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ECONOMICS



THE FUNCTIONAL AND THE INSTRUMENTAL IN MARKET DEFINITION: A LABORATORY FOR NATURAL EXPERIMENTS IN THE BALTICS

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Reforms of natural monopolies need clear delineations between the industries where market mechanisms contribute to social welfare and those where the costs of a transition to a market economy outweigh the benefits. In this article, we emphasise the difficulty of finding the optimum modes of governance within industries as a whole. Using the tools of the transaction cost economics, we show that, alongside the problem of market boundaries and the resultant position and behaviour of a company — an object of antimonopoly regulation — it is necessary to consider the hypothesis about the market being a special mechanism for coordinating interactions between economic entities. In particular, such determinants of transactions as asset specificity, uncertainty, and frequency can create a basis for abandoning the price mechanism. Williamson's heuristic models suggest that if an activity is characterized by high specificity, uncertainty, and frequency, the very organisation of this activity precludes transaction cost minimisation through the price mechanism employed either in full or in part (hybrid institutional agreements). This can be explained by excessive risks and ensuing high transaction costs. A more efficient solution is the organisation of interactions within a group of legal entities in control (within a single economic entity).

In order to compare the practical implementation of institutional alternatives, we examine the modes of governance in the gas supply industry. A major focus is the Baltic region where two interconnected pipelines — the Nord Stream and the OPAL — were constructed. Different ways to handle transactions relating to gas supply were employed at the time. We compare these ways

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and conclude that it is necessary to consider the determinants of a transaction to select the best structural alternative and to avoid choosing a wrong governance structure.

Keywords: market, transaction, modes of governance, hierarchy, gas, pipelines

Introduction

At the interface of academic, political, economic, and legal discourse, it is easy to confuse different meanings embedded in the same essential word. This word is *market*. A transition from a functional to an instrumental definition of *market*, and vice versa, may not only change ideas about current economic practices but also lead to regulatory conclusions, affecting decision-making in business and law enforcement. We remind the reader that, in economic studies, the functional differs from the instrumental in that the latter does not require a research approach to depend on the spatial and temporal context. In particular, instrumental rationality suggests that decisions made by individuals be examined in terms of maximisation behaviour, regardless of whether maximisation takes place in reality. The focus is on the explanatory, or predictive, power of this approach. The instrumental approach to analysing relations between economic agents can be described in terms of contracts. This is possible even if the counterparties did not mean to discuss terms and conditions or, least of all, conclude any agreements. Implicit contracts are a vivid example of such a situation. Accordingly, the instrumental approach to market research may appear as the presentation of almost any interaction between economic agents as a market one and the identification of relevant prices and quantities. In its turn, functionalism in the approach to behaviour studies in terms of rationality and to interactions in terms of contracts and market requires a weakening of the premise about the *de facto* absence of structural alternatives to economic exchange organisation (further, modes of governance). Another requirement of a positive analysis is the weakening of the premise about the absence of legally binding characteristics of contracts, or at least those perceived as such by its counterparties. The functional approach to studying the market as a means of organising interactions among economic agents allows for not only a comparative analysis but also for establishing the absence of a market despite the presence of such external attributes as relevant operations, transactions, and connections among legal entities.

This work aims to identify the grounds and possible consequences of a conclusion about the absence of market as a vehicle for interactions between parties to individual transactions, even if these transactions comprise operations relating to the production and transfer of goods. This also holds true for transfers between legal entities.

In section one, we will consider the problem definition as presented in research literature. In section two, we will give a theoretical interpretation that will provide an explanation necessary to delineate the boundaries of antitrust enforcement. In section three, we will examine major disputes among corporations and/or public authorities. In such situations, the question of a correct interpretation of relations between the counterparties, or, in other words, whether such relations can be interpreted as market ones, was coming to the fore. Finally, we draw conclusions about the appropriateness of interventions into economic agents' relations from competition authorities, depending on the employed mode of governance. This problem is not limited to local cases of 'degradation'. On the contrary, it has a wide scope, primarily, when it comes to relations in the province of natural monopolies amid ongoing reforms and the incompleteness of the regulatory framework.

1. Problem definition

Reforms in the system of natural monopolies require clear delineations between the areas where market mechanisms contribute to public welfare and those where the costs of a transition to a market economy outweigh the benefits. The need to identify what mode of governance is the most efficient one from the perspective of economics complicates decision-making. Note that the mechanism should be efficient not for the industry as a whole, or the circulation of certain goods or services, but for a special combination of transactions under certain spatial and temporal circumstances. Moreover, the conditions for such transactions may significantly differ [1, p. 45, 105].

The difficulty of choosing an optimal mechanism for transaction management for an industry as a whole is manifested in the existence of mixed regimes. For instance, Russia's electric power industry retains so-called non-price areas where 'market relations are still impossible for technological reasons' [2]. The market mechanism for transaction management — the price mechanism — is replaced in this situation by a trilateral governance mechanism described by O. Williamson [3, p. 79], the third party being a public regulator. The public regulator resolves the most serious disputes (firstly, those relating to rates) and sets the framework for relations within the industry. In the market of petroleum products transportation, pipeline tariffs are also regulated by the state. However, in October 2016, Russia's Federal Anti-Monopoly Service (FAS) carried out a market analysis and recommended to terminate such regulation to further the transformation of natural monopolies towards market competition [4]. At the same time, it was proposed that Transneft remained on the natural monopoly register and that the Federal Antimo-



nopoly Service retained control over the performance of the company. Transneft is considered a dominant economic agent in the market in question, regardless of its market share. A possible solution is a transition from a trilateral mechanism for transaction management to the market (price) mechanism. This will be possible if the decision of the FAS is adopted and the Service refrains from interventions in the pricing process.

The gas extraction, transportation, and distribution industries, which are the focus of this article, are in urgent need of selecting an optimal mode of governance. This holds true for both Russia and other countries, for instance, the EU member states.

From the perspective of the regulatory component of the business environment, antitrust regulation is one of the most sensitive aspects of the functioning of large companies in Russia, including national natural monopolists. In analysing the cases of a possible abuse of a dominant position by a company that is not a natural monopolist, a specific set of issues come to the fore. Using economic analysis tools, these issues may be interpreted as a company's lines of defence. Overall, they may be divided into three groups: (1) the delineation of the product and geographical boundaries of an economic agent's market; (2) the identification of an economic agent's position in the market (whether it dominates the market, if so, individually or collectively); and (3) an assessment of the actions of an economic agent from the perspective of possible consequences (whether, and if so how, it abuses its dominant position), including those for the consumer.

At first glance, these issues pose a dilemma for a natural monopolist.

It may be established in a dispute that a company operates in a natural monopoly market. In this case, the company's position is classified by default as dominant, according to Paragraph 5 of Article 5 of the Russian Law On Competition Protection. Only issue (3) remains relevant for such a monopolist. In effect, this means the launch of a trilateral mode of governance with government's mediation. The antitrust policy is tailored to deal with such situations.

Otherwise, it may be established that a company does not operate in a natural monopoly market. In this case, the antitrust authorities should deal with it as they do with any other company. The antitrust authorities have to use standard procedures, i. e. to control the effective performance of the market mode of governance. Another special case is that of a bilateral monopoly when the companies on both sides of the market are not natural monopolies and there are no other grounds for a regulatory authority's intervention. In this situation, it is highly probable that a bilateral mechanism for transaction management will be applied if the regulatory authority refrains from any intervention. This situation is examined in more detail in [5].

However, in all these cases, autonomous parties to a transaction transfer rights to each other. Therefore, from the perspective of the antitrust policy, there are grounds to speak of a commodity market, even if the relevant relations do not always fall within the market mode of governance.

At the same time, such a model overlooks another possibility for a scrupulous company to protect its legitimate interests. This is to question the synonymy of the two concepts that may seem quite similar — operations relating to the production and transfer of a product between two legal entities, on the one hand, and the sale of commodities, on the other.

This requires a hierarchical mode of governance, which may be more efficient than those considered above. However, an instance of vertical integration, it does not entail autonomy of its parts. This rules out any interpretation of relations between the parties to a transaction in market terms and thus takes such cases beyond the permissible set of situations that necessitate the use of antitrust policy tools.

In other words, it comes down to the foundations of the existence of a market as a special mechanism for organising interactions among participants in an economic activity, or economic agents, in terms of the antitrust legislation. This problem cannot be easily solved applying current regulations and usual economic analysis tools described in microeconomics textbooks. It seems that any interaction can be interpreted as a market one, even in the absence of the major market element — price. We remind the reader that the presence of price *per se* does not necessarily mean the presence of a market. A vivid example is transfer pricing.

However, the transaction cost economics, a key element of which is a comparative analysis of discrete structural alternatives to transaction organisation, opens up new opportunities. These opportunities pertain to using an economic analysis of non-standard situations for the purposes of antitrust enforcement and to improving type I and type II error rates in law enforcement [6; 7], in view of the available alternatives [8], including those relating to competition protection [9]. Thus, the next section will present the tools of the transaction cost economics adapted to fit this study.

2. Theory

Meeting the standards of economic analysis is a major requirement for improving the quality of law enforcement in regard to competition protection in commodity markets. This makes it possible to interpret both the results of an economic analysis and the situations of antitrust enforce-



ment [10]. To a great degree, this is a result of the valuative nature of the major rules of competition, the application of which requires that facts be established using relevant concepts borrowed from different areas of economics. One of the most promising areas in this context is the transaction cost theory.

The transaction cost economics, which is not to be confused with new institutional economics (for more detail, see [11]), highlights a number of important circumstances of running operations, namely, transaction attributes. They should be taken into account for the operations and relevant investment, as well as benefits for society, to be not only effective but also possible. These attributes are asset specificity, uncertainty, and frequency. Before discussing these attributes in detail, we should emphasise that transaction cost economics employs two behavioural premises — bounded rationality and opportunism [1]. What comes to the fore is that the results of using institutions of economic relations organisation depend on both the structure of incentives for agents and agents' ability to adapt, individually or collectively, to changing circumstances.

1. *Asset specificity*. Producing profits for their owners, assets can be used in very different ways, depending on the terms and conditions of contracts concluded with various counterparties. If redeployment to alternative uses or by alternative users or the repudiation of a contract by any counterparty does not lead to significant changes in productive value, there are reasons to believe that this asset is not specific. Strictly speaking, this thesis corresponds to the fundamental principle that competitive equilibrium translates into zero economic profit.

However, if there is a stable and noticeable difference between profits from one of the available ways to use an asset and the next profitable alternative, there are grounds to consider such an asset specific. The difference between profits from a contract with a certain counterparty and the greatest profit from a contract with an alternative counterparty is called quasi-rent, which is the measure of an asset's specificity.¹ In line with Williamson's ideas [1], the economic theory used to distinguish four types of specific assets. Later, the classification was expanded to include six types: (1) site specificity; (2) physical specificity; (3) the size of the market (dedicated assets); (4) human specificity (knowledge necessary for the transaction); (5) brand-name specificity; (6) temporal specificity [12, p. 3]. For the purposes of this study, it is necessary to take into account the attributes that fall under the categories of temporal or site specificity.

¹ Note that *quasi-rent* does not attest to the market power of counterparties. On the contrary, it testifies to the vulnerability of the profits of both parties, if the contractual relations do not include protection from the parties' opportunism under uncertainty (this will be addressed below). The latter may be a result of the absence of contractual precautions.

The more specific an asset, all other things being equal, the less effective the use of the price mechanism for the company is and, thus, there are fewer grounds to consider the object of a transaction 'a commodity' and the area of interactions between the parties 'a commodity market'.

This thesis is illustrated by the well-known heuristic model [1], which reflects conditions for minimising transaction costs at different levels of asset specificity. According to this approach, zero asset specificity, which is characteristic of the use of non-specific assets, translates into positive transaction costs. However, such an undedicated mechanism for transaction mechanism as pricing ensures minimum transaction costs, whereas maximum costs are associated with the hierarchy (see figure 1). As asset specificity increases, transaction costs grow for all the three basic institutional arrangements — markets, hybrids, and hierarchies. This statement is of crucial importance for the discussion below. High rates of increase in transaction costs are associated with low levels of transaction costs when non-specific assets are used. Thus, there are two points of redeployment, which necessitate a transition from the price mechanism through a hybrid institutional arrangement to a hierarchy as a key characteristic of relations within an economic firm, as asset specificity increases.

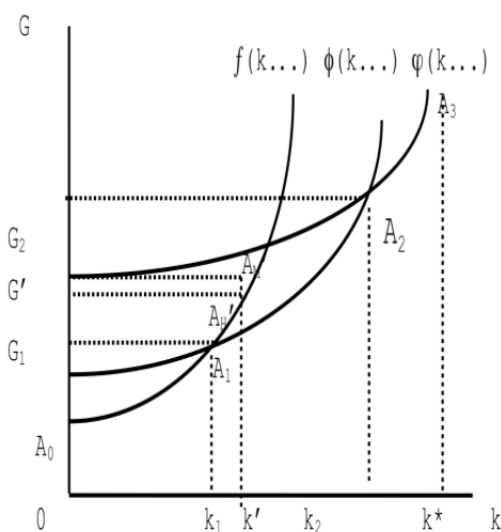


Fig. 1. Conditions for the minimising transaction costs as asset specificity changes

k is asset specificity, G is the level of transaction costs, $f(k...)$ is the function of transactions costs for the price mechanism, $\phi(k...)$ is the function of transaction costs for the hybrid mechanism; $\varphi(k...)$ is the function of transaction costs for the hierarchy mechanism, k_1 and k_2 are the levels of asset specificity for a transition from the price to the hybrid mechanism and from the hybrid to hierarchy mechanisms (transaction levels G_1 and G_2 correspond to these transitions)



High asset specificity does not make the use of the price mechanism impossible. However, this mechanism becomes economically impractical because it violates the basic principles of selective association of transactions with relevant governance structures in solving the problems of transaction cost minimisation.

Williamson's original model does not cover possible situations when, until a certain level of asset specificity, the actual level of transaction costs is above the potential one for each structural alternative. However, in figure 1, this gap is closed. Moreover, a certain implicit limitation has to be weakened for the sake of a consistent comparative analysis of discrete structural alternatives to transaction organisation [13, p. 108; 14, p. 210]. In the cases of (1) the violation of the principles of institutional design at a microlevel (contracts) or of (2) 'market fundamentalism' (see [7]), higher transaction costs of utilising the price or hybrid mechanism will not pose an obstacle to the application (or, at least, attempts at the application) of market modes of governance, despite economic inefficiency.

2. *Uncertainty*. Entrepreneurship is associated with uncertainty. Of crucial importance is how uncertainty is understood and how it can be taken into account in selecting a form of economic organisation (a mode of governance). This has been stressed in a number of studies [1; 15, P. 14—15]. The three major ways to organise operations and, therefore, interactions between economic agents — using prices, hierarchical relations, and a hybrid institutional arrangement — suggest different mechanisms for the adaptation of counterparties to changes in the economic situation. Each of the three alternatives has its own comparative advantages associated with different levels of asset specificity and uncertainty.

In the case of higher asset specificity, the higher the uncertainty of business decision making, the greater the incentives for using hierarchical instruments for transaction management and the fewer grounds to consider the asset in question a commodity and the relevant relations a commodity market. The only exception is the situation when the application of classical contracts and the price mechanism are invariants for non-specific assets by transaction frequency.

The price mechanism is efficient when it allows market participants to adapt to unexpected changes in the operation conditions independently of each other and without lengthy and complicated negotiations. Such changes can be caused by alterations in commodity circulation in a market under the effect of external factors or by the unscrupulous behaviour of a counterparty. In the case of the hierarchy mechanism (within an economic agent with a single control centre), rapid adaptation is also possible. However, this does not apply to hybrid forms. Why is it so? Alongside independent decision-making by the parties, the price mechanism is associated with the minimum dependence of market players on a certain counterparty. If a need arises to switch between contracting agents, the costs will be at the minimum. Although permitting

independent decision-making by the parties, any hybrid form requires that adaptation to changing conditions is collective and that switching to a different counterparty does not take place. This is not always possible. The higher the uncertainty, the greater the significance of the ways to adapt to unexpected changes (including such a crucial dimension of entrepreneurship as time). Why should one use hybrid forms and sign long-term package contracts with prolongation mechanisms when one can use the price mechanism? The latter solution would not cause any problems but there is a catch, namely, the dependence of one of the parties on preserving relations with the other one due to asset specificity. Such a unilateral dependence is associated with significant risks of the expropriation of quasi-rent, i. e. profits associated with the operations of a specific asset owner. However, until such operations commence (a project is launched), there are none (or very weak) incentives to invest in specific assets. In other words, the expropriation of quasi-rent inevitably weakens the incentive to invest in such assets. Accordingly, the absence of contractual precautions becomes a source of a relative reduction in public welfare because of missing the opportunities for using specific resources where they will be more productive than non-specific ones.

Figure 2 illustrates this thesis. Its original is found in [1] and more detailed versions in [13, p. 106; 14 p. 208]

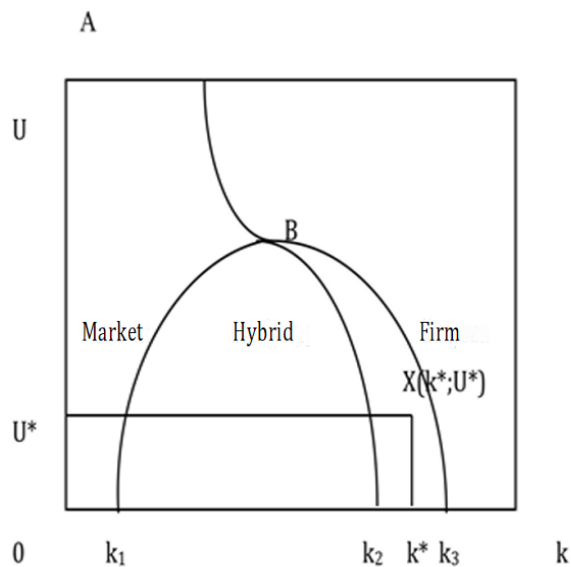


Fig. 2. The selection of governance structures on the degree of uncertainty and asset specificity

U is the uncertainty level, k is asset specificity; AB is the demarcation line between the market and the hierarchy under high uncertainty; k_1B is the demarcation line between the market and the hybrid under low uncertainty and low asset specificity; Bk_2 is the demarcation line between the hierarchy and the hybrid in the case of asymmetry in the design of the two types of institutional arrangements; Bk_3 is the demarcation line between the hierarchy and the hybrid in the case of symmetry in the design of the two types of institutional arrangements



That is why an increase in uncertainty and asset specificity translates into the forcing out of hybrid mechanisms and a wider application of the price and the hierarchy mechanisms. This is explained by that the transaction costs of renegotiation, which becomes more probable under high uncertainty, grow at the highest rate when hybrid forms are employed. In terms of the antitrust law, this would mean organising operations within one economic agent or one group of agents governed managed from a single control centre.

However, just as in the above example, it is important to consider what consequence the wrong choice of a mode of governance will entail, when the hierarchical principle of transaction organisation is rejected as inadmissible in favour of the hybrid mode of governance. The latter mechanism creates grounds for the enforcement of antitrust laws — in this case, it is possible to answer the questions about the price and the commodity that is the object of contractual relations.

3. The *frequency* of transactions in regard to the production, transfer, and processing of products with the same counterparty. This factor would not mean much on its own without the other two — asset specificity and uncertainty. Moreover, some studies show that the role of transaction frequency has not been sufficiently explicated [16]. Below, we will analyse transaction frequency in view of this consideration.

Frequency can refer to several aspects: (1) the frequency of interactions with a certain set of participants (up and down the production chain, not necessarily buyers and sellers); (2) long-term relations (all other things equal, the higher the frequency, the more long-term the relations). In particular, the latter aspect is crucial to complex, capital-intensive projects with a long payback period. In both cases, voluntary contractual relations between independent parties are complicated by an inability to foresee how specific assets will be used and the output will be distributed between the parties.

The higher the frequency of contractual relations with the same counterparty, the fewer incentives there are to use the market mode of governance and the fewer grounds there are to consider an asset as a commodity and the relevant relation as a commodity market.

In summing up the above overview of transaction cost economics, it is necessary to consider the following. *The very organisation of operations associated with high asset specificity, high uncertainty of the economic situation, and high frequency prevents from minimising transaction costs by using the price mechanism in whole or in part (by means of hybrid institutional arrangements). This is explained by excessive risks and resulting transaction costs that will be higher than those borne in the case of relations within a group of entities with a control centre (within one economic agent).*

Hierarchy as a mode of governance simplifies collective adaptation to changing conditions, since residuary rights — included in Honoré's eleven incidents of ownership [17] — are an important indication of to whom a certain resource or asset belongs [18]. This incident of ownership is invoked when incomplete contracts, part of which cannot be turned into complete ones even *ex-post* [19], *ex-ante* do not contain an answer to the question what actions the parties should take under limited time for adaptation to changing conditions (time specificity).

3. Gas pipelines: An analysis

Natural gas can be transported along pipelines using different modes of governance, including both general and dedicated ones.² The core of the first category is the price mechanism. However, the specifics of gas pipeline transportation make the use of this mechanism without alterations from the state a rare occasion, even if the pipeline was constructed to accommodate for multiple gas suppliers and consumers. This section considers two situations, one of which helps to introduce the historical context of the development of gas transportation and distribution system. The other situation describes emerging approaches to the selection of a mechanism for transaction management, where the pipeline is an extremely specific asset, which is used in transactions associated with high frequency and rather high uncertainty.

3.1. International practices of regulating access to the system of gas transportation and distribution: The economic impracticability of market transactions

In different countries, there are different conditions for the use of pipelines. In this short overview, we will show that the use of gas pipeline, based on the hybrid modes of governance, yields better results and has wider currency when the sections included in the pipeline systems are less specific. However, in the most developed systems that grant independent participants access to gas pipelines, namely, the US and the UK, the legislative systems allows for the impossibility to use market mechanisms in its pure form, which is reflected in complex regulatory requirements.

² A general mechanism suggests that, for any contracting party different to the owner, conditions for using an asset are universal. A case of a general mechanism is the use of terms and conditions stipulated within government regulation. A dedicated mechanism suggests that the conditions for the use of an asset are negotiated individually with each contracting party.

In the US, the complicated history of gas market regulation spans 80 years. In 1938, the Federal Power Commission (FPC) — later, the Federal Energy Regulatory Commission (FERC) — was given jurisdiction over interstate natural gas pipelines and wholesale sales so that pipeline owners did not abuse the market power. Against the background of the vertical integration of extraction and transportation companies or collusions between such companies, the abuse of power could manifest itself in setting inflated prices at the wellhead. From the mid-1950s, FPC was intervening in the organisation of related transactions and regulating wholesale gas prices. However, that initiative was not a success. Regulating prices for each deposit was too expensive and the prices were unprofitable for producers. As a result, the US was faced with a gas shortage. During the reforms of 1989—1993, wholesale price regulation was abolished [20]. At the same time, the regulation of gas pipeline services continued, although it was modified by Order No. 636.³ The document compelled all the owners of interstate gas pipelines to restructure their operations through unbundling their non-regulated sales services from regulated transportation services. Thus, after November 1993, pipeline companies could only ship gas to end-users. All interstate pipelines are regulated by FERC.⁴ FERC oversees the operations of gas transportation companies, in particular, it sets tariffs (if certain flexibility mechanisms are available, at the discretion of regulated entities) for the services provided, lays down access conditions and considers applications for the expansion of the existing capacities or the construction of new ones. Thus, even several decades after the launch of the reform aimed at unbundling gas transportation as a natural monopoly activity and production and sales as competitive activities, there is still a need for regulation to compensate for the faults of the market mechanism.

An interesting case is the Australian gas transportation system. There are significant differences between the market carriage system in Victoria and the contract carriage system in the other states. In the first case, pipeline owners grant the Australian Energy Market Operator access to the capacities. The Operator is responsible for transmission. Just as in the systems of regulated access to gas transmission capacities, a representative of the state is expected to ensure the absence of (or at least an effective limitation to) opportunism in contracts between market participants. In the second case, beyond the state of Victoria, gas suppliers conclude bilateral agreements with gas pipeline operators. Such agreements specify the maximum daily quantity of gas. The decision about introducing, or

³ Order No. 636 — Restructuring of Pipeline Services <http://www.ferc.gov/legal/maj-ord-reg/land-docs/restruct.asp>, accessed 13.02.18.

⁴ U.S. Energy Information Administration, http://www.eia.gov/pub/oil_gas/natural_gas/analysis_publications/ngpipeline/fullversion.pdf, accessed 13.02.18.

refraining from the regulation of a certain gas pipeline is made by the National Competition Council based on the assessment of the competition level. Within full regulation, both price and non-price conditions of pipeline access should be in line with the Access Arrangement Guideline. They require approval from the regulatory authority. Light regulation means that the operator can set tariffs independently, publishing them on its website. A gas pipeline can be recognised as uncovered if it has a limited market power [21]. For such gas pipelines, the access of a third party is coordinated within gas transportation agreements (GTAs). However, this is almost the only case when the terms and conditions of a contract covering the use of gas transportation capacities are not regulated by the state. Moreover, this happens against the background of specificity plummeting due to the opportunity to choose counterparties — both pipeline owners and consumers.

In the UK, gas industry operations were carried out within a single vertically integrated structure — British Gas — until the 1980s. The reform opened access to pipelines for third parties. British Gas was privatised, although vertical integration was left intact. However, the reform was not completed at the time. *De facto*, the access of outside companies to the pipeline network was not granted on acceptable conditions. The market of transportation services had not been functional until unbundling. Today, National Grid Gas is the owner and operator of the national transmission system (NTS). It supplies gas to distribution networks or directly to power stations and large business users.⁵ The function of National Grid Gas is to maintain the supply/demand ratio through trade on the On-the-Day Commodity Market. The industry is regulated by the Office of Gas and Electricity Markets (OFGEM), the principal function of which is to support competition and regulate the operations of monopolies within these industries. In particular, since April 2013, the OFGEM has exercised the RIIO-T1 price control over National Grid Gas.⁶ Alongside the national operator, which is responsible for transporting gas through major gas pipelines, there are independent companies in the gas carriage market that are engaged in distribution (GTC Pipelines, Independent pipelines, ES Pipelines, Energetics, Fulcrum Pipelines, Indigo Pipelines Limited⁷), whose rates are also regulated by the OFGEM.

The EU policy for gas transmission regulation has been developing over the past 25—30 years. Overall, it is based on the principles under-

⁵ <https://www.nationalgrid.com/uk/about-grid/our-role-industry/about-gas>, accessed 13.02.18.

⁶ <https://www.ofgem.gov.uk/gas/transmission-networks/network-price-controls>, accessed 13.02.18.

⁷ For more detail on independent gas suppliers, see the website of the Association of Independent Gas Transporters at <http://www.aigt.org.uk/companies.asp>, accessed 13.02.18.

lying the US system, i. e. the unbundling of a regulated carriage industry so that gas transmission services should be present in the market under close control from a regulatory authority. In some countries, gas transmission systems are privately owned. The number of EU operators is rather considerable. In the EU gas industry, regulation applies to only transmission and distribution. Transmission companies must be certified in compliance with the unbundling requirements. Moreover, they also have to grant third parties non-discrimination access to their networks, based on a number of regulations (network codes) and according to the so-called Third Energy Package (in particular, EU Directive 2009/73/EC). Overall, access to gas transmission and distribution is regulated using standard access conditions and tariff rates, whereas access to gas pipeline beyond the national network is granted within negotiated third-party access agreements with possible exceptions to ensure continuous operations.

Thus, we can conclude that in international gas transmission practices, modes of governance reflect problems emerging in the conditions of long-term highly specific investment. In most countries, conditions of access to gas transmission systems are regulated. They are rarely established on a bilateral basis — when specificity is relatively low, i. e. the number of both suppliers and consumers is significant.

*3.2. Selection of governance structures,
subject to the requirements of the Third Energy Package.
Russian gas transported via the Baltic*

A vivid recent example of a transformation in the mechanisms for gas industry coordination was the gas industry liberalisation in Europe. The key regulations were the constituents of the so-called Third Energy Package adopted in 2009 — the Directive 2009/73/EC and Regulation EC No. 715/2009. However, the reform was launched as early as the 1990s, and was inspired by similar events in the US. These documents allow for alternative modes of governance in regard to the services of gas transportation between gas producers, on the one hand, and gas pipeline operators, on the other hand. The documents suggest three alternatives: ownership unbundling (OU), the status of an independent system operator (ISO), and that of an independent transmission operator (ITO) [22]. In the first case, two companies should have two different owners, which means virtual autonomy, whereas, in the second and third cases, transportation assets can remain in the ownership of gas companies. However, ISO suggests that capacities are managed by a special independent organisation and ITO and that they can remain under the management of a vertically integrated company provided its operational and

financial structures are separated and it keeps separate records of its revenue and expenditures. The latter two variants suggest strict control from the European Commission to ensure scrupulous and non-discrimination management of gas pipelines.

In terms of modes of governance, which were examined above in detail, it means that European legislators tried to replace the earlier hierarchical modes of governance between a gas company and a pipeline operator with the following options. The first one is a package of market mechanisms if part of the capacities is sold to independent participants at an auction, especially if a short-term contract is concluded. The second one includes bilateral mechanisms if long-term contracts are concluded with independent market participants based on auction results and similar process. The third variant is trilateral mechanisms if pipeline operators conclude contracts with pipeline owners under strict control from the European Commission within the ITO/ISO models.

One of the most serious problems associated with the use of new modes of governance relating to gas transportation is the conflict around the Nord Stream pipeline and its onshore extensions.

Nord Stream is an offshore pipeline that runs across the bottom of the Baltic Sea to connect Russia and Germany. It delivers 55 billion m³ of gas per year and includes 2 lines, each with a capacity of 27.5 m³. The pipeline is owned by a consortium of major stakeholders, including Gazprom (the controlling block of shares) and a number of European gas companies (Germany's Wintershall and E. ON, the Netherlands' Gasunie, and France's Engie). The pipeline's construction was a response to the following circumstances. Firstly, there was a need to create sufficient gas transmission infrastructure for North-western and Central Europe in view of a possible increase in demand for imports and of the depreciation of existing pipelines. Secondly, it was necessary to diversify the routes of gas supply from Russia in view of the existing risks in relations with transit states.

In recent years, the discussion has focused on the economic feasibility and, in a broader sense, the rationality of the decision made for the parties to a project and their states, as well as on the project's impact on the gas market. Lately, the discussion has been brought to the fore by the anticipated construction of a peer pipeline — Nord Stream 2, which will follow a similar route.

Most studies focusing on Nord Stream address a more complex object, namely the EU — Russia energy relations. The Nord Stream pipeline is usually considered as an element of a 'big game' of ensuring energy security of both parties against the background of high mutual dependence. A recent work [23] uses a game theory simulation to demonstrate that the Nord Stream pipeline is the most promising project



from the perspective of strategic investment. Moreover, it contributes to the negotiation power of German and Russia in Europe and reduces that of other participants. Other authors [24] have arrived at similar results using an analogous methodology. Although the above studies do not address the modes of governance relating to the Nord Stream pipeline, they attest to the high specificity of the project and related assets. The project is not only a means to transport gas in general but primarily a means to transport gas between the two specific parties to the transaction.

Other findings [25] demonstrate the asymmetry in the impact of the Nord Stream pipeline on transit risks faced by different EU member states, which once again prove the high specificity of the asset. However, the presence of a regulator, which has to aggregate the positions of different European shareholders, attaches a new aspect to the problem of selecting a mode of governance. Probably, the regulator, which intervenes in transaction management as a third party, is not interested in efficient transactions and it may even jeopardise them. However, in this work, we will not address this particular aspect. Therefore, we will assume that the regulator will not engage in opportunistic behaviour. Note that the latter term should not have a negative connotation. There are distinctly different approaches to energy security in Europe and, in particular, in the Baltic region (for more detail, see [26—29], thus, European regulators have to resort to, figuratively speaking, mixed strategies when designing energy security institutions and using enforcement tools.

Another area of research focuses on the legal regulation of the construction and operations of gas pipeline system with offshore sections, i. e. the rights of the third parties to intervene in governance from a legal perspective. In particular, Langlet and Talus [30; 31] emphasise that, in the current international institutional environment, coastal states and the EU as a whole have very limited rights in regard to the Nord Stream pipeline. These rights relate to restrictions on pipeline construction but not on gas carriage transactions. This means that the project participants have to face a diverse institutional environment and, therefore, with non-harmonised limitations on selecting modes of governance along the onshore and offshore sections of the same gas transportation system.

Research literature rarely offers an immediate analysis of modes of governance relating to gas transportation along the Nord Stream pipeline and its extensions, from the perspective of the transaction cost economics. Nevertheless, some experts are exploring the issue. In particular, it has been stressed [32] that the Russian supplier's interest in offshore gas transportation may be explained by the possible project participants from the Baltics rejecting the idea of hierarchical relations. If they were ready for this format, the pipeline would run across their territories. This is very much in line with our position on the priority of the hierarchical mecha-

nisms for managing transaction relating to gas transportation services within the project in question. However, another work [32] uses a different hierarchy concept borrowed from the international relations theory.

In 2011, when gas was pumped into the first line of the Nord Stream, Gazprom was faced with the problem of implementing a necessary mechanism for transaction management. We will dwell on it at some length. The company had to manage the onshore extension — two lines running from the German city of Greifswald — OPAL and NEL. The two pipelines were operated by the companies OPAL Gastransport and NEL Gastransport. Gazprom had control over both operators and over the gas pumped through the Nord Stream.

The level of specificity is very high for OPAL, NEL, and the Nord Stream. The services of the OPAL and NEL have value only if gas supply from the Nord Stream is secured. At the same time, the services of the Nord Stream have value only if there is an opportunity to pump gas into OPAL and NEL. The high level of transaction frequency is undoubted. Gas supply must be uninterrupted and in line with the consumption rate to ensure heat and electricity generation. In this case, uncertainty is accounted for by the number of necessary transport services, which is affected by competition, transit problems on other routes, and — most importantly — the level of economic activity, energy regulations, and weather conditions. The latter three parameters influence gas demand, which is highly volatile (figure 3).

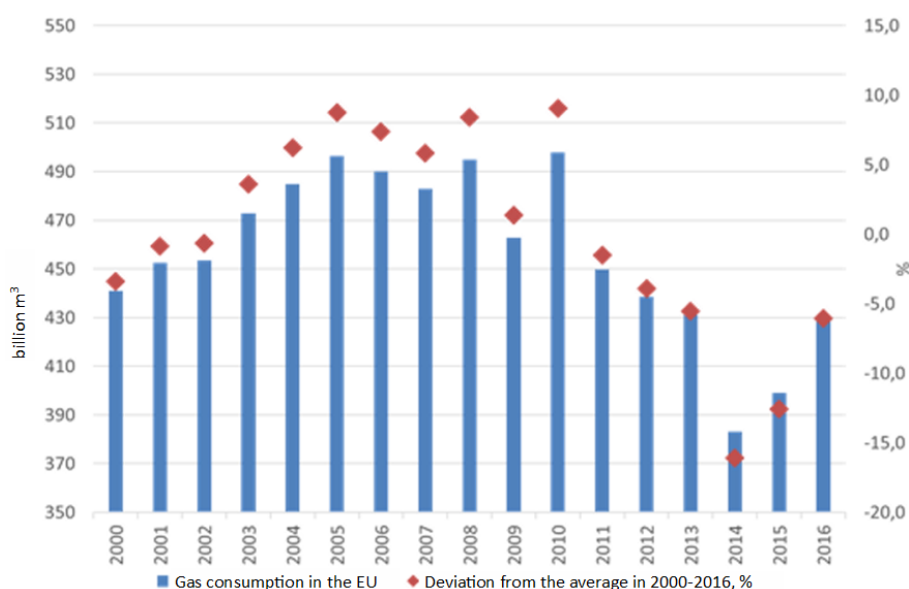


Fig. 3. Gas consumption and deviation from the average in 2000—2016
Source: British Petroleum Statistical Review of World Energy 2017

In view of these transaction attributes, the best possible mode of governance is hierarchy. However, it does not meet the requirements of the Third Energy Package. The Gazprom Group submitted applications for excluding the operators OPAL and NEL from the EC's standard gas regulation. There was such an opportunity for new pipelines. The NEL application was rejected straight away. Gazprom had to adopt the ITO model, thus abandoning the hierarchy mechanism. In this case, the company's transaction costs are difficult to observe, whereas OPAL was affected by the problems of the new European regulation in a more evident manner.

As to OPAL, the European Commission made an exemption decision and the hierarchy mechanism was preserved within the Gazprom Group — albeit for limited gas volumes. This was achieved by introducing a limit to the volume of gas that Gazprom could ship to OPAL's exit point at Brandov at the German-Czech border. The company was not allowed to utilise more than 50% of OPAL's capacity. The rest of the capacity could not be used to transport Gazprom's gas but it could be transferred to other gas companies. However, due to some technical issues, only Gazprom could ship gas to OPAL. Therefore, the EC's decision created a situation when OPAL had to work at only half the capacity over several years. This translated into a lower gas supply and rising gas prices in the Czech Republic. The outcome was opposite to what was intended. Gazprom tried to sell part of the gas to other gas companies at the OPAL entry point. However, the demand was minimal [33].

At the end of 2016, the European Commission permitted OPAL Gastransport to sell the available capacity through an auction platform and Gazprom to buy it. As a result, OPAL approached full capacity.⁸ Thus, quasi-market mechanisms were introduced anyway. Today, part of the capacity is distributed according to the regulator's rules using the auction procedure. However, in recent years, costs were incurred by both producers and consumers, whereas positive effects of the previous policies remain unclear. If there is one producer and one consumer, which are affiliated, even a strict control over their relations or the prices they set for each other regulates neither what parties can take part in a transaction, not their incentives, nor their limitations, nor shipment volumes.

At the same time, the use of the price mechanism, which determines the transaction attributes, requires an acknowledgement of the presence of a commodity market. In particular, this is necessary for utilising antitrust policy tools to prevent the abuse of a dominant positions or anti-competitive agreements.

In the above example, hybrid forms and hierarchies prevail as two classes of dedicated institutional arrangements ensuring uninterrupted

⁸ This decision did not come into effect immediately, since it had been contested within European procedures.

and constantly renewed transactions. The hybrid mechanism for transaction management suggests that the parties conclude a long-term contract covering comprehensive services. The hierarchy mechanism suggests utilising a pipeline built at the expense of a company in the framework of the same company. In the first case, all other things equal, there are grounds to speak of elements of the price mechanism and the presence of a commodity market, unbundled in accordance with the antitrust regulation. In the second case, there are no such grounds.

Accordingly, for performing the same operations (for instance, gas carriage), which presuppose the use of the price mechanism translates into the emergence of a commodity market, not by default but only if a number of conditions are met. If the conditions, which are examined above, are not met, investors choose alternative mechanisms to manage transactions. The availability of such a choice — and the protection of the right to make it — constitutes a fundamental principle of entrepreneurship. Entrepreneurship, in its turn, ensures the stability of the mechanisms for economic development and public welfare growth.

Conclusions

Economic models that provide a rationale for interventions from antitrust authorities often take the existence of a market of a relevant commodity or service as its basic premise. However, this trivial premise is not always met, since the specifics of transactions can translate into the emergence of a different coordination mechanism within an industry, probably, not even an industry but a separate product or geographical segment.

Using a trilateral or bilateral mode of governance in the case of a natural or bilateral monopoly leaves room for the operations of an antitrust authority, which nevertheless might be forced to revise its approaches to regulation.

The intervention of an antitrust authority into the hierarchy mechanism for transaction management, i. e. the operations of a vertically integrated company, can be justified only if there are sufficient grounds to restructure the company, with public welfare in mind.

At the same time, as the case analyses examined show, disputes about attempts to construct an artificial market mechanism can lead to a suboptimal result, if they ignore the attributes of relevant transactions, primarily, their asset specificity.

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**PLATFORM MARKETS:
THEIR PLACE
IN THE THEORY
OF MESOECONOMIC SYSTEM:
DEVELOPMENT
AND A CHALLENGE
TO SPATIAL STUDIES**

*T. R. Gareev*¹



Over the past three decades, researchers across different disciplines have paid close attention to the development of platform markets — an emergent long-term trend in economic policy. I consider platform markets as institutional and technological systems. Platforms create systems of rules and mechanisms that stimulate agents to adopt, maintain, and improve standards disseminated by the most successful platforms. Similarly to economic zones and clusters, platform markets are two-factor mesoeconomic systems. In this article, I consider the differences between two-factor systems and traditional one-factor groupings (agglomerations, industries, and conglomerates). I present a general theoretical framework for studying two-factor mesoeconomic systems, which is employed in a comparative analysis. A specific feature of platforms is the contribution of digital technology to the formalisation of relevant external effects and institutions, whereas economic zones are characterised by the external effects of agglomeration and clusters — by locally specific effects. Platforms are replacing economic zoning and clustering on the research agenda.

Keywords: platform, platform markets, platform economy, network effects, cluster, conglomerate, local economic zone, mesoeconomic system, agglomeration, spatial economics

Introduction

Global platform economy is experiencing an unprecedented growth [1]. Since its influence is felt across almost all areas of theory and practice, platform economy has become a major challenge for spatial research [2], so much so that any spatial theory proposed today should be tested for compatibility with the observed platform economy phenomena [3—6].

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One elegant economic theory of platform markets — multisided platforms — emerged much earlier than platforms received wide attention. This, modelling platforms requires few concepts that are truly new. Approaches used within game theory, NIE, and industrial organisation suffice to describe platform markets, also known as *two-sided markets* [7].

However, the effects of deeper-level global technological platforms (the Internet and cyber-physical systems) and the dialectic of platform market development translate into the emergence of new qualitative effects, which apparently have not been foreseen by the macroeconomic theory. One of such emerging effects is the rise of socioeconomic big data, which has provided a solution to the ever-present problem of economic science, i. e. that of determining and forecasting preferences.

Since platform markets strongly affect economic development, this study aims to analyse the features of platforms as institutional and technological systems and to compare them with other known and common types of mesoeconomic systems.

The first part of this article will focus on the phenomenon of platform market development. I will describe network effects at the heart of platform markets, demonstrate the connection between platforms and institutions, and identify a number of what I believe to be new institutional properties of platform markets. The second part of this article will compare platform markets with other types of mesoeconomic systems¹ — clusters and local economic zones — using tailor-made criteria. In conclusion, I will emphasise that, from the perspective of the theory of mesoeconomic system development, *platform markets* are an important empirical and theoretical model that complements and completes the typology of two-factor mesoeconomic systems.

The theory and practice of platform market functioning

This study will distinguish between platform markets, technological, and digital platforms. Figure shows how the three interrelate.

There is a vast body of national and international research on the theory of two-sided and multi-sided platform markets (see, for instance, [9—11]). Thus, I will only make a few remarks on the key characteristics of these phenomena.

¹ Mesoeconomic systems are described as groupings of heterogeneous economic agents (as a rule, firms and their environments) [8]. Studies into such groupings traditionally faced the problem of institutional formalisation and that of the identification of external effects creating weak ties within mesoeconomic systems. Digital formalisation of institutions provides a new perspective on many of the issues tackled by social science scholars.

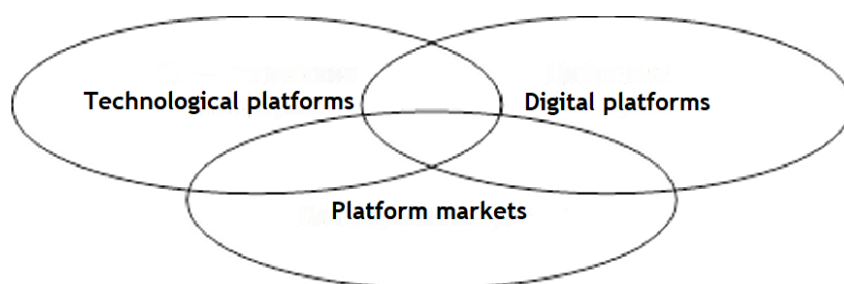


Fig. Technological platforms, digital platforms, and platform markets concept overlap

Few researchers disagree that two-sided markets are products of network effects between two interconnected markets whose agents use a platform to interact. The key distinguishing feature of a platform is that the operator sets prices for access for all the agents, i. e. the platform's clients.

There are different approaches to platform formalisation — those at the level of the platform's markets (1), at the level of the platform's agents (2), and at the level of competition between different platforms (3). All of them describe the strategic situation and the external effects of (not) joining a group.

1. In its traditional form, the theoretical game model of a two-sided market comprises two interdependent functions of demand for participation in the platform [12]:

$$q_A = D_A(p_A, q_B), \quad q_B = D_B(p_B, q_A), \quad (1)$$

where q_r is the number of agents connected to the platform for markets A and B .

Direct dependence between the parameters q_A and q_B in both demand functions is an important element of this model. Platform operators control the prices p_A and p_B . A price increase in any of the markets results in a network effect, which leads to platform shrinkage. A decrease in the prices entails a cumulative effect of the expansion of both markets. Platform expansion is limited by the size of agent population. Therefore, the process of connecting to the platform can follow an S-curve. Such development pattern is characteristic of both technological and institutional factors that affect the process in question.

2. At the level of agents, network effects produce the following theoretical game model:

$$u_i = x_i n - p, \quad (2)$$

where u_i stands for the net utility of the i^{th} agent, p for the amount charged by the operator for the platform use, x_i for the individual assessment

of the i^{th} agent's willingness to participate in the platform (readiness to pay), and n for the function that increases as the number of agents connected to the platform grows.

If the impact of n is excluded, game equilibrium is determined exclusively by the distribution of individual assessments x_i . In more complicated cases, population is divided into groups by an agent for whom connection to the platform is irrelevant. For such an agent, $u_i = 0$. Thus, $p = x_i n$. While generally there are several equilibria in such games, not all of them are stable.

3. Platform network effects can also be modelled at the level of competition between platforms. For instance, [13] employs the following model of oligopoly in the market of search service providers:

$$\pi_i = \frac{z_i}{\sum_i z_i} \nu - \frac{z_i}{N_i} - F, \quad (3)$$

where z_i stands for the quality of the i^{th} search engine (the quality of the search service provided by the platform), N_i is accumulated search *history*, which affects the cost of quality production (the greater the number of queries, the higher the quality), ν is advertising revenue, directly proportional to the number of queries processed by the platform (or its market share), and F is fixed costs (investment in the platform creation). Network effects are closely linked to the impact of the variable N_i . Note that this model describes a strategic situation, and whether the platform wins depends on the quality of other competing platforms, z_{-i} .

Looking at the models shows how different approaches to interpreting and modelling network effects are (for more detail, see [14]). While this variety provides a solid theoretical framework for the concept of platform markets, it accounts for the diversity of platform definitions and platform types identified in theory and, especially, in practice. Here it is important to understand the general principles behind the functioning of platform markets, especially, digital ones. A more detailed review of different platform market typologies and of practical cases can be found in many works (see, for instance, [12; 15]).

Two key elements of platforms — technologies and institutions — are easily identified from their digital footprint. The major factors are the critical mass of agents using the platform, i.e. the technological and institutional rate of expansion, agents' reputations, and — most importantly — the proportion of member agents in the population. Naturally, attention of general public is drawn to platforms of a potential national and (or) global scope.

To a great extent, the theory of platform development is a generalisation of models describing competition between technological standards. Like platform competition, standard competition has been studied since the dawn of the digital era [16; 17]. Later sources of authority considered

platforms as an independent module of the general intermediation theory [14]. A qualitative and profound shift in the understanding of platform economy occurred with the spread of wireless network standards and mobile electronic devices. However, the expansion of industrial platforms — mainly those related to additive manufacturing and full product lifecycle management — is of greater importance for mesoeconomic production systems.

Platform markets present a serious challenge to regional and spatial studies [18], and the authors of the anniversary review for the *Regional Studies* journal emphasised inconsistencies and uncertainties in the current regional studies agenda. This is largely explained by the platform-based spread of technology and institutions. Some authors also speak of ‘virtual geographies’ [2]. I believe that the very notion of technological leadership is moving from cluster model towards that of dominant platforms, which consider not only production capabilities but also cohesion between agents using different production and sales platforms and integrating customers into their platforms.

Although platforms have a rather weak connection to traditional geographical space, the positioning of largest global platform operators’ headquarters still follows the traditional principles of agglomeration and concentration around global cities and established centres of technology [4, p. 12].

Regional development is increasingly affected by complex flows of information and finances, whose sources and transmitters are not only large multinational corporations but also diverse economic groups of agents consisting of small and medium-sized companies brought together by a platform [1].

Platform markets in the mesoeconomic system typology

In a broad sense, mesoeconomics studies the evolution of economic groups and thus it is affected by sectoral, spatial, and institutional economics. Note that mesoeconomics is not a subsidiary discipline, like micro- and macroeconomics [19]. Mesoeconomics is an interdisciplinary area that studies diverse groups of economic agents — groups emerging in the competition between generic rules adopted by such agents [8]. This area deals not only with competition between agents but also with competition between, and the evolution of, groups.

Studies of groups are complicated by the need to consider at least two levels of the system — the level of individual microeconomic agents and that of their associations. Competition between groups depends on the viability of grouping rules².

² This process reminds of evolutionary biology and of the emergence of ideas about the role of two-tier systems of evolution (the traditional species — organism system or the carrier — replicator opposition at a different conceptual level) [20].

As the views on key factors determining competitiveness evolve, the idea of what group objects should be studied by researchers and practitioners is changing.

Traditionally, it was believed that the main factors influencing socio-economic evolution and competitiveness were location and technology. A more recent view introduces the concept of institutions as a new factor affecting competitiveness. Thus, contemporary approach to mesoeconomic system studies gives equal value to three consolidated factors — location, technology, and institutions.

As shown in Table 1, one can distinguish between two large categories in the typology of mesoeconomic systems, depending on the number of actors used to identify these categories.³

Table 1

**Key development factors and relevant types
of mesoeconomic systems**

System	Factor group		
	Location (space)	Technology	Institutions
Agglomeration	+		
Sector		+	
Conglomerate			+
Zone	+		+
Complex/cluster	+	+	
Platform		+	+

Source: compiled by the author.

One-factor systems are agglomerations, sectors, and conglomerates.

Two-factor systems are of special interest: as one can see, platform markets are important elements in the typology of mesoeconomic systems.

Economic zones are the most obvious institutional-spatial systems (second to sectors, which are studied within industrial organisation). Zones develop under the influence of exogenous regulatory institutions that distort initial incentives.

³ Networks are not included in the typology, since network analysis is considered as a universal means (language) to describe a system (integrated objects consisting of elements and connections between them). In this sense, any mesoeconomic system can be modelled as a network. It is also possible to study relevant network effects. (For more detail on the network structure of economy, see [21]).

Cluster is the focus of spatial studies. In my earlier works, I considered the differences between cluster and complex models [22] and the role of institutions with the cluster approach [23]. I largely agree that endogenous location-specific institutions are key to the formation of clusters. However, these institutions are poorly formalised and lack tangibility, which makes this factor inferior to location and technology. Thus, I define clusters/complexes as primarily spatial and technological systems, with a weak institutional factor being a distinguishing characteristic of clusters.

Platforms are institutional-technological systems, within which it is possible to identify (or formalise) both a technological and an institutional component. The latter is of greater importance, since platform-based formalisation of institutions is happening at an unprecedented rate.

Whether three-factor systems are possible is an open question. For a long time, clusters were thought to be such systems. However, they lack pronounced institutional characteristics, which are present in conglomerates, zones, and platform markets. The prototypes of such systems are smart cities.

Early attempts to derive a theory of inter-firm groups from such an understanding of the role of institutions did not make it possible to ‘capture’ the institutions themselves. Similarly, pre-digital two-sided markets did not give the whole picture of the scale and rate at which global digital platforms were developing. Digitising is not a *sine qua non* for the emergence of platforms but it is a necessary tool for the formalisation of the platform functioning rules and an efficient use of the transaction history.

Thus, there are two key elements attributed to the competitive advantages of digital platform markets:

- 1) Platforms make it possible to formalise institutions digitally. Platforms have memory and can store the history of transactions (interactions between users).
- 2) Platforms can derive information about producers and consumers, which translates into a more efficient use of resources.

Within platforms, information technology has solidified the features crucial for the evolution of institutions, i. e. the accessibility of the whole agent population and the capacity to store the history of both economic and social transactions.⁴ The way information technology affects the determination of preferences deserves a special study. In their research on psychometrics, M. Kosinski et al. have shown that identification of consumer preferences and modelling of choices can employ a machine learning-based consumer classification [24].

⁴ Interestingly, emerging digital platform-based entities are embracing terminology developed within institutions studies (consensus management, smart contracts, transaction management, voting models, etc.).

These characteristics — established rules (for instance, those for joining a platform), stable game equilibria, and direct and indirect rule enforcement mechanisms — reveal the institutional nature of platforms. In case of a violation, an agent can be banished from the platform. At the same time, contract formalisation makes such violations next to impossible, since many platforms computerise transactions and contract relations, which are controlled by a program code.

Joining a new platform should be beneficial for an individual [3]. Having joined a platform, individuals do not have any incentive to disregard its rules because platform users grow accustomed to its routines. The history of agents' reputation (the quality of their products and services) is being built in the framework of a platform. Such histories have independent value and contribute to the emergence of new markets that are based on information and data dissemination.

A comparison of two-factor mesoeconomic systems

The theoretical framework presented in Table 1 helps to develop a comprehensive picture of the evolution of two-factor systems — zones, clusters, and platforms.

Table 2 offers a comparative analysis of such systems, which is based on tailor-made criteria pertaining to the system's theoretical framework and contribution to regulatory interactions. Two-factor mesoeconomic systems have become the major object of study within the current industrial policy. This is explained by a recent shift from individual and sectoral support instruments to those supporting groups.

Table 2

Competitive characteristics of two-factor mesoeconomic system development

Characteristic	Zone	Cluster	Platform
Generic term	Regulation, concessions	One-sided markets, competition	Two-sided markets, standards
Boundaries	Precise, accurate to an agent or a location	Fuzzy	Precise, accurate to a transaction
An established economic framework	None; influenced by the regulation theory	None; influenced by the input-output theory	Present; two-sided market (platform) theory
Grounds for theoretical feasibility	The possibility of pricing arbitration, tax recovery	Probably, (agglomeration) externalities	Network externalities (indirect)

End of table 2

Characteristic	Zone	Cluster	Platform
Identification method	Deduction	Induction	Induction / Deduction
Negative factors	An institutional trap, should concessions be abolished	An institutional trap, should competitive positions be lost	A tendency towards monopolisation and inequality
Restrictive policy potential	High; at the level of statutory instruments	Restrictions are not advisable	Limited; at the level of prohibition and control
The role of public support	Central	Not proven	Not apparent
The role of the state in the launch 'from scratch'	Central — statutory mechanisms and investment in infrastructure	Indirect — infrastructure and statutory instruments	Public-private platforms within a single jurisdiction are possible
Influence on the stakeholders' home region	Considerable, partly because of incentive distortion	Considerable and positive	Not proven, probably, positive

Source: compiled by the author.

In my opinion, platforms were the missing element in the typology. Having emerged within industrial organisation, they surpassed the limits of the theory that focuses mainly on pricing decisions and anti-monopoly practices [17].

The most successful platforms have turned into global mesoeconomic systems that affect the macroeconomic performance of not only individual regions but also that of the global economy. Some studies attribute global deceleration of inflation to the expansion of digital e-commerce platforms (i. e. the reduction in the transaction costs of the search for the best deals) [25].

Although the major platforms studied specialise in the modernisation of service industries, the basis for industrial modernisation is formed by the industrial Internet of Things platforms (innovative platforms, according to Evans and Gawer's classification [4]). These bring together producers and developers of engineering design systems. New platforms' technology makes it possible to combine engineering and physical models and create digital twins of actual systems and products at all life-cycle stages [26]. Such platforms provide for more flexible small-batch production and bring manufacturing closer to the consumer [1]. In the future, they will erode cluster model of industrial organisation even further.

Conclusions

Many theories of economic system development based on sectoral and spatial concepts were rather limited due to the weakness of institutional factors. The expansion of global platform markets brings in an important link — institutional technological systems that are independent of a concrete location but have powerful mechanisms for the formalisation of rules and standards.

Platform markets empowered by information and new production technology have everything for the formalisation and functioning of institutional mechanisms. Moreover, platform markets determine preferences and store transactions histories. Platforms formulate systems of rules and mechanisms that encourage agents to accept, support, and develop the rules and technology standards.

A by-product of platform emergence is the industry of socioeconomic big data that is owned by platform operators. This poses a serious methodological problem for traditional socioeconomic research methods (geographical and statistical measurements, surveys, etc.), since big data is undermining the value of such methods.

The development of information technology made platform markets a phenomenon of global consequence [1]. Their presence is so formidable that they affect the actual public policies across many regions and countries [6]. I believe that platform markets will gradually replace cluster approach. In effect, platform markets differ from clusters quite substantially.

1) Platforms have a developed theoretical framework and they are identified more easily than clusters.

2) Platforms make it possible to formalise institutions digitally. They have institutional memory and can store the whole history of transactions (interactions between users).

3) Platforms can derive information on producers and consumers, thus making the use of resources more efficient.

4) Platforms contribute to the tendency towards monopolisation and inequality.

5) States can take an active part in platform regulation (and create public-private platforms).

The effect that platform markets will have on spatial economics and location of production is still unclear, and the most urgent research problems pertain to the three aspects of platform market functioning. These are:

1) Spatial consequences of platform development; formation of three-factor economic systems where location, technology, and institutions are of equal importance;

2) Consequences of the global dominance of industrial platforms for traditional clusters; an analysis of the consequences of computerisation, additive technology, and the dwindling the role of narrow local labour markets (the role of the human in production);

3) Changes in the public policy on the platform economy; studies into how public policy can and should contribute to the development of emerging and established platforms.

It is likely that the role of economic zoning and clustering will reduce and that the cluster approach employed at the local level and the global development of platform technology will escalate competition at the level of advanced agglomerations (today, they are referred to as *smart cities*). A more complete substantiation of, or revisions to, this hypothesis will require a larger body of observations and a more developed conceptual and analytical framework.

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ECONOMIC GEOGRAPHY



ONE BELT — ONE ROAD INITIATIVE: A WINDOW OF OPPORTUNITY FOR RUSSIA'S WESTERN BORDER REGIONS

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Y. Dong²



In recent years, global geo-economic transformations have been considerably affected by the development of the People's Republic of China, its reviving leadership and ambitions, and its increasing efforts to reformat and integrate the Eurasian space. The One Belt — One Road Initiative is a manifesto and a tool to advance China's long-term geostrategic interests that spread to the bordering states and regions and to the prospects of their socioeconomic development. The initiative encompasses transportation and logistics, production and investment, finances, research and technology, humanitarian affairs, and foreign policy.

In this article, we will highlight the key geoeconomic and geopolitical aspects of the One Belt — One Road initiative implementation, based on the Chinese and Russian studies. Another goal is to weigh up the risks and benefits associated with the extension of the project to Russian territories. Special attention is paid to Russia's western borderlands — 17 regions that account for 8.6% of the country's territory, 17.4% of the total GRP, and 20.8% of the national population.

We analyse the factors in effect — including geopolitical ones, as well as current trends in the development of Russia's western borderlands. It is shown that the inclusion into the Chinese Eurasian integration initiatives creates additional incentives for a positive re-evaluation of the Russian space as a whole and holds special relevance for Russia's western border-

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lands. We analyse the possibility of including Russia's Baltic regions — the infrastructural and economic island of the Kaliningrad exclave among them — into the One Belt — One Road Initiative.

Keywords: geoeconomics, China, Eurasia, transport and logistics corridors, regional development, core-periphery system, Russia's western borderlands

Introduction

As the highly influential theoretical geographer, David Harvey has repeatedly stressed [1; 2], a *sine qua non* of productive activities is the 'spatial fix' attained through the construction and reconstruction of transportation and logistics infrastructure, production facilities, residential housing, etc. On this basis, space is 'produced' repeatedly. In the modern geoeconomic architectonics, the scale, potential, and directions of dominant spatial changes are largely affected by the 'explosive' economic growth of the People's Republic of China¹ and the country's geostrategic, marketing, financial, and investment interests. A geo-ideological manifesto and a tailored strategy enjoying international, resource, and technological support is the One Belt One Road Initiative (一带一路). A tool to reformat the Eurasian economic space, the national strategy has given rise to hundreds of projects [3—5]. Its complete implementation will create new socioeconomic risks and opportunities for the vast territories of Eurasian periphery and semi-periphery. This article is an attempt to highlight the key geoeconomic and geopolitical aspects of the One Belt One Road initiative and to estimate the prospects of Russia's Western borderlands for the integration into the Chinese project.

The One Belt One Road Initiative as a Geostrategy and a Megaproject Aimed to Reformat the Eurasian space

The One Belt One Road concept was first introduced by the President of the People's Republic of China Xi Jinping, in autumn 2013. In less than a year, it was named the key element of the Chinese leadership's foreign policy course [6]. In March 2015, a detailed implementation plan was published ('Excellent Prospects and Practical Steps...'), which inco-

¹ According to the World Bank, the PCR accounted for 1.8% of the gross world product, at the official exchange rate, in 1992, for 3.6% in 2000, 12.6% in 2013, and 14.9% in 2015. The GDP (PPP) of the emerging global leader, whose ascension has been predicted by leading analysts, reached 18.6% in 2017, or 1.22 times that of the US and 1.18 times that of the EU.

orporated such priority aspects as transnational interactions, interconnection of member states' transportation infrastructures, cooperation in energy, agriculture, and other sectors, and favourable conditions for investment and free trade [7;8]. The most probable routes, or geostrategic targets, of the One Road One Belt Initiative were presented at the same time. Furthering the interest of the PRC, these routes run across Eurasia and the adjacent seas (see figure).

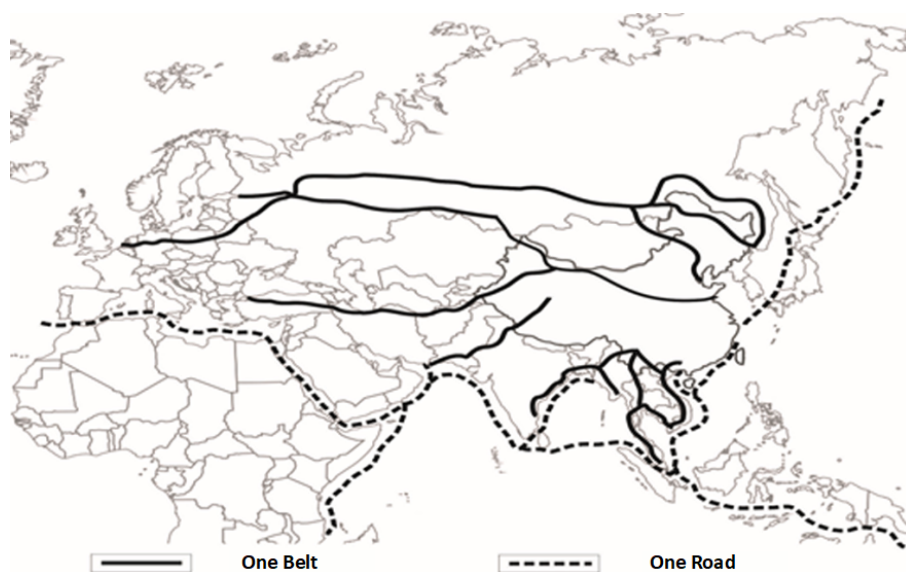


Fig. Priority routes of the One Road One Belt Initiative*

* compiled based on [6; 9—11].

Partly following the navigation routes of ancient Chinese seafarers [12], the One Belt runs along the main maritime arteries of today [13, 14]. Holding the historical memories² of the thoroughfare that crossed Iran, Iraq, and Syria to link China to the western Mediterranean, the One Road is a reflection of China's terrestrial geoeconomic priorities. As early as 2016, it became evident that the initiative would not limit itself to transportation and logistics but would include investment, industrial, R&D, financial and humanitarian components. China announced its intent to support international research projects in digital economy, nanotechnology, biotechnology, and other areas, initiated by members of the One Road One Belt Initiative. Support actions include the establishment and equipment of shared laboratories, research and academic

² It was brought back to life and invested with renewed urgency by the Silk Road (*die Seidenstraße*) geoconcept found in the works of the German geographer F F von Richthofen and historian A Hermann [9].



exchange, and other measures. As the prominent Chinese geographer Liu Wei Don stresses, the One Belt One Road Initiative opens up new horizons of economic globalisation through promoting social justice, combating poverty, offering new development trajectories, and supporting cultural diversity [15; 16].

An essential part of systematic efforts to further the development the People's Republic of China, to overcome asymmetry between the country's eastern and western provinces [11; 18; 19], to open up new markets, and to raise the country's geoeconomic stature through 'creative expansion' [5], the One Belt One Road Initiative has become a conceptual framework for China's emerging pan-Eurasian leadership in trade, production, investment, and finance. Committed to the 'win-win' and mutual trust principles [10; 17], the Initiative has been reported to involve 65 countries with a total population of 4.4 billion people [20]. Moving out of the shadow [21], China is expected [22] to become the greatest power in the world. However, a sustainable full-scale implementation of the initiative requires both a stable transportation and logistics link to the still economically powerful Europe and an access to the resource potential of Central, South, and Southeast Asian and Middle Eastern states. This may demand boosting the industrial development of the regions' peripheries [23]. As of today, the PRC is dominating the markets of Pakistan, Tajikistan, Kirgizia, Iran, and Mongolia. The country has long-term interests in Japan, India, the states of the Persian Gulf, and other countries [24]. As Chinese analysts cogently argue, Russia and its regions can make an important contribution to the One Belt One Road Initiative [25; 26].

Risks and opportunities posed by the One Belt One Road Initiative to Russia: The geoeconomic and geopolitical aspects

The current Russian-Chinese relations do not rest solely on the long-term and diverse experience of geographical neighbourhood — an important factor of transboundary cooperation and the development of the vast Russian-Chinese borderland [27]. Another foundation of the countries' relations is bilateral trade. As of the beginning of 2018, the PRC accounted for the unprecedented 17.2% of Russia's international trade. Moreover, amid the conflict between Russia and the West, which has been ongoing since 2014, the similarity between Russia and China's position and the Eurasian interdependence between the two countries are becoming increasingly pronounced.

The countries' social and geographical parameters place Russia and China among the few giant states [28]. However, the balance of power

between the two countries is constantly changing. Russia's advantage is that its jurisdiction extends to a very large segment of Eurasia — 31.5 % of the continent's area. The country boasts a massive geo-historical heritage, although part of it was wasted in the post-Soviet period. Russia's military and strategic influence has been growing over the past decade. According to S. Karaganov, Russia is **de facto the largest provider of security in the world** [22]. *It is also noteworthy that the country is taking attempts — some of them successful* [29] — *to develop Russian-centred integration formats* (the Collective Security Treaty Organization and the Eurasian Economic Union). However, this stands in stark contrast to the country's geoeconomic position. The gap between the sizes of the Russian and Chinese economies is steadily growing. In 1992, the countries were at near-parity in terms of GDP. However, the GDP of China was 4.7 times that of Russia in 2000 and 8.3 times in 2015. According to the World Bank, the PRC accounts for almost a quarter of the GDP of Eurasia, whereas Russia's contribution to the continent's GDP is 2.83 % and that of all the EAEU countries 3.37 %. At purchasing power parity, China accounts for 26.5 %, and Russia for only 4.4 % of the GDP of Eurasia. Against this background, the 2014—2015³ Russian-Chinese agreements on the harmonisation of Eurasian integration initiatives take not only an economic but also a geopolitical character, the latter being prevalent. These agreements are declarations and shapers of a new Eurasian reality, as well as logical attempts to avoid a collision of interests through outlining strategic common grounds.

It is important to understand that China's integration project — which is very much in line with the idea of a 'turn to the East', dominant across Russian research and political discourse, and with that of a 'Big Eurasian Partnership' [30—32]) — is aimed to promote the interests of the 'Middle Kingdom' and to develop its periphery. Against this background, it would be unwise for Russia to count on any special treatment. Giving priority to the 'northern' corridor of the One Road — the one that runs across Russia — is not beneficial to China. The southern corridor, which crosses Central Asia, Pakistan, Iran, South Caucasus and Middle Eastern states, provides access to sixteen countries, home to 538 million people. In the last decade, the demographic potential of these states has increased by 18 %. Thus, they are more likely than Russia to show accelerated rates of socioeconomic growth. Moreover, their incorporation into the area of China's interests is not associated with significant geostrategic risks, as it might be in the case of Russia.

However, one should not overestimate the chance (and possible negative consequences) of the One Road's Russian direction being

³ 中华人民共和国和俄罗斯联邦关于深化全面战略伙伴关系、倡导合作共赢的联合声明，莫斯科，2015年5月8日。(Joint Statement on Cooperation on the Construction of Joint Eurasian Economic Union and the Silk Road Economic Belt, Москва, May 08, 2015) <http://www.kremlin.ru/supplement/4971>

ignored. Russian authors [33] have addressed these concerns in their research works. In line with the established tradition, the PRC will most likely diversify its transcontinental routes. Probably, China will take part in the Northern Sea Route projects and the exploration of the Russian region of the Arctic. However, sea freight traffic — the One Belt, in China's case — will remain a priority because of the huge difference in sea and railway freight rates. The same holds true for Russia, which has been expanding the infrastructure of its Baltic and Black Sea and Pacific Ocean ports [34; 35] to boost the development of strategically valuable coastal territories. Naturally, Euro-Chinese trade will not dominate the Eurasian geoeconomy forever, as it does today. The development of the countries of South and South East Asia — partly prompted by Chinese initiatives — will inevitably turn the European subcontinent into one of equally powerful economic centres. It is in the interests of both Russia and China to coordinate their efforts and to build and modernise not only latitudinal East — West corridor but also the Eurasian communications infrastructure as a whole, including its longitudinal Northeast corridors. Common Russian-Chinese goals and shared responsibility are emerging in the field of security. Both countries seek the improvement of the political, social, and, in a long-term perspective, environmental situation in the countries south of Russia's border. The geopolitical congruity of Russia's and China's Eurasian efforts is creating a solid foundation for upcoming large joint infrastructure projects, for the much needed collaborations in research and technology (which are already taking place in the defence industry [36]), and for prioritising the Russian direction within the One Belt One Road Initiative. Engagement in Chinese Eurasian integration initiatives prompts a positive 'revision' of the whole Russian space, which is asymmetric, poorly integrated, sparsely populated and insufficiently involved in the national economy [37]. Although it may seem paradoxical, the above considerations and increasing geopolitical risks have lent urgency to the incorporation of Russia's western regions, including border and coastal territories, into the One Belt One Road Initiative.

Russia's Borderlands: Society and Geography in a Changing Eurasian Context

Russia's western borderlands (RWB) are a multiscale, multifaceted, non-static phenomenon with blurred spatial boundaries.⁴ Incorporating the territories that serve as a barrier between Russia and the West (in the military, political, and civilizational sense) and yet ensure contact between them, the U-shaped Western borderlands skirt Russia's north-

⁴ The content of the 'Russian borderlands' category may vary significantly and accommodate a most broad interpretation: '... lands, countries, and peoples on either side of our new and traditional borders' [43, c. 3]

western and southwestern peripheries. At the same time, in terms of location, mentality, and institutions, RWB are part of the metaregional trans-Eurasian limitrophe, or buffer, structures, the so-called ‘strait’ territories [38]): the Intermarium [39], the Baltic region [40], the Black Sea Region [41], and the Barents Region [42]. Serving as both a façade and a buffer, as border and transboundary space, these territories are closely integrated into the current national architectonics — the country’s core-periphery structure and the Moscow-centric system. Russia’s borderlands include not only regional and municipal frameworks contiguous with the national borders but also numerous semi-external elements. The latter extend to transportation, logistics, customs and border infrastructure, etc. Thus, it is logical to consider the RWB as comprising 17 Russian border or coastal regions, four of them having only maritime boundaries (see table).

**Russian Western borderlands at the regional level:
Key economic and population characteristics**

Region	Percentage of the national total, %*				Population change in 2010—2016, %	Urban agglomerations with a population of over 500,000 people*	Largest seaports (total cargo handled in 2017, m tonnes)**	Investment rating ***
	territory	GDP	population	international trade				
<i>Northern segment</i>								
Arkhangelsk region	2.4	0.6	0.8	0.5	– 5.2	—	—	(3B1)
Nenets autonomous region	1.0	0.3	0.03	0.0	+ 4.8	—	—	(3B2)
Murmansk region	0.8	0.6	0.5	0.5	– 4.6	—	Murmansk (51.7)	(3B1)
Republic of Karelia	1.1	0.3	0.4	0.2	– 2.5	—	—	(3C1)
<i>North-western (Baltic) segment</i>								
Saint Petersburg	0.01	4.7	3.6	7.9	+ 7.8	Saint Petersburg (approximately 6.5 m people)	Big port Saint Petersburg (53.6)	(1A)
Leningrad region	0.5	1.3	1.2	1.6	+ 4.2	—	Ust-Luga (103.3); Primorsk (57.6); Visotsk (17.5)	(3A1)
Kaliningrad region	0.1	0.5	0.7	1.5	+ 4.7	Kaliningrad (approximately 600,000 people)	Kaliningrad (13.8)	(3B1)

End of table

Region	Percentage of the national total, %*				Population change in 2010—2016, %	Urban agglomerations with a population of over 500,000 people*	Largest seaports (total cargo handled in 2017, m tonnes)**	Investment rating***
	territory	GDP	population	international trade				
Pskov region	0.3	0.2	0.4	0.1	- 4.3	—	—	(3B2)
<i>Western segment</i>								
Smolensk region	0.3	0.4	0.6	0.5	- 3.1	—	—	(3B1)
Bryansk region	0.2	0.4	0.8	0.2	- 4.3	—	—	(3B1)
Kursk region	0.2	0.5	0.8	0.2	- 0.3	Kursk (550,000 people)	—	(3A1)
Belgorod region	0.2	1.0	1.1	0.8	+ 1.4	—	—	(2A)
Voronezh region	0.3	1.3	1.6	0.4	0.0	Voronezh (1.1 m people)	—	(3A1)
<i>South-western (Black Sea) segment</i>								
Rostov region	0.6	1.8	2.9	1.7	- 1.1	Rostov (over 2 m people)	Rostov-on-Don (14.9)	(2A)
Krasnodar region	0.4	3.0	3.8	2.0	+ 6.5	Krasnodar (approximately 1.2 m people); Sochi — Tuapse (550,000 people)	Novorossiysk (147.4); Tuapse (26.6); Port Kavkaz (35.3); Taman (14.9)	(1A)
Republic of Crimea	0.2	0.4	1.3	0.02	- 2.6	Sevastopol — Yalta (550,000 people)	—	(3B1)
Sevastopol	0.0	0.1	0.3	0.0	+ 12.9	—	—	(3B2)

* According to the Federal State Statistics Service

** According to the Association of Russian Commercial Seaports (<http://www.morport.com/>)*** Investment ranking according to the Expert RA rating agency (<https://raexpert.ru/>): (1A) is maximum potential — minimum risk; (2A) is medium potential — minimum risk; (3A1) is low potential — minimum risk; (3B1) is low potential — moderate risk; (3B2) is insignificant potential — moderate risk; (3C1) is low potential — high risk.

Surrounded by multiple neighbourhoods [28], Russia has an economic and settlement framework that is Europe-centric [30], or skewed westward. Diverse and [44] still germinating, the Western borderlands emerged in their current configuration just over a quarter of a century ago — almost 71 % of Russia's 5750 km western land border is post-Soviet. Nevertheless, the countries western regions are far from being periphery in terms of their socioeconomic development, which is proven by statistics. Occupying 8.6 % of the country's territory, the RWB account for 17.4 % of its GDP and 20.8 % of the total national population.

Amid globalisation, the 'opening up' of the transforming Russian economy, and the growing economic gap between Russia and the West (which was especially pronounced in the 1990s), the Western borderlands were assuming leadership in transportation and transit, resources and raw materials, agriculture and manufacturing. In 2017, Russia's western terminals accounted for 73 % of the cargo handled by seaports nationwide. Symptomatically, the RWB regions handle 18.1 % of Russia's international trade. The Western borderlands are home to the largest national trade and logistics hubs — Saint Petersburg, Kaliningrad, and Novorossiysk. They are centres for production, technology, innovations, and education. The Saint Petersburg, Rostov, Voronezh, and Krasnodar agglomerations boast strong consumer and investment demand. Notably, with the exception of the northern segment and the Bryansk and Pskov regions, the RWB have a positive net migration. The resulting favourable demographic and economic effects corroborate the idea of the advanced development of capital and coastal regions [45—47] and fit well with the coastalisation principle [48] — the gravitation of population, manufacturing facilities, and infrastructure towards coastal areas. The historical path-dependence reinforced by prevalent post-Soviet trends predetermined the alternating/zonal/insular pattern of the RWB economic and settlement landscape. The polymorphism of the Western borderlands and their significance for the country has come strongly to the fore amid the geopolitical and geoeconomic turbulence observed since 2014.

The Western borderlands were joined by the Crimean peninsula. The territory of a controversial geopolitical status and restricted geoeconomic capabilities, it became *de facto* a national investment priority: in 2014—2017, fixed capital investment in the two Crimean regions increased 4.9-fold. With the national borders with Ukraine, Poland, Lithuania, and other countries assuming a pronounced barrier function, traditional transboundary contacts were broken off and the Kaliningrad region was turning into an island. Affected economically and infrastructurally, Russia's exclave was faced with the isolation of the power transmission system and partial termination of transboundary cooperation. Against this background, the flow of goods and raw materials along the major — Baltic

and Black Sea — transport corridors [49] was growing. The socioeconomic potential of the RWB was boosted not only by the preparation for 2018 FIFA World Cup (the host cities include Saint Petersburg, Kaliningrad, Rostov-on-Don, and Sochi) but also by the strengthening of military presence and the defence industry in the area. During the downturn of 2015—2016, the economies of thirteen out of the seventeen RWB regions were growing. Nine regions were witnessing an increase in investment.

The socio-geographical characteristics of the RWB regions — a favourable geography for transport and transit, an established settlement system, a developed infrastructure, major producers' orientation to export, and experience in transboundary cooperation [49—51] — are creating new opportunities. At the same time, the growing rift between Russia and the West, which is aggravated by the 'blurred' identity of some RWB segments and the neighbourhood-related stress [52], necessitates geoeconomic diversification. In this content, new prospects may lie with the Chinese Eurasian integration project.

Incorporating Russian's Western Borderlands Regions into the One Belt One Road Initiative: Priorities and Possibilities

The rates, directions, and the very possibility of China's geoeconomic exploration of Russian space, including the RWB, depend on the structures, functions, resources, logistics, and other characteristics of Russian territories. Most probably, the incorporation of Russia's economy into the One Belt One Road Initiative will start from the country's major centres, which are already familiar to Chinese businesses. One of them is Saint Petersburg.⁵ It is safe to assume that the harmonisation of the new Eurasian integration megaproject with the targets and opportunities of the RWB will draw on the experiences of Western partners and the performance of industrial, including transboundary, clusters with Western participation. In particular, this will help to attract Chinese investment in automobile assembly projects not only in the Saint Petersburg

⁵ A representative office of the Export-Import Bank of China (China Exim Bank) is quartered in Saint Petersburg. Since 2005, Chinese businesses have been running a large real estate development project — the Baltic Pearl. A Russian-Chinese business park and a logistics hub of the Alibaba Group are being built in the region. There are regular direct flights to Ürümqi, Shanghai, and Beijing and charter flights to Beijing, Wuhan, Macao, and Taipei from the Pulkovo airport in Saint Petersburg. Scheduled air services invigorate business communications and attract thousands of tourists to the city [53].



agglomeration, which accounts for 27% of national automobile production, but also in the Kaliningrad region. From the perspective of the Chinese market, the latter region opens up an even more attractive opportunity of investing in the amber mining and processing industry.

In the northern RWB segment, Chinese businesses — whose preferences are not yet completely clear — may be interested in Murmansk and Arkhangelsk as hubs, an Arctic exploration foothold, and the capitals of regions with a significant resource potential for fertilizer production and metallurgy. As to the western and Southern (Black Sea) borderlands, the Chinese may show interests in the agro-climatic resources and the related horticulture clusters, most of which are export-oriented [49]. These clusters — spanning Russia's border regions from Smolensk to Crimea — account for 30% of the national agricultural produce.

An increase in the number of investment projects and a wider sectoral scope may be attained through the implementation of large real estate development projects with Chinese participation and the forging of alliances with Russian large⁶ and medium enterprises. A possible accelerator (and indicator) of the incorporation of the RBW into the geoeconomic space of the 'Middle Kingdom' is Chinese investment in Russia's ports and other transportation and logistics facilities. However, all these projects are still under discussion. In view of the overall geopolitical situation and the growing Turkish influence in the Black Sea region, Russia should seek to attract Chinese businesses to the Crimean peninsula, thus partly lifting the geoeconomic 'siege'.

Despite the opportunities and priorities discussed above, it is premature to expect a rapid 'sinofication' of the RWB. Our partners will continue to look into the regional situation, analyse general national economic and political trends, and study and create 'neighbourhood' alternatives in Belarus, Ukraine and, probably, Turkey, Poland, the Baltics, and other countries. For decades to come, the Western borderlands will remain a crucial⁷ territory for Russia. At the same time, the country should continue to modernise its transport infrastructure, to make better use of 'targeted' development tools (special economic zones, advanced development territories), and to expand the 'Chinese component' in the place marketing of cities and regions. At the same time, it is important to consider the long-term socioeconomic and environmental interests of the Russian territories.

⁶ Partnerships with Chinese businesses have been forged by many companies 'entrenched' in the RWB. Among them are Gazprom, EuroChem, Phosagro, RUSAL, the United Shipbuilding Corporation, and others.

⁷ In the Concept of the Spatial Development Strategy of the Russian Federation until 2030, it is rightly stressed that 'inertia will continue to skew the proportions towards the West' [54, p. 25].

Conclusions

In a rapidly changing Eurasia, the potential of the Chinese One Belt One Road Initiative cannot be ignored. Nor should it be exaggerated. It is very unlikely that incorporation into the scope of Chinese integration initiatives will meet all the overblown economic expectations of the moment. This holds true for both the RWB and the country as a whole. The stronger Russia's geopolitical and geo-economic standing in the Eurasian space (this includes the resumption of a dialogue with the West) the more likely it is that the One Road One Belt Initiative will meet the country's spatial development needs and contribute to the modernisation of its transcontinental transport and logistics network and to its various integration projects. The Chinese Eurasian megaproject is another incentive to maintain and develop the 'eastern' component in the development of Russian society. In this context, a modest yet important landmark is growing cooperation between Russian social geographers and their Chinese counterparts who have been developing Russian studies at the universities of Beijing, Ürümqi, Xi'an, Lanzhou, Harbin, and Kunming and such research centres as the Chinese Academy of Sciences, the Institute of Russian, Eastern European, and Central Asian Studies of the Academy of Social Sciences of the PRC.

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**EQUIVOCALITY
IN DELINEATING
THE BORDERS
OF A CLUSTER:
THE BALTIC'S CASE**

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Increasing competition between states striving to integrate into the global economic system has created a need for a spatially targeted regional policy as a means of boosting national competitiveness. The regional polarisation approach, which seeks to create new and support the existing nodes of a regional economic system — clusters, technopoles, industrial districts, etc., — has gained wide currency in public administration. The heralds of such forms of spatial networking are various institutional, cultural, organizational, technological, social, and cognitive proximities. Combinations of these proximities create the unique mosaic of a regional milieu. Geographical proximity translates into the boundaries of spatial networks, which rarely follow the existing administrative divisions. Thus, the identification of spatial networks is becoming the focus of regional governance. This article is part of a complex study on equivocality in identifying the boundaries of spatial networking. In this work, we pay particular attention to delineating the boundaries of territorial clusters. This form of spatial networking is both a contemporary tool for targeted regional development and a result of spontaneous functional integration of economic entities. Building on an extensive factual base, we present a complex model of territorial cohesion for delineating the boundaries of a territorial cluster. The model makes it possible to integrate data on geographical, institutional, cultural, organisational, technological, social, and cognitive proximities. The properties of a cluster as a form of networking warrants distinguishing between internal, external, thematic, and absorptive types of boundaries. The feasibility of this approach is tested in the Baltics' national and regional

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clusters, with special attention being paid to the Latvian IT-cluster. Committed to economic clustering and glocal cluster interactions beyond national borders, the Baltics are an ideal case study for testing our model. Latvia's mature IT-cluster is an important national growth point. Regional and industry-specific policies should consider the differences between the cluster's geographical and non-geographical boundaries.

Keywords: cluster policy, territorial cluster, cluster initiative, cross-border cooperation, territorial cohesion, Baltic States, cluster boundary

Introduction

The large-scale changes in the world economic system over the last decades accompanied by the expansion of the ideas of network economy, open innovations, co-production of value and a combination of creativity and entrepreneurship have created the need for new development paths and economic restructuring in many countries. The desire to remain competitive in the international arena has intensified competition among different economic systems. It created demand for the reinvention of approaches, forms, methods and mechanisms for implementation and management of traditional economic processes. Artificial geospatial polarization is one of the trends in economic development. It involves establishing various spatial networks such as international and regional clusters, regional innovation systems, knowledge regions, international innovation networks, etc. This controlled deformation is usually accompanied by a spatial concentration of personnel, financial, knowledge, entrepreneurial, investment, management and other resources, which increases territorial heterogeneity.

Development of economic relations facilitates the formation of a territorial community as a basis for various types of spatial units. Sometimes several territorial communities coexist within one region. This exacerbates the problem of equivocality of their spatial boundaries. There is no integrated methodological approach to the development of tools for boundary identification and border mapping. This complicates the identification and evaluation of properties, structure and functional features of territorial communities as well as related forms of spatial-networking interactions and their management. In this respect, this work is a continuation of a holistic study of economic geography focused on the problem of equivocality in identifying the boundaries of a territorial community in the modern geo-economic context. Based on the results of the previous researches, the article demonstrates the applicability of the developed approach to the identification of boundaries of a territorial community to a cluster as one of the most widespread spatial-networking interaction forms.

The paper presents the current stage of cluster formation processes drawing on the example of the Baltic States with their active cluster policy. Over the past decade, they were involved in a number of cluster initiatives launched and actual clusters created. Moreover, their small area and the fact that they are neighbours provide a solid basis for the formation of regional, national, and international clusters. In this respect, Lithuania, Latvia and Estonia are of great interest for this research as they are viewed as a platform for testing the theoretical models that were previously proposed.

Model of the boundaries of a territorial community

Social geography views a territorial community as a complex territorially rooted system of spatial networks of heterogeneous entities (enterprises, government authorities, research and educational institutions, public organizations, etc.) located within a geographically defined area and connected by technological, social, organizational, institutional, cultural and/or cognitive similarities [1—3]. A territorial community is characterized by emergent properties arising from a fusion of the properties of interacting subjects and a contextual environment. The decomposition of its structural elements made it possible to identify seven basic interconnected types of proximity (geographical, technological, social, organizational, institutional, cultural and cognitive). The formation of territorial communities is not always based on all of these types of proximity, and their composition is not constant either. Geographical proximity provides a basis for interaction processes. It reflects territorial cohesion of the entities involved. Geographical proximity is supplemented by other "non-territorial" (otherwise "virtual") types of proximity. The spatial model of a territorial community demonstrates their cohesion — Fig. 1.

The largest virtual proximity is the institutional one. It characterizes the embeddedness of territorial community elements in a single institutional field being a combination of formal and informal institutions. Institutional proximity serves a basis for the cultural one, which is its continuation. It reveals similarities in beliefs, organizational and business culture, norms of behaviour and management traditions, which are often accompanied by common historical traditions of the interacting subjects. The organizational and technological types of proximity directly relate to the nature and type of activities conducted by business entities. Organizational proximity is the similarity in size and structure of companies, specialization areas, target resource and sales markets, and development strategies. Technological proximity involves unified standards, technological compatibility strategy and common specialization. The social and

cognitive types of proximity are the most local types. They require stable social relationships and close personal contacts. Social proximity refers to kinship, friendship, familiarity and other close informal ties, while the cognitive one implies mutual understanding due to the similarity of processes of thinking, perception and interpretation of information, events and phenomena.

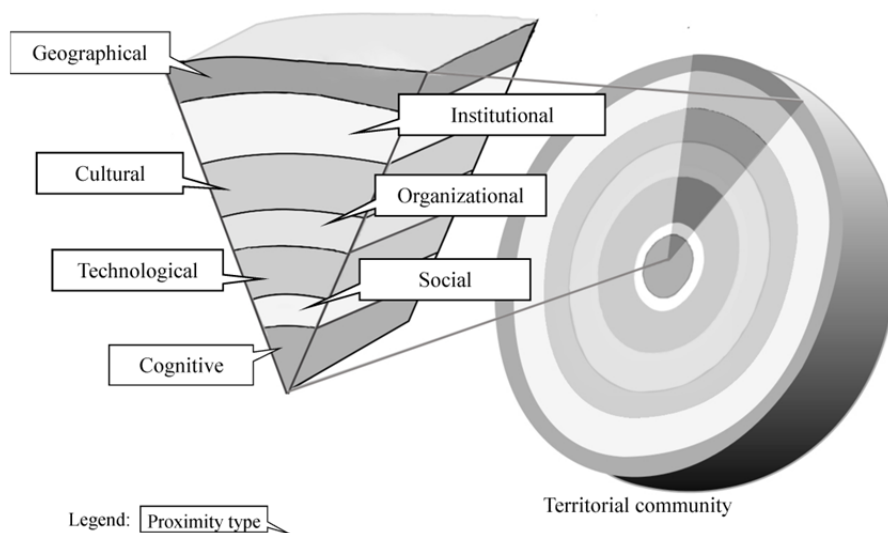


Fig. 1. Schematic model of a territorial community

This systematic approach to territorial proximity was further used for developing a theoretical approach to the definition of its boundary as a complex multi-component object of study (Table).

The multidimensional boundary of a territorial community

Boundary Type	Characteristics
Geographic	Determined by the physical location of interaction participants — elements of a territorial community; tied to infrastructure objects; can be intermittent due to the dispersity of global-local interactions
Institutional	Outlines an institutional space of interactions within a territorial community; has two contours: external — formally fixed by laws, regulations, standards, etc., and internal — informal, determined by shared values, procedures and other informal institutions

End of table

Boundary Type	Characteristics
Cultural	Outlines a single cultural space, including the industry sector, based on previous interactions of territorial community elements
Organizational	Determined by the organizational and functional features of territorial community elements; can be cross-sectoral, interdisciplinary or inter-organizational in nature
Technological	Determined by technological compatibility and similarity of technological standards; outlines a single technological space; falls within the accepted scientific and technological paradigm
Social	Outlines a space of sustainable social interactions among territorial community elements; highly dynamic; its identification is subjective
Cognitive	Determined by a similar level of competencies, knowledge bases, socio-economic (including scientific and technological) development of territorial community elements; implicit; its identification is highly subjective and labour-intensive

Principal model of the boundaries of a territorial cluster

A territorial cluster is currently one of the most popular forms of spatial-network interactions. The main reason for the upsurge in its popularity was set out in the works of M. Porter [4]; although D. F. Darwent [5], N. M. Hansen [6], H. R. Laswell [7] and others [8] had studied the phenomenon of clustering in the economy before those publications. Despite the fact that there are many types of clusters (industrial, innovative, entrepreneurial, scientific-technological, professional, high-tech, etc.), in general, this form of interaction is a localized open system of competing and cooperating actors bound by common aspirations and interests. Territorial clusters are formed on the basis of a territorial community serving as a space for the establishment of a rooted network of stable cluster interactions. Thus, a cluster can have two types of boundaries: objective, that are inherent in all territorial communities (geographical, institutional, cultural, etc.), and individual, that is associated with specific forms of interaction (internal, external, thematic, absorptive capacity). The extensive geographic coverage of a territorial community makes it possible to form clusters at various hierarchical levels: regional, national, and international (including cross-border and transnational). Figure 2 presents a principal territorial-functional model of regional, cross-border and transnational clusters.

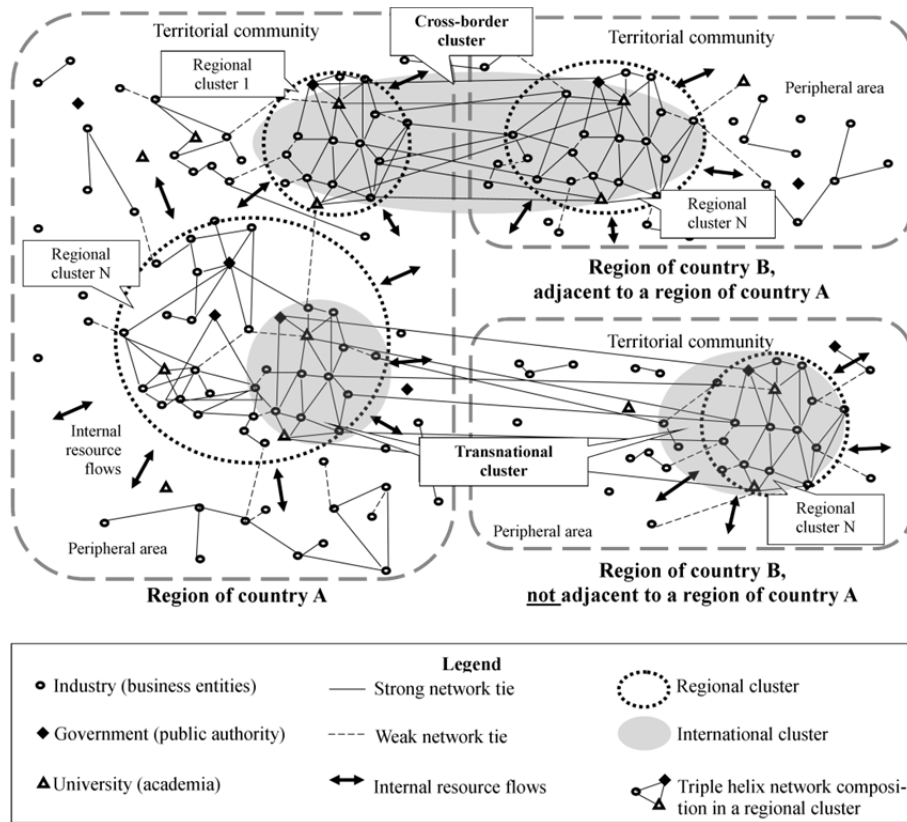


Fig. 2. Territorial cluster model at different hierarchical levels

The proposed territorial cluster model is a combination of several knowledge generation models including "local buzz — global pipelines" [9], Etzkowitz-Leydesdorff's triple helix [10], the double triple helix [11] and the regional innovation system [12—13]. The nucleus of a regional cluster is a sustainable partner network of three institutional helices: university — industry — government. The organizational diversity of participants creates a favourable environment for entrepreneurial and, especially, innovative activities in the region. Localized participants of cluster interactions being institutionally recognized members of the cluster serve as reference points for the multidimensional internal cluster boundary in geographical, organizational, institutional, cultural, technological, social and cognitive spaces.

The non-territorial boundaries of a cluster can be both clear and fuzzy depending on the degree and nature of virtual similarity of its actors, or cluster members. Criteria for the identification of boundaries of a territorial cluster vary depending on the type of proximity. For institutional proximity, they include the unity of formalized quality standards and condi-

tions for economic activities. For cultural proximity, they are shaped by the unification of business standards and consolidation of functional roles of participants of cluster interactions. For organizational proximity, it is the operation of a membership system. Technological proximity is defined by unified technological standards. Social proximity is characterized by regular industry-specific events aimed at strengthening the external and internal links of a cluster, exchanging knowledge among its members, collective learning, etc. A criterion for determining cognitive proximity boundary is a common long-term vision expressed in the cluster's mission and shared by all its members. If the degree of proximity is small according to any of the criteria, it becomes difficult to distinguish a complete set of interacting actors, and it is necessary to consider the exclusion of the category from further study.

In the course of interaction, the actors of a cluster exchange information and knowledge that is both explicit and implicit. Codified (otherwise explicit) knowledge can be alienated from its source, systematized, transmitted, deliberately reproduced and materialized as a product (for example, technology). Implicit knowledge, on the contrary, is inalienable from its creator, so it cannot be codified or systematized. It is embedded in skills and experience of qualified personnel, technical practices, informal norms of behaviour, culture, etc. The strategic strengths of a region are associated with this type of knowledge. The nature of implicit knowledge is determined by ambiguity (the more tacit the transferred knowledge, the greater the ambiguity of its perception); complexity (high dependence on the recipient's absorptive capacity); stability (insensitivity to environmental changes explained by a long knowledge-formation time connected with deepening the understanding of the processes and maintaining the ability to adapt to current needs); integrity (coherence of transfer) [14]. Difficulties in the diffusion of tacit knowledge result in "stickiness".

The actors exchange accumulated implicit knowledge through collective learning. The cluster members' ability to value, assimilate and apply new implicit knowledge successfully is called absorptive capacity [15]. It can be potential, i. e. associated with the assimilation of knowledge, and realized, i. e. related to its transformation and use [16]. High absorptive capacity provides an opportunity for participants to increase their competitiveness through access to knowledge flows. It requires mature territorial proximity with the cluster's local environment. The term for the diffusion of additive and commutative information within the local environment is "local buzz" [9]. Only actors within one particular region (including a cross-border one) can access it. Absorptive capacities of clusters vary. They can be influenced by such factors as specific features of relations of their actors, the development of transport and information and communication infrastructure of the clusters' regions, etc.



Spatial clusters also have a thematic boundary. It is an outline of a geographic area of concentration of individual actors that are not cluster members but have similar specialization or competencies. For example, within the thematic boundary, there can be scientific and educational institutions conducting educational and/or research activities in compliance with the development priorities of a cluster. The external boundaries of a cluster as a spatial-network structure are determined by the location of "global pipelines". These are the key actors located outside the region of a cluster. Not being the cluster members, they affect the pathways of regional development, specialization and research topics of local economic entities as well as other major issues. They exercise this influence by transferring new knowledge through sustainable channels of interaction. In the course of the implementation of state policy on internationalization of the regional economy and development policies of individual companies, the number of such pipelines grows. This increases the number of external information flows, as well as their frequency and duration. Such a convergence of the external and internal environment of a regional cluster on the basis of information flows promotes cross-border and transnational regionalization.

Cross-border regionalization is based on stable cross-border, and then transboundary cooperation stemming from the integration of regional clusters of bordering regions. Cross-border clusters emerge when there is cross-border proximity, the mature form of which is a cross-border region [17—18]. Since each of the border regions has its own set of "triple helix" actors, the interactions within a single transboundary cluster space are characterized by the phenomenon of the "double triple helix", i.e. cross-interaction of business, government and academic actors. Transnational clusters emerge in the process of transnational regionalization when close political and economic ties are established between two or more countries, and there is also cultural, historical, social or other proximity. Interactions in a transnational cluster are also realized within the framework of the "double triple helix" model. They involve permanent collaboration, business partnership, inter-organizational cooperation and information exchange.

Under the proposed model of territorial cluster boundaries, the delimitation process takes place at three hierarchical levels: national, regional, and local. The first stage is the study of statistical data and factual information. This allows for primary assessment of the territorial cluster boundary, i.e. determining its geographical location, features (development level, the nature of education, specialization of the community, sectoral coverage, etc.) and institutional context. Intra-network analysis at the micro level is performed to distinguish between the attributive and transactional characteristics of an aggregate of cluster members. The second stage involves describing the properties and similarities of the cluster's core elements to explain how and why they interact. Then, the

focus of the research shifts to the identification of the emergent properties of the spatial cluster by comparing the properties of individual subjects to the cluster core and analyzing them in the contextual environment [19].

Institutional context of cluster formation and cluster policy in the Baltic States

The reason for the deliberate creation of clusters observed in the Baltic States in the 2000s is the desire of these small-sized countries having limited resource potential and undergoing major socio-economic transformations to boost domestic competitiveness by focusing resources on priority areas. Having withdrawn from the USSR in the early 1990s, Lithuania, Latvia and Estonia faced the need to build new political and socio-economic systems relevant to the models of developed Western countries. The implementation of the reforms was challenging since the countries were facing a severe economic recession accompanied by cuts in industrial production, inflation, a drop in the quality of life, unemployment and a sharp increase in public debt. During that period, traditional production chains and the management system were breaking, and the geography of partners, interaction patterns and technical standards were changing. A major factor affecting the economic development of the Baltic States in the 2000s was foreign direct investment and financing from the EU structural funds. The state economic policy focused on the provision of a favourable business environment and the creation of economic clusters in traditional and cutting-edge industries.

For Lithuania, cluster policy is a relatively new area. In 2007—2013, the country introduced some measures intended to facilitate the development of general infrastructure for clusters and the creation of perspective growth points of the national economy — integrated science, education and business centres (valleys). Each valley has its own specialization. They are located in 3 major cities of Lithuania: "Santara" and "Sunrise" are in Vilnius, "Santaka" and "Nemunas" are in Kaunas, and "Baltic Valley" is in Klaipeda. The first concept of development of the Lithuanian clusters was adopted in 2014 in accordance with the National Progress Strategy "Lithuania 2030" (2012) and the National Innovation Development Programme for 2014—2020 (2013). The same year, the Association of Lithuanian Clusters was established. It undertook to participate in formation and implementation of clustering policy in Lithuania; to represent interests of clusters and their members in Lithuania and abroad; to strengthen cluster management competences and disseminate good practices; to provide training.

In 2017, the concept of development of Lithuanian clusters was updated to meet the needs of cluster members in new economic conditions. The new document emphasizes the need to create a favourable environ-



ment for the development of innovative clusters; to promote cross-sectoral cooperation; to build human capacity; to internationalise Lithuanian clusters and to develop international world-class innovation clusters. The main directions of this new cluster policy are development of the innovative potential of clusters; promotion of export activities and internationalization of cluster members; increasing business interest in clustering by means of disseminating the benefits and potentials; creation of a favourable environment for the development of clusters; promotion of intersectoral, interregional and international cooperation. The updated concept retains a requirement for a minimum of 5 members in a cluster, although it introduces 4 levels of cluster development (emerging, formed, developing and mature). These levels will be one of the bases for funding allocation and cluster assessment. Under the concept, the funding sources include proprietary funds, the state and municipal budget funds, the EU and other financial support funds. According to an analysis of development of Lithuania's clusters in 2017¹, the most considerable support was that provided by the EU investment funds. Over half the clusters that stopped receiving that support have to face an issue of financing of cluster management teams.

The implementation of the cluster policy in Estonia is connected with the adoption of the National R&D and Innovation Strategy for the period of 2007—2013, that provided for the development of innovative export industries with high added value, including by means of clustering. In 2008, the country launched a state programme for supporting clusters. The programme was aimed at increasing the international competitiveness of clusters through joint initiatives of Estonian enterprises. At present, Estonia supports cluster formation on its territory at three levels: supranational (within the framework of the European cluster development programmes), national and local. Enterprise Estonia (EAS) is a major tool of the national cluster policy. The goals include the creation of technological development centres, competence centres and promotion of clustering. Local support is offered as municipal co-financing of cluster projects. Financing is provided on a competitive basis. To be eligible, an applicant shall meet several criteria: a certain part of its business shall be located in a given cluster; a cluster must operate in one of the priority fields of activity (service economy, future technologies, and information and communication technologies). There is also information support provided in the form of consultations and training, incubation services and promotion of internationalization. Another form of support is organization of joint events, training and informal meetings under the auspices of the Cluster Club to initiate joint projects of different types of actors

¹ *Lithuanian Clusterization*. 2017. Research Institute for Changes. URL: <http://www.lca.lt/summary-of-the-report-lithuanian-clusterization-2017> (accessed Feb 15, 2013).

(enterprises, science parks, incubators, industrial parks, business associations, universities, etc.). There are also marketing activities (campaigns, study visits, etc.) aimed at promoting entrepreneurship and business environment.

The EU-wide cluster development trend and the EU support programmes have produced a strong effect on clustering in the Baltic countries, including Latvia. In the early 2000s, within the framework of the EU PHARE project, four sectors of Latvian economy (IT, timber and forest products, engineering and new materials) were identified as having high clustering potential. They served as platforms for the development of cluster initiatives, the first 2 of which proved to be viable. At the national level, the importance of forming clusters was first stated in a series of documents dated 2003 to 2006, including the National Innovation Programme for 2003—2006 (2003), Industrial Development Guidelines of Latvia (2004) and the National Development Plan 2007—2013 (2006). In 2005, the country developed the National Lisbon Programme of Latvia for 2005—2008. It emphasised the importance of cluster cooperation among business, research and educational institutions. It also set out criteria for assessing the potential of Latvian clusters to provide adequate further support. However, until 2008, the instruments of state financial support for clusters had remained undeveloped. This was severely hampering the cluster formation and development processes. The fact was reflected in the Operational Programme "Entrepreneurship and Innovation" for the period 2007—2013 adopted by the Cabinet of Ministers of Latvia in 2007. The document declared the need to ensure greater coordination of business and government efforts aimed at developing clusters seen as growth points that can create a favourable environment for the transfer of knowledge and innovation in the real sector of the economy. The importance of intersectoral cooperation and diffusion of knowledge and innovation was emphasized as priorities in sector-specific development strategies.

In 2008, Latvia's Ministry of Economy developed a special programme to support cluster projects set up by unrelated companies, research, educational and other institutions that was co-financed by the EU structural funds and the cohesion fund. This tool provides support to the priority sectors of the economy, ensures the formation of new value chains, promotes international cooperation, enhances export capacity and facilitates the formation of cluster management competencies. During the first stage (2009—2011), 9 cluster initiatives in traditional and innovative sectors received grant-based funding. The programme produced a beneficial effect on the economy and was extended until 2020. The total budget for 2016—2020 amounted to 19 million euros. In accordance with the Strategic Development Plan of Latvia for 2010—2013, during the same period there was a number of other initiatives launched to form a cluster support infrastructure (the programme aimed at creation of competence



centres and technology transfer contact points in 2011—2017), to facilitate cooperation among Latvian research, educational and production sectors in applied research, new product and technology development ("Science and Technology Development Framework 2007—2013", "Policy Framework for the Development of Education 2007—2013").

At the moment, cluster development in Latvia is determined by the long-term national development priorities of economic system transformation (increasing added value, labour productivity and efficiency of resource use, creating new forms of cooperation between producers and suppliers of goods and services), as enshrined in the Development Strategy of Latvia until 2030, the National Development Plan of Latvia for 2014—2020 as well as the Guidelines for both National Industrial Policy and for Science, Technology Development, and Innovation 2014—2020. According to the Smart Specialization Strategy for 2014—2020, the most important transformational trends are the development of sectors with significant horizontal impact and contribution in the transformation of national economy, along with the change in the production and export structure in traditional sectors of the economy and the development of innovative sectors with high added value. The political tools for the strategy implementation include direct financial support by the state, the EU funds and tax incentives. At the regional level, cluster formation is promoted within the framework of the regional policy for sustainable and balanced development of the territory of Latvia. The adopted long-term strategies and development programmes for specific Latvian planning regions (Riga, Zemgale, Vidzeme, Latgale, Kurzeme) declare the priority of supporting the creation of regional clusters as integral parts of a knowledge-based economy uniting local universities, large foreign and national companies, and small and medium-sized local enterprises in order to create new value chains.

Baltic clusters and cluster initiatives: features and localization

The active clustering process in Lithuania, Latvia and Estonia over the last decade is associated with the expansion of financial support instruments for national and regional clusters, including access to the Pan-European investment funds and programmes. To date, most of the Baltic clusters initiatives are undertaken, i. e. clusters have been formed by deliberate efforts (for example, in Lithuania their share is about 75%). The public administration sector as a subject of cluster policy performs a significant role in this process. Common features of most Baltic clusters include their immaturity; small size and a small number of members; weak inter-organizational links between the real sector and research organizations; prevalence of small and medium-sized enterprises; predominant location in the largest cities of the countries; funding dependence

on various support programmes, especially the EU ones; weak cluster management; aim of enhancing international integration; dependence on foreign technological, investment, material and technical, personnel and other resources.

According to the European Cluster Excellence Initiative², only two Baltic clusters have the Silver Labels confirming the successful implementation of cluster management improvement processes. These are Estonian and Latvian information and communication technologies clusters (ICT). Other 17 clusters (11 Estonian, 4 Latvian, 2 Lithuanian) are awarded the Bronze Labels, which demonstrates their interest in the development and improvement of cluster processes organization. As of the beginning of 2018, none of the clusters in Lithuania, Latvia or Estonia was awarded the Golden Label. This indicates a low maturity level of cluster development in these countries. In the Baltic countries, the service industry is the most active sector of cluster development. Major areas of specialization of the Baltic countries include tourism, information and communication technologies, medicine and healthcare, construction, production and design. A poll of Lithuanian cluster managers³ shows that the following industries are actively involved in cluster cooperation in that country: creative industries, ICT, manufacturing and engineering, energy, and construction. A similar trend is seen in Estonia. Latvia develops transport and logistics and food products along with the above-stated industries.

In Lithuania, there are over 50 clusters and cluster initiatives. That is the biggest number in the Baltics. The majority of clusters develop in the largest and economically strongest Lithuanian cities — Vilnius, Klaipėda, and Kaunas, where the concentration of personnel, financial and infrastructure resources is the highest in the country. However, cluster initiatives can also be found in Lithuanian towns (Biržai, Ignalina, Šiauliai, Kedainiai, etc.) with unique natural resources and developed specialization, mostly tourism. In total, cluster links connect 34 cities and municipal districts in Lithuania. The lowest cluster network density is observed in the counties of Taurage, Marijampolė and Telsiai. Organizationally, most members of Lithuanian clusters are micro, small and medium-sized enterprises. The public administration sector also occupies a crucial role. Research and educational organizations, associations and other non-profit organizations are poorly involved in cluster cooperation. Their participation mostly enhances the image of a cluster. Lithuanian companies rarely

² *European Cluster Excellence Initiative*. 2017. URL: <https://www.cluster-analysis.org/benchmarked-clusters> (accessed Feb 15, 2018).

³ *Lithuanian Clusterization*. 2017. Research Institute for Changes. URL: <http://www.lca.lt/summary-of-the-report-lithuanian-clusterization-2017> (accessed Feb 15, 2013).



outsource R&D as well as staff training and retraining. Lithuanian enterprises join clusters mainly to overcome their financial limitations by combining their efforts to conduct research, develop and launch new products and services, enter international markets, participate in an international project and apply for a grant. The technological, as well as the internal institutional and cultural, boundaries of most Lithuanian clusters are at the initial stage of their formation. The report on Lithuanian clusterization in 2017 points out that Lithuanian companies show little interest in creating a legal ecosystem, certification and training of their employees⁴.

Estonia ranks second among the Baltic countries in terms of the number of clusters. At the moment, there are around 20 cluster formations. The cores of most clusters gravitate towards Tallinn, the capital and the economic centre of the country, that provides more than half of its GDP. Organizationally, clusters are formed mainly by micro and small businesses and start-ups. There is a considerable proportion of companies with foreign participation, mainly Finnish and Swedish. Estonian companies form clusters to develop joint products and services and promote them internationally, and to form localized value chains. More than half of all identified Estonian clusters are interested in improving the quality of cluster management and strengthening cluster links. This is proved by their active participation in the European Cluster Excellence Initiative benchmarking. Specializations of the clusters are consistent with the development priorities of the country and its key region (Tallinn). They include ICT, health and medical science, mechatronics, environmental technologies, creative industries, tourism, transport and logistics, and finance. Estonia has established an infrastructure to support its clusters. There is a number of partner organizations directly involved in cluster interactions, including their initiators: centres for development of technology, educational and research institutions, competence centres, and scientific and industrial parks. Public authorities take an active part in the clustering process by creating a favourable business environment and an institutional interaction space as well as applying various financing instruments and a number of other mechanisms.

Latvia is the third among the Baltic States in terms of the number of clusters and cluster initiatives. In total, there are about 15 of them identified. The most mature are an IT cluster and a cluster of forestry and wood processing industry. The majority of cluster members are located in the metropolitan area of Riga and its vicinity. The basis for the Latvian economy is formed by micro and small companies. They account for approximately 95 % of it. For them, clustering is an effective tool for inc-

⁴ *Lithuanian Clusterization*. 2017. Research Institute for Changes. URL: <http://www.lca.lt/summary-of-the-report-lithuanian-clusterization-2017> (accessed Feb 15, 2013).

reasing competitiveness. Medium-sized and large enterprises also participate in clusters. However, their share is not high. The leading role in coordinating cluster development efforts in Latvia belongs to industry associations. The state does not take such an active part in clustering, which is negatively assessed by their direct participants [20]. There is no overall coordination of clusters and cluster initiatives at the national level. Latvia's degree of industrial cluster formation is insufficient [21]. This limits the ability of local businesses to profit from economies of scale and effectively use various locally-generated resources that are inherently inalienable and are an important factor in long-term competitiveness. Therefore, they are forced to rely on comparative advantages in labour costs. According to the survey of Latvian cluster representatives [20], the major factor for cluster emergence is the desire to increase export volume (89%), to increase competitiveness (78%), to increase productivity (44%) and to access additional sources of financing (67%). Only a fifth of all respondents consider the formation of a cluster as a mechanism for strengthening existing cooperation and an opportunity to execute their common strategic idea. The cluster growth in Latvia is hampered not only by a lack of financial resources and bureaucratized state support but also by a number of factors impeding the formation of cognitive, social and organizational proximity. For example, lack of understanding in society of the very idea of a cluster and its importance for regional development; difficulties in reaching a consensus on common mechanisms and tools for improving competitiveness, and at the initial stage of clustering — difficulties in finding partners sharing a cluster approach and in identifying complementary activities [20].

Problems of identifying the multidimensional boundary of the Baltic cluster: a case study of the IT cluster of Latvia

The Latvian IT cluster was established in 2000 and is one of the most mature territorial clusters in the Baltic States. This makes it attractive for testing a comprehensive methodology for delimiting the multidimensional boundary of a territorial community. A well-developed IT sphere is one of the national priorities in the Republic of Latvia, and a strong IT cluster is an important structural element of its economic system. Identification of the spatial boundaries of an IT cluster as a planning and management object is of significant practical importance. At the national and regional levels, Latvian authorities can use it when implementing their territorial and sectoral development policies; at the intercompany level, cluster managers can use it for devising a cluster growth strategy. Since the boundaries of all cluster formations are subject to strong fluctuations, their delimitation at a certain point in time is similar, in a way, to a pic-



ture of a cluster taken at a given point in space and time. Assessment of the dynamics of cluster boundaries requires continuous monitoring of its components: geographical, institutional, cultural, organizational, technological, social and cognitive. The results of this study represent a spatial section at the beginning of 2018.

The characteristics of cluster members determine its internal boundaries. The internal geographic boundary of the Latvian IT cluster outlines the location of its existing members. It lies within the administrative boundaries of Riga. Despite the changes in its organizational structure over the past five years, the cluster retained a high degree of concentration — within a single urban metropolitan area. The internal contour of the institutional boundary of the Latvian IT cluster is determined by the membership mechanism. In 2018, there are 38 members in the cluster. These are mostly small IT companies registered as limited liability companies. More than 20% of the members began their operation before the 2000s and have gained considerable work experience. There are also several large companies: "TIETO Latvia" and "VISMA Enterprise" employing around 700 and 200 people respectively. A lot of the cluster members are also members of specialized national associations (for example, the Latvian Information Technology and Telecommunications Association, the Latvian Open Technologies Association, the Federation of Security and Defence Industries of Latvia, the Latvian Internet Association). This creates favourable conditions for the formation of a single institutional and cultural space covering most IT companies in the country. The IT cluster itself has a membership in the Latvian Information and Communication Technologies Association and the Latvian Chamber of Commerce and Industry. This allows for the development, support and dissemination of uniform business standards in the IT sphere.

The internal organizational boundary of the Latvian IT cluster is inter-organizational in nature, as the members of the cluster are not only business but also research and educational institutions (Riga Business School, Baltic Computer Academy (BDA), "Learn IT" — a coding club for children). The industry affiliation of the IT cluster members is not homogeneous. There are IT firms specializing in software development, IT consultations, hardware architecture, networking and data transmission solutions, financial and business management solutions, business analysis solutions, Enterprise Resource Planning solutions, finance management and accountancy solutions. Also, there are companies that provide complementary services including publishing, marketing, hosting, etc. Nevertheless, the intersectoral linkages within the cluster's internal organizational boundary are rather limited due to a small number of its members. It is difficult to assess its social boundary remotely. We can only make an assumption that the cluster members are socially connected since the number of their employees is rather small and they are concent-

rated in one city with a population of slightly over 640 thousand people. We assume that social links among the employees of the cluster members are formed not only through professional contacts but also through informal interactions (for example, the use of common urban infrastructure, studying in the same educational institution (school, university, etc.), living in the neighbourhood as well as through common friends, acquaintances, relatives, etc.).

Delimitation of the internal cognitive boundary of the Latvian IT cluster as well as the social one is a laborious process and is associated with a high degree of subjectivity. The cognitive boundary directly outlines the contours of cognitive proximity. It is a mutual understanding arising from the actors' similarity in thinking and perception, including the perception of their mission, goals and paths of development, and existing problems. In general, the very fact of membership shows a certain level of mutual understanding between the companies reached at the stage of development of their common vision: "to create a value network of Latvian companies providing reliable IT development and application services for export". For the majority of the cluster members, the preferred areas of cooperation include development of export activities and joint promotion. An analysis of specialization of the cluster members has shown that there is a small group of enterprises that focus on the development of IT technologies for the health sector (ABC Software, Datakom, Meditec, Datamed, etc.). This may be complementary to the Baltic medical and healthcare clusters.

The external boundary of a cluster is determined by the location of its members' partnership network. The external geographical boundary of the Latvian IT cluster extends beyond the national border, passing through the territory of 33 states⁵. This creates favourable conditions for the circulation of new knowledge. In Europe, the cluster's strongest links are those with the economic entities located in the countries of the Baltic Sea region. The external institutional and cultural boundary of the Latvian IT cluster is quite broad. This is proved by successful cooperation with both companies from the USA and Western Europe, as well as from Eastern Europe, Asia and Africa. Business languages spoken in most member companies include Latvian, English, and Russian. German is widely spoken, too. Some companies use Lithuanian, Estonian, and Norwegian. The external organizational boundary, as well as the internal one, is of an inter-organizational nature. National non-member partners of the IT cluster include educational and research organizations, professional associa-

⁵ Australia, Azerbaijan, Belarus, Brazil, Canada, Denmark, Estonia, Finland, Georgia, Germany, Great Britain, Hungary, Iceland, Kazakhstan, Kenya, Latvia, Lithuania, Moldova, Namibia, Nigeria, Norway, Panama, Philippines, Poland, Russia, Singapore, Slovenia, Sweden, Turkmenistan, Turkey, Finland, South Africa, Ukraine, the USA.

tions, and state institutions; one of the international ones is Belarus High Technology Park. The economic entities of the cluster cooperate with large multinational corporations (Oracle, Novell, Microsoft, Cisco, IBM, etc.). They are their certified gold and silver partners. This ensures high technological compatibility with international companies from the international partnership network of IT giants and significantly expands the technological boundary of the cluster.

The thematic boundary of the cluster is determined by the peculiarities and geographic location of regional actors with similar specialization, competencies, level of development that are not formally cluster members but have the potential for cooperation. The geographical area of the actors complementary to the Latvian IT cluster includes Riga, Marupe and two major transport hubs: Valmiera bordering Estonia and Rezekne bordering Russia. The defining points of the absorption boundary of the Latvian IT cluster are IT centres including clusters, located near the cluster core: Vilnius and Kaunas in Lithuania, Tallinn in Estonia. The proximity measure was their location within a 4-hour drive from each other. This is based on the assumption that the best absorption efficiency is reached when a distance between potential interaction points is such that a person can reach them, transfer information and return within one day. The absorption zone covers the entire territory of the country.

Conclusions

Addressing the problem of equivocality of the boundaries of various spatial-network entities is an important practical task of state territorial development policy. It involves monitoring and assessing transformations of the nodes of territorial economic systems in the geospace, which are the result of a deliberate concentration of resources in strategically important sectors and regions. To ensure national competitiveness, state authorities tend to focus their regional policies on supporting existing or creating new growth points that can give an impetus to the development of the region as a whole. Herein, the growth points are various forms of spatial-network interactions such as a cluster, network, industrial area, etc. formed from a combination of certain types of proximity and rooted in a regional context. The territorial proximity of a particular region is a unique mosaic of the institutional, cultural, organizational, technological, social and cognitive types of proximity of its elements united by geographical proximity being the basis for a variety of interactions, the most stable of which are registered by science and practice. The elements of a territorial social system can simultaneously participate in several various forms of spatial-network interactions, depending on the purpose of contact. These forms feature boundaries that are highly dynamic and flexible

and may not coincide with the administrative borders of regions and go far beyond them. The identification and delimitation of different types of boundaries of spatial-network entities in a changing geospatial environment are vital for accurate assessment and forecasting of their development being influenced by a whole range of external and internal factors affecting the participants of interactions, their external partners and the environment in which they operate.

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SPATIAL PLANNING



MARINE SPATIAL PLANNING: THEORETICAL ASPECTS

*P. Ya. Baklanov*¹



In this article, I consider marine spatial planning (MSP) as a complex of analyses, calculations, and evaluations aimed to prove feasibility of economic activities and contribute to their development in a certain part of a sea or an ocean. A most likely comprehensive MSP object is an integrated segment of coastal/marine area. Consisting of a marine part and a coastal area, such segments are a product of zoning. In this article, I explore the key MSP stages — from identifying the planning object to evaluating the natural resource potential and performing calculations for relevant aqua-territorial structures. The basic principles of the geographical division of marine geosystems are the following ones: identifying relatively integrated marine sectors and relatively integrated coastal sectors and connecting them into a single whole. A hierarchical approach is key to transboundary marine basins. I propose the following techniques: geographical zoning, identification of an area and basin-specific combinations of natural resources, geoinformation modeling, and forecast analysis for different activities and relevant spatial elements of aqua-territorial structures.

Keywords: marine spatial planning, coastal-marine space segment, marine geosystems, trans-boundary marine basins, natural resource combinations, aqua-territorial structures, planning techniques, geographical zoning

Introduction

Socio-economic planning, being a process of analyzing and planning scenarios of the future has always included spatial, regional and territorial dimensions. Ho-

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wever, spatial and regional planning used to be carried out mainly for regions or other territories. Planning for offshore areas was either not done at all, or carried out in a simplified form. Only certain marine zones having prerequisites (or restrictions) for economic activity were included into socio-economic plans, for instance, mariculture, recreation, or shipping zones.

Marine spatial planning (MSP) has been developing worldwide since the 1980s as part of Integrated Coastal Zone Management (ICZM) and Integrated Coastal Area and River Basin Management (ICARM), or large ecosystems management [1—6]. Similar management methods were developed and applied in Western Europe, East Asia — Japan, China, South Korea, Vietnam, Thailand — and other countries. However, these approaches differed very little from territorial ones.

Statement of the problem

Since the end of the 20th century, countries all over the world have been exploiting marine natural resources, including biological, oil-and-gas, mineral, recreational and others more extensively. The ‘maritime constituent’ of spatial socio-economic development of Russia and its regions has also become more visible: the country has been extensively using its diverse marine resources, developing different types of marine activities, and deepening knowledge about seas and oceans [7—11]. Marine spatial planning has started developing on a new basis — that of objective-setting and information technology¹.

In Russia, the first steps in the development of marine spatial planning were made by scientists and specialists in economy and geography [12—19]. Nevertheless, the following aspects of marine spatial planning (MSP) require further research:

- identification of MSP objects and their hierarchy;
- identification, spatial division and zoning of marine areas;
- nature management of marine areas;
- assessment of possible combinations of spatial economic activities within marine areas.

Key findings

Marine spatial planning (MSP) is a complex of analytical, computing and evaluative activities aimed at the identification and justification of certain types of economic activities and their combinations feasible in a particular marine area.

¹ E. g.: Proceedings of the International Conference on Marine Spatial Planning — November 24—25, 2017, St. Petersburg, and the works of S. D. Mityagin, V. M. Razumovsky, M. I. Amosova, G. M. Fedorova, P. P. Spirina, V. A. Mayboroda, O. Yu. Korneev, the author of the article and others.

From the point of view of its integrity and complexity, an object of MSP in its integrated form should consist of the following segments (Figure 1):

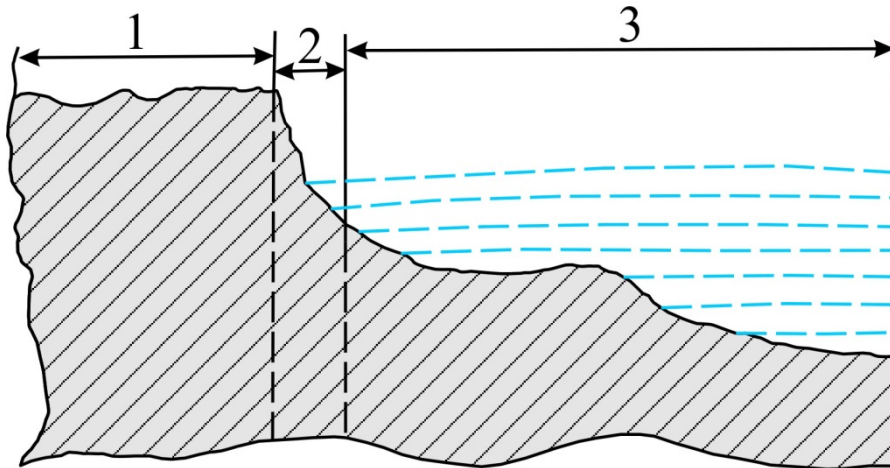


Fig. 1. Segmentation of a coastal-marine area
 1 — coastal land segment; 2 — coastal structures;
 3 — marine space, including water space and some of the seabed

As historical experience shows, the organization of almost any type of activity in the marine area is impossible without coastal bases (land-based structures) and other segments of coastal territory. In this regard, the inclusion of coastal structures in the MSP object should be considered as the most important methodological principle of MSP.

The following main stages of marine spatial planning can be distinguished:

- 1) Identification of a MSP object (marine geosystems, ecosystems of different types) in the form of segments of coastal-marine space;
- 2) Assessment of spatial differentiation of the MSP object and identification of its structural parts;
- 3) Identification of natural resources and the assessment of their potential in marine geosystems (here and after marine geosystems are considered as forms of coastal-marine spatial segmentation);
- 4) Assessment of coastal territories and their functions in the economic development of marine geosystems;
- 5) Identification of coastal structures as primary centres for the development of marine geosystems on coastal territories;
- 6) Calculation and assessment of economic and natural-resource potential of marine geosystems;
- 7) Selection and justification of the most effective options and stages of a comprehensive development of coastal-marine spatial segments.

As our studies and experience of economic development of coastal regions show, they usually include complex spatial elements — port complexes, shore-based processing enterprises and settlements; some of them also function in coastal water areas, including the seabed — mariculture farms, fishing vessels, oil and gas platforms, transport vessels and communications, and others. We refer to these spatial structures as *aquaterritorial ones* [17—18]. Functionally, they can be considered as economic or as socio-economic ones since they have social (population) and economic components. If complex integrated spatial structures have natural resources both in their coastal and water areas they can be called geographic aquaterritorial ones [20]. Being highly integrated, such structures can form an aqua-territorial system. Therefore, the MSP object is a segment of the coastal and marine space that may comprise various combinations of geographic aquaterritorial structures and systems within its boundaries.

We can identify the following principles of geographical segmentation (zoning) of marine ecosystems:

1. Identification of relatively integrated geographic structures in a coastal zone, in most cases based on the type of landscape. The coastal territory should be large enough to accommodate a settlement (about 50 km wide). (1, 2, 3, 4 — Fig. 2);

2. Identification of relatively integrated marine ecosystems having a natural resource potential (a, b, c, d — Fig. 2);

3. Establishing interconnection between marine ecosystems and geographic structures of coastal zones; identification of coastal-marine geosystems in the form of spatial segments (1a, 2b, 3c, 4d), in which it is possible to achieve sustainable coastal-marine and marine wildlife management; formation of certain types of economic activity and their aquaterritorial combinations.

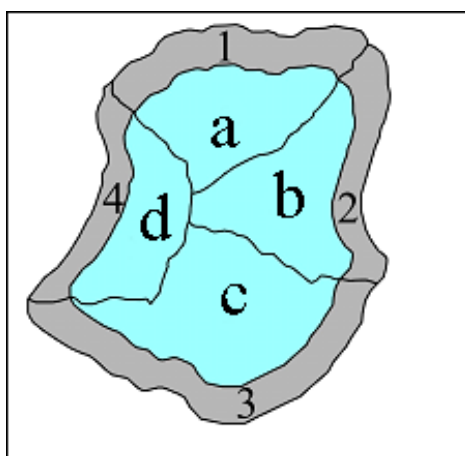


Fig. 2. Identification of coastal marine segments as MSP objects (See the article)

The most important task and stage of MSP is the identification and assessment of natural resources of marine areas. It should be noted that natural resources, being spatial themselves, are located throughout the space of coastal-marine segments. Taking the inter-resource links into consideration, these natural resource systems appear to be complex ones [21].

Basic principles for the identification of spatial marine natural-resource systems are as follows:

1. Assessment of spatial differentiation of near-surface layers of the water area in terms of:

- hydrophysical characteristics;
- availability of natural resources, their properties and interconnections.

2. Assessment of spatial differentiation of benthic layers in terms of:

- underwater landscapes;
- benthic natural resources, their characteristics and interconnections;

3. Assessment of spatial differentiation of seabed layers in terms of:

- types of seabed relief;
- availability of seabed natural resources, their characteristics and potential.

4. Assessment of spatial differentiation of the entire marine space according to a combination of resources and other characteristics; identification of marine natural-resource systems;

5. Matching the identified marine natural resource systems and areas of the coastal territory.

It should be noted that many of the seas and their basins in Russia are transboundary ones: the Baltic and the Barents seas in the west, the Black, the Caspian and the Azov seas in the south, and the Chukchi, the Bering, the Okhotsk and the Japan seas in the east.

Being relatively integrated geographic systems due to their natural resources and ecological characteristics, these transboundary basins are intersected by state borders — land and marine — as well as territorial water boundaries and 200-mile economic zones. These boundaries can form (and they often do) certain "gaps" in the information space which contain different characteristics of these integrated transboundary basins, different approaches and methods of assessing natural resources in some countries, the formation of national environmental management structures and the regulatory environmental base etc. As some research works show [11; 22—26], the assessment of natural resource potential, sustainable nature management and the development of transboundary regions in general require active international cooperation and the development of international cooperation programme.

Therefore, marine spatial planning requires a multilevel hierarchical approach, comprising at least four levels:

1) International level for a general assessment of the entire transboundary marine basin;

2) National level, covering coastal and marine segments of several countries; marine area is included within a 200- nautical mile economic zone;

3) Regional level for the identification of a coastal territory within an administrative entity (region, territory, etc.) and a marine area both as part of an economic zone and territorial waters;

4) Local level for the identification of coastal settlements and adjacent waters (not more than a few kilometers in width).

Some transboundary basins require a combination of hierarchical planning levels. For instance, it is impossible to single out only national Russian coastal-marine segment for the Baltic Sea basin. In this case the regional level takes on enormous importance, and in the Kaliningrad region, for example, it overlaps with the national one [9; 25; 27].

Marine spatial planning should use a combination of different tools:

1. Geographical division, zoning and coastal-marine space zoning which have been described in many research works in Russia [2; 3; 13; 20, 23];

2. The identification of spatial natural-resource systems in coastal territorial zones and in the sea; their quantitative assessment including mapping;

3. Geoinformation modeling of layers and components of natural and natural-resource space;

4. Complex forecasting and calculations of the formation and development of different spatial aqua-territorial economic structures.

Based on the above-mentioned approaches, the generalized zoning of Pacific Russia has been carried out (Fig. 3).

These segments, which include coastal areas with a width of 25—50 km and sea areas within a 200-nautical mile economic zone, can be considered integrated objects of MSP with a subsequent assessment of long-term prospects for their development.

A number of practical tasks of MSP can be outlined:

— The assessment of the natural resource potential in coastal-marine segments.

— Different-scale functional zoning of coastal marine areas and water areas and the identification of priority and presumptive types of nature management within the identified segments.

— Functional zoning of a 200-nautical mile economic zone.

— The assessment of options for the formation and development of aqua-territorial economic structures in certain coastal-marine segments.

— Geoinformation modeling of the formation and restructuring of spatial structures of nature use as well as spatial aqua-territorial economic structures in general.

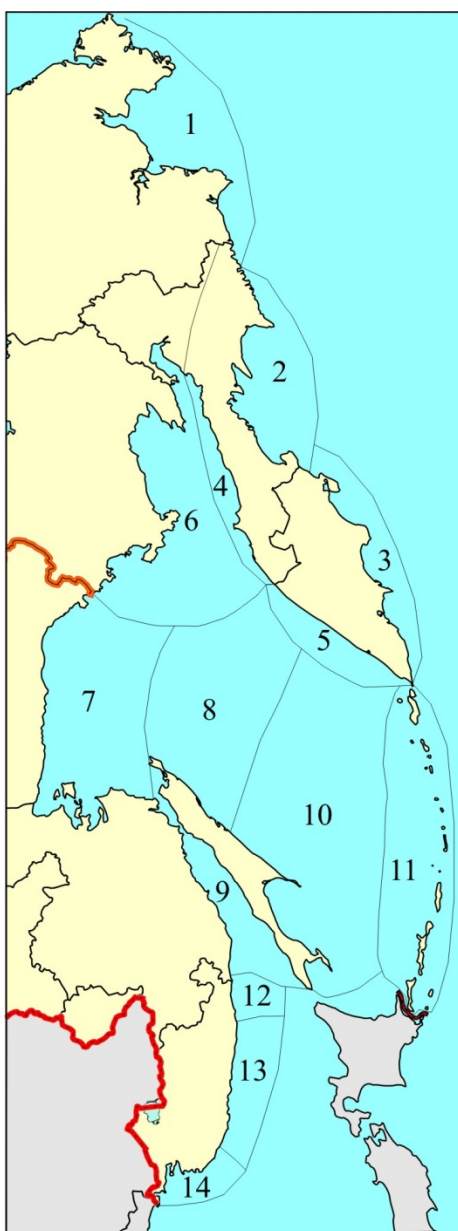


Fig. 3. Pacific Russia coastal area zoning (See the article):
 Major segments of the coastal and maritime space are identified as follows:
 1 — Outer Chukchi Sea Shelf zone (*Prichukotskaya Zone*); 2— 5 — Kamchatka Shelf
 (*Prikamchatka Zone*); 6 — Northwest Outer Shelf of the Sea of Okhotsk
 (*Northwest Priokhotsk Zone*); 7 — Southeast Outer Shelf of the Sea of Okhotsk
 (*Southeast Priokhotsk Zone*); 8 — Northeast Sakhalin Shelf (*Northeast Prisakhalin Zone*);
 9 — Western Sakhalin Shelf (*Western Prisakhalin Zone*);
 10 — Southern Sakhalin Shelf (*Southern Prisakhalin Zone*);
 11 — Kuril Islands Outer Shelf Zone (*Prikuril Zone*);
 12—14 — Primorye Zone



Conclusions

Segments of the coastal and maritime space should be identified as the main objects of MSP. The basic type of human activity within the coastal sea area is a multitier source of nature management, based on the extraction and use of coastal territorial and marine natural resources. Therefore, MSP can be defined as a coastal-marine spatial planning at large. In the course of MSP, a close interconnection of the formation and development of spatial coastal-territorial and aquatorial socio-economic structures is necessary, which in its turn should be based on variants calculations and modeling.

Therefore, MSP should become the most important gear of spatial socio-economic development of coastal regions.

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**SPATIAL PLANNING
IN THE EUROPEAN UNION:
PRACTICES TO DRAW
ON IN RUSSIA**

*A. I. Chistobaev*¹
*S. I. Fedulova*¹



In this article, we employ a systemic-complex methodology to consider the targets, functions, and content of spatial planning in European countries and compare them to urban planning practices in Russia. We analyse concepts and terminology used in spatial planning and related areas — territorial, marine, and underground planning. The article examines the evolution of the ideas of spatial planning in the EU. We consider the documentary framework for spatial planning from the last third of the 20th century to the present. The basic principles of spatial planning are identified in the article. We describe the level of territorial development management in the EU and its member states. The concept of 'best practices' is interpreted as an approach that includes the transfer of expert knowledge, concepts, ideas and practices developed in certain conditions and their adaptation to the needs of a different set of conditions in order to attain similar goals using the components of the transferred technique, model, or policy. We present a classification of spatial planning systems. We show how civil society is being involved in spatial planning in the EU and Russia. We stress the need to draw on the EU spatial planning experience, in particular, the involvement of civil society in project evaluation. At the same time, it is important to take into account the features of Russian natural and socioeconomic conditions.

Keywords: space, territory, urban planning, projects, planning principles, best practices, civil society

Introduction

The term "spatial planning" was coined in the course of evolution of spatial development management [1]. Territorial planning was applied to large mining areas in England, Germany, and France at the beginning of

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the last century [2]. In our country, the first district planning project was implemented for the territorial development of the oil-rich Absheron Peninsula and the city of Baku. A team of scientists led by Prof. A. P. Ivanitsky carried out this project in 1924—1925 [3]. The works by D. I. Bogorad (1960), V. V. Vladimirov (2002), V. G. Davydovich (1964) and E. G. Pertsik (1973, 2006) cover scientific and methodological principles and approaches to district planning on the territory of the USSR and the current-day Russian Federation. They present accumulated experience and, among others, include "Recommendations for improving the methods of district planning in the RSFSR" (1969), monographs "District Planning and Problems of Housing" (1970), "Integrated District Planning" (1980) and "District Planning: Designer's Handbook" (1986). After the dissolution of the USSR and the transformation of the socio-economic system, urban planning in the country has undergone fundamental changes. A new management approach to regional socio-economic development called for improved theoretical, methodological, regulatory and technological principles, and since there were none, the building development of the territory was chaotic, to put it mildly. The Town Planning Code of the Russian Federation that defines the goals and objectives of territorial planning, as well as its functions, was adopted only at the end of 2004.

To date, the Russian Federation has accumulated certain experience in territorial development management. This includes design of strategies for socio-economic development of the RF federal districts and subjects, development of territorial planning schemes for the subjects of the RF and municipal districts, resumption of the practice of master planning for cities and settlements, and the establishment of a land management system. Along with territorial planning, two more types of planning — marine and underground — have timidly sprouted. However, it is still too early to say that all three types of planning have made their way to life. The main problem is an obvious gap between the formulation of territorial development projects and their implementation, as the public seems to be rather passive when it comes to discussion and decision-making. Therefore, it is obvious that the spatial planning experience of the EU member states is useful in this respect.

The authors' position and research approaches

The authors of the article have extensive experience in strategic and spatial planning at the level of the subjects of the Russian Federation and municipal districts, summarized in their previous works [3—8]. In this article, they use their knowledge to compare spatial planning practices in Europe and in Russia, to identify their key features, and to substantiate

their proposals. In this work, they combine a comparative-geographic method with spatiotemporal, genetic, reproduction, geopolitical and problem-programme scientific approaches widely used in social and geographical studies. Each of them has found its specific place in this systematic comprehensive study of spatial development of countries and regions. To carry out this study, the authors have analyzed not only scientific literature but also information and statistical resources, regulatory documents, and survey results. They have also used visual observations made both in Russia and abroad. The authors' research efforts have resulted in the current original piece of work that, in their opinion, could contribute to the development of spatial planning in Russia. Moreover, the exchange of spatial planning experience will promote cooperation of specialists in this field and the rapprochement of the Eurasian countries.

History of European spatial planning initiatives

The concept of spatial planning was formulated in the EU when the perception of territorial development and its strategies was undergoing significant changes. This happened at the end of the last century when the EU countries were discussing the draft of a project on joint decision-making aimed at ensuring sustainable land use [9]. In the 1980s, the European Commission for the first time directed its special attention to the need to regulate the development of cities and initiated the preparation of "Europe 2000" and "Europe 2000+", thereby laying the foundations for research initiatives on urbanization problems [10]. At the same time, it was decided that, since the urban issues were not two- (like land use) but three-dimensional, the term "territorial planning" used previously should be replaced by the term "spatial planning".

Four years later (1999), Germany, the Netherlands and France initiated the adoption of a document entitled "European Spatial Development Perspective" [11]. It has never been adopted; however, it was instrumental in setting clear strategic goals for national, sectoral and regional policies in the EU member states. It was translated to all the languages of the European Union and became a kind of spatial planning manual.

Yet another document, "Guiding Principles for Sustainable Spatial Development of the European Continent", was developed (2000). It proposed a number of measures to ensure balanced socio-economic development of a territory combined with responsible management of natural resources and protection of the environment [12].

However, there was an obvious lack of information to conduct spatial planning works. The solution to this problem was found by establishing

the "European Network for Observing Spatial Planning" in 2002. The objective of the network was the creation of a comprehensive comparative database of data and indicators covering countries within the EU in order to facilitate the production of evidence-based and measurable solutions to assess the impact of policies adopted. The database provided the following data categories required for systematic analysis of territorial development: European, national and regional. The network also aimed to collect data required to address the issues associated with polycentric development, strengthening urban-rural linkage, ensuring territorial accessibility, introducing innovations and making attempts to solve demographic and environmental problems [13].

Another spatial planning initiative, "Territorial Agenda of the European Union 2020", was based on the "Europe 2020" strategy for smart and inclusive growth. This initiative is aimed at ensuring territorial cohesion that is a set of principles for harmonious, balanced, effective and sustainable territorial development enabling equal opportunities for citizens and enterprises, wherever they are located, to make the most of their territorial potential. Territorial cohesion fosters the principle of solidarity to promote convergence between the economies of better-off territories and those whose development is lagging behind, which requires continued cooperation and integration among various regions of the EU at all relevant territorial levels.

The term "territorial cohesion" was originally used, along with economic and social cohesion, as the main objective for promoting European integration in the Lisbon Treaty (2009), which led to the creation of a spatial planning competence shared by the EU and its member states.

Objectives and principles of spatial planning

In the course of the implementation of the above initiatives in the EU, spatial planning has become a kind of geographical expression of economic, environmental, social and cultural policies of society as well as an administrative mechanism and a tool for pursuing regional policies. Spatial planning is an interdisciplinary approach directed towards balanced regional development and the physical organisation of space. The EU compendium of spatial planning systems and policies says that states use it as methods to influence the future distribution of activities in space [14].

In the 2008 UN-sponsored report, it was noted that spatial planning aims at the rational territorial organization as well as at balancing demands for development with the need to protect the environment and the achievement of social and economic objectives [15]. In this process,

the objectives of territorial development, its strategies and plans are defined and developed at interregional and intermunicipal governance levels linking management of urban development, industrial and agrarian policy, transport and environmental protection.

There is vertical and horizontal coordination of spatial planning aimed at coordination of actions at different governance levels and interaction between governmental and non-governmental organizations and citizens[16].

Cross-border spatial planning pursues a similar goal. It is carried out at supranational level by means of the EU directives. The member states are bound to transpose decisions of the European Parliament into national legislation and to apply jointly developed concepts and ideas on their territory.

This is not an easy task, especially for the new members of the Union with strong long-established traditions. For example, in the Soviet time, Lithuania introduced the concept of a unified housing system implemented within the framework of a centrally-planned economy. Estonia, another Baltic country, developed and implemented the theory of the socio-economic spatial systems formation. Therefore, in the modern EU context, changing spatial planning naturally encounters certain difficulties.

The concepts of territory and space are related but not identical: "space" is more general, abstract, while "territory" is its "sub-concept" having clearly defined boundaries. Space has no boundaries; the parts of it correspond to a certain land or sea area. This leads to a reasonable conclusion that territorial planning is a form of spatial planning [17]. Other authors see spatial planning as complex socio-economic and environmental developments and consider territorial planning to be a functional zoning of the territory [9], i. e. a means to achieve a particular objective.

Spatial planning currently covers not only the land but also the sea area (marine planning) and underground territorial resources (underground planning), and, perhaps, another type of it will appear in the future — the one associated with the use of aerial space [4]. It is obvious that the concept of "space" is not limited to urban development only but includes geographic, resource, socio-economic, ethnic, confessional, geopolitical and legal space.

The principles of sustainable spatial development are the same and binding for all EU countries. The main one is the principle of territorial cohesion promoted through balanced social and economic development of regions and improved competitiveness. The principle underpinning urban-rural linkages is the encouragement of development generated by urban functions. The essence of the third principle is ensuring transport

accessibility to all places of residence, and the fourth principle is the development of access to information and knowledge. The next five principles are aimed at reducing environmental damage, enhancing and protecting natural resources and natural heritage, enhancing cultural heritage as a development factor, developing energy resources while maintaining safety, and encouraging sustainable tourism [4].

Although the EU authorities have no direct powers over spatial planning, they still influence its procedure and practice through three policy instruments: strategic policy documents, promotion of ideas and concepts; regulations and directives; funds and subsidies, e. g. those aimed to support regional development and agriculture [18; 19].

Systematization of approaches to spatial planning and management

The EU authorities can have influence over spatial planning and regional development of all EU member states [19]. Nevertheless, these types of activity are nation-specific because of a local language and culture, traditional values and attitudes, a particular legal framework and a system of government [20; 21]. Due to these peculiarities, each country has its own successes and failures in regional policy and spatial planning. Thus, along with national spatial planning systems, there is European Spatial Planning (within the EU framework).

In the most general sense, the EU member states see a spatial planning system as a specific social construct featuring the application, in certain institutional contexts in time and space, of certain techniques of social cooperation directed towards ruling a collective action for the use of space [16]. Specific actions depend not only on the specifics of a decision-making process in a country but also on various socio-economic, political and cultural factors affecting the development of the productive forces.

International comparative planning research employs a typology of countries based on approaches and convergence in the context of Europeanisation, which is in detail presented in the EU Compendium on Spatial Planning Systems and Policies [22; 23]. It is based on the substantive aspects of a national legal framework at different levels of government, the scope of regional policy issues covered in documents, the nature of the division of powers between state and municipal governments, private sector share in GDP, importance of spatial planning for the state and in social life, and differences in objectives and outcomes. The same document identifies four traditions of regional development systems: 1) the "urbanism" tradition, 2) the land use management approach, 3) the regio-

nal-economic planning approach, 4) the comprehensive integrated approach (tab.). It is worth noting that some countries, for example, Germany, use the landscape approach, which is also characteristic of the current practice of spatial planning in Russia.

**Criteria approaches for the systematization
of regional development management in the EU member states**

<i>The "Urbanism" Tradition</i>	<i>Land use management</i>
<ul style="list-style-type: none"> • Evolution of urban development • Regulation of territorial development and zoning <p><u>Countries:</u> the Mediterranean Member States of the EU</p>	<ul style="list-style-type: none"> • Land use zoning • Increased level of interaction among government bodies <p><u>Country:</u> United Kingdom</p>
<i>Regional economic planning approach</i>	<i>Comprehensive integrated approach</i>
<ul style="list-style-type: none"> • Pursuit of regional objectives • Reduction of regional disparities • Integration of spatial planning issues into regional policy • Emphasis on development of problematic areas • Innovations in the social sphere • Improvement of territorial development governance <p><u>Countries:</u> France and (to a lesser extent) Portugal</p>	<ul style="list-style-type: none"> • Hierarchy of plans • Focus on spatial planning • Coordination of spatial impacts of other policies • Justification of the principles of spatial development • Definition of the functions of local and central authorities <p><u>Countries:</u> the Netherlands, the Nordic countries, Austria and Germany</p>

Based on: [6].

Best practices in spatial planning

As different territories seem to have common problems, there is a need to identify effective international solutions and successful examples and to transfer them to another context. Many solutions already exist but are not widely disseminated or implemented, so the EU supports its member states and local authorities by promoting Europe's best practices, facilitating their widespread use and encouraging effective interaction and exchange of experience. It is important to provide local authorities with access to existing solutions to allow them to learn from each other and develop solutions adapted to their specific situations.

The notion of "best practice" has become widespread in European policies and regional development programmes [24]. The identification of best practices and their promotion contribute to the accumulation of knowledge and facilitate progress in various spheres of life, including spatial organization of society.

The idea of sustainable development originated in the Netherlands in the late 1980s, and then in Germany it was embedded in spatial development. France is especially successful in transition to a balanced urban system. Finland and Sweden have rich experience in managing the northern territories. Germany, the Netherlands, France and Sweden have impressive achievements in public transport promotion. Italy, Spain and Greece have succeeded in developing tourism and protecting cultural heritage. The exchange of experience at the supranational level facilitates the development of documents and databases aimed at spatial development harmonization. Therefore, the *best practice* is a scientific approach that involves the transfer of expertise (expert knowledge), concepts, ideas and practices developed in a certain context to solve a particular problem in another context in order to achieve a similar desired result through the use of components of the transferred method, model or policy [25].

One of the most promoted ideas in the EU is the compact city concept, suggesting that continuing urban growth requires dense and proximate development patterns to reduce the negative impact on the environment and maintain the well-being of urban residents. The compact city development mitigates the effects of climate change and reduces automobile dependence by providing sustainable transport and consuming less energy for heating. Moreover, compact cities can facilitate the preservation of biodiversity and ecosystem services outside cities.

To ensure that the consequences for other cities, regions or countries interested in implementing best practices are positive, policy-makers, politicians and other stakeholders should fully understand all aspects of ideas, tools and policies before transferring them to their own cities or regions. The ideas from different geographical, cultural and planning contexts imply not only successes that may be achieved but also difficulties that one may encounter. There are some generalized policy ideas, tools and processes that can be successfully applied to international contexts. Nevertheless it is unlikely that any model that has proved successful in one context will work in a different one. Local policy-makers and experts need to develop their own context-specific solutions for transferring best practices, using international examples only as inspiration. Any solutions should be specific to a particular territory, a political and planning situation, and cultural preferences to ensure successful implementation.

Public participation in spatial planning

It was not until recently that citizen participation and general stakeholder involvement has become a standard part of the planning process and public policy in general. In spite of the existing concerns that their

participation may result in delays in policy development and decision-making, public participation has become common and almost universally accepted as best practice.

Spatial management in the EU countries relies on a thorough analysis of various environmental, economic, technological and social processes. The more people from different spheres of activity and social strata participate in the development and examination of spatial planning documents, the higher is the likelihood of effective project implementation [6].

Instead of being passive consumers, the EU citizens are turning into participants of decision-making processes [26, 27]. Thus, the spatial planning systems are becoming open, consultative and interactive; they have developed both vertical and horizontal links.

Multilateral communication is beneficial to all planning process participants because it improves the quality of decision-making and balances public and private interests in conflict situations due to a better understanding of needs, preferences and values of people, which is achieved by communicating with them. The social context and public trust are of growing concern to regional and city authorities. Residents have the opportunity to realize their creative potential and to improve their environment [28]. This develops their civic awareness and responsibility for the future of their country, region and city. Business facilitates the search for opportunities to influence decision-making and policy development, and supports best practices and technologies [6].

The best system is believed to be the one which is developed with engagement of city authorities, specialists and external experts and consultants, business community and the public. Residents of a territory under planning and all other stakeholders are able to participate in the development of strategies and plans at any stage of the process.

At the moment, traditional public involvement activities dominate in many countries. They include public hearings, consultations, exhibitions and public meetings. However, it is expected that in the future interactive consultancy websites will be the most popular tool for public involvement. It is necessary to understand how to motivate citizens to contribute their own ideas to urban development since there is a significant difference between formal participation and the real power needed to influence the outcome of the process. The fundamental point is that participation without redistribution of power is just a waste of time as in this case, even with all opinions considered, a final decision benefits one party only. For this very reason, new cooperative and interactive methods of civic participation in spatial planning are being developed all over the world.

One of them is an online geo-questionnaire used to elicit geographic data in the variety of topics and geographical contexts. Materials are

presented together with an interactive map, which allows respondents to answer questions related to the geographical features of a territory under planning. Geo-questionnaires aim to provide localized data on residents' perception and everyday experience in the form convenient for analysis. The increased demand for such new methods for collecting data on experience, opinions and preferences of urban residents is explained by a greater focus that city authorities give to sustainable development and community involvement. At the same time, the development of geo-spatial technologies and social networks has enabled the use of new types of geo-information data. This has resulted in the emergence of new GIS methods for public involvement and the engagement of large groups of individuals.

Evaluation of spatial planning experience in Russia

The authors' experience in spatial planning in Russia and the analysis of the best EU practices suggest significant differences in the prevailing approaches to spatial planning. However, the main difference, besides the structure and content of the documents being developed, is the approach to public participation in spatial planning combined with the lack of forms of civic engagement in Russia.

The Town Planning Code of the Russian Federation provides only for public discussions of urban development documents. Such forms of citizen participation as conferences, appeals to local authorities, meetings and surveys are rarely used. The passivity of citizens during project discussions can be explained by the lack of trust in politicians and state institutions, and the peculiarities of mentality. The lack of transparency prevents a constructive dialogue between the public and government officials. This is largely due to the lack of formal requirements for presentation of layouts and schemes of existing buildings; moreover, the lack of brief textual and visual information at public discussions obscures the situation for ordinary citizens.

An illustrative example is a one-day public discussion of Moscow Master Plan that had been developed over a period of five years. Obviously, it was impossible to reply to all 75,000 comments in such a short time. In addition, it is worth noting that most of the comments were not relevant, which can be explained by the complexity of the document, its size, lack of visual materials as well as a limited understanding of the issues by citizens. Moreover, after a 2.4-fold increase in Moscow's territory, the relevance of this long-term plan was called into question. A similar situation arose in St. Petersburg in connection with development of planning for the town of Yuzhny that adjoins the city. The residents initiated an environmental assessment but the expert group was headed by

an expert on ancient oriental culture. The plan was approved by amateur experts, although real experts were against it. Similar examples can be identified in other towns, cities and regions across Russia.

In general, legal opportunities for public participation in development project discussions are established but they are realized formally or not in full. The disregard of interests and opinions of ordinary citizens is a major drawback of Russian spatial planning. Yet, to stick to the principle of fairness, it should be noted that some regions of the Russian Federation show a slight increase in the activity of citizens and public structures in managerial decision-making; however, the number of such examples is still limited. In view of this, we believe Russia can draw on the experience in spatial planning accumulated in the EU countries.

Conclusions

Despite considerable Russian and international experience in spatial planning, many of its aspects have not been properly assessed yet. The comparison of Russian and European experience reveals different trends in regional policy development and territorial development management. For example, European countries are reconsidering the role of the state and civil society in spatial planning and urban development, while in Russia the state-centred approach to decision-making on the functional use of the territory remains predominant. Its main drawback lies in the fact that according to the Town Planning Code of the Russian Federation spatial planning documents shall comply with uniform requirements that do not take into account the specifics of natural and socio-economic conditions of territories, the diversity of which in Russia is greater than in any other country. At the same time, the EU countries (which, in this case, we consider to be large regions) can follow upper-level recommendations with a certain extent of variations while applying common principles of sustainable spatial development.

To increase the effectiveness of spatial development and management in Russia, it is necessary to analyze, adapt and test best practices and modern technologies. In this connection, new objectives for research are clear; they should summarize national and international experience in spatial planning and implement its best practices in Russia.

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BALTIC COOPERATION IN MARINE SPATIAL PLANNING

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Marine spatial planning is a relatively new area of cooperation in the Baltic Sea region — a site of long-term joint efforts towards environmental protection and sustainable development. At the beginning of the 21st century, the integrated management of coastal zones and marine spatial planning emerged as a new area of international cooperation. Despite intensive theoretical work on the mentioned concepts, the development of a harmonised spatial planning in the Baltic Sea region is complicated by the complex nature of the problem, a relatively intensive exploitation of marine resources, diverse interests of the stakeholders, and differences in national institutional systems. We describe the key stages of the process, which is regulated by the EU standards on the one hand and affected by the activity of such organisations as VASAB and HELCOM, on the other. In this article, we examine basic documents defining the principles and scope of marine planning and analyse recent research works into spatial development. We conclude that marine spatial planning is a principal tool of the EU's integrated policy. Many European countries of the Baltic region are seeking cooperation with Russia to preserve the natural and economic environment of the Baltic Sea. Most joint spatial planning projects have been initiated by Finland, Sweden, Germany, and Poland.

Keywords: Baltic Sea region, European Union, integrated coastal area management, spatial planning, Poland, Russia

Introduction

Environmental Basis of Baltic Co-operation

Although economic and political cooperation on the Baltic Sea enjoys a long tradition — of which the Hansea-

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tic League¹ is a good example — the beginnings of the most recent chapter of economic and political collaboration date back to the seventies of the twentieth century and are related to the signing of international marine environmental protection conventions, an area least burdened by political divisions hindering the development of multilateral relations². Gradually, the cooperation of countries around the Baltic Sea expanded to cover other areas of social and economic life. It gained momentum at the end of the eighties and the beginning of the nineties of the twentieth century following the demise of the USSR and the emerging political transformations in Central Europe. These processes led to the EU enlargement covering nearly the countries in the Baltic Sea Region and eliminated many stumbling blocks, which impeded cooperation in the past. Nevertheless, not all problems disappeared and new ones appeared. Military détente and the accelerated economic growth of countries under transformation contributed to a growing economic interest in using the sea. Though the ratification of conventions for the protection of the Baltic Sea environment brought certain positive results [1], it became quite clear that the challenges of growing anthropopression and the reconciling of varied interests require new forms of international cooperation.

In the first decade of the twenty first century, the area of integrated coastal zone management (ICZM) and marine spatial planning (MSP) provided such new formats for collaboration. Although for the last four decades both concepts have gained in popularity, and are gradually implemented, they bring limited benefits to the environment and society. The exploration of complex ecological and social interactions in coastal zones and the sea remain a challenge. The integration of terrestrial and marine planning pose a similar challenge, particularly the transfer of standards and procedures of public participation in terrestrial spatial planning to marine planning, as well as convincing local coastal communities to turn to sustainable management of marine resources [2]. The true motivation underlying coastal management and marine planning continue to be

¹ Hansa (Hanseatic League) — an association of medieval trading cities mutually supporting their economies. In the fifteenth century it comprised 160 member cities led by Lübeck. The Polish members included, among others: Chełmno, Elbląg, Gdańsk, Cracow and Toruń.

² Joint work towards the protection of waters and live Baltic Sea resources of all countries in the region (Denmark, Finland, Sweden, GFR, GDR, Poland and the USSR) started with the signing in 1973 of the The Gdansk Convention on Fishing and Conservation of the Living Resources in the Baltic Sea and the Belts (Gdańsk Convention), and in Helsinki, in 1974, the Convention on the Protection of the Marine Environment of the Baltic Sea Area (Helsinki Convention) The Conventions provided a cooperation plane for protection of the marine environment of countries of two contrary ideological, political, and economic orientations, which was a unique solution worldwide.

an open question. It is still a question how and to what extent efficient coastal management and marine planning can contribute to a sustainable and integrated approach to environmental protection and to what degree they can solve conflicts regarding the use of sea resources [3].

The article has two goals. The first is recapitulation of actions and measures up to date related to Baltic maritime spatial planning. The second goal is an attempt to summarize the achievements of cooperation between the EU and Russia in marine spatial planning and identify the strength and weakness both in the conceptual and implementation layers. The analysis, based on desk research methods, helps to explore the key documents regulating the nature and scope of marine planning and helps to identify the main theoretical provisions related to spatial development plans.

The article comprises three major parts. The essence of spatial planning is discussed below with special focus on the difference between marine and terrestrial planning and the European Union's contribution to the development procedures and methods for maritime spatial planning. Next, we present the scope of planning work embracing the Baltic Sea. Planning achievements feature diversified study methods and varied approaches to the task. In order to better describe the issue, the subsequent parts of the article present works related to selected examples of EU and Russia cooperation in the field. They are remarkably interesting because EU Directives, aimed at harmonising maritime spatial planning, are not mandatory for Russia. Yet, cooperation practice shows that such harmonisation is possible.

The essence of marine spatial planning

Marine and coastal areas are becoming areas of dynamic human activity related to wind energy, pipeline transport and marine shipping, fishery and aquaculture. These activities may be complimentary, neutral or give rise to conflicts in using water basins. Insufficient coordination may lead to rivalry and generate pressure for valuable resources and consequently may lead to a continued degradation of the marine environment. The integrated management of coastal zones and marine spatial planning are to counteract this negative scenario. The two types of intervention in political and market mechanisms of utilizing sea resources are interlinked. Integrated coastal management is a complex tool for controlling all processes affecting this zone, particularly the land-sea interface in coastal areas, and a tool for ensuring sustainable development of coastal and sea areas. Owing to this tool, management and development decisions are made in a coherent manner in all economy sectors.



ICZM processes combine such issues as environmental protection policies, spatial planning, economic policies and even social policies as they all influence the status and the functioning of coastal areas.

Achieving consistency in terrestrial spatial planning (in coastal areas) and marine spatial planning is a challenge [4]. Coastal zones are a link between land and sea development. Catchment areas and the impact of various economic activities on land, such as agriculture and urban development, strongly influence the natural sea environment and the MSP trends. Therefore, terrestrial spatial planning should be done simultaneously with marine spatial planning. In practice, ICZM focuses strongly on terrestrial management and coastal management, whereas MSP refers mainly to big water basins more distanced from the coast and focuses on efforts to coordinate, organise and restrict their economic use. An additional barrier in coordinating terrestrial and marine plans is the 3D dimension of sea planning — the three tier approach, which accounts for the sea surface, seawaters and seabed developments.

According to VASAB³ “spatial planning of maritime regions should be treated as a legally defined hierarchal process of reconciling competitive needs in using sea space (sea surface, waters and seabed) in line with the values and objectives of a given society which can be found in international and national priorities and agreements. Such a definition of planning affects the shaping and monitoring of maritime spatial planning by applying relevant instruments (e. g. visions and spatial planning strategies)” [5].

Maritime spatial planning defines more than the admissible and excluded forms of developing a given water basin. It also provides principles governing their development (e. g. cable laying in parallel bundles), as well as relevant guidelines (e. g. using certain sea areas today but leaving considerable sea parts for future generations to decide; the need to avoid sea location of projects that may be more efficiently placed on land) [6]. The Intergovernmental Oceanographic Commission UNESCO (IOC) defines planning on the strategic and executive level as “a process for identifying and allocating fragments of 3D maritime space for

³ VASAB — Vision and Strategies around the Baltic Sea. The Conference of Ministers responsible for spatial planning, held in Wismar in 2001 adopted “The Action Programme for spatial development VASAB 2010 PLUS”, which specifies the development of coastal zones and islands as one of the themes of transnational collaboration in spatial planning, extending spatial planning to include the coastal lands. The VASAB secretariat is seated in Riga. VASAB prepares policy options for the territorial development of the Baltic Sea Region and provides a forum for exchange of know-how on spatial planning and development between the Baltic Sea countries; recommends transnational policy measures; promotes methodology development; promotes cooperation projects; cooperates with other cross-BSR initiatives; and promotes a dialogue with sector institutions.

concrete use to satisfy environmental, social and economic goals agreed in political processes” [7]. The European Union (EU) became involved in the process of developing maritime spatial planning and joined the process of developing relevant planning systems. The European Commission [8, 9] defines this issue as the domain of public authorities, which are to coordinate human activity in maritime regions, both in space and time, to satisfy environmental, economic and social goals.

Starting 2004, most of the Baltic Sea area remains under the jurisdiction of EU member states. Thus, the solutions put forward by EU bodies under the European maritime policy have a meaningful impact on spatial development and the state of the Baltic Sea natural environment. The European Commission favoured the adoption of an integrated and holistic approach to the economy and management of oceans, seas and coastal areas, as well as to the coordination of all sea related policies. Marine spatial planning (MSP) is the key tool for implementing an integrated maritime policy. Public authorities and other stakeholders can coordinate actions and optimise the use of maritime space to the benefit of the economy and the marine environment. This approach was expressed in the Green Paper and Blue Paper regarding the policy [10; 11], and later by a Framework Directive [9], which established the framework for maritime spatial planning. The Directive promotes sustainable growth of maritime economy, sustainable development of marine areas and sustainable use of marine resources, at the same time taking into account the land-sea interaction and close trans-national cooperation (tab. 1). Coastal member states collaborate to achieve coherent and coordinated maritime planning in the entire sea region. This cooperation takes into account, in particular, transnational matters. Member states make efforts to cooperate with third countries in their maritime spatial planning actions in accordance with international conventions. They take advantage of international fora and regional institutional cooperation to pursue this goal.

Table 1

Minimum requirements for maritime spatial planning and fields of interests specified in the EU directive on maritime spatial planning

Maritime spatial planning requirements
Coherent terrestrial and marine interaction in maritime planning
Inclusion of environmental, social and economic aspects as well as safety and security aspects
Strengthening maritime spatial planning cohesion with integrated management of coastal areas and terrestrial spatial planning
Involvement of stakeholders
High quality data and information base
Trans-national coordination and consultation of Member states
Promoting cooperation round water basins with countries outside EU

End of table 1

Potential scope of spatial plans
Mariculture areas
Fishing areas
Raw material exploitation areas, exploration, installations and infrastructure, crude oil, gas minerals, aggregate mining, production of renewable energy
Maritime transport lanes and traffic
Military ranges
Environmental protection and protection of species
Areas of scientific research
Underwater cables and pipelines
Tourism
Underwater cultural heritage

Source: Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning.

MSP on the Baltic Sea

Maritime spatial planning (MSP) in Baltic Europe has been developing for merely a dozen years. The Conference of Ministers responsible for spatial planning, held in Wismar in 2001, adopted “The Action Programme for spatial development VASAB 2010 PLUS”, which specifies the development of coastal zones and islands as one of the themes of transnational collaboration in spatial planning and extends spatial planning to include coastal terrestrial areas. Following the Conference, the first Baltic MSP project called BaltCoast [12] was launched in 2002. The project elaborated ICZM spatial planning principles. Based on the developed guidelines, the 2005 VASAB Conference of Ministers in Gdańsk stressed that “sea use planning could serve as a tool to prevent conflicts of use in intensively used offshore areas”.

The experience in MSP obtained in international projects has played a fundamental role in the implementation and development of spatial planning in the Baltic. The projects facilitated MSP planning in Germany and contributed to amending relevant legislation in the country. Mecklenburg-West Pomerania planners introduced the first MSP spatial marine development plan [13], which entered into force in 2005 [14]. It referred to German territorial waters covered by spatial planning of Mecklenburg-West Pomerania. It showed the broadening scale of terrestrial planning and the inclusion of the sea territory into it. Follow-up activities of the Baltcoast project included the elaboration of ICZM and maritime spatial planning recommendations adopted by VASAB in 2005. The BaltSea-Plan emphasised the transnational dimension of maritime spatial planning and the role of cross-border cooperation in it. It also indicated cultural



differences among the Baltic Sea region countries that have their institutional implications, which hinder the integration of planning works. Projects developed in Baltic Europe resulted in producing a vision of sustainable marine spatial planning for this water basin [15]. The areas that require international collaboration in marine spatial planning were identified. These include environmental protection, energy, sea transport, fisheries and mariculture. Conclusions showed the need for the Pan-Baltic dimension in effective use of space and the assurance of connectivity.

The next important step in MSP development on the Baltic was the establishment of a VASAB Working Group, in 2006, for planning the use of sea resources and ICZM. The concept for planning the use of marine resources of the Baltic Sea Region (BSR) was proposed in October 2008. The concept clearly stated the need to develop a long-term vision of the Baltic Sea area development as well as the principles and priorities to realise the vision.

The VASAB Working Group for maritime planning was transformed into a joint HELCOM-VASAB MSP WG task force for maritime spatial planning in 2010. It provides a regional platform for international collaboration of Baltic Europe for a cohesive implementation of such planning, also in the transnational environment. This group manages EU horizontal actions for the Baltic Sea Region strategy referring to planning of maritime regions. The strategy assumes that by 2020 the ecosystem approach in maritime spatial planning will have covered the entire Baltic region. The Working Group is to facilitate this process. A major building block supporting the action includes the above-mentioned general principles of spatial planning for the Baltic Sea [14]. They indicate that spatial plans of sea areas in the countries of the Baltic Sea region should meet numerous criteria ensuring their adequacy to the needs, comprehensiveness and effectiveness (tab. 2).

Table 2

Principles of maritime spatial planning in the Baltic Sea Region

Sustainable management
Ecosystem-based approach
Long-term objectives and prospects
Prudence (in the environmental, economic and social dimension)
Participation and transparency
Quality data and information sources
International coordination and consulting
Coherent terrestrial and marine planning
Planning adjusted to the characteristics and specific conditions of various areas
Planning continuity

Source: author's own elaboration based on [14].

HELCOM together with VASAB coordinate MSP actions. The MSP HELCOM-VASAB Working Group studies, reviews and builds on the results of MSP related projects such as Plan Bothnia, BaltSeaPlan, Parti-SEApate and Baltic SCOPE. The Baltic MSP Roadmap (2013—2020) supports the ultimate quality related expectations regarding the plans. By 2018, the guidelines developed by the Working Group on transnational consulting and cooperation in the Baltic Sea Region will have to be implemented. The EU strategy for the Baltic Sea region (EUSBSR)⁴ assigns an important role to VASAB and HELCOM in promoting MSP in the region together with other stakeholders “encouraging spatial planning on land and at sea in all member states round the Baltic Sea and developing a common approach to cross-border collaboration”. By 2017, all Baltic European countries, with the exception of Russia, had adopted legislative acts facilitating maritime spatial planning. It marked the next step in the realisation of the strategy. Russia is also working towards reaching this goal.

Selected examples of the EU and Russian cooperation in MSP on the Baltic Sea

EU countries of the Baltic Sea region — Finland, Sweden, Germany and Poland — strive to collaborate with Russia in preserving the natural and economic environment of the Baltic Sea. Russia is at the beginning of the road towards developing maritime spatial planning legislation as a tool for governing the country’s extensive water basins. The government have made a number of important decisions to elaborate relevant legislation and the process of introducing maritime spatial planning in Russia is going on. Its stages and achievements are clear. The most important factors supporting and hindering the process of introducing maritime spatial planning in Russia have been identified.

In October 2016, in cooperation with German partners⁵, a three year programme “Environmentally friendly land use concepts for the Baltic

⁴ The main goal of the EU Strategy for the Baltic Sea Region (SUE RMB) adopted in October 2009 is to strengthen cooperation in the region and benefit from the potential generated by EU expansion. The essence of the Strategy is multilevel co-operation: Its essence is multilevel co-operation on the national, regional and local level with the participation of the world of science, research centres, academics, regional structures institutions managing operational programmes as well as the private sector. The strategy facilitates wide-ranging contacts with macroregion partners, including Russia, to initiate new projects and promote projects in progress on the international forum.

⁵ The German Federal Environmental Agency.

Sea coast of the Russian Federation" was completed. Its objective was to develop an environmentally friendly concept for spatial management of the Neva River estuary and the Gulf of Finland that provides a compromise for satisfying social and economic requirements with environmental priorities. During the XV Russian Saint Petersburg forum "Strategic planning in Russian towns and region", recommendations and guidelines were published for spatial planning of maritime regions in Russia. They support the progressing spatial planning processes in Russia, which are beneficial for all the Baltic Sea countries.

In 2006—2008, partners from Poland, Lithuania and the Kaliningrad Oblast (the Russian Federation) in the years implemented the transnational project POWER. The conducted studies made it possible to gain experience in planning, to identify the necessary information, to prepare the basis for spatial planning and create conditions for the efficient development of wind farms along the Baltic Sea coast of Lithuania, Russia and Poland. The project included joint research and exchange of best practices in the assessment of wind energy resources, their potential economic benefit and risks. Potential areas for locating wind farms were identified. The project provided important information for wind farm investors.

Within the framework of the document "Understanding on the system for the exchange of information on the ecosystem state of Vistula Lagoon in frame of the Polish — Russian transboundary cooperation" (2011) IMGW-PIB and the Kaliningrad Hydrometeorological Monitoring Centre (KCHM) have been exchanging the monitoring data collected by the centre of the Baltic Oceanography and Monitoring, and KCHM of the Gdańsk Gulf and the Vistula Lagoon.

The project VILA⁶ (VILA-Opportunities and benefits of joint use of the Vistula Lagoon/common benefits of developing the Vistula Lagoon potential), carried out by partners from Poland and Russia in 2013—2015, aimed at using the full potential of the Vistula Lagoon, a water basin cut by the Polish and Russian border. The major objective of the project was to specify possible actions supporting social and economic cooperation of both parts of the Vistula Lagoon. The VILA project facilitated the preservation the unique character of the Vistula Lagoon's natural environment and the development of collaboration between local communities. Results of the project were published and provided information about the natural, social and economic environment of the area. The first publication presents the European context of spatial planning of the Vistula Lagoon sub-region and a synthetic overview of spatial planning

⁶ The VILA project was carried out under the Lithuania-Poland-Russia Cross-Border Cooperation Programme 2007—2013.



systems in Poland and Russia. It also includes a description of the main regional and local spatial planning documents in force on both sides of the Vistula Lagoon. This information should help to identify forms of cooperation beneficial for both parties. The project also assessed possible forms of cooperation between Poland and Russia in the cross-border area of the Vistula Lagoon [16]. The second volume describes the hydrotechnical infrastructure of the Vistula Lagoon water basin — ports and harbours — and indicates options and conditions for their development and modernisation [17]. The next volume, apart from presenting the baseline natural, economic and social resources, indicates possible scenarios for the development of the Vistula River sub-region [18]. The VILA project publication series closes with an atlas containing a description of the cross-border catchment area of the Vistula Lagoon developed according to the guidelines of the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention).⁷ Besides maps of the Vistula Lagoon catchment area, its major rivers and their tributaries, the atlas also provides information about the spatial character of the catchment area and contains numerous maps, records and graphs [19]. Although the project did not result in the development of a long-term regional cooperation strategy, the outcome may potentially improve standards of living in the area; stimulate the economic development and mobility of the Vistula Lagoon region.

Conclusions

Foundations of the Baltic collaboration were laid in the seventies of the twentieth century and are related to the signing of international marine environmental protection conventions. Environmental protection is an area least burdened by political disputes that impede the development of multilateral relations. International cooperation in this field gained momentum at the end of the eighties and the beginning of the nineties of the twentieth century following the demise of the USSR and the emerging political transformations in Central Europe. These processes led to the EU enlargement covering nearly all countries around the Baltic Sea and eliminated many obstacles impeding cooperation in the past. Nevertheless, not all problems disappeared and new ones appeared. Though the ratification of conventions for protection of the Baltic Sea environment brought positive results, it is quite clear that the challenges of growing anthropopression and the reconciliation of various interests re-

⁷ The Convention on the Protection and Use of Transboundary Watercourses and International Lakes was adopted in Helsinki in 1992 and entered into force in 1996.

quire new forms of international cooperation. In the first decade of the twenty first century, the area of integrated coastal zone management (ICZM) and marine spatial planning (MSP) provided such new formats of collaboration.

MSP is a key tool of the EU integrated maritime policy. Public authorities and other stakeholders can coordinate actions and optimise the use of maritime space to the benefit of the economy and marine environment. The EU Maritime Strategy Frame Directive provides grounds for marine spatial planning in the form of environmental protection regulations. According to the Directive, all EU member states are to reach environmental status of marine waters by 2020, to apply the ecosystem approach and to guarantee the attainment of a good status of environment protection in general.

The Baltic Sea MSP experience indicates that the specificity of particular water basins — the natural environment, the interests and aspirations of coastal societies, should be taken into account in MSP. It requires a more active public participation in the process of developing, implementing and evaluating marine spatial plans. The MSP experience gained in international Baltcoast, PlanCoast and BaltSeaPlan projects, among others, were of fundamental significance in implementing and developing Baltic spatial planning. The HELCOM-VASAB taskforce for maritime spatial planning provides a regional cooperation platform for Baltic Europe countries towards a coherent implementation of these plans. The EU Strategy for the Baltic Sea Region (EUSBSR) assigned an important role to the taskforce in promoting MSP among all Baltic Sea member states and in developing a common approach to transnational cooperation in this field.

EU Baltic countries strive to collaborate with Russia in preserving the natural and economic environment of the Baltic Sea. Finland, Sweden, Germany and Poland have implemented international projects with partners from Russia. Polish-Russian projects were aimed at developing maritime cross-border cooperation on the Vistula Lagoon, the water basin divided by the Polish-Russian border. Although a long-term regional cooperation strategy was not adopted, the results may improve the residents' life standards, stimulate mobility of local society and the economic development of the Vistula Lagoon in general. Both Polish-Russian cross-border basins — the Gulf of Gdańsk and the Vistula Lagoon — are exposed to growing anthropopressure and increasing conflicts over the use of marine resources [20] (Fig.).

The ongoing work on the spatial development plan for the Polish sea areas revealed five existing and 17 potential conflicts related to the existing/planned ways of using the sea [21]. Most of them, thanks to spatial planning, will be mitigated. Chances of success will be greater if planning is coordinated across the borders.

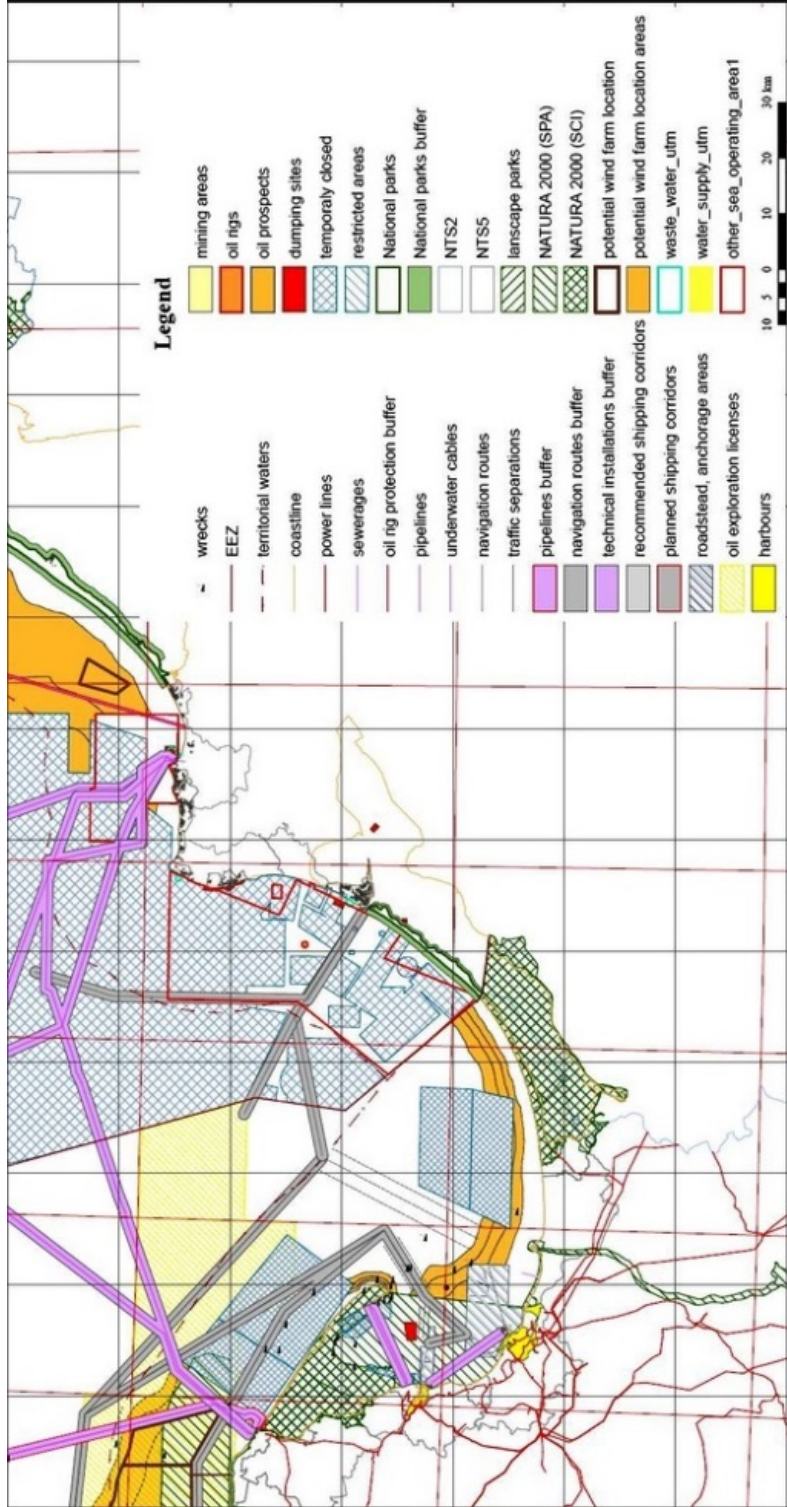


Fig. Inventory of the potential use of sea in the Gulf of Gdańsk area

Source: Maritime Institute in Gdańsk.

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CURRENT
AND PROSPECTIVE
TRANSPORT
CONNECTIONS BETWEEN
POLAND'S BORDER
VOIVODESHIPS
AND RUSSIA'S
KALININGRAD REGION

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T. Studzieniecki²



Transport is an important tool to support interregional cross-border cooperation. Moreover, transport is a traditional area of cooperation between neighbouring regions. In this study, we analyse the features and configuration of today's transport links between Russian and Polish border regions and examine a range of transport projects aimed at a more diversified and intensive cooperation. We believe that priority should be given to the projects that are beneficial to all the parties. As of the beginning of 2018, Russian — Polish cross-border cooperation was sustained by road, railway, and, to a degree, marine transport links. There is a vast variety of projects aimed to create new transport links between the border regions. These projects differ in timelines, scopes, and the range of resources required. In our opinion, the most promising project in a short-term perspective is the establishment of a waterway connection between Russian and Polish ports. The project includes the seaport terminal in Pionersky in the Kaliningrad region. Another promising project is the launch of a cross-border passenger railway connection using a European gauge.

Keywords: transport connections, cross-border cooperation, Russian-Polish state border, transport projects, transport corridors

Introduction

Cooperation among regions of neighbouring countries is a multi-aspect and variable phenomenon that involves different sectors. However, there is no single conceptual framework for cross-border cooperation [1]. For each region, cooperation priorities va-

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ry depending on its development goals. Social and environmental cooperation among border regions can be more intense and have greater significance for regional development than the nature of political or economic relations. For example, cross-border cooperation within the Russia — China — Mongolia triangle was motivated from the start by the need for joint environmental actions to protect river systems [2]. These collaborations were boosted by initiatives aimed to manage the transboundary Lake Baikal basin [3].

For border regions, which often have limited resources for development, cooperation with a neighbouring state's regions can play a very significant role. In the case of the Kaliningrad region and the contiguous regions of Lithuania and Poland, the activation of the border factor can turn the territory's coastal position into a major benefit. Transport is a tool to strengthen cross-border ties and to increase the role of a coastal position in overall regional development. It can perform two equally significant functions in the context of both regional development and cross-border cooperation. A tool for strengthening cross-border ties, transport is an object of cross-border cooperation, which includes joint transportation projects and the creation of transport and logistics corridors. Providing for passenger and freight traffic across the border, transport defines how economic and social ties develop between the neighbouring territories. Finally, transport is critically important for launching and strengthening interregional cross-border cooperation.

Problem formulation

Russian-Polish cross-border cooperation is an important factor in the internal development of the Russian region and the bordering Warmian-Masurian and Pomeranian voivodeships of Poland [4], since there are few other development instruments. Despite the complications in the political and economic dialogue between the countries and between Russia and the EU, the history of Russian-Polish border contacts is best described as progressive development [5].

Russia is engaged in cross-border cooperation at national, regional, and local levels. The Agency for International and Interregional Ties is a Kaliningrad regional executive body that provides recommendations for shaping and implementing foreign, interregional, and foreign economic policies in line with national foreign policy targets. Not long ago, cross-border cooperation became possible at the municipal level, i.e. now it can be conducted by municipalities.¹ Until recently, there was a problem

¹ On the Framework for Cross-Border Cooperation: Federal Law of July 26, 2017. Available through the Consultant Plus system.

relating to the delineation of responsibilities between regional executive bodies and municipalities when organising and conducting cross-border cooperation [6—7]. In Poland, the principal agents of cross-border cooperation are self-government units. The principles of cross-border cooperation are regulated by a law² that allows municipalities to join and participate in associations within their powers and competencies and acting under the laws of Poland and in lines with the country's foreign policy and international obligations. A voivodeship enters into cross-border cooperation in accordance with the priorities for voivodeship international collaborations and with procedures stipulated in self-government regulations.

Another important factor is the institutionalisation of cooperation by bilateral commissions of the national and regional level. The Russian-Polish Council on Cooperation between Polish Voivodeships and Russia's Kaliningrad Region is a major body. Acting under the Agreement between the Government of the Republic of Poland and the Government of the Russian Federation of May 22, 1992³, the Council plays a crucial role in the organisation of, and support for, cross-border cooperation between Poland's voivodeships and the Kaliningrad region. Institutional, political, and economic factors can either intensify (local border traffic between Russian and Poland [8]) or inhibit (sanctions and countersanctions [9]) cross-border cooperation. Today, similarities in the socioeconomic development on either side of the border prevent the complete termination of cooperation. One set of cross-border cooperation models is replaced by another one, which is adapted to current conditions. This proves that isolated border regions are impossible [10]. Although the intensity of cross-border cooperation between the Kaliningrad region and Poland's border voivodeships is unlikely to change dramatically in a short-term perspective, there is a need to define the role of transport in current and future Russian-Polish cross-border collaborations.

Polish authors maintain [11—13] that the mechanism for local border traffic (LBT) was a success in economic and social terms. Poland benefited from a growth in tourism and trade and Russia — from stronger social contacts [14], an increasing number of joint NGO projects, and closer cooperation of border services in the development of border infrastructure. At the same time, LBT translated into an increased work-

² Law of September 15, 2000 on the principles of joining international associations of local and regional communities by units of territorial self-government. URL: <http://dziennikustaw.gov.pl/du/2000/s/91/1009> (accessed 01.11.2017).

³ The Agreement between the Government of the Russian Federation and the Government of the Republic of Poland on Traffic in the Vistula Lagoon (September 1, 2009). URL: <http://docs.cntd.ru/document/902178646> (accessed 09.12.2017).



load for the existing border infrastructure [15]. The suspension of LBT alleviated the problem of border crossings. However, on average, checkpoints are working at 1.3 of their capacity. With the resumption of LBT, the capacity of checkpoints will once again become a limitation to the progress of Russian-Polish cross-border cooperation. Alongside plans to develop road checkpoints on either side of the border, there are numerous projects aimed to diversify transport links between the regions, using different types of vehicles. Building on an understanding of the regional trajectory of socioeconomic development, the Kaliningrad region is working on projects to promote transport cooperation with Poland's border voivodeships. Polish projects to enhance transport links with the Kaliningrad region are also driven by national needs to develop the border voivodeships.

Methods and the hypothesis

This work aims to harmonise the Russian and Polish perspectives on the practicality of various transport projects that may be launched in the border regions in the near future. We support the hypothesis that priority should be given to projects beneficial for all partners. Pursuing such transport projects will not only intensify cross-border cooperation but also contribute to the internal socioeconomic development of the border regions. This article analyses earlier proposed transportation projects that can affect Russian-Polish cross-border cooperation and the development of both border regions. A project analysis should include an evaluation of project variants in a short-term (1—3 years), mid-term (5—7 years), and long-term (10—15 years) perspective. The key methods used in this study are analytic comparison, spatial analysis, and critical forecasting.

An analysis of the current transport situation at the Russian-Polish border

Before embarking on an analysis of the projects, we will outline the current condition of transport links between the Kaliningrad region and Poland's border regions. Today, passenger traffic between the border regions is carried exclusively by road. However, during some historical periods, it was carried by rail and waterways too. Due to a wide range of causes — which do not always include a lack of demand from local residents, — rail and waterway transport does contribute to passenger traffic across the Russian-Polish border (table 1). Road and rail cross-border freight traffic is growing whereas the use of maritime and inland waterway transport is sporadic.

Table 1

The contribution of different modes of transport to freight and passenger traffic across the Russian-Polish border

Mode of transport	Cargo traffic	Passenger traffic
Road	+	+
Rail	+	—
Maritime	+	—
Inland waterway (including cabotage)	+	—
Air	—	—

Source: compiled by the authors.

In 2017, 3.9 m people crossed the Russian-Polish border — 2.5 m from the Kaliningrad region and 1.4 from Poland.⁴

The passenger traffic across the Russian-Polish border is serviced by four road checkpoints, the total capacity of which is 6,700 vehicles per day, including 4,700 cars (table 2).

Table 2

The design capacity of checkpoints along the Russian-Polish border

Checkpoint	Total capacity	By type of vehicle		
		Cars	Lorries	Buses
Two-way road checkpoint Bagrationovsk	1 200	900	200	100
Two-way road checkpoint Mamonovo	500	450	No data	50
Two-way road checkpoint Gusev	1000	750	175	75
Two-way road checkpoint Mamonovo-2	4000	2600	1250	150
<i>Total</i>	<i>6 700</i>	<i>4 700</i>	<i>1625</i>	<i>375</i>

Source: [15].

⁴ *Biuletyn Statystyczny Straży Granicznej za 2017 r.* Biuletyn statystyczny opracowany na podstawie baz danych Straży Granicznej. URL: BIULETYN_STATYSTYCZNY_STRAZY_GRANICZNEJ_ZA_2017_ROK.pdf (accessed 09.03.2018).

Russian open sources do not contain information on the actual performance of checkpoints in 2017. Since the Federal Agency for the Development of State Border Infrastructure (Rosgranitsa)⁵ was disbanded and its functions were transferred to the Directorate for the Construction and Exploitation of Rosgranitsa Facilities, there is little open source information on the operation of checkpoints. According to a report by Poland's border service, in 2017, the Russian-Polish border was crossed by 2.2 m land vehicles, including 2 m cars. Therefore, the total capacity of checkpoints along the Russian-Polish border is 1.7 m cars per year (4,700 cars per day × 365 days). In 2017, the checkpoints were working 20% above their capacity. Obviously, checkpoints Mamonovo and Mamonovo 2, which are the closest to the city of Kaliningrad, accommodate most of the cross-border passenger traffic.

As the 2017 data show, the existing checkpoints along the Russian-Polish border are working above their capacity. LBT translated into two million more crossings per year, which required additional transport channels at the Russian-Polish border that could reduce the workload of the existing infrastructure and create competition in the market of cross-border transport operations. Figure 1 and table 3 show a summary of information on projects considered in the article. Below, we will provide a detailed analysis of the projects.

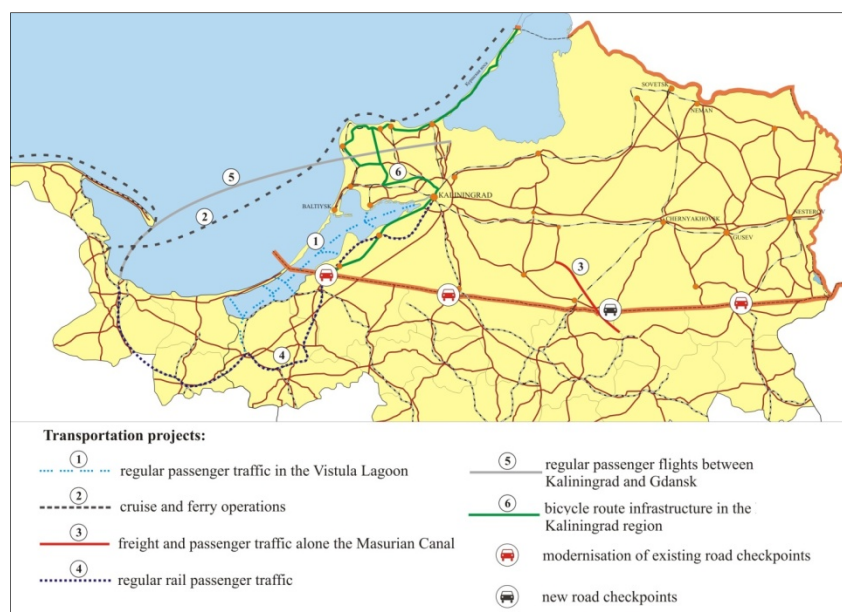


Fig. Transportation projects aimed to expand channels for cooperation between Russia's and Poland's border regions

Source: compiled by the authors.

⁵ On the dissolution of the Federal Agency for the Development of State Border Infrastructure: Executive Order of the President of the Russian Federation of February 2, 2016 No. 40. Available through the Consultant Plus system.

Table 3

Proposed transportation projects aimed to expand channels for cooperation between Russia's and Poland's border regions

Mode of transport	Project title	Project duration		
		1—3 years	5—7 years	10—15 years
Road vehicles	The modernisation of the existing and the construction of new checkpoints along the Russian-Polish border			+
Maritime and inland waterway transport	Regular freight and passenger traffic in the Vistula Lagoon		+	+
Maritime transport	The launch of cruise and ferry operations at the international port of Pionersky	+		
Inland waterway transport	Freight and passenger traffic along the Masurian Canal			+
Rail transport	Regular rail passenger traffic	+	+	
Air	Regular air flights between Kaliningrad and Gdansk		+	
Green transport	Bicycle route infrastructure in the Kaliningrad region			+

Source: compiled by the authors.

Description of major transportation projects

1. Modernisation of the existing and the construction of new road checkpoints.

From the perspective of design capacity and of compliance with current requirements for equipment and infrastructure, only one of the four checkpoints stands out. Checkpoint Mamonovo 2, which has been functioning since 2010, is the Kaliningrad region's most state-of-the-art border facility. The year 2015, when the LBT was not yet suspended, recorded the highest number of border crossings in the history of Russian — Polish cooperation. Various institutions — the Council on Cooperation between the Kaliningrad Region of the Russian Federation and the Regions of the Republic of Poland and the Russian-Polish Work Group on Customs Affairs, which was established in the framework of the effec-



tual international Russian-Polish cooperation of customs services, — discussed projects to increase the capacity of the border. The proposals made can be classed into two categories — comprehensive modernisation of the existing checkpoints and the construction of new facilities. The village of Krylovo was considered as a probable construction site. It was planned to use the Poland-Russia cross-border cooperation project for 2014—2020 as a major source of funding. However, in 2018, an increase in checkpoint capacity is not a pressing concern. Although the cross-border cooperation programme adopted at the end of 2017 embeds ‘border security’ as a priority. However, a budget of 5.7 m euros⁶ is too low to modernise the existing checkpoints and, all the more so, to create new ones. For example, the construction of checkpoint Mamonovo 2 — Grzechotki, which was commenced in 2006, had a budget of 13 m euros⁷ (in 2006 prices). Thus, an increase in the total capacity of road checkpoints along the Russian-Polish border is rather unlikely in a short-term or mid-term perspective because of the absence of either coordinated plans or sources of funding.

2. Freight and passenger traffic between Russian and Polish ports in the Vistula Lagoon.

The national border between Russian and Poland has both land and sea sections. An indivisible object from the physiographical perspective, the Vistula Lagoon is divided by the national border into the Polish and Russian parts. It is possible to organise regular freight and passenger traffic between cities located on the shores of the lagoon, the largest being Russia’s Kaliningrad and Poland’s Elbląg. The traffic can be carried by ferries, barges, motorboats, yachts, etc. In the history of the two countries’ cross-border cooperation, there was a period when traffic in the lagoon was quite heavy. In the mid-1990s, hydrofoil passenger boats were cruising between the Russian ports of Svetly and Kaliningrad and the Polish ports of Elbląg, Frombork, and Krynica Morska. The fuel consumption of such boats was very considerable and the sea link turned out to be economically inefficient. In the same period, barges were carrying coal, grain, and construction materials. The sea link was ended in 2006 on the initiative of Russian federal bodies. The decision was explained by

⁶ The Russia — Poland cross-border cooperation for 2014—2020. URL: <http://www.plru.eu/ru/> (accessed 10.12.2017).

⁷ On the signing of the Memorandum of Understanding for TACIS Funding of Design and Construction of the Mamonovo — Grzechotki Border Crossing Post on the Russian-Polish Border: Resolution of the Government of the Russian Federation of December 28, 2006. No. 1828-r. Available through the Consultant Plus system.



the absence of a necessary legal status granted by a document of an intergovernmental level [16]. Boat traffic, partly carried by vessels flying the flags of third countries, resumed only in 2009 when a Russian-Polish intergovernmental agreement was concluded.⁸ However, freight traffic remains insignificant and regular passenger traffic is absent. The Russian — Polish project ‘VILA — Opportunities and Benefits of Joint Use of the Vistula Lagoon’ and the Lithuania — Poland — Russia ENPI cross-border cooperation project for 2007—2013 contained analyses of the economic-geographical and infrastructural potential for the resumption of regular passenger traffic in the lagoon [17]. A considerable passenger traffic will require special infrastructure, namely, passenger terminals where customs and border checks can be carried out on a regular basis. There is such a terminal at the port of Elbląg. However, the terminal is not used for its intended purpose. The Russian party has a terminal that can be equipped for regular customs checks at the port of Baltiysk. From the economic perspective, a regular passenger line between Baltiysk and Elbląg is not a promising project. To be economically efficient this line should include a passenger terminal in the city of Kaliningrad. The Russian party is considering the construction of such a terminal. However, the project will demand not only a search for the sources of funding but also an approval from federal services responsible for border and customs checks. There is a plan to prepare a relevant feasibility study equipped with an analysis of the cost-effectiveness and social benefits of the whole project. Overall, the project looks promising. If its social benefits and economic feasibility are demonstrated, it can be completed in a very short time through private investment.

Alongside a regular passenger link, the development of a network of smaller ports and harbours in the Kaliningrad region will benefit Russian-Polish cross-border ties. The Russian region is part of European route E70. This circumstance requires the creation of infrastructure and the development of a relevant institutional and legal framework in the Russian exclave. The need to advance inland waterway tourism and expedite the integration of the region’s inland waterways has been discussed by the expert community since tourism was included in the list of the region’s prospective economic specialisations. With the launch of international — including Russian-Polish — projects, several studies were carried out to justify and devise a general coordinated plan for developing infrastructure for inland waterway transport in the Kaliningrad region.⁹ However, in

⁸ Agreement between the Government of the Russian Federation and the Government of the Republic of Poland on traffic in the Vistula Lagoon (September 1, 2009). URL: <http://docs.cntd.ru/document/902178646> (accessed 09.12.2017).

⁹ The most noteworthy projects include: 1) Maritime Tourism Marketing in the Baltic Sea Region (MariTour) Program INTERREG III B / TACIS project;



terms of infrastructure, these projects are much closer to completion in Poland than there are in Russia. Poland has launched a large project aimed at the infrastructural modernisation and technical equipment of smaller ports and marinas. Partly funded by the EU, the ‘Żuławy Loop — The Development of Water Tourism’ project was carried out in 2010—2014.¹⁰

The comprehensive development of inland waterway transport and the construction of necessary infrastructure in the Russian part of the lagoon require that the spatial inefficiency of the border and customs check organisation be overcome. Today, the Russian party checks passengers who have crossed the border using inland waterway transport only in the port of Baltiysk — a city on the shore of the Vistula Lagoon, located at the maximum distance from the border running across the waterbody. Any boat heading to Elbląg from Kaliningrad has first to reach Baltiysk to go through customs checks and then to repeat the procedure in Elbląg. A competitive waterway link means a three-hour journey from Kaliningrad to Elbląg, instead, any vessel has to take a six-hour bypass via Baltiysk — and this estimate does not take into account time necessary to go through border checks. This problem can be solved by establishing a checkpoint at the port of Krasnoflotskoe — part of the town of Mamonovo — the closest point to the border. Such a checkpoint might give a significant boost to cross-border small-craft traffic, since the port is situated very close to the shortest route from Kaliningrad to Elbląg. However, the infrastructure at the port of Krasnoflotskoe needs significant renovation. The port was equipped in the Soviet period as a harbour for fishing boats operating in the lagoon. The equipment of berthes and marinas, as well as relevant onshore services, including those for customs and border checks, requires an investment project worth 50 m roubles.¹¹ This project has not been included in the list of regional or industry-specific state programmes. Thus, it can be carried out only if supported by a private investor — either independently or as part of public-private partnership.

The effective functioning of water transport can change the current configuration of Russian — Polish cross-border cooperation. Water transport can not only support cooperation through ensuring 3—3.5 m cross-

2) Project ‘Exploiting Inland Waterways in the Baltic Sea Region’ Programme INTERREG III B / TACIS; 3) VILA — Opportunities and Benefits of Joint Use of the Vistula Lagoon, European Neighbourhood and Partnership Instrument in the framework of the Lithuania — Poland — Russia Cross-border Cooperation Programme for 2007—2013.

¹⁰ The Żuławy Loop project. URL: <http://www.petlazulawska.pl/index.php> (accessed 15.03.2018).

¹¹ Investment characteristics of the Mamonovo District of the Kaliningrad Region. URL: <https://mamonovo.gov39.ru/invest/> (accessed 15.03.2018).

sing per year but also become a platform for the development of new cross-border cooperation models. If the potential of the coastal position is unlocked, a shared lagoon and the need for the common use of the waterbody will give rise to transboundary cluster initiatives, including small-vessel building and repair and collaboration to create tourism products using inland waterways, etc. Despite its significant potential, inland water transport does not take part in supporting Russ-Polish cross-border cooperation. The infrastructural and institutional equipment of inland water transport in the Russian part of the lagoon is time-consuming. Thus, cross-border cooperation using water transport is possible only in a mid-term (not earlier than 2020) or even long-term (not earlier than 2025) perspective.

3. Cruise and ferry operations from the port of Pionersky.

The seaport of Pionersky can be engaged in cross-border cooperation between the ports of Poland's border voivodeships and the Kaliningrad region. This will require launching a large infrastructural project in the resort town of Pionersky to construct an international sea terminal that will handle cruise and cargo and passenger vessels. Scheduled for completion in 2020, the project will make it possible to handle cruise liners and ferries. The project is aimed at the construction of not only designated maritime infrastructure but also a passenger terminal where customs and border checks will be carried out and ro-ro ferries handled. Putting the Kaliningrad region on the map of Baltic cruise destinations will open up new prospects for the territory's integration into the existing cruising routes, which include the Polish ports of Gdansk and Gdynia [18]. This will create another transport corridor between the Polish ports and the port of Pionersky. If the cruise industry is capable of generating tourist flows, a ferry service connecting the Tricity with Pionersky will carry regular freight and passenger traffic. The ferry service project is viable. Its implementation will largely depend on whether freight owners and residents of border regions show an interest in it. The cruising route project is a short-term initiative, whereas a ferry service can be launched in a mid-term perspective after demand for such a link in the Kaliningrad region and Poland's border voivodeships is studied in detail.

4. Freight and passenger traffic along the Masurian Canal.

Another inland waterway project aims to generate freight and passenger traffic along an artificial waterway — the Masurian Canal. The engineers of the early 20th century envisioned the 51-km long waterway as a link between the *Mauersee* (today, Lake Mamry in Poland) and the River Lava. The canal creates a possible waterway link between Chernya-



khovsk or Kaliningrad and the Baltic Sea. Commenced in 1908, the construction has never been completed. It was interrupted several times and finally terminated with the establishment of the Russian — Polish border [19]. At the time, the canal was 70—75% completed. The national border divided the canal into two almost equal parts. The Russian part of the canal is 25.6 km long and it has five locks. The 25.4 km Polish part also has five locks [20].

The Kaliningrad part of the canal is disused, whereas the Polish one is a site for tourist rides and kayaking [21]. However, there are few incentives for the Russian party to develop a new vision of the canal situation. The canal cannot be used in accordance with its initial design — i. e. for carrying freight traffic, since the region has neither necessary infrastructure nor fleet. The reconstruction of the Masurian Canal should be preceded by the organisation of regular inland waterway traffic along the region's major rivers. The Canal cannot be considered as a local freight and passenger link. Neither the Russian nor the Polish part of the canal passes large settlements that can provide a necessary number of passengers or industrial facilities capable of generating substantial cargo traffic. The Masurian Canal can be used only for tourist purposes. However, there are more limitations than opportunities associated with its use. The Kaliningrad region is involved in several other large federal projects, including that run at the port of Pionersky. Local border traffic was suspended. There is no designated infrastructure and the project has insufficient tourism potential. All these will prevent major investors from taking part in this project, which may otherwise contribute significantly to the development of transboundary tourist routes [22].

5. A regular cross-border rail passenger link.

Of transportation projects in the field of cross-border logistics, the greatest economic and social potential is associated with the creation of a cross-border rail passenger link. Russia and Poland have launched several projects aimed to develop rail freight logistics in recent years. Over the first seven months of 2017, 2.01 m tonnes of freight were carried by rail to and from Poland. The preliminary estimates for 2017 are at 3.0 m tonnes. In 2015, 2.1 tonnes of cargo were transported. Main exports include coal, petroleum products, cement, and containerized cargoes, whereas main imports are containerized cargoes, black metals, and refractories. The range and amount of cargoes carried by rail are affected by both the specifics of local economic development (shipping of coal, petroleum products, black metals and cement) and the ambition to take part in the construction of land freight corridors between China and the EU. The freight corridor projects are run by China, one of them is the Belt

and Road Initiative [23—25]. Both countries are interested in integration into global logistics chains. Both understand the urgency of finding infrastructural and logistics solutions for rail freight traffic. Moreover, there is a pressing need for new alternatives to extremely busy maritime transport corridors [26—27].

Current discussions address not only an increase in cross-border freight traffic but also the resumption of regular passenger traffic between Russian and Polish cities. Until 2013, rail passenger traffic was generated within the Kaliningrad — Berlin route, which passed through Poland. Passenger trains did not run until the beginning of 2018, which was explained by the economic unfeasibility of a rail link. On January 5, the Kaliningrad Railways in collaboration with Polish partners from the neighbouring voivodeships and border and customs services organised trial runs from Kaliningrad to Klaipeda (via Sovetsk) and to Gdansk (via Mamonovo and Braniewo). The train to Lithuania did not have sufficient interest from local residents, whereas tickets to the Polish train had been sold out several days before the trial run.

A rail link between Gdansk and Kaliningrad is expected to witness greater demand in 2018, when Kaliningrad will host World Cup matches. However, Polish voivodeship officials do not believe in sufficient demand from local residents and they are rather sceptical about restoring the rail link [28]. Nevertheless, negotiations between Polish and Russian railway experts are continuing. At the first stage, it is planned to run trains once a week on Saturdays with additional trains during the World Cup matches in the Kaliningrad region.

A boost to the revival of Russian-Polish rail traffic can be boosted by the project aimed to link Berlin, Elblag, Kaliningrad, the Baltic and Saint Petersburg by regular runs of a Talgo train. Set up in 2004, the project is still at its initial stage. However, it has good chances to be completed in a mid-term perspective, since this is in the interest of all the parties to the project, which — collectively — can overcome today's negative geopolitical climate.

Russian-Polish cooperation within railway projects is very active and extends to both freight and passenger links. In a short-term perspective, the existing infrastructure and public support can translate into alternative transport corridors between Kaliningrad and Polish cities. There are promising projects aimed to develop transboundary rail transportation and logistics.

6. Regular flights between Kaliningrad and Gdansk.

The diversification of transportation corridors between Kaliningrad and Poland's border regions lends an urgency to the launch of regular



flights between Kaliningrad and Gdansk. The Gdansk airport is turning into a major hub that connects the Polish city to many European destinations [29]. Kaliningraders prefer the airport of Gdansk to the hubs of Moscow, Saint Petersburg, and Riga when planning trips to Europe. As a rule, Kaliningraders reach the airport by road transport. However, they are ready to use air transport if convenient routes are available at reasonable prices. The route network of LOT — Poland's largest airline — makes it possible to reach Kaliningrad from Gdansk via Warsaw. At a cost of 100 euros, this journey takes 3 hours 20 minutes. The management of the Polish airline has not announced plans for a direct flight to Kaliningrad [30]. At the same time, the administration of the Kaliningrad airport has mentioned that another Polish airline — SprintAir — demonstrates an interest in creating such a route. However, an air link between Kaliningrad and Gdansk cannot compete with the existing routes in either economic or technical terms. According to current estimates, the airline will charge 60—70 euros for a one-way flight. Although there are passengers willing to pay this price to avoid lines at the Russian — Polish border, their number is not sufficient for launching a regular flight. A better economic situation and technical advances, as well as the deteriorating border crossing conditions, may result in the launch of such a link. The flight between Kaliningrad and Warsaw was relaunched in summer 2017. Its economic and public success may become a decisive factor for establishing a regular air link between Kaliningrad and Gdansk in a mid-term perspective. Three-four flights a week between the two cities will account for 25—30 additional crossing of the Russian-Polish border every year. Such a route will not become a major alternative to the existing transport corridors. However, it will contribute to diversification and competition in transport support for Russian — Polish transboundary cooperation.

7. Bicycle routes.

To complete our detailed analysis of projects aimed to develop transport links between Russia and Poland, we must mention plans to create necessary infrastructures for international bicycle routes running through the Kaliningrad region. Technically, there are three such routes — EURO-ROUTE or R1, EuroVelo-10, and EuroVelo-13. In effect, running through the border with Poland (near Mamonovo) to the border with Lithuania (the Curonian Spit), the three routes almost overlap. Most stretches of the route lack necessary infrastructure — bicycle lanes, signs, parking racks, camping sites, or dedicated lanes for border and customs checks. Although some infrastructure elements are appearing in local cities and towns, there is neither a coordinated programme nor sufficient

funding for launching a bicycle infrastructure project. Bicycle routes will not generate stable freight and passenger traffic across the Russian-Polish border. However, they may make a significant contribution to the region's tourism potential and attract international tourists.

Conclusions

Today, Russian-Polish cross-border cooperation is supported by road (passengers and freight), rail (freight), and, partly, maritime (freight) transport. There are many projects that can diversify and stimulate transport links between Russia's and Poland's border regions. These projects differ in duration and resources needed for their completion. On the one hand, the 2018 World Cup matches held in Kaliningrad are expected to change the configuration of regional transport infrastructure as a result of the reconstruction of the Khraborovo airport, the construction of new roads, the modernisation of railway infrastructure, and the creation of new port facilities. On the other hand, the status of a host city will make it possible to create new routes that can continue their operations after the World Cup if there is sufficient demand from local communities. The World Cup should contribute to the development of stable and diversified traffic between Russia's and Poland's border regions. Russian-Polish intergovernmental commissions of national and regional levels should play a major role in the development of transport links. These organisations should become platforms where transport initiatives will be discussed and prepared. The sooner such platforms as the Council on Cooperation between the Kaliningrad Region of the Russian Federation and the Regions of the Republic of Poland resume their work, the more probable it is that the proposed transportation projects are completed. These Russian-Polish commissions may contribute not only to the development of transport corridors but also to the preparation of a coordinated programme for enhancing the attractiveness of neighbouring border regions among local residents. Kaliningraders are well aware of the tourism benefits of Poland's voivodeships. However, enhancing the attractiveness of the Kaliningrad region among residents of Poland's border territories requires joint efforts from Polish and Russian tour operations and industry organisations. Stronger social and economic ties are a decisive factor in developing transport links between Russia and Poland.

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