International typologies of rural areas[1]

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Abstract. The article presents international, mainly European, typologies of rural areas, focusing on the features and differences in the criteria for identifying 'rural' territories in the European Union. The author explains the reasons for the need for more comprehensive typologies based on the transport accessibility of the territory, trajectories of its transformation, and macro-regional characteristics. The article considers the main methodological difficulties in developing a universal typology of rural areas for all regions of the world and emphasizes differences in the indicators and their threshold values used for typologies and in the levels of administrative-territorial analysis. The author provides references that reflect the methodological foundations of contemporary national typologies and mentions scientific innovations used in such research works. Finally, the article identifies the main common features of the presented typologies, focusing on their methodological limitations.

Key words: rural areas, international typologies, spatial differentiation, types of rural areas, assessment methods, rural-urban continuum, transition zones, identification criteria

Methodology for the typologization of rural areas is of particular interest for rural geography due to the high diversity and heterogeneity of its object. Typologization can serve various research purposes: to monitor the development of 'genetically' identical rural areas, to improve the efficiency of rural and regional policies, to support spatial planning, and to scientifically identify distinctive features of regions/countries (Kotomina, 2019).

Approaches to the definition of the 'rural' vary greatly by region and country, which leads to disputes about the correct definition of rural areas and to extensive lists of works in different countries. At the international level, there is no unambiguous or universal definition of rural areas (Antonova, 2015); therefore, international organizations, countries, regions and researchers develop their own methods for identifying rural areas, which determines methodological problems for comparative analysis of rural areas in different regions. Moreover, the lack of a general theoretical framework for the study of rural areas gives researchers freedom of choice, which, provided the specificity of

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the object, raises doubts in the objectivity of dividing rural areas into separate structural elements. Other barriers to developing a unified typology of rural areas are the lack of homogeneous and comparable statistical data at the subregional level and significant differences in demographic, social-economic and environmental conditions in rural areas of different countries (Naumov, Rubanov, Ablyazina, 2021). These factors hinder the adoption of a general statistical definition of rural areas.

The article is based on foreign works on the methodology for typologization of rural areas. Such works focus on the features of typologies based on the available national statistical data, problems in the qualitative cross-country comparison of the resulting typologies, new mathematical methods for processing statistical data, and potential directions for improving the representativeness of data for the final typological selection. For the Russian science, the research experience of European countries is of greatest interest due to the similarity and high heterogeneity of rural territories, which provides opportunities for applying foreign experience in the heterogeneous Russian countryside.

Foreign approaches to the typology of territories

European countryside varies greatly by region, representing a wide range of different types of rural areas: from the Low Countries' countryside closely connected with urban agglomerations to the remote resource peripheries of Fennoscandia; there are different types of spatial transition from urban to rural areas and differing transitional types (Khalaf, Michaud, Jolley, 2022). Moreover, even in the European Union, there is no unified typology: the choice of final parameters and criteria for identifying 'rural' territories remains with governments of the member countries, which becomes an obstacle to a unified regional policy due to disproportions in the financial needs of different types of rural areas and limits the representativeness of a cross-country comparative analysis.

Table 1 presents the criteria and threshold values used for identifying rural areas in the EU countries, which allows to conditionally consider about 18% of the EU citizens as villagers and more than 80% of the total EU territory as rural areas (Khalaf, Michaud, Jolley, 2022).

Table 1. Rural areas in the EU countries

Country	Administrative-territorial level	Criteria	Threshold values
Austria	Communes	Settlement size	>2000
Belgium	Communes	Sectoral structure of employment	20% employed in agriculture

Country	Administrative-territorial level	Criteria	Threshold values
Bulgaria	Municipalities	Population density Population size	<150 people per sq. km <30000 people in the largest city
Cyprus	–	Population size	Not cities
Czech Republic	Municipalities	Resident population size	<2000
Germany	Districts	Population density Settlement size	Population density <150 people per sq. km or <100 near a large urban core (with 100 thousand residents)
Denmark	Separate residential areas	Settlement size	<200
Spain	NUTS 5	Population size	<2000
Estonia	Municipalities	Population size	<2500
Finland	NUTS 5	Many	–
France	NUTS 5	Population size Number of workplaces Spatial patterns	<2000
Greece	NUTS 5	Population size	<2000
Hungary	NUTS 4	Population size Population density	<10000 <120 people per sq. km
Ireland	Electoral districts	Population size	<1500 people outside the urban influence
Italy	Communes	Population density	<100
Lithuania	Postal districts	Population size Settlement features	<3000 Weak urban features
Luxembourg	Communes	Population size	<2000 in the commune's administrative center

Country	Administrative-territorial level	Criteria	Threshold values
Latvia	–	Not cities	–
Malta	–	Settlement size	<1500, not cities
Netherlands	Submunicipal level	Population density	<500 people per sq. km
Poland	Municipalities/ their parts	Population density	<150 people per sq. km
Portugal	Communes	Population density	<100 people per sq. km
Romania	Villages/ Municipalities	Settlement size Employment in agriculture	–
Sweden	Districts, separate residential areas	Settlement size	<1000 <200 people per sq. km
Slovenia	Municipalities	Population size Population density	<5000 <100 people per sq. km

However, since the mid-1990s, the UE has taken measures to develop a unified definition of 'rural areas', and some general, limiting criteria were introduced by the typology of urban and rural areas, which was developed in 1994 by the Organization for Economic Cooperation and Development (OECD) and in 2004 by the Eurostat typology (Champion, 2008). Both typologies use a similar simple approach based on the population density analysis which divides the EU subregions (NUTS 3 level) into three types: mainly urban, intermediate, and mainly rural. The OECD typology estimates the share of population in rural municipalities: the types are identified as 15% and 50% respectively. The Eurostat typology is based on the population size and density: all areas with more than 50 thousand residents and over 500 people per square km are classified as mainly urban, and areas with less than 50 thousand people and less than 100 people per square km — as mainly rural.

This methodological description reveals a serious limitation of the approach on which these typologies are based: as classifications they measure 'rural areas' using a single indicator — population density. Such an approach is too rough to reflect the apparent and increasing polymorphism and diversity of natural, social and cultural characteristics of the contemporary rural areas. Therefore, the OECD and Eurostat typologies no longer correspond to the new scientific concepts of 'new rurality'/postindustrial rural areas due to not showing

their heterogeneity and multidirectional development. To overcome this limitation, many researchers developed typologies based on multivariate statistical approaches — a wide range of variables, ranging from social-demographic and sectoral to territorial (land use, remoteness, integration with urban space, etc.).

The main reasons for the development of new typologies and for the improvement of old ones with more complex types are as follows: growing diversity of rural areas; growing complexity of development policies in rural regions; growing interdependence of rural and urban economies; a better understanding of the mathematical modeling advantages and limitations for the development scenarios for each type of rural areas. Moreover, in the 2000s, the basic ideas of new economic geography ('path dependence', agglomeration effect in rural areas) were introduced. Many works tried to adapt new concepts to the existing needs, and the OECD (in 2007) and EU (in 2012) typologies were supplemented with an indicator of remoteness from urban cores, which is an example of the center-periphery concept. The list of the most valuable research typologies is presented in Table 2.

Table 2. International typologies of rural areas

Name (year)	Country	Administrative territorial level	Indicators, method	Purpose
OECD Typology (1994)	OECD	NUTS 2/3	Population density	Political
Austrian Spatial Development Concept (2001)	Austria	Municipalities	Territorial development	Political
Slovenian Typology (2002)	Slovenia	NUTS 5	Population density and dynamics, natural conditions	Scientific
Pan-European Typology (2003)	EU	NUTS 2/3	Availability zones, economic indicators and their dynamics	Intermediate
Eurostat Typology (2004)	EU	NUTS 3	Population density	Political

Name (year)	Country	Administrative territorial level	Indicators, method	Purpose
Rural and Urban Areas Classification (2004)	UK	NUTS 5	Population density	Scientific
New Rural Typology (2005)	Spain	NUTS 4	Territorial division, cluster analysis	Scientific
Rural-Urban Classification (2005)	India	Districts	Employment	Political
Spatial Structure (2005)	Germany	Raster of 1*1 km	Accessibility zones	Intermediate
Typology of Localities (2005)	France	'Localities'	Cluster analysis	Scientific
Finnish Typology (2007)	Finland	NUTS 5	Principal components method	Scientific
Improved OECD Typology (2007)	Belgium, France, Poland	NUTS 5	Accessibility criterion and cluster analysis were added	Political
Serbian Typology (2008)	Serbia	NUTS 3	Social-economic indicators, cluster analysis	Scientific
Urbanization of Postal Districts (2009)	Netherlands	Postal districts	Housing density	Scientific
Typology of Rural Centers (2009)	Belgium	Municipalities	Weighted average social-economic indicators	Scientific
Typology for the Strategic European Policies (2012)	EU	NUTS 3 + raster	Division into regions, accessibility and economic density	Intermediate

Name (year)	Country	Administra-tive territorial level	Indicators, method	Purpose
Czech Typolo-gy (2016)	Czech Republic	NUTS 4	Demograph-ic and eco-nomic indica-tors и экон. показатели	Scientific
Brazilian Ty-pology (2016)	Brazil	Subregions	Popula-tion density (Eurostat)	Scientific
Swedish Ty-pology (2016)	Sweden	NUTS 5	Social-eco-nomic indica-tors, cluster analysis	Scientific
Chinese Typol-ogy (2020)	China	Villages	Social-eco-nomic indicators, neural model	Scientific
'New Rural Ty-pology' (2021)	USA	Counties	Social-eco-nomic indicators, unsupervised machine learning	Iintermediate
Evaluation of SME under spatial hetero-geneity (2021)	Canada	Municipalities	Social-eco-nomic indicators, as-sessment of heterogeneity	Intermediate

Main features of the typologies under study

In most examples in Table 2, rural typologies are simple dichotomies identifying a gradient border between rural and urban areas. The standard number of types varies from 3 to 9: the number of inter-mediate types between 'truly urban' and 'truly rural' depends on the distance from the urban core (dependence on the city), manifestation of urban features (urbanization) and population density. When mak-ing a typology, the EU countries tend to conduct analysis at the level of subregions and below to better identify the heterogeneity of rural areas and to further aggregate data and get a more general picture at the regional or national level.

In fact, the typologies under study can be divided into two large groups: 'spatial' and 'social-economic'. The first group is largely a form of zoning (its methods are not widespread in foreign countries) which reflects the spatial structure of relations between rural and urban areas. Such typologies include many categories, varying from urban to rural. The second group is based on the division of rural areas according to similarity of social-economic indicators (employment in agriculture, share of pensioners, gender and age structure of the population, etc.). It should be noted that many typologies are largely hybrid: they identify types by both spatial (transport accessibility from the center, belonging to a macro-region) and social-economic factors (population density, per capita economic indicators). In other words, functional typology is combined with the center-periphery concept: the position of the type depends on both spatial location and social-economic development.

The main limitation of most typologies is problems of scale and scope. The problem of scale occurs when aggregating selected types to a higher administrative-territorial level — the representativeness of the existing rural-urban differences and the degree of spatial heterogeneity decrease; therefore, urban types begin to prevail, and the features of rural areas are lost. The problem of scope is determined by the poor comparability of statistical regions in different countries and, accordingly, by the difficulty of using one typology for all countries. For instance, about a half of the typologies based on the EU member-states' specific indicators cannot be applied to the entire EU at any NUTS level. For a greater scope, a compromise is needed, which means less demanding statistics. Although national typologies usually do not imply a broader scope, they can provide innovative conceptual/methodological insights as reflecting specific knowledge about rural areas.

Most European typologies under study were developed for scientific rather than political purposes, i.e., are mainly used for research. The development of typologies for political purposes was funded by the EU government departments and Commission. Political purposes prevailed in the early 2000s, while in the 2010s, such works focused on scientific purposes — the need for typologies for management purposes was lost. Today, among typologization methods, aggregation for identifying types prevails over disaggregated methods: the quality and scope of statistical data ensures typologization 'from below'.

Ideas potentially useful for research

Let us consider in more detail those typologies that can provide conceptual ideas and methodological experience for research. Many works are based on innovations that can be used for developing a research typology for Russia's heterogeneous rural areas. Thus, the

OECD typology updated in 2007 was supplemented by the distance criterion — an estimated travel time from the rural area to the nearest city with more than 50 thousand residents (Van Eupen et al., 2012), which allowed to identify two subtypes for 'mainly rural' and 'intermediate' types: 'close to the city' and 'remote'. The criterion for identifying each subtype is the ability of 50% of the population to reach a large city within a specified time interval. In European countries, this interval is 45 minutes, in North America — 60 minutes. This typology applies different criteria for each region, depending on population density and infrastructure development; therefore, it can be used for typologization based on the center-peripheral concept for European/Asian Russia, Black-Earth/Non-Black-Earth regions.

Typology for the Strategic European Policies, which was developed after the OECD typology, aimed primarily at taking into account the diversity and differences of the EU regions, which is necessary for a correct comparative analysis of rural areas in different parts of the EU (Van Eupen, 2012). This typology divided the EU territory into 5 geographical zones based on the similarity of environmental conditions and improved the standard set of accessibility and population density by multiplying population density by per capita GDP (economic density). Thus, the idea of the economic development of rural areas allowed to assess their sectoral transformation and the changing role of agriculture. Moreover, this typology is to be supplemented with a time variable to assess the dynamics of rural development.

Among works on national typologies, one can identify a group of countries that, like Russia, have undergone post-socialist transformations both in society as a whole and in rural areas: Slovenia, Czech Republic, and Serbia. The former socialist bloc countries show similar features of changes, which can be used for typologization. The Slovenian typology is based on the following division of rural areas (Perpar, 2002): suburban areas with the population density above 200 people per square km and the share of employed in agriculture above 10%; typical rural areas differing by local geographical conditions (lowlands, hills and mountains); depopulation zones divided into three subtypes depending on the depopulation — intensive (loss of more than 2.5% of the population per decade and the average age above 72 years), controlled (similar rate but the average age below 72 years), and potential (no depopulation, the average age above 72 years). To ensure a higher internal homogeneity of regions for analysis and further implementation of regional policy, the lowest statistically available administrative-territorial division was used — local community.

The Czech typology is based on the principles similar to Russian works: the typology aims at identifying those rural areas that suffered the most from aging and those depressed villages that lost their economic specialization. Thus, the identified types represent a scale of depression and stagnation in rural areas (Hrabák, Čapkovičová, 2015): steadily developing rural areas, stable, non-developing rural areas,

'non-core villages' with economic problems, 'aging/retirement villages'. The next level above this typology is the division of rural areas by the historical past, which is a dichotomy of the border areas, on which Czechs settled after the World War II, and the internal Czech core. There are still statistical differences in their development — in characteristics of their social and human capital. This typology also reflects the social-economic transformations determined by the Velvet Revolution of 1989 (transition to the market economy, changes in economic relations with the countries of the socialist bloc) and the Velvet Divorce of 1993 (with Slovakia), which affected rural areas. Thus, there is an indirect impact of the economic-geographical location (position in relation to the long-term growth centers) of rural areas on their development.

Unlike most others, the Serbian typology uses cluster analysis to initially divide rural areas into groups on the basis of similar social-economic problems for further regional planning. The typology identifies the following types of rural areas: the most lagging in terms of health care, with demographic problems, and specializing in some economic activity; then factor analysis of the main problems/characteristics is conducted (Martinović, Ratkaj, 2015).

In general, new ideas for the study of rural transformations through territorial typologization are proposed mainly in developed countries. Among the most advanced and interesting typologies are those adopted in the Netherlands, German-speaking countries, Sweden, and the United States (extremely specific). The Swedish typology does not focus on the urban-rural continuum but aims at identifying functional types of rural areas (looks like the functional typology proposed by A. I. Alekseev and S. G. Safonov). This typology describes how global rural trends affect the Swedish reality: development of tourism and recreational areas in the countryside, organization of retirement villages, etc. This typology is based on microdata (statistical areas do not correlate with administrative ones) and does not include geographical characteristics in cluster analysis (Hedlund, 2016), which allows to better understand the mosaic nature of rural Sweden.

The Netherlands has unique characteristics for the formation of distinctive rural types due to its high population density and lowland, uniform settlement: the high density of connections between urban and rural areas leads to a wide range of intermediate forms. There are many new ideas and concepts of rural areas in the country due to the highly developed research, complete and extensive statistical data, and in many ways unique research object. Many works aim at identifying suburban areas and their subtypes. According to the geographical theory, suburban areas are largely characterized by the classic hierarchical model, in which mobility within the municipality and between it and the central city is the most significant factor. However, in the Netherlands, there are clear de-

viations from theoretical models of mobility: while the north-east regions show the traditional hierarchical mobility, in the densely populated areas of Randstad and Limburg, the role of inter-district connections, movements from one suburban zone to the central city of another region and its suburban zone are more significant (Hornis, Van Eck, 2008).

Thus, in the polycentric, densely populated systems, suburban areas can be independent from the central city and become regional centers due to the connections with other areas. In other words, such suburban areas can be considered a part of the urban network at the regional level, and rural areas achieve the similar level of centrality to cities. On this basis, the typology of rural areas divides them into four types: classical (few connections with suburban areas of other regions), city-dominated (low mobility to cities in other regions), intermediate (weak external and internal connections), and compressed (Randstad and Limburg with high connections with other suburban areas and cities). The multidirectional development of suburban areas can be explained by differences in the economic-geographical position and historical factors of spatial development, which determined the spatial decentralization of the country under the 19th-century urbanization. A favorable location close to other central cities or other attractive suburban areas is a prerequisite for more polycentric development.

In developing countries (Brazil, India and China in Table 2), there are no widely used, specific national typologies of rural areas with methodological innovations and new approaches. In Brazil, the development of its own typology is hampered by the lack of statistical data (Braga, Remoaldo, Fiúza, 2015). Therefore, for censuses and regional development projects the country uses the OECD typology.

Thus, typology is one of the most practical methods for assessing the dynamics of changes and differences between rural areas. However, this method has many disadvantages such as the problem of scale (losing details when aggregating to a higher level), the problem of scope (poor comparability of the regional data sets), difficulties with taking into account regional characteristics of rural development (many national typologies are not reducible to a single base), the quality of the initial data and its representativeness (secondary data cannot reflect specific processes and historical trajectories of each region). Foreign typologies can be divided into two large groups: spatial ones are based on the analysis of the spatial position of rural areas, their place on the center-periphery scale (analogue of the Russian zoning); the social-economic ones apply an extensive list of social-economic and demographic indicators (cluster analysis is an analogue of the Russian typologization). The main criteria for identifying different types of rural areas are as follows: population density, accessibility of territory, settlement size, employment, gender and age structure of the population. In recent decades, this list was supple-

mented by indicators reflecting the dynamics and trajectory of territorial development and the connections between rural areas and cities, which is determined by the mass dissemination of the new economic geography ideas about 'path dependency' and agglomeration effect in development. The impossibility of a 'rigid' single typology of rural areas made many countries identify subregions as a more homogeneous basis for typology (subtypes within separate geographical zones). Therefore, today the number of the identified types is quite large — 3 to 9 not to mention many intermediate forms between rural and urban areas. In each developed European country, there are national concepts for assessing and identifying suburban areas, focusing on the national features of rural areas to improve national programs for regional development.

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Зарубежный опыт типологизации сельской местности[2]

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Аннотация. В статье рассмотрен зарубежный, преимущественно европейский, опыт
типологизации сельских территорий. Описаны особенности и различия критериев выделения «сельских» территорий в странах Европейского Союза. Объясняются
причины формирования запроса на комплексные типологии, учитывающие транспортную доступность территорий, траектории их трансформаций, а также макрорегиональные особенности. Конкретизируются основные методологические трудности в разработке универсальной типологии сельских территорий для всех регионов
мира. Отмечены страновые различия в используемых для типологизации показателях и их пороговых значениях, а также в уровне административно-территориального анализа. Представлен справочный материал, отражающий методологический
фокус современных страновых типологий и научные новации, характерные для этих
исследовательских работ. Подчеркиваются основные общие черты представленных
типологий и их методологические ограничения.

Ключевые слова: сельская местность, зарубежные типологии, пространственная
дифференциация, типы сельских территорий, методы оценки, сельско-городской
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