

Azarova Irina

PhD (Eng.), Associate Professor of the Department of Project Management, orcid.org/0000-0002-9332-5124
Odessa Regional Institute of Public Administration of the National Academy of Public Administration under the President of Ukraine, Odessa

KEY FACTORS AND TOOLS OF REGIONAL DEVELOPMENT

Abstract. *The aim of the study is to find the most promising methodological basis for territorial development studying, as well as the analysis of key indicators and tools to influence their development. Researches in urban development are provided at the intersection of many areas of knowledge, such as: City Planning and Urban, Project Management and Economy, Development, Sociology and many others. The main theories and models of territorial development were analyzed; the key factors of development were identified. Based on the analysis performed, a comprehensive classification of the territorial development indicators was proposed. The results of this study can be used in developing strategies for the sustainable development of territories by structural units of city administrations, as well as in territorial planning at various levels. The further research is possible to provide the formation some new methods of collection and processing information on key development indicators in accordance with the proposed classification.*

Keywords: *sustainable regional development; territorial development indicators; indicative approach; area development models; land development*

Introduction

The urgency of researching problems of urban areas development is caused by several reasons. On the one hand, this problem is an area of public interest. Creating the best conditions for sustainable territorial development is one of the main tasks of the state. On the other hand – the most effective investment in real estate development is relevant to commercial investors, both internal and external.

Regional development in former Soviet Union countries is uneven, creating imbalances in its economics and worsening its demographics.

Thus, the depopulation is present at all regions of Ukraine since 1991. Along with it, there is a growing trend in the area of settlements, which is accompanied by extremely inefficient use of the territories, insufficient infrastructure development, transport, communal and technogenic problems. According to the same Ukrainian legislators, this is a consequence of long-term excessive state interference in regional politics [1].

Nevertheless, despite attempts to introduce a European regulatory system, in urban development activities the state still acts as the main regulator of the territorial development of Ukraine [2].

Some existed methods of formation of regional development strategies, which are used in the development of general plans of settlements, are poorly formalized, subjective and based mainly on statistical data of the previous periods and the results of public opinion polls. According with the approved Ukrainian Methodology of regional strategies development [3], the system of indicators to analyze the state of the region is determined by the main developer of the strategy. So, there is an urgent need to refine the methodological support for the process

of making managerial decisions in formation of strategies for the regional development.

Therefore, the aim of the research is to find the most promising methodological basis for studying sustainable long-term territorial development. Some existing theories and models of development in various scientific fields are being analyzed to achieve this goal, as well as key performance indicators and tools influencing the development of certain areas. The key performance indicators classification were also proposed by the author.

The models and theories of territorial development

The urban planning approach to the regional development was best represented by W. Christaller in his “A theory of central places” [4], proposed in 1933. The theory is dedicated to optimal principles of making cities network structure skeleton, aimed to an optimal access to city services and transport communications between the cities. The number of access levels will be directly proportional to the level of social and economic territorial development.

Some dynamics to the process of central places forming was added by Y. Veneris [5]. He argued that in origin the cities appear as a network of uniformly distributed settlements like medieval type. In accordance with the model of J.H. von Thünen [6, p. 151], this settlements was a distribution centers for the surrounding farms.

In the second stage of the urban system evolution, some cities are getting new economic activities, differentiation and "industrial" city structure are creating, which was described, in particular, at the theory of the central places.

Further differentiation of cities production and specialization activities leads to creation of a "post-industrial" city system, described by A. Lösch [7] in his "Theory of the economic landscape". The basic tenet of his theory says that as far as we will move away from the places of production, transport costs will inevitably lead to higher prices for the goods and services. Higher prices will cause to a drop of customers demand. This process creates a "demand cone" – radius of distribution area where the lower limit is a threshold value of the market, and the top limit is based on the reasonable goods selling distance. Unfortunately, in this theory would be inexplicable the rapid development of international online trade via the Internet.

The central place theory has some other limitations and formalism. The key aspects of the topography and natural resources location, climate and soil differences, transport links are lead to the inevitable deformations of the model and its mismatch with the reality. Some urban planning specialists also add the synergy and self-organization, government regulation, and regional policy to important urban development factors, as well as many others.

The key aspects of territorial development were analyzed in many regional growth theories. The researchers divided them into a four main groups:

- 1) neoclassical theories;
- 2) the theories of cumulative growth;
- 3) new theories of regional growth;
- 4) other theories about specific issues of territorial development [8].

The first group of theories considers on traditional manufacturing factors, transport costs, social, political and geographical factors as the main reasons for regional growth. G. Borts [9] believed, that the pace of region economic development is determined by the quantity and quality of natural resources, the level of technology, the monetary resources availability and the labor resources quantity and qualification. Due to the free geographical movement of these factors, the growth rates of different regions should getting equal and stay constant until a new exogenous shocks or temporary deviations happens. But the social and political aspects, innovations and regions peculiarities are ignored as growth factors. Growth is regarded as translational changing equilibrium states, which acted in homogeneous economic space with free perfect competition.

The creators of the cumulative growth theory took into account shortcomings of neoclassical theory. According to G. Myrdal [10], the territorial development is influenced by factors of territorial specialization, transport costs and innovation. Due to these territorial features, the growth centers appear as local agglomerations with economic effects of production scale.

Researchers of the growth poles theory such as F. Perroux, J. Boudeville, J.R. Lasuen [11] believed that

localized number of enterprises with a strong potential and high ability for innovation becomes the center of attraction for the main production resources with maximum return from their use. Some researches in the innovation sphere show what the leading regions attract highly qualified researchers, causing their migration from donor regions [12].

According to P. Pottier [13], the transport links between two such poles give a good start for the local area development through the movement of resources and the penetration of innovations. The axes of development are being formed. The poles and the axes form together the spatial "skeleton" of the regional development. But even this theory has disadvantages too. The impact of local small businesses and transnational corporations on regional economy, as well as the effect of production scale and monopolistic competition, was ignored.

Supporters of the new regional growth theories research the territorial development on the basis of the new international trade theory and the new growth theory. They explain the competitive advantage creation in imperfect competition conditions based on knowledge and experience of employees. According to this concept, increasing the effect of production scale and the regional market expansion with its availability are the main formation factors of regional agglomerations and development of the respective regions.

The model of M. Fujita and P. Krugman [14] describes the influence of urban industry concentration to the activation of local economy and appearing of agricultural production around these centers. The model of M. Fujita & P. Krugman & T. Mori [15] assigns a significant development potential to areas of major transport nodes. Their model ignores the international influence on the regions development, as well as local social factors and innovations [8].

Other regional growth theories are much smaller in their scale. They focuses on specific aspects and particular issues of regional development. So, the theory of the economic base of Pieter de la Court describes the regional development as the growth of basic economic sectors, which produces export goods. H.A. Innis in his raw material theory offers the production of raw materials for export as a basic economic sector. The theory of flexible specialization describes development in quantitative and qualitative indicators as the transition from price competition to innovation competition, and so on.

All these theories unite the incompleteness of all possible production and spatial factors of regional growth [8, p.60]. A common feature of these theories is considering the region as a uniform formation with equally affection of different growth factors. Any of these theories can't explain the neighborhood of rapidly developing and depressed areas in the same city.

The concept of sustainable territories development was developed in urban planning to establish more

equitable and sustainable settlements development. The base of the concept was described by T.R. Malthus as a realized need to relate the pace and direction of human civilization development with the possibilities of our planet.

The regulations of the sustainable territorial development was adopted in “The Charter of European Sustainable Cities and Towns Towards Sustainability” (Aalborg Charter) [23] in 1994, the Leipzig Charter on Sustainable European Cities [17], the European Urban Charter II (Manifesto for a new urbanity) [18], and in some other documents.

In European interpretation [18] a city of sustainable growth is a city that provides its current and future residents of the conditions of life and management, which are both stable (basic rules of the organization), safe, flexible (system open to a variety of changes), and cost-effective, while respecting environmental requirements.

The scientists are interpreted and perceived that concept ambiguously. V. Danilov- Danil'yan [19] accentuates, that sustainability implies something stable and constant. At the same time the development intends direction of movement and qualitative changes. Scientists are trying to solve this contradiction into various ways.

M. Averkina [20] makes a guess about some attributes of city as an open system, such as Equifinality. This feature of dynamic system means ability of urban system to reach the stability state in different ways from different initial states, despite of the stochastic disturbances in the environment. That approach is wrong because of the practical impossibility to separate the city from external macroeconomic processes.

The leading scientists proved the cyclical character of economic systems evolution, such as R.J. Hawtrey, I. Fisher, M. Tugan-Baranovsky A. Shpithov, G. Cassel, W. Mitchell, J. Schumpeter, J.M. Keynes, F. Braudel and

others. J. Forrester [21] & D. Meadows model proved the inevitability of the cyclical development of the largest socio-economic system – planetary economy, ecology and population, natural resources, food and industrial production. Therefore, sustainable urban development shouldn't be reached by blocking or "quenching" of external macroeconomic disturbances. They must be taken into account as development indicators of the sustainable region development model.

An approach that assesses the sustainability of a system's development based on monitoring of certain indicators was called indicative approach [22]. Indicative and model approaches to assessing the sustainability of development were considered in previous studies by the author [23].

In 2013, the Commission on Sustainable Development at the United Nations was closed and transferred its authority to the UN high-level political forum [24]. The UN chief called as disadvantages the Commission's inability to integrate economic, social and environmental aspects of sustainable development into a single formula. For these reasons, as well as weak scientific methodological study, the concept of sustainable territories development is still mainly beautiful legislative slogan than concretized methodology of development. Despite this, research in sustainable urban development remains relevant. The concept of "Smart Cities" involves the use of digital technology for long-term solutions to social, environmental and economic problems of urban areas, including the optimization of resources usage, improving the infrastructure services quality. The smart management of supply and demand allows saving amounts of resources.

The study of existing basic theories of urban development allows making the key factors list in table, developed by the author of the study.

Table – Urban development key factors in the basic theories and models

Theory / author	The main provisions of the theory	Key factors of development
1	2	3
1. The neoclassical regional growth theory		
<i>G. Borts</i>	The area economic potential defined by the production factors. The regional development is achieved by moving these factors among regions (migration labor, resources transportation, etc.)	Quantity and quality of natural resources; Labor force amount and qualifications; Funds of capital; Technological level
Models of countries convergence / <i>R.M. Solow,</i> <i>T. Swann and others</i>	All of the regions and the countries have equal development potentials. The backward regions have more intensive development. The advanced regions develop more restrained. This provides the alignment of development levels to all of this areas	Proportion of material and human capital in the gross regional product (GRP); Technical progress pace; Rate of savings; Rate of amortization; Population growth pace
<i>H. Siebert</i>	The region's productive capacity volume is determined by its development factors with the spatial heterogeneity of these factors	Capital; Work; Earth; Technical knowledge level; Transportation costs; Social factors

1	2	3
<i>R. Hall, C. Jones</i>	The territorial development due to the effective labor use, which is influenced by social factors. Development gets possible in the right economic environment, which is well-formed by the state and institutional policy. It gives the best conditions for capital accumulation and investment it to the industry	Material capital; Human capital; Work; Social factors; Institutional factors; Political factors; Geographical location
2. The theory of cumulative growth		
The concept of circular cumulative causation / <i>G. Myrdal</i>	The slight region potential can get huge pace of development due to some growth factor. This effect will circulate to the surrounding area, but the development of all the territories will be uneven	Specialization; The effect of production scale
The concept of growth poles / <i>F. Perroux, J.R. Boudeville</i>	The regional development provides by the innovation and capital diffusion from leading industry further thru the economic ties hierarchy	Leading industry with a high capital multiplier effect and the innovation ability; A group of local industries linked to the main industry in "input-output" mode; Spatial agglomeration of industries with economies of scale
The axes of development / <i>P. Potier</i>	The transport links between some growth poles makes the "settling" development effects for the transit area	Several of the distant growth poles; The volume of freight traffic; The rate of innovation diffusion; Infrastructure development
The theory of the urban agglomeration / <i>H. Richardson, "The centre-periphery model" / J. Friedman</i>	The territorial development made by industrial cities agglomeration, promoting the innovation and technical progress, the labor market growth	The industrial agglomeration effect in large industrial centers; Production localization preferences; The difference between the local and general production factors prices
The model of propagation of innovation waves / <i>T. Hegerstrand, P. Haggett; Model "Volcano" / H. Hirsch</i>	The implement the innovations in a large cities as a centers of science and capital starts the regional development. The innovation's distribution from the center to the periphery takes place in several waves	The ability to innovate; Distribution channels innovations; The speed of innovations propagation
Central place theory / <i>W. Christaller</i>	The cities creation and growth aimed to the optimal settlements network structure skeleton formation performed under the influence of growth factors	Optimal access to services; Optimal transportation between cities; Effective territorial management
The economic landscape theory / <i>A. Lösch</i>	The urban industries concentration with its scale economy and transportation costs minimization causes the local economic growth. The equality of growth factors and consumers distribution creates a development balance to industries	The production types concentration; Terrain (deposits of natural resources, transportation hubs)
3. The new regional economic growth theory		
The theory of market potential / <i>J. Harris</i>	Regional development activates by the industry concentration and its function of self-reproduction. Placing the industry into good market access area promotes the local concentration of production	Market access level defines the "market potential" as a weighted sum of the local purchasing power. The weight of area purchasing power depends of its remoteness
The base- multiplier region income model / <i>A. Pred</i>	Regional growth is determined by an increasing volume of exports. That starts the production of goods for the local needs. Local industry developing leads to increase the export base multiplier, and so on	The regional export base multiplier is the ratio of revenue from outgoing sales to the income, which spends to local goods production
Model of modernization of production location traditional theories / <i>M. Fujita & P. Krugman, T. Mori</i>	The industry concentration contributes the urban development and capital activity. The agriculture forms around the cities to supply inhabitants of food	The city size and the industry concentration creates the local market potential

1	2	3
The cyclic factors motion model / <i>È. Venables</i>	The main industrial sector development causes the secondary production development and further along the technological chain of goods	Industry concentration; The size of the sales market
The agglomeration theory / <i>P. Krugman, R. Fiani,</i> Model "The core-periphery" / <i>A. Hirschman</i>	Regional development is determined by the increasing production concentration. The production development is provided by the increasing returns to scale effect, competition, minimizing the transportation costs etc	The level of local industrial agglomeration
Econometric model of regional growth spatial lags / <i>Lungen Inn</i>	The regional economic growth (on China experience) is facilitated by both development factors and factors of resources and technologies, transfer payments free movement	Non-agricultural labor force; Industrial goods; Fixed assets; Direct foreign investments; Different factors interference effects
4. Other regional growth theories		
The economic base theory / <i>Peter De la Court W. Sombart,</i> The raw materials theory / <i>H.A. Innis</i>	External demand for made in basic sector goods leads to production scale, income and employment increasing, That activates the local economy as a whole	The regional exports volume of goods, which is manufactured by the basic economic sector
The sectors theory / <i>A. Fisher, K. Clares, J. Fourastié and others</i>	Labor productivity growth in the primary and secondary sectors of the economy of the region causes the people income increase. That stimulates the consumer goods production by tertiary sector. The labor productivity is growing much more slowly in it, which is contributing to the labor influx from the two primary sectors	Income demand elasticity of the tertiary sector products; Primary and secondary sector labor productivity
The flexible specialization theory / <i>P. Hirst, J. Zeitlin</i>	The regional development associates to the quality production development based on flexible technologies, to the transition from price competition and mass production model to the address product and market niches	The changing nature of product demand on the local market
5. The sustainable territorial development concept		
Model of world dynamics / <i>J. Forrester</i>	Different development factors have a mutual influence on each other forming the cyclical nature of the development	Population, production facilities, living standards and environment pollution as derived from the production facilities
The World 3 model / <i>D. Meadows</i>	The nonlinear relationship is setting between the development factors. Sustainability provided by achieving a balance between consumption (and contamination) of the resource and its recovery	Population, industrial capital, environment pollution
Model "Nature-Society-Human" / <i>O. Kuznetsov, P. Kuznetsov, B. Bolshakov</i>	The development is a result of more efficient use of the available power, achieved by higher technology (through innovation) and quality of management	Power-sharing of labor; Efficiency of machines and technologies; Social efficiency – the products for needs, which ensured the demand solvency
The Indicative approach	Sustainable development is defined and projected based on the selected indicators system	A groups of: – social indicators; – economic indicators; – environmental indicators; – institutional indicators
The concept of "Smart City"	The digital technology usage for long-term solutions of social, environmental and economic problems in urban development	Optimization of resource consumption; Services quality improving; Keeping supply and demand balance

Territorial development indicators classification

The development indicators classification can be done by the following main criteria. It is possible to allocate constant, relatively constant and variable criteria by the indicator's stability in time. The constant indicators include the climatic characteristics, the seismic activity, etc. The relatively constant indicators are a recreational potential, topography, soil composition. In some cases these parameters may be modified, for example, by a vertical layout or by a national park creation. The variable urban development indicators include the purpose of a land use, population and its density, the service infrastructure types and its state, etc. The variable indicators are the most representative in the formation of territorial development strategies.

In its activity types indicators can be grouped as follows:

1) the economic sphere indicators, such as the volume of exports, the volume of the sales market, the volume of demand, the GRP, the multiplier of the export base and so on;

2) indicators of industrial sphere include productivity of industries and enterprises, the number and qualification of human resources, economies of scale of production, the turnover of goods and transportation costs, etc.;

3) indicators of urban planning and environmental sphere include the level of the region's industrial agglomeration, the quantity and quality of natural resources and transport communications, provision of housing, tourist and recreational potential and so on;

4) the social-demographic indicators, such as natural population growth and the population increase due to migration, etc.;

5) the indicators in innovation – scientific and technical potential, the share of innovative products in the GRP, the rate of innovation diffusion, etc.

Conclusions

The study of the main regional and urban development theories and models allows us to make a conclusion about the limited nature of existing approaches to the study of territorial development issues. The available theories are mainly focused on isolated development aspects – economic, industrial, urban planning, resource and so on. Assessment of the complex impact of various industrial, spatial, social and other regional growth factors combination to its development is unfortunately quite problematic based on the existing models and theories.

The most promising approach to solving this problem is the concept of sustainable development, which considers the balanced development of three areas – economic, environmental and social to ensure the sustainable development of the system in the long term.

The concept of sustainable development today is in its infancy. For the full application of this concept in assessing of the territorial development sustainability, its conceptual and methodological apparatus needs further refinement. Therefore, in the course of this study, as an improvement of an indicative approach to assessing the development sustainability, a classification of territorial development indicators was developed according to several classification criteria: by the ability to change the indicator over time and by field of activity.

The results of this study can be used in developing strategies for the sustainable development of territories by structural units of city administrations, as well as in territorial planning at various levels. The further research is possible to provide the formation some new methods of collection and processing information on key development indicators in accordance with the proposed classification.

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Азарова Ірина Борисівна

Кандидат технічних наук, доцент кафедри проектного менеджменту, orcid.org/0000-0002-9332-5124

Одеський регіональний інститут державного управління Національної академії державного управління при Президентові України, Одеса

ОСНОВНІ ФАКТОРИ ТА ІНСТРУМЕНТИ РОЗВИТКУ РЕГІОНІВ

Анотація. Метою дослідження є пошук найбільш перспективної методологічної основи вивчення розвитку територій, а також аналіз ключових показників і інструментів впливу на їх розвиток. Сфера досліджень, пов'язаних з розвитком міських територій, знаходиться на перетині багатьох сфер знань: містобудування та урбаністики, проектного менеджменту та економіки, девелопменту, соціології і деяких інших. У цих сферах були проаналізовані основні теорії та моделі розвитку територій, виділені ключові фактори розвитку. На підставі виконаного аналізу була запропонована комплексна класифікація показників розвитку територій. Результати цього дослідження можуть використовуватися при розробці стратегії сталого розвитку територій структурними підрозділами міських адміністрацій, а також при територіальному плануванні на різних рівнях. Напрями подальших досліджень полягають у пошуку методів збирання і опрацювання інформації за ключовими показниками розвитку відповідно до запропонованої класифікації.

Ключові слова: сталий розвиток територій; індикатори розвитку територій; індикативний підхід; моделі розвитку територій; девелопмент територій

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