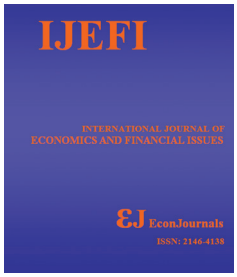

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The Spatial Transformation of the Urban Environment in the Conditions of Post Industrial Development of Society: Dedicated to the 100th Anniversary of Jean Gottmann, Immanuel Kant Baltic Federal University, 23-26 August 2015, Russia.

The Spatial Development of the Rural Settlement of East Prussia: Kaliningrad Region

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ABSTRACT

The present system of displacement of the Kaliningrad region's population results from a complicated historical process, during which the socio-economic, geopolitical and cultural conditions were repeatedly changed in which it was established. An analysis of the changes taking place at that time and now provides the basis for the preparation of forecasts of further transformation of the region's spatial environment, one of the most important tasks for specialists of the contemporary geographical science. In the publication, the authors examine the key historical stages of the creation of the modern system of displacement of the region's population and identify the key economic, political and social factors that had an impact on the process at various historical stages of development of East Prussia until 1945 and the contemporary Kaliningrad region. The so-called Nizhnenemanskaya lowland area was chosen as a local example of the transformation processes of the modern part of the Slavsk municipal district (north of the Kaliningrad region). The research results were obtained in the analysis of the cartographic material on the status of the area related to the study of three time stages, 1834-1960, 1914-1939 and 2010-2012. It became possible to compare the cartographic material featuring such a broad time horizon due to the project of the Russian Geographical Society "Post-War Changes in the Kaliningrad Region (based on topographic maps)." Based on the performed analysis, at the end of the article the authors formulated the key forward-looking trends in the development of the Kaliningrad region's rural settlement taking into account the historical features of its foundation as well as the forecast of the social and economic development of the Russian exclave.

Keywords: Kaliningrad Region, East Prussia, Settlement System, Spatial Organization
JEL Classifications: R00, R1

1. INTRODUCTION

The extent of the impact of various economic, political and social factors in the displacement of population in the territory of any spatial level at different stages of social development is well studied (Alekseev, 1988; Vladimirov, 1982; Kovalev et al., 1963). At the same time, the Kaliningrad region's settling was also influenced by unique factors radically changing the direction and intensity the settlement that require separate research and reflection. In our opinion, the history of the Kaliningrad region's settlement can be provisionally divided into several stages, the Prussian stage (VI-XII centuries); the beginning of the German colonization (XIII-XVI centuries); the beginning of the modern settlement (XVI-XIX centuries); the Soviet stage (1945-1990) and the contemporary stage (1991-present).

At the Prussian stage in the VI-XII centuries, the original land development depended on the quality of the environment and ways of farming. The Prussian ethnic group had to adapt to the surrounding landscape, the economic activities of which depended on the natural conditions forcing the Prussians to engage in hunting, fishing, grazing and to a limited extent arable farming. The high percentage of the region's forest land combined with wetlands, the predominance of the moraine

landscape and quite an extensive river system resulted in the concentration of settlement on individual land plots most suitable for that purpose. The populated areas did not create an enclosed space but represented small islands in the middle of the wild forest. The settlements are usually located on the banks of rivers in wide valleys and are concentrated on talus deposits and the main moraines avoiding the terminal moraine landscape. The planning forms of Prussian settlements in the middle of the XIII century were dominated by isolated farmstead and small-sized peasant villages where the land belonged to all the community members.

Since the first quarter of the XIV century (after the conquest and pacification of the Prussian tribes of the Teutonic Order by 1270-1280) the Prussian land had been regularly colonized by the Germans on the basis of the consistent uniform advance from west to east by using the most appropriate settlement and landscape arrangements in favorable locations. Very often the Prussian settlements or the fortified sites of ancient settlement were used for that purpose. Most of the existing settlements were integrated into the new settlement system. The Prussian settlements were supplemented by two basic forms of settlements, i.e., manors of the nobility with farm estates and large peasant villages. The size of large estates reached 660 ha. The total amount of land allocated to a peasant village was equal to 500-1000 ha thus making it possible to allocate a significant number of peasant members in the community. When the average size of a village was 20 households, each household received from 30 to 65 ha for use. Due to this, individual members of the community had some more economic freedom than smaller Prussian villages where peasants had only 10-20 ha in use (Bloech, 1980). The existing basic types of landscape led to the creation in the Prussian territory of a certain type of villages of German colonists with a relatively compact arrangement of estates (yards) from the field plots on the other side of which there was some common land shared in the form of forest or pasture. The three-field system, such as the annually inter-changed winter crops, spring crops and fallow, was used as the form of land use.

From the middle of the XVI century, against the backdrop of the changed political and social conditions (secularization of the Teutonic Order and the establishment of the Duchy of Prussia), the colonization of the presently Kaliningrad region's eastern parts, which were almost unpopulated until the time, had started. There was a significant increase in the proportion of large landholding. Both Prussian and German villages ceased to be different from each other by falling under the noble or state power. From this stage, the human impact on the environment during resettlement greatly enhanced, the number of settlements increased and the number of settlements and inhabitants grew; the territorial settlement tended to occupy larger areas of the pristine natural landscape. Agriculture developed extensively, and the forest was actively cut down, the natural watercourse was regulated, artificial waterways (canals) were built and the first melioration measures started to be implemented. The rural settlement was created as an interconnected system. The forest-land percentage reduced to 33% by 1800 (Mortensen, 1937).

2. THE BEGINNING OF THE MODERN SETTLEMENT

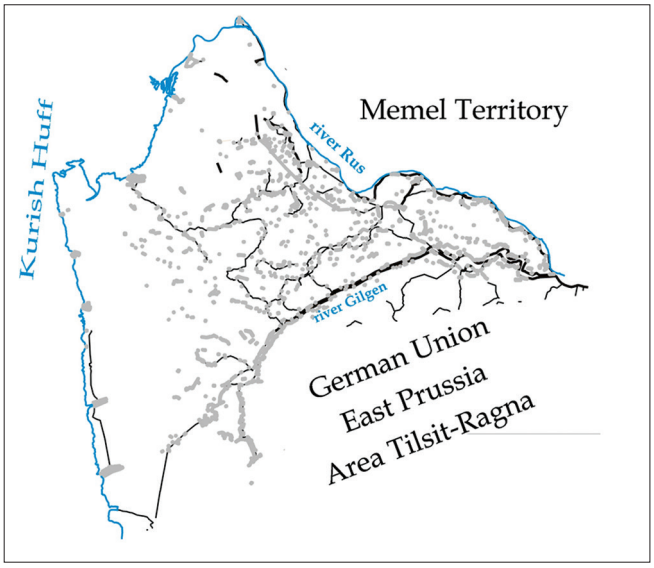
The Prussian agrarian reform implemented for most of the XIX century (from 1807 until the end of the 1850's) became a leap forward in the territorial setup of the settlement system. The transformation of the socio-economic conditions led to a change in the settlement system, types and forms of settlements. Instead of villages, which had various social and property status, the number of various forms of individual settlements, i.e., farms, strip plots, estates and manors was growing. In the eastern parts of East Prussia, this process was more intensive due the prevalence of the non-German population (usually the peasants of the Lithuanian origin) there. Residents of the eastern regions quite easily dismantled a log house and transferred it to a new location, while in the western regions the German peasants had stone houses, and despite the possible separation, they continued to live in the village.

In the territory of Nizhnenemanskaya lowland, first of all, the low-lying terrain was subject to domestication, which resulted in the creation of linear concentrations along the shores of the lagoon and rivers. The population is concentrated along as many canals and canalized rivers, i.e., the Gilge (the river Matrosovka[1]) Tavelle (the river Tovarnaya), the channel Gross Fridriskhgraben (the Polessky channel), the Zekenburg channel (the Primorsky channel) along the forest edges. Inside the Nizhnenemanskaya swampy lowlands in the centers of woodlands and raised bogs settlement progressed slightly (Figure 1). As of 1834-1860, the total number of settlements in that territory was 158 (Lemke, 1966).

At that time in the territory Nizhnenemanskaya lowland there was only one single permanent land transport service on the highway Tilsit (Sovetsk)-Kaukehmen (Yasnoye village) - Russ (Rusnė

1 Hereinafter in brackets the current names of the rivers and channels are indicated.

Figure 1: Settlement system of the Nizhnenemanskaya lowland in 1834-1860



village in the Republic of Lithuania) with branches to Alt-Lappi (Bolshye Berezhki village), Shakunen (Levoberezhnoe village) and Kalliningken (Prokhladnoye) - Kakeln (Mysovka village).

Prior to the beginning of the XIX century the natural waterways, e.g. bays, navigable sections of the rivers Pregel, Deima and Alla, but above all, the Neman with its extensive delta were the main transport routes. The first work to regulate the individual sections began in the early XVII century[2]. The decisive factor for the area development was the draining contract in 1696 for the so-called "Wasteland" between the Great Elector and Colonel and Quartermaster-General Philipp von Chieze with the construction of the channel between the Deima and Gilge at the same time. In 1689-1697 the Great (between the rivers Deima and Nemonien) and Small Channels were built that were named after Friedrich (the German names of which are Gross Fridriskhgraben and Klein Fridriskhgraben respectively), with the length of 19 km and 1 mile respectively.

In the second half of the XIX century, cultivation along with the further development of the reclamation business significantly advanced by creating an extensive transport infrastructure. The transport position of the Nizhnenemanskaya lowland area in question dramatically improved with the construction of the railway Koenigsberg (Kaliningrad) - Tilzit (Sovetsk) (one of the latest highways built in East Prussia). First, on 1 October 1889 the first section of Koenigsberg (Kaliningrad) - Labiau (Polessk) was opened to traffic followed by a section on the other side, namely Tilsit (Sovetsk) - Heinrichswalde (Slavsk) - on 1 June 1891 the connecting branch Labiau (Polessk) - Heinrichswalde (Slavsk) put into operation on 1 October of the same year.

To connect the lowlands with their well-developed agriculture to the main road in 1904-1905 a narrow-gauge railway company was established with a gauge of 750 mm (Lemke, 1966). One branch led from Brittanien station (Scheglovka village) through Neukirch (Timiryazevo village), Budelischken (it does not exist now) to Kaukehmen (Yasnoye village), in 1906 it was laid through Schakendorf (Levoberezhnoe village) and Kallningken (Prokhladnoye village) to Karkeln (Mysovka village); the second branch led to Neukirch (Timiryazevo village) from it westwards to Seckenburg (Zapovednoe village) (Table 1).

3. THE SOVIET PERIOD

The profitability of the railway was achieved due to the demand for freight traffic from agricultural producers (mainly specialising in dairy cattle) and demand for passenger traffic from the local inhabitants (Table 2).

From the plans in the early 1930's designed to relay the railway track and switch to the gauge of 1,435 mm typical of East Prussia, it was decided to abandon the new type of passenger services by bus growing in popularity at that time. By the summer of 1936 buses almost completely covered the area's inhabitants' demand for mass passenger traffic. The intermodal traffic experience in the area is quite interesting, when in the summer months in 1939 "high-speed" trains were put into operation from the Brittanien station (Scheglovka village) to the station. Karkeln (Mysovka village) with a subsequent transfer on the steam boat to Rossitten (Rybachy village) and Nidden (Nida village is located in the territory of the Republic of Lithuania) on the Curonian Spit.

Paved roads in the area were built submitted quite late compared to other areas of the province. The first highway was built in 1869-1871 Heinrichswalde (Slavsk) - Neukirch (Timiryazevo village) - Kaukemen (Yasnoye village); then in 1876 it was extended from Heinrichswalde southeastwards to Shillien (Zhilino). In subsequent years highways linked virtually all major towns in the lowlands (in 1914-1939 there were 123 settlements in the Nizhnenemanskaya lowland) thus creating a dense transport network with a total length of about 225 km (Figure 2).

An additional impetus to the development was obtained in 1920-1930 when along with the programmes for settlement and rural area support some activities (often with the public participation) were

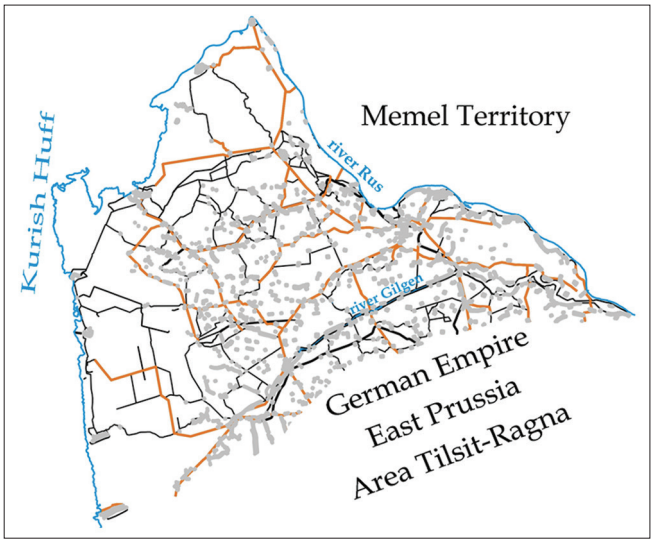
Table 1: Niederungsbahn railway (Gress, 1999)

Opened	Line	Length (km)
07 Nov 1902	Brittanien station (Scheglovka village) - Kaukehmen (Yasnoye village)	14.6
07 Nov 1902	Budelischken (it does not exist now) - Seckenburg (Zapovednoe village)	16.4
20 Nov 1911	Kaukehmen (Yasnoye village) - Karkeln (Mysovka village)	22.2

Table 2: Performances of the Niederungsbahn Railway (Gress, 1999)

Indicator	1914	1929	1933	1939	1942
Passengers	429,519	174,586	109,457	62,887	268,764
Freight, tons	41,483	46,848	34,012	39,513	59,658

Figure 2: Settlement pattern of the Nizhnenemanskaya lowland in 1914/1939



2 1613-16 – regulation of the Gilge from Skepen (Mysovka village) to Alt Lappinen (Bolshye Berezhki village), 1664 - the start of construction of dams on the Gilge etc.

implemented to create the transport infrastructure, i.e., bridges, ferries, highways etc.

Water transport was a separate component of the transport infrastructure that changed its functionality from cargo traffic to tourist routes over time. All the major distributaries of the Neman and channels were equipped quays and berths with the necessary infrastructure.

Speaking for the entire province, as of 1939, the total number of rural settlements of East Prussia was 10,614. Administratively, the settlements were united in community usually comprising between one and four settlements. There were 4,606 such communities. The average population size of settlements differed by area and made up 150-195 people in the east of the province, or significantly lower compared to the western areas (for example, more than 400 people in the area of Samland). The population density in the province amounted to 67.3 people/km^2 but also varied by area from 37.2 (the rural area Insterburg) to 75.7 people/km^2 (district Gumbinnen) (Mortensen, 1923). As mentioned above, in the northeast of Eastern Prussia, the rural communities by functional type dominated by agricultural settlements as well as forest areas and fishing villages (mainly on the coast of the Curonian Lagoon with a typical planning pattern).

By the middle of the XX century a large territory of East Prussia turned into a cultural landscape. The gross area of the land used for agriculture due to deforestation, land reclamation and drainage of wetlands increased to 68.17% in 1938 (2 million 515,000 989 ha) (Bloech, 1980).

At the end of the Second World War by the resolution of the Potsdam Conference the Soviet Union received the north-eastern part of East Prussia with an area of 15,100 km^2 known as the Kaliningrad region. The agricultural land within its borders reached 1,161,500 ha, of which almost 50% (580,000 ha) accounted for the arable land, 14% (170,300 ha) for the hay, 4.5% (52,500 ha) for the manor lands, 20% (238,000 ha) for the forests and shrubs and 10% (120,200 ha) for other land. According to the Soviet statistics, as of 17 May 1939 1 million 165,000 837 people lived on the territory of East Prussia, of which 512,000 in rural areas (5, State Archive of the Kaliningrad Region). Due to the military activities, the population declined sharply as a result of which only a very small number of settlements were originally inhabited[3].

The area of the Nizhnenemanskaya lowland (which became part of the newly established Slavsk area) in question was populated

3 As of 01 September 1945 the total population of German citizens in the territory of Special Military District was only 139,614. By 01 June 1946 the German population of the Koenigsberg region increased to 170,000, of which 61,122 people were registered in rural areas (State Archive of the Kaliningrad Region, 6).

Table 3: List of settlements of the Slavsk area as of 1 October 1947 (State Archive of the Kaliningrad Region, Fond 297, Inventory 7, File 74, Page 245)

Present name of the settlement	German name of the settlement	Households	Population	Including the Germans
Slavsk	Heinrichswalde	-	1,546	157
Timiryazevo rural council				
Timiryazevo	Neukirch	699	2,110	965
Zapovednisk rural council				
Zapovednisk	Zakenburg	26	729	654
	Inzy	44	79	77
Zalivnoe	Tavve	54	229	317
	Loe	8	13	13
	Gilga	135	337	312
Rural council, total		337	1,387	1,373
Rzhevskoye rural council				
Rzhevskoye	Gross Brittanien	36	172	
	Altvaiten	48	216	
	Kaltekar	30	156	
	Vistyukait	30	119	
	Pokraken	43	142	
	Tomaten	60	210	
	Didbait	18	94	
Rural council, total		265	1,099	139 people in the gardens and farms of military units
Gastello's rural council				
Gastello	Gross friedrichsdorf	136	643	
Engels collective farm	Samdolis	46	213	
Zhdanova collective farm	Skrobliken	41	162	
Iskra collective farm	Arginoten	41	154	
Rural council, total		264	1,172	28
Yasnoye rural council				
Yasnoye	Kaukehmen	160	316	290
	Krakeln	90	147	118
Rural council, total		250	463	408
Area, total		1,815	7,916	2,931b

quite slowly. So, as of 17 October 1947, only 7, 916 lived in the Slavsk area (Table 3).

In the Slavsk area, among the first actions, the Soviet administration took some measures to restore the land reclamation system severely damaged and ran out of order as a result of the military operations. This primarily concerned the protective dams and reclamation facilities mostly affected by the war. The farmland protected by them was fit for use only by half, while the rest was flooded[4].

The planned development of the existing drainage network and placement of the new one had taken place since the late 1950's requiring substantial investments. In fact, the pre-war drainage system could not be restored to the former condition. Firstly, the nature of land use changed, instead of the fragmented private ownership, large collective owners, and thus the reclamation system did not meet the needs and requirements of the large-scale socialist economy. A large number of small thalwegs and connecting canals and ditches split the land into the plots of 0.5 ha each. On some plots of polders water was lifted by a number of small pumping stations instead of a large one. Secondly, the system was heavily damaged during the war, and no plans or designs were preserved. Even now, despite the significant investments, the area continues to be partly flooded, especially in the forest areas.

In the formation of rural settlement, natural factors were not so much taken into account. Among the restoration and settlement development factors, priority was attached to the favorable transport position. At that time, the procedures for restoration and conservation were applied to those elements of the region's transport network that met the economic needs of the collective farms. As a result, the density of the transport network was greatly reduced because many links between the individual settlements often used only for residential purposes had been abandoned being not suitable for the household needs of larger farms.

In the creation of a modern settlement system, apart from the transport factor, such factors as the degree of preservation of the residential and commercial buildings, the conditions for creating machine and tractor stations on their basis, dairy farms, and land quality were also taken into account. In other cases, being away from the key transport routes, some manors or entire villages well developed and even preserved during the war ceased to exist. This was partly due to the fact that in the new political and socio-economic conditions of the collective management, the settlement system did not require so many settlements as before, most of which were small and scattered.

There was a change in land-use patterns. Smaller plots with an area of 5-20 ha did not meet the criteria for a planned socialist economy. The road network and crossroad distribution was not in harmony with the establishment of large mechanised farms either. The enormous size of farms as compared to the pre-war period (over 1,000 ha) and a decrease in their absolute numbers increased the scope and concentration of the load on the environment (in 1946 - 240 state and collective farms; in 1947 - 362; in 1950 - 217; in 1965 - 170) (Galtsova, 1986).

In general, during the Soviet period of the region's development the settlement system changed a lot, especially by such a key indicator as the number of settlements that had decreased by 5.5 times. The settlement system reduced most significantly against the background of the active hostilities or in the region's eastern part (the Krasnoznamensk, Nesterov and Neman areas) or under the influence of natural factors (the Slavsk area). The settlement system was particularly reduced in the polder lands of the Slavsk and Polessk areas. In the early post-war years, the elevated areas were primarily settled and large settlements rehabilitated, while at the same time, a number of isolated farms (especially in the lowlands) were abandoned. Thus, the high degree of settlement in the Slavsk area increased (Figure 3) (Volynskaya and Fedorov, 1977). Of 123 settlements that existed in this considered territory in 1939, only 27 settlements were restored during the Soviet period (and therefore exist at present) fully in line with the collective management model promoted at that time.

Figure 3: Settlement pattern in the Slavsk area in 2010/2012

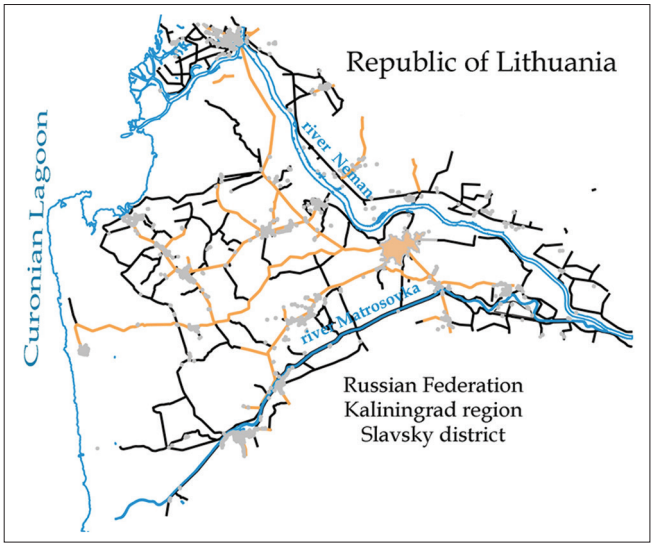
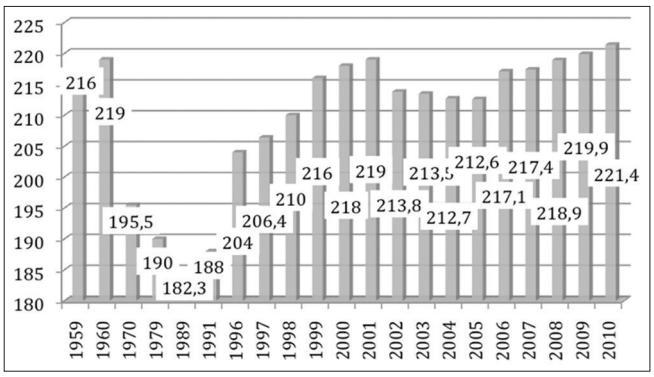


Figure 4: The region's rural population changes



4 For example, in the Bolshakovo area at the Michurin collective farm (32 households) in 1949 only 68 hectares of the allocated 500 ha were cultivated, and other areas were flooded. In the Slavsk area the Kalinin collective farm was established in 1948. Out of 41 households and 934 ha of land, of which only 193 ha (arable land - 150 ha, hay - 10 ha, pasture - 3 ha) were cultivated at that time, and 739 ha were flooded [(State Archive of the Kaliningrad Region, 7).

After reaching by 1960 the maximum number of 219,000 people, the Kaliningrad region's rural population began to decline later, in 1970 - 195,500 and in 1989 -182,300. Since the early 1990's the region (and especially its rural part) had become the centre of migration (Figure 4). For 20 years of the new economic conditions the rural population of the region increased by more than 20% due to the external migration.

4. THE CONTEMPORARY PERIOD (1991-PRESENT)

After 1990, a major impact on the modern spatial differentiation of the village was from the economic differences associated primarily with the geographical location of the areas and proximity to the region's capital. The natural conditions (the relief and soil features) do not play a significant role. It can also be assumed that a significant portion of spatial differences can be explained by the degree of effective control at the level of districts and economic entities.

In general, the Kaliningrad region has a stable structure of the rural population especially in comparison with other regions of the North-West. The rural population is concentrated around the region's centre (largely due to the possibility of employment in Kaliningrad companies), and to a lesser extent, around other cities of the Kaliningrad agglomeration. In addition, the proximity of a market to sell agricultural products also plays a positive role in this context. In other words, the economic growth rate determines the further concentration of population in the western part of the region, particularly within the Kaliningrad agglomeration.

In the 1990's the functional role of many villages in the region began to change. It is believed that those changes, as well as the changes in the population size of settlements, will continue, and it is important to forecast them and promote the most promising features of each locality.

To determine trends in further development of the Kaliningrad region's rural settlement it should be useful to compare the exclave region of Russia to the northern provinces of the Federal Republic of Germany as they have a similar genesis of rural settlement, during the pre-war and socialist periods. These areas are similar in many ways, e.g., similar historical, cultural and socio-economic conditions for the creation of rural settlement before 1945, the application in the German Democratic Republic (GDR) of the Soviet experience in the planning and building of rural communities as well as measures to optimise the rural settlement concentration.

By analysing the current transformation processes taking place in the rural settlement of "new provinces" of Germany, it can be concluded that they are almost identical to the Russian processes (only with a time shift and without any large-scale crises like in Russia). This includes depopulation, the decline in the number of jobs, loss of elements of the former social infrastructure and prevalence of large agricultural enterprises. It is essential to note that the previous principles based on the relationship between the settlement and land use are not fully relevant now. In the present context, land use in itself is quite independent of the existing structure of rural settlement, you can live anywhere and manage land at a distance. This is especially true for large agricultural enterprises or large private investors who manage their land through some hired personnel. Big investors, which have replaced the former GDR state-owned enterprises, do not need so much labor as previously. For example, the enterprises in eastern Germany with the agricultural land of 15,000-20,000 ha require from 7 to 15 labor (rarely 20-30 people) per 1,000 ha, i.e., the total number of employees in an enterprise is only 150-200 people (Klüter, 2011). To manage spatial planning in rural areas over the past 30-40 years in Germany they use such a mechanism as the 'central place' theory, a tool that is actively promoted in Russia at the moment. Many researchers believe that after so many years, it does not work any longer; and therefore a new paradigm and tools need to be developed.

Thus, current development trends and forecasts for the Kaliningrad region's rural settlement are as follows:

- The region has generally quite a stable structure of the rural population, especially in comparison with other regions of the North-West.
- An increase in the rural population due to the migration inflow, although not at a pace as in 1990-2000.
- The rural population concentration in the urbanized suburbs will be continued; the population can be consolidated in peripheral areas if we can solve the economic problems of villages (especially the development of farming) and ensure the active development of the social infrastructure in rural areas and the expansion of ties in the peripheral systems "city-village."
- The change in the land use and structure of agricultural enterprises by increasing the proportion of large agricultural producers.
- The change in the functional character of rural settlements; reducing the available remaining settlements and strengthening the ones with functions of the local socio-cultural and district-forming centers for the primary socio-economic areas (areas), usually in the form of municipal government centers.

5. ACKNOWLEDGMENT

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