutions of a higher standard, thus also accompanied by a higher price tag. Additionally, modern profiles, both wooden as well as aluminum, are wider and more massive than past ones, which further restricts the amount of light entering the rooms.

In the case of revitalizing post-industrial buildings, the investor may also have to face problems connected with chemical, biological or radioactive contamination of the building. The necessity of carrying out professional evaluations also affects the economic balance of the entire undertaking. If such an evaluation reveals the contamination of the building, a cost analysis of its removal must be carried out. The reclamation or decontamination of an area preceding an investment is usually a very expensive and complicated process.

Analyzing formal issues, one also must mention the necessity of obtaining connection conditions to utilities or ensuring adequate amounts or power. Old outside installations, including connections, can be heavily exploited, characterized by small diameters and power outputs, or simply damaged. Obtaining conditions for connecting to utilities at the present level can be faced

with difficulties, especially in city centers, where the networks are overloaded, have too small diameters, and their concentration underground is so great that it would be necessary to rebuild large stretches of the entire below-ground infrastructure beneath the streets. The number of collisions, their removal and necessity of reaching agreements with all media owners generates numerous problems which precede the initiation of carrying out such an investment.

In the case of electrical energy installations providing power to modernized buildings, it is often necessary to construct a new transformer station to ensure adequate amounts of power. The monopolist practice of energy providers often forces investors to construct new transformation stations and then transfer them over to the energy provider. Such a new station must be constructed on a specified, though small, plot of land with public road access. It is this accessibility that often poses big problems, especially when the plots of former manufacturing plants are densely built-up or contain a closely-knit frontage along the street.

An abundance of problems also arises when designing water and sewerage installations. In city centers, old sewage collectors do not have big enough diameters. Connecting a new sewerage system from what used to be a manufacturing building (characterized by low sewage discharge) adapted to function as a residential building with a many times higher discharge to the existing city sanitary sewage system is often impossible. The technical conditions set out for the connection impose connecting long stretches of sewers, sealed holding tanks or the retention of sewage with pumping stations.

The situation is similar in the case of runoff rainwater from roofs or parking lots. Overfilled city sewage treatment facilities often do not have such high capacities. In the issued technical conditions for collecting rainwater, the responsibility of managing runoff is placed on the investor, which leads to the necessity of storage in tanks and its slow transfer to the city sewerage system. Introducing runoff rainwater to the ground in the area of a city usually becomes impossible due to numerous protected deep well water intake areas which are maintained in cities.

Former factories also do not meet current fire safety regulations, this being yet another set of formal-legal issues. Due their wide scope and complexity, they will comprise a separate research paper. It should only be noted that laws regarding the fire protection of buildings refer to both, actual building structures which are subjected to revitalization as well as their surroundings. While there is a possibility of some derogation from these regulations with the consent of the Voivodeship Fire Chief in the case of buildings, especially listed properties, it is very difficult be granted such exceptions in the case of requirements connected with fire access and escape routes, and supplying water for firefighting operations. Distances, e.g. from external evacuation routes or the number and size of fire hydrants must be the same as for newly-designed buildings. In former factories, such requirements are often difficult to fulfill.

4. CONCLUSIONS

The revitalization of post-industrial buildings is currently one of the activities of the construction industry which exhibits constantly increasing dynamics. The number and variety of modernized and adapted buildings of such type now makes the analysis of such processes possible. The above described formal and legal aspects are the result of the study of a few projects concerning the adaptation of buildings in Zielona Góra and Żaganie to new functions. An individual view into each problem does not lead to conclusions any different than those applicable to designing new buildings. It is not until the preparation and design process is looked into as a whole and all experience from the formal and legal sphere collected, that we can observe that the adaptation of post-industrial buildings to new, modern-day functions requires a multifaceted, but also specific approach, different than that of newly designed buildings. When considering the above-described problems, the revitalization process of a former factory can be planned in such a way that successfully leads to the introduction of a new functional use within its walls - a new life.

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SPECYFIKA ZAGADNIEŃ FORMALNO - PRAWNYCH W PROCESACH REWITALIZACJI OBIEKTÓW POPRZEMYSŁOWYCH

S t r e s z c z e n i e

W artykule poruszono zagadnienia z początkowej fazy procesu inwestycyjnego związanego z rewitalizacją obiektów poprzemysłowych: z planowania i programowania inwestycji w zakresie funkcjonalnym i finansowym oraz projektowania. Opisane aspekty formalno - prawne, są wynikiem popartym doświadczeniem kilku projektów adaptacji obiektów do nowych funkcji w Zielonej Górze i Żaganiu. Pojedyncze rozpatrywanie każdego opisanego problemu nie daje innych wniosków, niż przy projektowaniu

budynków nowych. Dopiero spojrzenie na cały proces przygotowania i projektowania, zebranie wszystkich doświadczeń ze sfery formalno - prawnej, pozwala zauważyć, że w przypadku rewitalizacji obiektów poprzemysłowych, ich adaptacji do nowych współczesnych funkcji, konieczne jest podejście wielowątkowe, ale i specyficzne.

Słowa kluczowe: rewitalizacja, obiekty poprzemysłowe

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