Scientific and economic support for construction development in the countryside of Ukraine

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Abstract

The article is devoted to the concept-categorical apparatus concerning scientific and economic support of industrial and civil construction development in the countryside of Ukraine. The author defines concepts of scientific and economic provision, development, countryside, construction. On the basis of generalization of theoretical studies' results, the author's interpretation of the essence of construction development in the countryside is provided, where the latter is considered as a dynamic process, a movement to acquisition of qualitatively new parameters and properties by industrial and civil construction in rural areas, which will be carried out in accordance with achievements of scientific and technological progress in the field of construction and will promote: satisfaction of individual and social needs of rural subjects, sustainable development of rural areas, forming positive image of rural areas and the country in conditions of globalization and integration.

Subjects and objects of construction activity are defined. Types of construction in the countryside of Ukraine are highlighted.

Keywords: Development, Industrial Construction, Civil Construction, Countryside, Types Of Construction.

1. Introduction

In order to recognise the processes, characteristic of the country's countryside, and the peculiarities and trends of industrial and civil engineering development, in particular what is one of the levers of dynamic changes, the corresponding conceptual-categorical apparatus must be formed. This apparatus, as well as principles, methods and tools, should serve the successful development of rural areas, aimed at creating favourable conditions for economic subjects in the countryside and rural communities.

2. Main body

To determine the essence of the concept of scientific and economic provision of development of industrial and civil construction in rural areas, its components were investigated.

The notion of "scientific" is interpreted as based on the principles of science. At the angle of investigated issue, meaningful is the notion of a "scientific apparatus", which is understood as main provisions determining the direction, logic and conditions for preparation and conduct of the research [1].

The category "economic" is used in the following meanings: one that makes it possible to save something; economically advantageous; in relation to organization and conduct of economy, associated with the study of economy, etc. It is the last definition of this category to be used in the work.

In the process of research, the concept of "provision" revealed its ambiguity. According to an explanatory dictionary it is understood as [2]:
- a certain action in the meaning of provision, that is, to create reliable conditions for the implementation of something, to supply something in sufficient quantity, to satisfy someone or something in some kind of needs;
- livelihoods;
- a set of mathematical, software, hardware means for processing data using computing equipment.

The most common are such phrases in which the notion of "provision" is present: informational, ergonomic, mathematical, organizational, legal, software, technical, material and technical, etc.

Summarizing the above-mentioned interpretation, under "scientific and economic provision" it is proposed to understand a set of principles, provisions, means of economic direction, the applied use of which creates conditions for effective satisfaction of needs on a scientific basis.

An analysis of the interpretation of the "development" concept indicates its ambiguous interpretation in scientific literature. Under this term a process, change, type of movement, degree of education is understood. However, as a result of a study the definitions of the "development" category can highlight such universal properties of this phenomenon as: process, movement, object change. At the same time, it is advisable to clarify this circumstance. Interpretation of development as a transition to a new quality, state of an object, is not necessarily associated with creation of an improvement. Development can have both upward and downward orientation.

There is a need to focus on the essence of the concepts of "countryside" and "rural territory." The European Union's legislation describes "countryside" (rural territory) as an area that is located at a considerable distance from business activity of centres and is experiencing some difficulties in obtaining the necessary set of economic and social benefits by its population [3]. That is, according to the above definition, "countryside" and "rural area" can be considered as identical concepts.
Rural area is treated as an area where rural settlements (villages, settlements), agricultural and other lands, forests, reservoirs, objects of transport and other infrastructure serviced by inhabitants of rural settlements are located [4]. A similar definition is given by Olyynyk Y. B., who views the countryside as a collection of people, territories and other resources of the public landscape and small settlements outside the immediate sphere of economic activity of large city centres [5].

Let's agree with the position of Zalizko V. D. regarding the fact that taking into account the historically established definition of a place (area) as a certain territory, area, it is appropriate to treat "rural territory" as a combination of natural resources concentrated in the vicinity of villages and settlements inhabited by the population [6].

The position of Baranovsky M. O., which offers several approaches to the concept of "rural territories", namely: administrative, industrial, settlemental, territorial and integrated, is emphasized substantially. Summarizing these approaches, the author identifies rural areas as a complex entity that performs a variety of functions, includes areas outside urban settlements and territories that are used as a basis for development of agriculture and settlements, rural society and utility entities [7]. Malik M. Y. emphasizes the fact that it is "a system set, historically formed within historically defined limits" [8].

Well-known researchers Yurcheshyn V. V. and Onischenko V. M. focus on multifunctionality, defining "rural territory" as a "complex and multifunctional natural, socio-economic and production-economic structure, characterized by a combination of peculiarities of each of them". Development of rural areas is complex, aimed at creating conditions for agricultural production, non-agricultural activities, as well as the inhabitants of rural areas [9 - 11].

Development of industrial and civil construction in rural areas is a factor that can provide positive animation changes in the agrarian sector by: contributing to strengthening material and technical base of agriculture; creating housing and communal conditions for the socio-economic rise of a village, improving provision of rural settlements due to the development of their engineering and technical infrastructure; increasing the welfare of rural residents; forming a positive image of a particular rural territory for business, residence, employment; creating opportunities for introduction of modern technologies in production, service, social and communal spheres; encouraging diversification of production and economic activities in the countryside, reducing the impact of seasonal labour in the agrarian sector; time alignment of cash receipts to agrarian business entities; obtaining opportunities for stable financing of diverse projects for business development in rural settlements, etc.

In rural areas, construction as a material production branch carries out creation or reconstruction of buildings, structures, as well as their complexes, which are an integral part of the basic means of production and non-production. Thanks to construction each business entity forms "...tangible assets that an enterprise holds for the purpose of using them in the process of production or supply of goods, rendering services, leasing to other persons, or implementing administrative and socio-cultural functions, the expected useful life (exploitation) of which is more than one year (or an operating cycle, if it is longer than a year)". The Encyclopedia of Accounting specifies the belonging of such construction products to fixed assets as a set of tangible assets, where each object is identified, that is, it can be processed separately. The term "fixed assets" defines the same set of assets, but it is an integrated quantity in which the physical units that make it are not distinguished [12]. Consequently, in the real economy, construction is aimed at erection of certain buildings and constructions that belong to fixed assets and are assets of specific economic entities. At the same time, the assets formed by construction industry acquire the form of building materials, works, services, etc.

In the academic explanatory dictionary of Ukrainian language, construction is interpreted from four positions, namely: construction; "The place where construction is being carried out, as well as the building under construction; institution or organization that builds, constructs something "; "Creation of certain social relations, a social system, new forms of government, organization of labour, etc."; a science that deals with problems of building structures, their artistic design, as well as architectural solutions.

Construction is also considered as a branch of the national economy which provides construction and reconstruction of residential, public and industrial buildings and structures, and creates a base for development of all its branches. Construction is a special branch of national economy which is formed as a process of reproduction of fixed assets and requires capital investment in its implementation, and as a process of development of this field of material production [13, p. 356].

In state building codes, the term "construction" is shown from a substantive point of view and is defined as new construction, reconstruction, overhaul and technical re-equipment of construction objects [14, p. 1]. At the same time, in the specified document houses, buildings, structures of any purpose, their complexes or parts, linear objects of engineering and technical infrastructure are understood as the object of construction.

In economic-legal literature construction is also considered from the standpoint of: new construction, reconstruction, overhaul, technical re-equipment. It is also defined as activity, which includes new construction, repair work, expansion and reconstruction, construction of prefabricated buildings at the site of work, construction of temporary objects. General construction - construction of integral residential complexes, office buildings, other public and communal or agricultural buildings as well, engineering and other buildings, industrial facilities, pipelines and power lines, sports complexes.

According to the above definitions, the term "construction" has no unambiguous interpretation. In addition, in normative legal documents it is used both for definition of the general process of consolidation and in specific types of activities. Taken together, this underscores the need to work out a clear terminology base for construction development in rural areas. Consequently, general for considered definitions of construction is its understanding as building, the process of erection of a new object, reconstruction, repair, technical re-equipment. Depending on sectoral features, construction as a process can go beyond these general provisions and specify and concretize.

Summarizing the social and terminological aspects of understanding construction and rural areas, it is proposed to interpret the term "construction in rural areas" as:

- a process consisting of a set of consistent, technologically grounded actions in construction of buildings and structures subject to compliance with: regulatory and legal acts in the field of construction, taking into account branch features and production and economic trends of rural development, within which it is planned to carry out such activities;
- territorial division marked by construction industry, which involves creation of additional value through new construction, reconstruction, repair or technical re-equipment of material objects of production and non-production purposes, as well as manufacture of building materials and provision of construction services in rural areas;
- a project for creation or renovation of fixed assets in a rural area, capital or current repair, reconstruction, restoration, renovation, carried out by a contracting organization (organizations) in accordance with customer’s requirements and at his expense or at the expense of investors. It may include organizational, exploratory, design, assembly, construction and other work related to the construction (upgrade) of construction sites. Implementation and management of such projects involves cooperation with competent authorities that provide permit documentation, information and consulting services.

Types of construction in the countryside are summarized in Table 1.

Construction activity is carried out with participation of entities, the main of which are: developer, customer, contractor, state, investors, self-regulated organizations, professional scientific and
investors, architects, builders, etc. [20].
In addition, the subjects of construction activity include professional scientific and creative organizations, international organizations in the field of construction. Implementation of each investment-construction project is carried out with participation of such entity as the state.
Depending on the scale of construction process, all listed construction entities can participate as well as only one that can combine functions of investor, developer, customer, and contractor and subcontractor. The combination of functions can take place in the case of small construction - individual housing construction, construction of garden houses, premises for household maintenance, means for soil cultivation, etc. In the latter case, self-regulated organizations, professional scientific and creative organizations, international organizations in the field of construction do not directly participate in construction. At the same time, the state through a system of legislative and normative levers, controlling, permissive and regulated influence remains a constant participant in industrial and civil construction in rural areas.
Construction sites in the countryside are buildings and structures. Under buildings we mean construction objects artificially created by people, located on a certain land, having an overground, underground part or a combination of them; including premises, systems and networks of engineering and technical support, the purpose of which is to carry out individual or complex functions for placement of production capacities, implementation of production processes, storage of products, raw materials, materials and other supplies, as well as for permanent and/or temporary stay and/or residence of people. That is, buildings have the following characteristics:
- a capital structure that has an overground or underground part or combines them;
- is placed on a certain land plot;
- includes premises equipped with systems and networks of engineering and technical support and communications;
- is intended for placement of production processes (production capacities), storage of stocks used in the process of production, finished products or for permanent or temporary residence of people.
It is proposed to only consider those construction sites that have the above-mentioned characteristics as buildings.
A construction is proposed to be determined as a construction object artificially created by people as a result of construction and installation work which may have an overground, underground, and also a ground part and is intended for production, auxiliary, service processes or their parts, transportation.
The totality of buildings and structures as objects of construction should be considered as structures, that is, what is built or erected. All the diversity of structures in the countryside is proposed to be classified according to certain features.
1. Buildings in rural areas, according to the possibility of people living in them (in the direction of use), are divided into industrial and civilian.
1.1. Industrial buildings are intended for placement of production, as well as creating conditions for implementation of supply and marketing activities.
By appointment, industrial buildings are divided into production (in agriculture field these are livestock farms, greenhouses, and others); power (CHP, transformer substations); transport and warehouse facilities (warehouses); auxiliary (administration facilities), etc.
According to the branch principle they are divided into buildings in agriculture field, enterprise buildings for storage and processing of agricultural products, enterprise buildings of other economy sectors.
1.1.1. Industrial buildings in agriculture field are divided into production, auxiliary and service buildings and general economic purpose buildings.

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### Table 1: Types of construction in rural areas

<table>
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<tr>
<th>Construction Type</th>
<th>Method of Construction (Organizational forms)</th>
<th>Assignment of Construction Objects</th>
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<tbody>
<tr>
<td>- construction of agricultural facilities</td>
<td>- construction by contract method</td>
<td>Industrial:</td>
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<tr>
<td>- construction of other industrial construction objects in the countryside</td>
<td>- construction by utility method</td>
<td>- construction of housing and utility facilities;</td>
</tr>
<tr>
<td>- construction of objects of material and technical supply and sales</td>
<td>- construction by mixed method</td>
<td>- construction of health, physical culture and social security facilities;</td>
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Investors are subjects of investment activity which make decisions on investing their own, borrowed and attracted property and intellectual property in investment objects. Investors can act as depositors, lenders, buyers, and can also act as any member of investment activity. Participants of investment activity may be citizens and legal entities of Ukraine, other states, which ensure implementation of investments as executors of orders or on the basis of investor’s order [15]. In construction activity such investors as developers are of particular importance – they are entrepreneurs who make profit in the process of creating new buildings. Such entrepreneurs have the copyright to the idea of construction. They take an active part in all stages of construction - from selection of object location to its sale. Developers are often legal entities who own or are able to attract investment for construction. The economic factor of construction, namely the need to invest significant sums of money, led to emergence of a new variety of investors - shareholders - legal and natural persons who, through their share contributions, carry out construction of buildings.

The developer is a person who according to the law has acquired the right of ownership or use of land for construction needs and performs necessary for the construction actions [16, 17]. Developers can be both legal and natural persons who have a land plot on which construction will be carried out. Developer can have own funds necessary for construction, and independently invest them in construction process.

Customer - a person authorized by investor who carries out the investment project of construction [16, p. 520]. The customer may be an investor at the same time, that is to invest in construction. By law, a customer is a natural or legal person who intends to build in a territory (one or several land plots) and file a corresponding application in accordance with law established procedure [18].

Since construction process involves technological operations (work) that require a variety of knowledge, skills and training, third parties or contractors who work under a contract can be involved in their implementation. The Contractor, in accordance with the Civil Code of Ukraine, has the right, unless otherwise stipulated by the contract, to involve other persons (subcontractors) in execution of construction works, while remaining responsible to the customer for the result of their work. In this case, the contractor acts as a general contractor for the customer, and as a customer for the subcontractor [19].

Self-regulated organizations related to construction activities are non-profit organizations with special status, which unite subjects carrying out economic and/or professional activities in the field of construction and operate according to certain principles. Such organizations may include survey organizations, unions of designers, architects, builders, etc. [20].
A) Industrial buildings of the agricultural sector are buildings used for agricultural production and intended for maintenance of farm animals and poultry, storage of plant growing and livestock breeding branches' products.

B) Auxiliary and service industrial buildings are buildings that are not directly involved in production process but are intended for placement of objects or units that provide services of auxiliary and servicing nature without which production process is impossible or difficult. These buildings include garages for cars, tractors, combines and other agricultural machinery, repair shops, warehouses, and others.

B) General buildings are administrative buildings in which workplaces of employees of the enterprise management and its subdivisions are equipped with necessary communication and engineering systems and networks, as well as technical means and equipment, which increases the productivity of their labour; buildings of auxiliary character - a medical centre; storage facilities for inventory storage, technical devices; utility buildings - a walk-in closet, a shower room, a bathroom, etc.

1.1.2. Industrial buildings of enterprises for storage and processing of agricultural products include:

- Warehouses - buildings intended for storage of seed, food and feed products in containers and bulk. Depending on types of products for which they are intended, storage can be divided into potato, cabbage, root crop and other storages. By the floor level under-ground, semi-submerged (depression in the ground to half the building height), deepened (more than half the building height located in the earth) are allocated. By the level of use of cooling systems and devices - repositories, which have ventilation cooling systems, storage facilities without cooling systems. By appointment - for prolonged storage of products, for treatment of products, for pre-sowing, commodity processing, etc. By presence of additional premises - repositories, which have only premises of the main nature; repositories with main and auxiliary premises (for placing control rooms, engine room for refrigerating equipment, parking for trucks, utility premises, office premises, laboratories for quality control). By type of storage products - bulk, storage of products in containers, mixed type of storage.

- Buildings for processing of fruit and vegetable products and their storage. These include:
  - buildings of canny and factories (vegetable, fruit);
  - henries - production departments for fermentation and salinization of products, as well as buildings with subsidiary and servicing units are placed there;
  - buildings for drying vegetable products and fruits;
  - buildings for fruit storage refrigerators and buildings for production of quick-frozen vegetables, fruits and berries.

- Buildings for processing and storage of grain and products for its processing; grain compartments, elevator complexes, mills, shops for cereals production, macaroni products, mixed fodders. Such buildings may also include both the main building and the premises of auxiliary and serving character.

- Buildings for processing and storage of livestock products. These include: buildings for meat and dairy products storage refrigerators; buildings for production of canned meat; buildings for production of smoked, raw smoked, dried meat and sausage products; cheese factories - buildings of enterprises for production of cheese and cheese products; buildings of enterprises, shops and divisions for production of dairy products - milk, sour cream, cream, sour-milk products, butter.

1.2. Next type of buildings in the countryside are civil buildings, which are divided into public (social-cultural or non-residential) and residential.

Socio-cultural - these are buildings designed for social services, social, cultural, educational, health and other needs. Such buildings, according to the frequency of their use, are divided into buildings of regular use - shops, schools, dining rooms, kindergartens and nurseries, etc., and periodic use - summer cinemas, fairgrounds, etc.

Residential buildings - intended for permanent or temporary residence of people - houses, dormitories, hotels. The features of civil buildings in rural areas are that they must meet peasant requirements for rational use of land, environmental friendliness, efficiency, meet the requirements of standards and achievements of scientific and technological progress in construction field, and organically fit into the environment.

2. In addition to buildings in rural areas constructions in countryside are also considered buildings. The last are proposed to be divided by sectoral features into buildings in the field of agriculture, construction of enterprises for storage and processing of agricultural products and construction of other sectors of economy, including technological facilities - engineering (engineering and technical), transport, etc.

In the field of agriculture, structures similar to buildings are divided into production, auxiliary, service and general purpose. Industrial buildings in agriculture field are buildings intended mainly for temporary storage of agricultural raw materials and finished products, keeping animals, storing equipment, etc. They do not have systems and networks of communication and engineering. In the field of plant growing - these are silos and haylings, temporary sites for storage of agricultural products - grains, roots, potatoes, annual and perennial grasses; in the field of livestock breeding these include food storages, summer fields for maintenance of farm animals and poultry.

Engineering and technical structures are buildings that provide conditions for implementation of production processes and deliver resources, without which it is difficult or impossible to produce agricultural products. These facilities include: constructions of a water supply system for industrial, public and residential buildings; constructions for the supply of industrial, public and residential buildings; power supply and power transmission lines; hydromelitary structures - irrigation and drainage systems, etc.

A separate type of agricultural facilities are transport facilities, which include a network of roads and premises of both temporary and permanent character.

Buildings and structures in rural areas are classified by other features.

I. Depending on materials used in construction process: stone, concrete, reinforced concrete, wood, combined;
II. Depending on the climatic conditions of the district - heated or not heated;
III. By number of floors: low-rise (1-5 floors); middle-rise (5 - 12); high-rise (more than 12 floors);
IV. By the way of erection: full-fledged (panel or bulk blocks); not industrial (brick);
V. By longevity: with a term of service more than 100 years (public buildings); with a service life of 50 to 100 years; with a term of service from 20 to 50 years; with a term of service of up to 20 years (temporary buildings and structures).
VI. By degree of fire resistance: high fire resistance - buildings with stone structures; average fire resistance - wooden plastered; low fire resistance - wooden not plastered;
VII. By liability class: I - large industrial and public buildings, 9-storey residential buildings with increased operational requirements; II - the majority of small public and industrial buildings, houses up to 9 floors; III - buildings with average operational requirements, residential buildings up to 5 floors; IV - temporary buildings with minimum requirements.

On the basis of generalization of concepts of "construction", "rural", "development", the following interpretation of "development of industrial and civil construction in rural areas" concept is proposed. This is a dynamic process, a movement towards acquisition of qualitatively new parameters and properties by industrial and civil construction in the countryside which will be carried out in accordance with achievements of scientific and technological progress in construction field and will promote satisfaction of individual and social needs of rural subjects, sustainable countryside development, formation of a positive image of rural areas and the country in conditions of globalization and integration.

3. Conclusion
On the basis of generalization of the research results it is proposed to understand "scientific and economic provision" as a set of principles, provisions, means of economic direction, applied use of which creates conditions for effective satisfaction of needs on a scientific basis. “Construction in rural areas” is proposed to be considered as a process, a construction industry, separated by a territorial feature, as well as a project for creation or renovation of fixed assets in rural areas, capital or current repairs, reconstruction, restoration, renovation, carried out by a contracting organization (organizations) in accordance with customer requirements and at his expense or at the expense of investors. 

Development of industrial and civil construction in rural areas is considered as a dynamic process, the move to acquisition of qualitatively new parameters and properties by industrial and civil construction in rural areas which will be carried out in accordance with achievements of scientific and technological progress in the field of construction, and will promote: satisfaction of individual and social needs of rural area subjects, sustainable development of rural areas, formation of a positive image of rural areas and the country in conditions of globalization and integration. 

Development of industrial and civil construction will be facilitated by appropriate provision, that is, a set of measures and means, creation of conditions that will ensure normal course of processes, implementation of scheduled plans and programs, maintenance of a stable functioning of the system. Scientific and economic support for industrial and civil construction development in rural areas involves a set of scientific, economic, organizational, legal and other measures aimed at development and effective implementation of new knowledge and technologies in solving the problem of construction development in the village in accordance with needs and directions of rural area development.

References