

## GEOGRAPHY OF INTERNATIONAL CLUSTERS IN THE BALTIC REGION

*A. Mikhailov\**



*International cluster is a relatively new form of spatial organization of economy in the process of globalisation, which has become a frequent phenomenon in European countries, including those of the Baltic region. This phenomenon requires a comprehensive study of both regional economics and economic geography. The aim of this article is to identify structured international clusters in the Baltic region and to map out corresponding regions. The obtained results will enable us to get a comprehensive idea of the aggregate of international clusters, which already exist and are emerging in the region. It will also make it possible to put forward a hypothesis about the prerequisites of their formation. The methodological framework of the research is an integrated case study. The article showcases the processes of transboundary and transnational regionalisation in the Baltic region countries, which are aimed at the development of international clusters. 'International cluster' is defined as a new form of spatial economy. The author identifies and maps out organised international clusters and cluster initiatives in the Baltic Sea region countries. International clusters of the Baltic region are characterised in compliance with the following criteria: the degree of geographical localisation, the organisational type of formation, and specialisation areas. The author speculates about the degree of involvement of Russian regions in the processes of international cluster cooperation in the macroregion.*

**Key words:** international cluster, Baltic region, geography, transboundary regionalisation

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\* Immanuel Kant Baltic Federal University  
14 A. Nevski Str.,  
Kaliningrad, 236041, Russia

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Since the second half of the 20<sup>th</sup> century, regionalisation processes have become a pattern of social development that is manifested in various forms differing in terms of content and space. One of its most dynamic types is transboundary regionalisation relating to the emergence of

international regional unities based on transboundary (cross-border) cooperation [5, p. 80]. Europe, which is in the process of rapid integration serves as the pioneer and the major testing site for such cooperation, and some Russian regions appeared to be involved in this process, too<sup>1</sup>. As of today, multilateral relations between Russia and European countries in the framework of the Council of the Baltic Sea States and the Barents Euro-Arctic Council have matured, which makes it possible to speak of transnational regionalisation [6].

According to N. V. Kaledin and V. S. Korneevets, international integration is a result of cooperation between spatial systems with horizontal connections, such as industrial districts and/or economic clusters [5]. The internationalisation of regional clusters is “one of the most mature forms of transboundary mobility of business activities” [14, p. 20] and is connected with the expansion of opportunities and increasing benefits for the participants of an international cluster (IC).

This article will define international cluster as stable interaction of a wide range of interconnected, interdependent, mutually supplementing, and competing stakeholders localised on the territories of two or more countries, operating in related industries, exhibiting a similar level of skills and technologies, and involved in joint production of goods and/or services in the process of value co-creation, which ensures the synergy effect in the development of corresponding territories and innovation diffusion among them [10].

Creation of such clusters results in an increase of the innovative activity through a process of continuous generation of innovations and the formation of flows of knowledge, skills, and know-how among those involved in cluster interactions. A stable system of interactions in the field of research and innovations will be required, so that innovation activity becomes one of the key characteristics of an international cluster.

The identification of the Baltic region areas that are most involved in the processes of transboundary and transnational regionalisation with the formation of international cluster requires solving the tasks that follow:

- identifying and mapping out the Baltic region areas, where the transboundary and transnational regionalisation processes resulted in the emergence of international clusters;
- analysing international clusters by geographical localisation and specialisation;
- identifying territorial associations of Baltic region states based on the existing international cluster initiatives;
- assessing the involvement of Russian regions in the process of international cluster cooperation in the macroregion.

There are two ways for international cluster formation: *endogenous* formation results in the emergence of a limited cluster, whilst *exogenous*

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<sup>1</sup> For example, the Murmansk region cooperates with the neighbouring administrative units of Finland and Norway; the Republic of Karelia, Saint Petersburg, and the Leningrad region with those of Finland; the Pskov region with Estonia and Latvia, and the Kaliningrad region with Poland and Lithuania.

one in that of a cluster organisation. As a rule, an organised international cluster is characterised by a significant contribution of public funding and the formation of an official cluster organisation that submits annual reports. It makes it possible to compare and verify the results of research on the identification and mapping of organised international clusters in the Baltic region.

The demarcation of the Baltic region borders is based on approaches presented in related publications [2; 8; 12; 13; 16]. However, in the process of collecting and processing data, the area of the region under consideration was expanded in order to obtain a more objective picture of international cluster distribution. Therefore, the analysed territory includes the Baltics (Estonia, Latvia, Lithuania), the Nordic countries (Denmark, Finland, Sweden, and Norway), the northern lands of Germany (Mecklenburg-Vorpommern, Schleswig-Holstein, and Brandenburg and the cities of Hamburg and Berlin), the northern voivodeships of Poland (Lubusz, Pomeranian, Warmian-Masurian, Podlaskie, and West Pomeranian) and most of Russian North-West (Saint Petersburg, Leningrad region, Pskov, Novgorod, Murmansk, and Kaliningrad regions, and the Republic of Karelia) (fig. 1).

According to the European Cluster Collaboration Platform, as of 2013, there were 369 cluster organisations in the Baltic region [3], only 8% of which were characterised as international. Their rather insignificant specific weight is indicative of the problems associated with the formation of such form of economic integration, which corresponds to the results of a survey of cluster initiative participants conducted by the German organisation Kometenznetzwerk. The survey showed that only 10% of European cluster initiatives have plans for internationalisation [17].

Denmark and Sweden take part in 19 international clusters in the Baltic region, Germany in 10, Norway and Finland in 6, Poland and Lithuania in 2. In Latvia, Russia, and Estonia there were no identified international clusters. Fig.2 demonstrates the involvement of Baltic region countries in international clusters.

In the Nordic countries, ICs account for 20% of cluster organisations, in the Baltics and Poland for 7%. In Sweden, almost a third of all clusters are international. In Germany, the percentage of international clusters is lower than in the Nordic countries; however, this result is explained by the fact that the study covered only the northern states and Hamburg and Berlin. On the whole, there are more than 300 organised clusters, including international ones (for instance, Bio Valley with French and Swiss participation).

Out of 28 international clusters in the Baltic region, 75% are identified as transboundary and 25% as transnational. In both cases, Danish and Swedish officials are the most active cluster participants. The historical unity of Danish and Swedish border regions created a favourable environment for the development of transboundary cooperation with the further development of a unified transboundary region (TR). Good examples of international cooperation between the two countries are Medicion Valley and Cluster 55.

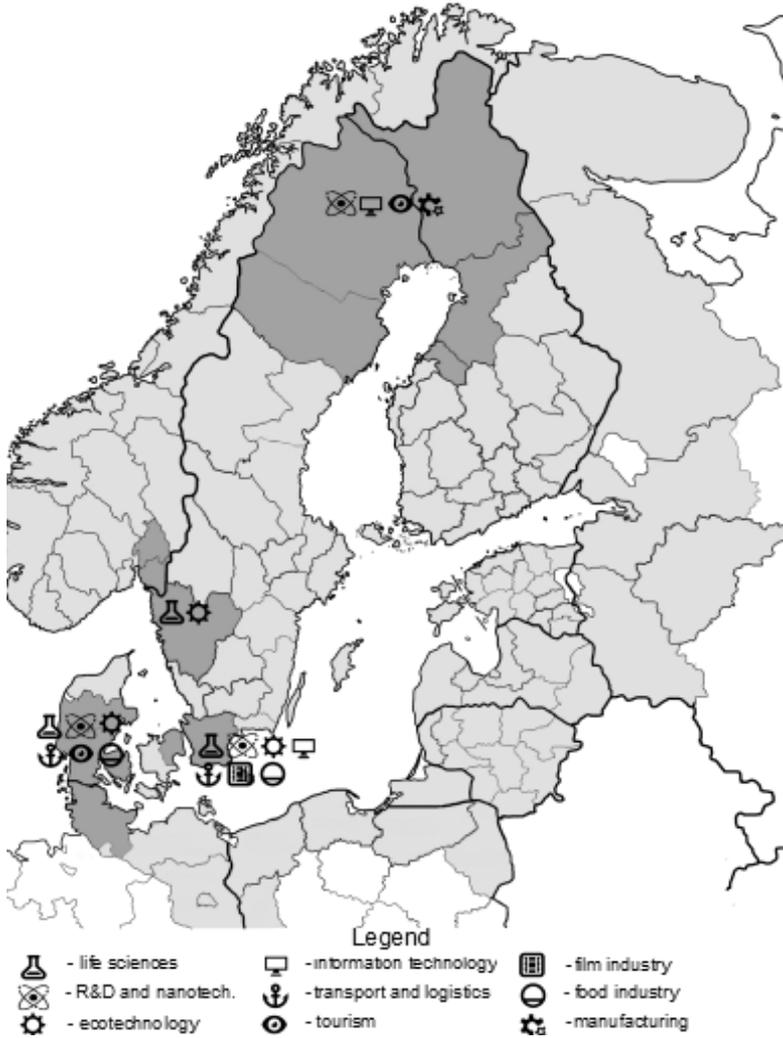


Fig. 1. International cluster geography in the Baltic region

Source: compiled by the author; master map from [7].

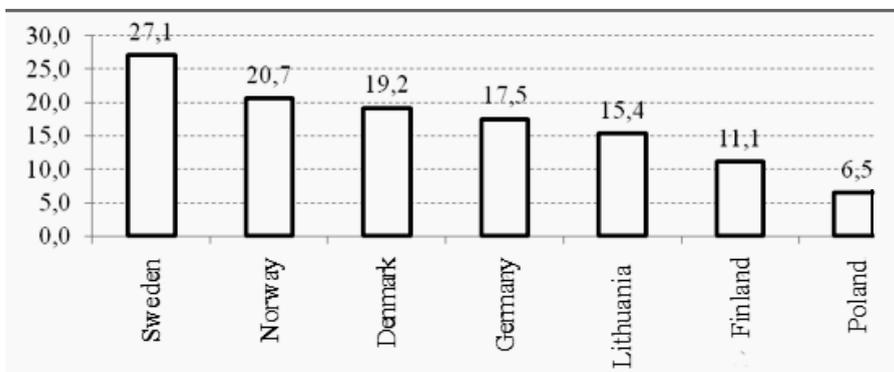


Fig. 2. Percentage of ICs in all cluster organisations with the country's participation

The correlation between the number of transboundary and transnational clusters with German participation is 60 to 40. In the Baltic region, more than 57% of transnational clusters were initiated with the country's participation, which emphasises its high standing in international cooperation and transnational regionalisation.

Finland and Norway take part in six international clusters in the macroregion, however, the contribution is rather different. 80% of clusters with Finnish participation are transboundary, whereas such clusters account for only 30% of those with Norwegian participation. The extent of the countries' involvement in international clusters in the Baltic region is also different. Finland's contribution to transboundary and transnational regions is estimated at 23.8 and 14.3% respectively. Norway's level of transnational regionalisation is higher (57.1%) and is compared to that of Germany and Sweden.

The reasons behind the different degree of involvement in the processes of transboundary cluster cooperation relate to the nature of the cluster policy and the efficiency of the region's innovation-based completion policy [15]. Finland has drawn up a programme for supporting the development of expert centres aimed at stimulating national industrial clusters and increasing their competitiveness through an efficient system of connections among institutional actors. As a rule, the emergence of international clusters is a result of a joint initiative of Finnish and Swedish institutions aimed at developing peripheral territories and increasing the efficiency of historical integration processes in the border areas, which explains Finnish active participation in transboundary clusters.

Norway's cluster policy is also aimed at developing clusters within the country. However, the high level of development of national industries identified as key specialisations of the Baltic region (for example, life sciences) made it possible for the country to forge transnational connections. The MedCoast Scandinavia transnational cluster was created in 2005; in 2006 Oslo Cancer Cluster emerged. Over the last decade, programmes of public support for cluster development in Norway are increasingly oriented towards receiving benefit from creating an international collaboration network<sup>2</sup>.

Poland and Lithuania participate only in transnational clusters; their involvement in cluster cooperation in the Baltic region is insignificant.

A significant percentage of transboundary clusters in the macroregion is indicative of a high level of cooperation within transboundary regions. Most transboundary clusters of the Baltic region are situated in four transboundary regions: Øresund, Jutland, the Bothnian Arc, and Oslo-Västra Götaland (fig. 3).

The leading territory is the Danish-Swedish region of Øresund that emerged in 1993 as a result of the unification of the Danish capital region

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<sup>2</sup> A developed collaboration system suggests a "merger" between actors from different institutional spheres manifested in establishing close partner relations resembling interactions among division of one company that technically retain an independent legal status. According to T.R. Gareev, the creation of "location-specific institutions" [1, p. 27] makes it possible to explain the phenomenon of international clusters.

and the Swedish region of Scania. Its formation was accompanied by the creation of Øresund Committee and the development of transport infrastructure between two border territories [18].

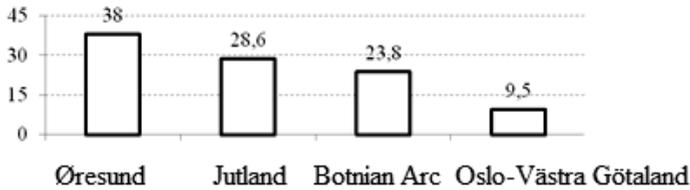


Fig. 3. Transboundary region by the percentage of transboundary clusters located on their territories, %

The transboundary region of Jutland ranks second. Throughout its history, the region has been a Danish and German territory. For the last time, the region's borders changed after World War II (1955) in the framework of the *Bonn-Copenhagen Declaration*. Region Sønderjylland—Schleswig was created in 1997. It formed the core of the transboundary region of Jutland. Today, it is home to a specially created organisation, the so called growth centre (*Vækstcentret*) the coordinates political, business, and social initiatives [23].

The Bothnian Arc transboundary region, created in 1998, brought together 21 Swedish and Finnish municipalities on the coast of the Gulf of Bothnia — home to half of the population of Northern Sweden and Northern Finland. It was established to solve the problem of a lack of qualified specialists in the border areas, increase labour mobility, and use the potential of the cities of Oulu and Luleå centres for industry and R&D [20; 22]. The formation of the Bothnian Arc region was accompanied by the creation of an association that brought together public officials, businesspeople, and researchers from the two countries.

The transboundary region of Oslo — Västra-Götaland was created in 1995 by an agreement on transboundary cooperation between the cities of Oslo (Norway) and Gothenburg (Sweden) in the field of biomedicine. In 2003, the cooperation area incorporated the districts of Akershus and Østfold in Norway and the Västra-Götaland in Sweden. The formation of the current borders of the transboundary region was accompanied by the creation of an association that brought together the transboundary region council, a contact group, and four workgroups (on communications, culture and tourism, business, and education) [4].

Sweden participates in three out of four transboundary regions (Øresund, the Bothnian Arc, and Oslo — Västra-Götaland); Denmark in two out of four (Øresund, Jutland); Germany, Finland, and Norway in only one. It can be explained by the great innovation potential of these regions rather than the factor of geographical proximity<sup>3</sup>. The results of a study into the typology of EU

<sup>3</sup> Other regions promising in terms of international cluster formation are analysed below.

border regions [21], carried out within the Fifth Framework Programme, shows that the transboundary regions of Øresund, Jutland, the Bothnian Arc, and Oslo — Västra-Götaland belong to the group characterised by a high degree of integration and economic efficiency, as well as sociocultural proximity. Other transboundary regions lag behind in terms of development and economic efficiency, in particular, due to poorly systematised economic relations and a low market potential, which has a negative effect on the development of ICs.

A country's participation in international clusters is determined by the competences of its decision-makers that can create a synergy effect of the complementary properties of the cluster participants. Fig. 4 shows the distribution of international clusters in the Baltic region by specialisation.

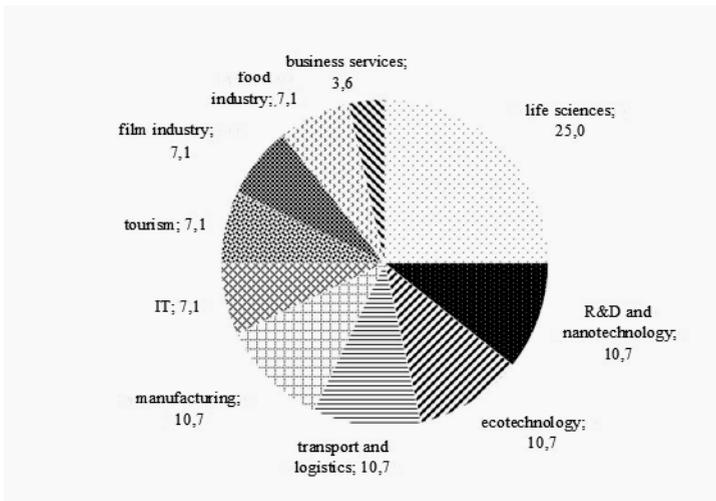


Fig. 4. International clusters of the Baltic region by specialisation, %

Almost half of all international clusters of the macroregion are engaged in innovative industries and involved in disseminating innovative solutions<sup>4</sup>. Key specialisations include life sciences (including pharmaceuticals, bio- and medical technology), R&D, nanotechnology, ecotechnology, transport and logistics, and manufacturing. Life sciences are identified as a priority of international cluster cooperation in almost all countries except Finland (the country is focusing on manufacturing).

More than half of all ICs in the macroregion are at the stage of development, which is explained by increasing attention to cluster policy aimed at supporting international (predominantly, transboundary) cooperation. One of its results was a growing number of cluster initiatives towards the development of international clusters. On average, in the Baltic Sea region, international cluster initiatives account for 23.4% of the total number of interna-

<sup>4</sup> For example, international clusters in the field of ecotechnology are oriented towards cross-industry cooperation in alternative energy (bioethanol), waste treatment, etc.

tional cooperation projects<sup>5</sup>. Fig. 5 demonstrates the location of transboundary territories of the Baltic region states that can serve as examples of implementation of international cluster initiatives.

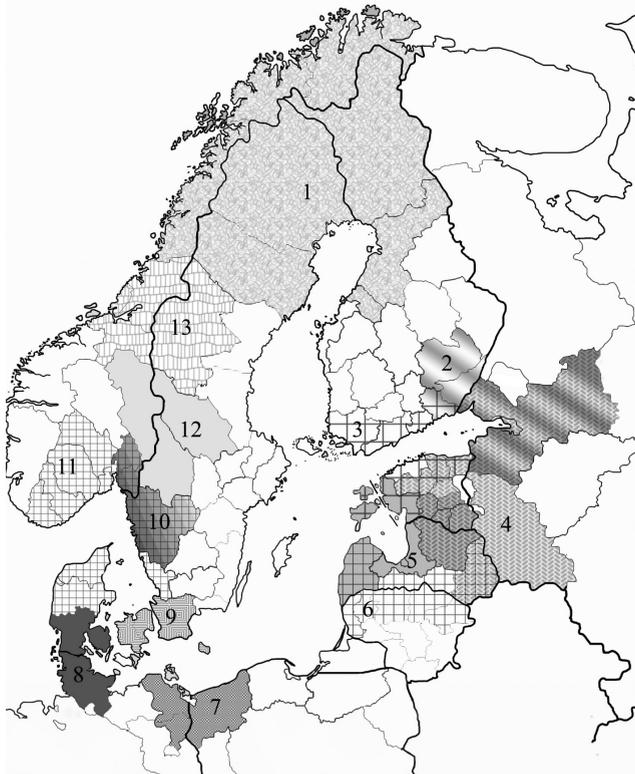


Fig. 5. Territorial cooperation structures in the Baltic region based on the actual implementation of cluster initiatives:

- 1 — the Bothnian Arc — Sweden and Finland, 22%\*; 2 — border territories of Finland and Russia, 40%; 3 — border territories of Estonia and Finland, 28%; 4 — border territories of Estonia, Latvia, and Russia, 26%; 5 — border territories of Latvian and Estonia, 11%; 6 — border territories of Lithuania and Latvia, 10%; 7 — Pomerania — a German-Polish transboundary territory, 16%; 8 — Jutland — Denmark and Germany, 37%; 9 — Øresund — Denmark and Sweden, 18%; 10 — Østfold — Västra-Götalana — a Norwegian-Swedish transboundary territory, 34%; 11 — Skagerrak — Denmark, Sweden, Norway, 30%; 12 — Central Scandinavia — Norway and Sweden, 17%; 13 — Nordic Green Belt — Norway and Sweden, 15%

\* The figures show the percentage of international cluster projects in the total number of international cooperation projects.

Source: compiled by the author based on [19].

<sup>5</sup> This figure was obtained through an analysis of European international cooperation programme (*Interreg, InterregNord, Intranet, Pomerania, LatLit, Derreg, EstLat, Kohla-jarve, Centralbaltic, Southeastfinrusnpi*, etc.).

The highest percentage of international cluster project in the total number of international cooperation projects (40%) is observed in the border areas of Finland (Southern Savonia, Northern Savonia, South Karelia, Kymenlaakso, Uusimaa, and Päijät-Häme) and Russia (Leningrad region, Saint Petersburg, and the Republic of Karelia). It is explained by the small total number of cross-border cooperation projects (36), and the selected project specialisation (predominantly, business cooperation of small and medium enterprises). The regions of Jutland (37%), Østfold — Västra-Götalana (34%), and Skagerrak (30%) are three of the four regions, where one third of projects focus on the creation of international clusters. The key areas of IC development are ecotechnology, life sciences, R&D, and nanotechnology. On the whole, Russia participates in international cluster initiatives in 13 different areas in the framework of transboundary cooperation with Latvia, Finland, and Estonia. However, there are no developed international clusters with Russian participation. For reference, Sweden — the macroregion's most active participant in ICs — is involved in fewer areas of development but in more transboundary regions with international cluster initiatives.

A comparative analysis of specialisations of international clusters and initiatives reveals a number of patterns:

— firstly, priority areas of cluster initiatives in the region coincide with the specialisation of the existing international clusters (ecotechnology, life sciences, R&D, and nanotechnology). It is explained by that the Nordic countries and Germany strive to develop international clusters based on the existing competences; whereas the Baltics, Poland, and Russia are guided by the potential of a certain area and its attractiveness for the developed countries of the Baltic region;

— secondly, less than half of regions with international cluster initiatives have developed ICs (predominantly those, in the Nordic countries and Germany), which is indicative of the problems associated with creating a system of international cluster interactions and stresses the need for a high level of overall development of participating countries and a significant potential in a certain area;

— thirdly, the Baltics, Poland, and Russia can identify new promising areas of cooperation, including agriculture, forestry, and manufacturing.

The formation and development of international clusters is a long and complicated process that requires a significant innovative potential, a competitive economy, and considerable (also public) investment in research, education, cluster initiatives, and the existing ICs.

The state is playing the key role in creating a favourable environment for the development of ICs, which manifests in the emergence of the necessary economic conditions and simplification of systemic inter-organisational interactions among the institutional spheres of different countries. At the preliminary stage, cooperation agreements simplifying the processes of labour and capital mobility were signed in border regions that had developed successful international clusters; transboundary regions were formed and committees on facilitating the active socioeconomic integration of two (Øresund) or more (Skagerrak) countries.

Russian regions also pay attention to integrating regional clusters into global value added chains through purchasing and using new technologies and equipment by economic entities, gaining access to new methods of knowledge base management and entering new markets [9]. However, the selection of participants and cluster specialisation by public authorities on the basis of applications for co-financing and the parameters of *economies of scale* (increase in production output, R&D expenditure, etc.) often results in that, in Russia, cluster projects turn out to be mere “financial applications submitted by territories and governmental organisations to cover the current needs (facilities, housing, roads), whereas governmental cluster programmes are a counter stream of subsidies and preferences for selected applications” [11, p. 7].

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### ***About the author***

*Andrei Mikhailov*, PhD student, Junior Research Fellow, Centre for Socioeconomic Studies, Immanuel Kant Baltic Federal University, Russia.

E-mail: [mikhailov.andrey@yahoo.com](mailto:mikhailov.andrey@yahoo.com)