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RUSSIAN CITIES AT THE CROSSROADS:
*getting lost in transition or moving towards
regeneration*

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ABSTRACT

After the collapse of the USSR, Russia has engaged itself in a complex transformation from central-planned to market economy and has replaced the space and urban planning approaches. It is becoming increasingly hard to ignore the fact that since the completion of the Soviet regime and the end of centralized policies on urban planning Russian space underwent deep transformation. The post-Soviet cities are facing a set of challenges such as degradation of the urban economy, rapid deterioration of housing and communal infrastructures, poor transport maintenance, increasing transport congestion and social segregation. The crisis of Russian cities is a result of reforms, shock therapy and the inelastic transition to market conditions. However, during transition period cities have got different impulses for their development. Recently, it is plain, that the complex socioeconomic, spatial and political movements are leading towards unbalance spatial development and an increasing unevenness among Russian cities.

The study is set out, on the one hand, to demonstrate within a historical and recent politico-economic frame the peculiarities of Russian urbanization which have to be taken into account for the creation of urban regeneration tools and, on the other hand, by means of neural network self-organizing map (NN SOM) application, to explore recently emerging types of cities which could serve the base for the development of urban regeneration initiatives. For making a comprehensive analysis, the transformation processes have been considered at the national, regional and local perspectives as different territorial-administrative levels of a city system which themselves are undergoing different political pressures and speed of transformation, even if at the same time they are deeply interconnected.

This PhD thesis seeks to address the following issues: What the evolution of the Russian urban system in respect to geographical, economical and political context is, and how the city system has been altered due to transition from centrally-planned to market economy model. To what extent various urban settlements have gotten development impulses and why different cities were following different development trajectories. How federal policies are affecting the different types of Russian cities, why in this way, which is the dynamic factor, and what has been endowed for urban regeneration.

The PhD study has provided a framework for rethinking Russian cities in a way to understand what supplements today's polarizing tendency towards Moscow with other cities along the huge territory of the Russian Federation. As the nation moves to increase its richness and welfare the thesis has looked at how the reorganization of the Russian city system can contribute to equity and welfare objectives.

The transformation of the national city system has shown that the soviet planning approach based on the space 'equity' criteria, bypassed local unfavorable conditions and did not consider much the transport cost; however, it became important in the post-Soviet market reality where geographical location, transport accessibility and regional wealth have significant value for people and for business.

Apart from the demographic dynamics, the effect of this study indicates that Russian city system in some aspects has been regulated by national policies. If the Soviet era was an attempt to level the space around the country, during the post-Soviet period the space production is limited to few selected areas which have got a significant federal attention and support, while others have remained unstained and neglected, and had to adjust themselves to the new market conditions being unassisted. On the other hand the study argues that the transformation of the Russian city system is undergoing chaotic federal political initiatives in the absence of integrated spatial development strategies and comprehensive view of further territorial development that logically have led to a fragmentation of the country's space and thereafter to urban decay. The results of this study show that recent post-Soviet Russian cities could be characterized as 'faceless' cities getting lost in transition; nevertheless, in spite of transformation of post-Soviet cities via various adaptation paths, the role of cities in the national economy is blurred and not enough attention is paid to find effective models and approaches for urban recovery.

The study has proved that post-Soviet cities demand a complex regeneration which could be based on diversification and modernization of urban economic base, transport network extension, improvement of housing conditions. Launching the Russian urban regeneration policy demands a new awareness on the merit of cities in market-oriented economy. The urban system improvement requires a long term commitment and should be based on long-term strategic approach, that should counterbalance the short-term urban actions currently implemented by the government. Thus, there is no single quick solution for many years of disinvestment and urban decay. The pattern of urban extension which is promoted directly by the governmental bodies should be replaced by integrating urban regeneration initiatives, which encourage the sustainable compact urban development with reinforcement of interurban connection. However, we are optimistic about the process of post-Soviet cities' transformation. The newly emergence of various urban oriented initiatives both at the national and local levels, proves that urban discourse is getting the force and become an actual topic for discussion among communities.

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CHAPTER 1

POST-SOVIET SPACE TRANSFORMATION - WHY IT MATTERS

1.1. Setting the scene: Reconfiguration of Russian urban space

Globalization, post-industrialism, neo-liberalism based on economic, political and social transformation has had a fundamental impact on urban space worldwide. Currently increased division is taking place, which is presented on the one hand by a few growing urban areas and on the other hand with a wide-ranging urban shrinking trend. This results in an uneven spatial development where some metro-regions are becoming nodal points and others are left behind. The increased differentiations of urbanized areas have origin a different approach for leveling these disparities and concepts to find development models aimed to balance existing city systems. In times of globalization the creation of well-connected livable cities by developing tertiary sector, which could be attractive for investment, people and tourists is one of the contemporary approaches to smoothing space unevenness.

After the fall of the Iron Curtain, the Russian Federation, one of the biggest and significant countries in the world arena, has engaged itself in a complex transformation from planned to market economy, from totalitarian to democratic regimes, from socialist to capitalist country. Recent evidence suggests that the transition to market economy has been painful and, in many aspects, is still incomplete (Malle, 2013).

The rapid politico-economic changes are having a grave influence on the urban space transformation. A soviet planned spatial development strategy had been completely rejected under the new neo-liberal policy and market economy, which nevertheless took time to emerge. The results, space reconfiguration process influenced by 'new' market forces has been realized in almost 'open space' during the decade. Originally the Soviet city system had been planned as a closed system irrelevant to transport costs and climate conditions, but it has transformed into an open one, where cities have to compete for resources both at national and international levels. The changed economy has led to a rapid degradation not only of the old industrial and mono-industry cities, which extensively were built during the Soviet industrialization, but of almost all cities throughout the country.

Some scholars have argued that during the last decades a new special regime emerged in Russia, in which cities are no longer part of a rigid nationwide planning system where the State controls the redistribution of urban

resources, through its administrative hierarchy. Instead, the spatial centrality has become much more privileged in the form of a spatial re-concentration of the financial power – above all in Moscow – with a deterioration of the living standards in many other cities (e.g. Golubchikov et al., 2013; Kolossov and O'Loughlin, 2004). As a result of the transitional period, urbanized Russian space is progressively “shrinking” around Moscow, evident polarization is emerging in central Russia and an increasing peripherization affects Siberia and Far East regions.

On the other hand the urban landscape of post-Soviet Russia has also been affected by the market oriented economy and neoliberal policy. Socialist cities had been planned under the socialist logic that formed specific urban fabrics and social structure. In spite of transformation from a centrally-planned to market economy has occurred quite rapidly, the Soviet urban heritage cannot be transformed into capitalist market-oriented urban model overnight (Harloe, 1996). After more than twenty years Soviet cities have changed significantly with respect to housing, transport and services sectors. Created under anti-market logic the post-Soviet cities are facing a set of challenges such as degradation of the urban economy, rapid deterioration of housing and communal infrastructures, poor transport maintenance and increasing transport congestion, social segregation and spring of gentrification. Moreover, recently it is a problematic issue how urban reconfiguration will take effect in Russia. Will it be a new 'post-Soviet' urban pattern, or it will be a copy of 'capitalist' urban pattern. The former Soviet cities which had been created under socialist regime are not able to compete for private investment, which become a driver of urban development under a market economy.

The PhD thesis is motivated by the appeared space disaggregation around Russia, which is presented in economical and physical decline of many cities, parallel with substantial growth of a few ones. Dealing with the unfavorable situation in post-Soviet urban transformation is of great importance both for the country's spatial development and for each single city as a parcel of urban system. An issue is in what extent, influenced by market forces, various urban settlements have got impulses for their further development.

Apparently that after the collapse of the USSR, Russia, has been reluctant to follow the path of creation of attractive conditions for international investments. This process is a multifold and includes spectrum of various actions, among which are a creation of effective socio-economic institutes, clear legislation rules, transparent financial tools, etc. In attempts to set up a favorable investment climate for launching effective innovative economy, the Russian political elite has neglected the necessity of complex space and urban (re)development, though creating a friendly urban environment with high

accessibility is one of the important prerequisites for the investments, and people attraction in post-industrial era.

In the research it is supposed that the breakup of the Soviet Union has caused, on the one hand, the formation of a new system of cities both at national and regional scales, and on the other hand, the fundamental changes of the soviet urban fabrics. In spite of these transformation processes are realized on different levels, they are deeply interconnected and influence each other so they could be considered simultaneously.

1.2. Problem statement

Recently the country is at a critical turning point in its economic, social and political development. At the World Economic Forum in Davos-2013 three scenarios have been presented for the future development: Regional rebalancing, Precarious Stability, and Beyond Complacency (Bishop et al., 2013). All of them hardly could be more serene for the country, but doubtless that one of them: 'regional rebalancing' is completely dedicated to reconsider the country's spatial structure, including rebalancing of economic flow, new attention to the social cohesion and to the formation of attractive livable cities and towns which could create an alternative to Moscow. De facto 'regional rebalancing' is a fresh and quite innovative idea for post-Soviet Russian towns and cities in terms of formation of a city system adjusted to market conditions and the regeneration of the urban economy and quality of the environment after decades of obliviousness. However, this scenario is one among other possible directions of spatial and economic development. In this case the framework set by the national government matters a great deal. Turning to the urban issue, it could help emancipate Russian growth from oil-gas dependence. Currently as well as the Soviet era, Russian economy is heavily dependent on natural resources and energy sectors, which does not demand creating a livable urban environment as its function could be realized out of urban boundaries. But contemporary innovation economy requires a livable and prosperous urban environment for attracting and keeping high-skilled human capital. The added value to cities and towns in national economy could be an initial impulse for launching drivers of the innovation economy.

The set of research problems is twofold. On the one hand, there are urban issues at the upper level connected with political initiatives and socioeconomic factors which influence the transformation of the national and regional city systems. On the other hand, there is a big set of local urban problems, which are directly connected with the urban economic environment and urban fabrics.

The first layer of urban problems arose from the end of the centralized urban policy of the State. If, during the Soviet period, cities were integrated into a hierarchically-ordered national economic space, under the new market conditions cities lost themselves among chaotic strategic initiatives without any spatial or urban agenda (Golubchikov, 2004). Indeed, during the first years of the new regime and the independence of the local authority from the federal government, no instruments have been created in order to drive the urban development and to form cohesion urban space around the country. Only recently we have observed a few attempts concerning urban (re)development, including federal funds stimulated housing construction and repair, creating special economic zones or territorial innovative clusters, or blurred policy to support mono-industry cities. The existing policy is more a bunch of sectoral, non-territorial measures, which hardly add value to the formation of an integrated city system.

The second layer is local urban problems. Cities and towns face the problems of providing jobs, decent housing and adequate infrastructure and of looking after the educational, social and medical needs. In some respect these issues are the results of the inherited Soviet urban environment which embraces unsatisfactory housing conditions, rapid (unpredictable during the soviet time) growth of private transport that has led to transport congestion, absence of livable public spaces, when cities were considered mainly as places for work not for life. Also new problems connected with segregation and gentrifications are appearing.

1.3. Research questions

As a consequence of the transition period urban dynamics as well as city system became more and more complex and difficult to explain with classical tools. Therefore the analysis of the contemporary system of cities which has emerged mainly due to adaptation of a Soviet pattern to new market conditions remains crucial for policy makers and present a substantial interest for researchers of post-Soviet transition.

During the transition period cities have got different impulses for their development. The issue is why different cities have followed different development trajectories. What kind of factors influences the process of city system transformation. This PhD thesis seeks to address the following issues:

- What the evolution of the Russian urban system in respect to geographical, economical and political context is, and how the city system has been altered due to transition from centrally-planned to market-oriented economy model.

Answering to this question the historical overview of the city system formation will be done. In order to understand the pros and cons of inherited urban endowments the factors influencing the formation and evolution of urban system in Russia will be explored. Finally, the emerging spatial urban patterns will be defined

- How federal policies are affecting the different types of Russian cities, why in this way, which is the dynamic factor, and what has been endowed for urban regeneration.

- To what extent various urban settlements have gotten development impulses and why different cities were following different development trajectories.

The unevenness of space is politically and socially produced (e.g. Lefebvre, 1991; Harvey, 1985). Any urban space is a specific product of political choice and economic measures applied in certain economic frameworks such as market-oriented economy or central planning economy. The study will explore economic and social measures, approaches and instruments affecting the urban space transformation with the aim to understand how they change city system and how they could contribute to urban regeneration. The thesis concentrates on the post-Soviet urban space transformation and it is undertaken at different scales.

The research examines the system of cities, while rural areas are beyond the scope of the analysis. The study is an attempt to find the new roles in post-Soviet cities faced with the problems of adapting to economic and social changes.

1.4. The structure of the PhD Thesis

The thesis sets out on the one hand to demonstrate within a historical and legal frame the peculiarities of the urbanization in Russia and on the other hand by means of neural network self-organizing map implication to explore recently emerging types of cities which could serve the base for the further analysis and development of urban regeneration policies.

The PhD thesis is organized in seven chapters. Chapter 1 has provided a background of the study. It has set out the research problem and purpose of the study by highlighting the relevance and importance of the research taking into account current urban issues in Russia. Chapters 2 and 3 cover the history of the Russian urban system formation and outline the peculiarities of urban structure. The survey embraces three main periods of Russian urbanization: imperialistic, soviet and post-soviet. The post-Soviet period is stressed and

considered in detail, providing the snapshot of contemporary Russian urbanization. Chapter 4 outlines in detail the urban policy formation during the post-Soviet period, providing an overview of existing political initiatives which have an impact on the urban policy formation. Based on the analysis of urban space, housing, transport and social policies, it highlights the general background of urban state, including inherited urban challenges emerged during the transition from socialist to capitalist city. The primary focus of these parts (Chapters 2-4) is on changes of city system during last 20 years. It includes the changes of weight/position of each single city in comparison with the others; the geographical context and transport accessibility; the role of a city for the national policy; the changes of internal urban form including urban environment, housing market and infrastructure. The scope is to understand the set of transformations which is necessary to take into account for the formation the urban regeneration model for different types of the cities.

With Chapter 5 begins the empirical part of the study. By means of the Neural Networks Self-Organizing Maps (NN SOM), groups of cities with high internal resemblance have been singled out and investigated. Due to SOM implementation twenty five groups of cities with similar socioeconomic trends, where each group is characterized by an appropriate profile (a codebook) have been identified. As result, new urban ranking structured in four layers (clusters): 'urban engine', 'strong cities'; 'dynamic cities' and 'weak cities' has been proposed.

Based on the results retrieved in previous chapters, Chapter 6 discusses various political initiatives, emerging trends and perspectives in different urban clusters. In doing so it discovers some of the significant shortcomings of the national urban regeneration strategy, that seeks to promote a few politically appointed growth poles (among 'urban engines') and simultaneously curbs the regeneration opportunities from all the rest cities. In addition here are considered in more depth the consequences of events-driven regeneration strategies recently implemented in the Russian political geography – although nevertheless they are rapidly evolving into a significant phenomenon. Chapter 7 concludes the study by reiterating and discussing some findings and themes emerging during the research.

1.5. The existing literature and the added value of the work

In recent years, despite significant urban space reconfiguration, accelerated by the political changes, researches on system of Russian cities and urban fabrics transformation are scarce and highly uneven. The most holistic studies on Russian city systems have been implemented by the Russian urban

geographers Treivish (2009), Lappo (2010, 2012), Lubovniy (2013). Most studies (e.g.: Axenov, 2006; Golubchikov, 2010; Kinossian, 2012; Trumbll, 2012) are dedicated to large and important cities such as Moscow, St. Petersburg and some regional capitals only. Some researches explored the cities in different regions, precisely: Northern cities (e.g. Engel, 2006), Southern cities (Bondarenko, 2009) or Ural cities (Kuznetsov, 2008). Others address different types of cities, including industrial cities, soviet 'closed' and knowledge cities (e.g. "The 250 Largest Industrial centers of Russia in 2011"). On the other hand the recent trends of urban research are focusing on ranks and classifications mainly showing the relative location of each city among others in terms of the economic situation, attraction of private investment and business, for example research prepared for the First Moscow Urban Forum. "Comparative performance of Russian cities" concerns only 12 cities with population more than one million people, while "The general ranking of Russian cities' attractiveness in 2011" developed by Russian Engineers' Union includes cities with population more than 100.000 people. On the other side, so far, however, there has been a little discussion about balanced post-Soviet city system transformation by means of comprehensive urban regeneration. Several studies have produced approach and strategies for urban regeneration (Grabovii, 2002; Bachurina, 2007), but they are still exploring technical aspects of urban regeneration, leaving behind the integrated approach for urban regeneration.

As a matter of fact the recent analysis has revealed the lack of holistic and complex researches aimed to understand how to prevent post-Soviet city system degradation. Nevertheless, it is obvious, that during the transition period, cities have acted differently, some are doing rather better than others for reasons which are not evident and simple. The question: "How post-Soviet cities are changing under the contemporary economic and institutional situation, which urban types are emerging and which interactions between cities are transforming the whole city system" demands a specific and urgent research activity based on the holistic approach.

In one way the findings of this research enhance our understanding of post-Soviet transformation of Russian city system. The SOM algorithm revealed itself as a helpful tool to explore the vast and multiform urbanized space of Russia and moreover, to build and organize the knowledge of such a complex system. The groups of cities revealed by means of NN SOM implementation assist us in understanding the diverse urban development paths during post-Soviet period. In another way, the undertaken comprehensive policy analysis allows us to provide recommendations for regeneration of proposed urban classes, which could contribute to a more balanced urban space transformation. The target audiences who can use the research results are federal, regional and local authorities, which are in charge of the development

of territorial socioeconomic strategies and who might bear the responsibility for urban system formation as part of spatial and regional policies including the development of urban regeneration policies.

CHAPTER 2

THE HISTORY OF RUSSIAN URBANIZATION

2.1. Cities and political regime

Different national approaches to urban issues can emerge from different spatial development patterns (Van der Berg et al., 1998), which is mainly appeared from different political ideology (Pacione, 2001). Each country has its own geography, history, political regime, economic and social conditions, which have influence on formation and evolution of city systems. Taking into account a stock of inherited national peculiarities each country has started to form urban regeneration policy from a different points (Couch et al., 2011). It proves that the theory of path dependency is important for urban analysis, as it often plays a prominent part in the explanation of spatial and urban transformation, but it should be critically applied under existing circumstances. As Robert Putman argues that:

“Path-dependence is just another way of saying where you get to depends on where you are coming from” (Putman, 1993).

Each state around the world has a diverse mix of urban successes and failures; their spatial development practices reflect divergent paths of historical development and contrasting political and economic systems (Taubman, 1973). Cities reflect the political ideology of their society (Pacione, 2001). If most European cities have followed the translatory development based on the model of capitalist cities, Russian cities are not so far. The impact of political change on cities and towns is clearly demonstrated by the Russian case. During the twentieth century two times Russia (here Russia is used for Russian Empire and USSR for the Russian Federation) cardinally changed the political regimes and twice people witnessed a strong tendency of rejecting totally the past in favor of a new political ideology. During the Socialist period (1917-1990) one of the political aims was a complete destruction of Imperialist cities. As Antony French states:

“Many initiators of Soviet planning concepts in the 15 years or so after 1917 believed that a new world had begun and they therefore devised plans and planning theory as if starting from nothing” (French, 1995).

During the post-Soviet period (since the 90s to present) which is dedicated to a free market formation, the idea is that everything could be solved by means

of market mechanisms, that competitiveness and self-development are the main forces of urban development. The new legal environment including market mechanisms and instruments have to be created from nothing after seventy years of strong planned regulation. Regarding transformation of city system there is a consensus among scholars of post-Soviet transition that transformation of urban system demands a significant amount of time and efforts, whereas the political change take only a few weeks and institutional transformation can be realized by few years (e.g. Medvedkov, 1990; Sykora, 1999).

In analysis of post-socialist cities Sykora (2012) discusses the transformation of urban space, he claims that it is a permanent and relatively gradual process but sometimes it could be influenced by periods of radical urban restructuring which could be consequences of international or national economic crisis, tempestuous developments in society, or radical changes of political regimes. Russian cities have experienced a strong transformation which at certain historical period has been provoked by external political and economical factors. For the further analysis the model of Russian urban system transformation is decomposed into three alternating periods: Imperial period (up to 1917), Soviet period (1917-1991) and Post-Soviet period (since 90s to present). The transitions from one period to another had radical character and conditioned by the transition from imperial to communist and from communist to democratic political regimes. Each new phase demands transition period for adjusting and each time the transformation of Russian city system had been engaged with significant economical and social restructuring.

2.2. What is Russian urbanized space

Before starting with analysis of history of Russian urbanization it makes sense to give an explanation of what different scholars conceive as urbanization. And especially what “city”, “urbanized area” and “urban” mean in the Russian context.

At first sight it is a challenge to understand what can be considered as “urban” in Russian reality and what it is, which characteristics it has. As we mentioned above the Russian cities are the best prove that “cities reflect the political ideology of their society” (Pacione, 2001). Capitalism and socialism influence urbanization process and these ways of urbanization are different. Ivan Szelenyi notes that socialist urban development was different from Western urbanization. But it doesn't mean that it was better or worse, just different (Andrusz et al., 1996). The issue is to explore the specifics of Russian urban place, external and internal forces which form and change it.

Actually, there is no precise definition what urbanization is. It is fuzzy and depends from country to country. From a general point of view, urbanization could be understood as the growth of urban population. On the other hand urbanization is a spatial process. It means the concentration of the population inside the areas with urban characteristics. In this case, the problem is what urban (city, town) means. There are different approaches of defining an urban area. The most common approach is to identify urban areas on the base of the following four criteria: “population size”, “economic base”, “administrative criteria” and “functional definitions” (Pacione, 2001). In some countries an urban area is defined according population size. In general point of view the settlements with a population more than 2.000-3.000 people are considered urban (Szelenyi, 1996) but for example in Sweden a settlement with more than 200 inhabitants is classed as urban (Pacione, 2001). In Russia, the correlation among "urban status" and “population size” is fuzzy. In some technical documents Russian city has to have a population at least 10.000 - 12.000 people, but in practice this criteria is not employed and, for example, the smallest Russian city Chekalin in Tula region has a population less than 1.000 people, or the regional capital of Ingushetiya - Magas has a population a little bit more than 4.000 people. On the other hand some Russian villages have population more than 20.000 people.

Even if the “economic base” is not accepted officially as a criterion, in Russian practice it is widely applied for the identification of urban areas. According to it, an urban area has to have more than 85% of the population employed in a non-agricultural work.

In Russia historically *administrative criteria* have been accepted for identification of official urban areas hence the city is first of all an administrative division. It should be mentioned that this approach is rooted since the Ekaterina the Great time. Cities are appointed by government.

On the other hand, a definition of “urban” based on the concept of “functional urban regions” which reflect the real extent of urban influence is rather problematic at Russian scale and it is possible only for several agglomerations. The extension of urban areas is observed around Moscow, St. Petersburg, Novosibirsk, Tomsk, Krasnoyarsk, but it is not treated by the Russian statistics that provides a problematical character for the analysis of urbanized space and its dynamic.

Simultaneously with physical city’s identification there is another approach which considers “the urban as a quality”. According to it, the urbanization is characterized by a special “urban life style, urban social structure” and “certain quality of social relationships” (Szelenyi, 1996, Pacione, 2001).

Some scholars consider a difference between 'urbanization' which concerns a quantitative criteria and 'urbanism' which is connected with quality of urban life. And here, it could be marked that Russian cities usually are very specific in their expression of "urban life style" and "urban quality" as well. In European countries many villages look like cities or as urban extension, in Russia quite the contrary, many cities look like villages with some industries inside. It partially could be explained by the fact that many Russian cities are rather young, as many of them have appeared owing to swift country's industrialization during soviet period, and during this period industrialization controlled urbanization. As Harvey (1985), Castells (1977), Soja (2010) argue in capitalist society 'urban lifestyle' can spread beyond the physical limits of the city, in socialist society 'rural lifestyle' engaged with centralized industrialization had been converted into 'urban' administratively. That has created a situation of 'incomplete cities' or underdeveloped urbanization, when the difference among rural and urban cities is indistinct, but not because of urbanization has extended its influence to all areas, quite the contrary because rural areas quickly converted into urban, or new industrial cities which have been created in Siberian greenfield did not have enough time to get the spirit of urban lifestyle.

Also, the difficulties with spread of urban conditions along the Russia could be explained by its huge territory, the considerable part of which is situated in the zone with severe climate conditions. On the one hand it means that the appearance of settlements mainly connected with the necessity to explore natural resources under trying conditions. Very often these settlements have a contemporary character and their population is the shift workers mainly. These conditions are challenges for the formation of livable cities with the culture and society. Shift workers consider the settlements only as a source for earn money and do not think to stay in the city during long time.

The next point earns the confidence that since the Soviet era Russia inherited two types of "urban areas". There are cities, towns and the *settlements of urban type* (in Russian *poselok gorodskogo tipa, p.g.t.*). These settlements have the intermediate position among city and village. This settlement type has appeared during soviet period. Ideally, in terms of population p.g.t. is bigger than village but smaller than town and its population is considered as urban. Usually p.g.t. has one main enterprise which is a core of the settlement' economy. Currently there is no strong criterion for the formation of p.g.t. and it is the issue of regional authority.

As the city has an administrative character in Russia, in reality during approaching to settlements it is difficult to understand the official settlement' status. Some examples are provided below. Onega is a small one-company city in Archangelsk region with population around 22.000 citizens. It has got

the status of the city since 1780. But during transition period the town has experienced an economic decline and the urban environment reflexes it. On the other hand the Stroitel city in the Belgorod region with population around 24.000 citizens which have been converted into the city in 2000 only. During long time it was p.g.t. but owing to growing population, close situation to the regional capital Belgorod and developing economy, it has obtained a city status. The comparison of urban environment of these two settlements the Onega city which exists during several centuries and Stroitel city which has been founded only few decades ago (Figure 2.1) presents a striking differences and proves the fact the concept of 'urban life style' is blurred inside Russian city system.

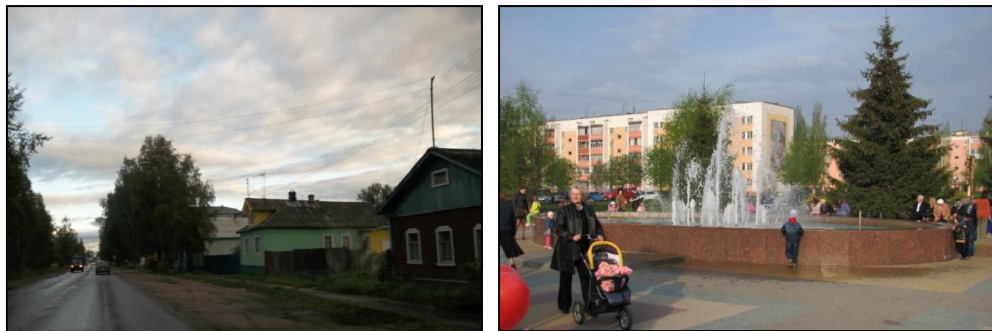


Figure 2. 1 *The comparison of urban environment of Onega city in Archangelsk region and Stroitel city in Belgorod region*

Taken together, these results show that Russian urbanized space is a chaotic mix of cities, towns and the settlements of urban type. All of them are very diverse in population size, location, transport accessibility, economic base, climate conditions, etc. The understanding of Russian “urban life style” is rather ambiguously. Some villages look like cities, than some cities look like villages.

2.3. The formation of city system around the country. Imperial capitalist cities

2.3.1. What determined the cities location

Historical, economical, social, cultural and political background of city systems evolution is a prerequisite to understand current transformational process inside the system. Inherited urban challenges should not be underestimated. The way forward urban renaissance needs to be grounded in an understanding of the past, the present and the pressures of the future changes.

The big country's size, severe climate conditions, long wars of conquest, military character of the country's policy always influences significantly urbanization process in the country. Further to these factors, Russia has a history of "isolated" country (Medvedkov, 1990). There is possible to define two big periods of isolation. The first deep isolation was during the Renaissance before Peter the Great. Only with Peter the Great, Russian Imperium had started to participate to the World market. The second isolation period took place after 1917. This caused the original urbanization way of Russian space which is considerably different from Western urbanization.

Historically Russia had a big space and warlike neighbors (e.g. Mongolians and Tatars). That's why the priority task was to protect and to save boundaries of the country. It should be noted that Tatar yoke during XIII –XV centuries was a disaster for Russian settlements (cities and towns) and it threw back the country in its economical development. Some of the sacked towns never reappeared on the map; others were not re-founded for centuries. Yet others struggled to re-establish themselves, only to be sacked over and over again in the period of Tatar invasion (French, 1995). Since medieval centuries a very large part of Russian cities were founded as a network of frontier defensive system (Tverskoy, 1953; French, 1996; Medvedkov, 1999) and until the 19th century cities had been created as fortress. Garrisons are at the origin of Russian city system: they are the best connected nodal points. Around 270 cities in modern Russia initially had been created as fortress, garrisons. (Lappo, 2002). Some examples are Torjok (Торжок), Porhov (Порхов), Ivangorod (Ивангород), Cola (Кола), Pskov (Псков). Originally many Russian cities were military outposts (Medvedkov, 1990).

In XVIII century Catherine the Great launched the administrative territorial reform and set the pattern of urban development for the next hundreds years. Currently its outcomes have a great importance for Russian city system formation. First of all she set up a planned *hierarchy of central places*. This hierarchy survived until after 1917 revolution (French, 1995). Since 1775 with the Statue of Provincial Administration, the reform aimed to modernization of old regional network. Settlements got an urban status designated as centers of new administrative units at each level (French, 1995; Hittle 1979). But as it has been mentioned before, the most important point was that new settlements had been appeared not because of economic needs or historical path, but because of private state desire (considerations). This approach "to appoint" city by government is applied so far.

Transportation costs for internal trade and imperial duty travel were a major reason the nation remained poor. For a long time internal trade could not develop to the point of cementing nation, so it was logical, instead, to place garrisons everywhere.

“Even the factory settlement of the Urals, consisting of an ironworks and housing for workers, were laid out in regular geometric fashion; they were usually surrounded by protective fortifications, making their layout strongly reminiscent of the frontier fortress-towns such as Taganrog” (French, 1995).

In 1820, only 2.4% of population of Russian Empire lived in settlements of 20.000 or more inhabitants. By 1885, the level of urbanization based upon the same size criterion had increased to 7.4% and by 1897 the urbanization level had reached of 9.4% (Lewis and Rowland, 1976).

“Although Russia wasn’t highly urbanized in the late XIX century, it was not substantially below the world norm”. (Lewis and Rowland, 1976).

In New Russia between 1860 and 1910, industrial towns, based chiefly on mining and metallurgy, grew much faster than towns that were local commercial centers (French 1996).

During the XIX century a mass railway construction started. This allowed to connect Russian lands together and increase the connections (ties) among cities. The dynamics of railroad construction is represented in Table 2.1.

Table 2. 1 *The dynamics of railroads’ length in the 19th century (km)*

	1840	1860	1880	1900	1938
Russia	27	1626	22865	53234	85100

(source: Fontana Economic History of Europe. Vol. 4. Part 2.)

The boom of transport infrastructure construction in the end of XIX century had influenced significantly the extension of city system to Siberia and Far East. In 1891 the construction of Trans-Siberian Railway (The Great Siberian way) was launched and had been finished in 1916. It was and it is the longest railway in the world which connects European and Eastern parts of Russia. In 1916 its length was 8,3 thousand kilometers. Currently its length is 9,298 thousand kilometers from Moscow to Vladivostok. Trans-Siberian Railway had provided impulse for the great economical development of Siberia and Far East and at the same time had created preconditions for the formation of city system along it that increased population flow from European and Central to Eastern part of Russia. Trans-Siberian Railway gave the life to such cities as Novosibirsk, Tatarsk, Taishet, Yurga and many others. Novosibirsk, which due to new railway had been transformed rapidly from village to city, is

informal Siberian capital with more than one and half a million as population and now it is one of the dynamic cities in the Eastern part of the country. Also Trans-Siberian Railway had influenced the urban planning. Because of rapid economic development the cities had to be arranged in appropriate way. The chaotic urban environment had been changed to planned one and also cities which were along the main transport artery had to represent attractiveness for travelers and this factor also influenced urban environment. Trans-Siberian Railway has connected the space and it has transformed Russian Empire from a territory into a Country ("state"). Despite Trans-Siberian Railway provided a fresh air for development of Siberia, the railway network was reasonably well developed in the European part of Russia; rail-way towns had grown up to join the older-established port cities (French, 1995).

2.3.2. The quality of urban environment and urban planning

Over a long period Russia was a rural country. Almost up to the middle of the 20th century less than twenty percent of the population was living in the urban areas. There were 415 cities in Russia in 1825. Saint Petersburg with the population more than 400.000 people was the biggest one. At the same time it was the first planned Russian cities. At that time Moscow accounted for 241 thousand people. Tula was the third Russian city with population around 38.000 people (Lappo, 2012; Lubovniy 2013). Almost all other cities were small ones with a rural life style.

As initial cities had been created as garrison, they had not been planned carefully. The quality of urban environment in Russian cities over a long period could be characterized as poor and inadequate, without planning structure and roads, with lack of social infrastructure. Only in the 18th century Catherine the Great made a development plan requirement for all cities (French, 1995). The vitally important innovation of Catherine time was that she decided that cities have to be developed with schools, hospitals, homes for the old and orphans, all to be built under the supervision of a Board of Public Welfare (Hamm, 1976). These plans had a legal force for most the century up to the beginning of the 20th century (French, 1995). Unfortunately, Although these plans were unique during century, in reality their implementation had been characterized by partial realization only (Bliznakov, 1976).

In Russia Industrial Revolution arrived in the middle of the XIX century with some lag in comparison with Europe. It was characterized by increasing urban population which mainly was constituted by migrants from the countryside which demanded housing. Housing was a common problem for both for industrializing Europe and North America at the end of the 18th century and for Russian Empire in the next century as well. As many scholars (e.g.

French, Hamm) note the provision of housing was usually far less than adequate, leading to overcrowding and slum conditions:

“housing became a major problem as the rate of urban growth surpassed the pace of new housing construction” (Hamm, 1976).

Despite housing was a common problem during industrialization and in sharp contrast with European practice, Russian urbanization was characterized by very low correlation between industrialization and urbanization. It was expressed that from the beginning all aspects of public services were weakly developed. Most towns, even the largest, had no piped water supply (Bater, 1980).

Overall, the period of development of the modern and industrialized towns of Tsarist Russia was characterized by a near total lack of coordinated planning, whether in the layout of the expanding city or in the provision of services infrastructure (French, 1995). In his research paper Starr has argued that:

“State agencies whose city-planning activities under Catherine II had once made Russia the European leader in deliberately conceived town construction, had atrophied even before large-scale industrialization begun” (Starr, 1976).

In general after 1892 both state and city government neglected the weighty task of urban modernization. During first wave of industrialization the quality of life in urban Russia consequently deteriorated.

“According to 1904 data, 1.804 cities with population of more than 10.000, 892 had no established water supply and only 38 were ‘drained’. Only 55 had streetcar lines and only 105 had gas or electric lighting. Of the 1.804 cities, 320 had no paved roads at all” (Hamm, 1976).

The urban character of Russian Empire at the beginning of the 20th century had been presented in form of very poor housing conditions. The houses were mainly single-storey and wooden. Population was largely non-urban in number, location, character or spirit. Moreover, French (1995) pointed out, that town and village served the same function. It means that among cities and villages there were not big difference, as well as the slight difference was among urban and village life styles.

Further in Figures 2. 2, 2. 3 city views of Krasnoyarsk are hold up. It is the old Russian Siberian city which got urban status in 1690. The city was founded as a Russian border fort intended to protect the frontier from attacks of native people who lived along Yenisei river. Krasnoyarsk has an advantageous transport location along all historical development. By the end of the 19th century, Krasnoyarsk had several manufacturing facilities and railroad workshops and an engine-house. Growth continued with the discovery of gold and the arrival of a railroad in 1895.



Figure 2. 2 *Krasnoyarsk city view*

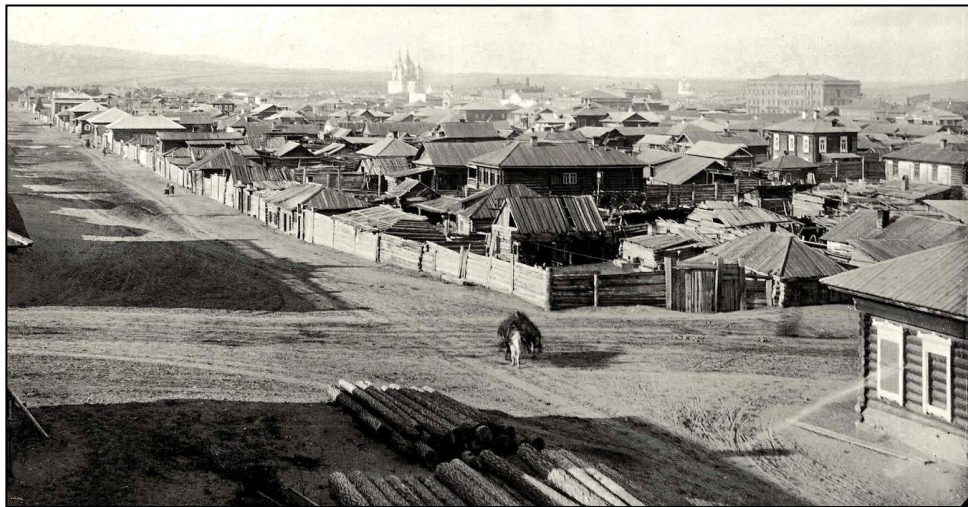


Figure 2. 3 *Krasnoyarsk urban edge, residential districts before revolution*

Before 1917 Russian cities had presented the examples of early capitalist cities in the beginning of industrialization era. They were characterized by big poverty and social inequalities, poor housing conditions, inadequate communal facilities, poor transport infrastructure. It should be mentioned that due to first Industrial revolution for many places in Central Russia and in Siberia the industrial profile had been shaped.

Since 1917 Russia had faced a new wave of urbanization which could be called a socialist urbanization. This period continued during next seventy years up to the 90s of the 20th century.

2.4. Socialism - the era of growth and planning

2.4.1. *The Soviet city system formation*

1917 was a turning time for Russia. The capitalist ideology had been changed to socialist one which continued during following 70 years. Socialism had created a new urban face in Russia. The most paradox was totally rejection of any capitalist legacy without any clear rule for the following country's development. As Engel (2006) notes Soviet Planners had started a search of a new type of socialist city as a reaction to the degradation of living conditions in the industrial cities of the late XIX century.

After the 1917 Revolution, Bolshevik Party had got a freedom in many political areas which did not have a "predetermined model" and urban planning was one example (Bliznakov, 1976). The necessity of a new development strategy for the new country had appeared. The new development path had to take into account the communism and bolshevism ideologies.

Several possible directions of further socialist cities' development had been proposed. The first was *urbanist* movement. It stood for urbanization of rural areas through the concentration of the rural population in medium-sized cities and through development of new industrial centers all over the country. Among the main ideologists of urbanist movement was L. Sabsovich. He argued for creation of a mixed agro-industrial economic unit which based at the self-contained house-commune. The main idea of urbanist school was centralization.

The second movement was aimed to *de-urbanize*, to disperse cities by the creation of new continuous communities distributed alongside major transportation and power arteries. The de-urbanism offered a theoretical solution called "*the socialist population resettlement*" which promoted neither urban nor rural life style but which sought the uniform dispersion of urban and rural population over the entire territory. The third movement was proposed by *Nikolai Milutin* and was called liner city. This new urban scheme advocated population resettlement and the creation of industrial and residential zones in parallel bands separated by a continuous green strip (Bliznakov, 1976). By the way it is interesting historical fact that Nicolay Milutin was famous among foreign researches of Soviet urbanization, but he was under a ban in USSR and his famous book "Sotsgorod" were republished only in 2007 (the first publisher was in 1930 and afterwards it was prohibited).

The tie-line for all these directions was that the cities and towns inherited from the capitalist period must be discarded *as useless in a socialist state*

(Bliznakov, 1976). But because of difficult political situation of the country emphasized by the Revolution in 1917, Civil war in 1917-1922 and the First World War in 1914-1918, Soviet government was faced serious economic problems, housing shortage and industrial inadequacy. The acceptance of the absolutely new approach for urban planning along the whole country was impossible under the circumstances.

It could be noted that the similar situation about uselessness of all communist legacy has been observed in the 90s of XX century after disintegration of the USSR. Because of the really difficult political and economical situation in the country (transformation from planned to market economy, knowledge vacuum, absence of property right during 70 years, as well as absence of institutes of local authority) federal government faced serious economic and legislation problems, housing shortage and industrial inadequacy, the acceptance of absolutely new approach for spatial and urban planning along the whole country was almost impossible but under new political and economical conditions it was an inevitable task.

The most important decision for the further Soviet urban planning had been accepted in June 1931 (in the report of Lazar Koganovich during plenary session of the Central Committee of the Bolshevik party). It was the resolution to suspend new industrial development in major cities such as Moscow and Leningrad at the beginning of 1932 and to extend the construction of new industrial centers in rural areas (Bliznakov, 1976). Since this time the greatest industrialization of the whole country had been launched. It could be considered as the second wave of Russian industrialization. But for that time the holistic urban planning concept had been absent. The idea about how a new socialist city had to be planned was inarticulate. Also the database about existing cities had not been collected (Kosenkova, 2010). The new industrialization of the country was taking off without an 'urban background'. New industrial buildings were in priority; new settlements had been created around the fabrics for it serving.

Between 1920 and 1970 urbanization rate of the USSR was the most rapid of any major world regions (Hamm, 1976; Data from the United nations, 1969). In a ten year period (1930-1940) the rate of urbanization in the USSR was perhaps the highest rate ever experienced in human history (Hamm, 1976). Between 1917 and 1991 the urban population in Russia (in its modern boundaries) increased from 17% to 74% in other words from 15.7 million people in 1917 up to 109,8 million people in 1991 (Pivovarov, 2001).

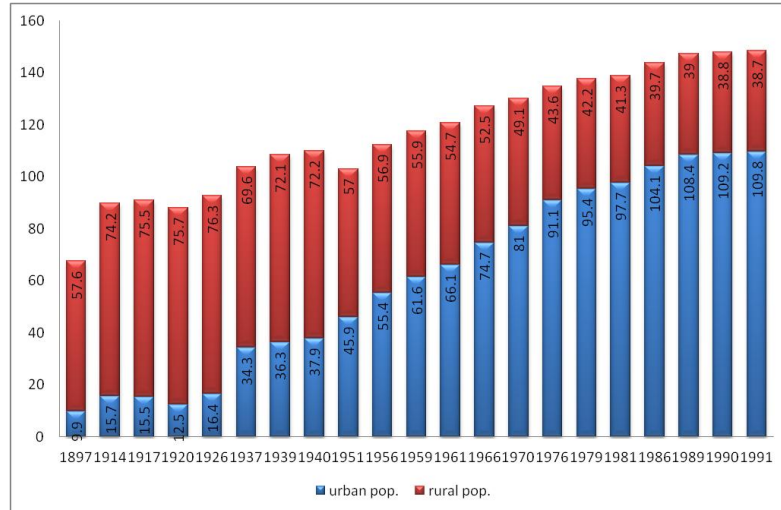


Figure 2. 4 Dynamic of urban/rural population in Russia

The urban skyrocket was possible due to significant net rural-to-urban migration, (Lewis and Rowland, 1976), reclassification of settlements from rural to urban and creation a lot of new industrial cities.

“During the middle fifty years of the twentieth century the development of new towns and the reorganization of existing cities reflected the imperative of command economy and centralized political apparatus. The planned socialist city was intended to promote national economic development and to foster social and spatial equity in collective consumption” (Pacione, 2001).

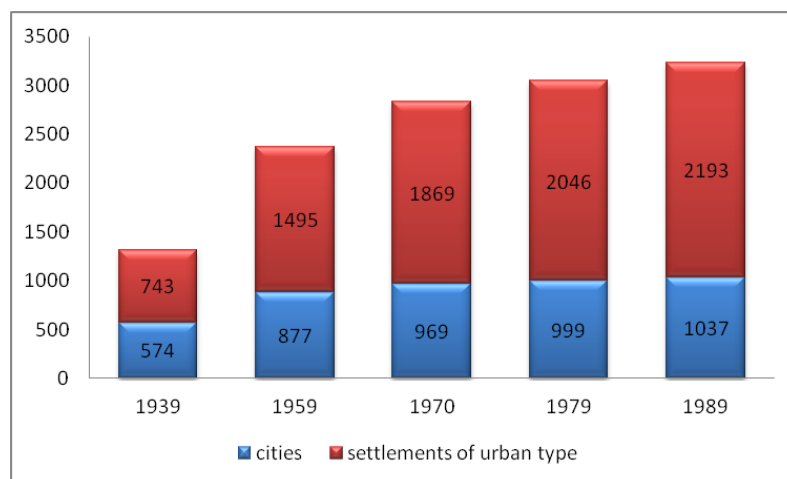


Figure 2. 5 Dynamic of cities and settlements of urban type during Soviet era

It should be stressed that reclassification of settlements had a double-barreled effect as this was not only added to the urban population but simultaneously depleted the rural population” (Lewis, R and Rowland R, 1976).

On the other side, the objective prerequisites for rapid urbanization (the development of small and medium-size towns) was electricity network equipping of the country, the development of different transport modes, a substantial expansion of the sources of raw materials, the rapid growth of industrial production.

During Soviet period, the accelerated growth of industrialization was requiring an exploration of territories in the North and the East characterized by a sparse settlement system. After the end of the Second World War, under strict governmental directives, a process of “spreading” the population across the land was instigated in order to exploit the richness of Siberia and the Far East (Nefedova et.all, 2010).

The majority of new cities were founded during the period of big industrialization programs, between 1955 and 1975, in the Northern parts of Siberia and the Far East (Engel, 2010). The availability of enormous resources of space and minerals in this part of the country combined with the availability of cheap labor resulted in extensive economic rise of these regions (Tumanik, 2001). Within the span of two decades close to 800 new towns were built, casting a net of settlements over the remote and sparsely populated lands of the North. Many of them were developed as highly specialized military, industrial and research centers located along new transport lines (mainly industrial) and development axes leading from important cities along the Trans-Siberian railway to the north (Engel, 2006).

The concept for urbanization of Siberia and Far East included the development of a settlement system including permanent mountain settlements, supporting cities in the South, and base cities and smaller towns in the North. (Brade et al., 1998, Engel, 2006). The idea was based on the formation of strong urban hierarchy: regional center, base town, permanent settlements.

As the development of the national economy in the USSR was realized on the basis of national plans, the soviet cities were also created according to the general concept of national planning. State plans for the construction of housing, industrial and socio-cultural facilities were integral part of the general system of planning of the national economy.

The principle of controlled interdependent development of the system of settlements was implemented at different levels. The single national system of settlements corresponded to the single national economy of the USSR. The plan-based development of the national economy allowed the research institutes to elaborate the national and regional forecasts in residential distribution over the territory of the USSR for estimated period. These calculations determined the interregional proportions in the development of cities and small settlements, defining the centers of the regional systems of human settlements. The national system of residential distribution was based on the continuously widening production specialization and cooperation, as well as on infrastructure. Actually the industrialization was the first driving force for space development and housing was a necessary complement for it.

The most important features of Soviet urbanization were that urban development was a State-controlled process based on state ownership of the land and centralized allocation of resources. The absence of private property and strong central power allowed realizing coordinated urban development projects at different levels on the scale of the whole country, regions, cities and their districts. Transport facilities were integral part of the single process of formation of urban communities in the country.

The fundamentals of the state policy in the field of Soviet urban development were determined by state long-term five-year and annual plans of national economic development approved by the Supreme Soviet of the USSR. Plans of civil and housing constructions, covering five-year periods with breakdown by years, were prepared for each Union republic, territory, region and town. These plans provided a basis for the allocation of finances, and of necessary material and labor resources. But as Milka Bliznakov argues

“these plans never contained a fully comprehensive urban theory” (Bliznakov, 1976).

The State planning Committee of the USSR was defining the total volume of housing construction to be done in the whole country, in each region, by each Ministry and state department, including housing to be constructed by housing cooperative association and individual investors. This planning system allowed to coordinate different sections of the plan of capital construction, to balance material and labor resources.

The separation of urban planning from economic, industrial, and transportation planning in 1933 enforced a definite limitation; urban designers had to solve mainly the problems of housing, the aesthetic unity of the urban environment, and the appropriate form of the administrative urban centre (Bliznakov, 1976).

The official principal directions of the Soviet policy in the field of urban development were (Baranov and Belousov, 1976):

- Creation of a scientifically substantial system of residential distribution based on the rational placement of the productive forces of the USSR;
- Redevelopment of old communities in conformity with modern requirements and social, scientific and technical progress, and construction of new human settlements ensuring most favorable conditions for the people's life, work, recreation;
- Restriction of the growth of large cities and development of small, medium-size towns and settlements;
- Leveling out the remaining distinctions between living standards of the urban and rural population.

In a book "Soviet Urbanization" Olga Medvedkov concluded that

"the peril of the Soviet planning urbanization was rooted in the gap between idealistic central planning on the one hand and real spatial changes on the other" (Medvedkov, 1990).

Practically, Soviet urban development was far from declared principles. It was unbalanced, with industrial expansion and population growth exceeding the supply of housing, and housing going up faster than the expansion of municipal and consumers' services. Soviet cities are result of process in which priority was given to production than to urban planning. (Taubman, 1973).

The current study has showed that socialist urban planning system is characterized by an extremely sectorial approach. Housing, transport and communication, public health services, education were planned separately by different ministries. But as Antony French (1995) argued during soviet regime socialist country displayed far more continuities than discontinuities with its predecessor Russian Empire.

2.4.2. How Soviet cities looked like

The capitalist and socialist cities have been planned based on different rules and ideological concepts. There were a set of important distinctions among socialist and capitalist urbanization. The main differences began from state ownership of land and infrastructure, from the centrally planned allocation of development funds, and from the existence of comprehensive strategies for the development of the national settlement network. By contrast, capitalist urbanization is led by market competition, private property, real-estate profitability, local decision-making and physical planning on a city-by-city basis (Enyedi, 1996). Michael Pacione (2001) has singled out the following principles of planning the socialist city:

- Limited city size. The optimum city size was generally considered to be in the range of 50.000-60.000 inhabitants. (also “propiska” had to regulate population movements).
- State control of housing. Regulations to control the allocation of housing space were considered essential on ground of equity and public health.
- Planned development of residential areas.
- Spatial equality in collective consumption.
- Limited journey to work and public transport was to be the dominant mode.
- Stringent land-use zoning. As industry was to be a major urban employer, strict zoning and use of green buffers were essential to separate residential areas from noxious industry.
- Rationalized traffic flows.
- Extensive green space. Parks and green belts were an integral part of urban design.
- Symbolism and the central city. The city centre was to be the symbolic hearth of the city and locus for public demonstrations.
- Town planning as an integral part of national planning. Urban planning was subservient to national economic planning.

Engel (2006) in her study dedicated to analysis of soviet urban planning notes that the ideological call for reinforcement of the socialist way of life through town planning formulated the programmatic aims of the socialist city, could be described with the three concepts of "unity", "profitability" and "equality". At a town planning conference in 1960 a resolution was passed, deciding among other things that the main emphasis of town planning and development should be on economic viability: simplicity, severity of form and economy of solutions were cited as the chief characteristics of Soviet architecture (Engel, 2006).

The concepts of unity and equality were wide implemented in urban planning. The individual districts were not to be different in their spatial structure and organization, there were to be no differences in location or quality, social differences were not to be emphasized by separate districts. The result was strictly hierarchical urban districts with uniform housing types, which impeded any ambitions towards individuality of design. The basic structural principle of Soviet housing was the socialist housing complex as a collective housing form. This did not, however, mean the elimination of individual apartments but rather the integration of many identical apartments in one building (Strassenmeier, 1962; Engel, 2006).



Figure 2.7 *Soviet mass-housing construction*

Although soviet urbanism is characterized by extensive green-field development, not all new developments have been created in green fields. Many new factories have been created in existing settlements (urban and rural). It meant that countries urbanization would be increasing, and cities and towns were demanded regeneration as creation a special protected zones, expansion of transport infrastructure and housing.

The redevelopment of Soviet cities included both the development on new territories and renewal of the existing districts. The whole history of Soviet urban development is a broad system of renewal projects along with new construction. From 60s to 70s of the 20th century there were big redevelopment projects in Moscow, Leningrad (Saint-Petersburg). The redevelopment of the existing large cities provided for:

- Securing population with comfortable and well-appointed dwellings and a well-developed system of services (child-care institutions, schools, commercial establishments, cinemas, clubs, sport facilities, hospitals, polyclinics, theatres, etc.);
- Improving the sanitary-hygienic conditions of settlements through the situation of the air and water basins, large-scale landscape treatment. Construction of modern public utilities and improvement of urban territories;

- Ensuring convenient rapid and safe transportation service by improving the transport systems and isolating pedestrian movement from speedy transport.

Rehabilitation of old residential districts was an important part of renewal carried out in big cities. The housing renewal aimed to improve its functional organization and sanitary-hygienic condition. During the renewal of residential districts historic and solid buildings were conserved and dilapidated houses were demolished.

One of the most important direction of urban renewal in Soviet period was the reconstruction of the centers of old cities. The reconstruction of central part of the cities was undertaken with the goal of preserving architectural and cultural monuments, not only individual buildings and structures, but in the first place, entire streets, blocks and parts of old districts.

In Moscow from the seventies a comprehensive renewal of the city's centre was undertaken. The new thoroughfares were laid out and many squares were rebuilt, for example Kalinin Avenue (now it is New Arbat) was totally rebuild and after long reconstruction it includes administrative and office buildings, shops, cinemas, cafes, as well as the new Smolensk Square was built. Also in the city, reserve zone with special restoration regime were singled out on the basis of scientific research.

2.5. Cities in transition

2.5.1. Disorder of Soviet urban system

In the 1991 the USSR disintegrated and the transition process has been established. The transition has had a multilayer base characterized by political, economic and societal changes. After seventy years of planned economy in the 90s Russia made an abrupt turn to market economy under the neo-liberal ideology, which has been arranged in the motto: "The market will decide everything". Since the 90s the country has been affected by: political and economic transformation which has been realized in restructuring of State enterprises on market principles; rapid privatization; land reform; housing reform; planning (urban planning) reform; social changes. As a results the transformation in the basic political and economic rules became a cause of urban space transformation and changes of urban fabrics (Sýkora and Bouzarovski, 2012). Both national urban system and urban landscape which were formed mainly under socialism regime had to be transformed (adapted) to the new political and socio-economic conditions.

The post-socialist urban restructuring is rather a complex theme and process as well. Numerous studies have attempted to explain the transition process, for example, Andrusz et al., 1996; French, 1995; Hirt, 2013; Sykora 2012; Tsenkova and Nedovic-Budic, 2006. These researches consider mainly East European countries, including East Germany, Czech Republic, Poland, etc. Researches dedicated to post-socialist urban transformation in Russia is rather scarce and scattered and at the same time they are dedicated to Moscow and St. Petersburg transformation mainly, as, for example, the research of K. Axenov et al. (2006) explores the transformation of urban space in post-Soviet Russia and particularly in St. Petersburg.

During the transition period the spatial urban system tested the first unavoidable transformation. USSR collapse has produced a new truncated urban network because of the new state the Russian Federation has appeared. During seventy years the unique urban system simultaneously pooled fifteen countries. After the dissolution of USSR each country has to cater for its own infrastructure, services and industry included within their limits. If before they were incorporated in one production cycle, after they became separate and have to find new solutions for functionalism and cooperation.

At the end of the 20th century Russia has become a nation with a population living in cities (settlements) whose locations have been often a function of country's rapid industrialization reliance on military industry and on industries which were uncompetitive under new market conditions. Appearing borders with other post-Soviet countries, shortened transport infrastructure, deformed urban hierarchy have added challenges for emergence country at international level. The previous soviet planned world disappeared, and cities as well as the whole nation has entered into new market reality. This reality has presented rapid industrial degradation which mainly has appeared due to new economic and legislation conditions. Additionally, under market conditions government has refused any planning of further large-scale spatial development.

In spite of it was presumed that the post-socialist Russia would adopt a more rational and economically efficient Western model of capitalism (Kinossian, 2012) in reality the inherited soviet spatial system had some points which do not work under market economy. Among them are: adverse economic-geographical conditions; adverse transport-geographical location; mono-structural of the cities' economic base. The existing urban locations are uncompetitive under market conditions. Mainly it is connected with high transport cost, which were not taken into account for industry allocation inside the closed system as the USSR was. Its production did not have a competitor before. After the USSR collapse, a huge amount of international goods has entered into new markets and supplanted a lot of national goods.

As a result of transition period, the Russian city system has got quantitative and qualitative shifts which are presented as follows:

- The concentration of decreased urban population in large cities. The preconditions and consequences of this trend will be examined in detail in the following chapter.
- The continuing from the soviet era synthetic administrative conversion rural areas into urban and vice versa has deformed the real patterns of urbanization. .
- After the USSR disaggregation, the Russian Federation has stopped to create new cities for a long time.
- The competitive position of the city has reached an immense importance for urban development. In comparison with Soviet period it was absolutely new trend and conditions for each individual city. The cities which have an advantageous transport location have got a significant impulse for the development under new market condition. Contrariwise, the northern industrial cities which have been made during the Soviet period and which have unsatisfied transport accessibility have faced with a lot of "capitalist" problems, as for example, rapid economic degradation, significant population emigration.

The main tendency of post-Soviet spatial development is polarization and peripheralism in economical and social spatial development. Since the 90s the increasing uneven spatial development (uneven among cities and inside cities as well) could be observed. In transition period big cities (with a population more than 500.000 people) were in the best conditions among all others. Mainly they were regional capitals. But later these cities start to compete among each other for human resource. The losers in a transition period where the smaller cities with the monofunctional economy because under new market conditions they are uncompetitive.

2.5.2. Post-Soviet urban landscape

At the time of the dissolution of the Soviet Union in 1991, the nature of urban planning and design in Russia was characterized by centralization, bureaucratization and technocracy. In the past decade, the Russian planning system has had to adjust to several types of ongoing transitions (Ieyr, 2003). On the other hand the development of post-socialist cities are driven by private investment and a various actors which act under neo-liberal policy. It was an absolutely new experience for each Russian city. The new urban policy leading from "market forces" has reorganized urban landscape of post-socialist cities and this reorganization far from complete.

“With the collapse of Communism and relaxation of strict urban land-use controls, capitalist tendencies such as suburbanization and social differentiation in housing are becoming increasingly evident” (Pacione, 2001).

With the transition to market economy in Russia social and economic "basis" of urban planning has cardinally changed. The state capital investments in the development of cities and territories were replaced by private investments which are subordinated to market laws and adapted to receiving fast commercial effect.

The gradual appearance of land market, land zoning, urban planning tools has changed urban fabrics as well as urban landscape of post-Soviet cities. The first cities' reaction has been presented in the form of “mushrooms” buildings which have been rapidly constructed both in city center and urban edges. First post-Soviet cities were a mix of new architecture idea based on the soviet thinking. The understanding of land value wasn't accepted momentary, and as a result the mix of high-rise and low-rise building could be constructed on adjoining land plots in the city center. The first decades of real estate market formation is characterized of mega-malls in the suburbs, new high-tech plazas in the centers, illuminated advertisement, and formation of strip-retail along main city streets. During time post-Soviet cities have faced with the lack of social infrastructure, both in the city center and in suburb neighborhoods; with the appearance of abundant industrial sites (e.g. Iron ring around Saint Petersburg center). With the lapse of time it becomes more and more difficult to find a “sense of place” inside Russian urban areas.

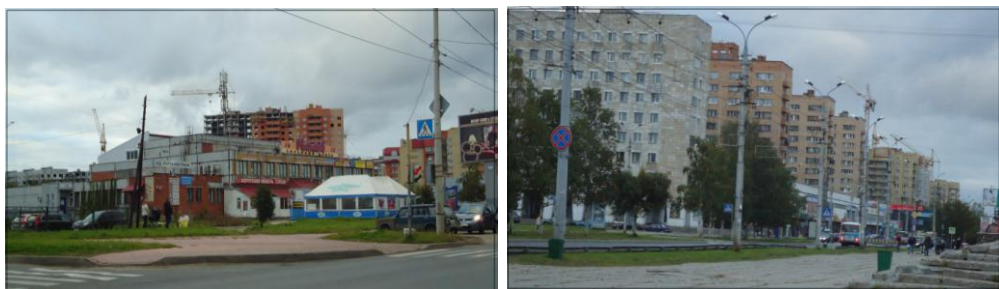


Figure 2. 8 Archangelsk city view

In addition to a general disdain for planning, urban development plans created during the Soviet period do not represent the needs of post-Soviet society, especially with the growing demand for private automobile ownership and single-family housing.

2.6. Conclusions

The chapter has analyzed the evolution of city system formation and the factors which have influenced urban transformation. The study has found that historically Russian urbanization has an administrative character. Interestingly that during the years the creation of cities in Russia was a political (administrative) decision, and more than that since the period of Ekaterina the Great up to USSR collapse the establishment of new cities have been realized in the logic of central placed theory, based on the hierarchical principles, when the centre of each administrative level as far as possible was a multifunctional city with the biggest population size and provided consumer goods and services its lower-ordered administrative levels. On the other hand the establishment of new cities had to be realized for the exploration of vast space engaged with the necessity of exploitation of the natural resources which are mainly located in the Siberian and far East regions.

The second finding is, in spite of its long history, Russia is a country of young cities. The main part of existing Russian cities has been created less than 100 years before and around 60% of Russian cities have been created in the 20th century due to rapid country' industrialization. It expresses a significant distinction from European cities, where many cities were created hundreds years before and the new one had been mainly created as a satellite of core cities due to get the effect of agglomeration economy. This reality means that Russian cities have a few times for both for the formation of efficient urban networks and agglomerations and for the formation of qualitative urban environment. Also, the situation is aggravated by the fact that many cities have been created for closed central-planned industrial system when the connection between cities have been planned 'above' and transport cost have not been a crucial factor for effective trade-off, further to many soviet cities firstly have been planned as places for work and only after for life. Nevertheless, this fact does mean that soviet cities were unsuitable for life, it only means that these cities have been created under different logic, during a short period of time and the city's youth is one of the causes, why multifunctional urban environment, which recently is promoted by post-industrial way of life, has not been created yet.

Thirdly, during the second part of the 20th century and the first decades of last century Russia comes up with strong space polarization. Cities become bigger, they enlarge their population, leave a vast space almost without population. As at the end of the 19th century there were only seven big cities with population more than 100.000 people, in 2010 the amount have reached 164 cities including 39 which are situated after Ural. This process has intensified with the USSR collapse when the urban growth has been

derestricted and Moscow has become the main attraction pole around the country.

The most striking observation to emerge from the analysis was that Russian cities along all their history were demanded modernization in terms of housing, amenities, transport infrastructure and every time the State was neglected urban problems in favor of industrialization. At least, it has been done twice in the nineties of the 19th century (French, 1995) and in one century at the end of the 20th century as well. As a result, post-Soviet Russia has a legacy which differs from the endowment of the past in non-socialist developed countries. More than that, the scholars of post-socialist transformation Szelenyi (1996), Andrusz (1996), Medvedkov (1990), Tsinkova (2006) declare that socialist and capitalist cities are different and the abolishing of the socialist model cannot directly provide the path for capital cities. Nevertheless, although the considerable part of Russian cities have been created based on socialist development logic in framework of a central planned economy, the further their development is going to be realized in an open market-oriented economy. Hence the cities have to be adjusted to the new economic and political regime, that's why in spite of the urban adaptation is continuing during the last two decades with some evident outcomes, Russian urban Renaissance has become an issue of time.

CHAPTER 3¹**NEW URBAN REALITIES: THE SYSTEM OF RUSSIAN CITIES IN THE XXI CENTURY**

This chapter is twofold aimed. On the one hand it analyzes the current state of post-Soviet Russian city system, on the other hand it serves as an explanatory framework for the quantitative analysis of city system which will be undertaken in Chapter 5. In order to understand the reproduction of Russian territory and features of recent urbanization trends the chapter explores several issues. Firstly, for the purpose to understand territorial and power divisions, the form of current territorial-administrative system is reviewed. Secondly, to see the spatial and quantitative transformation of the city system, dynamic analysis of city size and population is provided. Thirdly, in order to understand functional reconfiguration of post-Soviet urban system the main city types and classes and its transport accessibility are explored.

3.1. Administrative and territorial division of the Russian Federation

The Russian Federation occupies an area of 17 million square kilometers being the largest country in the world. Spreading widely from west to east, the territory of Russia encompasses nine time zones. Russia shares land borders with 18 countries. The RF is also the world's ninth most populous nation with 143,5 million people as of 2013 (Rosstat, 2013).

Contemporary Russia has a complex administrative-territorial division. It is a three level hierarchical structures: federal level, regional and municipal levels. From the 2000 the RF is divided into the eight Federal Districts (*FDs*) mainly based on the territorial belongings. There are Central, Southern, North-Western, Far-Eastern, Siberian, Urals, Volga and North-Caucasian Federal Districts. They are a level of administration for the convenience of the federal government. Figure 3.1. shows the Federal Districts of Russia and Table 3.1. presents the spatial characteristics of the RF.

At the federal level the Government of the RF exercises executive power in the RF. The members of the Government are the Prime Minister of Russia (Dmitry Medvedev), the deputy prime ministers (8) and the federal ministers (at present, the total number of federal ministers is 22).

¹ This chapter is based on the conference paper prepared to ERSA-2012 "*Regional policy and Urbanization in the contemporary Russia*"



Figure 3. 1 *Federal Districts of the Russian Federation*

(Source: http://en.wikipedia.org/wiki/Federal_districts_of_Russia)

Table 3. 1 *Spatial characteristics of the FDs of the Russian Federation*

Name of Federal District	Area (km ²)	Population (2010 Russian Census)	Federal Subjects	Administrative Center	Cities (Total)	Cities with population more than 100.000)
Central	652,800	38,438,600	18	Moscow	310	41
Southern	418,500	13,856,700	6	Rostov-on-Don	79	17
North Western	1,677,900	13,583,800	11	Saint-Petersburg	145	11
Far Eastern	6,215,900	6,291,900	9	Khabarovsk	66	10
Siberian	5,114,800	19,254,300	12	Novosibirsk	130	22
Urals	1,788,900	12,082,700	6	Yekaterinburg	115	16
Volga	1,038,000	29,900,400	14	Nizhny Novgorod	198	34
North Caucasian	170,700	9,496,800	7	Pyatigorsk	56	13

While Government of the RF ensures the implementation of a uniform state policy in the areas of culture, science, education, social security, health protection, ecology (Constitution of the RF, 1993); the issues connected with regional development, housing and transportation could be realized based on territorial adopted development concepts.

Among Ministries connected with country's spatial and urban development and influenced directly or indirectly on the urban transformation and space development are the Ministry of regional Development (Minregion), the Ministry for the Development of the Russian Far East, the Ministry of

transport (Mintrans), the Ministry of Construction, Housing and Utilities, Ministry of Labor and Social protection. The Ministry of Finance and the Ministry of Economic Development are responsible for financing of any government activity.

Minregion has the most significant impact on spatial development. Hence it is responsible for drafting and implementing government policy and legal regulation with regard to the socioeconomic development of regions and municipalities, urban development, particularly territorial planning; drafting and coordinating strategies and comprehensive projects for the socioeconomic development of the federal districts, federal targeted programs and departmental targeted programs in the sphere of comprehensive territorial development. The Ministry of Construction, Housing and Utilities has been created in November 2013. It is responsible for developing and implementing state policy in the spheres of construction, architecture, urban development, housing and utilities; providing public services; as well as coordinating the activities of the Federal Fund for Promoting Housing Construction, the Fund for Promoting Housing and Utilities Reform, and the State Corporation for Building Olympic Venues and Developing Sochi as a Mountain Resort.

Since the 90s Russia applied a target program approach for socioeconomic development. The strategic directions of economical, social, territorial development are provided in various State Programs and Federal Target Programs. The Ministries are acting for program implementation. At the same each Ministry has a set of programs and concepts for the specific sectoral development.

The second administrative-territorial level is a regional division. Since March 1, 2008 Russia has comprised eighty-three subjects of the Russian Federation (regions). These Federal Subjects are of equal federal rights. They are governed by state level bodies. Six types of federal subjects are distinguished: 21 republics, 9 krajs, 46 oblast, 2 federal cities (Moscow and Saint Petersburg), 1 autonomous oblast, and 4 autonomous okrugs. The Federal Subject has its own regional government, which is a part of state government. The regional government provides federal policy at the territorial/regional scale. The article 72 of the Constitution of the RF lists the number of powers that are to be shared between federal authorities and federal subjects. No exclusive power is delegated to the regional level. The regional government is intermediate between state power and local authority.

The third administrative level is a municipal division and this level presents the “archaic system” which does not coincide with a territorial division. In the course of the *Russian municipal reform of 2004–2005*, all federal subjects of Russia were to streamline the structures of the local self-government, which is

guaranteed by the Constitution of the RF. The reform prescribed that each federal subject has a unified structure of the municipal government bodies by January 1, 2005, and a law enforcing the reform provisions went into effect on January 1, 2006. According to the law, the units of the municipal division (called “municipal formations”) are as follows:

- *Municipal district (rayon)*, a group of urban and rural settlements, often along with the inter-settlement territories. In practice, municipal districts are usually formed within the boundaries of existing administrative districts (rayons).
- *Municipal okrug (settlement)*, a city/town or an urban-type settlement, possibly together with adjacent rural and/or urban localities
- Rural settlement, one or several rural localities

There are 23907 municipalities in the RF (census 2010). All of them are divided into types. Each municipality with local self-government operates independently within the bounds of its authority. The bodies of local self-government are not part of the state power bodies. Local self-government is exercised in the cities, rural areas and other localities taking into account historical and other local traditions (Constitution of the RF, 1993).

According to the Russia Constitution local self-government possesses autonomy in addressing issues of local importance, including urban planning, land management, housing, social services, public transport. Local governments possess financial autonomy, with discretion over the management of municipal property and the implementation of local budgets. Also, according to constitution adequate funding guarantees for the performance of additional state functions delegated to the local governments by the decision of federal or regional state authorities.

The hierarchy of Russian administrative-territorial division is represented in Figure 3.2.

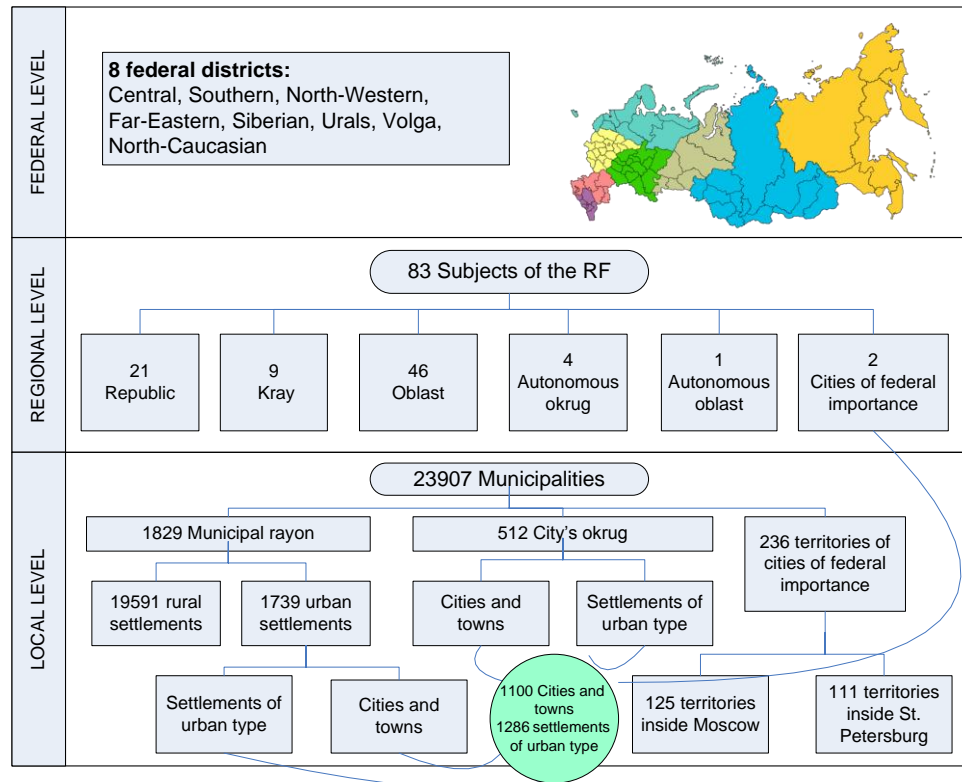


Figure 3. 2 Hierarchy of Russian administrative-territorial division

3.2. Cities' size in contemporary Russia

Russia is very high urbanized country with the urbanization rate is more than 70%. According to the population Census of 2010 there are 1.100 cities in Russia. For 2010 there are twelfth cities with populations over one million inhabitants. And its number has increased up to 15 in 2013. Among them are Moscow, Saint-Petersburg, Novosibirsk, Yekaterinburg, Nigniy Novgorod, Samara, Omsk, Kazan, Chelyabinsk, Rostov on the Don (Rostov-na-Dony), Ufa, and Volgograd and in 2013 Perm, Krasnoyarsk and Voroneg have supplemented this list. Besides, twenty-five (in 2013 - 22) cities have a population between 500.000 – 1.000.000 people and thirty-six cities have a population of 250 up to 500 thousand people. There are ninety-one cities with populations between 250.000 – 100.000 people. All others 935 cities or 85% of Russian cities have populations less than 100.000 inhabitants (Rosstat, 2010).

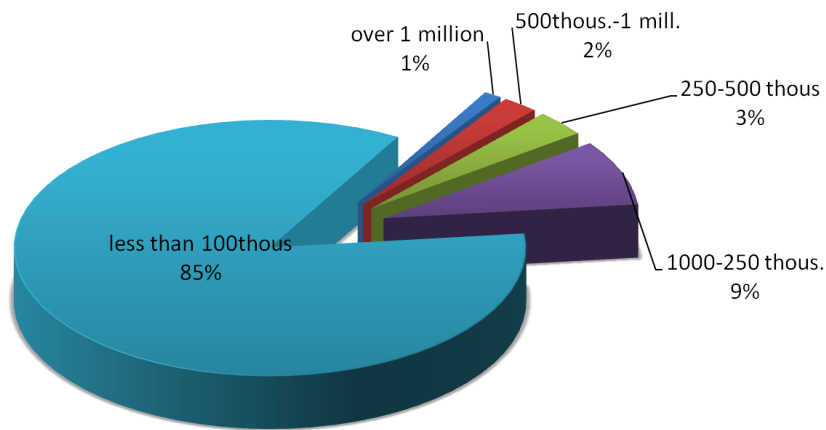


Figure 3. 3 The shares of cities according to population size

As a result the fifteen percent of Russian cities with populations over 100.000 inhabitants concentrate around seventy-one percent of all urban residents. In fact more than twenty-five percent of the urban population lives in twelfth cities with populations over one million people. At the same time only twenty-nine percent of the urban population lives in 935 Russian cities.

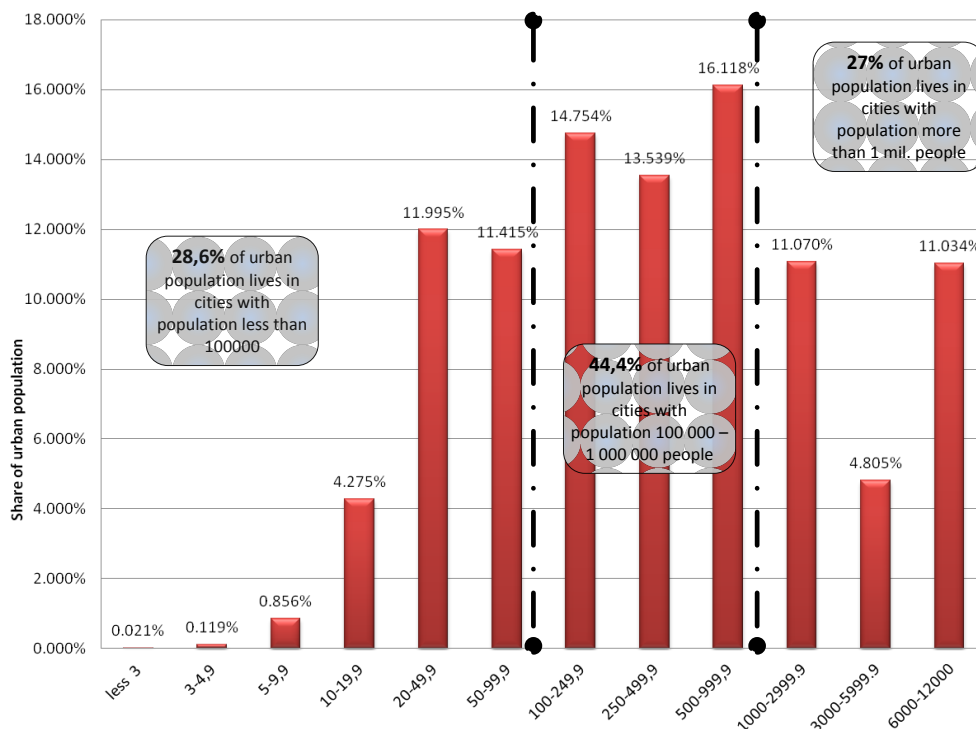


Figure 3. 4 The distribution of urban population among cities with different population level (census 2010)

The rank-size analysis has revealed that the quantitative behavior of urban pattern in Russia does not follow a Zipf's Law. According to this Law, a country's largest city has about twice as many inhabitants as its second-largest city, three times as the third-largest, etc. Saint-Petersburg is a country's second-size city, has a population around 4,8 million people, which is less than half of Moscow with its 11,5 million population. Furthermore, the cities with population over one million do not reach a limit of two million residents. Certainly, now Russia is a country of small cities with a lack of big cities. Hence, approaching to balance in urban population redistribution, existing Russian urban system demands cities with populations between 1.5 - 6 million inhabitants.

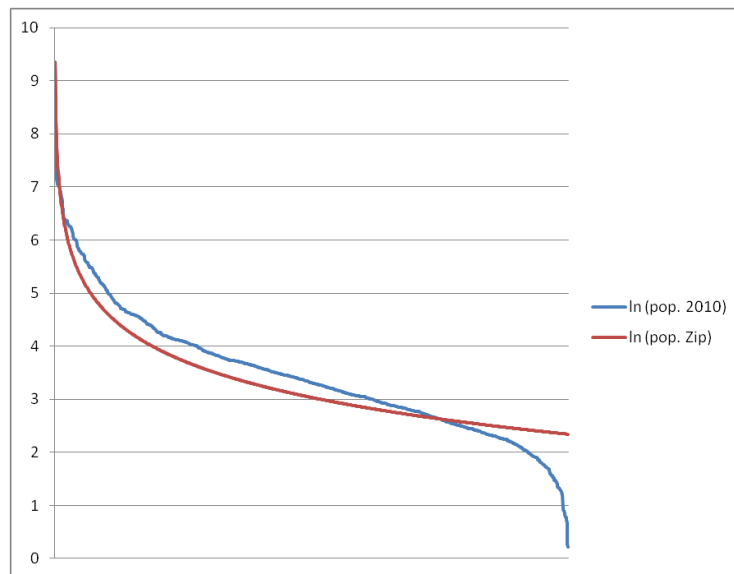


Figure 3. 5 *Zipf's Law for Russian cities for the year 2010*

Although Russia is a country of small cities, at the same time its space is a hyper polarized due to Moscow. Although Russian capital is an enormous city which concentrates around eleven percent of all Russian urban population (and eight percent of all country's population), this spatial pattern is not unique and could be found around many countries. Most European countries have not reached a balanced urban system in which the various levels of urban hierarchy are adequately filled. In most of the countries a primate city (always the capital) dominates the urban system. London, Paris, Dublin, Lisbon, Copenhagen, Vienna, Stockholm, Helsinki, Athens and Luxembourg are such distinctly primate cities (Van der Berg et al., 1998).

Likewise the general concentration index of urban population in Russia is equal to 0.9964 and among Federal Districts this index varies from 0.775 in Northwestern *FD* to 0.526 in North Caucasian *FD*. In other words, such high value of concentration index has proved highly uneven distribution of urban population across the country's cities and towns.

The results show, that Russia is the country of few large cities with a lot of small ones. Elvira Nabiullina, former Minister of Economic Development, has estimated this situation a preciser, stated that now the country is one growing major city and shrinking small towns (Trapkova, 2012).

3.3. Uneven spatial development

Russia is a very heterogeneous country from the distribution and density of population. Eighty three Federal Subjects are differing from areas, population density, and climate to GDP, industries and main economic indicators. As a result this heterogeneity creates additional obstacles for planning a harmonious settlement system for a whole country. There is a great uneven development along Russia as well as along Russian cities.

Similarly with distribution of the country's population the city's allocation across the country is strong polarizing in its central part. Central and Volga Federal Districts (together they have ten percent of the country's area only) concentrate forty-six percent of all cities and around fifty percent of the urban population. The distribution of cities between *FDs* according to their population is represented in Figure 3.6.

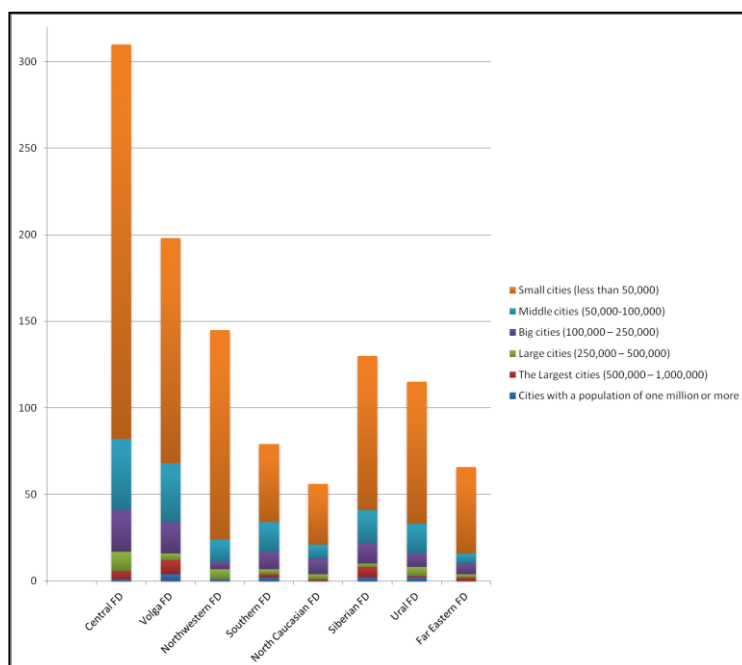


Figure 3.6 *The cities distribution among Federal Districts*

Hence, the Russian city system has a high density of population and concentration of cities in the European part of it, embraced Central, Volga, North-West, Southern and Caucasian Federal Districts; and on the contrary a

very rare network in a remainder part of the country which comprises Far Eastern, Siberian and Ural Federal Districts. Ural can be considered as a border between two country's spatial urban patterns. As a result provisionally Russia can be divided in two parts; there are European and Eastern spatial urban patterns. European pattern has a mono-centric structure with a core in Moscow. It embraces forty-six Russian regions. Although the European pattern occupies only 23.2% of the country's area, it includes around seventy-three percent (72.6%) of urban population and seventy-two percent (72%) of all cities and towns. There are 788 from 1100 of all Russian cities including eight cities with populations over one million people and sixteen cities with population between 500.000 – 1.000.000 inhabitants. In contrast, although the Eastern urban pattern occupies around seventy-seven percent of the country's space only thirty-eight and half million people live in this area including around twenty-nine million of urban residents. The average population density is less rather low and it is significantly less than in the European part. Furthermore, there are only twenty-eight percent of all Russian cities and towns, including four cities with populations over one million inhabitants and nine cities with populations between 500.000 – 1.000.000.

The population distribution correlates with the cities distribution. Most of the population is concentrated in the European part of it, in Central, Volga and North-Western FDs. The population distribution among Federal Districts is represented below in Figure 3.7.

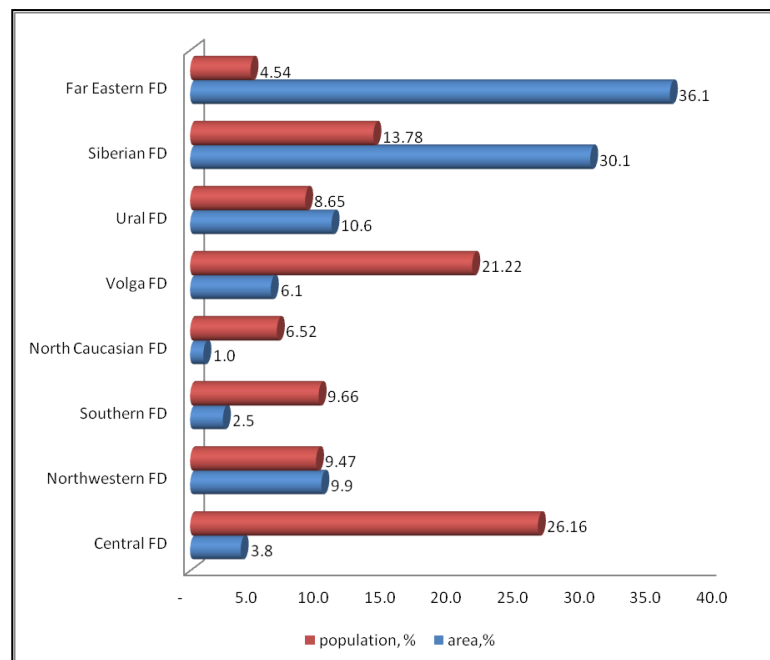


Figure 3.7 *The distribution of population among Federal Districts (2010 Census)*

The average population density in Russia is 8.3 persons per sq. km. Central Federal District has the highest density, which accounts 57.1 persons per sq. km. Based on different sources (Rosstat, 2012, Sobyenin, 2012) density of the Moscow population varies from 9,682 to 10,659 persons per sq. km. And it is one of the highest densities among World cities. In contrast, Far-Eastern Federal District has the lowest density, which accounts, one person per sq. km., moreover density of the Chukchi Peninsula (Chukotka) is 0.1 persons per sq. km only (Rosstat, 2010).

In spite of significant attempts of the Soviet government to populate Siberia and Far East statistics shows that after the USSR collapse these parts of Russia have experienced a huge population loss (Table 3. 2). A number of studies have found that yet since 1959 the great turnover had happened and Siberia became the main area of out-migration in the USSR (Medvedkov, 1990; French, 1995; Lewis and Rowland, 1979). Between 1959 and 1970 there was a net out-migration of almost 800.000 people from West Siberia, 60.000 from East Siberia and more than 900.000 from the Urals. (Lewis, R and Rowland, R, 1976; *vestnik statistiki*, no 10, 1968:89). The population growth during 1979-1989 presented in the Table 3. 2 was a result of high birth rate, which was bigger in comparison with out-migration flow. The main reasons for emigration were relatively low living standards. On the other hand, in the western part of the USSR between 60s-70s the industry had been returning to life. There were several reasons (Lewis, R and Rowland, R, 1976):

1. The increased investment in the west, which had many medium-sized cities with a labor surplus;
2. Improvements in transportation facilities, which now make it easier to transport raw materials to the west;
3. The switch in the energy balance from coal to oil and natural gas;
4. The expansion of Soviet trade with the United States and Europe.

Also, as Medvedkov (1990) notes that in 1975, the Soviet made a milestone decision, they stopped funding development. The rate of growth of fixed investment falls dramatically from an annual rate of 7.0% in 1970-1975 to an annual rate of 3,4% in 1975-1980.

The idea about settlement of Siberia and Far East initiated at the beginning of industrialization and supported because of the Second World War and the necessity of people and industry evacuation, since the 70s went to almost zero results and with the USSR collapse has come to grief. For this period the permanent and significant out of migration from these big part of Russia is observed. It was strongly enforced in a period of transition (since 90s).

Table 3. 2 *Changes of population in the Eastern Russia*

	Population increase/decrease			Average year population increase/decrease	
	1979-1989	1989-2002	2002-2010	1989-2002	2002-2010
Siberian Federal District	9,5	-4,8	-4,0	-0,36	-0,51
Altai Republic	11,0	6,3	1,6	0,45	0,20
Republic Buryatiya	15,3	-5,5	-0,9	-0,41	-0,11
Republic Tiva	15,4	-1,0	0,8	-0,07	0,10
Republic Hakasiya	13,6	-3,7	-2,5	-0,27	-0,32
Altaiskii Krai	4,7	-0,9	-7,2	-0,07	-0,93
Zabaikalskii Krai	-	-16,0	-4,2	-1,26	-0,54
Krasnoyarskii Krai	12,6	-2,4	-4,6	-0,18	-0,59
Irkutsk region	10,4	-8,6	-5,9	-0,65	-0,76
Kemerov region	7,2	-8,6	-4,7	-0,65	-0,60
Novosibirsk region	6,1	-3,1	-1,0	-0,23	-0,12
Omsk region	9,5	-2,9	-4,9	-0,22	-0,62
Tomsk region	15,6	4,4	0,0	0,32	-0,01
Far East Federal District	16,1	-15,8	-6,0	-1,25	-0,77
Saha Republic (Yakutya)	28,4	-13,2	0,9	-1,03	0,12
Kamchatskiy Krai	23,2	-24,0	-10,3	-1,98	-1,35
Primorskiy Krai	14,2	-8,2	-5,5	-0,62	-0,71
Habarovskiy Krai	16,7	-10,1	-6,4	-0,77	-0,83
Amursk region	12,1	-14,0	-8,2	-1,09	-1,06
Magadan region	16,3	-53,3	-14,1	-5,40	-1,88
Sakhalinregion	7,3	-23,0	-8,9	-1,89	-1,16
Jewish Autonomous Region	13,2	-10,8	-7,5	-0,83	-0,97
Chukotskiy AO	17,1	-67,2	-6,1	-7,79	-0,79

Not only economical transformation was a cause of loss of population in the Eastern Russia. The most important reason of desertification of Russian space was that during 1995-2009 the country faced a permanent natural population loss. The number of births declined significantly and migration flow did not replace the natural movement. With regard to the total number of arrivals, Russia is the second most popular immigration country worldwide and strongly depends on further immigration (Mansoor and Quillin, 2006). From 2007 the rate of natural population loss has sluggish gone down and in 2012 it has got its historical minimum and if this trend will show positive dynamic in the future Russia could present the trend of natural population growth. At the same time the volume of immigration inflow is growing and in 2012 it has got maxim. As a result of this positive trend Russia shows population growth during the last years. (Rosstat, 2013).

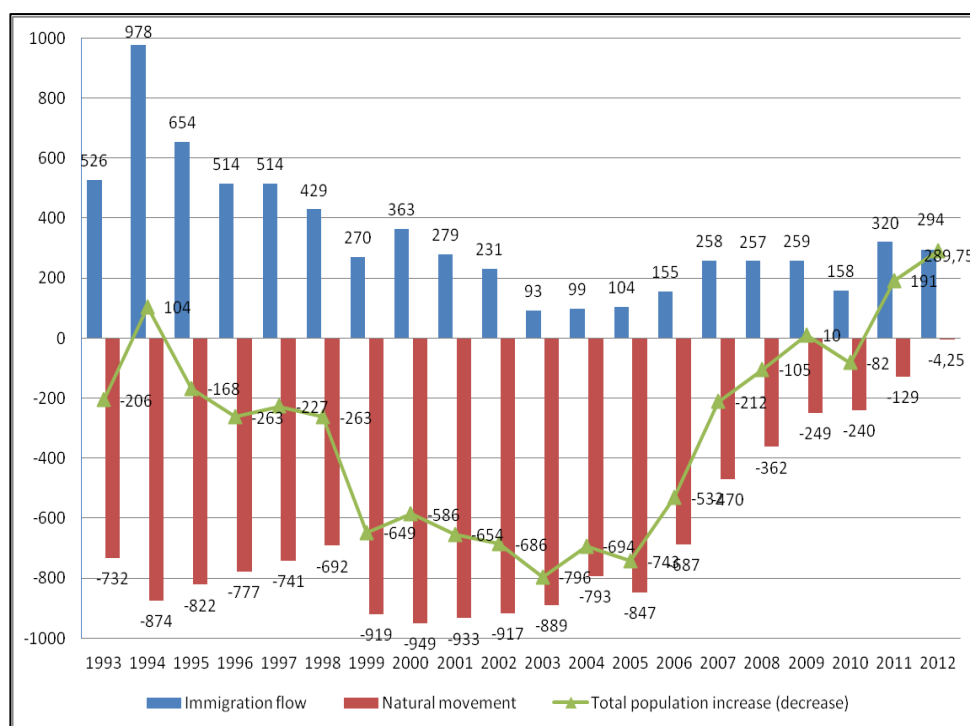


Figure 3. 8 Demographic balance of Russian population 1993-2012

During last decades the urbanization processes have stabilized and varies slightly from year to year, in general the ratio of urban and rural population in the country remains stable and vibrates around seventy three percent. However, from 1991 to 2011 the urban population in an absolute value has reduced by 3,7 million inhabitants; from 109.4 million to 105.7 million, mainly it has occurred due to natural population loss.

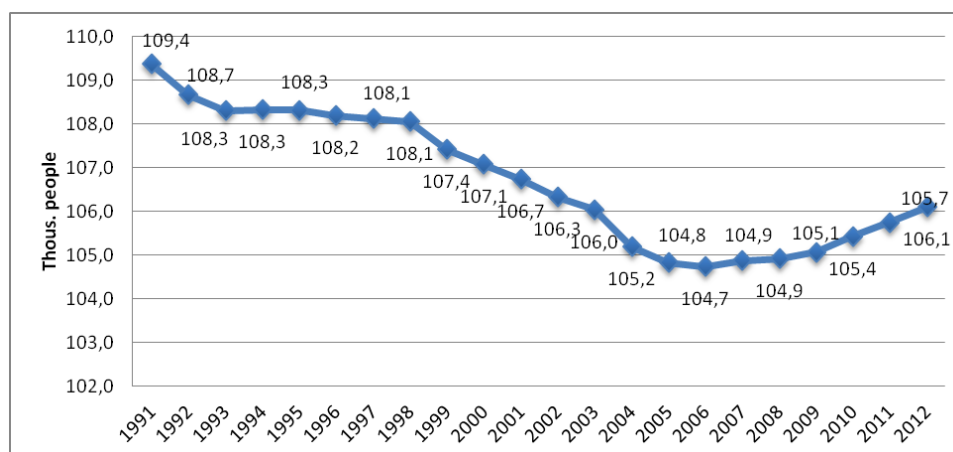


Figure 3. 9 Urban population trend

Considering changes in urban and rural population along the regions we find that both urban and rural population has declined since the collapse of the USSR, but the rural population has decreased faster because of significant in-urban population dynamic.

According to the official statistical information only in two Federal Districts (Central and North-Caucasian) we can observe the growth of urban population. For example, in Central *FD* urban population growth accounts around three percent (+2.9%), however, in fact, only three from eighteen regions of Central *FD* have increased their population. There are Voronejskaja oblast +1.1%; Belgorodskaya oblast + 2.7% and Moscovskaja oblast (without Moscow) + 8.2%. In the meantime the growth in Central *FD* is formed mainly by Moscow city (+ 11%) and Moscow region. There is a population reduction in all others Subjects of the Central *FD*: from -1.1% in Kalugskaya oblast up to -9.7% in Tuskaya oblast. Simultaneously, there is substantially decreasing in rural population, which accounts minus six percent. For example, only Kurskaya oblast has lost around eighteen percent (17.8%) of its rural population. On the contrary, there is a concurrent process of rural population growth and urban population decline in Tuskaya, Vladimirskaya and Ivanovskaya oblast (regions).

In North Caucasian *FD* we observe the growth of both urban and rural populations. But there are differently directed tendencies inside this *FD*. For example Dagestan has more than twenty percent (22.2%) population growth; instead of in Ingushetia we observe twenty percent of population loss.

However, in all others Federal Districts there is a hard decline of urban population. In the North-West the highest outflow of the population has had Murmanskaya oblast (-10.2%). Pskovskaya oblast has lost twenty-two percent of the rural population. In South *FD* only in Krasnodarskaya oblast we can observe the slight increasing of urban population (+0.9%). Furthermore, there is a lost of population in all Subjects of Volga *FD*. The average rate of decline is -3.9%. Only Tatarstan Republic has increased up to +2.3% due to Kazan (the regional capital).

Ural has a different directed population trend among their regions. In some regions we can observe a significant urban population inflow. For instance, in Tumenskaya oblast population growth accounts plus five percent; there is the same situation in the Hantimansiiski Autonomous Okrug. Mainly this increase is connected with gas and oil industry development. All big cities in Hantimansiiski Okrug are growing. The regional capital Hanti-Mansiisk has grown up to forty-eight percent. At the same there is a decline of population in all other regions: Kurgan, Sverdlovskaya and Chelabinskaya. In Siberian and Far Eastern Federal Districts we also see an overall declining of urban population.

The last decades have been characterized by significant changes in the population dynamics of Russia, which could be described as centrifugal

compression of the population in certain areas (Lappo, 2002). A main zone of population concentration, containing 30 percent of all Russian towns, has emerged within a 500 km radius around Moscow (Molodikova and Makhrova, 2010).

As a result of transition period in post-Soviet Russia the uneven spatial development has been intensified with a significant population concentration in a few big cities. The Eastern part of Russia is continually faced with "space desertification".

3.4. Shrinking cities in Russia

A complexity of social, cultural, economic, technological and political changes underlies the processes of growth and decline of cities (Van der Berg et al., 1998). The analysis has revealed a shrinking tendency in many Russian cities; dwell on this urban trend. Seventy-two percent of Russian cities have lost their population in 2010 in comparison with 2002. Among 1041 analyzed cities 750 of them are shrinking. The level of decline varies in different types of cities as well as different parts of Russia have different declining rate. Fifteen Russian cities have lost more than thirty percent of their population. Eighty percent of cities with population less than 50,000 have lost their population. The shrinkage level of Russian cities is represented in Table 3.3.

Table 3.3 Shrinking Cities

Type of the city	The percentage of decline, %						
	In Russia	More than 50%	50% - 30%	30% - 10%	Less or equal 10%	5-10%	Less than 5%
All types of cities	750	1	14	165	570	307	263
Cities with population of one million or more	2		0	0	2		2
The largest cities (500.000 – 1.000.000)	8		0	0	8	1	7
Large cities (250.000 – 500.000)	18		0	1	17	4	13
Big cities (100,000 – 250.000)	53		0	5	48	18	30
Middle cities (50.000-100.000)	90		2	10	78	35	43
Small cities (less than 50.000)	579	1	12	149	417	249	168
Including (10.000-50.000)	440	1	11	100	328	188	140
Including (less than 10.000)	139		1	49	89	61	28

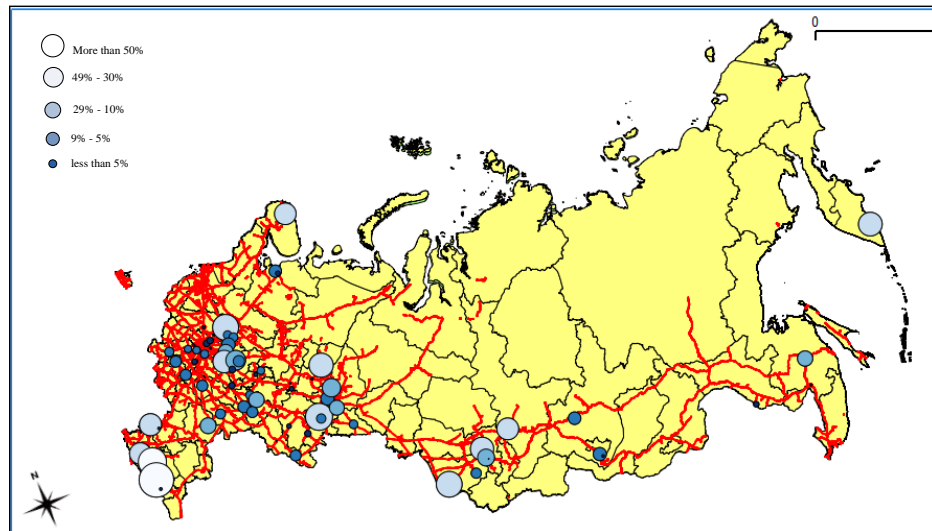


Figure 3. 10 *Shrinking cities in 2002-2010*

In the modern period of Russian urbanization reasons of city shrinkage are various. The main causes of urban shrinkage in Russia are:

1. Natural demographic changes: low birth rate, high mortality rate and population ageing;
2. Economic decline which has been promoted by changes in social-political regime and have been presented in terms of industrial collapse, business failure of many enterprises, including enterprises forming a company town;
3. Increasing Moscow region's attractiveness, where people can earn much faster in comparison with any other region (city);
4. Severe climate conditions of Northern cities without any economic or social incentives to stay there. During the Soviet period there were, the government support for stimulation people to stay in northern cities, including high salaries, social advantages in terms of housing, schools and kindergarten for children. Recently this government support have been significantly reduced and cannot counterbalance the advantages of central Russia;
5. out-migration of population from rural areas and from small cities towards regional capitals, where housing and social conditions much better. The poor housing and environmental conditions due to dilapidation and neglect that drove people out of the city.

The causes of urban shrinking are often interconnected and it is an intersection natural demographic trend with economic, social and institutional reforms.

Instead, only twenty-eight percent of cities have increased their population from 2002 to 2010. Nine cities with more than one million inhabitants have added 1,652,286 people; it is around one percent of all urban population. But

the lion's share of it belongs to Moscow. Its population has increased more than eleven percent and it is 1169.13 thousand people. That is around seventy percent of all population growth in this group of cities.

Table 3.4 *Growing cities*

Type of the city	The percentage of increasing						
	In Russia	More than 50%	Less or equal 50% and more than 30%	Less or equal 30% and more than 10%	Less or equal 10%	5-10%	Less than 5%
All Cities	291	6	12	67	206	50	156
Cities with population of one million or more	10	0	0	1	9	2	7
The Largest cities (500.000 – 1.000.000)	17	0	1	3	13	2	11
Large cities (250.000 – 500.000)	21	0		4	17	5	12
Big cities (100.000 – 250.000)	37	2	2	10	23	9	14
Middle cities (50.000-100.000)	57	1	4	14	38	9	29
Small cities (less than 50.000)	149	3	5	35	106	23	83
Including 10.000-5.0000	138	2	5	32	99	20	79
Including less than 10.000	11	1	0	3	7	3	4

As shown in Table 3.4 the urban growth is quite chaotic process. Urban growth is observed among cities of different size. Therefore, in general we could agree with Polyan et al. (2005) that apart from Moscow and St. Petersburg the following group of cities have experienced population growth:

- Cities in the North Caucasus are growing as a result of natural increases and migration inflows (Nazran, Khasavyurt, Makhachkala, Nalchik, Kislovodsk, Armavir);
- Centers of oil and gas exploration with large net migration increases (Surgut, Tyumen, Neftekamsk);
- 'Gateway' towns in border regions such as Belgorod, Novorossiysk and Kaliningrad.
- Cities in the ethnically non-Russian Povolzhye (in the Volga Federal District), which are growing due to high natural population increases and a stream of migrants (e.g. Kazan and Cheboksary);
- A group of new economic growth centers with labor-intensive industries (Togliatti, Volzhskiy, Staryy Oskol, Lipetsk).

- Growth of several cities is caused by the expansion of their territories and the inclusion of neighboring settlements (Kopeysk, Artyom, Norilsk, Khimki, Balashikha, Novy Urengoy).

However, more precise analysis of urban size transformation will be conducted below in Chapter 5. Although the results of this study do not explain why different cities act differently in post-Soviet reality, nevertheless they provide the general understanding of the ongoing process of urban space reconfiguration.

3.5. Transport infrastructure and city system

Having defined the city system transformation trends, we could start to move to the explanation of this process. Transport infrastructure is a vital element for the city system formation as well as for urban development, it embraces all cities in one conglomerate and allows them working and collaborating, ipso facto gives life or doom to failure.

Currently Russia has a quite “weak” city system in terms of connectivity and transport accessibility. The distances between the cities are huge and connections among them are poor. For example the distance between Moscow and St. Petersburg is more than 800 km. And between Moscow and Vladivostok is around 9.000 km., which demands almost nine hours by plane. Many settlements do not have a permanent (year-around) connection with transport infrastructure, they are isolated from "the mainland". As a result, Russia is characterized by pronounced territorial disconnection.

As was explored in the previous paragraph, the country conditionally could be divided into two parts: European and Eastern. The European pattern has a star-formation transport network, radiate from Moscow. The main transportation arteries of European part are going around Moscow to the North (Murmansk), South (Sochi), West and East. Transport infrastructure is mainly concentrated in and around Moscow hub. Almost all regional capitals have a connection between each other and are connected with Moscow. Inheriting star system Russia has a very poor interregional and intercity connection also in the European part. The horizontal connection among cities is very low and in many parts is absent. The Eastern transport network has a linear form and mainly constructed by Trans - Siberian and Baikal-Amur railways, a poor road network and a few airports which are situated in regional capitals mainly or in northern oil-gas cities which do not have neither road nor railway connections. Besides that the 'eastern' transport network characterized by industrial railways branches which are belonging to oil-gas corporations as well as enterprises specialized in natural resource extraction.

Trans-Siberian railway remains the vitally important magisterial for the development of a significant part of cities situated in Siberia and Far East. Currently 87 cities are situated along Transsib railway: five with population more than 1 million people (Moscow, Perm, Yekaterinburg, Omsk, Novosibirsk), nine with population from 300.000 to 1 million people (Yaroslavl, Kirov, Tyumen, Krasnoyarsk, Irkutsk, Ulan-Ude, Chita, Khabarovsk, Vladivostok) and 73 with a population less than 300.000 people. 14 cities are the regional capitals.

According to The World Bank Report the state of Russia's transport infrastructure is generally poor for an upper middle income country and has been declining due to underinvestment in maintenance and rehabilitation (Bogetic et al., 2010). In the released *2012 Enabling Trade Index* (World Economic Forum), Russia ranks 56th (48th in 2010) on the availability and quality of transport infrastructure. This rank estimates the state of transport infrastructure across all modes of transport in each country, as demonstrated by the density of airports, the percentage of tarred roads, and the extent to which they are congested, as well as the transshipment connections available to shippers from each country. Now, transport infrastructure is a restriction for the country's economic growth. Further development of Russian cities and their cohesion depends heavily upon the development of transport networks.

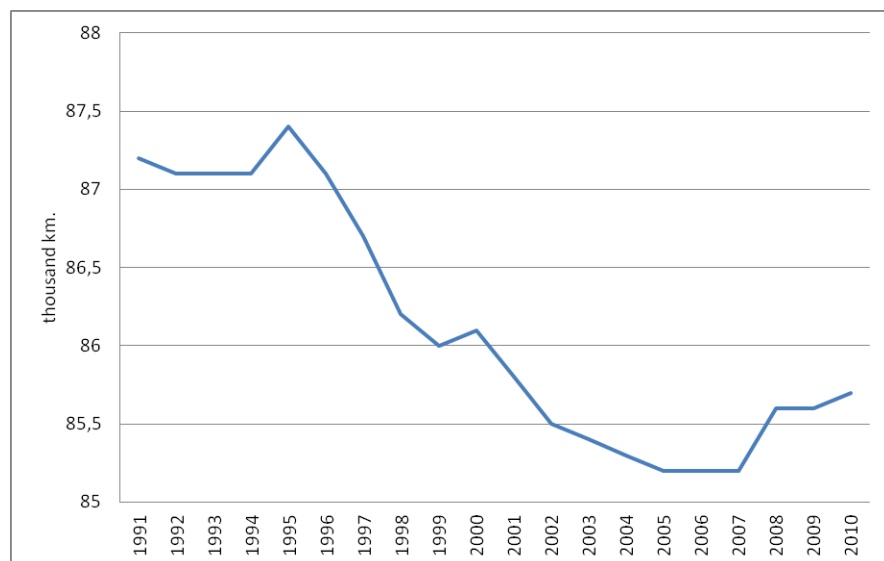
According to the World Economic Forum's 2012 Enabling Trade Index Russia's railway infrastructure quality ranks 30th in the world (33rd in 2010), relatively good, but still significantly behind the Western European levels which the country aspires. Although Russia has the world's third-largest railway network after the USA and China, the total length of Russian railway in 2012 is around 86 thousand km (for general use) and 38 thousand km for industrial use, besides it the railway density is very low and as a result the connection between settlements is unsatisfactory. For instance, only seventy-eight from eighty-three regions have railroad tracks. Altai, Tiva, Kamchatka, Magadan and Chukotka don't have a railway connection at all. With its vast territory, Russia is far inferior to developed countries and nothing near so density of main transport infrastructure (Table 3.5).

Around sixty two percent of all railways are concentrated in the European part of the country; with the highest density equals 261 km per 1000 sq. km of area in Central FD and the lowest in North-Western FD which accounts 78 km per 1000 sq. km of area. At the same time the highest density in Eastern pattern accounts only 47 km per 1000 sq. km of area and it is in Ural FD. Far East has the lowest railway density at the level of 13 km per 1.000 sq. km of area. There is an identical situation with motor roads. The highest density at the level of 242 km per 1000 sq. km of area is in Central FD and the lowest one is in Far Eastern FD; it accounts only 7.5 km per 1.000 sq. km of area.

Table 3. 5 Length of rail roads and motor roads for the year 2008 (Rosstat).

Country	Railroad tracks		Motor roads	
	Operating length, thousand km	Density, km per 1000 square km of area	Roads - total, thousand km	Density, km per 1000 square km of area
Russia	85,6	5,0	793	46,4
Germany	33,9	94,9	644,5	1805
China	63,6	6,7	3584	373,3
The UK	16,2	66,7	420,0	1729
The USA	226,7	23,5	6516	676,6
France	29,9	54,2	951,1	1725

Currently the volume of new railway construction is very low and modernization of existing network practically is not realized. The statistical data shows the decreasing of railway length that is also connected with the closing of some manufacturing at the remote country's districts (Figure 3.11). That has a negative impact on the existing settlement system, because some small cities and villages have lost one of possibility and sometimes the only way of connecting.

**Figure 3. 11** The length of railway of general use, thous. km

Since 2002 the development of railway network has been realized on a few directions such as "Kuzbass - Azovo-Black sea hub", "Kuzbass - Far-East hub", "Kuzbass - North-West", the line Berkakit - Tommot - Yakutsk (source of JSC "Russian railways"). This new railway construction is connected with industrial development and has little value to city system development.

Turning now to the motorway network around Russia. The length of

motorways is around 903 thousand km in 2012. As seen from Figure 3. 12 the situation with a highway construction is much better than with railway construction. But it is worse in comparison with the Soviet period when around 10.000 km of roads had been constructed yearly. Now only one fifth of that period is constructed. It is not enough for avoiding space disconnection. In spite of the increasing of length of highways, up to now the federal road network connected all regions is not formed. There are places where the road system in one region does not connect to a neighboring region, *e.g.* between Tatarstan and Samara (Kashbrasiev, 2010). Of course, there are border crossings where roads in either region seamlessly could be joined, but it seems that interregional cooperation is so poor that roads at these border crossings are still being repaired or constructed (Kashbrasiev, et al., 2001).

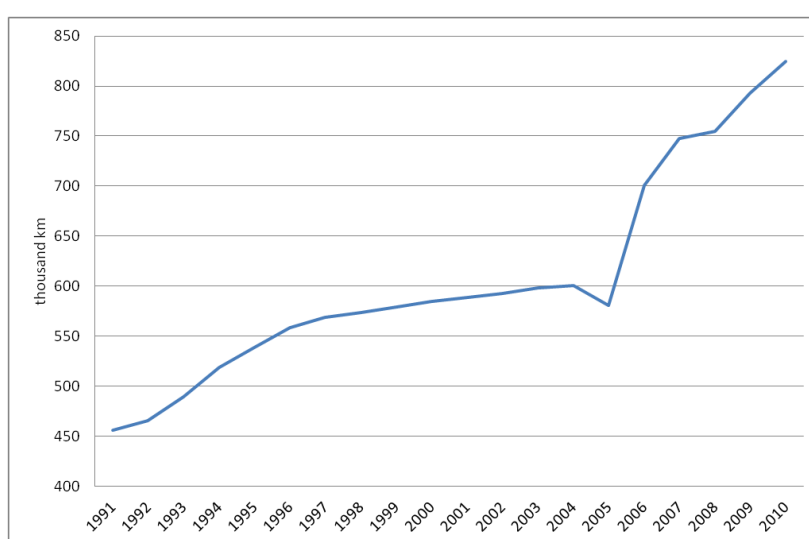


Figure 3. 12 *The length of highway of general use, thous. km*

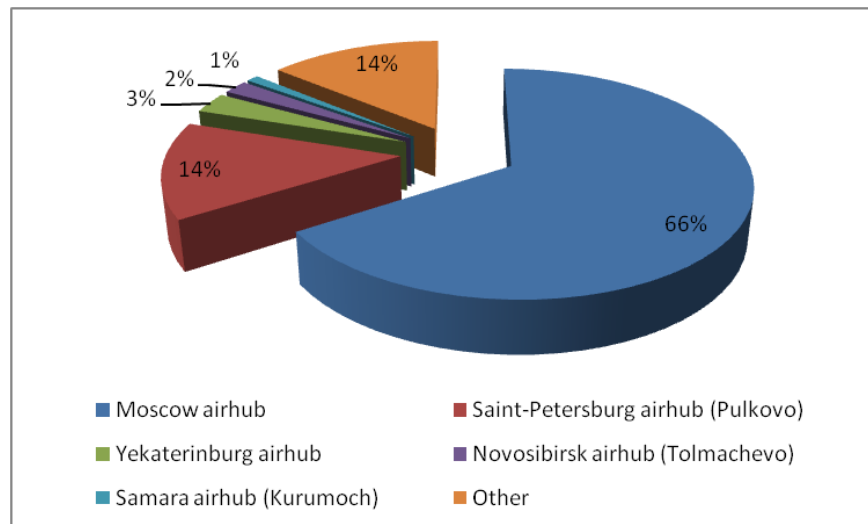
In the released *2012 Enabling Trade Index* (World Economic Forum), the quality of road infrastructure in Russia is ranking at 121st (111th in 2010), and it is among the world's worst situation. This fact is proved by recent surveys of the quality of the federal road network undertaken by federal authorities, which indicates that the majority of the roads do not meet the minimum riding quality requirements. The Russian road system suffers from poor maintenance. Only 38,7% of Federal motorways satisfy the normative requirements for quality of road surface. More than 10% of the Russian population (15 million people) during the summer and autumn period are isolated from "the world" and transport communication owing to absence of hard roads. Around 46,6% settlements (mostly villages) do not have connection with the federal road network. While the quality of transport infrastructure in Russia varies significantly across different modes of transport - and different parts of the country - the road infrastructure is estimated to have deteriorated the most.

Table 3. 6 Length and percentage of the federal road network not meeting standards (2009)

	Length (km)	Percentage
Failing to meet minimum riding quality requirements	28,500	57.1
Failing to meet minimum grip requirements	12,200	24.4
Failing to meet minimum strength requirements	24,900	49.9
Failing to meet minimum defect requirements	35,100	70.3

Source: Avtodor, Long-Term Program of the Russian Motor Roads, Public Company (2010-2015), Dec 31, 2009. (Cited from the World bank Report)

The poor infrastructure of air transport is another acute problem. The network of existing airports has declined by more than four times from 1999 to 2012. There were 1450 airports around the country in 1991 and in 2012 there are only 305 (Morozova, 2012). During the transition period many local and regional airports have been closed one of the main reasons was unprofitable. As a result the centralization of transport network in Moscow hub is increased significantly. Around 66% of passenger traffic is going through the Moscow hub (Figure 3.13). In fact Moscow is only one major international air hub in Russia. Hence, to reach Novosibirsk from Shanghai is possible only to change planes in Moscow; it doubles flight time of transfer as it is. There is a stagnation of local air traffic through regions and increasing international traffic.

**Figure 3. 13** The structure of air passenger traffic in Russia in 2011

According to above mentioned survey the quality of air infrastructure is also comparatively poor - in 2012 Russia ranks 97 (87th in 2010).

The complex survey such as that conducted by Blinkin (2011) has shown that currently the development of the Russian city system is restricted by

inadequate infrastructure, which promotes poor connections among the cities and villages, strong dependence from Moscow. Existing transport network mainly is inherited from Russian Empire and the USSR. After the USSR collapse during twenty years the large-scale transportation, construction has been suspended. Also, as we saw above the condition of existing infrastructure has been deteriorating significantly. Many experts note that during last twenty years transport system has not gotten sufficient investments. Now it is characterized as under-invested and do not have a reserve for the further development (Blinkin, 2012).

All in all the huge Russian territory is not linked by transport infrastructure effectively. Even today there are many small towns which cannot be reached by land at all or only seasonally. As a consequence, it creates great risks for economic development as well as it creates additional problems for city system functioning. Usually transport infrastructure works on space shrinkage and taking into account Russian spaces, transport infrastructure should become an efficient mechanism for reducing regional inequality, connect cities and create a coherent space. However, in reality, interregional and interurban system of highways and railways as well as air transport is undeveloped in Russia. Weak interregional economic relations are explained mainly scanty transport infrastructure; that restricts the economic growth. Urbanization along with the development of transport infrastructure are the most powerful means to effectively passing Russian 'spatial barrier'. The results of this study show that the development of transport infrastructure in the country will be one of the most serious challenges in the coming years in Russia.

3.6. The types of Russian cities

3.6.1. Urban hierarchy

Centrally planned soviet city system has been released based on the creation of strong urban hierarchies and at the same time has generated urban types, particularly for soviet regime, such as closed cities, knowledge cities, one-industrialized cities. Russian movement towards global economy has influenced on inherited soviet urban hierarchy. Possessing various endowments posts-soviet cities have acted variously in new market conditions. So far, this research part explores the current urban hierarchy and contemporary state of main urban types.

With respect to 'central place' theory throughout this subsection, the term urban hierarchy will refer to the city's importance in political, social and economic sphere. From this point of view urban hierarchy could include:

- Cities of international and national importance: Moscow as the capital

and St. Petersburg as the second informal Russian capital and Russian cultural capital;

- Cities of regional importance - Capitals of Subjects of the *RF* (regional capitals) – 81 cities;

- Cities of local importance, or all other cities which are not in two previous groups. The cities belonging to this hierarchy level could be classified better by other classifications, depend on economical base, historical endowments, etc.

Moscow and St. Petersburg approach to the new global cities

The concept of global cities as exceptional centers of the global economy, which form a separate supranational network have become powerful in contemporary social-political discourse (Sassen, 1991; Taylor, 2004). For successful infusion into global economy Russia demands a powerful center. Moscow and St. Petersburg could be the best candidates for that role and since the market economy regains together with government support the cities are restructured with the aim to be a parcel of the global urban - network.

Moscow is the capital of the RF and the outstanding Russian city. During the XX century, Moscow changed from being a city with one million people to the largest European urban agglomeration with population more than twelve million. Moscow functional dominance within the Russian urban system became very apparent in the 20th century and became hypertrophic after the 1990th (Rudolph and Brade, 2005). Saint Petersburg with population around 4,5 million people is the second largest city in the RF and fourth largest in Europe. If Moscow is the place where political, economic and administrative powers are located, Saint Petersburg is the cultural capital with one of the world's largest and most intact neoclassical historic center (Trumbull, 2012).

Due to reorientation of economy from plan to market, country' spatial efficiency in terms of dislocation of foreign companies has improved (Coulibaly, 2012). Being the business centre in the Eastern Europe, Moscow has headquarters of major public and private Russian corporations and banks and recently it has become the largest community of billionaires in the world according to Forbes (Klimanov, 2013). Between 1989 and 2004 almost all new firms chose to locate near Moscow and St. Petersburg, which have been transformed into the gateways to international markets (Brown et al, 2008).

Formerly being the biggest industrial cities in the Soviet Union, Moscow and St. Petersburg lost a substantial share of its manufacturing during last twenty years. The cities' economies have radically changed in the post-Soviet period. A different service industries, including real estate and finances, have

increased rapidly in these two cities and the two cities are better positioned than others to lead Russia's diversification (Coulibaly, 2012).

Currently Moscow generates twenty percent of Russian GDP and eighty percent of all country's financial flows (Sobyanin, 2012). Most of the city's economy is therefore due to the service industries involved in the global networks. But the concentration of services has not solved many current problems in the city's development of Moscow. These strategic problems include low quality of life of citizens, lack of many public goods and social services, transport collapse and other negative elements of city's spatial structure (Klimanov, 2013). These planning problems are ones of the major obstacles to the development of Moscow as an international finance center and world-city.

Compared to Moscow, St. Petersburg was underinvested through most of the 1990s (Trumbull, 2012). Its financial power and role in the Russian economy is significantly lower in comparison with Moscow. From this aspect Russia follows path dependency when only one city - Moscow, could be prominent in the global economic and political landscape (Hall, 1998, Golubchikov, 2010). At the same time as any Russian city, St. Petersburg has faced with a complex transition process, including spatial restructuring, privatization and commercialization of land use (Sykora, 1994, Stanilov, 2007) that have transformed significantly urban landscape

To approach a city to the global urban-network, Russian government following the series of certain steps: the attraction of the head offices of global corporations; intensive infrastructural development; the creation of 'highly urbanized' built environment; the location of federal executives and large projects and important institutions (Golubchikov, 2010). The efficiency of these actions will be seen later, but recently we have observed a mix of success and failures. On the one hand the cities have the highest level of life, but on the other hand the significant deterioration of the built environment is becoming more notably.

Cities of regional importance

Regional capitals form an intraregional urban network, which more or less embraces all territory of the RF. They are the most important cities on the national scale. Actually, there are eighty-one regional capitals (NB. Moscow and Saint-Petersburg are capitals of the Subjects of the RF and independent Subjects of the RF simultaneous). These capitals have a main role in terms of dynamics and socioeconomic development in Russian regions. Thirty-eight percent of all Russian population, representing more than fifty-one percent of all urban inhabitants, live in regional capitals. In fact, all fifteen Russian cities

with populations over one million residents are regional capitals. As a matter of fact, this group of cities has two main strategic features. The first one is a vantage economic-geographical place and the second one is a high industrial potential. They take place in key sectoral and territorial structure of the Russian economy. For example, Novosibirsk and Tyumen have a highly strategic location. They are two main cities in Siberia and they are situated along the main transportation hub – Trans-Siberian Railway. Yekaterinburg is the main city in the Ural. Kazan, Samara, Volgograd, all of them have a strategic economic location at the intersection of main transport infrastructure. Consequently, in these cities significant and sometimes overwhelming part of economic, financial, scientific, educational, social and infrastructural capacity of a whole region are focused. Moreover, these capitals also concentrate organization of the tertiary sector, acting as a region-wide medical, educational, cultural, banking, and other countries, while being also major transport hubs. In other words, all these advantages make them a real engine for national growth. Hence, they are nodes of the settlement pattern and provide the territorial, economical, and cultural cohesion inside the regions.

Although regional capitals have a common thread; in the meantime, they are deeply various in a case of population, level of economic development, attractiveness for people. For example, the smallest regional capital Anadyr (Chukchi Peninsula, Far East *FD*) accounts only 0.013 million people, in contrast Moscow population is 11.551 million people. Furthermore a rank - size analysis, among regional capitals has revealed a lot of capital with a small population also. This fact is a result of rapid country urbanization during the Soviet period. Birobijan, Kizil, Elista are absolutely new cities, they have existed in the ‘empty’ place due to support a strategic concept of Soviet Union spatial development.

In spite of regional capitals can be considered as points of attractiveness, there is also a population decline in thirty-eight from eighty-one regional capitals. The biggest loss from 2002 to 2010 was in North-Caucasian *FD*. Nazran has lost around twenty-five percent of its population, and Nalchik has lost more than eleven percent (11.5%) during the same period. At the same time eight from eighteen (44%) regional capitals in Central *FD* have lost from two to five percent of their population. Among them are Tula, Ivanovo, Kostroma, Orel, Tambov, Yaroslavl, Kaluga, Bryansk. It means that in Central *FD* regional capitals go under to strong competition with Moscow. In Volga *FD* eleven from fourteen regional capitals have lost their population. In comparison with Central *FD* this decline is not significant; the most capitals lost their population in the interval from 0.1 to 2%; for instance, Penza has lost 0.12%, Saransk has lost 1.9% of its population. However, the shrinkage of regional capitals in Volga *FD* has the same cause with Central *FD*; yet even regional capitals are not valid to struggle for human resources against

Moscow. More stable situation in Siberia and Ural. In these districts only Irkutsk and Kurgan has population decline. In other words, the regional capitals which are staid aloof from Moscow may retain their population more successfully than Moscow's neighbors.

The third level of proposed urban hierarchy is constituted by cities which do not belong to the previous two. Being the most numerous hierarchical level the cities are very diverse in their functional base, size, location, etc. In general case the cities could be classified based on their specialization: industrial cities; transport hubs (port cities and rail junction); knowledge cities; touristic cities. This classification is not a one-folder. Some cities could be industrial and transportation centers simultaneously. Below specific types of cities will be considered: mono-industry cities; ZATO and Acdemgorodki.

3.6.2. Mono-Industry cities in Russia

One-company city in Europe and mono-industry city in Russia are not exactly the same. In Russia mono-industry cities are called Monocities/Monotowns (in Russian they are named Monogoroda). They present the settlements with an economic base dominated by the single industry or core enterprise. Mountains are not necessarily one-company towns, often they have more than one core enterprises, but all of them belong to one industry or connected by one production cycle.

In Russia monocities is mainly a soviet legacy. In a massive drive for industrialization and urbanization, Soviet planners created them at "rational" locations, in their minds a contrast with the "chaotic" and "wasteful" patterns of the capitalist economies (Bogetic et al., 2010). As it is discussed above during Soviet period, Russia's urban settlements grew rather rapidly, significant part of them has been founded in geographically inhospitable areas to the north and east of Central Russia. The main principle was the spatial division of labor, which meant maximum regional specialization in some types of production within the autarkic national economy, underpinned by military, strategic, political, and economic rationales (Bogetic et al., 2010). Many Soviet Russian cities were developed around major industries (e.g. mining, oil, machine processing, etc). Quite frequently, these industrial enterprises formed the heart of the city, providing not only jobs for people, but also a service sector (health, education, heat, sewage, electricity). These cities were in effect built to serve the industrial enterprises (Urbanization Knowledge Platform, 2011).

After the USSR collapse in transition period these cities were more problematic (Lappo, 2012). With market conditions, these types of sites have

become an actual problem for Russian economy as well as for Russian spatial development.

In spite of the problem of Russian monasteries is singled-out at the national level, the precise amount of this city is not defined. There is no firm consensus on what constitutes a Monotown or on how many Monotowns there are. The most authoritative study, “Monotowns and Core enterprises,” commissioned in 1999–2000 by the Ministry of Economy, classified 467 cities as Monotowns - where around 25 million people live. Currently, according to different researches and criteria, there are from 150 to 700 one industry towns in Russia (Zubarevich, 2005, Lubovniy, 2004).

In 2009 Russian Government has developed a Federal program which is aimed for supporting single-industries cities. According to official statistic now there are 335 mono-cities /more correctly mono-settlements/ in the *RF*. These 335 settlements include 229 cities and towns, 56 settlements of urban type and 50 communities (settlements, villages).

Table 3. 7 *The distribution of mono-industry settlements among Federal Districts (based on official government list)*

Federal District	Amount of the Subject Of the <i>RF</i>	The amount of single-industry cities/settlements	Population, thousands people
Central	13	72	2676,57
Northwestern	7	41	1047,98
Southern	4	10	749,11
North-Caucasian	1	4	219,69
Volga	12	87	4286,37
Ural	5	43	3323,43
Siberian	8	53	3143,25
Far-East	5	25	410,75
Total:	55	335	15857,15

Around sixteen million people live in Russia’s mono-industry towns. The list of this type of cities includes three regional capitals as well, among them are Tver', Lipetsk, Astrakhan and a number of major industrial locations, such as Cherepovets, Tolyatti, Vorkuta, and Nizhniy Tagil. At the same time more than eighty-five percent of single industry towns have less than 100.000 residents. However, Russia is characterized by a significant number of large and extra large cities that are at the same time single-industry cities (Zemlyanskiy, 2011).

Table 3. 8 *Size and population of mono-industry cities*

Cities' population, thousands people	500-1000	300-500	100-300	50-100	20-50	5-20	Up to 5	Total
Amount of cities	5	3	24	49	96	110	48	335
Amount of inhabitants	2779,36	1192,00	3851,61	3398,89	3203,74	1288,53	142,88	15857,15

Many of these cities faced ever increasing population decline. The total population of Russia's single-industry towns has declined by 1.1 million people in eleven years. The population has decreased in 183 single-industry towns. Some of them even lost more than one third of their population. For instance, Vorkuta has lost 36% of its population, Inta, 40%, and Raichikhinsk, 50% (Zemlyanskiy, 2011).

Many Monotowns are in manufacturing, fuels, metallurgy, food processing, and timber and pulp. Therefore, the problems of Monotowns in Russia - competitiveness, diversification, technological upgrading, jobs - are largely the problems of soviet inherited urban-based manufacturing (Bogetic et al., 2010). Because of cardinal changes in national economic base Monotowns went through difficult periods of ownership and restructuring reforms and phases of boom and bust. Most of the Monotowns' core enterprises were privatized in the 1990s, ending up in the hands of large Russian industrial conglomerates, which sought to free themselves of social service obligations. In uncompetitive industries, such as textiles and machine-building, most went bankrupt by the late 1990s, bringing further decline to the towns (such as the old textile area of central Russia).

The situation reversed again with the Great Recession in 2008–2009. Most core enterprises are in industries hit by the collapse of global and industrial demand - machinery, metallurgy, chemicals, wood and paper products. With core enterprises facing a massive demand slump, the main social issue became unemployment. With narrow economic bases, large-scale layoffs, and few short-term opportunities for alternative employment, Monotowns took the brunt of the crisis. And limited outmigration - due to economic, social, and cultural factors - made the problem of Monotowns even more acute.

Mono-cities have a set of disadvantages in comparison with multi-functional ones. Lappo called Russian monocities - "embryo" of real cities (Lappo, 2012). Most monotowns, have narrow and inflexible structures including obsolete physical capital, crumbling infrastructure, and an immobile population. The system of soviet monocities "worked" as long as relative prices were controlled to reflect domestic planning priorities rather than

international relative scarcities, but it collapsed in the face of market realities when prices were liberalized (Bogetic et al., 2010). Under new market conditions only a few of the enterprises can compete in international markets. Many soviet monocities produce the wrong products in the wrong places (Bogetic et al., 2010). Economically unviable Monotowns are similar to the once booming mining towns that became “ghost towns.”

Shifting work arrangement together with the high migration constituent, building of temporary towns without proper infrastructure, impact of rigorous climate conditions, and monopoly control of life by enterprises forming a company town - all these resulted in serious problems of the *northern* mono-towns:

- Dependence of the standard of living of the vast number of townsmen on stability of one producing company, prices for energy resources, political factors (for example, the conflict with Yukos Oil Company);
- Weak possibilities for a dialogue between the society, government bodies and producing companies (per se, government bodies and the public of a particular mono-town don't have powerful leverage for the enterprise forming a company town, which is the main taxpayer and employer in the town);
- Paternalism from the side of enterprises, i.e., in the most mono-towns the social sphere, health care service and leisure are financed by enterprises, thereby increasing their costs and reducing competitiveness; per se, the enterprises “privatize” the social sphere and the issues connected with it (Lefevre, 2008);
- Serious ecological problems, which are the result of the crude, outdated approach to hydrocarbon production and temporary, shifting work arrangement (Pit, 2011).

3.6.3. ZATO - closed cities and Academgorodki - knowledge cities

In the middle of the 20th century the USSR started to form a network of "closed administrative-territorial settlements" ("closed cities" or more precisely closed settlements as it could be rural, in Russian ZATO - 'zakrytye administrativno-territorialnye obrazovanya'). ZATOs are the cities created especially for development of nuclear industry and for construction, military infrastructure and they could be considered as an outcome of 'cold war' with capitalist countries. During a long period of time these cities were under secret. Meanwhile, closed cities can be identified as cases where the nuclear industry, armed forces and munitions industry were deeply involved in establishing towns in the Soviet era. More often than not, they are physically distinguished by boundaries set by a concrete wall and require special permission to visit (Tokunaga, 2005). The first public information about

ZATO has appeared only in 1992 when Federal law "About ZATO" has been accepted. Recently there are about 40 ZATOs in Russia, among them are 25 cities (Lubovniy, 2013). ZATOs are scattered across Russia. For state and population security the nuclear ZATOs are situated far from Moscow (far from Central Russia) mainly in Ural and in Siberia regions.

ZATOs are a special settlement by many points. First of all, they have been planned as autonomy settlements, they had a special system of goods provision. Secondly, they have a high level urban planning, complex building environment, the streets are wider, the higher quality housing. Each ZATO city had its own theatre and a wide (in comparison with all other Soviet cities) specter of social services. The highest level of living was a peculiar compensation for the "closed life", for the isolation. Tokunaga (2005) calls these cities as "elite towns", which are successfully combining a high standard of welfare with ample funds for significant investment under Soviet era. However, the exclusiveness and isolation of these cities became a negative factor during the transition to a market economy. The cities which economic base 100% formed by government demands on special productions and which are isolated from the general city system under market conditions were doomed to failure.

Currently these territories enjoy a special status, that are under the jurisdiction of the federal government (Ministry of Defense and Ministry of Nuclear Energy). ZATOs have some priorities under other cities, mainly it is a financial government support. ZATOs receive their intergovernmental transfers only from the federal government, which means that financially they are independent of the regional governments. Until recently ZATOs were allowed to retain all taxes collected in their territories, including the regional and federal shares. Any financing gaps between ZATOs' expenditure needs and revenues are covered directly from the federal budget. At present discussions are under way in the Russian Government of whether the number of ZATOs should be drastically reduced, and preferential tax treatment that they so far enjoyed cancelled. If those plans come true, most of ZATOs will lose their special status and become ordinary municipalities. On the other hand, Brock (2000) argues that the system closed cities can be seen as a fiscal archipelago weakening Russia's ability to become a true federation, due to that each ZATO has little own revenue authority and remains dependent on federal authority.

Academic towns (knowledge cities) can be included in the category of closed cities, featuring higher education and research institutions all grouped together on the outskirts of big cities such as Akademgorodok (the base of the Siberian Branch of the Russian Academy of Sciences) in the suburbs of Novosibirsk, or Akademgorodok in the suburbs of Tomsk, or Dubna in

Moscow, etc (Tokunaga, 2005). Academic towns represent unique concentration of technological and intellectual resources and a potential to become centers of modernization and innovation in Russia (Stanilov, 2007). As Molodikova and Makhrova (2007) argue during the transition period the special types of socialist towns including academic towns and closed cities were converted to "dormitory towns" serving their regional capitals due to their mono-functional, highly specialized urban base.

3.7. Conclusions

This chapter was set out with the aim to understand reconfiguration of city systems. On the one hand the city system transformation is influenced by socio-demographic changes which during the last decades is characterized by high mortality and low fertility; significant and continue depopulation on the vast Far East and Siberia areas; worsening of transport accessibility. On the other hand the end of a centrally planned economy and Russian attempt of integration into the global economy has influenced on inherited soviet urban hierarchy. After the USSR collapse, the soviet spatial pattern has been degraded significantly. Many cities, especially cities generated by the soviet regime such as closed cities, knowledge cities or one industry cities have been lost among the general strategic development of the whole country.

The result of this study has proved that in spite of desperate attempts of the soviet regime to equalization of Russian space, contemporary Russia has an unbalanced city system. Under the new political regime engaged with removal of migration barriers (the limitation of urban growth, the institute of "propiska"), the new highly uneven spatial landscape has emerged in Russia. Russian space conditionally has been divided into two parts: the European part of Russia with quite developing city system, while Eastern Russia is characterized by dispersing city system poor connected by transport infrastructure. Further, during the last decades due to significant transport network deterioration the state of city system belongs to eastern Russia has got a negative impulse for the further development.

In spite of Russia is a country of small cities (85% of cities have populations less that 100.000) more than 70% of the population lives in a few big cities. The strong and centripetal movement is gaining the strength. The current study has shown that during the last decades, population is concentrated on Central and Sothern Russia, in few regional capitals, in St. Petersburg and in Moscow. Moscow collects 70% of Russian immigration flow. Against the background small cities became smaller. The competition among regions and cities for sources: investment, people, knowledge became more and more evident.

Moscow has been distinguished from all other Russia far before, but after the USSR collapse the city has “separated” from Russia finally. Recently everything rushes to Moscow: money flow, business, tax flow, people flow. This process is supported by the government, which is trying to promote Moscow as a new world city. We can draw a conclusion that Russian space is polarized because of Moscow is the only strong zone of economic activities for the whole country. Saint Petersburg could be counterbalanced, and the government takes a measure for improving its position, but up to now the city is quite behind the Moscow. To prevent the proliferating growth of Moscow is necessary to think about development of attractive and vibrant cities all around the country. Some activities are needed to upgrade the urban functions; among them could be: development of transport infrastructure, which allows shrinking a vast territory; defining strategic functions for different types of cities, which allow developing a labor market; as well as improve housing conditions and social infrastructure in cities.

The opposite part of strong polarization is the urban shrinkage. More than 70% of Russian cities are shrinking. The reason this process has been presented in the previous paragraph. It can thus be suggested that there is a lack of political initiatives and broad understanding of what urban shrinkage is, why look at this process, how do with this general trend around the country. Recently the country has pro-growth strategies, based on job-creation, on attraction of foreign and potential investments rather not regarding at the causes and consequences of shrinkage.

Hence it is interesting to note that in spite of Russian space is huge, Russian territory is not so big and in post-Soviet period it has got the tendency to shrink. Some of the issues emerging from this finding relate specifically to analysis of what type of policies influencing the urban system transformation are applied in contemporary Russia.

CHAPTER 4

THE CONTEMPORARY GOVERNMENT POLICIES AND THEIR IMPACT UPON CITIES IN RUSSIA

4.1. The emergence of urban issues in Russian political discourse

The analysis undertaken in previous chapters has proved that fundamental changes in the politics and economy engaged with demographic changes influence the urban system reconfiguration and reshape the environment of Russian post-Soviet towns and cities. During last decades the proliferation of urban economy, depreciation engaged with the housing shortage, infrastructural decay, traffic congestion, urban environment degradation, and social polarization have taken place among Russian cities. The open issue is which factors influence urban transformation, and in what extent.

Presently, there is surprisingly little shared understanding about what constitutes an urban policy as well as urban problems in Russia. According to Russian legislation (the Federal law № 131 "General principles of local government in the RF" dated October 6th, 2003) local self-government is responsible for urban policy development and implementation. In 2000 a "federal reform" hinged on a recentralisation of political and financial powers on the federal level and aimed at bringing the regions as well as the local government level back under the federal influence and control was embarked. In spite of separating the local self-government from the state's power, currently, under administrative and fiscal reforms local-self government becomes more and more depended on the regional and federal power (in detail this issue is analyzed by Cameron Ross and Adrian Campbell, 2008; Vladimir Gel'man and Alfred B. Evans, Jr., 2004). As a result of "federal" and "local" reforms, on one hand there is an official promotion of institutions of local self-government; but on the other hand, we observe the local budget and local power reductions and increasing dependence from the federal finance. It creates a highly unbalanced situation when municipalities do not have the resources for realization their progressive responsibilities in all social sectors including housing, education, health, etc. During the last years, this situation is exacerbated as more tax goes go directly to the federal level and subsequently at the federal level taxes are redistributed to the local level according to unclear mechanisms. As results, local authorities do not have capacities as well as incentives for the effective and long-lasting development (Zubarevich, 2013).

At the same time federal government realizes development policies that are not specifically designed for cities, but that may still have a major impact on them and that influence the position of the cities. Concerning national policy

responses, it is important to make a distinction between policy that is explicitly directed to cities and policy that is not, but that is ‘urban’ in the sense that it makes impact on cities, such as housing policy, transportation policy, spatial planning policy, labor and social policies (Van der Berg et al., 1998). The initiating national policies play a role in shaping the social, economic and political conditions of cities around the country. Recently in Russia the federal policies have not been targeted to cities directly, but some of them are to some extent ‘urban’ in its impact on cities. Although the urban agenda was long ignored at the level of the federal government, with no clear urban policy or urban regeneration strategy formulated at the national level since the collapse of the Soviet Union (Golubchikov, 2010, Golubchikov et al., 2013), the Russian government increasingly admits, within the context of its new technological modernization discourse, that cities are the engines of the country’s economical development but that a transformation of the cities into the national economy’s powerhouses demands comprehensive regeneration, including improvements in the urban economy, a renewal of the urban environment, and a development of inter- and intra- urban transport infrastructure.

The historically Russian political regime is characterized by a strong sectoral approach, including housing, transport, and social policies. In spite of the elements of sectoral policy have no integration and do not have a direct tie with an urban space they influence urban areas unavoidably.

In recent years, different spatial initiatives shaped the interplay of federal and regional strategies in relation to simulating urban transformation including technological and industrial “clusters” (e.g. The creation of so-called Russian Silicon valleys – Skolkovo near Moscow and Innopolis in Kazan), special economic zones, the formation of a network of federal universities, federal support of mono-industry sites. Besides that during the last years the trend of mega-events led regeneration has emerged in Russia. Despite of this trend is aimed to country’s rebranding in fact, certain urban regions are getting a great impulse for the transformation. Also the contemporary federal and regional policies have implemented several initiatives with a space connection that allows conclude that recently the spatial policy is emerging. The federal government is emphasizing the development of different parts of Russian as for example the intensive development of the North Caucasus due to boundary protection, Kaliningrad region as a Russian enclave in Europe, and Far East as Asian gateway.

At this research step the attention focuses on responses to urban challenges from a “top-down” perspectives. The objectives are to understand how implemented national policies influence city system transformation and urban regeneration; what kind of preconditions has been created yet for the

promotion of the Russian urban Renaissance; and in what extent the national government attributes priority to urban issues.

4.2. Territorial and strategic planning - the first trigger for Russian urban Renaissance

The competent planning is based for the successful spatial and urban development. The territorial planning of the RF is regulated by a set of Codes of the RF. The main federal documents are the following: Urban Planning Code of the RF, Land Code of the RF, Civil Code of the RF. These documents provide the base for the spatial territorial planning around the country. All other planning documents implemented at the regional and local levels are regulated by these Codes and have to be interrelated with them.

The Urban Planning Code is the main federal law which regulates territorial and urban planning of the RF. The first Urban Planning Code of the RF was adopted only in 1998. It was crucially different from the previous Soviet normative acts in the sphere of urban planning. Actually, it was the first document to meet market conditions. It should be stressed that post-Soviet planning is based on the existing on various types of property on the land (federal, municipal, private). After seventy years of state ownership on the land and centrally planned determination of the land use, the delimitation of property rights as well as creation legal and administrative framework demand a significant preparation work and a lot of times. The first Urban Planning Code was not applied actively and had a lot of mismatches. On December 29th, 2004 the new Urban Planning code of the RF was adopted. It was a new edition of the Urban Planning code of the year 1998. The adoption of the Code brought essential changes in state regulation of town-planning activity as well as for spatial planning.

The Urban planning Code has proposed development of five sectoral federal schemes of country' territorial development. Among them are: Transport scheme, Energetic scheme, Educational scheme, the scheme of Public health and Defensive scheme. The primary goal of these systems is to provide land redistribution among state, local and private owners and reserve land for state needs. The Code provisions of schemes harmonization but in reality it is difficult to do also because of there is scarce information about their evolution. On the other side there is no unifying scheme of territorial development of the RF which combines regional schemes of territorial development with sectoral federal schemes. These five sectoral federal schemes of territorial development are developed without any idea of general development of a settlement system in the RF. It implies that there is a plenty

of disagreement among them, absence of transport, energy infrastructure, educational, social and defensive scheme. As M. Y. Vilner (2013) argues, without understanding the settlement system inside such big country as Russia the planning of transport, energy, educational system lost its sense. The weak point of the current Urban Planning Code is the dissolution of existing sectoral planning documents and absence general scheme dedicated to the growth of the settlement system throughout the country. Contemporary sustainable territorial development demands integrated spatial planning. At the first stage to increase efficiency of sectoral schemes and to understand the further development of settlement system, it is necessary to create a general scheme of territorial planning for settlements, industry, agriculture, forest and water economy, touristic zone, environmental protection, and saving historical legacy, and others.

The second weak point of spatial development exists gap between spatial and strategic socioeconomic planning. The analysis of planning documentation and strategic documentation at the regional and local levels (at the federal it is impossible to do because of federal spatial documentation is under development) has revealed a poor correlation of aims and objectives.

Currently the strategic and territorial planning in the RF is a mix of various documents which are hardly connected and integrated. During the last decades, strategic planning in the RF was not framed under any federal documents and regulation. In spite of Russia follows the strategic planning concept the pull of obligatory strategic documentation is not defined. At present the federal law about Strategic planning in the RF is under the process of approving. Ad interim currently in Russia a system of strategic documents has appeared and lined up. The general concept of strategic and territorial planning of the RF is represented in Figure 4. 1. Russia has a Concept of social-economic development 2020 which defines the key targets of the country's development. Each Federal District and Subject of the RF has its own development strategy, as well as there are more than sixty sectoral development strategies. Also Russia realizes the target planning based on the State Target Programs, which are aimed to create a new quality of life, enforce innovation development, balanced regional development, etc.

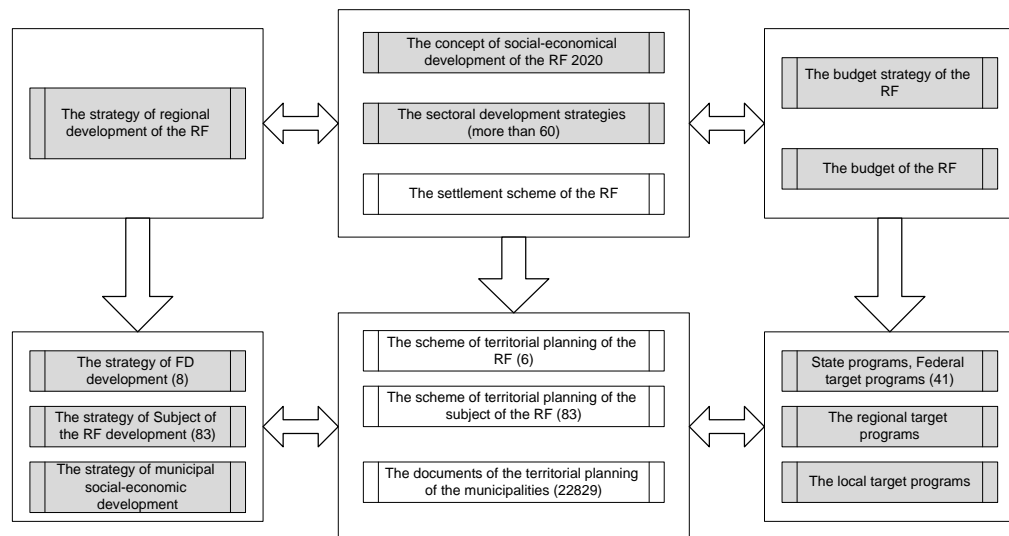


Figure 4.1 *The general concept of strategic and territorial planning of the RF*

There is a consensus among planners and geographers that the current situation in spatial (territorial and urban) planning is critical (e.g. Lubovniy, 2013; Vilner, 2013; Gertsberg, 2013). The quality of prepared territorial documentation is characterized as poor and their development based on the incomplete (unsatisfied) information. The critical situation in the fields of urban and spatial planning in the RF is a result of many factors. Perhaps the most serious loss in transit from soviet to post-Soviet planning is that the new efficient, legal, public and professional institutions in the territorial planning have not been created yet. Existing Urban planning Code is not able to resolve structural problems and strategic tasks inside the country. Any new strategic task is solved by means of new federal law acceptance. Mega-events in Russia are striking examples of that. Olympic Sochi and Summit APEC have demanded the creation a series of new federal, regional and local laws regulated territorial development including master plans.

Despite the steady process of adaptation of territorial and strategic planning to market realities, there is a substantial gap in correlation of proposed initiatives and real situation. The findings of the analysis suggest several lines of action for filling a gap among spatial planning and city system development:

- Creating a comprehensive idea about how to prevent city system degradation based on the prevention a hyper concentration in Moscow region, which could be supplemented by reconstitution of urban types diversity, including actions aimed to further development of inherited specific soviet urban types such as science centers, ZATO, one-industrialized cities;;
- Formation a multi-level city system

- Radical extension of the transport network aimed to increase accessibility of settlements. Recently the transport extension and city system have barely correlation.

These actions should be aimed at prevention of city system degradation. The comprehensive spatial planning aimed the clear goals and direction of territorial development is vitally important for such large-scale country as Russia. Currently we observe chaotic attempts from the federal government to develop various areas of Russia. These attempts have unstructured and unclear character and are not arranged in any strategy or document. As result country is developing in "hand" management depending on desire some investors or politics.

4.3. Urban economic changes - the second trigger for Russian urban Renaissance

4.3.1. Changing economy structure

In post-socialist period all cities have seen fundamental economic restructuring - both with regard to their internal economic experience and to their position in the broader economy. The fundamental weaknesses of post-Soviet cities are their strong dependence from industries which have been created under another ideological, economic and planning rules without concern of transportation cost.

Among the priorities of the Russian government are singled out that Russia must transition to a new economic growth model and activate sources of competitiveness in the Russian economy that have not been fully tapped (education level of the population, scientific and technological capacity), overcome infrastructure and institutional constraints on socioeconomic development, and achieve high labor productivity (Policy Priorities of the Government of the Russian Federation in 2018).

During the transition period Russia hardly has been transformed into the country with innovative economy. In spite of the urban economy basis of Russian cities has changed significantly, it has happened not because of the shift from industrial to postindustrial economy, mainly the changes are connected with the transformation from planned to market-oriented economy. On the other hand, urban economic base has deteriorated significantly, also due to inherited soviet industry was uncompetitive in a market economy. To prevent the economic decline and create competitive as well as absolute advantages government is searching for a creation of diversified and innovative economy, moving the country's industry to an innovative ground and attracting direct investment to the economics. There are several programs

aimed at modernization of energy complex; priority industry support (motor-car construction, pharmaceutical industry, defense industry, energy, building materials production, etc.). The Russian government established a program of incentives to attract Russian and foreign capital in these areas. As Vladimir Putin notices: "We understand that winning the competition for direct investment and creating the most attractive conditions for business mean winning the struggle for efficiency of Russian economics, for a new quality of growth. That is why our economic policy, business climate, conditions for foreign investment inflow, new factories establishment and innovation implementation should be competitive in the full sense of the word" (V.V. Putin's statement in the enlarged session of the Board of the Ministry of Economic Development of the Russian Federation. April, 2012).

Originally Russian economy based on exports of raw materials makes social welfare strongly dependent on external economic conjuncture instead of depending on, and establishing, internal sources of growth. Lower productivity and inefficient resource utilization have also been among the endogenous factors hampering the country's economic development. In certain sectors of the economy, technological gaps with leading industrial nations have accumulated during the last decades (Gokhberg and Roud, 2012).

Recent years have been notable for the substantial changes in innovation policy in the RF. Innovation has become a central part of the top-level policy agenda: coordination committees chaired by the President and Prime-Minister were established, key strategy documents were published, and a network of development institutions (the Technology Fund, the Russian Venture Company, the Development Bank, etc.) providing an 'innovation lift' was put in place. The special economic zones and innovative territorial clusters are the new federal initiatives aim to stimulate regional and national economies.

4.3.2. Special economic zones (SEZ) and Territorial Innovative clusters (TIC) as tools for economic regeneration

Special economic zones (SEZ) are large-scale federal projects aimed at Russian economics and regions development by attraction of direct local and foreign investment to the high-tech economy industries, import-substituting production, shipbuilding and tourism. The systematic creation of SEZ has been launched in 2005 based on the Federal law "About Special economic zones in the RF".

Among the objectives of the establishment of SEZs are the development of manufacturing industry and of the areas of advanced technology, the diffusion

of new industrial models and commerce of scientific and technological products. Besides, the development of the SEZ is aimed to the reduction of the alarming dependence on Russian oil and natural gas exports.

All SEZs are endowed by the state with special legal status, providing a set of tax and custom preferences to the investors/residents and also guarantees the access to engineering, logistics and business infrastructure. According to the current legislation SEZs provide several unique opportunities to investors, such as simple and transparent interaction with state regulating authorities based on the "one window" system; use of the infrastructure built by means of state budget, which gives an opportunity for reduction of start costs; significant customs facilities thanks to the free customs zone conditions; a set of tax preferences include the income tax rate at 0% for federal budget and not more than 13,5% for regional budgets of subjects of the RF; exemption from land tax, transport tax, also the state authorities provide tax holidays on regional level which could last from 5 to 10 years. The bundle of providing incentives is aimed to decrease the costs of the project realization in SEZ in average at 30% compared to all-Russian general practice (the source: SEZ official site). In the long run SEZs have to serve for providing comfortable conditions for business development, implementing new ideas, creating new industries and high-tech products.

Currently there are seventeen SEZs in Russia, they are divided into four types: *industrial*, *technological*, *tourists* and *logistical*. The main characteristics of SEZs and their redistribution are presented in Table 4. 1 and Figure 4. 2 respectively.

Industrial SEZs are aimed to high-tech economy, industry development. They are vast territories located in Russia's major industrial regions. SEZ "Alabuga" is situated in the Kama industrial hub (junction), SEZ "Togliatti" in the Samara region, SEZ "Lipetsk" in Lipetsk region, SEZ "Titanium Valley" in the Sverdlovsk region. Also, two industrial SEZs have been created recently in 2012. There are SEZ "Moglino" in Pskov region and SEZ "Ludinovo" in the Kaluga region. Proximity to production resources, access to existing infrastructure and key thoroughfares are the main advantages of creating industrial SEZs.

Technological SEZs stimulate import-substituting production development, design and production of new kinds of goods. Technological areas are territories located in major centers of science and education in long-standing scientific traditions and recognized research schools. The zones could be considered as innovation poles, which offer great opportunities for residents to manufacture science-intensive products and sell them on the domestic and international markets. A positive correlation could be found among the

technological SEZs creation and soviet endowment. SEZ "Dubna", SEZ "Zelinograd" and SEZ "Tomsk" are based on the inherited from soviet time scientific base and situated in the cities with considerable technical and scientific potential. On the other hand the SEZ "Innopolis" in the Republic of Tatarstan is created as a new innovative city in the most beautiful and ecologically clean areas in 15 km from Kazan. The same model is used for creation new Russian Silicon Valley - "Skolkovo" in Moscow region. Skolkovo is also created as a new innovative city, but as this project has a high government priority this zone is not included as SEZ.

Logistical SEZs are aimed to expansion of transport-logistic system. Port SEZs located in immediate proximity to global transit corridors, the Logistics SEZ may serve a ground for shipbuilding and ship repair enterprises, providing logistics services, and a base for new routes. Currently there are two active SEZs: SEZ "Ulyanovsk Eastern" and SEZ "Soviet haven" in the Khabarovsk region. The third SEZ in Murmansk region has not been created yet.

Tourists SEZs are located in Russia's most picturesque and popular destinations. Two of them are situated close to the big lake Baikal. Initially the Tourism & Recreation Zones would offer favorable conditions for tourism, sports, hotel business, recreation and other activities.

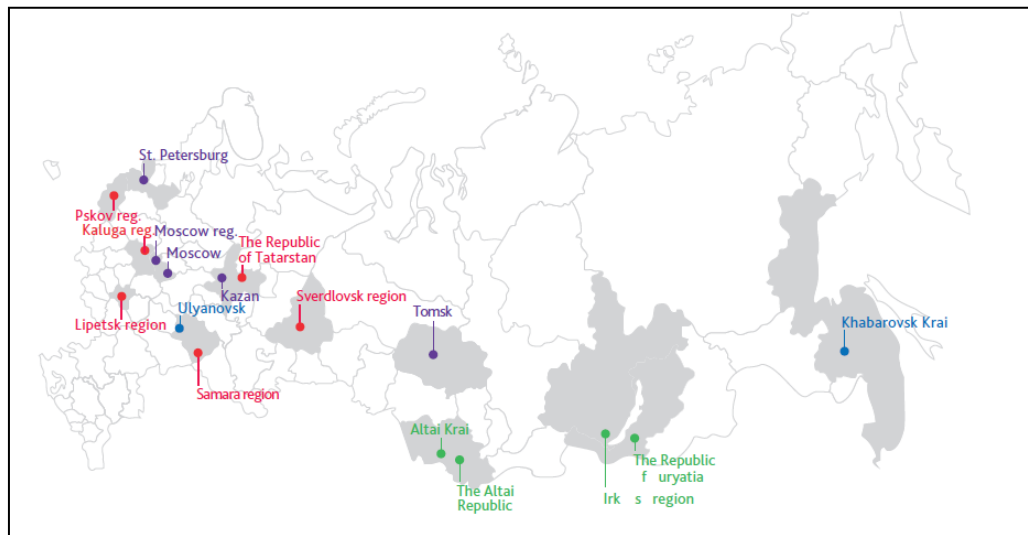


Figure 4. 2 Geography of special economic zone. Source: <http://www.russeze.ru/>

Table 4. 1 Special Economic Zones of the RF

City	Region	Zone name	Priority Industries	Date of foundation
Industry				
Elabuga	The republic of Tatarstan	SEZ "Alabuga"	Motor vehicles and components;	21.12.2005

City	Region	Zone name	Priority Industries	Date of foundation
			Petrochemicals Construction materials; Consumer goods	
Togliatti	Samara region	SEZ "Togliatti"	Cars and auto components production; Building materials; Consumer goods production	12.08.2010
Lipetsk	Lipetsk region	SEZ "Lipetsk"	Finished metal products; Machine-building Vehicles, machines and components production; Construction materials	21.12.2005
Verhnyaya Salda	Sverdlovsk region	SEZ "Titanium Valley"	Motor-car construction; Instrument-making industry; Chemical industry	16.12.2010
Moglino (8 km from Pskov)	Pskov region	SEZ "Moglino"	Machine-building; Instrument making	03.02.2012
Ludinovo	Kaluga Region	SEZ "Ludinovo"	Medical equipment production; Machine components production; Instrument-making	31.12.2012
Logistics				
Ulyanovsk	Ulyanovsk region	SEZ "Ulyanivsk Vostochnii"	Maintenance and repair; Aircraft manufacture; Aircraft components production	30.12.2009
Khabarovsk	Habarovsk region	SEZ "Sovetskaya Havan"	Logistics; Ship repair; Seafood processing	30.12.2009
Murmansk	Murmansk region			
Technologies				
Saint-Petersburg	Saint-Petersburg	SEZ "Saint Petersburg"	Information technologies and telecommunication; Medical technologies and pharmaceuticals; Nanotechnologies; Precision engineering	21.12.2005
Dubna	Moscow region	SEZ "Dubna"	IT technologies and telecommunications; Optical Electronics; Nanotechnologies; Nuclear technologies; Biotechnologies	21.12.2005
Moscow	Moscow	SEZ "Zelinograd"	Technico-innovative zone	21.12.2005

City	Region	Zone name	Priority Industries	Date of foundation
Tomsk	Tomsk region	SEZ "Tomsk"	IT and telecommunication; Medical and biotechnologies; Nanotechnologies and nanomaterials; Resource-saving technologies	22.05.2005
Kazan	The Republic of Tatarstan	SEZ "Innopolis"	Information and communications technologies; Electronic technologies; Nanotechnologies; Biotechnologies; Medical Technologies	01.10.2012
Tourist				
	The republic of Buryatiya	SEZ "The Baikal Haven"		03.02.2007
	Irkutsk region	SEZ "The Great of Baikal"		03.02.2007
	The Altai Republic	SEZ "The Altay Valley"		03.02.2007
	The Altai Krai	SEZ "The Turquoise Catun"		03.02.2007
Vladivostok	Primorskii Krai	Project phase SEZ "Solers"		

By SEZs creation Russian government pursues the aim to boost scientific development and especially the innovative sectors of industry fostering the development of special industrial and technical-scientific zones, from which innovative technologies will develop to be transferred later to the big industry (Kozyrev and Malyzhenkov, 2011). The SEZs have to serve as a "growing poles" from which to sprout the new economy in Russia of qualitatively new type, based on innovative principles.

The location of SEZs have been defined by the Ministry of Economic Development based on the selection process of regional applications. The Ministry identified the most favorable areas for development, but the general criteria of selection are not clear.

As we see at Figure 4. 2 almost all SEZs are situated in the European part of the RF. Only one logistics SEZ is situated in Far East. It is SEZ "Sovetskaya Havan" in Khabarovsk region. All four touristic SEZ are situated in Siberia. The Eastern technological SEZ is situated in Tomsk. Beyond Tomsk there is no innovative economy.

The transport infrastructure matters a lot for development, innovation economy. The technological and industrial SEZs are situated in comparatively more developed regions in the European part of Russia. The distribution of SEZs mainly in European part of the country presents that state does not use its strategic geographic position between Europe and Asia: nowadays through the territory of Russia passes less than 1% of the flow of goods between the European and Asian countries, the potential for transport in Russia is used just 5-7 percent (Kozyrev and Malyzhenkov, 2011).

On the other hand the analysis has revealed that the most SEZs are situated in relatively strong regions (Moscow Region, Saint Petersburg, Tatarstan Republic, Sverdlovsk region) and have a robust endowment. It allows to find a logic in the SEZ selection process which could be based on the assumption that the less endowed territories may find it difficult to finance the necessary infrastructure.

The second type of economic regeneration tool is creation territorial innovative clusters (TIC). Known as a classic definition of the cluster is proposed by Porter:

"A cluster represents the integration of companies based on the networked form of business organization by forming strong links with the rules of cooperation and collaboration in a competitive environment, which contributes to the effective exchange of resources, technology, knowledge, and provides a high level of competitiveness" (Porter, 1998).

In Russia the modern cluster policy formation has originated since 2007-2008. In 2008 the methodological recommendation for realization of cluster policy in the Subject of the RF have been adopted, and since 2010 the regions are getting the federal subsidy aimed to creation and development of centers of cluster development. In 2011 the Strategy of Innovative Development of the RF - 2020 has been accepted. In August 2012 Russian government have approved a draft list of TICs of the RF. There are twenty five TICs. They are divided into two groups. The first group comprises 13 TICs which will get Federal financial support for their development. The second group engages other 12 this and their development is planned without financial support from the federal budget. The short description of TICs including location, specialization is provided in Table 4. 2.

Table 4. 2 Territorial Innovative clusters in the RF

	City	Region	Cluster	Priority Industries
	First group			
1	Kaluga; Obninsk	Kaluga region	Pharma cluster	Medicine and pharmacy, radiation technology
2	Zelenograd	Moscow	IT cluster	ICT
3	Dubna	Moscow region	IT cluster	New material
4	Pushino	Moscow region	Pharm cluster	Biotechnologies
5	Saint Petersburg; Gatchina	Saint Petersburg	IT cluster Pharm cluster	Medicine and pharmacy, radiation technology
6	Sarov	Nignii novgorod region	Innovative cluster	Nuclear technology IT, laser technology
7	Ardatov; Insar Saransk	Rep. Mordoviya	Power efficient lighting technology	Instrument engineering
8	Nabarajniichelni; Mendeleevsk; Zainsk; Elabuga; Nignekamsk	Rep. Tatrstan	Kama industrial cluster	Oil-gas processing and Petrochemistry. Automobile industry
9	Samara	Samara region	Innovative cluster	Production of aircrafts and spacecrafts
10	Dimitrovograd	Ulyanovsk region	Nuclear cluster	Nuclear technology; radiation technology, New materials
11	Geleznogorsk	Krasnoyarsk region	Innovative technologies	Nuclear technology; Production of aircrafts and spacecrafts
12	Novosibirsk	Novosibirsk region	Innovative cluster "SibAcademSoft" Biopharmaceutical cluster	ICT. Medicine and pharmacy
13	Tomsk	Tomsk region	Medical cluster; IT cluster	Medicine and pharmacy, ICT
	Second group			
14	Troitsk	Moscow region	Innovative cluster	New materials. Nuclear technology
15	Dolgoprudnii Khimki	Moscow	Cluster «PhystechXXI»	New materials. Medicine and pharmacy, ICT
16	Severodvinsk Archangelsk	Archangelsk region	Innovative cluster	Shipbuilding
17	Saint Petersburg	Saint Petersburg	IT cluster; Innovative cluster	ICT. Electronics, instrument engineering
18	Nigniy novgorod; Arzamas; Sergach Dzerginsk; Pavlovo Balahna; Kstovo Bor; Zavolgie	Nignii Novgorod region	Industrial cluster	Oil-gas processing and petrochemistry. Automobile industry
19	Perm	Perm krai	Innovative cluster	Production of aircrafts

	City	Region	Cluster	Priority Industries
			"Technopolis"	and spacecrafts, propulsion engineering, New materials
20	Sterlitamac; Salavat; Ishimbai	Rep. Bashkortostan	Industrial cluster	Oil-gas processing and Petrochemistry
21	Ulyanovsk	Ulyanovsk region	Industrial cluster "Ulyanovsk-Avia"	Production of aircrafts and spacecrafts, New materials
22	Yekaterinburg; Pishma; Nignii Tagil; Verhaya Salda	Sverdlovsk region	Titanium cluster	New materials
23	Biisk (the cluster core). Novoaltaisk	Altai Kray	Biopharmaceutical cluster	Medicine and pharmacy,
24	Kemerovo	Kemerovo region	Industrial cluster	Chemical industry
25	Khabarovsk; Komsomolsk na Amure	Khabarovsk Krai	Innovative clusterя	Production of aircrafts and spacecrafts. Shipbuilding

Some TICs are situated in the knowledge-cities, which have been established during soviet time. As, for example Zelinograd, Dubna, Pushino, Obninsk, Troitsk, Sarov, Geleznogorsk, Dimitrovgrad. Also, several TICs are situated within the agglomeration areas such as Saint-Petersburg, Nigniy Novgorod, Samara, Tomsk, Perm, Ulyanovsk, Nignekamsk. In some clusters main industries are considered as cluster engines. As, for example, in Republic of Tatarstan, Archangelsk region, Nigniy Novgorod region. On the other hand, in other clusters such as Pushino, Obninsk, Troitsk, Dimitrovgrad, universities and scientific institutes are considered as powerful for cluster development. As seen, many clusters are formed on the base inherited from the Soviet era, or by other words, industrial know-how skills and productive capacities succeeded from soviet union did not evaporate in the market economy.

It is interesting that the clustering of the Russian economy is not entirely new mechanism for regional development. TIC is a prototype created in the command economy of regional-production complexes (RPC). RPC was the Soviet model of the industry organization. In post-Soviet period (re) forming of clusters is caused, first, by historically developed system of territorial placing of production in the conditions of the according to plan-centralized economy, secondly structural shifts in the transitive economy in the course of market transformation. In a number of regions there were favorable preconditions for the development of clusters in those or other industries: there is a concentration of producer companies, suppliers, the organizations of a scientifically-educational complex; an active role of regional and regional authorities in forming and development cluster support (like Moscow region,

St. -Petersburg region, Krasnoyarsk region, Ivanovo, Lipetsk, Samara, Novosibirsk, Sverdlovsk regions, etc.). The formation of clusters in the modern national economy, in fact, is a "clone" of regional-production approach to the distribution of productive forces in the region, which has been born under other conditions and has another goals and framework and realization model.

The current cluster policy is aimed to create an attractive and competitive environment for business and to attract investments to the territory (region). On the other hand, in some aspect it is proposed to increase efficiency of communication among participators. Despite TIC is aimed to be a growth pole for regional and national economy, at the same time they do not have an essential physical, transport, energy and housing infrastructure. This place looks rather paradoxically, as respects that without appropriate infrastructure it is difficult to expect accelerated cluster development.

Contemporary TICs and SEZs look like artificial islands at the urban fringe. For the effective development they demand the creation of suitable infrastructure, including housing for new residents, enforcement of power stations and communal facilities, reconstruction of transport infrastructure, and so on

International experience (England, France, Germany) shows that TICs as well as SEZs could be considered as triggers for urban regeneration. On the one hand aimed to improve the regional economy and investment climate they influence on urban economy as well. On the other hand, to be efficient and attract new people the set of social initiatives, including housing market improves, transport infrastructure creation, social facilities etc. are demanded. As result clusters can become centers that generate urban redevelopment in processes of production restructuring, due to the substantial impact they have on their surroundings (Marques et al., 2004). Clusters evolved from productive agglomerations as districts or development poles, and are nuclei of small/medium interrelated entities in complementary productive sectors, which cooperate with research institutes, trade associations, local governments, etc., establishing synergies and linking agents in the same geographical location (Nunes, et. all, 2012).

In contrast, with desire aim, when clusters could provide the appropriate reality for all sorts of needs, practically, at the first development stage clusters remain predominantly untouched by the local milieu, since these evolving spaces have not yet conjoined with the surrounding urban layouts. TICs and SEZs are majorly identified as areas, which only over time will grow together with the existing urban fabrics. Nevertheless, in framework of appropriate

regional political tools they could have the potential to reactivate regions and city's development.

4.3.3. Mono- Industry cities - diversification of economic base or mass resettlement

As we have seen in previous chapter Russia is rich in one-industrial cities which have been swift created during the soviet era based on the socialist logic and a planned economy. The monotowns' underlying problems are market unfriendly locations for enterprises which produce uncompetitive products (Bogetic et al., 2010). Obviously that to adopt these cities to market economy a special comprehensive policy is demanded. Monocities are faced with the necessity of reorientation to diversified specialization, creation of human and social capital, improvement urban fabrics, improvement interurban transport connections. During long period the problems of mono-industry cities have not got due attention from the government. An unrest in a small city of Leningrad region - Pikalevo- was the crucial turning point, after that federal government has started to undertake measures for improving the situation among monocities.

To adopt cities to the new conditions is not a simple choice between government interventions and market solutions. As Russian monocities are greatly various and facing different circumstances, structures, and prospects them demand various approaches for its regeneration. To deal with the monocities problems, in 2010 the federal government created an Intergovernmental Committee on Monocities, which invited monocities to submit comprehensive plans (KIP - complex investment plan) with specific measures for current economic and social problems and a medium-term road map for diversification leading to sustainable long-term growth (Bogetic et al., 2010). In 2010, the government approved 27 monotowns to receive 27 billion rubles (about USD 920 million) from the 2010 federal budget. he parametres used in selecting the cities were not clear and has provoked a lot of debates and comments. By the way the 27 cities had to be pilot projects which aimed to form a mechanism for monocities regeneration. The financial support of 27 monocities has been realized from the federal budget: 10 billion were planned as interbudgetary transfers through the Ministry of Finance, 10 billion as subsidies from the Ministry of Regional Development, 5 billion from the federal Housing and Communal Services Reform Fund, and 2 billion from the Ministry of Economic Development as subsidies for small business. Vnesheknombank (the special State bank) was the coordinator of federal investment redistribution. The federal support of monocities had been reserved for the 2010 and 2011. The short-term horizon planning presents that the government does not have the long-term strategy as well as clear view of

monocities development. Currently the government does not have enough budget resources to equip monocities with modern technology to produce the right output mix and the local initiatives are so weak and do not have a force for urban economic regeneration. Obviously enough that diversification of urban economic base will not solve the problems for monocities, a combination of restructuring and other reform measures is likely to be needed (Bogetic et al., 2010).

The route which has been promoted in 2010 towards diversification of monocities economic base in 2013 has been cardinally changed towards resettlement of inefficient monocities. The government has proposed the variants of mass people dislocation. At first the idea was to stimulate mono-industry city' population movement to the Far East and Siberia, the last idea supports also movement in the Central part of Russia. The 'innovation' idea of how to deal with mono-industry cities is providing people with grants for dislocation in other cities. In 2014 around 100 bills. RUB. is planned for the monocities support.

On the question of how adaptation of one-industrial cities are proceeding in market conditions, the study found that, currently government promotes a set of measures, including a creation of industrial sites /technoparks/, advanced professional training of workers, the stimulation of commutation, resettlement. These measures form the framework of regeneration policy for mono-industry cities. By the way a menu of approaches tailored to the circumstances of specific monocities stands a better chance of success than a "one-size-fits-all" approach, especially one that relies on financial support alone. That's why the development of monocities in many aspects depends on the activity and professionalism of regional and local authorities and on the applied governance model, collaboration with business and local community.

Analysis of the international practice of regeneration of mono-industry/one-company cities has revealed that a set of measures aimed to improve the situation of old-industrial cities are more or less equal (creating affordable housing, creating a job in other sectors, diversification of urban economy) with Russian ones. However, the international experience has shown that results depend on the right and effective implementation of these measures and it depends on local authorities. In the Russian case we see that currently this policy is under construction, and the practice demands a precise analysis and generalization.

4.4. Transport policy - the third trigger for Russian urban Renaissance

Transport, infrastructure has a crucial impact on the formation of the national city system, regional economy and urban development. Recent evidences suggest that transport lies at the heart of urban regeneration (Rogers, 2005). On the other hand transport infrastructure requires long-term investments and reliable mechanisms to maximize public and private funding.

Despite an increasing resource wealth, Russia's infrastructure stagnated at a low level over the past decades. In 2012, the overall quality of Russia's infrastructure ranked 101 out of 144 in the Global Competitiveness Index. As we saw in the previous chapter during the last 20 years the construction of new transport infrastructure is stagnating, the railway network has not been enlarged, the air transport infrastructure has shown a significant shrinkage. The transport restrictions (poor transport network, bad quality, unsatisfied maintenance, the structure), have become the real obstacles to the country's economic growth and further until it has a negative impact on the city system development.

There are several documents found in the transport policy in Russia. The most important are Transport Strategy - 2030, the federal target program "The development of transport policy in the RF 2010-2020" which provide the general directions of development of transport infrastructure. The federal target program includes several sub-programs which regulate the development of different transport modes: railway, highways, air transport, water transport. These sub-programs define the main transport infrastructural projects and provide the sources of investments. The analysis has revealed that many projects are oriented to enforce the role of Moscow hub, as, for example, reconstruction of three Moscow's airports, enlarge the Moscow railway system, also construction several highways M8 "Kholmogori" which will go along the Moscow-Archangelsk, or M5 "Ural" which will start in Moscow and goes from Ryazan, Penza, Samara, Ufa, Chelyabinsk, or M7 "Volga" in Moscow from Vladimir, Nizhny Novgorod, Kazan, Ufa. On the other hand the transport projects which are planned to realize in distance from Moscow are a few and mainly have an industrial background to provide a cargo transportation from Far East to central Russia

In spite of transport in Russia could become the key factor in the space development, in reality investment in transport infrastructure is only 1-2 % of GDP (Blinkin, 2011). It is rather behind in comparison with other countries and cannot be sufficient for the effective space development. As many experts have argued that Russian transport infrastructure is highly underinvestment (e.g. Blinkin, 2011; Lubovniy, 2013).

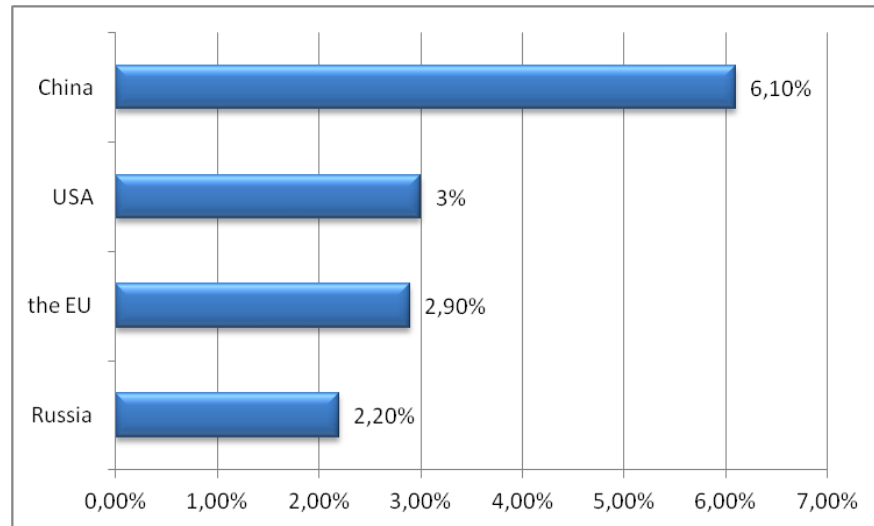


Figure 4. 3 *Transportation infrastructure investments, %, % GDP (source: Blinkin, 2011)*

The low transport investment is not sufficient for modernization of transport infrastructure. It is scale back the efficiency of the national economy. Many cities have no all-year transport connections that worsen their economic base and create a significant disadvantage in comparison with other cities. During last years the transport accessibility of some cities, especially northern mono-industry cities have been deteriorating.

In spite of transport plays a significant role in urban development, implemented transport policy has an industrial tint. Many infrastructural projects are oriented to the creation of preconditions for the development and transportation of natural resources.

Analysis has shown that implemented transport policy is realized in isolation from urban development issues. A demonstrative example is a planning of the construction of high-speed railways. Actually the construction of high-speed railways in Russia has a long history, but up to now there are no true high-speed railways which are constructed on the separate traces. The existing 'high-speed railways' from Moscow to Saint Petersburg and from Moscow to Niginy Novgorod are sharing the traces with ordinary trains, that do not allow to rich the high speed as it should be.

JSC "Russian railway" has a plan of constructing high-speed railways. The main directions are presented in Figure 4. 4. But when these projects will be realized is not clear. In 2013 no one high-speed railway has been started yet.

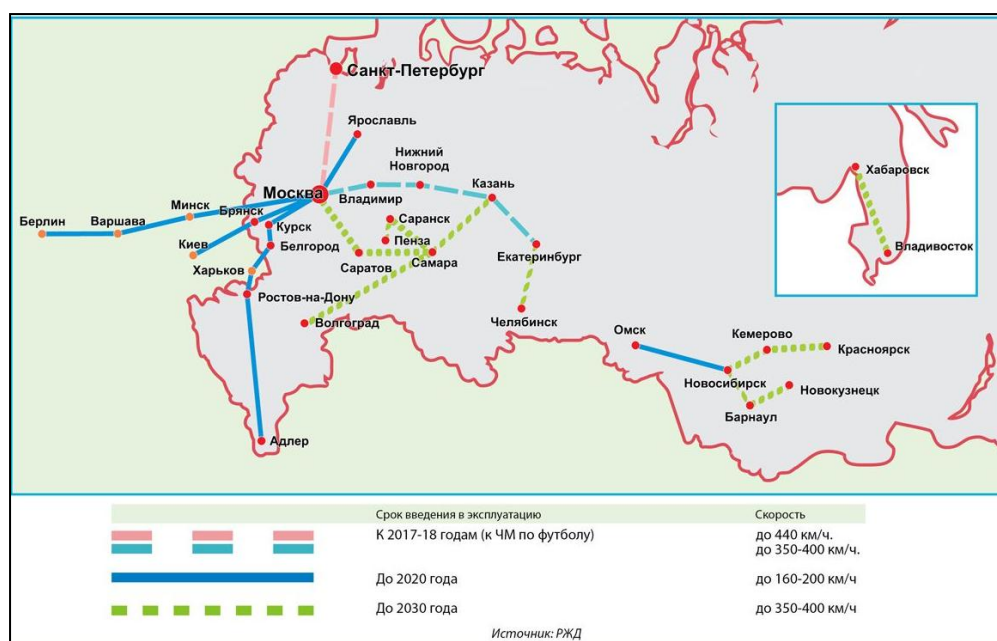


Figure 4. 4 Planned high-speed railways in the RF

Source: <http://www.skyscrapercity.com/showthread.php?t=445514&page=163>

The debates about the construction of high-speed railways have arisen when Russia has won the right to host FIFA-2018 which will take place in 11 cities. After that significant decision, a lot of discussions were about a necessity to construct high-speed railways to the hosting cities. But because of during last years 2012-2013 Russian economy has demonstrated a significant stagnation this decision has been rejected by case of lack of investments.

In May 2013 the historical decision has been accepted. Up to the 2018 the first Russian high-speed railway Moscow-Kazan will be constructed. The demanded time from Moscow to Kazan will be 3,5 hours opposite to present 14,5 hours (Inozemcev, 2013). The finance in amount around 450 bills. The rub will be realized from the Fund of National welfare. This high-speed railway is only which will be constructed to FIFA-2018. All other cities are obliged to improve their airports and highway infrastructure.

In general, therefore, it seems that the existing national transport policy presents several shortcomings. The policy does not aim to prevent uneven spatial country development. It stimulates the enforcing Moscow hub and leave all over Russia with a few infrastructural projects. Realized measures scarcely add to create a precondition for the creation a balanced transport system.

4.5. Housing policy - the fourth trigger for Russian urban Renaissance

If the creation of economic poles is a selective process and depends on the presence of natural resources, transport accessibility, social capital; the decent housing is a governmental priority task regardless of economic circumstances. International experience has shown that in many country's urban regeneration has been originated from the housing renewal, and so far housing renewal is main (if not only) urban regeneration mechanism. This approach has the sense as if decent housing will be provided for a wide range of social stratum, it will give an impulse for urban regeneration and will encourage the Renaissance of urban living.

According to Van Beckhoven' research (2006) housing renewal as the part of urban regeneration context is formed by the composition of two components: the peculiarities of housing market formation, including housing stock conditions, and the division of power in urban and housing policy development. These two components are laid down for the analysis of housing renewal in Russia.

4.5.1. The characteristics and peculiarities of Russian housing stock

The nationwide task is providing all citizens with comfortable dwellings agreeable to the modern standards. Nevertheless Russia has been and still is a country with largely unsatisfied housing demand (Sprengrer and Urosevic, 2011). The date of the sociological analysis show, that around 60% of Russian families face the housing problem and would like to improve their housing conditions (WCIOM survey). Many Russian cities are having a great shortage of adequate and reasonably priced housing. Housing and especially affordable and comfortable housing are high on the government's list of priorities during decades.

The housing stock in Russia in 2011 makes 3.288 billion square meters, including 2.373 billion square meters in cities and towns (Rosstat, www.gks.ru). The floor area for one person has increased from 15,7 sq. m in 1990 to 22,9 sq. m. Per person in 2012 and parallel with it the houseroom also has increased from 46.6 in 1990 to 53.6 in 2012. This positive trend has been reached thanks to inverse dynamics. On the one hand, in 1992 - 2011 the volume of the urban housing stock has been increased from 1779 mil. sq.m up to 2373 mil. sq.m., on the other hand, the country's population between 1992-2011 has decreased to 5505.3 thousand people. Further to these two factors Pusanov (2013) notes that one of the reasons of housing stock increasing is that slum housing is not taken away from the market and it increases the real figures.

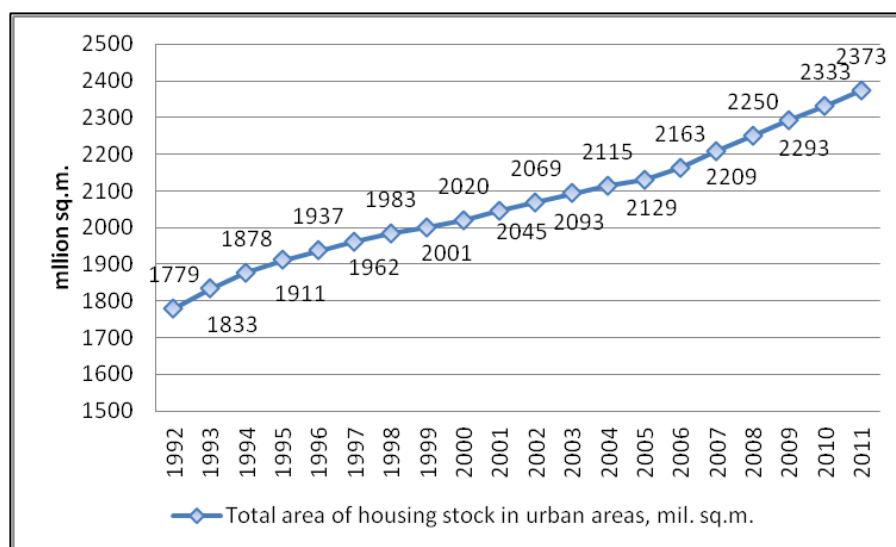


Figure 4. 5 Dynamic of the volume of housing stock in urban areas

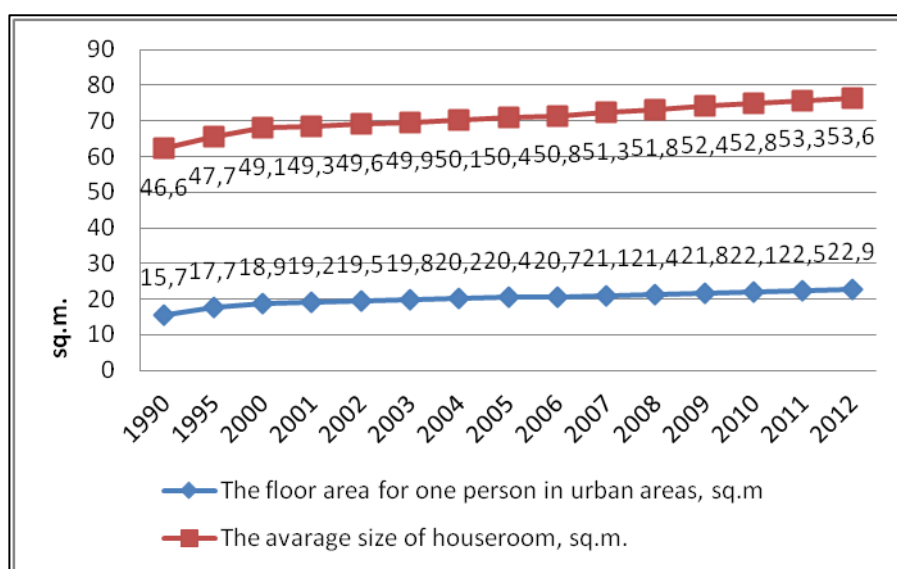


Figure 4. 6 Dynamic of average size of house room and the floor area for one person

In spite of currently the positive dynamic in the sector of new housing construction is visible, it is the fact that the volume of housing building was sharply reduced in the 90s and in 2010 was lower than in 1990 and slightly bigger in 2011 (Figure 4.7). The reason of such negative trend was the appeared legislative vacuum in the field of land relations, building relations as well as in planning.

On the other side during the transition period the quality of housing stock has declined and the amount of slum in post-Soviet Russia is growing catastrophically. During two decades the share of dilapidated housing has increased more than three times from 29,8 mil. sq. m in 1990 up to 99 mil. sq.

m in 2011 (Figure 4.7). Moreover some scholars note that the real indicators of slum and dilapidated housing in Russia are significantly greater than official ones (Nijegorodskaya, 2013). According to Russian legislation, local government has to resettle the slum and trying to avoid it, because of absence of investment for new social housing construction, many dilapidated dwelling are not classified as “slum” only because this status is directly demand resettlement.

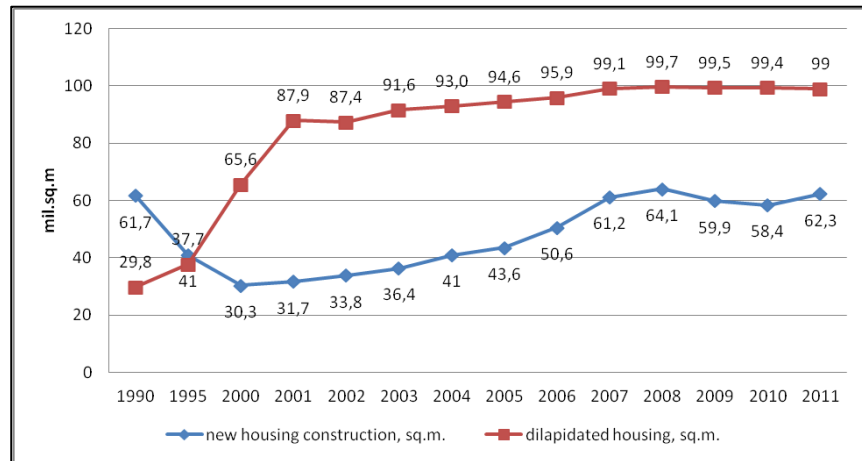


Figure 4. 7 *The volume of new housing construction and slum dwellings in Russia*

The reasons of housing decay are underinvestment of housing sector engaged with the loss of housing management system applied during the soviet era. Economic mismanagement has lead to significant deterioration not only housing stock, but also housing amenities including communal infrastructure.

On the other side the existing housing stock is characterized by a lack of standard amenities. The statistics show that the quality of housing (communal) amenities have been deteriorating significantly during the transition period (Figure 4.8).

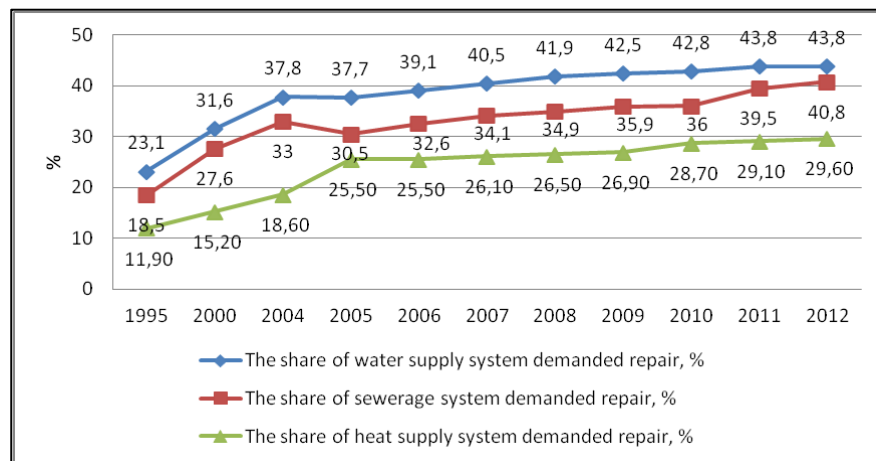


Figure 4. 8 *The conditions of housing amenities*

The cause of such housing collapse originates since the transition period. During the soviet period government had adopted a specific attitude towards the meeting of housing needs provision. In the USSR housing was considered as an essential part of the ‘social’ capital, although in practice the inability of state resources to meet housing demand (Pacione, 2001). All housing belonged to the state (there was the absence of private ownership) and only state had been responsible for its maintenance. It was a strongly hierarchical system of special housing companies (housing operation office -ЖЭК - JEK) based on which all housing had been managed. In a change of regime, due to housing privatization the class of house (flat) owners has been formed rapidly. But how to manage the housing and skills and attitudes to owner behaviors are not formed quickly. Actually from the 1991 up to 2008 the housing maintenance did not realize neither by the owners nor by the state. As the result the growth of slum around Russian cities has acquired a huge scale. On the other hand the majority of capital expenditure on housing in both public and private sectors has been on the new construction rather than on the improvement and modernization of the existing housing stock. But even the prevalence of new housing construction under housing rehabilitation does not solve inherited problem of housing shortage. The exiting volume of new housing does not suffice to solve the problem of housing shortage and improve housing conditions for Russians.

4.5.2. Housing policy and housing renewal tools

Within the last two decades a new housing policy was under construction, however, recent evidences suggest that after 20 years of reform housing policy is steel only under construction (Kosareva et. all, 2013). Although a lot of attempts, approaches, forces have been undertaken to create effective policy Russian housing policy is still in embryo. According to a report “Strategy 2020: the new growth model – new social policy” the housing problems which have been noticed in 2005 remain actual in 2013 and the state housing policy is estimated as inconsistent. There are several explanations for that statement. Firstly, as we saw in the previous part, the state of housing stock, including communal amenities has deteriorated significantly. It means that the effective mechanisms for housing management are not created yet. And at the same time for more than twenty years' housing stock transformed to private owners did not become the subject of their responsibility. Secondly, there are significant disproportion among solvent demand and supply. Most people need dwellings, but cannot afford buying it due to an underdeveloped system of long-term housing loan. Recently only a few families with really high income can use the housing market to get on the property ladder, while people with low income are out of housing policy tools. Thirdly, the existing volume of housing construction cannot supply the demand of the population.

Mainly because the market of housing construction is highly depended on administrative authority, it creates a low level of competition and high risky. Further to, the shortage of land plots provided with infrastructure heightens the restriction of affordable housing construction. In situations when land plots appropriate for housing are in shortage, developers prefer to build business class housing for rich people.

Nevertheless, during two decades Russia has made new and significant steps towards the creation of federal housing policy. New housing legislation has defined the main principles of realization of a constitutional right of citizens of the RF for dwelling in new social and economic conditions. These laws establish the general beginnings of legal regulation of housing relations in the emergence of various patterns of ownership and the kinds of use of the real estate in housing sphere.

The main goal of the first stage of housing reform was the transition from state ownership to private ownership of housing. As a result of housing reforms the structure of housing of the RF in terms of patterns of ownership has changed cardinally. The new layer of housing owners as a social base of housing reform was created. Currently, the share of private housing in Russia is 86,3%. Since 1991 up to 2011 82,9% of houses have been transformed from state to private tenure by means of privatization (www.gks.ru).

The second goal of housing reform as well as housing policy is to create the sufficient amount of affordable housing with the consideration of the country's future needs in order to completely satisfy all the strata of the Russian population. Taking into account swift housing degradation as the major part of existing housing have been built in the middle of XX century and presents panel housing, the goal could be achieved only through the acceleration of housing construction engaged with efficient housing renewal tools. The aims of housing policy can be approached in conditions of cooperation of all participants of the housing market: authorities, investors, housing owners, construction organizations and other parties involved.

Recently in Russia several tools aimed to contribute housing renewal have been adopted. There are:

1. The Fund for Promoting Housing, and Utilities Reform (FPH&UR)
2. Russian housing development foundation (RHDF);
3. Development of built-up areas regulated by an Urban - planning Code of the RF.

The FPH&UR and RHDF are federal initiatives aimed to increase the volume of housing construction and housing renewal. Development of built-up areas

is a tool for housing renewal which is realized by the local authorities. Further, consider how these tools contribute to urban renewal.

The Fund for Promoting Housing, and Utilities Reform)

The state corporation “The Fund for Promoting Housing, and Utilities Reform” (FPH&UR) was created in 2007. The main objective of FPH&UR is providing the financial and normative assistance for capital repair (housing rehabilitation) of existing multifamily housing, and for the resettlement of the slum. According to legislation, it should be finished its function in 2012. Nevertheless, in 2012 its operation has been extended up to the end of 2014 by several reasons. Firstly, the aim of increasing the quality of existing housing has not been reached and it has demanded further federal support. Secondly, during this period any other mechanism aimed to support housing maintenance has been created. It means, that leaving housing stock without any financial support will doom it to continuing degradation. It should be stressed that FPH&UR is a first federal institutes aimed to improve conditions on existing housing stock since the USSR collapse. As housing policy is the responsibility of local authorities, the investments into the housing sector depend on municipality welfare. Fund PH&UR provides co-financing (federal, regional and private investments) for housing rehabilitation.

During 2008 - 2012, 135,36 thousand houses have been repaired where 17,5 mil. People leave. Also during this period 20 529 houses were 339, 57 thous. people leaved have been resettled. In comparison with previous experience, this mechanism has provided a shift towards housing renewal in Russia.

Russian housing development foundation (RHDF)

The Russian Housing Development Foundation is a new State Development Institution, which was established in 2008 and launched in the 2010. The main objective of the RHDF as a development institution is to promote housing construction, greenfield urbanization and Brownfield regeneration, utility infrastructure solutions, construction of facilities responding to social needs, modernizing of transport infrastructure, manufacturing, construction material, supplies, and structures for housing development.

In 2013 there are 141 integrated development projects on 205 land plots in the portfolio of projects implemented on the sites of the RHDF. As a result of implementation of integrated urban development projects 1.876 million square meters of housing have been commissioned for the period of 2010-2013. The total estimated amount of housing constructed and planned to be erected, underdevelopment of planning documents, design and construction amounts to 19.351 million square meters.

One question that needs to be asked, however, is whether the new housing stimulates balance urban development and improves urban environment. In order to understand the specifics of undertaking housing projects, we have analyzed the database of current projects on the RHDF official site. Analysis has shown that land plots of RHDF mainly are situated out of cities, in urban peripheral or in the areas belonged to rural. Many projects of RHDF are high-rising large-scale housing massive, most of them look to the past rather than the future. Prefabricated, large-scale estates are still the standard products of housing builders. Although by means of RHDF support the volume of housing construction is increasing, the "new wave of mass construction" hardly improves the quality of the urban environment. Some examples of new housing realized with support of RHDF are represented below.



Figure 4.9 *Post-Soviet mass housing construction*

Development of built-up areas

Development of built-up areas is housing renewal tool regulated by the Urban-planning Code of the RF art. 46.1-46.3. In comparison with two previous it is a local level tool aimed to improve existing housing stock, mainly by means of slum demolition and resettlement of dilapidated housing. This mechanism based on the private investment interest and it is realized based on PPP. The mechanism is aimed at distressed urban areas which has a significant amount of slum and dilapidated houses.

The practice of the implementation of this tool shows that each city has its own experience which is influenced by specific urban challenges, such as urban authorities qualification and capacity, existence and quality of the local housing database, physical conditions of housing stock, etc. To sum up

various urban practice it is possible to single out several challenges which arising during implementation of this mechanism.

Firstly, this mechanism could be realized if the city has updated urban-planning documentation (urban-planning regulation or local urban planning regulation). In Russian reality far from all cities have appropriate planning documentation. It makes impossible to use this scheme for many cities, especially for small ones. Secondly, appropriate urban planning norms have to be applied at the regional level. If these norms do not approve at the regional level, they could be developed and approved by local authorities. Actually, the lack of modern comprehensive and legitimated urban planning documentation at the both local and regional levels is a significant obstacle for the implementation of this mechanism.

To launch this mechanism the identification of distressed urban areas are demanded and it is another challenge for local authorities. For single out appropriate areas, it is necessary to collect a vast data about the area. First of all a list of all appropriate areas has to be developed. A list of buildings, construction which have to be demolished or reconstructed should be developed for each area. Also, the issues about resettlement of residents should be discussed. As currently cities are characterized by poor urban statistics and database, the great challenge is a collection of necessary information. Also, there is now methodological support how to select areas, what factors are in priority, etc. The Urban planning Code provides only one criteria for selection of built-up areas. This area should comprise the large housing estate under the threat of collapse, and this fact should be approved by special document. Now the selection of redeveloped built-up areas has a subjective character and depends on the desire of one or two authorized people.

The research has shown that the tool is implemented successfully in big cities such as Kazan, Yekaterinburg, and mainly in central urban areas, while medium and small cities (Archangelsk, Kotlas) are experiencing difficulties with implementation of this tool. Mainly it could be explained by challenges cause of housing resettlements which are associated with high risk for private investors.

4.5.3. Housing policy crossroads

Russian housing policy in the post - soviet area is concentrated on the steppe of new housing construction. The political beliefs are based on the idea that growing supply of new housing will lead to automatic improvement of

housing conditions, just when the quality of appearing urban environment is left aside.

Since the land market appearance two main trends of housing construction could be singled out. On the one hand the 'pointed' housing construction in the city centers has got a large scale inside many cities. As results, it has aggravated post-Soviet urban environment. Central part of cities has been deteriorating and unbalanced, characterized by lack of schools, kindergarten, public spaces, transport congestion, absence of parking and livable public spaces. On the other hand, the implemented approaches for solving the problem of housing shortage promotes the urban sprawl. Massive large-scale housing construction is realized in urban fringes. As a result, new residential areas are characterized by poor transport connection, lack of social services, and rather often they are constructed at the greenfield.



Figure 4.10 *Perspektivnyy district, Stavropol*
<http://stavropol.orr.ru/company/mikrorayon-perspektivnyy/>

In existing Russian reality high-rising housing sprawl could be considered as highly inertial process from the soviet era. During the soviet period massive housing construction was realized mainly in the urban fringes in form of large-scale housing. As during socialism urban land did not have a value, this approach could be explained by strong planning restrictions, urban agenda which is characterized by the priority industry construction instead of housing. In post-Soviet period in spite of land market has appeared and housing construction is getting priority, this approach to dense build up urban fringes of high-rising housing has got the force. This urban development paradox could be explained by several factors. Firstly, a general uniform idea about how to develop peripheral urban areas is absent. Secondly, in situation of huge housing deficit and unsatisfied demand, developers are in win-win situation. They can construct what they want with high prices and low quality (market for developers). This situation promotes the practice of poor-quality housing construction around the country. Although developers argue that customer (buyer) are not able to pay for better quality housing, evident that this approach is provoked by high housing demand around the country.

Thirdly, as the availability of free land plots (greenfield) around the cities, developers are not interested to renovate the inner city that it is more complicated and risky. Moreover the absence of urban regeneration priority at both federal and local levels originates the high-rising sprawl throughout post-Soviet cities.

Apparently this approach leads to a set of problems. Firstly, it is a transport problem, and a problem of commutation. Also, it is trouble with communal infrastructure, because of mechanism to connect the house to the communal network is very close, unclear and corrupted in Russia. On the other hand as known current housing problems in Western European cities tend to focus on high-rise building blocks, stemming from poor materials and design; wider urban issues such as traffic problems and social problems linked to poverty and unemployment, and inadequate management of housing estates (Dodd et al., 2013). It is not difficult to make a parallel and to realize that Russia trying to solve existing housing shortage is moving directly towards the same problems. As soon as the housing shortage will be eliminated, apartments in the large-scale estates will go to the bottom of the market, segregation, urban problems and the decline will be triggered. To prevent the threat to happen, it is necessary to start regeneration programs in early enough stage.

Post-Soviet Russian cities demand policy aimed not only to the increasing housing construction, but also to improving the urban environment. Currently applied policy is a short-period policy (the policy of "rapid effects"), when government is not interested to vest developers with a function of urban quality demands. At the same time existing state housing policy aimed to improve population with housing is realized very slowly. On the other hand, this approach deforms urban environment in the city and provide urban sprawl as well.

Current housing regeneration initiatives have single-purpose objectives, short planning horizons and were not set within the strategic planning context of the urban system. However, it is essential that regeneration policies are included in broader city plans and strategies, as that brings long lasting results, and is beneficial for the neighborhood and for the city itself.

The analysis of housing renewal initiatives in such cities as Moscow, St. Petersburg, Kazan, Archangelsk, Severodvinsk has defined several features. The current study found that Russian cities are trying to solve housing problems in different ways, mainly by using an approach based on the target-programs with co-financing from federal and regional budgets. The approaches for housing renewal depend on the city scale: the big cities have more comprehensive housing renewal programs which embrace various urban areas, types of housing; extent of elaboration; by-turn it depends on the

possible volume of budget financing (government support), apparently that big cities have a more chances for federal and regional support, at the same time big cities have developed housing and land market that creates additional advantages for private investors; from the local and regional authorities capacity; from the good cooperation among federal government, regional authorities and private investments. Another important finding is that population plays quite low role in decision making process.

4.6. Conclusions

On the question of how implemented national policies influence city system transformation, this study found that policy impact has selective character: the creation of 17 SEZs, 25 TICs, government support of 27 mono-industry cities. Although this result could not be considered as negative, because the selection process for such large-scale country as Russia is a logical consistency, however a clear benefit of this political approach in the prevention of city system degradation and more on providing the impulses for the further development is doubtful. One of the issues that emerges from the policy analysis is that development policies contributed to urban reconfiguration are fragmented into different bits of programs and strategies without interrelation that promotes a scarcely visible contribution to city system development. Housing policy, transport policy, the policy aimed to create an innovative economy or measures aimed to upgrade mono-industry cities' performance is dispersal and do not have a direct tie with space and with cities at least. What is surprising is that in contemporary Russian practice the timing, planning is in a favor while a space planning is at the initial stage of development. For example, the aim twice increase the road construction promoted in the Transport Strategy -2030 does not specify where these roads should be built; in housing policy the aim is to build 1 sq.m. per 1 person in a year in 2020 without a specification where these square meters have to be built. At the same time the increasing volume of construction is realized to the prejudice of urban environment quality and promotes the urban sprawl mainly around large cities. Transport policy and housing policy have a time priority under the space. As results it shows a low efficiency of undertaking measures during the last decades. We suppose that the explanation for this might be that Urban-Planning Code of the RF makes no provision for the general settlement scheme, at the same time there is no harmonization of proposed sectoral schemes for country's territorial development.

However, recent international experiences deal with space development (at all levels: city, region, country) promotes an integrated approach. All in all integrated approach involves spatial, temporal, factual coordination and integration of diverse policy areas and planning resources to achieve defined

goals using specified instruments. There are clear advantages of integrated policies. The risk of working against each other is more extreme in single-issue policies than in multi-issue policies. Also, combinations of problems can be attacked from different angles. Third, and finally, all kinds of small initiatives can be bundled together, creating a clear overview of the situation (Van Beckhoven, 2006). Taking together all advantages of an integrated approach to territorial development, the undertaken policy analysis has shown that in Russia the problems connected with territorial development are considered separately from various points of views and pursue different objectives. Each policy acts independently.

However, previous studies have reported that the lack of unified national urban policy, is a policy in itself (Stanilov, 2007, Golubchikov, 2010). The absence of general national strategy or at least general overview on the complex territorial development with clearly defined growing poles, and transport infrastructure extension due to improve urban accessibility promotes the chaotic territorial development, when some cities are getting a sufficient government support, while others are left without any initiatives.

In the chapter four triggers for urban Renaissance: spatial policy, housing policy, transport policy and a complex of measures aimed to urban economy diversification have been singled out. We argue that these triggers have to be integrated into the unified national policy (strategy, agenda) aimed to prevent space degradation, single out urban growths and define the place of the city within the applied policies.

From the positive side, the analysis of urban development initiative has found that during the last years the question about the creation of new life in cities and towns is tardy emerging. Recently we can observe that the cities themselves undertake various initiatives to develop policy measures to meet the urban challenges. Currently there are emerging local associations aim to urban development as well as to enforce and clarify urban status/position in federal economy and the country's space. For instance, the first Forum of municipalities which took place in small Russian city Lisva (Perm Kray) in November 2013 was aimed to create a common ground for communication and practical exchange among state government, local authorities, public and private sectors for the purpose of further territorial development including urban development. Also, during the last decade, various urban unions have been created, for example "The Union of small Russian towns", or "Association of innovatory cities", or "Association of Siberian and Far East cities". All of them are aimed to create a network for knowledge and best practices exchanges, and also, as in Russia the central government plays an important role in providing financial support for selected urban development projects (Kinossian, 2012), the aim of this local unions is to promote their self

at the federal level for getting an additional financial support for the development. In addition to that practice a set of documentation/declaration aimed to urban development have been created recently. Among them are "Tula initiative", "Obninsk declaration of innovation-oriented cities", "Omsk manifesto", etc. "Tula initiative: urban development and best practices" are a result of participation of the RF in the EXPO-2010 and this document embraces a vast experience of the current situation in international urban policy, on the other hand it is the attempt to adjust existing Russia urban development practice with the main international urban movements. "Obninsk declaration of innovation-oriented cities" has been adopted at the November 2011, with the aim to improve the urban environment, especially of small and medium-sized cities, creating a knowledge network for the sheer experience of local management, and effective and fair tax redistribution among the cities. "Omsk manifesto" has been adopted at the February 2012 by NGO "National guild of urban planners". This document provides a critical analysis of the state of Russian cities and proposes a set of direction for National Urban Policy formation. Unfortunately the described initiatives undertaken at the local level have a chaotic, un-systemized character; not been arranged in any kind of policy their efficiency and result are not well-defined.

CHAPTER 5³

THE EMERGING STRUCTURE OF RUSSIAN URBAN SYSTEM: A CLASSIFICATION BASED ON SELF-ORGANIZING MAPS

As was explored in previous chapters during last two decades Russia faces a permanent population movement from North to South and from East to West, motivated by better economic prospects in the central region of Russia and better climate conditions as well. Also a few cities, most obviously Moscow, have population inflows so large that they find it hard to cope; and the current spatial population movements reflect, in one way or another, adjustments to market conditions, which is to say that they are correcting a structure that evolved under central planning (World Bank, 2005). Depending on soviet endowments and recent development policies which are neglecting the urban value of national development, cities have had a various impulses for their further development and have developed through different paths.

The purpose of this Chapter is to group the cities with high internal similarity, using Neural Network Self-Organizing Maps (NN SOM), in order to understand the existing city system, revealing spatial patterns and interferences of cities at different hierarchical levels. This research step is an attempt to reveal successful and failed cities, with proposal of possible scenarios for further regeneration.

5.1. Collecting data on Russian cities

To prepare a comprehensive city system analysis in Russian statistical reality is a complicated task, and more, at first sight it seems an impossible task. Practically it lacks an extensive and qualitatively sound statistical urban database. The existing data are fairly scarce and scattered with a bunch of missing values. On the one hand, there are not enough data, at the city level, collected by the official statistical institute “*Rosstat*” and its regional branches. On the other hand collected information is represented in an unsuitable way for a further processing, i.e. divided into several files and not in a table format. For instance, since 2004 *Rosstat* publishes a special issue “*Russian regions*” with the main socioeconomic indicators of Russian cities with more than 100.000 inhabitants, but unfortunately also this resource has an unsuitable data presentation format. Obviously the lack of reliable, complex and geographically comparable data may lead to incorrect analysis and conclusions regarding the socioeconomic trends.

³ The conference paper Diappi, L., Bolchi, P. & Slepukhina, I. 2013. The emerging structure of Russian urban system: a classification based on Self-Organizing Maps. 53rd ERSA Congress: Regional Integration: Europe, Mediterranean and the World Economy. Palermo, Italy has significantly contributed on this chapter

For this research, governmental statistics has been used, derived from a special information resource called “*Multistat*” comprising a section regarding the economy of Russian cities. The database contains statistics on population; finance and investments; construction; trade, transport, education and culture in the years 1970, 1975, 1980 and from 1985 to 2010. Unfortunately, there are a lot of missing data, so the variable selection is not the perfect one for this analysis.

For the present analysis 856 cities have been selected and analyzed by means of twenty eight indicators. The selected cities have almost complete information. Urban indicators have been split up into three groups: population dynamic; characteristics of the housing stock; economic aspects. The list of the indicators and how they have been calculated are presented in Table 5.1. The analyzed period is limited at two official Russian censuses which took place in 2002 and 2010 but some indicators have a larger observing horizon.

Table 5. 1 List of performance indicators for SOM analysis

Indicator	Short name	Description
Population dynamic		
Population 2002	pop02	
Pop. 02-10	dpop0210	$(\text{Pop } 2010 - \text{pop } 2002) / \text{pop } 2002$
Pop per flat 2002	crow02	$\text{pop}2002 / \text{numb. Of dwellings } 2002$
Pop per flat 10-02	icrow0210	$(\text{pop}2010 / \text{numb. Of dwellings } 2010) - (\text{pop}2002 / \text{numb. Of dwellings } 2002)$
% natural balance 1990-2002	natbal9002	$(\sum \text{natural balance } 1990-2002) / \text{pop } 2002$
% natural balance 2003-2010	natbal0310	$(\sum \text{natural balance } 2003-2010) / \text{pop } 2010$
% migratory balance 1990-2002	migbal9002	$(\sum \text{migratory balance } 1990-2002) / \text{pop } 2002$
% migratory balance 2003-2010	migbal0310	$(\sum \text{migratory balance } 2003-2010) / \text{pop } 2010$
Housing conditions		
mq/per 2002	hmq02	Houses tot surf. 2002 / pop 2002
mq/per 2002	hmq0210	$(\text{Houses tot surf. } 2010 / \text{pop } 2010) - (\text{houses tot surf. } 2002 / \text{pop } 2002)$
% dilapidated housing 2002	hdil02	Dilap. Houses tot surf. 2002/ houses tot surf. 2002
% dilapidated housing 2010-02	hdil0210	$(\text{Dilap. Houses tot surf. } 2010 / \text{houses tot surf. } 2010) - (\text{dilap. Houses tot surf. } 2002 / \text{houses tot surf. } 2002)$
% housing with water 2002	hwwater02	Houses with water tot surf. 2002/ houses tot surf. 2002
% housing with water 2010-02	hwwater0210	$(\text{Houses with water tot surf. } 2010 / \text{houses tot surf. } 2010) - (\text{houses with water tot surf. } 2002 / \text{houses tot surf. } 2002)$

Indicator	Short name	Description
Population dynamic		
% housing with sewerage 2002	hwsew02	Houses with sewerage tot surf. 2002/ houses tot surf. 2002
% housing with sewerage 2010-02	hwsew0210	(Houses with sewerage tot surf. 2010/ houses tot surf. 2010) - (houses with sewerage tot surf. 2002/ houses tot surf. 2002)
% housing with heating 2002	hwheat02	Houses with heating tot surf. 2002/ houses tot surf. 2002
% housing with heating 2010-02	hwheat0210	(Houses with heating tot surf. 2010/ houses tot surf. 2010) - (houses with heating tot surf. 2002/ houses tot surf. 2002)
% housing with hot water 2002	hwhw02	Houses with how tot surf. 2002/ houses tot surf. 2002
% housing with hot-water 2010-02	hwhw0210	(houses with hw tot surf. 2010/ houses tot surf. 2010)- (houses with hw tot surf. 2002/ houses tot surf. 2002)
new construction/ tot.surf. 2003-2010	hnew0310	(\sum new houses, surf. 2003-2010) / houses tot surf. 2010
Economic profile		
Average salary 2002	salary02	Average salary 2002 * inflation index
Average salary delta 2002-10	dsalary0210	(Average salary 2010 - average salary 2002 * inflation IND.) / average salary 2002 * inflation IND.
% unemployment 2002	unemp02	Unemployed 2002 / population 2002
% unemployment 2010-2002	unemp0210	(Unemployed 2010 / population 2010) - (unemployed 2002 / population 2002)
Investments 98-10	inv9810	(\sum inv 1998-2010) / pop 2010
% ineff. Factories	ineff02	Rate of inefficient factories 2002
ineff. Factories 2010-2002	ineff0210	Rate of inefficient factories 20010 - a rate of inefficient factories 2002

The *population dynamic* group contains eight indicators, describing the changes of cities' population endowment based on natural balance and migration flow. Unfortunately, those data are limited mainly by historical reasons. The role of interurban migration was underestimated in the soviet reality, because everything, including population flow, were under control and planned from the centre (Mkrtchan, 2008), so there were no reasons to study these processes. This also applies to the commuting: in 1970 the issue about necessity to study it had been raised, but the pertinent data are not still collected in the 2002 Census (Mkrtchan, 2008).

The *housing stock characteristics* comprise thirteen indicators. Among them are the share of dilapidated housing, the volume of new housing construction, and the group of indicators describing the equipment of the housing stock,

such as flowing water, sewage, heating, hot water. All indicators are presented in dynamic from 2002 to 2010.

The final group of indicator city's economic profile describes trends in the economic sphere, including the level of average salary, the changes in the unemployment rate, the volume of capital investment from 1998 up to 2010 and the share of inefficient factories.

5.2. The self-organizing mapping as a clustering toolbox

There are many different approaches for data clusterization. There are k-means algorithm, hierarchical clustering algorithm, self-organizing map algorithm, expectation maximization clustering algorithm, etc. All of them have some advantages and disadvantages. In this research the cities' clusterization has been made by using a Self Organizing Map neural net (SOM). Further on it is explored what it is and why it has been chosen for the analysis.

SOM is a type of artificial Neural Network which allows to solve non-linear problems with high-dimensional fuzzy data by organizing them into clusters on the basis of their similarity (Kohonen, 2001). In other words, the task is to "group" or to "range" data in some way and try to catch any regularities. So, self-organization corresponds to an unsupervised learning paradigm, where "self" means learning without a teacher (Kanevski et al., 2009). Nowadays the SOM is popular and its competitive and unsupervised learning, is primarily used for the visualization of nonlinear relations of multidimensional data and dimensionality reduction (Silva and Marques, 2010).

The SOM algorithm has been created by the Finnish scientist Teuvo Kohonen in the eighties to display similar patterns into adjacent parts of the out flowing space. Generally SOM is "a result of a nonparametric regression process that is mainly used to present high-dimensional, nonlinearly related data items in an illustrative, often two-dimensional display and to perform unsupervised classification and clustering" (Kohonen, 2001). From the beginning the SOM algorithm has been proposed as a method of data clusterisation, visualization and generalization (Kohonen, 2001). The SOM maps offer a comprehensive picture of the multidimensional similarity among various items (Arribas-Bel Daniel et al., 2012). Currently its application is extending and interests for this analytical tool is growing also because of SOM networks are especially suitable for hidden knowledge presentation (Lukras Vojracek et al., 2011).

Now SOM is applied in a wide range of fields and its usage has been extended during last years, but despite its impact in the social sciences was

limited (Arribas-Bel Daniel et al., 2012). As a matter of fact recently more and more urban studies based on SOM implication have appeared such as the ones of Arribas-Bel Daniel (2012) and Lidia Diappi and Paola Bolchi (2013).

5.3. The implementation of SOM neural network

As it was said before, the SOM is used to classify a set of observed data into different groups by identifying similarities and differences among them. Each observation (city) might be considered as a point in an n -dimensional space, where n is the number of variables acting as coordinates (in our case 856 vectors/points with 28 variables/dimensions). When *Kohonen layer*, which is in form of a rectangular grid, is superimposed on the cloud of points, a set of nodes is obtained in which the nodes are connected together in a way that they move to the vicinity of the nearest dense cluster of a group of observations in the cloud. (Figure 5.1a shows, necessarily in a two-dimensional space, the points corresponding to the observations and the nodes in their initial positions. During the learning process, the algorithm deforms the grid of nodes in order to approach each node to a cluster of observations (Figure 5.1b). The observations, described by data vectors, are repeatedly presented to the network, which identifies the nearest node (winner node) and “moves” it's closer to observed point. The distance assigned to the node depends on the time step of the process. Initially, the displacements are bigger in order to speed up the learning process; then the spatial configuration stabilizes and progressively refines the fitness of the network to the points. The nodes connected with the winning node move as well, even if their movement is more limited in terms of distance covered. In this way the structural property of the grid is maintained and the connected nodes are placed in the centers of clusters of records presenting similarities. Once the learning process has been accomplished, the records are assigned to the various groups, which are identified by the nearest node. The final coordinates of the nodes of the grid form a typical profile (*Codebook*) of each group (Diappi et al., 2013).

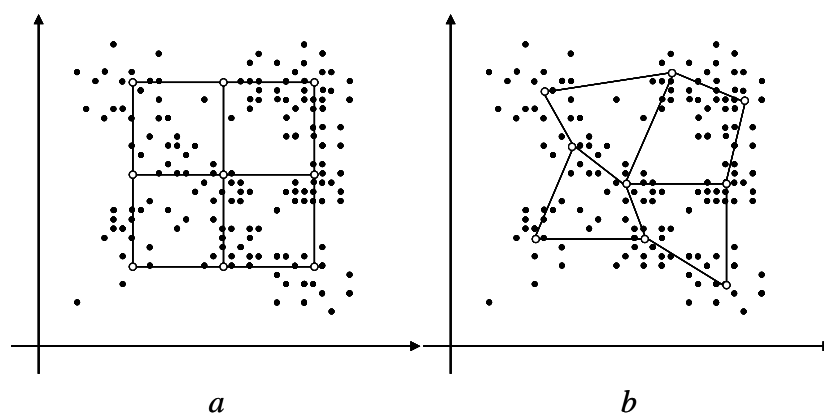


Figure 5.1 *Functioning of the SOM NN: The network is deformed by the learning algorithm to bring the nodes close to the groups of observations (Diappi et al., 2013)*

To work correctly the SOM needs normalized data. This has been done, between 0 and 1, outside the used software, prior to feed it the data, since knowing correspondences between raw and normalized data is anyway necessary.

The city data records were divided into three groups: cities with all data, cities with missing data, and cities with outlier data. This last group comprises cities where the value of one or more indicators is largely out of range, and this can lose accuracy to the SOM results.

From the data ranges in the first group of cities have been calculated the parameters to be used for the data normalization. This group was used to train the SOM, and then classified as usual. Experiments have been made changing the size of the Kohonen layer, a 5x5 matrix was chosen as a good compromise between number of clusters and clustering quality.

The cities of the second group, not used for the training, were classified ignoring the missing data (i.e. Calculating the distance to find the nearest node using only the existing data). For the cities of the third group, data were scaled using the same parameters of the normalization (obviously obtaining also data outside the 0-1 range), and then classified.

5.4. An overview of the city clusters

5.4.1. General description of obtaining results

The clustering has identified 25 groups of cities which are represented in a 5x5 matrix (Figure 5.2). Each group has been named C i - j , where i is a row and j is a column which group belongs. Each cell in Figure 5.2 shows the group name, the number of cities in the group and the share of urban

population belonging to this group. The position of a group inside the matrix is significant because some group's characteristics are similar in neighboring cells and change gradually moving from one vertex to another.

Each cluster of cities is characterized by a Codebook, which synthesizes the information about the group. All twenty five codebooks are represented in Figure 5.4 and provide a general description and comparison of the clusters.

City size					
City size	C 1-1	C 1-2	C 1-3	C 1-4	C 1-5
	45 0.7%	26 0.5%	34 0.8%	18 0.7%	25 0.7%
	C 2-1	C 2-2	C 2-3	C 2-4	C 2-5
	32 0.7%	29 0.7%	22 0.9%	35 1.8%	24 1.7%
	C 3-1	C 3-2	C 3-3	C 3-4	C 3-5
39 1.6%	41 1.8%	35 1.9%	42 2.7%	32 1.9%	
C 4-1	C 4-2	C 4-3	C 4-4	C 4-5	
24 1.1%	28 2.2%	48 3.8%	52 6.6%	39 5.3%	
C 5-1	C 5-2	C 5-3	C 5-4	C 5-5	
32 2.3%	27 1.9%	49 2.6%	32 5.7%	46 49.5%	
Dilapidated houses					
Housing facilities: water, sewerage, heating, hot water					
Salary; Investments; new construction					

Figure 5.2 Some variables' distribution into groups in the 5x5 matrix

The cities' size, in terms of population, is growing, moving from left to right and from top to bottom simultaneously. As the group C 1-1 comprises 45 cities where less than 1% of analyzing urban population lives, and on the other hand, the opposite group C 5-5 comprises the equal amount of cities (46) where almost half of the population lives. The share of dilapidated houses considerably decreases with the increasing city's size and it is decreasing going from left to right. On the contrary the housing equipment including heating, water supply and sewerage are improving from left to right. The analysis has revealed a correlation between city's size and housing equipment: big cities perform better than the small ones. Moving top-down the majority of economic characteristics is improving, but not evenly along columns. Not all the variables follow a linear and a monotone trend as is possible to see for the most part of them in the one-parameter matrix in Figure 5.3

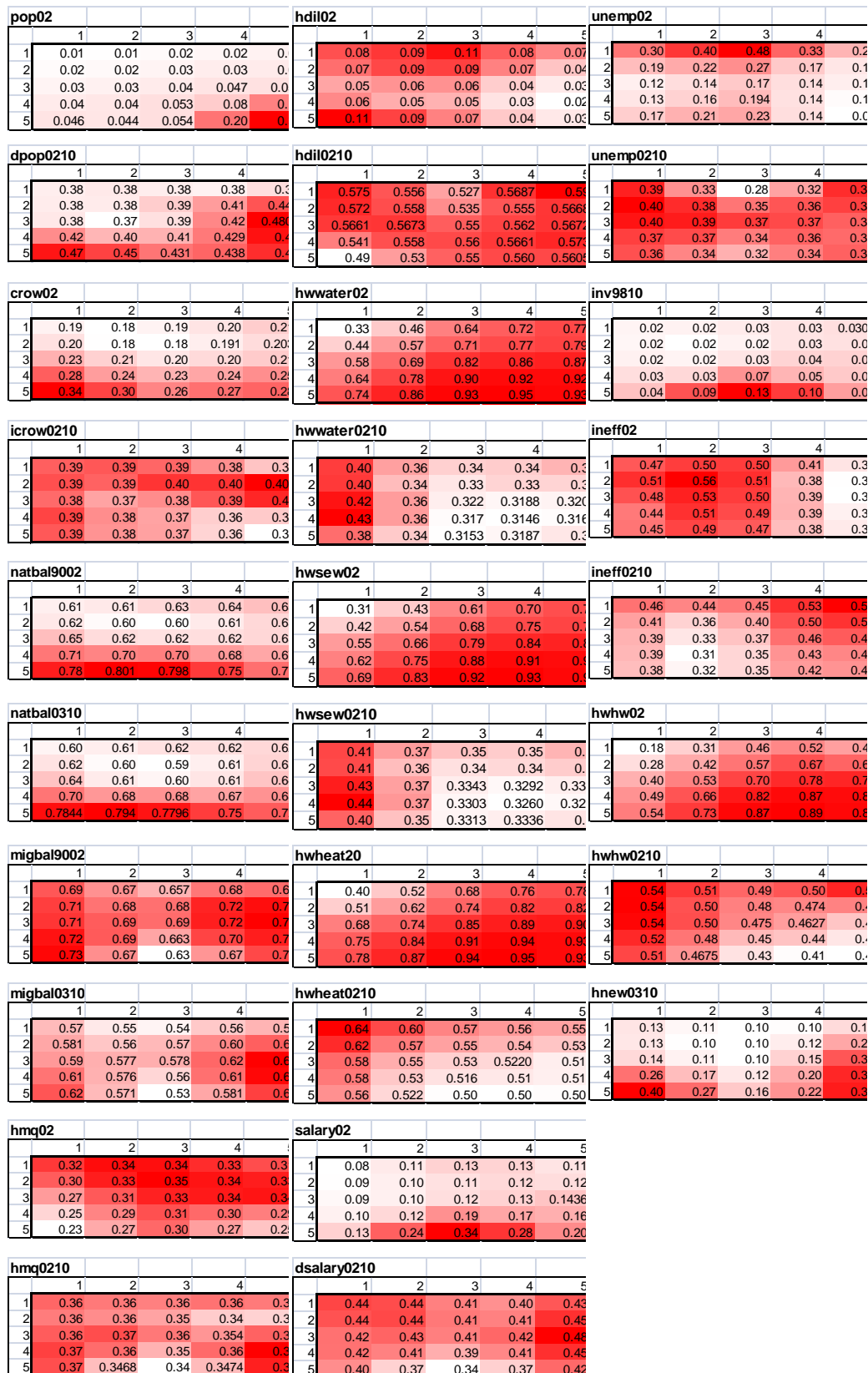


Figure 5.3 One-parameter matrix

As shown in Figure 5.2 while the number of cities in the groups is quite equal, on the contrary, the population is highly concentrated. The most populated groups are concentrated in the right-bottom zone. Around sixty seven percent of analyzing population lives in the cities belonging to four groups (C4-4; C 4-5; C 5-4; C 5-5) comprising twenty percent of the analyzed cities (169 cities). The most populated group C 5-5 comprises almost half of analyzing urban population (49.5%) distributed in forty six cities only. On the other corner top-left (C 1-1; C1-2; C1-3; C-1-4; C1-5; C 2-1; C 2-2; C 2-3) only 5.7% of urban population lives in 231 cities.

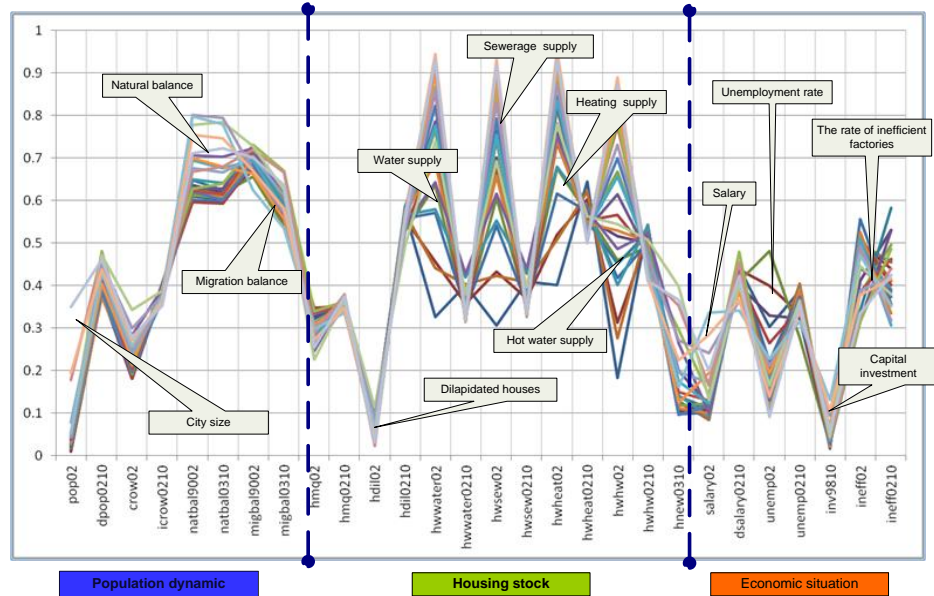


Figure 5. 4 Codebooks of the twenty five clusters

The complex analysis of 25 codebooks has revealed on the one hand, some trends in different groups, on the other hand it allows to provide a comparative analysis among all groups of cities. The natural population balance between groups is various significant, but only two groups (C 5-2 and C 5-3) have a natural growth during 1990-2002 and three groups (C 5-1; C 5-2; C 5-3) have a natural growth in 2003-2010. All other groups have a permanent natural decrease since 1990. It is a cause of high mortality combined with a low fertility rate in the most part of Russian cities. On the other hand, turn to the migration outflow we will see that if in the period between 1990-2002 only one group (C 5-3) had expired migration outflow, the next period up to 2010 15 groups of cities have migration outflow. Further analysis showed that in 17 groups from 25 the population has decreased in the period from 2002-2010. It proves a rather strong shrinking trend among cities.

Housing stock folder shows a big disparity among cities in terms of housing equipping with services and utilities. The three groups (C 1-1, C 1-2 and C 2-1) have a significantly worse housing stock in comparison with all other groups. The changes in housing facilities in the period 2002-2010 have run

rather homogenous between cities. Evidence the growth of housing stock based on the volume of new construction has a great difference between groups and in spite of in big cities the volume of new construction is higher than in small ones, there is no strong correlation between city size and the rate of housing stock growth. The group C 5-1 has the highest growth of new houses.

Economic profile is rather various as well. It is a four time differences in average salary level among groups and more than 5 times the difference in unemployment level in 2002. The change situation in 2002-2010 has elapsed rather homogeneity and it should be mentioned that for example the groups with higher salary have experienced the smallest changes (growth) in the period 2002-2010, and vice versa the groups with smallest salary in 2002 have faced with the biggest growth in 2002-2010. The changes in the level of ineffective enterprises in the period 2002-2010 are rather differently directed.

5.4.2. A description of the vertex groups

To understand better the situation within the groups and inter group cooperation the most extensive analysis of each group has been undertaken. As the 5x5 matrix is quite extensive (vast) and at the same time as it is mentioned above, there is no strong linear sweep from one vertex to another for the further analysis we proceed with an elaborate explanation of the edges. Parallel with a factor analysis, we will conduct a location analysis with the aim to find out a correlation between socioeconomic urban characteristic and its position concern to geographical interposition, transport accessibility and distance from Moscow. Start with the most populated groups C5-5 which is located at the lower right corner.

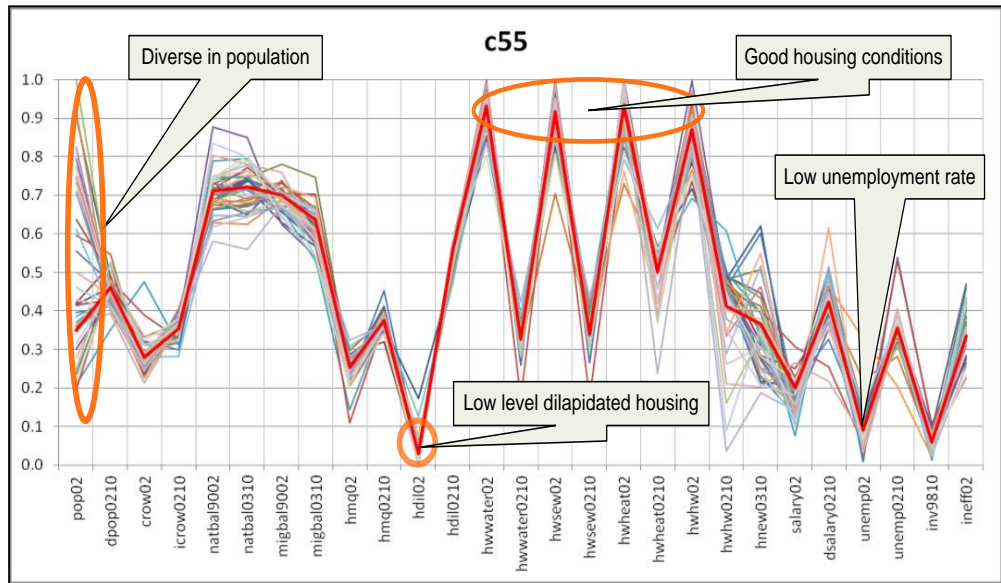


Figure 5.5 Codebook of group C 5-5

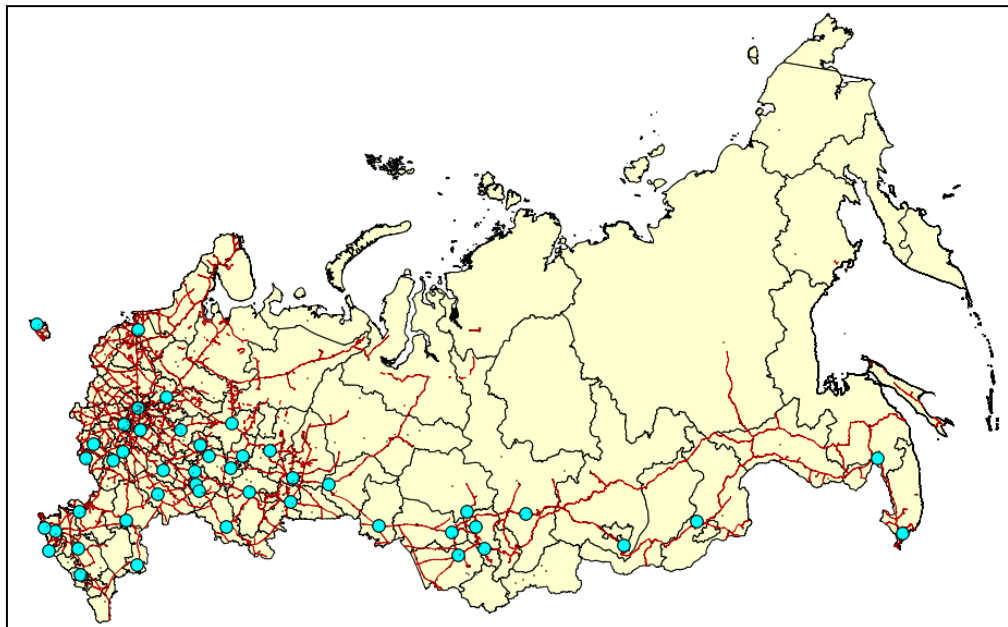


Figure 5.6 The C 5-5 cities' distribution along the country.

Group C 5-5 embraces forty-six cities. The ninety percent of these cities are regional capitals, including Moscow and Saint Petersburg. As can be seen in Figure 5.5 the cities of this group are a fairly similar by all variables except the population size. Distinguish of the cities' size of this group is spectacular in comparison with all others clusters. This group embraces all cities with population more than one million people and at the same time Chita and Nalchik with an average population rather more than 300.000 people belong to this group also. Roughly fifty percent of the urban population lives in the cities belonging to this group.

As it is presented in Figure 5.6 the cities of this group is propagated along the country. Vladivostok is the Eastern city of the group and Kaliningrad is the Western one. The significant amount of the cities is concentrated in the European portion of the country (27 cities). Eight cities are situated in the South and three of them belong to Krasnodar Krai. Tomsk, Novosibirsk, Kemerovo, Novokuznetsk and Barnaul are Siberian cities situated relatively close to each other. Krasnoyarsk, Irkutsk, Chita and Khabarovsk are the cities situated along the Eastern part of the Trans-Siberian railway. The cities have a good transport connection, including railway and roads. Eighty three percent of cities have the international airports other have local and federal airports and only Novorosiisk does not have air connection. But at the same time Novorosiisk is the biggest Russian port on the Black Sea and the important railway hub in the Russian South.

The cities could be classified as multifunctional systems with highly developed industrial and service base. What is interesting in this cluster that five cities from the official list of one-industrial cities approved by the Russian government, belong to this cluster. There are Togliatti, Naberejnie Chelni, Astrakhan, Lipetsk, and Novokuznetsk. In spite of Togliatti in Samara region, appurtenant to this group, officially it is a mono-industry (one-company) city, but in terms of size it is the biggest city which is not a regional capital. In 2012 the city's population accounts around 720.000 people. Actually, we consider Togliatti as a multifunctional city. In spite of a main automobile enterprise JSC "VAZ" is considered as the only industry, we think that it is a main industry, but the city has a diversify economy basis, which includes well developed chemical industry, food industry, etc. The similar situation with Naberejnie Chelni in Republic of Tatarstan which is also considered as a mono-industry city (the core enterprise is JSC "KAMAZ") but in reality it has a rather diverse industry including the building industry, processing industries.

The main part of cities have experienced a population growth since 2002 up to 2010 except 16 cities which have lost their population in 2002 - 2010. The city's growth mainly is provided by migration inflow as a natural balance is characterized by the permanent decreasing since 1990.

The housing stock of this group is significantly better in comparison with other clusters. Here we observe one of the lowest rate of dilapidated houses in Russia and one of the best situations with housing facilities, including water supply, sewerage, heating. Also, this group has one of the biggest rates of housing growth (case of a significant volume of new housing construction). But it should be mentioned that the situation with housing construction is fairly different between the cities of this group. As, for example, Tula had new construction three times less than Astrahan' in 2002.

From the economical point of view this group performs quite well. In 2002 the lowest unemployment rate was here. Also, the group is characterized by good levels of average salary and low shares of ineffective companies during 2002-2010.

The analysis shows that this vertex cluster embraces the biggest cities with the situation rather better than average around the nation. The set of characteristics of all three profiles (population dynamics, the quality of housing stock and economical profile) characterizes this group as a group of “strong” and successful cities. It possesses one of the most favorable positions among all other groups. Taking into account a positive trend in social-economic parameters and the cities’ distribution along the country we can propose that they could be considered as “growth poles” for the national spatial-economical development.

At alternate angle the **group C 1-1** is a totally opposite to group C-5-5. This group embraces 45 small towns and as follows from Figure 5.7 the cities are enough diverse inside the group. The cities have experienced significant depopulation in 2002-2010. The cause of depopulation is a high mortality jointed with a high migration outflow. All cities experienced the natural decrease since 1990 up to 2010. Concerning migration outflow, they received a bidirectional behavior. More than half of the city have seen a positive migration trend since 1991, but also there are some cities which have changed the migration flow from positive to opposite after 2002.

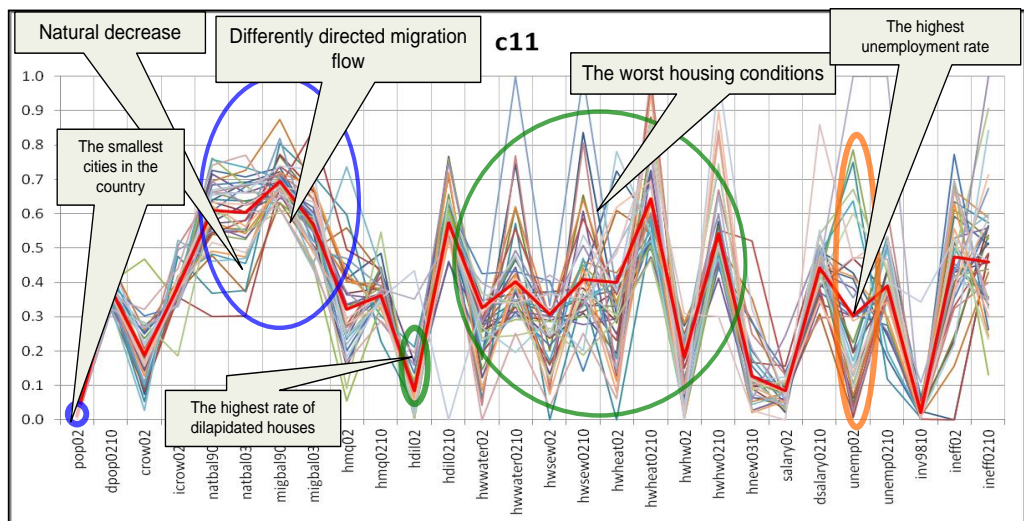


Figure 5.7 Codebook of group C1-1

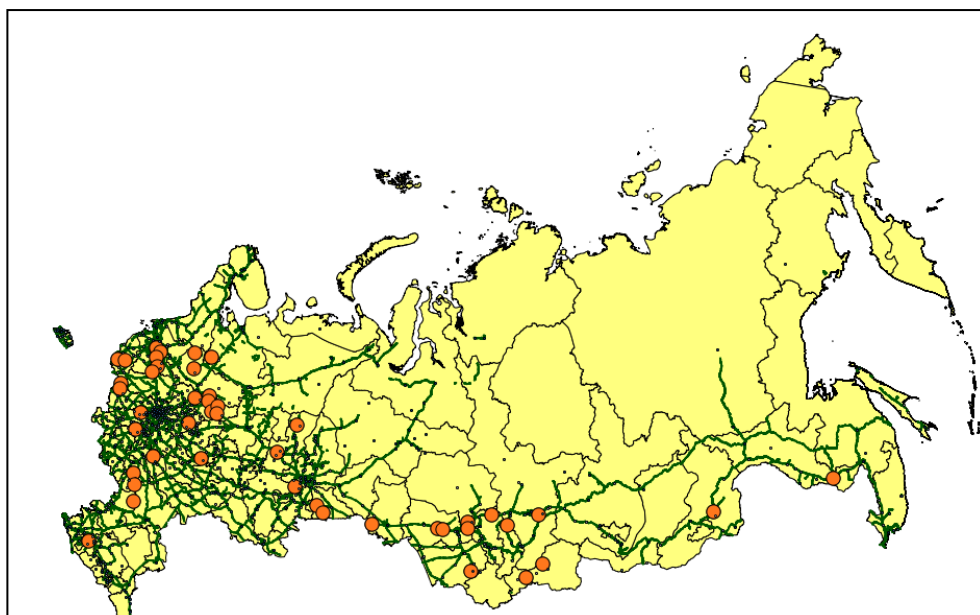


Figure 5. 8 *The C 1-1 cities' distribution along the country*

In spite of this group is characterized by the best housing (flat) supply per person in the country (e.g. In Okulovka there were only 1,27 people per flat in 2002) the condition of housing stock is inadequate, especially in terms of water supply, sewerage, heating and hot water supply. And it is considerably worse in respect of all other clusters. In spite of during 2002-2010 the general situation with housing facilities has started to improve, it has not changed the situation significantly. As well the share of dilapidated houses is much higher than an average around the country.

Further analysis indicated that the economic profile of this group is poor. It is characterized by the lowest salary and a high unemployment rate. The level of investment in the cities since 1991 up to 2010 is the lowest among all others clusters. The analysis of economical facet of this group has shown that here we can find very different cities from the economical point of view. In some of them such as Kurtamish we observe the highest rate of inefficient enterprises (0.77), but in other ones such as Kurganinsk and Liuban the rate of inefficient enterprises is the lowest. Also, there is a huge, diverse among unemployment rate.

Four cities from this group belong to official list of one-company cities in Russia. There are Juja (Ivanovo region), Nitva (Perm Krai), Manturovo (Kostroma region) and Njazepetrovsk (Chelyabinsk region). The distribution mono-industry cities among clusters is interesting, because as we find out the poor cluster (C1-1) contains less mono-industry cities supported by government than the cluster of strong cities (C 5-5).

As shown in figure 5.8 the cities of this group are rather passed out along the country. At the same time some space concentration is observed, as, for example, half of analyzed cities of Kostroma region belong to this group (6 out of 12). Only one South city Kurganinsk of Krasnodar Krai is included into this group. If cities of European part have more or less satisfied transport accessibility, turning to the Eastern and Northern cities we observe the very poor transport connection. Some cities such as Kargopol in Archangelsk region, Nitva in Perm region, Kalach in Voronej region, Eniseisk in Krasnoyarsk Krai, Nerchinsk in Zabaikalskii Krai have a very poor transport connection. They are situated far from other urban settlements and connected with other cities only by roads. Mainly they are historical cities situated along the rivers (Northern, Western cities) or which have been founded as a fortress (Eastern cities). They have lost their position during the time. Only one eastern city of this group, Obluchie in Jewish Autonomous Region, is an important railway hub along the Transsib railway.



Figure 5. 9 *Kalach city view*



Figure 5. 10 *Obluchie city view*

Turning now to **the group C 1-5** which includes only 25 cities. This group is characterized by the significant economical decline in 2002-2010. During this period the cities have faced with a remarkable growth of inefficient enterprises as well as with the growth of unemployment rate, the lowest capital investments since 1998 make the picture worse. The significant economic decline could explain the strong shrinking tendency since 2002 which also embraced with a negative natural balance since 1991. All cities of this group have a negative natural balance in 1991-2010. A migration balance is very diverse parameter inside the group. For example, Primorsko-Ahtarsk,

city in Krasnodar region, is faced with significant migration inflow, contrariwise Holmsk, the city on Sakhalin island, has experienced the huge migration outflow since 1991. Each fifth city of the group belongs to mono-industry cities. There is Vjatskie plane, Zverevo, Lakinsk, Ruzaevsk, Krasnovishensk.

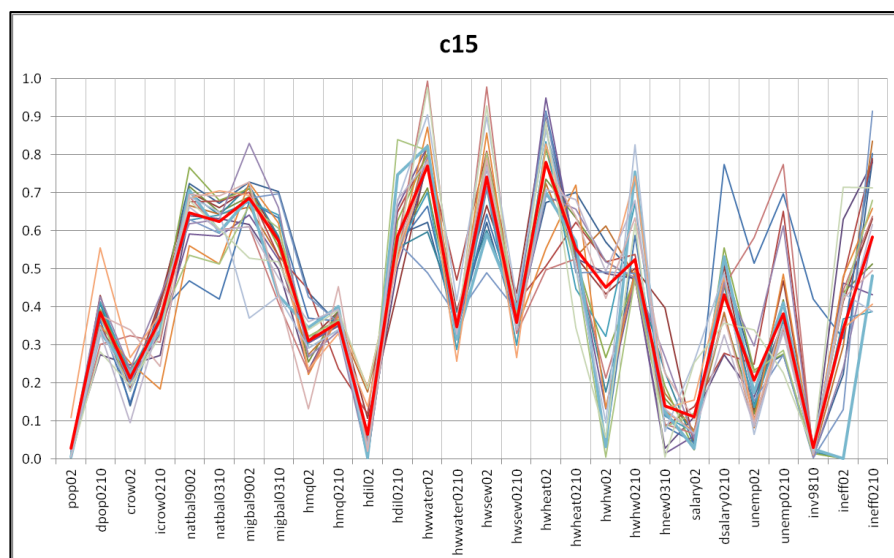


Figure 5.11 Codebook of group C1-5

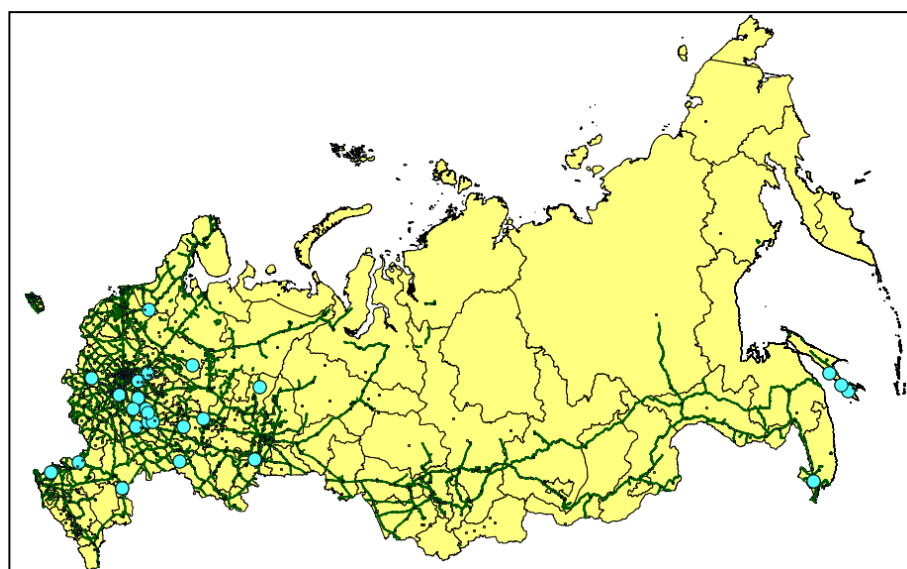


Figure 5.12 The C 1-5 cities' distribution along the country

Although urban economic profile is negative, the housing conditions of this group are slightly better than average around the country, but between 2002-2010 the amount of dilapidated houses has increased significantly, we consider that as the consequences of strong economical decline. As the natural result the quality of existing housing, amenities has not improved during 2002-2010. Since 1991 the crowded of housing stock has decreased, but only

because of significant emigration. The volumes of new construction are rather lower than average around the nation.

Considering geographical redistribution the cities are concentrated in the European part of Russia. Four cities, including Insar, Ruzaevka, Temnikov, Krasnoslobodks belong to Republic of Mordovija; three cities, Tomari, Holmsk, Shahtersk, are located at the Sakhalin island.

Carry on analysis of group C 5-1. From Figure 5.13 we see that within the group cities characteristics are rather diverse. As, for example, Kizlyar (Dagestan Republic) has the most distinctions, also some distinctions have anti-Mansiisk, Goryachiy Klych. The spatial distribution, on the contrary, is compact and the cities, mainly concentrated in the South and Volga FDs (Figure 5.14).

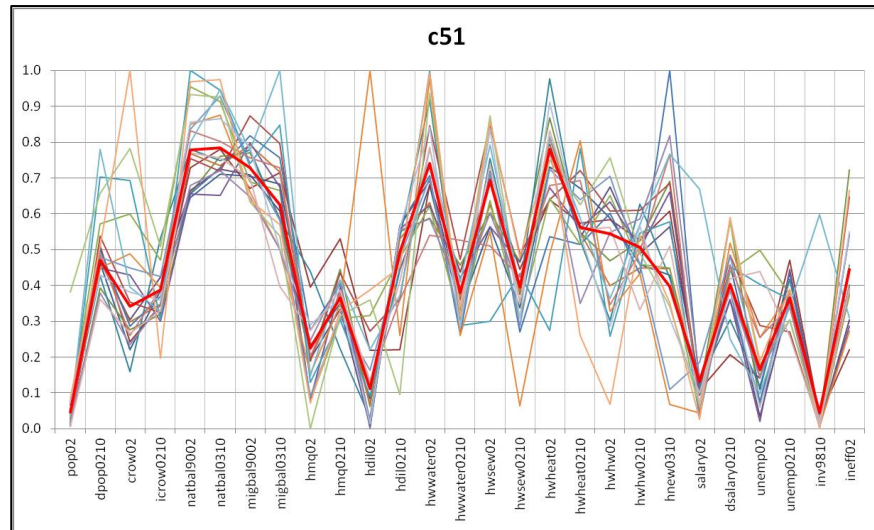


Figure 5. 13 Codebooks for group C 5-1

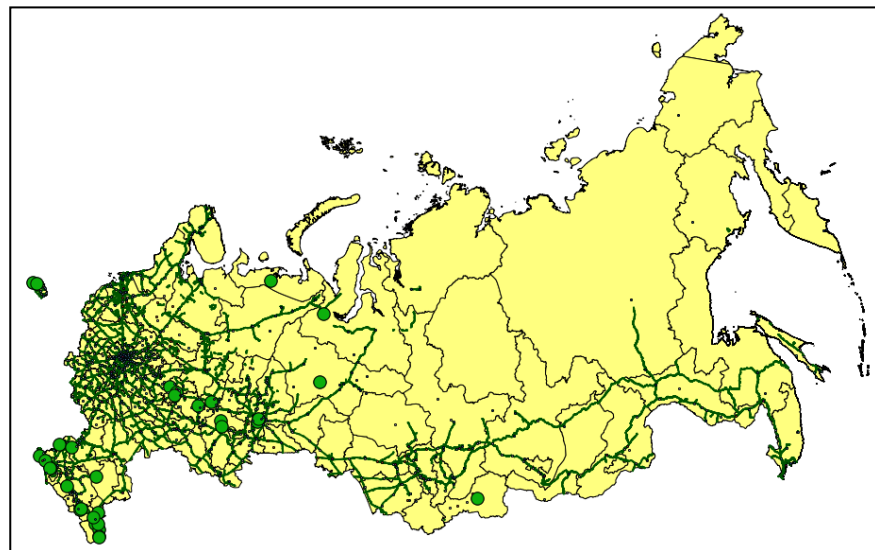


Figure 5. 14 The C 5-1 cities' distribution along the country

Group C 5-1 includes four regional capitals Kizil, Mahachkala, Elista, Cherkessk and also the sub-capitals of the richest regions: Hanti-Mansiisk, Salehard and Narjan-Mar. Geographically they are located in the Northern part, and as it is seen from the map they are separate from other cities. Kizil, the Eastern city of this group, also represents the capital of Tiva Republic.

This group is characterized by one of the highest population growth in 2002-2010, including a positive natural balance since 1990 and the highest migration inflow since 1990 up to 2002. This population growth has stimulated the development of dwellings crowded.

The negative characteristic of this group is the lowest housing supply. But analysis showed that the situation becomes better in 2010. The volume of dilapidated houses was rather high in 2002, but it has significantly decreased in 2010, thereby the situation becomes relatively better. The positive trend in the housing sector is the highest rate of housing construction since 2003-2010.

The analysis of the economic profile of the group is problematic. As the group embraces three richest subs-regional capitals and economically weak southern cities, the general picture could be inconsistent. The general economic situation in the group is slightly worse than average around the country. The average salaries are engaged with low unemployment, in spite of the amount of ineffective enterprises is above average. This group is characterized by the average level of capital investment. Hence the general profile of this group is rather positive.

The analysis of four vertex groups (C 1-1; C 5-5; C 1-5 and C 5-1) has allowed to reveal the relative position of strong and weak cities. The strong cities are located in the low-right zone, the weak cities opposite in the up-left zone. The upper-left and down-right zones have ambiguous identification, but from the first approximation we consider group C 5-1 close to the strong cities and group C 1-5 close to the weak one.

To clarify the situation, all other groups have been studied. Further the analysis of clusters which have provided the most important outcomes for the formation of city's classification are presented.

Further continue with the **group C 5-3**. This group includes 49 cities with a relatively big share of the population (2.6%) among which three regional capitals. The spatial analysis of this group has revealed the interesting fact that the main part of cities are situated in the Northern areas of the country. Anadir, Magadan, Petropavlovsk-Kamchatskii are three Northern Russian regional capitals situated in the Russian Far East. Mainly this group includes

the industrial cities based on the oil extracting and refining; mining; nuclear power station; hydro power station.

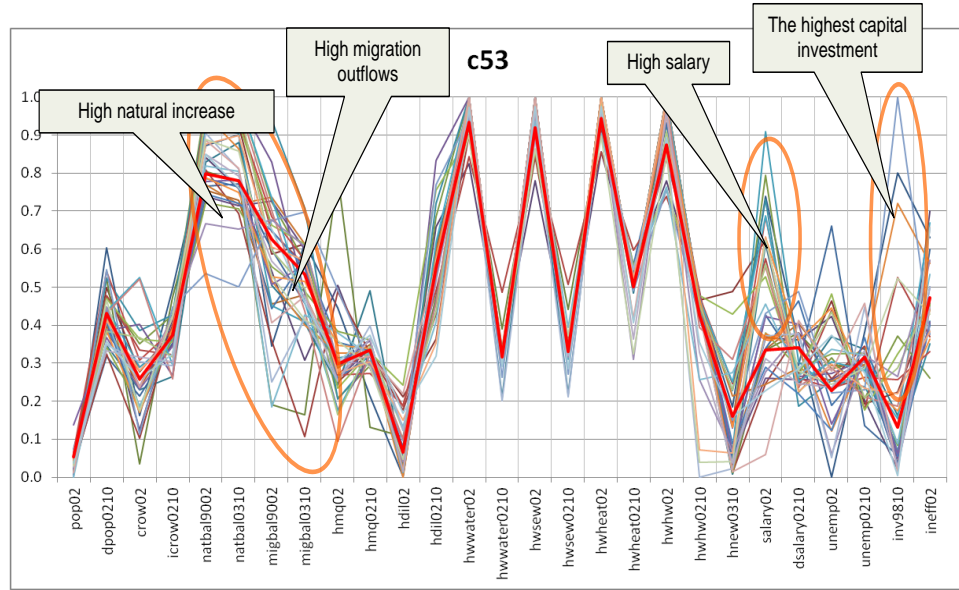


Figure 5.15 Codebooks of group C 5-3

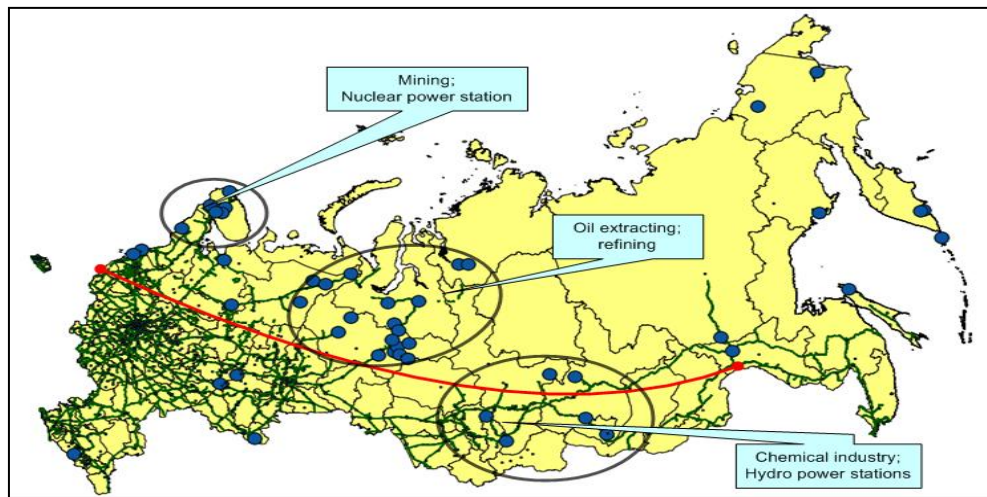


Figure 5.16 The C 5-3 cities' distribution along the country

This group is characterized by chaotic representation in respect of population dynamic and economical aspects. In spite of cities shows the widespread population outflow since 2002, the analysis has revealed that the population pattern of this group is diverse from others. The population outflow is provided by a significant out of migration in the background of a positive natural balance which is constant since 1990. This fact, first of all, has a historical explanation; the cause of the soviet Northern cities could be called “young cuties” in terms of population structure. These cities present places where young people come to work and at the same time pensioners return to a ‘native land’ after working period.

Includes a significant amount of oil-gas cities, the economic profile is one of the best throughout the country, which includes the highest capital investment since 1998 and the highest salary in 2002, but analysis has revealed that in 2002-2010 the salary growth was relatively slow. From the weak point of the economic state a high level of inefficient factories could be marked out. Having a strong representation in economic development and population dynamic this group is characterized by a strong housing shortage and low level of housing construction.

Turning to the **group C 5-4** will explore that this group has a mean position between C 5-3 and C 5-5. It includes 32 cities, five of them are regional capitals. This group is represented by strong cities, some of them are multifunctional regional capitals, others are big industrial centers, such as Salavat, Voljskii, including one-company cities based on the oil and gas extraction, such as Ural, Ural, etc. Some of them form agglomerations, e.g. Aznakaev and Almetievsk in Tatarstan, or Salavat and Sterlitamak in Bashkortostan. Having an average position among neighborhood groups, it is characterized by good housing stock and positive economic profile, but it should be mentioned that situation among cities in the group is varied significantly especially in terms of housing stock growth and the volume of capital investment.

Continue with the **Group C 5-2** which has the average position between C 5-1 and C 5-3 by almost all parameters with the exception in natural balance and the volume of ineffective enterprises. The share of ineffective enterprises is quite with a small growth in 2002-2010. The cities are characterized by the highest rate of natural balance throughout the country since the 1990.

Analysis along the 5 line has shown that here we find the cities with a good characteristic in comparison with other groups. The groups C 5-5; C 4-5 are more attractive among all others; groups C 5-1 and C 5-2 are worse, but in general they have good characteristics in terms of population dynamic and housing conditions. Group C 5-3 is an average, but it represents “the rich cities” which economics based on the natural resources or on the government support (as military functions).

Further, the analysis has revealed a specific geographical location in groups **C 4-5** and **C 3-5**. Forty cities among seventy one analyzed cities (or 56% of the total groups' cities amount) belong to the Moscow region. As shown in Figure 5.17, red points are cities from group C 4-5, while blue points – from group C 3-5.

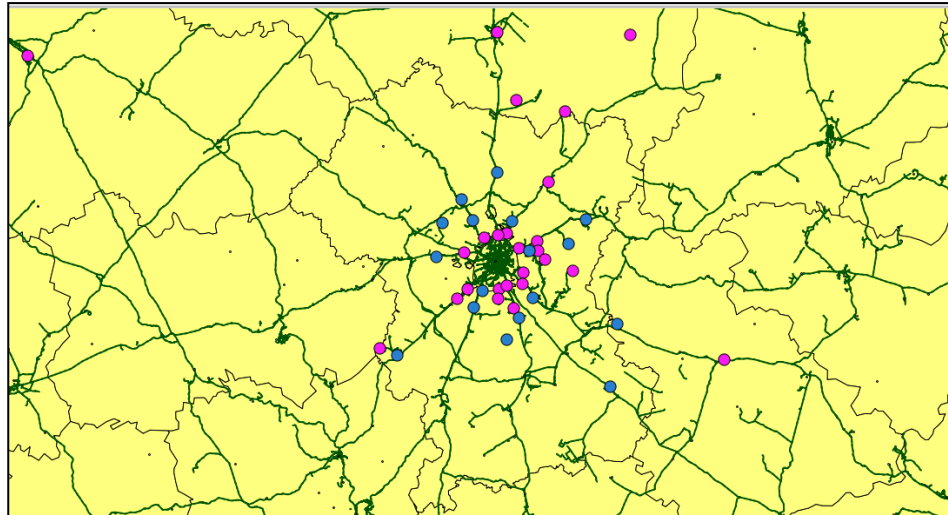


Figure 5. 17 C 3-5 and C 4-5 around the Moscow

In turn consider these groups. Start with group C 4-5. 39 cities belong to these groups and almost all of them are situated in the European part of Russia (excluding Berdsk which is situated in the Novosibirsk region). It comprises six regional capitals. The majority of cities (exclude cities belong to Krasnodar regions) is either settlement-cities for regional capitals (Engnels, Stroitel) or the second largest cities in the region (Berdsk, Geleznogorsk). Cities are characterized of population growth, which is provided by the biggest migration inflow since 1990 in spite of the permanent natural decrease.

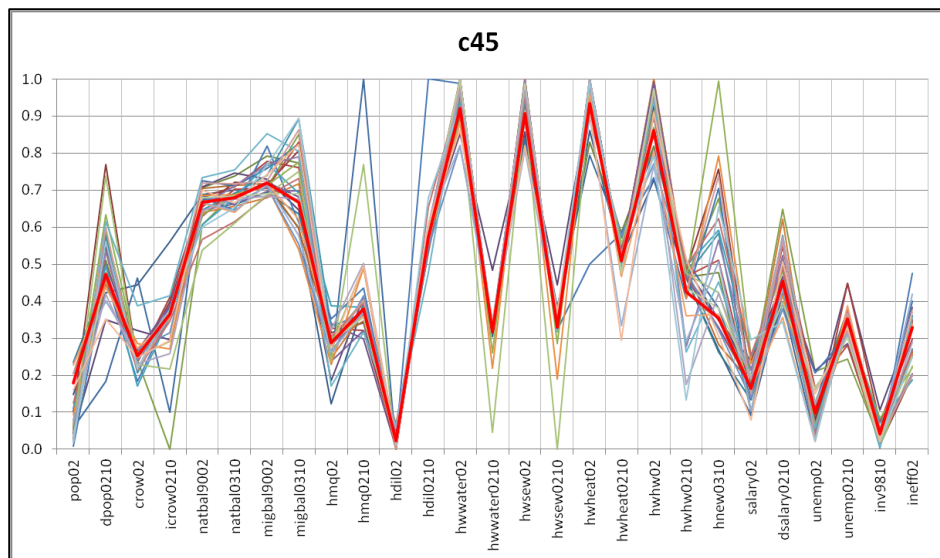


Figure 5. 18 Codebook of group C4-5

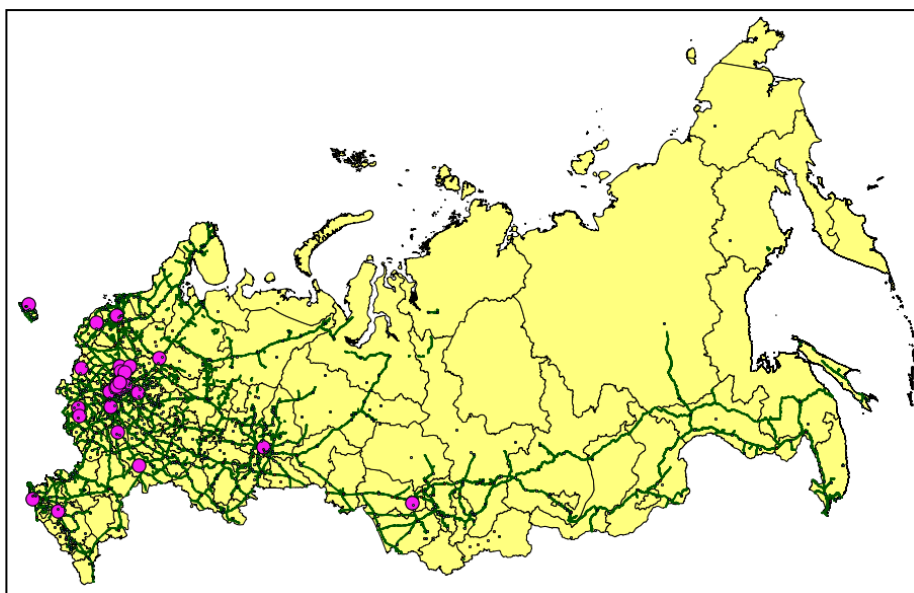


Figure 5. 19 *The C 4-5 cities' distribution along the country*

The situation in the housing stock is rather auspicious. It is provided by good housing, utilities, low share of dilapidated houses consolidated with high volume of new construction. This group has a good economic profile, including average level of salary and low unemployment rate, but at the same time the cities are characterized by rather low level of capital investment since the 1998.

The next group C 3-5 contains 32 middle-size and small size cities, all of them are situated in the European part of Russia and 17 belong to Moscow region. All these cities could be divided into three groups: transport nodal point such as Pokrov, resort cities: Svetlogorsk, Slavjansk, Pyatigorsk, Essentuki, satellite-cities: Azov, Sredneuralsk. This group has a lot of common with group C 4-5. It shows significant population growth based on the high migration inflow since 1990. Also the housing stock is relatively good and the share of dilapidated housing is lower than in other groups. At the same time there is a high level of housing provision per person and high level of new construction.

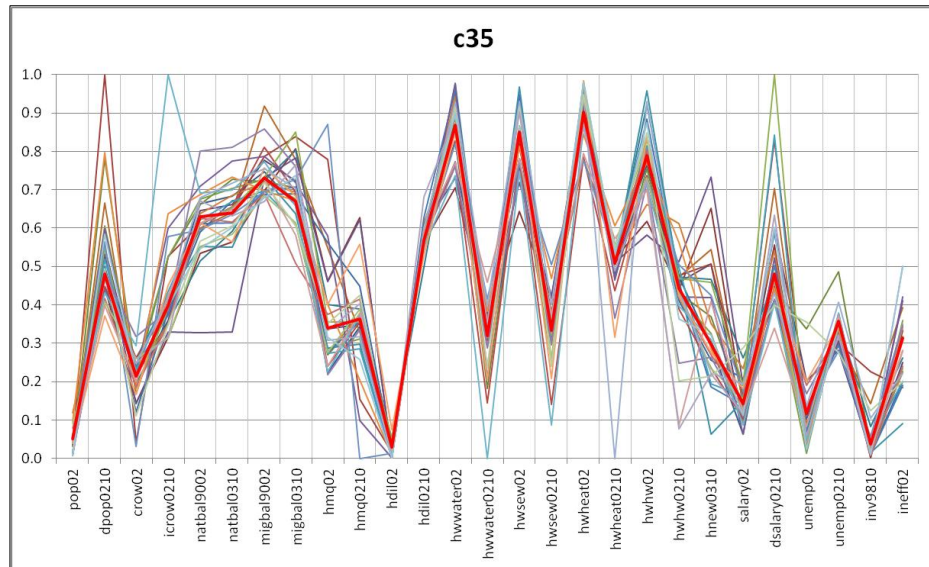


Figure 5. 20 Codebook of group C 3-5

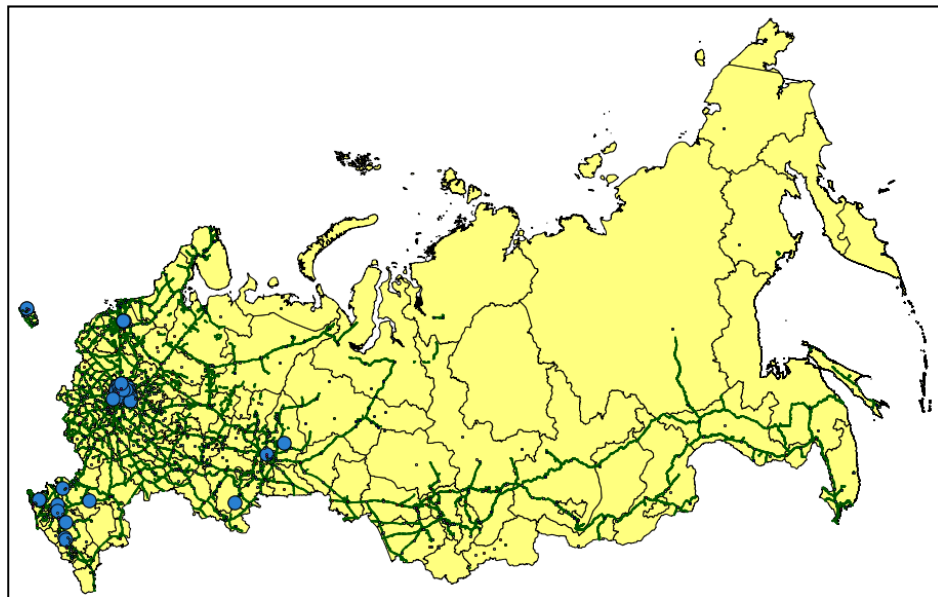


Figure 5. 21 The C 3-5 cities' distribution along the country

Economic profile is slightly worse in comparison with group C 4-5 but is better against the general background. It is characterized by the highest growth of salary in 2002-2010, the low unemployment rate and the minimal level of inefficient enterprises since 2002. But as a group C 4-5 it is characterized by very low level of capital investment since 1998.

Going up along a line 4 and simultaneously moving left along the column 4 towards the upper left vertex, we can observe a gradual decreasing of urban characteristics. And the upper left vertex with groups C 1-1, C 1-2, C 2-1 contains smaller Russian cities with worse characteristics in terms of urban population dynamic, conditions of housing stock and economic situation in

terms of low salary, high unemployment rate and significant percent of inefficient enterprises.

5.4.3. The resulting urban classification

Analysis of all 25 clusters has allowed to consolidate them into four groups with similar development paths. There are “urban engines”, “strong cities”, “dynamic cities” and “weak cities”. The redistribution of groups according to proposed classification is represented in Figure 5.22. Table 5.2 provides characteristics underlying such a classification. While the geographical redistribution is represented in Figure 5.23 and Table 5.3 presents regional redistribution. The list of cities belonging to each class is provided in Appendix 1.

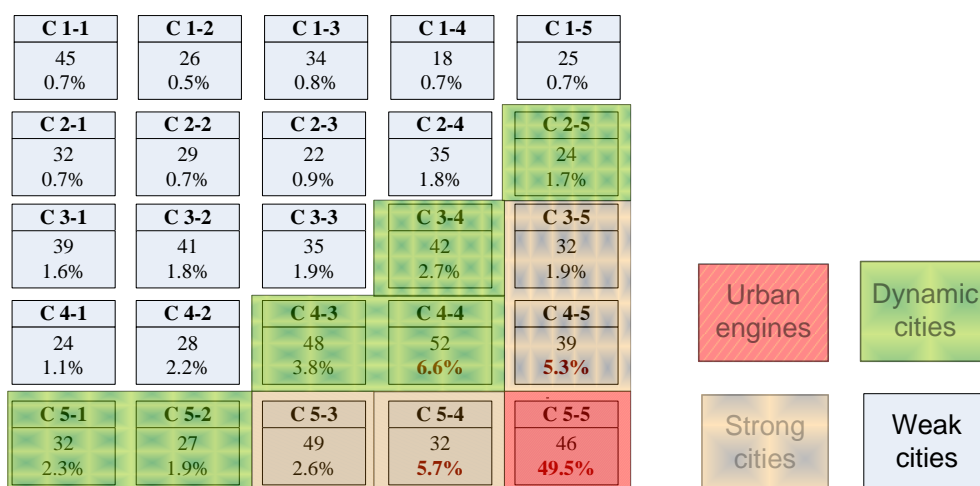


Figure 5. 22 Classification of Russian cities based on SOM analysis

Table 5. 2 Characteristics of Russian urban system

	Cluster	Population Dynamic	Housing stock	Socioeconomic Profile	Geographical location
Urban Engine	C 5-5	Urban population growth: considerable immigration; natural population loss. High crowding index.	Good housing equipment. Small share of dilapidated houses. High level of new housing construction.	High wages. The lowest unemployment rate.	Cities form the country’s settlement framework.
Strong cities	C 5-3	Urban population loss: Natural population increase; emigration. High crowding index.	Good housing equipment. Large share of dilapidated houses. Low level of new housing construction.	The highest wages. High unemployment rate. High capital investments	Northern oil-gas cities. The cities of national importance.

	Cluster	Population Dynamic	Housing stock	Socioeconomic Profile	Geographical location
	C 5-4	Urban population growth: Immigration; Natural population loss. High crowding index.	Good housing equipment. Small share of dilapidated houses. High level of new housing construction.	High wages. Low unemployment rate. High capital investments	Almetievsk agglomer.; Nijnekamsk agglomer.; Sterlitamak agglomer..
	C 3-5	Urban population growth: Considerable immigration; high natural population loss. Average crowding index.	Good housing equipment. Small share of dilapidated houses. High level of new housing construction.	Average wages. Low unemployment rate. Average capital investments.	Moscow region.
	C 4-5	Urban population growth: Considerable immigration; natural population loss. High crowding index	Good housing equipment; Small share of dilapidated houses. High level of new housing construction.	Average wages. Low unemployment rate. Average capital investments	Six regional capitals. Moscow region.
Dynamic cities	C 2-5	Urban population growth: Considerable immigration; natural population loss. Average crowding index.	Good housing equipment. Small share of dilapidated houses. Average level of new housing construction.	Low wages. Low unemployment rate. Low capital investments. Small share of inefficient factories.	Cities of Krasnodar krai Transport nodal points
	C 3-4	Urban population loss: natural population loss; immigration. Average crowding index.	Good housing equipment. Small share of dilapidated houses. Low level of new housing construction.	Low wages. Low unemployment rate. Average capital investments.	Cities of central European part, Tula region, Moscow region, Vladimir region
	C 4-3	Urban population loss: Natural population loss; Emigration. Average crowding index.	Good housing equipment; Small share of dilapidated houses. Low level of new housing construction.	High wages. Average unemployment rate. Average capital investments	16 cities form the official list of one-company cities. Second tie agglomerated cities:

	Cluster	Population Dynamic	Housing stock	Socioeconomic Profile	Geographical location
					Bugulma
	C 4-4	Urban population loss: natural population increase; immigration. Average crowding index.	Good housing equipment; Small share of dilapidated houses. Average level of new housing construction.	Low unemployment rate. Average capital investments.	Five regional capitals. 15 cities from the official list of one-company cities. Cities are situated in the Western part.
	C 5-1	Urban population growth: immigration; natural population increase. The highest crowding index.	Good housing equipment but with big variation among cities. Large share of dilapidated houses. High level of new housing construction.	Average wages. Average capital investments. Average share of inefficient factories	The North Caucasus agglomeration. Naryan-Mar; Hanti-Manissik; Salehard, Kizil.
	C 5-2	Urban population growth: immigration; natural population increase. High crowding index.	Good housing equipment; Large share of dilapidated houses. High level of new housing construction.	High wages. High capital investments. Low unemployment rate.	Two regional capitals. Second level agglomerated cities: Elabuga; Zainsk
Weak cities	C 1-1	Shrinking Cities: natural population loss, rural-urban immigration in 1990-2002	The worst housing equipment. Large share of dilapidated houses.	The economical profile is one of the worst. The lowest level of capital investment. High unemployment rate.	European part of Russia, but in distance from Moscow region. Few cities in the Eastern part of the country. Poor transport connection. Historical cities: Kargopol, Kalach. 4 mono-industry cities

	Cluster	Population Dynamic	Housing stock	Socioeconomic Profile	Geographical location
	C1-2	Shrinking Cities: natural population loss	Large share of dilapidated houses. The low level housing equipment	High unemployment rate. High share of inefficient factories. Low level of capital investment.	
	C1-3	Shrinking Cities: natural population loss, significant emigration	The biggest share of dilapidated houses. The average level housing equipment	The highest unemployment rate. High share of inefficient factories. Low level of capital investment	6 cities belong to Kareliya region. 8 mono-industry cities (old industry)
	C1-4	Shrinking Cities: natural population loss	Large share of dilapidated houses.	High unemployment rate. Low level of capital investment	6 mono-industry cities. 4 cities belong to Chelyabinsk region
	C1-5	Shrinking Cities: natural population loss; rural-urban immigration in 1990-2002	Large share of dilapidated houses.	High unemployment rate. Low level of capital investment	4 cities belong to Mordoviya. 5 mono-industry cities
	C2-1	Shrinking Cities: natural population loss, rural-urban immigration in 1990-2002	Large share of dilapidated houses.	High share of inefficient factories. Low level of capital investment.	Cities belong to central Russia: Bryansk, Kaluga, Ryazan, Nignii Novgorod regions. 4 mono-industry cities
	C 2-2	Shrinking Cities: significant natural population loss	Large share of dilapidated houses.	High share of inefficient factories. Low level of capital investment.	6 mono-industry cities
	C2-3	Shrinking Cities: natural population loss	Large share of dilapidated houses.	High share of inefficient factories. Low level of capital investment.	7 mono-industry cities

	Cluster	Population Dynamic	Housing stock	Socioeconomic Profile	Geographical location
	C2-4	Shrinking Cities: natural population loss	Large share of dilapidated houses.	Rather low unemployment rate. Low level of capital investment	6 mono-industry cities
	C3-1	Shrinking Cities: natural population loss, rural-urban immigration in 1990-2002	Average share of dilapidated houses.	Low unemployment rate. Low level of capital investment	7 mono-industry cities
	C3-2	Shrinking Cities: natural population loss	Average share of dilapidated houses.	Low unemployment rate. High share of inefficient factories. Low level of capital investment.	9 mono-industry cities
	C3-3	Shrinking Cities: natural population loss	Average share of dilapidated houses.	High share of inefficient factories. Low level of capital investment	9 mono-industry cities
	C4-1	Shrinking Cities: significant natural population loss, the highest level of immigration among weak cities	Average share of dilapidated houses. The highest level of new housing construction among weak cities	High share of inefficient factories. Low level of capital investment	Many cities are situated in the South of Russia in Krasnodar, Voronej, Belgorod, Stavropol regions. 5 mono-industry cities
	C4-2	Shrinking Cities: natural population loss; rural-urban immigration in 1990-2002	Average share of dilapidated houses.	High share of inefficient factories. Low level of capital investment	6 mono-industry cities

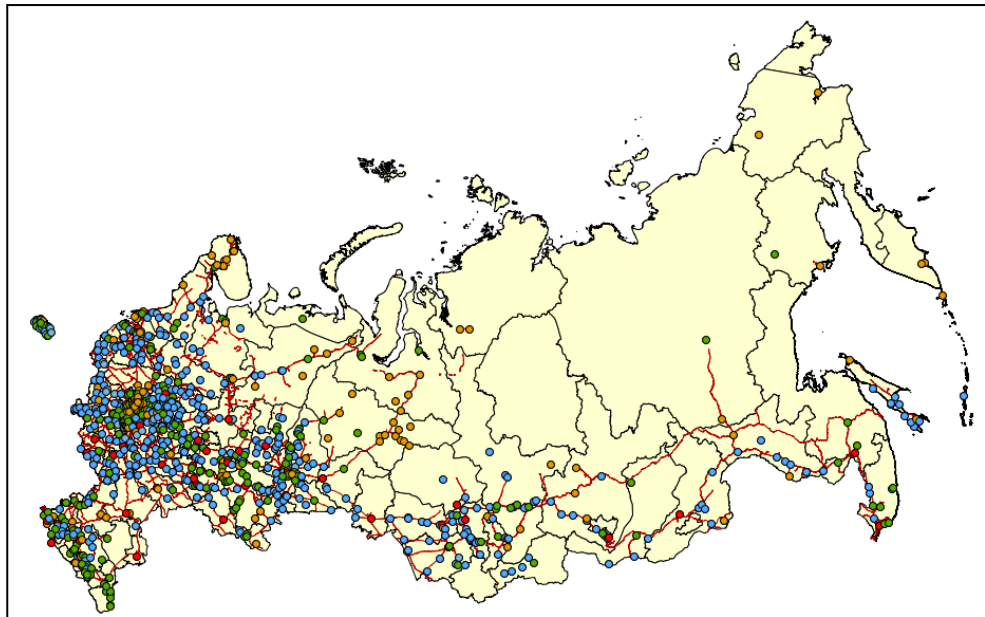


Figure 5. 23 *Distribution of cities around the country*

The proposed classification have been superimposed with regional country division. As we see in Table 5-3 different regions are presented with different combinations of urban classes. Before making a regional analysis, it is necessary to note that the different regions perform different information about their cities. For some regions 100% cities have been analyzed, but for many regions only partly urban information has been obtained. As, for example, in Tambov Region, Kostroma region, Republic of Udmurtiya all cities have been selected (hit) to analysis, while for Tver region only four percent of cities have been analyzed. It could deform representation of some regions and has been taken into account during analysis of regional urban systems.

As follows from Table 5-13, sixteen regions have an urban network included all four urban classes. Among them is Belgorod region, Kaliningrad region, Saratov region, Sverdlovsk region, etc. While several regions have cities belonging to one class only. Among them is republic of Dagestan, Republic of Ingushatiya. All cities of these regions belong to the class of "dynamic cities".

Forty regions out of eighty three do not have "urban engines". In Central FD nine regions do not possess this type of cities, the same situation in the North-Western FD. While in the South FD only two regions do not have urban engines. At the same there are six urban engines are located in South FD and three of them belong to Krasnodar Kray. Far Eastern FD has only two urban engines for seven regions. By three regions of Volga FD and Ural FD do not have urban engines. The contents of urban classes are correlated with regional performance. The progressive regions perform better with better cities, while the weak cities are concentrated in decline regions. As for the examples

Moscow region includes forty strong cities, eighteen dynamic and only six weak cities. While the Ivanovo region (declining region since 80s) is represented by sixteen weak cities and one dynamic. The similar situation in Pskov region where there are ten weak cities and one dynamic.

The results are presented that regions which have shown a positive development dynamic during the transition period are exhibited by a combination of high rank cities. On the other hand regions which have got poor impulses for their development in market conditions such as Ivanovo region, Tyva Republic, Amur region have a rather weak city system presented mainly by dynamic and weak cities.

Table 5.3 *Urban classes among regions*

	Total amount of cities	Analyzed cities	% of analyzing cities	Urban engines	Strong	Dynamic	Weak
Central Federal District							
Belgorod region	11	10	91%	1	2	1	6
Bryansk region	16	14	88%			3	11
Vladimir region	23	21	91%		2	6	13
Voronezh region	15	14	93%	1		3	10
Ivanovo region	17	17	100%			1	16
Kaluga region	22	13	59%		1	3	9
Kostroma region	12	12	100%		1	1	10
Kursk region	10	2	20%	1	1		
Lipetsk region	8	7	88%	1			6
Moscow region	80	64	80%		40	18	6
Orel region	7	6	86%		1	1	4
Ryazan region	12	10	83%	1	1		8
Smolensk region	15	15	100%		2		13
Tambov region	8	8	100%		1	1	6
Tver region	23	1	4%	1			
Tula region	19	17	89%	1		11	5
Yaroslavl region	11	11	100%	1		2	8
Moscow	1	1	100%	1			
North West Federal District							
Republic of Karelia	13	13	100%		1	2	10
Republic of Komi	10	10	100%		6	1	3
Arkhangelsk region	14	10	71%		2	3	5
Nenetsky autonomous area	1	1	100%			1	
Vologda region	15	12	80%		2	1	9
Kaliningrad region	22	21	95%	1	2	8	10
Leningrad region	31	30	97%		9	11	10

	Total amount of cities	Analyzed cities	% of analyzing cities	Urban engines	Strong	Dynamic	Weak
Murmansk region	16	11	69%		8	3	
Novgorod region	10	8	80%			1	7
Pskov region	14	11	79%			1	10
Saint-Petersburg	1	1	100%	1			
South Federal District							
Republic of Adygea	2	2	100%				2
Republic of Kalmykia	3	2	67%			1	1
Krasnodar territory	26	26	100%	3	5	10	8
Astrakhan region	6	2	33%	1			1
Volgograd region	19	2	11%	1	1		
Rostov region	23	12	52%	1	2	4	5
North-Caucasian Federal District							
Republic of Dagestan	10	9	90%			9	
Republic of Ingushetia	4	2	50%			2	
Republic of Kabardino-Balkaria	8	7	88%	1	1	2	3
Republic of Karachaevo-Cherkessia	4	3	75%			3	
Republic of Northern Osetia - Alania	6	4	67%			4	
Chechen Republic	5		0%				
Stavropol territory	19	19	100%	1	3	7	9
Privolzhsky (Volga) Federal District							
Republic of Bashkortostan	21	18	86%	1	4	11	2
Republic of Marii El	4	3	75%		2	1	
Republic of Mordovia	7	7	100%		1	1	5
Republic of Tatarstan	22	20	91%	2	4	9	5
Republic of Udmurtia	6	6	100%	1		1	4

	Total amount of cities	Analyzed cities	% of analyzing cities	Urban engines	Strong	Dynamic	Weak
Republic of Chuvashia	9	9	100%	1	1	4	3
Perm territory	25	22	88%	1		4	17
Kirov region	18	5	28%	1		1	3
Nizhny Novgorod region	28	25	89%	1		8	16
Orenburg region	12	11	92%	1	1	3	6
Penza region	11	10	91%	1			9
Samara region	11	10	91%	2		3	5
Saratov region	18	5	28%	1	1	1	2
Ulyanovsk region	6	5	83%			2	3
Ural Federal District							
Kurgan region	9	9	100%			1	8
Sverdlovsk region	47	43	91%	1	4	18	20
Tumen region (including Khanty-Mansiysky autonomus area Yugra)	29	6	21%	1	1	1	3
Khanty-Mansiysky AO - Yugra	16	13	81%		11	2	
Yamalo-Nenetsky AO-	8	7	88%		5	2	
Chelyabinsk region	30	18	60%	1	1	1	15
Siberian Federal District							
Republic of Altay	1	1	100%				1
Republic of Buryatia	6	5	83%			2	3
Republic of Tyva	5	5	100%			1	4
Republic of Khakasia	5	5	100%		1	2	2
Altay territory	12	9	75%	1		3	5
Zabaikalsk territory	10	8	80%	1	1		6
Krasnoyarsk territory	23	18	78%	1	4	5	8
Irkutsk region	22	13	59%	1	5	1	6
Kemerovo region	20	17	85%	2		3	12
Novosibirsk region	14	13	93%	1	1		11
Omsk region	6	3	50%	1			2
Tomsk region	6	4	67%	1	1		2

	Total amount of cities	Analyzed cities	% of analyzing cities	Urban engines	Strong	Dynamic	Weak
Far East Federal District							
Republic of Sakha (Yakutia)	13	2	15%		1	1	
Kamchatka territory	3	2	67%		2		
Primorsky territory	12	9	75%	1		4	4
Khabarovsk territory	7	2	29%	1		1	
Amur region	9	8	89%		2		6
Magadan region	2	2	100%		1	1	
Sakhalin region	15	12	80%		2		10
Jewish autonomous area	2	2	100%			1	1
Chukotka autonomous area	3	2	67%		2		
Total	1100	856		46	153	224	433

Now proceed to comprehensive description of obtaining urban classes. The class of “urban engines” is created by only one group, it is the group C 5-5. It contains the cities most attractive for people and for business. High migration inflow, high wages, low unemployment rate, and good housing equipment characterize these cities. They could be considered as locomotives of the country’s economic growth because all of them are growing multifunctional systems, with a high developed industrial, service and educational base. Actually the cities of this cluster are distributed quite evenly along the country (Figure 5. 24). They form the skeleton of the Russian city system. Most of them are the core of large agglomerations: Moscow, St. Petersburg, Samara-Tolyatti, Rostov, Yekaterinburg. It should be mentioned that four regions have two or more urban engines. As Krasnodar Krai has three cities belonging to this group. There are Krasnodar (regional capital), Novorosiisk (port at the Black sea) and Sochi (Russian resort). Tolyatti and Samara belong to Samara region and compose two-poles agglomeration. Novokuznetsk and Kemerovo belong to Kemerovo region. Naberegnie Chelni and Kazan belong to Republic of Tatarstan. Naberegnie Chelni is a core of Nigne-Kamsk agglomeration.



Figure 5. 24 Location of Russian urban engines

The analysis has revealed that these cities were performed well also during the Soviet period and also during last decades were well regarded by the national government and private sector as places of business with some exception of cities situated in the Eastern part of Russia, such as Chita, Khabarovsk, Vladivostok. These cities are performing worse in comparison with other from this group. But they are important poles for the cohesion of Russian space and we suppose that their development could be a national priority.

The second urban class is the class of “strong cities”, it includes four groups: C 4-5; C 3-5; C 5-4 and C 5-3 and amount to 152 cities. Generally, all cities of this cluster could be divided into three types. Forty (out to sixty four) of them belong to Moscow region. Others are Northern industrial cities and cities of strategic importance (nuclear power stations, defense industries), such as Krasnokamensk, Bilibino, Polyarnie zori. The last type is composed of cities belonging to urban agglomerations, for instance, Almetievsk - Aznakaevo - Leninogorsk; or Nijnekamsk - Naberejnie Chelni.

The most part of the city of this cluster is growing due to a considerable immigration, which is explained by the attractive location close to Moscow core. An exception is the northern shrinking cities belonging mainly to group C 5-3 (Dudinka, Norilsk, Tinda), where the migration outflow exceeds the substantial natural population growth.

The strong cities have good housing equipment. The economic profile is characterized by high wages and considerable investments, especially in

Northern cities, low unemployment rate and a small number of inefficient companies.

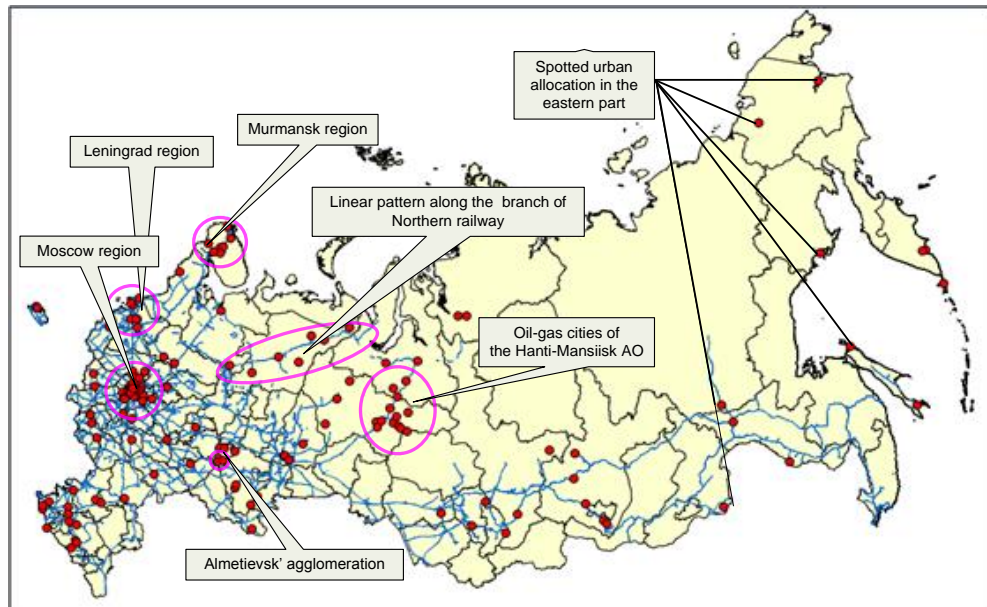


Figure 5. 25 Location of strong cities

The geographical location of strong cities is represented in Figure 5. 25. The spatial distribution of these cities reveals several urban patterns. The first one is formed by the forty cities belonging to the Moscow region. The second spatial pattern is around Saint-Petersburg and contains six cities of Leningrad region. In the Northern part of Russia three distinguished urban patterns stand out: the first one is formed by the cities of the Murmansk region; the second one includes ‘rich oil-gas cities’ of Hanti-Manssiisk Autonomous Okrug, among them are Surgut, Nefteyugansk, Nignevartovsk, Radugnii, Langepas, etc.; the last one is a line of cities along the branch of the Northern railway including Koryagma (Archangelsk region), Syktyvkar, Uhta, Usinsk, Inta, Vorkuta (Komi republic). The strong cities in the eastern part of Russia, such as Magadan, Blagoveshensk, are single isolated cities. This class contains the most northern cities in the country.

The next urban class is “dynamic cities” (Figure 5.26). This class is an ambiguous one. It comprises six groups: C 5-1; C 5-2; C 4-3; C 4-4; C 3-5; C 2-5 and contains 225 cities in which almost twenty percent of the urban population lives. The cities are distributed along the country and form two distinguished spatial patterns. The first one stretches from the North West with a concentration around Moscow region, Volga and Ural districts. The second pattern extends to the Southern border of the country. The cities in the eastern part of the country have a spotted distribution.

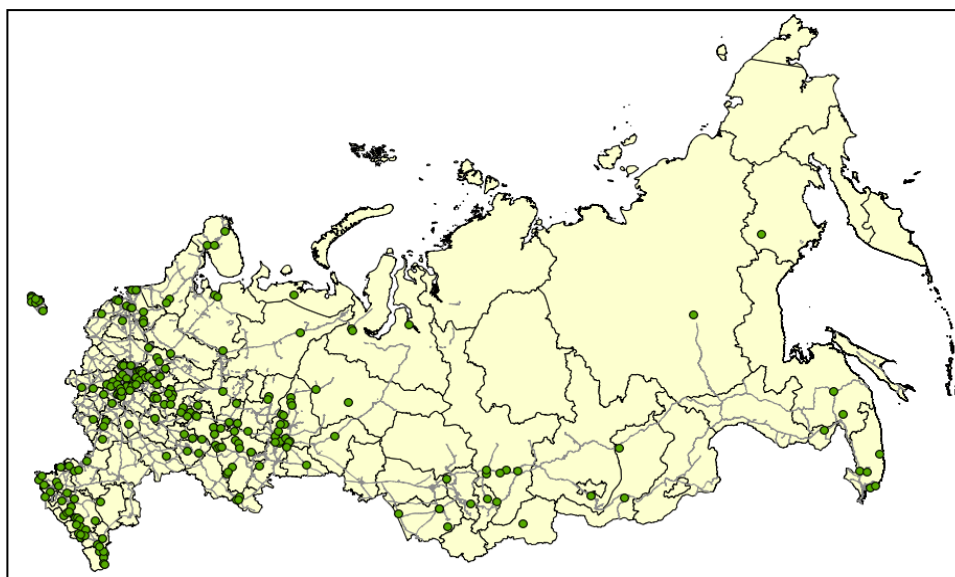


Figure 5. 26 *Location of dynamic cities*

The cities inside the cluster are various and have different sets of characteristics (Table 5. 2). Actually, the cities belonging to this class could be judged as “average” cities with a mix of advantages and disadvantages. For instance, northern cities have a good economic profile, but weak housing equipment; southern cities historically has a positive demographic trend but quite bad housing stock and economic basis. Actually, the common aspect of this city is that the most part of them have a good potential for a further development, which can be given by the strong government support, as for cities of Northern Caucasus, or buy a good strategic location and industrial base as have many cities in European part; or by the access to natural resources as the Northern cities. A good example of exploitation of the existing potential could be Kaluga, that during the last few years became a pioneer in attracting foreign investments to the region, having created a technological cluster and appropriate institutions and infrastructure.

The last is a class of “weak cities”. Including 433 cities and around sixteen percent of the Russian urban population this group is the most multiform. It is mainly composed of small cities in all regions, but also few big cities are included in this class. As twenty cities have populations more than 100.000 people, including such cities as Novoshahtinsk, Maikop, Prokopievsk. On the other hand sixty nine cities have populations less than 10.000 people. In the general case, the weak cities are undergoing enormous problems: demographic and socioeconomic. Only 12 from 433 cities had a natural population increase in 1990-2002 and only 10 in 2003-2010. But, on the other hand, many cities have rural-urban immigration. As groups on the first left column (C1-1, C 2-1, C 3-1, C4-1) have experienced population immigration since 1990. But in many cases these levels of immigration is not sufficient for providing urban growth. The degree of shrinkage is various among the cities.

As, for example Aleksandrovsk in Perm region for 8 years (2002-2010) has lost around fifteen percent of the population. Raichihinsk in Amur region and Kirjach in Vladimir region for the equal period have lost around twenty percent of the population. But such cities as Kislovodsk, Gorno-Altaysk are stable in the population and even show a little growth.

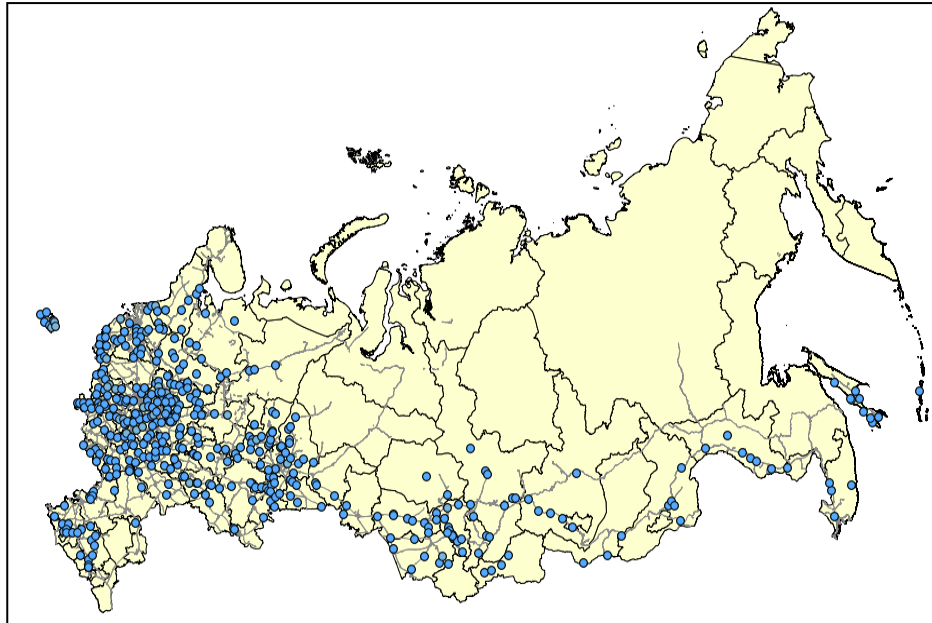


Figure 5. 27 Location of weak cities

This urban class performs with poor housing equipment. Many cities have a significant share of dilapidated houses and very low volume of new construction. The level of dilapidated housing is quite equal between all groups of this class with the exception of group C 3-1, where the share of dilapidated housing is the highest one. On the other hand the group C 4-1 is distinguished by a high level of new housing construction since 2003. Four groups of this class (C1-1, C1-2, C2-1, C 2-2) are performed worse in comparison with other groups. The cities in these groups have low levels of housing, utility lines, including water supply, sewerage, heating.

The negative economic base is another features of this class, including low wages, high unemployment rate, high share of ineffective factories and low level of capital investments. Many cities belonging to this class have unsatisfied accessibility (many of them do not have around-year transport connection) and one of the ways to improve their performance is to enlarge transport network which integrates roads, rail and air transport. As we analyzed above the air network has been considerably aggravate during last two decades. That has made many cities unreachable and isolated.

5.5. Conclusions: New Spatial Patterns of urbanized Russia

The SOM algorithm revealed itself as a helpful tool to explore the vast and multiform urbanized space of Russia and, moreover, to build and organize the knowledge on such complex system. Based on the SOM implementation the analysis has revealed a set of urban profiles and the emerging structure of the contemporary Russian city system. Results obtained by means of SOM have provided the empirical basis for the analysis of city systems at all levels: urban, regional, national.

At the urban level all diversity of cities has been divided into four main groups. Russian “urban engines” are the most prosperous cities remarkably distinguish from other ones in terms of population size, robust urban economic base and quality of housing inventory. Noteworthy, the cities are spread along the country and form the settlement framework (skeleton). The second urban class is formed by “strong cities” which are divided into: northern industrial cities, strategic (state) important cities, cities belonging to the Moscow region, and several agglomerations in the European part of the country. The class of “dynamic” cities assumes an intermediate position where two situations are prevailing. Most dynamic cities are receiving a government support, mainly it is cities of Northern Caucasus, which stimulates their development. Some others, such as Kaluga, demonstrate that the development could arise from local initiatives integrated with local resource exploitations. The dynamic cities are spread from the country’s North-West towards the Ural with spotted distribution along the Trans-Siberian railway up to the Khabarovsk region. The last level of urban hierarchy is formed by “weak cities”, it includes more than half of analyzing cities in which only fifteen percent of the urban population lives. In post-Soviet period under market-oriented economy these cities have got less impulses. They were not able to find themselves mainly due to specific soviet endowments, such as unfavorable economic location and strong dependence on mono-industry urban economic base. Being small in size, without government support they have not found a sufficient capacity to adjust to new conditions.

The soviet central planning approach has been based on the space 'equity' criteria bypassed unfavorable conditions and was irrespective of the transport cost. Recently the requirements of the market economy have led to a new logic of location. If considering the European urban system we observe that due to efficient and inexpensive transport and telecommunication networks expand the potential market area and create an environment when traditional location constrains are disappearing (Wegner and Kunzman, 1996), in Russian case it is not so far. During last twenty years the unevenness of the

urban development has been amplified along Russia and now a huge socioeconomic disproportion exists between urbanized areas. In many respects poor developed, expensive and the ageing national transport network poses barriers to balance space development. The growing regional and urban disparities indicate the significant and structural processes of reorganization and reallocations of resources are taking place in the territory (Benini, 2007).

Another important finding is that urban growth and decline (as urban engines, and weak cities) appear almost in each region. The correlation between regional, state and regional city network was analyzed. The redistribution of singles out urban classes at regional level has proved that regions which have shown a positive development dynamic during transition period have a good city system/network. As, for example Moscow regional city system consists of forty strong cities, eighteen dynamic cities and only six weak cities. Tumen regional city system performed by strong cities, mainly, Republic of Tatarstan has two urban engines. On the other hand regions which have got poor impulses for their development in market conditions such as Ivanovo region, Tyva Republic, Amur region have a rather weak city system presented mainly by weak cities.

By influencing market forces the national city system becomes much more complex. It is being replaced by strong polarization around Moscow. The largest city is spreading its zone of influence wider territory as result medium and small sized cities around Moscow are prospering. As an analysis has revealed a significant part of "strong cities" belong to Moscow region. Some group of cities that were dominant during the Soviet period because of applied government policy to support of closed cities, one-industrialized cities are reduced in importance and were redistributed to dynamic or weak urban classes. During last decades the national and regional transport network has been shortened significantly. That creates unfavorable conditions for many smaller cities and was a reason for their decline.

Under European context several hypotheses about the genesis and future development of the urban system coexist. Some of them are as follow: *concentration* when the centre-periphery paradigm holds the cities located in the Blue Banana, the high -accessibility corridor between Southeast England and Northern Italy grow faster that cities in the periphery; *decentralization* which based on equalization theories postulate that, with growing agglomeration diseconomies in the core, investment moves to regions with lower production costs and less congestion; *mosaic* hypothesis describes the fact that prospering and declining cities appear to be irregularly distributed over the territory and even exist in close vicinity to each other; *urban hierarchies*, based on Christallerian or Loschain urban hierarchies explain why national urban hierarchies are supersede by a new transnational

configuration of cities, but cannot explain why this configuration does not resemble a hierarchy; *urban networks* theories relating urban economic success to functional, physical or personal networks between cities take account of the increasing importance of specialized synergies between complementary cities, but do not explain the growth of small and medium sized towns (Wegner and Kunzman 1996).

Turning now to the obtained results several hypotheses for the further Russian city system development could be proposed:

- **Concentration:** Currently Moscow is the core of Russia in spite of geographically it is far from the country' center. The city has acquired a great power during the transition period. Saint Petersburg called "the cultural Russian capital" is the second city in size and economic performance. Theoretically, it could be possible to propose a growing area /or wealth concentration/ between these two cities. The analysis has shown that Moscow region as well as Leningrad region has a significant amount of strong cities which could give the impulses for the development of other cities, and ipso facto create a direction for formation "spatial" corridor among Moscow and St. Petersburg. Hence analysis has revealed that recently there is no urban chain of strong cities among these two poles. On the contrary, there is a gap between these cities, and two regions Tver region and Novgorod region, which are situated among Moscow and St. Petersburg do not have urban engines at least. On the other hand, if we turn to the eastern part of Moscow, we explore several growth poles, including Kazan and Yekaterinburg. Historically, space development has gone along the main Trans-Siberian railway, and we can single out the concentrated development along this transport artery from Moscow up to Yekaterinburg.
- **Decentralization:** Concern to decentralization hypothesis, we have found that in Russian conditions this concept could have quite different nature in comparison with European patterns. Urban decentralization takes place due to dependency of medium sized cities' economy to natural resources exploitation. Tymen region, including Yugra and Yamalo-Nenetskiy autonomous area is a good example of a Russian decentralization pattern. The regional capital Tymen is an urban engine, but regional economy is based on the oil-gas extraction which is realized in northern cities such as Surgut, Kjanti-Mansiisk, Uray, Nignevartovsk, langepas, Megin, etc. All cities belong to class of strong cities and form a specific regional urban network.
- **Mosaic:** The analysis has revealed that many regions have mix of cities belonging to various groups. Prosperous and declining cities are irregularly distributed over Sverdlovsk region, Republic of Bashkortostan, Krasnodar territory. Further to if we take a general outlook on the national city system (Figure 5. 23) we will see that it is a mosaic and a mix of cities of all types.

- **Urban hierarchies:** In practice, this hypothesis should be more demonstrative in the Russian urban network, as the most part of cities have been founded during the Soviet period based on the accurate spatial planning and redistribution of urban force along the country. But in reality it is not so. Regional capitals have various states, and some of them have been rated as weak cities. However the importance of this hypothesis could not be underestimated for regional network analysis.
- **Urban networks:** During the transition from planned to market economy, many urban ties, production networks, regional-production complexes formed under soviet central economy have fallen to pieces and recently a new regional urban network is going to create. The contemporary attempts of formation around the country numerous territorial innovative clusters allows to singled out the appearing urban networks at regional scale. As, for example, in the Republic of Tatarstan, Kama industrial cluster forms the regional network including Naberejnii Chelni (urban engine), Nignekamsk (strong city) Mendeleevsk, Zainsk, Elabuga (dynamic cities); or Titanium cluster in Sverdlovsk region is formed by four cities. These emerging regional urban networks aimed to force national economy are demanding a special analysis.

Most likely only combinations or a mix of these alternatives can cope with the complexity of spatial and social-economical transformation. Being the biggest country in the world, Russia demands a special attention to space development as well as space production. The findings of this analysis have provided the conceptual framework for the further city system development. We argue that for the effective post-Soviet space development a creation of polynuclear city system could be proposed. The cities and towns should be organized into effective network, which allows the balanced and effective distribution of strategic functions. In polycentric structure cities and towns can act as nodes and for the creation a coherent space these nodes have to be distributed in the country along a reasonably balanced way. The results obtained based on SOM implementation have justified the possible polycentric structure of the Russian urban network. The proposed urban classification could create the outlines of different levels of the national city system. In order to avoid a strong polarization effect it could be a triple level polycentric model (EESC, 2009). The first level facilitates the emergence of urban engines distributed quite evenly along the country, they are the core nodes of urban network and their purpose is to create hubs for economic growth and jobs. The second level aims to create the links and synergies between main urban cores, enforcing agglomeration economy. The third level of dynamic and weak cities consolidates the links between cities in the region and across borders.

CHAPTER 6

ANALYSIS OF RESULTS AND CASE-STUDIES OF RUSSIAN CITIES TRANSFORMATIONS

As explained earlier, during soviet era urban development had been realized by issue of rules and directives from higher level government. The fall central-planned economic model opened cities to market reforms. The market economy has become the force driving the relocation of production and people (Coulibaly, 2012). On one hand, post-Soviet cities have obtained a freedom, they can develop new economic sectors, according to market demands, attract people, tourist, improve the urban environment, etc. On the other hand under the new market conditions cities have lost their selves. The formation of institutes of local self-government demands time and at the same time it demands a clear legal framework with fear tax redistribution, share of rights and duties among all government levels. Taking into account sectoral flux of Soviet economy for many cities it was a great challenge to save industrial urban base or to transform it into a postindustrial without clear rules and strong government support. As explored in previous chapter different cities have got different development paths in contemporary conditions. Some of them act more successfully than another, but all of them have to adopt the changing conditions and find their own trajectory for further development.

Searching development path, Russian cities more and more enter the competitive games. Cities are competing for the investment, labor force and residents and those cities which can make their built environment, social and cultural amenities more attractive for these elements can stand to improve their image, and external position in the urban hierarchy. Some cities are entering two competitions based on their economical endowment, trying to use the advantages of location, natural resources, or inherited industrial base. Other cities believe only in government support, in many respects owing to the fact that existing legislation on local self-government and tax redistribution do not provide stimulus for urban self-development. Many Russian scholars and mayors argue that under the current legal environment, waiting federal grants, subsidies or be involved in federal investment projects is much more efficient than undertaken something by yourself at the local level (e.g. Yasin, 2012; Zubarevich, 2012). Nevertheless, the research presents that at the federal level various initiatives influenced the urban transformation are undertaken as well. The aim of the chapter is to explore what type of cities get the state support, in what forms and how it influences urban regeneration.

6.1. Special economic zones and Territorial innovative clusters

6.1.1. Results analysis

One of the tools to launch innovative economy in Russia is a creation of conditions for innovation and competitive productions. SEZs and TICs are considered as one among starting points for it. As we discussed above, currently in Russia there are 18 SEZs and 25 TICs supported by federal government. Also, many various regional clusters have emerged recently around the country, but this research focuses on federal clusters only.

The undertaken analysis has revealed that, among 18 SEZs 12 of them are situated in the cities or close to urban boundaries. Eight SEZs is connected directly or indirectly with urban engines. There are "Togliatti" SEZ, "Lipetsk" SEZ, "Saint Petersburg" SEZ, SEZ "Zelinograd", SEZ "Tomsk". Also SEZ "Ulyanovsl Vostochnii", SEZ "Sovetskaya Havan" in Khabarovsk are belonging to logistics SEZ and actually situated not in the city, but in areas very close to urban boundaries. SEZ "Innopolis" is a new city which is situated close to Kazan, so this SEZ could be considered as it is situated in "urban engine". One SEZ "Dubna" is situated in a strong city, two are in dynamic cities: SEZ "Alabuga" and SEZ "Titanium Valley", and the new SEZ "Ludinovo" is established in the Ludinovo city of Kaluga region which is related to the group of "weak city". Redistribution of SEZs among urban classes and around the country is represented in Table 6.1 and in Figure 6.1.

Table 6.1 SEZ and urban classes

City	Region	Zone name	Priority Industries	Urban class
Industry				
Elabuga	The republic of Tatarstan	SEZ "Alabuga"	Motor vehicles and components; Petrochemicals; Construction materials; Consumer goods	Dynamic city C 5-2
Togliatti	Samara region	SEZ "Togliatti"	Cars and auto components production; Building materials; Consumer goods production	Urban engine C 5-5
Lipetsk	Lipetsk region	SEZ "Lipetsk"	Finished metal products; Machine-building; Vehicles, machines and components production; Construction materials	Urban engine C 5-5
Verhnyaya Salda	Sverdlovsk region	SEZ "Titanium Valley"	Motor-car construction; Instrument-making industry; Chemical industry	Dynamic city C 3-4
Moglino (8 km from Pskov)	Pskov region	SEZ "Moglino"	Machine-building; Instrument making	
Ludinovo	Kaluga Region	SEZ "Ludinovo"	Medical equipment production; Machine components production;	Weak city

			Instrument-making	C 1-5
Logistics				
Ulyanovsk	Ulyanovsk region	SEZ "Ulyanivsk Vostochnii"	Maintenance and repair; Aircraft manufacture; Aircraft components production	Urban engine C 5-5
Khabarovsk	Habarovsk region	SEZ "Sovetskaya Havan"	Logistics; Ship repair; Seafood processing	Urban engine C 5-5
Murmansk	Murmansk region			
Technologies				
Saint-Petersburg	Saint-Petersburg	SEZ "Saint Petersburg"	Information technologies and telecommunication; Medical technologies and pharmaceuticals; Nanotechnologies; Precision engineering	Urban engine C 5-5
Dubna	Moscow region	SEZ "Dubna"	IT technologies and telecommunications; Optical Electronics; Nanotechnologies; Nuclear technologies; Biotechnologies	Strong City C 4-5
Moscow	Moscow	SEZ "Zelinograd"	Technico-innovative zone	Urban engine C 5-5
Tomsk	Tomsk region	SEZ "Tomsk"	IT and telecommunication; Medical and biotechnologies; Nanotechnologies and nanomaterials; Resource-saving technologies	Urban engine C 5-5
Kazan	The Republic of Tatarstan	SEZ "Innopolis"	Information and communications technologies; Electronic Technologies; Nanotechnologies; Biotechnologies; Medical Technologies	Urban engine C 5-5



Figure 6. 1 *Special economic zones*

As we see, most of the SEZs are situated in the prosperous Russian cities, such as Moscow and Moscow region, Saint Petersburg, Kazan. The formation of SEZ in urban engines is reinforcing and improving their position among other cities. Also the SEZ "Togliatti" is created in mono-industry city and aimed to improve the urban economic base. The general idea of the policy of supporting mono-industry cities are the diversification of urban economic base and the creation of a multi sectoral economy. But in case of Togliatti, the government has approved the policy of enforcement of automobile industry in the city and continue the promotion Togliatti as a heart of Russian automobile industry. Togliatti is only mono-industry Russian city where SEZ is established. The priority industries in many SEZs as for example SEZ "Zelinograd:", SEZ "Titanium Valley", SEZ "Dubna" are based on the inherited from the soviet era existing industry. It means that undertaken initiatives for creation innovative economy are both dependent and in many cases it is attempted to rearrange old industry into an innovative one.

Turning to TICs we see that its geography and scale are rather bigger. There are 25 federal, territorial innovative clusters (the list of clusters approved by the government). The content on cities and towns and its redistribution among various urban classes is represented in Table 6.2. Geographical location is seen in Figure 6.2.

Table 6. 2 TIC and urban classes

	City	Region	Cluster	Priority Industries	Urban type
	First group				
1	Kaluga; Obninsk	Kaluga region	Pharm cluster	Medicine and pharmacy, radiation technology	Dynamic cities C 2-5; C 4-5
2	Zelenograd	Moscow	IT cluster	ICT	Urban engine C 5-5
3	Dubna	Moscow region	IT cluster	New material	Strong city C 4-5
4	Pushino	Moscow region	Pharm cluster	Biotechnologie s	-
5	Saint- Petersburg; Gatchina	Saint Petersburg	IT cluster Pharm cluster	Medicine and pharmacy, radiation technology	Urban engine C 5-5 Dynamic city C 2-5
6	Sarov	Nignii novgorod region	Innovative cluster	Nuclear technology IT, laser technology	Closed city (ZATO)
7	Ardatov; Insar Saransk	Rep. Mordoviya	Power efficient lighting technology	Instrument engineering	Weak cities C 1-1; C 1- 5; Strong city C 5-4
8	Nabarajnie chelni; Mendeleevsk; Zainsk Elabuga; Nignekamsk	Rep. Tatrstan	Kama industrial cluster	Oil-gas processing and Petrochemistry. Automobile industry	Urban engine C 5- 5; Dynamic cities C 404; C 5-2; C 5-2 Strong city C 5-4
9	Samara	Samara region	Innovative cluster	Production of aircrafts and spacecrafts	Urban engine C 5-5
10	Dimitrovograd	Ulyanovsk region	Nuclear cluster	Nuclear technology; radiation technology, New materials	Dynamic city C 4-4
11	Geleznogorsk	Krasnoyarsk region	Innovative technologies	Nuclear technology; Production of aircrafts and spacecrafts	Closed city (ZATO)
12	Novosibirsk	Novosibirsk region	Innovative cluster "SibAcademSoft"; Biopharmaceutica	ICT. Medicine and pharmacy	Urban engine C 5- 5

			1 cluster		
13	Tomsk	Tomsk region	Medical cluster; IT cluster	Medicine and pharmacy, ICT	Urban engine C 5- 5
	Second group				
14	Troitsk	Moscow region	Innovative cluster	New materials. Nuclear technology	Strong city C 4-5
15	Dolgoprudnii Khimki	Moscow	Cluster «PhystechXXI»	New materials. Medicine and pharmacy, ICT	Strong cities C 4-5
16	Severodvinsk Archangelsk	Archangelsk region	Innovative cluster	Shipbuilding	Dynamic cities C 4-4; C 4-3
17	Saint Petersburg	Saint Petersburg	IT cluster; Innovative cluster	ICT. Electronics, instrument engineering	Urban engine C 5- 5
18	Nignii novgorod Arzamas; Sergach Dzerginsk; Pavlovo Balahna; Kstovo Bor; Zavolgie	Nignii Novgorod region	Industrial cluster	Oil-gas processing and Petrochemistry . Automobile industry	Urban engine C 5- 5; Dynamic city C 4-4 Weak city C2-1 Dynamic city C 4-4 Weak city C2-4 Weak city C2-4 Dynamic city C 4-4 Dynamic city C 2-5 Dynamic city C 4-4
19	Perm	Perm Krai	Innovative cluster "Technopolis"	Production of aircrafts and spacecrafts, propulsion engineering, New materials	Urban engine C 5- 5
20	Sterlitamak; Salavat; Ishimbai	Rep. Bashkortosta n	Industrial cluster	Oil-gas processing and Petrochemistry	Strong cities C 5-4 Dynamic city C 4-4
21	Ulyanovsk	Ulyanovsk region	Industrial cluster "Ulyanovsk- Avia"	Production of aircrafts and spacecrafts, New materials	Urban engine C 5- 5
22	Yekaterinburg;	Sverdlovsk	Titanium cluster	New materials	Urban

	VerhnjaPishma Nignii Tagil; Verhjaya Salda	region			engine C 5-5 Strong city C 4-5 Dynamic city C 4-4 Dynamic city C 3-4
23	Biisk (the cluster core). Novoaltaisk	Altai Kray	Biopharmaceuti cal cluster	Medicine and pharmacy,	Weak city C3-3 Dynamic city C 2-5
24	Kemerovo	Kemerovo region	Industrial cluster	Chemical industry	Urban engine C 5-5
25	Khabarovsk; Komsomolsk na Amure	Khabarovsk Krai	Innovative cluster	Production of aircrafts and spacecrafts. Shipbuilding	Urban engine C 5-5 Dynamic city C 4-3

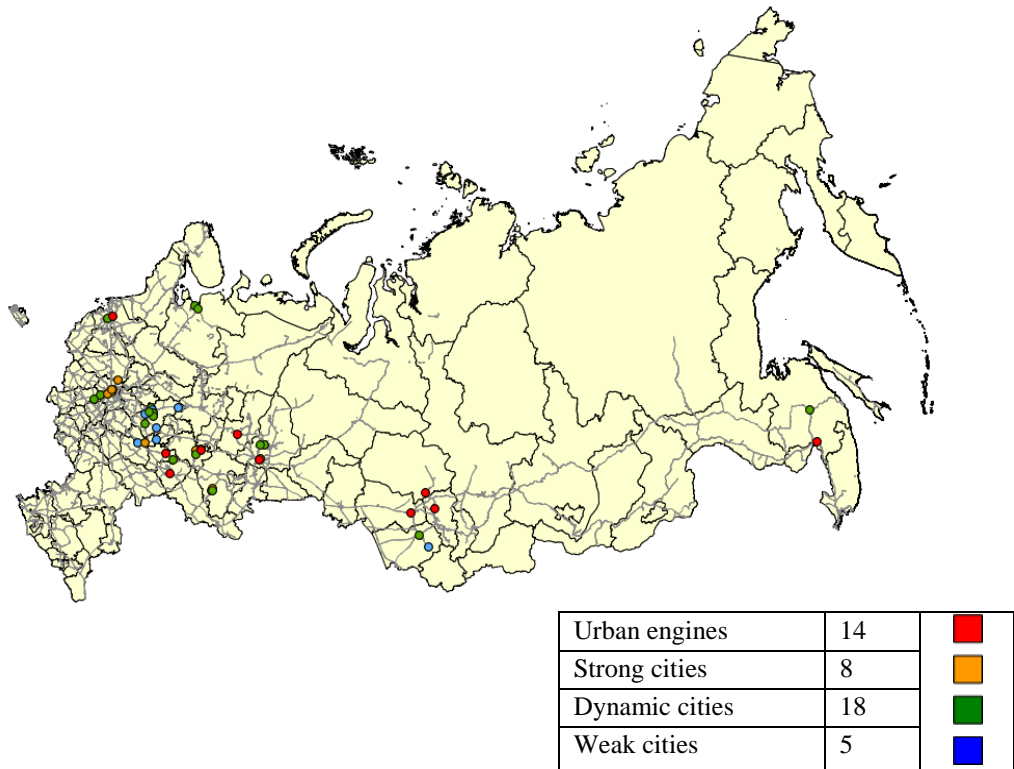


Figure 6. 2 Territorial innovative cluster

'Urban engines' create the heart of the TIC in the half of the clusters. As the SOM analysis has shown, dynamic cities are set in motion and some clusters are formed by dynamic cities only, as, for example, in Kaluga region (Kaluga-

Obninsk) or in Archangelsk region (Archangelsk-Severodvinsk). These clusters are formed by two cities which supplement each other and win from the agglomeration effect. As we see weak cities are not involved in TIC formation actively.

Table 6-2 shows that in some cases cluster is formed from one city only. Mainly there are clusters dedicated to IT or innovative technologies which are created on the base of knowledge cities or closed cities, for example Zelenograd, Dubna, Sarov, Geleznogorsk, Troitsk. The development of these TICs is based on the internal (intraurban) sources: business, knowledge and technology, which are inherited from the Soviet era. On the other hand industrial clusters such as the Titanium cluster in the Sverdlovsk region, or industrial cluster in a Nizhny Novgorod region creates an urban network where different urban classes create a productive chain and work together. This finding shows that on the one hand to be successful some clusters demand a good regional transportation network, while on the other hand, they themselves contribute to foster agglomeration economies and could provide the preconditions for the development urban network in the region.

SEZ and TIC could be a good starting point for regional economical development if they are designed to foster agglomeration economies and diversification. As the SEZ and TIC have been created recently the assessment of the real outcome of this practice is a great challenge. On the other hand useful lessons can be drawn from countries that successfully developed zones and clusters, such as France, the UK, China. Their experience suggests that successful zones and clusters can become strong catalysts for economic development in just 15 years (Farole and Akinci, 2011; Coulbaly, 2012).

To make an analysis of what should be done and how it plans and how it will proceed could be useful for understanding how the city will be regenerated. To understand better how TIC and SEZ creation is influencing the urban regeneration, we'll consider the experience of Tomsk city. Tomsk is one of the city where SEZ and TIC are created together.

6.1.2. Tomsk: TIC and SEZ in the middle of the Russia

Tomsk Overview

Tomsk is the regional capital of Tomsk region, located on the Tom' River. The city is situated in the geographic center of Siberia, in the southeastern part of the West Siberian Plain some 3,500 km away from Moscow. The city population is 569 462 people (Rosstat, 2013).

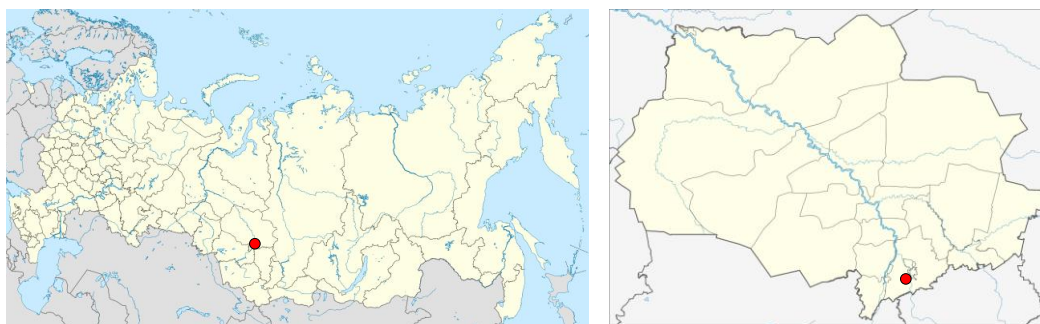


Figure 6. 3 *Tomsk location*

Tomsk is one of the oldest towns in Siberia, it was founded in 1604 as a fort during the reign of Boris Godunov. The discovery of gold in 1830 brought further development to Tomsk during the XIX century. However, when the Trans-Siberian railway bypassed the city in favor of the Novonikolayevsk village, development began to move south to connect with the railway. In time, Novonikolayevsk village has transformed into Novosibirsk city which would surpass Tomsk in importance. Recently Novosibirsk is the largest Siberian city and the third Russian most populated city after Moscow and St. Petersburg.

In the middle of the XIX century, one fifth of the city's residents were exiles. However, within a few years, the city would be reinvented as the educational center of Siberia with the establishment of Tomsk State University and Tomsk Polytechnic University. Now the city is the largest knowledge and innovative center in Siberia and in Russia as well. There are 9 Universities, 15 Research Institutes, SEZ "Tomsk", territorial innovative clusters.

During the Cold War, Tomsk was one of the many places designated a closed city, to which outsiders and, in particular, foreigners, had denied access. In 1949 matters were taken a stage further when a secret city, known as "Tomsk-7" (or sometimes simply as "Postbox 5") was founded 15 kilometers from Tomsk, and the new settlement became the home of the Tomsk Nuclear Plant, the country's first industrial scale nuclear power station. Tomsk-7 received municipal status in 1956 and was renamed Seversk in 1992. Now Tomsk and Seversk and their suburbs form the Tomsk agglomeration with population more than 700 thousand people. According to SOM analysis Tomsk belongs to the group of "urban engine".

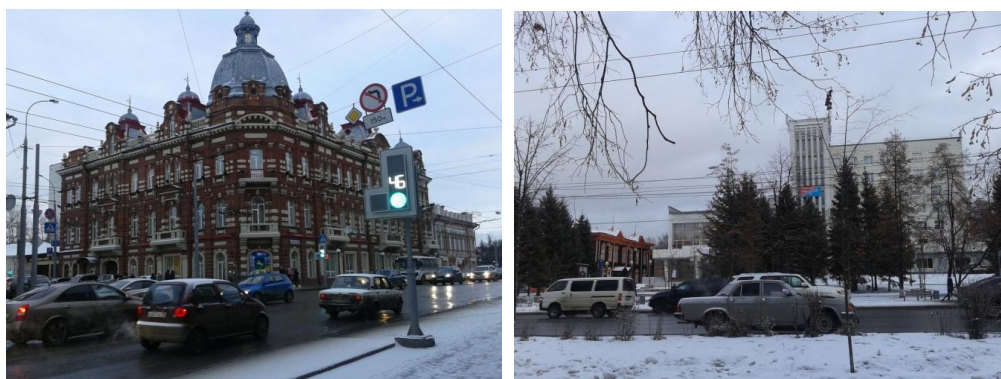


Figure 6. 4 *Tomsk city view*

Tomsk towards innovative city

In 2011 the Concept of creation in Tomsk region an educational, research and knowledge center "INO Tomsk-2020" has been adopted by the Federal Government of the RF. According it Tomsk is being transformed into the innovation center, which has to make a scientific breakthrough for the modernization of the Russian economy. This political decision could be explained by the fact that as the soviet endowment Tomsk has got developed educational cluster. There are many research institutes, universities, department of the Russian Academy of Science. On the other hand Tomsk could be considered as a spread of innovation at a distance of Moscow. Despite that various innovative projects have been launched before 2011 (such as SEZ, territorial innovative clusters), "INO Tomsk - 2020" has embraced all together and has created the integrated vision of further knowledge-based regional economic development. Further explore the undertaken initiatives aimed to create an innovative economic base and their influence on the urban environment.

The Tomsk Innovation Zone was created pursuant to the Russian Government's Resolution No. 783 dated December 21, 2005. It is one of the pioneer Russian SEZ. The parties involved in the implementation of the project are the Russian Government, the Government of Tomsk Region, and the Tomsk municipality.

The SEZ "Tomsk" is situated inside the urban boundaries, occupies 207 hectares and consists of two sites: Northern site - 14,6 ha and Southern site - 192,4 ha. The Southern site is a reserve area of the Siberian branch of the Russian Academy of Science and adjoining greenfield areas. The Northern site is a part of the Northern industrial area (the district of Kuzolevskii). As we discussed above, this factor is rather rare among Russian SEZ and TIC, when special zones are created out of cities' boundaries. The location of Tomsk clusters inside the city create advantage and an impulse for urban regeneration.



Figure 6.5 Southern site and Northern site of SEZ "Tomsk"



Figure 6.6 Administrative building of SEZ "Tomsk"

The creation of SEZ in the city is aimed to improve investment and entrepreneurial climate in the urban region. The Tomsk zone is focused on IT and electronics, medicine and biotechnology, nanotechnologies and new materials, resource-saving technologies. The aim is to create a unique environment for the development of innovative business, knowledge production and to provide it to the internal and the global market. In parallel with global idea the regional and local enforcement of the city position is also pursued.

SEZ "Tomsk" is one of a few initiatives which include not only the formation of knowledge and business environment, but also the formation of living and attractive building environment. As, for example, the Concept of SEZ "Tomsk" development includes the project of improving transport accessibility of the area. According to the agreement among federal, regional and local government, the regional authorities provide the construction of transport infrastructure to the SEZ. Also regional authority together with a local one finance the construction of engineering infrastructure and roads inside the zone boundaries. Further to the Concept of the development of SEZ "Tomsk" includes the construction of new housing and social infrastructure.

In the area adjoining the Southern site new housing districts will be constructed for professional labor and for participants of SEZ. These new districts will be situated in the Greenfield area, reserved by the city for the further city' development. This enlarges the urban area and also it is an attempt to create a second urban center and push city to a multi polar development. The enlargement of residential area will be provided in parallel with the development/growth of SEZ. For the realization of this project more than 20 km of new roads has to be constructed.

The creation of SEZ "Tomsk" is engaged with the creation medical and IT clusters which are being created on the base of existing universities. There are many innovative enterprises in the city as well as universities which have ties with the business community. The territorial innovative cluster is aimed to create an innovative economy and to enforce the knowledge city bus.

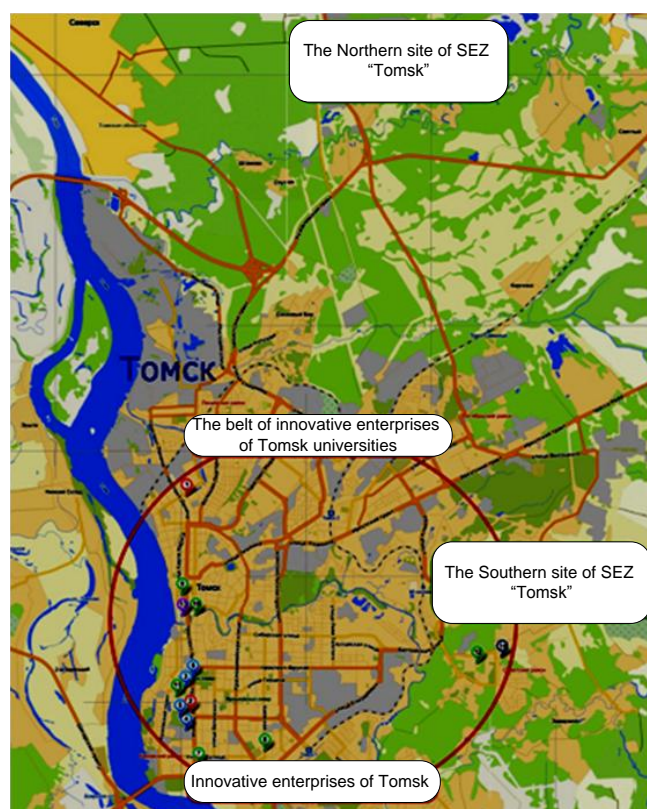


Figure 6.7 Location of SEZ and innovative enterprises inside the city (Source: Tomsk administration)

A complex of large-scale projects (SEZ and TIC) has stimulated the development of large-scale investment project "Tomsk embankment". The project embraces 400 ha of land and is going to create the recreation zone, the University campuses, business center, hotels, etc. This project has to be a new "advanced development" urban zone of Tomsk city. The realization of this project is planned with federal government support and significant investments should be attracted from various Federal programs, as for

instance from the Federal target program "The Education Development in the RF" which will invest in the construction of University Campus, and from the federal target program "The development of hydroeconomic complex of the RF" the construction of new dam will be financed.



Figure 6. 8 *The concept of Tomsk embankment (Source: <http://obzor.westsib.ru/article/386303>)*



Figure 6. 9 *The current view of the embankment*

This project is very ambitious. Obviously that its realization will be possible only with federal support. The logic of this project is quite easy. The territories in the city are constructed yet and have various encumbrance. The development of free land (the embankment and water, land) is the easiest way. But to use this free areas the construction of the dam is necessary. From a technical point of view, this project is quite complicated, but from a legal /institutional points of view to use free areas is much easier than the reconstruct already built up areas.

The realization of the project includes the construction of new University campus, which will be a good attractive point for the new coming students. It will increase the attractiveness city for students. Now the students have to rent

flats in the real estate market as existing accommodations are in bad conditions. The "Tomsk embankment" includes the construction of new accommodation for several universities. Also the regional government pursues the aim to increase the university level and include them into top-international ones.

As we see a set of economic regeneration initiatives in the Tomsk - city creates the preconditions for the further urban regeneration. In spite of this approach is characterized by large-scale projects that demands a significant investment from government, public and private sectors it creates a good appearance of the city and make it more attractive for the investors and for people. As, for example, according to Forbes estimation Tomsk has risen up from 15 in 2011 to 4 in 2012 rank in the list of Doing business in Russian cities. The advantages of Tomsk are high professional labor force, good financial environment and development of innovations. The combination of these advantages with public and private urban regeneration initiatives will stimulate the formation of a livable urban environment and create the preconditions to keep the original population in place.

6.2. Mono-Industry cities support

As was pointed out earlier Russia is rich in one-industrial cities and these cities are very diverse in their size, urban economic base, location and potentials for the further development under market conditions. According to proposed in a previous chapter urban classes, among 186 analyzed mono-industry cities we can select: 86 weak cities, 49 dynamic, 47 strong cities and 5 cities belonging to class of urban engine. On the one hand it proves that mono-industry cities are various significantly, on the other hand it presents that post-Soviet cities are undergoing different development paths which mainly depended on the inherited endowments.

As we have seen in Chapter 4, in 2010 the federal government has launched a policy aimed to support mono-industry cities. Hence, in 2010 - 2011 27 selected monocities have got a federal support for the diversification of urban economic base and for withdrawal from urban crisis. The analysis has revealed that 2 urban engines, 6 strong cities, 11 dynamic cities, 19 weak cities have got the federal government support. The results are represented in Figure 6.10.

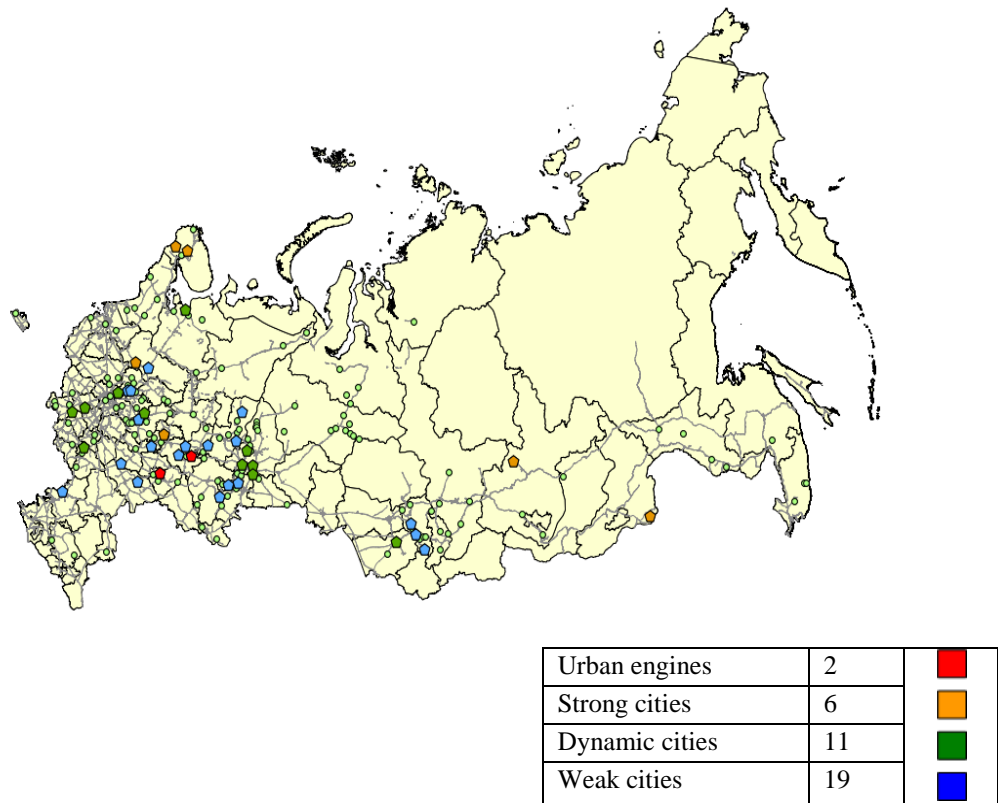


Figure 6. 10 *One-industrial cities supported by Federal investments*

What is interesting from this result is that two urban engines Tolyatti and Naberejnyi Chelni have got a significant federal support. These cities have been selected as pilot-projects for the spread obtained practice among the rest cities. However, it will be difficult to do in reality. Tolyatti is a unique city, historically it is a heart of Russian car-industry, on the other hand is quite big city with a diverse economic base, and support this city in the framework of mono-industry support actions could be explained only by the government's desire to support main automobile enterprises JSC "VAZ" at any price. From the positive side, we can note, that Tolyatti has got the Special Economic Zone "Tolyatti", as well as various techno-parks in IT and pharmacy industries are stipulated. However, as discussed before Tolyatti hardly could be called mono-industry cities, or at least ordinary mono-industry cities, hence, obtained experience will be difficult to apply for any other city mainly because of this city is getting support from very diverse sources, in other words the cash-flow of federal support for Russian auto-industry can't be compare and forecasted for ordinary mono-industry city.

On the other hand, as explained earlier, the federal support could get only city which has developed a special complex investment plan (KIP) for further development and urban economy diversification. Apparently, that urban engines and strong cities had a comparative advantages of weak and dynamic cities, nevertheless 19 weak cities and 11 dynamic cities have gotten federal

support as well. It presents the diversification approach for mono-industry cities.

As actions for centralized support of mono-industry cities have been launched in 2011 only, recently it is too early to make conclusions about policy efficiency, but what seriously concern is that in 2013 the government has changed the direction of dealing with mono-industry cities towards resettlement of inefficient cities. We argue, that this approach has to be scrutinized as only some cities, mostly weak cities could be resettle, and the proposed urban classification could create a base for the further policy development.

6.3. Transport infrastructure

Analysis of main transport projects has been done based on the Transport strategy of the RF up to the 2030. The results are presented in Table 6-3 and Figure 6.11. As we see, the lion's share of main transport projects is realized in and among the cities belong to the class of 'urban engines'. As, for example, Moscow has a lot of various transportation projects which reinforce its position as the most important country' hub. Also, all directions of the planned high-speed railway are initiated from the Moscow, that strengthen the star-shape of the transport network and grab the opportunity to create an orthogonal transport network with connections beside Moscow. Well, there are only a few projects in cities besides urban engines. One of them is created (reinforcement and development) a sea port Murmansk, which is connected with the federal idea to create a power Russian Northern port. In spite of Murmansk has won the competition from Arkhangelsk (another Northern Russian port, historically it was the first port) the project realization is going very slowly, and the transport SEZ "Murmansk" which had to be created parallel with port construction is not created yet. Other projects are projects realizing in Yakutsk and aiming to connect city with a national transport network. Being the regional capital, one of the biggest Russian region Yakutiya (Far East) this city does not have a railway connection with federal network. The tie with the rest of the country is realized by air or by road. For improving accessibility the bridge across the Lena river has to be constructed due to finish railway construction. In April 2013 the decision to start the project work has been signed and to continue the tendency of Vladivostok' bridge construction, this new bridge has become the most expensive bridge ever in Russia (Lutova, 2013).

Table 6. 3 *Federal large-scale transportation projects*

Urban class	City	Region	Project
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Urban class	City	Region	Project
c55	Moscow	Moscow	A lot of transport projects, including 3 airports reconstruction; creation a central railway, etc. ==> reinforces the role of Moscow
c55	Novorosiysk	Krasnodarskiy Kray	Complex transport nodal point
c55	Yekaterinburg	Sverdlovsk region	Complex transport nodal point; Airport - Koltsovo; High-speed railway Yekaterinburg-Chelyabinsk
c55	Rostov on the Don	Rostov region	Complex transport nodal point; Airport - Radujnii
c55	Khabarovsk	Khabarovskiy Kray	High speed railway Khabarovsk-Vladivostok
c55	Vladivostok	Primorskiy Kray	High speed railway Khabarovsk-Vladivostok
c55	Yaroslavl	Yaroslavl region	High speed railway Moscow-Yaroslavl
c55	Barnaul	Altayskiy Kray	High-speed railway Novosibirsk-Barnaul
c55	Chelyabinsk	Chelyabinsk region	High-speed railway Yekaterinburg-Chelyabinsk
c55	Saratov	Saratov region	High-speed railway Moscow-Michurinsk-Saratov; High-speed railway Samara-Saratov; Saratov-Volgograd
c55	Kemerovo	Kemerovo region	High-speed railway Novosibirsk-Kemerovo
c55	Krasnoyarsk	Krasnoyarsk region	High-speed railway Novosibirsk-Krasnoyarsk
c55	Novokuznetsk	Kemerovo region	High-speed railway Novosibirsk-Novokuznetsk
c55	Omsk	Omsk region	High-speed railway Omsk-Novosibirsk
c55	Novosibirsk	Novosibirsk region	High-speed railway Omsk-Novosibirsk; Novosibirsk-Krasnoyarsk; Novosibirsk-Barnaul; Novosibirsk-Novokuznetsk; Novosibirsk-Kemerovo
c55	Penza	Penza region	High-speed railway Samara-Penza
c55	Samara	Samara region	High-speed railway Samara-Saransk; Samara-Saratov; Samara-Penza
c55	Volgograd	Volgograd region	High-speed railway Saratov-Volgograd
c54	Murmansk	Murmansk region	Complex transport nodal point (sea port)
c54	Saransk	Mordoviya	High-speed railway Samara-Saransk
c52	Yakutsk	Yakutiya	Airport - Ykutiya; Bridge
c45	Smolensk	Smolensk region	High speed railway Moscow-Krasnoe

Urban class	City	Region	Project
			(through Smolensk)
c42	Bryansk	Bryansk region	High-speed railway Moscow - Suzemks (through Brjansk)
c24	Michurinsk	Tambovsk region	High-speed railway Moscow-Michurinsk-Saratov

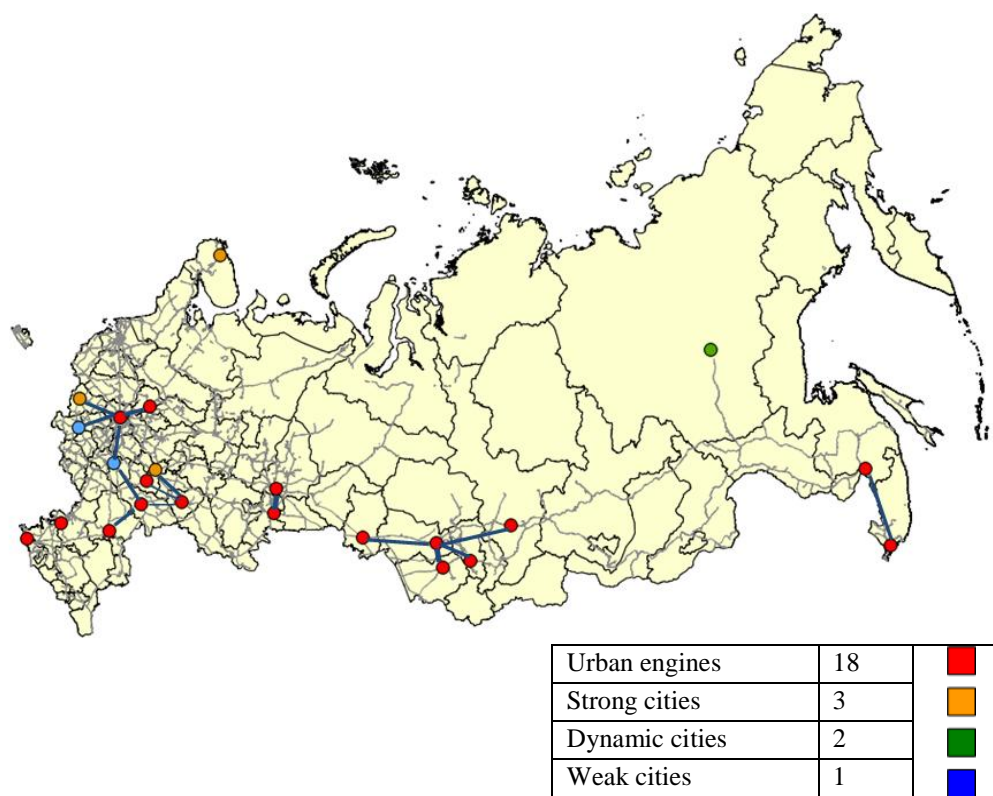


Figure 6. 11 *Federal large-scale transportation projects*

A significant part of large-scale transportation projects are dedicated to the construction of high-speed railway. As we singled out in the previous chapter (Chapter 4, section 4). The realization of these projects is frozen and only high-speed railway Moscow-Kazan could be realized in near future.

The analysis proves the previous conclusions that the Russian transport system is hardly underinvestment and at the same time there is a lack of projects aimed to improve transport network around the country. The large amount of proposed projects to high-speed railway look so ephemeral, if taken into account that after ten years of discussing and forecasts no one high-speed railway have been constructed.

With the reorientation of markets, national transport network has to be integrated with the EU, China and India, and on the other hand it has to be oriented on the improved interregional connectivity. As an analysis has shown

there is lack of initiatives aimed to improve transport accessibility among cities as well as connect the Russian network to neighbor' networks. Beyond the doubts that Russian transport network demands significant extension of all types of transport infrastructure.

6.4. Mega-events led regeneration strategies in Russia⁴

6.4.1. Hosting mega-events a new Russian spatial policy

In parallel with economic urban regeneration during the last years the trend of mega-events led regeneration has emerged in Russian practice. The following decade can be called a decade of events-led urban regeneration in Russia, as almost every year will feature a large event (Table 6.4.).

Table 6. 4 *Significant events linked to urban regeneration projects*

<i>Type of event</i>	<i>Main examples</i>
Sporting	2013 Universiade in Kazan 2014 Winter Olympics and Winter Paralympics in Sochi 2015 World Cup Formula-1 in Sochi 2016 IIHF World Hockey Championship in Moscow/St Petersburg 2018 FIFA in 11 Russian cities
Political	2006 G8 Summit in St Petersburg 2009 Shanghai Cooperation Organization (SCO) Summit in Yekaterinburg 2012 APEC Summit in Vladivostok 2013 G20 Summit in St Petersburg 2014 G8 Summit in Sochi
Cultural	2009 Eurovision Song Context in Moscow
Anniversaries	The 1000th Anniversary of Kazan in 2005 The 1150th Anniversary of Novgorod Veliky in 2009 The 1000th Anniversary of Yaroslavl in 2010 The 1150th Anniversary of Rostov Veliky in 2012 The 1150th Anniversary of Smolensk in 2013 The 300th Anniversary of Omsk in 2016

⁴ This paragraph is a part of book section "Mega-events as the regime of spatial exclusiveness in Russia's modernization", In: Grix, J. (ed.) *Leveraging Legacies from sports mega-events.*: Palgrave Pivot, prepared together with Dr. Oleg Golubchikov from the University of Birmingham

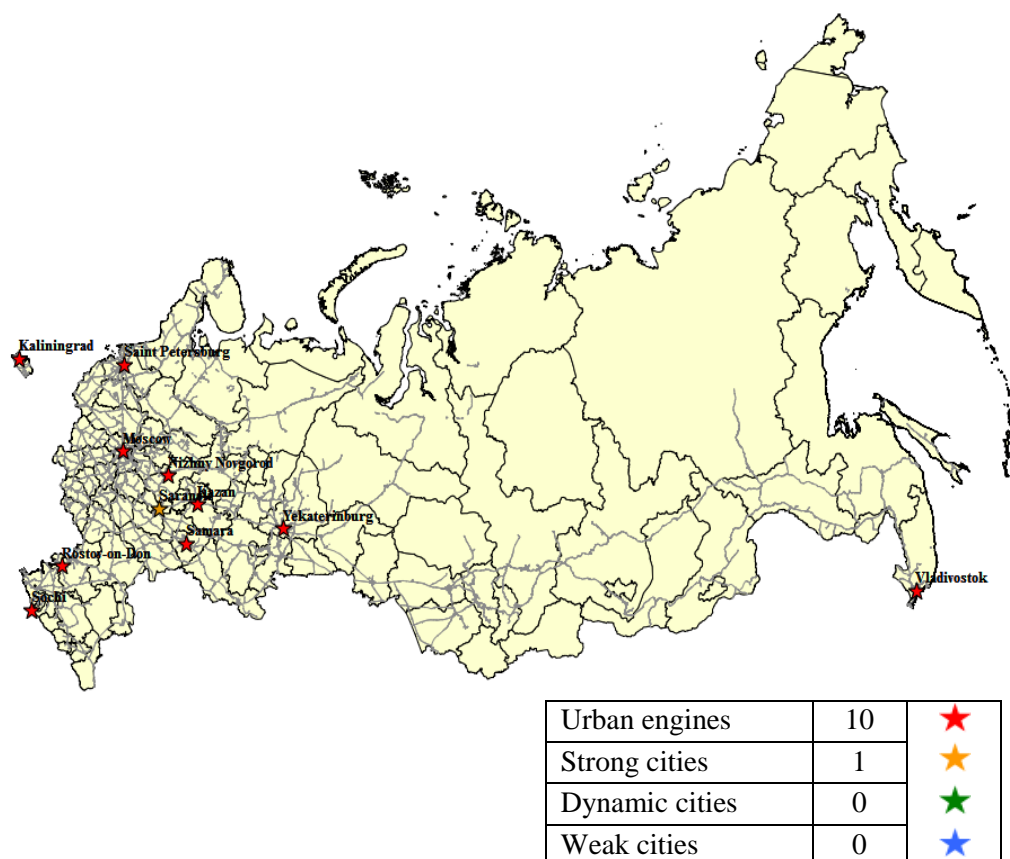


Figure 6. 12 *Cities to host Mega-Events*

It is the mega-events that have taken a particularly prominent role in Russia's government's approach to the territorial development of the country, shaping much of the national-level urban policy and urban regeneration strategies. By this means, the central government seeks to establish alternative "growth poles" in order to counterbalance the obviously unhealthy concentration of growth in Moscow and to support the province.

The new spatial politics, however, embodies the neoliberal worldviews that privilege the ideology of selectiveness and world-city-entrepreneurialism. While the neoliberal regime precludes the former equalization strategies of spatial (re) distributive justice, it seeks to refocus growth in a number of selected sites which are then promoted internationally. Above all, this strategy is seen as part of the attempt to "modernize" the country - firstly, to mobilize the strategic sites for the modernization "breakthrough", while, secondly, to consequently show them to the international community as a re-branding tool for New Russia. As Dmitriy Chemysenko, the President of the Sochi Organizing Committee, noted: "It is a deliberate strategy by our leaders. To redevelop our country by holding major sports events is key to our economic development" (Fox Sports, 2012).

The preparation works and the levels of federal investments depend on the scale and the importance of a particular event, but usually include not only the construction or reconstruction of the infrastructures, but also the upgrading the urban environment in terms of public spaces and, in some cases, additional social infrastructures, schools and housing. The high priority given to mega events is reflected in the federal spending. For example, in 2011, Krasnodarskiy Kray – the region encompassing Sochi – received 11% of all federal spending, Primorskiy Kray with Vladivostok as its capital received 8%, Moscow 10%, St Petersburg and its surrounding Leningrad Oblast 6%, while the Republic of Tatarstan with its capital Kazan 5%. Thereby these six regions over the 83 Russia's regions received 40% of the federal investment (Golubchikov and Makhrova, 2013). Given this spatial politics pursued by central government, it is no wonder that hosting mega-events is considered by the local elites as the most direct way to get access to a large-scale federal support and to promote their regions and cities. This has induced a strong competition between Russia's regions to propose their capital cities for hosting forthcoming mega-events or to invent events altogether (such as anniversary celebrations or specialized forums) and to lobby for central government's support (Kinossian, 2012).

This system of politically-appointed hosts of the mega-events creates a rather controversial landscape of spatial development. Although it does stimulate a cascading of investment to a new group of cities outside the initial locus of capital accumulation and thus somewhat mitigates uneven development at one scale (i.e. Counterbalancing Moscow at least), it intensifies the socioeconomic disparities within the Russian province at other scales – including between the mega-event-cities, on the one hand, and their hinterland and all the other cities, on the other hand, as well as within the mega-event-cities themselves by creating the dual city irregularities between different social groups who may be affected by the mega-developments quite differently.

As the two most significant event-driven regeneration programs in Russia have recently been those with respect to the Asian-Pacific Economic Cooperation (APEC) Summit in Vladivostok and the Winter Olympics and Winter Paralympics in Sochi, in the sections, we want to construct a profile of the mega-events' impact on these two cities (two urban engines), including priorities established for these cities' regeneration, the magnitude of investment and change, links between physical and economic regeneration, and social implications.

6.4.2. The 2012 APEC Summit in Vladivostok

The APEC Summit, which took place in Vladivostok in 2012, became the first major international event that the Russian government, which could be considered as the first national urban regeneration project.

Vladivostok is the regional capital of the Primorskiy Kray. Because of its naval base and near-border position, during the Soviet period (from 1930's until 1992) it was one of the Soviet “closed cities”.

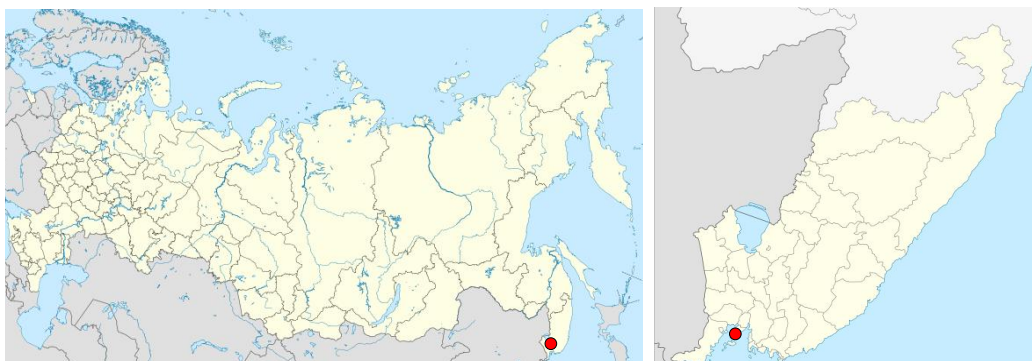


Figure 6. 13 Vladivostok location

Although like the rest of Russia it was opened for the market, in the last two decades, the city has experienced an economic decline caused by the closure of key enterprises, reduction of military expenditures, generally unfavorable local investment climate, remoteness and poor transport connection with European Russia. The demographic crisis involving a low birth and high mortality rate and population outflow have resulted in Vladivostok's shrinking from 648,000 to 578 800 population between 1992 and 2008 (Rosstat, 2012).

Table 6. 5 Demographic trends in Vladivostok (1897 - 2013)

1897	1923	1926	1931	1939	1956	1959	1962	1967	1970
29 000	98 900	108 000	140 000	206 000	265 000	291 000	325 000	397 000	441 000
1973	1976	1979	1982	1986	1989	1992	1996	1998	2000
481 000	521 000	549 000	576 000	608 000	631 000	<i>648 000</i>	627 000	618 600	606 200
2001	2002	2003	2005	2007	2008	2010	2011	2012	2013
601 400	594 701	594 700	586 800	580 800	578 800	592 034	592 000	597 476	600 378

Yet, Vladivostok still has a strategic location in the Asia Pacific region – due to the Trans-Siberian railway and a developed port infrastructure, it serves as an important gateway in the Far East, linking the Russian transport corridors with the Asia-Pacific ones.

The 2012 APEC Summit was an attempt by Putin's government to exactly brand Vladivostok as the Russia's Pacific Gateway and as the new “growth pole” in the Far East. The event was thought to become a turning point for

stimulating regional economical development by attracting investments from the fast growing Asia Pacific region.

After the post-Soviet years of neglect of its physical and social infrastructure, this transformation into “the new hot city on the Pacific” (James, 2012) would have required an enormous regeneration effort. As the decision to host the summit in Vladivostok was only taken in 2007, there was a limited period to make this transformation happen.

The preparation for the APEC Summit included massive construction works. A list of major new-built and renovation projects included 67 units, embracing a comprehensive range of projects, such as a new airport terminal and port infrastructure, bridges, highways, two five-star Hyatt hotels to accommodate the summit’s guests (first of that class in Vladivostok), an opera house, an ice palace, a gas pipeline from Sakhalin, as well as upgraded communal infrastructure including new water-supply and sewerage facilities. But the main highlights of the project were the Summit’s key conferencing area built as a brand new campus for the Far Eastern Federal University on the Russian Island and a new 1,104 m-long cable-stayed bridge, connecting the campus with Vladivostok proper. Before the Summit, the Russian Island was a military garrison without much public infrastructure. Now it features a modern University campus of a total area of 750.000 sq.m. And Russia’s largest conference hall. The Russian Bridge, one of the largest cable-bridges in the world, has ultimately become a new popular symbol of Vladivostok, signifying the marriage of modernization, engineering efforts, and mega-ambitions.

This large-scale city modernization certainly requires the mobilization of a significant level of funding in a very short period. While the initial valuations for preparing for the Summit was 147 billion rubles (Drobysheva, 2008), consequently the cost escalated to 670 billion rubles (US\$21,5 billion) – with 218.5 billion rubles as a direct federal input (Interfax, 2012), while 300 billion rubles have been invested by Gazprom in the construction of a new Sakhalin-Khabarovsk-Vladivostok gas pipeline to boost Vladivostok’s strategic position as an economic and transport hub (Bondarenko, 2013). Even disregarding Gazprom’s share, the APEC Summit, which lasted only eight days, has become the most expensive conference in history - for comparison, the APEC Summit in Singapore in 2009 cost US\$71.8 million, in 2010 in Japan US\$277 million (Romanov, 2012).

Despite all this injection of capitals, already well after the actual Summit the city was still struggling to complete its summit preparation program, and the completion of many projects was considerably in delay. According to the Account Chamber of the RF, Russia’s main audit body, in October 2012 only

23 projects of the planned 67 were completed (RIA Novosti, 2012). the Opera House and most of the planned transport and communal infrastructures were still under construction; the two Hyatt hotels had not been finished on time to host the summit's delegates and already in March 2013, the regional government earmarked additional 300 million rubles for their completion (Drobysheva, 2013). Delays were also experienced with the opening of the Far Eastern Federal University's campus on the Russian Island.

The value of the summit's legacy for the local citizens is also not indisputable. To finish all the planned projects and then to maintain them without a continuing federal support would represent a heroic challenge for the city with a total annual budget of 9 billion rubles (Pushkarev, 2011). Besides, there is a risk that Vladivostok's new international airport, the Russian Bridge, the high-end hotels, and the largest conference centers in Russia will remain an underutilized legacy in the context of a shrinking city. Within Vladivostok itself, the new developments such as the Russian Bridge and Russia's largest conference hall are not a vital infrastructure for the city, while the quality of the new roads and infrastructure built within the city is often criticized for being rather poor (RIA Novosti, 2013). Furthermore, it has been widely discussed that most of the work for building Vladivostok's mega-projects was performed by seasonally-attracted cheap labor from Central Asia to, consequently, limited positive impacts for the local employment market.

Yet, the general look of Vladivostok *has* changed thanks to the flagship projects and the government seems to continue to support the otherwise economic depressive region. Even if there is no clear strategy for how the city and the Far Eastern region should be further developed, a new federal Ministry for the Far-Eastern Development was set-up in the follow-up of the summit in 2012 (Minvostokrazvitiye) with a mandate to coordinate the completion of the summit's projects and to continue the modernization of the Far East. The Ministry promptly has prepared a plan for new developments with a total investment of over 5 trillion rubles (Pismennaya, 2011). Although it is not clear to what extent this program will be supported, it is rather clear that central government has singled out Vladivostok as one of a few "growth poles" in Russia for accelerated spatial accumulation intended to produce a new and "modernized" Russian geography.

6.4.3. The 2014 Winter Olympics in Sochi

The preparation for the 2014 Sochi Winter Olympics and Winter Paralympics is another manifestation of a super-large project employed for national modernization and urban regeneration. Sochi itself is Russia's most established sea resort ("the Russian Riviera") and one of a few cities that has

enjoyed a population growth since the collapse of the USSR, growing from 315,000 to 360,000 people between 1989 and 2012.

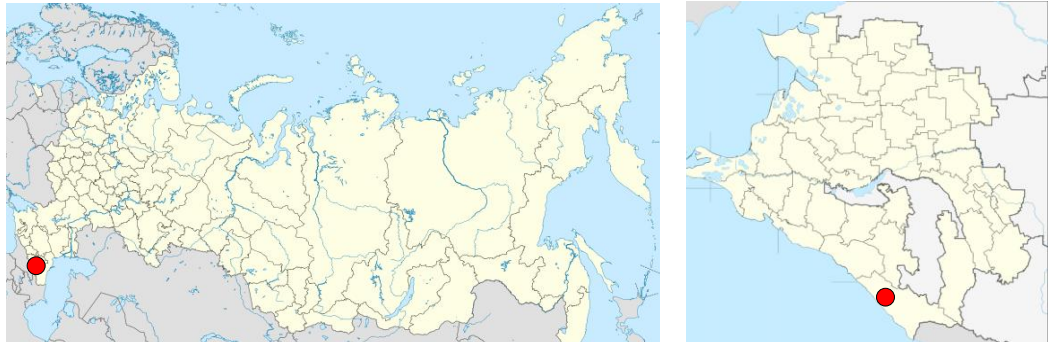


Figure 6.14 *Sochi location*

Table 6.6 *Demographic trends in Sochi (1897-2013)*

1897	1926	1931	1939	1959	1962	1967	1970	1973	1976
1000	13 000	12 000	71 000	127000	174000	188000	224000	241000	264000
1979	1982	1986	1989	1992	1996	1998	2000	2001	2002
243000	300000	313000	312000	344200	356100	359600	358600	357800	329000
2003	2005	2006	2007	2008	2009	2010	2011	2012	2013
328800	328500	329481	331059	334282	337947	343000	343300	360324	368011

Administratively, the city stretches for 145 km along the Black Sea and consists of four large districts - Lazarevskiy, Khostinskiy, Adlerskiy, and Centralniy - which have a relatively poor transport connection between each other resulting in traffic bottlenecks.

The Winter Olympics Games in Sochi have been presented to the Russian public as the accomplishment of “Putin’s dream” (Sochi2014.su, 2012). Only the third bid to the International Olympic Committee (IOC) from the city was successful (in 2007) – after it had been actively lobbied by Vladimir Putin personally and enjoyed a promise of considerable federal financial influx (Muller, 2011). The project was consequently designated as one of national pride and Russia’s national priority, turning Sochi into “one of the largest construction sites in the world” (Fox Sports, 2012). According to the former vice-president of IOC Kevan Gosper, Sochi is “one of the most exciting places in the world in terms of what happening” (Sochi2014.su, 2012). In this decade, Sochi will host not only the Olympics proper, but also a stage of the Formula-1 World Cup in 2015, the G-8 SUMMIT in 2014, as well as some of the FIFA World Cup’s matches in 2018 (Pismennaya, 2011, Kravchenko and Glikin, 2013). The government describes this as the opportunity to transform Sochi into, depending on the rhetoric, “a world-class round-year resort”, “a world city”, “a world sport capital”, or “a Russian Davos”. Some experts have even expressed the opinion that the city will become Russia’s major place for international conferences, sidelining Moscow (Kravchenko and Glikin, 2013).

The aspirations of Sochi are escalating alongside the bill for its redevelopment. While the initial bid's estimates for the expenses for the Olympics were at the level of US\$12 billion, and one year prior to the event skyrocketed to almost US\$50 billion, of which the share of the federal budget is estimated as two thirds (Tovkaylo, 2013). Aliunde, government manifest that the lion's share of Olympic expenses goes from the private investment and the budget has spend only 209,7 trill. RUB (<http://top.rbc.ru/economics/04/02/2013/843458.shtml>) At the same time main sponsors of Olympics companies such as Gazprom, Sberbank, Rosneft are belonging to government and their participation stimulated by government by mean of non-transparent agreement and preferences. As of January 1st 2013 the total expenses were equal 1,136 bil. RUB, it is 74,5% from the total cost. The distribution of Olympic expenses is represented in table

Table 6. 7 *The structure of Olympic expenses*

<i>Amount, bill. RUB</i>	<i>Sources</i>
737	Private investors
111,7	State development corporation Olympstroy
209,7	Federal budget
77,7	Regional and local budget
1136,1	Total

Source: <http://top.rbc.ru/economics/04/02/2013/843458.shtml>

Even before the Olympics, Sochi has established several records yet. It is the first Winter Olympics in a subtropical climate and it is also going to be the most expensive games ever (Tovkaylo, 2013). The latter fact is justified by the preexisting state of the sports infrastructure and the urban environment in Sochi being far behind the IOC requirements. Sochi effectively is the first city where all the sports infrastructure will have been constructed from the scratch and where existing transport infrastructure and hospitality sector will have been thoroughly re-shaken. Yet, by far the largest part of the total cost relates not to the sports and hospitality infrastructure proper, but rather to general urban modernization, showing that the Olympics have been used as a vehicle for mobilization of the public resources.

Immediately after proclaiming Sochi as a new Olympic city, an ad hoc state development corporation Olimpstroy was established for supervising the process. A set of new planning documents was adopted too, including a new city master plan, rules for zoning, and a land expropriation act. The new Master Plan of Sochi has been the first master plan developed for the city since the Soviet period. Its proclaimed objectives include transforming the city into a year-round resort in parallel with the transformation of the city into a world-level business, sports and tourist center. As Davies (2012) argues, to

present a lasting legacy and to serve as a genuine catalyst for urban change, Olympic Games ought to be holistically integrated with planned long-term developments in the host city. However, the opposite can be observed in Sochi: the strategic urban documentation was drafted specifically *for* the Olympics and is driven largely by forces unaccountable to the local government (i.e. by central and regional governments).

More than 200 new projects will have to be realized during seven years (a list of projects was approved by the 2007 Russian Government Decree as the Program of Olympic Venues Construction and Sochi Development (see <http://www.sc-os.ru/ru/activity/programm/>). Thanks to Olympics, Sochi has got a chance to upgrade a significant part of urban infrastructure including power supply system (Sochi is the city where emergency in power supply system is a routine matter), water supply and sewerage system, telecommunication system, and that is most important in Sochi after 20 years of oblivion has been launched a massive urban transport modernization, including renovation existing transport system and new construction, that is vitally important for the one of the most congested city in Russia. Though, immense undertaken transport infrastructure renovation has not solved urban transport problems. Around two hours are still demanded on the 26 km distance from Adler to Central Sochi.

Although Sochi does look like a huge construction site, it reveals much socioeconomic and geographical unevenness. First of all Sochi Olympics are provided as "the most compact in the history of Winter Olympic and Paralympics Games" (Russian Olympic Committee, 2013). The games will be held in two clusters: off-shore and mountain clusters which 48 km remote. The off-shore cluster contains the unique Olympic Park where sports facilities (6 main sport stadium) and Olympic village are located. This compact-cluster concept is applied for the first time in the Olympic history, when all sport facilities are situated in one cite. The mountain cluster contains downhill skiing facilities and ski resorts infrastructure. The two clusters are connected with combined rail and highway, which is considered as one of the most difficult and most expensive constructed and at the same time vitally essential Olympic units (Latuhina, 2012). The expenses for this road is estimated at 230 bill. RUB (Tovkaylo, 2013).

In spite of though the innovative cluster - approach provides an enormous concentration of all activities in one area, which prevents the traffic congestion and make easy access for participants and hosts, within the city of 145 km length it hampers all other areas without any "sport inspiration" and curbs the even urban development.

On the other hand, the “Concept for the architectural design integrity on the territories adjacent to the Olympic sites and in the international hospitality zones” adopted by the city in 2010 as a design code demonstrates that only a few urban areas will be physically regenerated. Most of the development is greenfield, raising, *inter alia*, various environmental concerns (most famously, the reduced size and damage to the Sochi National Park within the buffer zone of the Caucasian State Biosphere Reserve). The proper regeneration activity is focused on public spaces and roads along the main tourist flows around the “hospitality zones”, intended to create a good appearance to the city, rather than to change the local residents’ quality of life. Further, while the northern part of the city (Lazarevsky District) is less developed compared to the southern part (Central and Adlerskiy Districts), most of the development is taking place in the latter (Procenko, 2010). The new highway junctions also bypass Lazarevskiy District. Consequently, the Olympics are, if anything, a catalyst for increased disproportions between the northern and southern parts of the city.

As Sochi now is the biggest construction site in the country, thousands of workers are demanded to build all symbols of Russian sublimity. The foreign newspapers are full of facts and articles about violence under the worker-migrants, in terms of cheated out of their wages, terrible living conditions, abuse of human rights and labor legislation (Ward, 2013; Buchanan, 2012). Parallel with application and approbation of innovative novelty in building process and in attempts to create a friendly city, the workers abuse is a dark side of Olympics, which is proved neo-liberal regime in favor of relentless global ideology for account of ordinary people.

Worrying is the impact on social inequality, as the related residential and hotel infrastructure represent the upscale segment of the property market. As a Moscow restaurateur argued "The future of post-Olympic Sochi is clear. The resort for poor is downstairs, close to the sea. The resort for wealthy is here, in mountains" (Tovkaylo, 2013). The mountain cluster contains luxury ski-resorts, such as Gorki-Gorod and Rosa-Hutor with around 9.000 hotel rooms, high-end apartments, and world brands shops and restaurants with served foie gras, cushat, etc (Tovkaylo, 2013). But the class segmentation is widely promoted in the sea cluster as well. For example, after the games, the new Olympic Village of the total area of 74.78 ha will be transformed into an elitist district Sochnoye, offering high-end apartments and infrastructure, including the largest yacht club on the Black Sea coast (RogSibAI, 2012). The initial price for 1 sq.m starts from 150 thous. RUB, it is a comparable with Moscow level (Tovkaylo, 2013). The project has been realized as a public-private venture by the investment company Basic Element and the state-owned Vnesheconombank, with still much public funding involved in the construction of its infrastructure. From the very beginning, Sochnoye was

intended to target the high-income leisure class from places such as Moscow, who will supposedly come to stay there during their holidays. The outcome of this could be either that the settlement will turn into a private luxury zone accessible only to a small group of affluent people or will turn into a ghost town, where the built properties will be buy-to-let investment to be used only during the holiday season. In either case, the intention to create a private town demonstrates that an enormous share of the public investments going into the infrastructure will benefit only a small clique of the population and profit-seeking speculative developments, providing a spur for further social polarization. In this respect Russia seems to repeat the international experience where “increased social polarization remains one of the major legacies of mega-events” (Horne and Manzenreiter, 2006).

Yet, the legacy of the Olympic in terms of the use of the particular sports facilities is unclear. Re-using Olympic venues is a crucial question for the Olympic bid and one of the factors that allow winning the competition for the Olympics. In March 2013, the Program of the Post-Olympic Use of Constructed Units has been approved by government, but leaves a high degree of uncertainty about the future of the built sports infrastructure, especially with regard to a reuse of the large-scale winter sports infrastructure in a subtropical sea resort (Dolgoplov et al., 2013).

6.4.4. Discussion

The analysis of the preparations for the Olympics and the APEC Summit has revealed a set of similarities between the two cases (Table 6. 7). These mega-events are ambitious projects, which are considered by the government as accelerators of Russia’s modernization – via targeted massive public capital investment and the promotion of the selective “growth poles” at the international scale. The Sochi Olympics will likely become one of the most expensive Olympic Games in history yet, while the APEC Summit in Vladivostok is already the most expensive one. If a few years ago, there were perhaps only two Russian cities known to the larger international audience – Moscow and St. Petersburg – as a result of the mega-events, Sochi, a small Russian resort, has become known worldwide, while Vladivostok, a formerly closed city has acquired a recognition at least in the Asia-Pacific region. The mega - event has become a tool of national territorial rebranding strategy, providing mainly by exceeding PR support from the national government, enormous expenditures and ambitious large-scale projects, such as the Olympic park with 75.000 person capacity for the city with a population less than 400.000 residents, or the biggest bridge in the world with capacity 50.000 cars per day towards the island with a population around 5.000 people.

Table 6. 8 *Some characteristics of the compared mega-events as regeneration strategies*

Mega-event	City (region)	Population (2010)	Construction activity	Investment	City budget (2012)
2012 APEC Summit	Vladivostok (capital of Primorskiy Kray)	592.034	67 planned projects, including a renovated airport, a new campus for the federal university; opera house, three bridges. Only 23 were finished by the Summit.	Initial estimates – 147 billion rubles. By 2012 - 689.6 billion rubles	9.436 billion rubles
2014 Winter Olympics	Sochi (Krasnodarskiy Kray)	343.334	207 planned projects, including an Olympic park with sport and residential infrastructure, hotels, homes for resettled people, transport and communal infrastructure.	Initial estimates – 314 billion rubles; By 2013 – 1.5 trillion rubles	17.267 billion rubles

Singling out a few cities as a new growth pole for Russia manifests the politics of recycling, pursued as few emblematic projects to draw attention of the wider audience and investors. While this politics attempts to mitigate the huge socioeconomic disproportions between Moscow and the Russian province, concentrating massive government, political and financial support in a few cities actually intensified the unevenness of the national landscape, where “successful” islands of modernization manifest themselves in the sea of urban decay. As the then Minister for Economic Development stated at the 2011 Moscow Urban Forum, twenty largest cities in Russia produce half of the country’s GDP, while support of the “ineffective” small cities “might” cost the country 2-3% of its GDP growth, with an implication that large federal projects for the largest cities should be given priority, while the decline of small cities is an “ineluctable global trend” (Nabiullina, 2011). Our analysis demonstrates that such self-fulfilling prophecies reflect the actually existing spatial politics.

While the levels of public investment allocated for the preparation of the mega-events have been unprecedented, the choice of these cases has been arbitrary and depended on the lobbying power by national and regional elites. Small summer "Riviera"- Sochi is a striking example, when territory

neighboring with one of the politically uneasy North Caucasus region has been converted into the "national growth pole" of Russia by the host Winter Olympics. Such highly selective and non-transparent regime only fosters the conditions for the uneven spatial development.

On the positive side, the attempt to regenerate at least some Russian cities by means of mega-events are the first significant evidence of the national-scale attention to urban problems in post-Soviet Russia. Until recently the Russian approach for creating and building urban infrastructure (including transport infrastructure) focused on single projects, such as airports or highways rather than on comprehensive territorial development. The mega-events make the Russian urban development practice move towards a more comprehensive area-based urban (re)development (Allan and Khokhlov, 2011). Without doubt this is a breakthrough in understanding the scale of urban problems in Russia after the many years of the obscurity of the urban agenda.

Yet, while providing the support of the physical construction of a number of infrastructural elements, the two examples signify only a limited attention to the genuinely integral urban regeneration which would blend together physical, economic, and social elements. In practical terms, physical upgrade is the main priority during the preparations for the mega-events, while the economic and social aspects have receded to the background. The government assumes that economic development will sustain following the massive investments. However, the city's further regeneration remains unclear because of the limited and unstable local resources; it will rather depend on support to the mundane and everyday activities of the cities, beyond the flagship projects. The "growth poles" may easily turn into "growth holes" that not only consume the unprecedented levels of public resources, but also destroy the opportunities for a more balanced national economic development.

6.5. Conclusions

The analyses undertaken in this chapter has proved that the national development policies are applied in favor of 'urban engines' development. Therefore, it is concern about does it ipso facto stimulate uneven space development or quite the contrary provides a precondition for a more balance development.

From our point of view the reasonability of elimination of the few urban areas is provided by the theory of the stages of development, along other statement of this theory, one development that is in its early stages is concentrated and polarized in a country's central area. Only subsequently does it spread to more peripheral areas and to weaker sectors. Although these poles exacerbate

regional disparities, it is an unavoidable process until mechanisms working in the opposite direction begin to operate. In more advanced areas saturation of markets, high urban rents and physical congestion could lead to the creation of new jobs in less developed areas or reduced attractiveness (Capello, 2007). The study has revealed that sprouts of such type of mechanism which could be form preconditions for the development of cities along the country exist in the form of areas where SEZs and TICs are developing. Some of them are formed in Moscow and Moscow region ipso facto they reinforce the central pole, nevertheless many of them are situated in the Volga, Ural and Siberia regions. As explained earlier, SEZ and TIC creation is aimed to launch the innovative (high-technology and competitive) economy in post-Soviet Russia, to create new jobs and attract private investment. The realization of these large-scale projects inside pretty well developed urban areas such as 'urban engines' could be considered as a logic political choice. Further to, large urban centers better connected to domestic, regional and global markets enjoy a self-sustaining agglomeration of economic activities (Coulibaly, 2012). If local economy does not have sufficient savings to invest in capital or infrastructure, or if its market too small, its productivity level will remain extremely low and will fuel a vicious circle of underdevelopment - limited market expansion, low savings and low consumption and low income. It means that for the effective development of the territory it has a sense to start from the strong 'nodes' with sufficient critical mass of demand and infrastructure. Choosing 'urban engines' as the ten points for the further development could be a right political decision, but at the same time it should be supported by a complex action aimed to extension of transport infrastructure and most important to create an appropriate institution and a mechanism for the further development.

Being efficient and stimulate national economic development, creation of SEZs and TICs have to be supported by complex measures, including also the improvement of the urban environment. Tomsk is one of a few positive practice when realization of SEZ and TIC stimulates urban regeneration, including housing, transport and build environment. In many other cases SEZs and TICs have a weak point with the urban environment and mainly urban regeneration (regeneration of urban fabrics, improvement, housing stock and transport infrastructure) is realized on the logic of the 'trickle down' effect, when the creation of innovative economy by means of attracting new enterprises in the territory has to improve urban appearance automatically. In reality it is not so far. Created SEZs and TICs provide weak efforts to keep the original population in place. Comfortable and affordable housing, livable urban environment, developed service sector is demanded to attract new classified labor into the city and keep it on the place welfare. The analysis has revealed that these triggers do not use in practice.

The next important statement of theory of stages development which could serve for explanation of research results is the high role of infrastructure and their development with regard to demand side and the importance of transport infrastructure in increasing the size of the market and production. In the context of the research it means that for successful and effective development of divided poles the applied actions should be supported by construction of transport infrastructure. As research has showed during last decade, Russian transport sector is highly underinvested. The country uses the endowment such as trains-Siberian Railway, which recently is demanded expansion and increasing a traffic capacity. Parallel with railways system deterioration, the airport network has been deteriorating significantly during last two decades as well. As a result, the connectivity and accessibility among Russian cities became worse in comparison with soviet era and more depended on Moscow hub. From the one hand the current enforcement of Moscow hub is logical due to the transport demand is the highest here, but on the other hand, this demand is provoked by a bounded national transport network development, as a result, there is no alternative and competitive transport hubs around the country (here we speak mainly about passenger transportation). The extensive airports reconstruction initiated during last years (including Sochi, Vladivostok, Kazan, Tomsk) does not mean the creation of new transport infrastructure. Apparently it is recovering process of airport hubs which have been lost after USSR collapse. To get advantage from the development of selected poles and at the same time to create preconditions for the 'balance development' creation transport infrastructure should be mandatory provided. The study has explored that the government supports the development of transport infrastructure (e.g. Air hubs, or high-speed railways) mostly in 'urban engines', while the other cities and the 'weak' cities particularly, suffer from poor connection or isolation and no re-equilibrium strategies are provided.

Another important finding was that recently Russia has adopted a practice of mega-events led regeneration, such as 2012 Summit APEC, 2014 Sochi Olympics. However, despite of mega-event urban regeneration fits to idea the promotion of few growth poles, nevertheless this approach suffers from weak attention to urban economic base development. If in case of Sochi we could propose that the city could try to use the opportunity to become a new world-resort, in case of Vladivostok it is so far from reality, mainly because of regeneration of these cities realized in the form of 'hard regeneration' dedicated to improvement of build environment leaving behind economic aspects. The issue how the delimited federal urban poles such as Vladivostok and Sochi will stimulate development of regional economy and contribute to the creation of regional or intra-regional urban networks is demanding the further analysis.

CHAPTER 7

RETHINKING THE FORM AND FUNCTION OF CITIES IN POST - SOVIET ERA

7.1. Russian cities getting lost in transition

In this chapter, we would provide a framework for rethinking Russian cities in a way, what supplements today's polarizing tendency towards Moscow with suggestions about urban regeneration policies for the other cities along the huge territory of the Russian Federation. As the country moves to increase its richness and welfare the chapter looks at how the reorganization of the Russian urban system can contribute to equity and welfare objectives. For making a comprehensive analysis, the transformation processes have been considered at the national, regional and local perspectives as different territorial-administrative levels of a city system which themselves are undergoing different political pressures and speed of transformation, even if at the same time they are deeply interconnected.

7.1.1. *The national city system transition*

Being the largest country in the world, Russia has quite weak and uneven city system constituted by 1100 cities with a significant concentration in Central Russia and sparse distribution along the Far East and Siberia. Despite that during the planned economy the spatial allocation of citizens and activities followed an efficiency criterion, favoring urbanization in Siberia and Far East (Hill and Gaddy, 2003), since the seventies of the 20th century the development of the Far East and Siberia regions have been neglected by government (Medvedkov, 1990; French, 1995; Lewis and Rowland, 1979). A permanent centripetal population movement from Siberia and Far East to Moscow, Saint Petersburg and few regional capitals in central Russia was taking place. The desertification of the eastern part of the country has intensified after the USSR disintegration and recently Moscow and Moscow region absorb a lion share of migration flow. This population movement could be explained as an attempt to find a better quality of life in Central Russia. Further, in the last decade of the 20th century and the first decade of the 21st century, Russia has faced a significant natural population decrease; this factor, combined with high out-migration rate, had provoked a significant urban shrinkage around the country and an intensified depopulation in its extensive eastern part.

Apart from the natural demographic dynamics, the result of this study indicates that Russian city system in some respects is being shaped by national policies. If the Soviet era was an attempt to level the space around the country, during the post-Soviet period the space production has been limited to few selected areas which have got a significant federal attention and support, while others have remained unstained and neglected and had to adjust themselves to the new market conditions being unassisted. Currently the federal policies support the following territories:

- **Moscow and Moscow region.** The research has proved that large scale projects (TICs and SEZs in Dubna, Zelinograd, Pushino, as well as the creation of a new Silicon Valley - Skolkovo), engaged with numerous transport projects aiming to improve Moscow transport hub, are currently launching in Moscow and Moscow region. The impetuous political decision about the extension of Moscow boundaries for more than twice in 2012, has provided additional, 'potential power' for the city-region and more absorption capacity for migration. The overall sum of political initiatives added to the existing capacity of a city that was already the political and economic center, makes the national system of Russian cities fairly weaker and imbalanced.

- **Southern Russia.** Geographically its part comprises two Federal Districts: North-Caucasian FD and Southern FD. In many respects, due to the unstable political situation in Northern Caucasus during the last decades, the region is getting significant federal investments which first of all serve for national stability and safety and, afterwards, for the development. The SOM analysis has shown that 'dynamic' cities predominate in the Southern Russia. Under the research context, it is important to draw attention that Southern cities have got the impulses for their further development in comparison with many other cities due to the politically unstable situation. However, the Krasnodar Kray (belong to Southern FD) has got a significant federal impulse for its development either. Sochi is a striking example of the rescaling process in post-soviet Russia when regeneration of only one city creates a national image.

- **Far East area.** The present study evidences that during the last decades Russian Far East is a vast shrinking area. In 2012 a special Ministry of Far East Development has been created to prevent the territorial degradation and improve the economic state. Due to the inertia of political process it is difficult to provide any value, but hosting SUMMIT APEC - 2012 in Vladivostok is a significant example of federal attempts to attract attention to the Russian Far East. One of the goals of Far East development is the extension and development of cities along this territory.

The present study indicates that the transformation of the Russian city system is going under chaotic and focal federal political initiatives in the absence of an integrated spatial development strategy and comprehensive view of further territorial development with the risk of further fragmentation of the country's space and thereafter of urban decline.

7.1.2. The regional transition

The transformation of the national city system has shown that the Soviet planning approach based on the space 'equity' criteria, bypassed local unfavorable conditions and did not consider much the transport cost; however, it became important in the post-Soviet market reality where geographical location, transport accessibility and regional wealth have significant value for people and for business. It is interesting to note that utopian concept of space equalization, during the central planned economy had been supported by significant economical privileges for people going to live in Northern areas, such as higher salary, social benefits in the form of free air flights to the central Russia, treatment at a health resort, etc. In market economy all these incentives for living in severe climate conditions have been wrecked, leaving the Northern regions without any competitive advantage in comparison with favorable living conditions in other (central and south) regions.

In post-Soviet period, being Moscow and Moscow region with the highest regional GDP most regions have been left behind, with the exclusion of those endowed with natural resources. Detailed examination of post-Soviet regional disparities by Benini and Czyzewsk (2007) showed that the failure of the economic diversification in the country, as this growth model was heavily dependent on the contribution of those regions rich of natural resources, mainly in the Tyumen region, Tatarstan Republic, Sverdlovsk region, Saint Petersburg.

The results obtained by means of SOM application allow making a comparative analysis and revealing specific models of regional urban systems. First, regions presenting good economic performance in post-Soviet period are constituted by cities from high ranks, such as Moscow regional city system consists of forty strong cities, eighteen dynamic cities and only six weak cities, also the Republic of Tatarstan, one of the most dynamic region, has two urban engines. On the other hand regions which have got poor impulses for their development in market conditions such as Ivanovo region, Tyva Republic, Amur region, have rather weak city systems presented mainly by weak cities. Second, many northern regions present a specific

decentralized city systems formed by 'strong' cities specialized on oil-gas exploitation with weak transport ties among them, Tyumen regional city system is a good representative of this city system model, where Tyumen belonging to 'urban engines' is regional capital and it is well enough involved in national transport system, while other cities being 'strong' cities and significantly contribute to regional economy are act as independently units and do not contribute to creation a regional urban network. Third, in Central Russia, otherwise, the correlation between the state of regional city system and the transport infrastructure is important. A study has shown that the regions with a developed transport infrastructure constitute an urban network, for example, in the Republic of Tatarstan and Nigniy Novgorod region. It proves the fact that a sufficient transport infrastructure accelerates the transformation impulse from low to high levels and allows going to the conclusion that to give impulses for the regional development, modern and effective transport infrastructure represents an inevitable prerequisite.

7.1.3. The urban transition

Since the USSR collapse soviet cities have undertaken a great transformation. Some elements of transformation could be considered as positive, such as the appearance of new urban architecture (in some aspects it could be criticized, but in general it was a fresh air in the cities), and the rapid development of service sectors, while many others have led to deterioration of urban conditions. The formation of the real estate market, the appearing of ownership in the building and new approach to land use have pushed cities to become spoilt by poor chaotic urban design, economic dispersal, transport congestion and social polarization. The municipal reform and the increasing centralization of the fiscal policy, have caused an imbalance between the responsibilities and financial and governance capacity of local authorities and at the same time have pinched post-Soviet cities in their recovery paths and restrict their opportunities to compete for investment and human capital. The crisis of Russian cities is a result of reforms, shock therapy and the inelastic transition to market conditions.

As a consequence of this transition period, urban dynamics became more and more complex and difficult to explain with classical tools. Under the market forces and without a general national strategy in strengthening the urban system, the 1100 post-Soviet Russian cities are moving in different directions. The result emerging from the NN SOM analysis has shown that cities are characterized by particular paths and parameters of transformation which can be summarized into four urban classes: 'urban engines', 'strong cities', 'dynamic cities' and 'weak cities'.

To verify the proposed urban classification, the quantitative analysis has been combined with a qualitative investigation, realized by talking with people from different cities, which the author has interviewed during three years of research. The analysis has proved that during the last decades the urban conditions have changed significantly. Almost all the responders have pointed out the significant deterioration of the urban economy, closing of many factories, housing deterioration, traffic congestions, appearing chaotic building environment, appearance of social polarization. However, cities belonging to urban engines and strong cities perform better than the average. For example, the people from Saransk, Voronej, Kaliningrad have mentioned a positive trend in the quality of the urban environment, development of the service sector and public transport. On the contrary, people of Tver, Arkhangelsk, Chistopol, Kargopol have mentioned, in the last years, a significant degradation of the urban environment, the growth of transport jams, the increasing problems of job searching. The widespread trend in the cities is that the growth policies are dedicated to new constructions in free land, instead preservation and regeneration of existing urban fabrics. The construction of new housing is mainly realized in greenfields and neglect the problem of housing renewal or brownfield redevelopment.

During the research, some policies that could trigger the Russian urban Renaissance have been explored. The results indicate that, at the local level, contemporary development policies influencing the urban transformation are formed by a series of not complementary and disorderly projects and initiatives in response to sectorial issues such as housing shortage and transport congestion, industrial restructuring and economy regeneration. This sectorial approach presents low efficiency and does not improve the cities wellbeing and competitiveness.

In the context of a recognized growing role of cities in promoting development and welfare, it is relevant the position of city in the world as well as inside the national urban system, which in many aspects starts from the creation of a livable urban environment engaged in the development of the urban economy. The results of this study show that recently the role of cities in the Russian economy is blurred and a lack of attention is paid in finding effective models and approaches for post-Soviet urban regeneration and transformation towards competitive cities and towns. Most of contemporary post-Soviet Russian cities could be characterized as 'faceless' cities lost in transition.

7.2. Russian cities moving towards regeneration

After more than twenty years of transformation it becomes evident that a forceful political commitment on the urban issue is needed for the country, aiming to place cities' within the framework of undertaking strategic economical initiatives.

Recently there has been a debate whether Russia, at this stage of development, can pursue an active development policy toward equity targets or whether, the government could define several urban poles for the further intensive development which will give the impulses for the national development. A study has revealed that recently government rescues economy and try to assign and to support some urban poles and areas. From our point of view, at this conjuncture, it seems a mistake disregard development of the city system, as well as urban environment. We argue that the government policies could provide more urban value and could be oriented to define some strategic lines in urban revitalization giving the impulses for national development.

7.2.1. Polycentric city system

On the question of strong spatial polarization in the Central Russia and the desertification of the extensive eastern part, the study has identified the urban classes which have emerged under the new conditions and which could become the base for the creation of a polycentric city system. It can thus be suggested a triple level polycentric model of city systems. The first level facilitates the emergence of urban engines along the country; their purpose is to create hubs for economic growth and jobs. It is possible, therefore, that the class of urban engines could be promoted as alternatives cities with equal opportunities. Taking into account a reduced attractiveness of Moscow due to the saturation of markets, the physical congestion, extremely high cost of land, and significant deterioration of the urban environment, the alternative cities could have a great opportunity in trying to promote themselves and compete for the human resources and investments and at the same time to contribute towards a more balanced city system. The second level, composed of strong and dynamic cities, aims to create the links and synergies between the main urban cores, enforcing agglomeration economy. More attention could be paid to the development of regional urban networks with the stimulation of cluster development. The third level of weak cities should consolidate the links between cities in the region and across borders. This level could be considered as a final stage in the creation of a coherent space around the country aimed to embrace all cities together. On the other hand,

being the most numerous group, weak cities demand a selective approach for their further development. Several factors, including location, existing economic base, endowments have to be taken into account prior involving and reinforcing cities from this class.

7.2.2. Urban regeneration should overcome the limits of the Socialist city

Soviet cities were not conceived as social assets, they were planned first of all as places to work. The centralized urban planning created almost identical urban pattern and environment in Northern and Southern cities and similar panel housing is widespread from Kaliningrad to Vladivostok. We do not diminish the significance and importance of the Soviet undertaken model of urban space and development, because it was the model which at that time provided the rapid growth of urbanization and at the same time ensured basic housing needs for all the population. We argue that, for moving to the next developmental stage, cities demand a new purpose and approach for their growth. Post-Soviet cities should be transformed into livable resilient places attractive for people, for business, for investment, for tourism. Comprehensive efforts are necessary to strengthen the character of Russian cities as sources of economic prosperity, as places of social and cultural integration and sustainable development. Post-Soviet urban areas have to be transformed in correlation with the new requirements of post-industrial era and market economy.

Considering the Russian practices, we observe different initiatives, which lead to urban regeneration and urban transformation, but the research has proved that they are single-side and pursue diverse (sectorial) goals. For example, the creation of SEZs, development of innovative clusters, selected state support of one-industrial cities are aimed to improve the urban economic base, leaving aside social and technical components. Hence this approach reinforces the unbalanced situation of the post-Soviet city, as the improvement of economic base is the only goal, and the urban environment and the housing and service conditions are neglected. This scenario in fact repeats the Soviet urban development model.

Other important findings are that, taken together, the results of this research show that recent Russian federal policies are oriented on space "shrinkage", promoting a supportive of strong cities and refusing it to any weak city. Searching an alternative more balanced solution, we propose two directions which are opposite, but which should be applied simultaneously. There are promoted growth of core cities and control shrinking of uncompetitive cities. The shrinking policy does not mean the death of weak cities. We argue that

the shrinking policy could imply the creation of conditions for sustainable urban development based on the activation of bottom-up approach but with significant state support.

The proposed urban classes have shown various capacities of adaptation to the changing economic circumstances. In general, therefore, it seems that creating a "cookbook" for regeneration of various urban types is not so fruitful task, because each city is unique and has its own individuality. But at the initial phase, it could be useful to identify several main policy directions in dealing with certain urban groups, in which cities show close development paths and are characterized by similar urban problems and characteristics. Assuming, as a starting point the resulting classification of cities in Chapter 5, the following urban regeneration strategies could be considered.

a. Urban engines

For the class of urban engines *the strategy of smart city* could be applied. The idea of the strategy is to encourage sustainable development in the chain of the most prosperous Russian cities. The aim is to strengthen cities which could propose an alternative to Moscow. They don't need so much economic policies, but rather the improvement of the quality of living and human capital in order to attract skilled people to the city. The simulative measures could include: transport facilitation, large-scale development projects in the modernization of the urban fabric, improvement of public spaces, development of the service sector, higher education development, improvement of the ecological situation in the city and the region. More attention should be paid to the transport accessibility and transport connections at national and international levels with the creation of international logistic hubs.

b. Strong and dynamic cities

For the class of strong and dynamic cities we propose *the strategy of "urban legacy improvement"* aimed to enhance the value of inherited urban fabrics. The strategy is a complex because this policy must be compatible with the necessary transformations needed to upgrade the existing urban economic base but without large-scale renewal projects. The improvements in enhancing urban legacy should be based on the participation of local communities in the regeneration process. This strategy points to the development of social infrastructure, livable urban environment, public transport and modern urban design. The cities should be transformed for attractive cities for people and for business based on the existing endowment taking into account touristic and cultural urban potential. Bottom-up approach could be the main transformation force.

c. Weak cities

For weak cities *the shrinking control and selective development* could be considered a suitable regeneration strategy. As this group of cities does not have enough critical mass for self-development, the cities require a sensitive approach in the creation of paths for further urban development. As weak cities are very diverse, it is essential to give a value to urban specificity and the existing endowments have to be examined precisely for taking decision about their further development. A departing point could be weak cities disaggregation into cities with favorable transport connection in agglomeration area, with a promising economic base which could be competing under market conditions, or with historical legacy which could enforce the touristic potential of cities.

7.2.3. Institutional architecture

For the efficient space reconfiguration and urban regeneration policymakers need to connect post-Soviet cities through regional and national integration policies to strengthen market forces. To approach that, it is time to begin to design a national strategy to facilitate the adoption and coordination of policies for spatial development (Coulibaly, 2012).

Hence market oriented economy has pushed different cities into various development paths, it is essential to provide a comprehensive approach and select appropriate regeneration strategies for diverse city groups. Despite urban regeneration initiatives in post-Soviet cities which have to embrace all cities around the country, in Russia they have to be applied selectively depending on urban state. To overcome the limits of planned economy, urban regeneration should provide cities with incentives for *development* (not surely for growth) inside the existing environment, should prevent shrinking towns from becoming ghost cities and try to find ways of working with and for local people. Contemporary urban regeneration initiatives have to be aimed to provide a comprehensive view of cities inside national economy, have to give cities' and a towns' economic base for the further development, money and considerable freedom to decide how to use them.

For improvement of Russian urban quality and image new efficient policy tools are required. Firstly, the growing recognition that cities can contribute to national economies and boost urban economic performance could be the prerequisite for preventing urban system's decline. Secondly, the rescaling of the balance between national, regional and local powers, by reducing the role of the national government and by providing greater resources and opportunities to cities. Thirdly, the changing attitude to the cities should be

based on the awareness of the necessity to improve management capacity of governing bodies. Fourthly, local society has to be an active participant in improvement of the urban environment; this process should be launched by creating a relevant policy environment which will stimulate local urban initiatives engaged with society education in terms of being proactive in urban issues.

Taken into account the various and rich international experience, urban regeneration policy must be created within a comprehensive strategic framework that simultaneously seeks a balanced improvement in each field (physical, social, economical and ecological). It should not be a compromise among different parts, but an integrated approach could be useful for getting to the multifold goal of urban regeneration.

On the other hand, we can suppose that in improving the state of post-Soviet city urban regeneration policy could be successful if will be based on the stable local government with sufficient governance capacity; on the ability to create a partnership between many actors and stakeholders; on the creation at various urban development agencies and corporations.

7.3. Conclusions

The thesis presents an attempt to make a comprehensive analysis of the formation and the recent transformation of the Russian urban system by means of a complex political and economical factors. The analysis has proved that, due to intricate space reconfiguration process, post-Soviet cities demand complex regeneration policies, which should be based on diversification and modernization of economic base, transport network extension, improvement of housing conditions, betterment of urban fabrics and the prevention of social polarization.

As the research has shown neglectful attitude to urban value in political discourse, launching the Russian urban regeneration policy demands a new awareness on the merit of cities in market-oriented economy. The urban system's improvement requires a long term commitment and should be based on long-term strategic approach that should counterbalance the short-term urban actions currently implemented by the government, for instance, the policy that has aimed to support mono-industrial cities.

Therefore, there is could not be ordinary quick solution for recovering many years of disinvestment and urban decline. The protracted crisis of Russian city demands a comprehensive action plan which should be based on the

encourage of urban regeneration initiatives implemented selectively for different urban classes. The practice of urban extension which is promoted now by the government bodies should be replaced by integrating regeneration policy, which promotes the sustainable compact urban development with enforcement of interurban connection.

Nevertheless, we are optimistic about the process of post-Soviet city's transformation. Recently, various urban oriented initiatives have emerged in different cities, such as the Moscow Urban Forum, the association of innovative Russian cities, the first municipal forum, etc. The emerging practice shows that urban discourse is getting the force and become an actual topic for discussion among communities.

References

- AGEEVA, L., AKIMOVA, I., BUGAKOVA, S. & DUDUROVA, O. 2012. *Transport i svyaz v Rossii. 2012*, Moscow, Rosstat.
- ALLAN, S. & KHOKHLOV, O. 2011. Urban Regeneration as New Driver of Public-Private Partnerships in Russia. *The Moscow Time*, 14.09.2011.
- ANDRANOVICH, G., BURBANK, M. & HEYING, C. 2001. Olympic cities: lessons learned from mega-event politics. *Journal of Urban Affairs*, 23, 113-131.
- ANDRIEVSKII, I. 2012. *The general rank of Russian cities attractiveness -2011*. Moscow: The Union of Russian engineers.
- ANDRUSZ, G., HARLOE, M. & SZELENYI, I. (eds.) 1996. *Cities after socialism. Urban and regional change and conflict in post-socialist societies*, Massachusetts: Blackwell Publishers Inc.
- ARRIBAS-BEL DANIEL, KOURTIT KARIMA & PETER, N. 2012. Benchmarking of world cities through Self-Organizing Maps. *Cities*.
- AXENOV, K., ISOLDE, B. & EVGENIJ, B. 2006. *The Transformation of Urban Space in Post-Soviet Russia*, Oxon, Routledge.
- BACHURINA, S. 2004. *Megapolis: metodi i modeli upravleniya processami kompleksnoi rekonstrukcii slogivshejsja zastroiki*, Moscow, SINTEG.
- BARANOV, N. & BELOUSOV, V. 1976. *Urban Development in the USSR*, Moscow, Centre of scientific and technical information on civil construction and architecture.
- BATER, J. H. 198. *The Soviet City: Ideal and Reality*, London, Edward Arnold.
- BENINI, R. & CZYZEWSKI, A. 2007. Regional disparities and economic growth in Russia: new growth patterns and catching up. *Econ Change*, 40, 91-135.
- BERTAUD, A. & RENAUD, B. 1997. Socialist Cities without Land Markets. *JOURNAL OF URBAN ECONOMICS*, 41, 137-151.

BISHOP, A., AUBAKIROVA, A., JAAX, A. & LANG, T. 2013. Scenarios for the Russian Federation. In: REID, M. & STASSEN, F. (eds.) *World Economic Forum - 2013*. Davous.

BLINKIN, M. 2011. Na pereputye. *Itogi*. Moscow.

BLIZNAKOV, M. 1976. Urban Planning in the USSR: Integrative Theories. In: HAMM, M. F. (ed.) *The City in Russian History*. Lexington: University Press of Kentucky.

BOFILL, R. 2012. *iMoscow: Moscow Agglomeration Development Concept*. Moscow.

BOGETIC, Z., ULATOV, S., SMITS, K. & 2010. A Bumpy Recovery. . In: BANK, W. (ed.) *Russian Economic Report*.

BONDARENKO, A. 2013. Do 2025 goda Primorye poluchit na razvitie 1.3 trilliona rubley. *Rossiyskaya Gazeta*, 05.04.2013.

BONDARENKO, E. 2009. Urbanizatsiya na Severnom Kavkaze i v Nignem Povolgie (1897-2002). *Izvestiya Rossiskogo gosudarstvennogo pedagogicheskogo universiteta Gerzena*, 111.

BRADE, I., PERZIK, J. N. & PETERSKI, D. 1998. Die Raum-, Regional- und Städteplanung in der früheren UdSSR : Voraussetzungen für die Herausbildung des gegenwärtigen Städtesystems in der Russischen Föderation. In: BRADE, I. & GRIMM, F.-D. (eds.) *Städtesysteme und Regionalentwicklungen in Mittel- und Osteuropa : Rußland, Ukraine, Polen*. Leipzig: Inst. für Länderkunde.

BRETAGNOLLE, A., PAULUS, F. & PUMAIN, D. 2002. Time and space scales for measuring urban growth. *Cybergeo: European Journal of Geography*.

BROCK, G. 2000. The ZATO Archipelago Revisited - Is the Federal Government Loosening its grip? A research note. *Europe-Asia Studies*, 52, 1349-1360.

BUGAKOVA, S., GELVANOVSKIY, M., GORYACHEVA, I. & GOHBERG, L. 2013. *Regioni Rossii. osnovnie charakteristiki subjektov Rossiskoi Federacii*, Moscow, Rosstat.

CAMAGNI, R. 1992. Development scenarios and policy guidelines for the lagging regions in the 1990s. *Regional Studies*, 26, 361-374.

CAMAGNI, R. 2002. On the concept of territorial competitiveness: sound or misleading? . *Urban Studies*, 39, 2395-2411.

- CAPELLO, R. 2007. *Regional Economics*, Florence, Routledge.
- CASTELLS, M. 1977. *The urban Question: A Marxist Approach*, London, Arnold.
- CIVIL CODE OF THE RUSSIAN FEDERATION, Part 1, № 51 - FL, 30.11.1994
- CIVIL CODE OF THE RUSSIAN FEDERATION, Part 2, № 14- FL, 26.01.1996
- CONCEPT OF THE LONG-TERM SOCIOECONOMIC DEVELOPMENT OF THE RUSSIAN FEDERATION - 2020, <http://2020strategy.ru/>
- CONSTITUTION OF THE RUSSIAN FEDERATION, 12.12.1993
- COUCH, C., SYKES, O. & BÖRSTINGHAUS, W. 2011. Thirty years of urban regeneration in Britain, Germany and France: The importance of context and path dependency. *Progress in Planning*, 75, 1-52.
- COULIBALY, S. 2012. Rethinking the Form and Functions of Cities in Post-Soviet Countries. Policy Research Working Papare Washington D.C.: World Bank.
- DAVID, B., FAY, M., FELKNER, J. & LALL, S. V. 2008. The Death of Distance. Economic Implications of Infrastructure Improvement in Russia. World Bank, Office of the Chief Economist, Europe and Central Asia Region. Washington D.C.: World Bank.
- DIANOV, M. 2012. Regioni Rossii. Osnovnie soialno-ekonomicheskie pokazateli gorodov 2012. *Rosstat*. Moscow: Rosstat.
- DIAPPI, L., BOLCHI, P. & GAETA, L. 2013. Gentrification Without Exclusion? A SOM Neural network Investigation on the Isola District in Milan In: DIAPPI, L. (ed.) *Emergent Phenomena in Housing Markets. Gentrification, Housing search, Polarization*. Berlin: Springer heidelberg.
- DIAPPI, L., BOLCHI, P. & SLEPUKHINA, I. 2013. The emerging structure of Russian urban system: a classification based on Self-Organizing Maps. *53rd ERSA Congress: Regional Integration: Europe, Mediterranean and the World Economy*. Palermo, Italy.
- DODD, J., FOX, T. & TOSICS, I. 2013. Housing investments supported by the European Regional Development Fund 2007-2013. Housing in sustainable urban regeneration. In: EUROPEAN COMMISSION, URBAN AND TERRITORIAL DEVELOPMENT (ed.). Belgium.

- DOLGOPOLOV, N., ZUBKO, I. & SOBOLEV, I. 2013. Igrы vyshey proby. *Rossiyskaya gazeta*, 12.04.2013.
- DROBYSHEVA, I. 2008. Ostrovnoy pereraschet. *Rossiyskaya gazeta* 13.05.2008.
- DROBYSHEVA, I. 2013. Na nedostroi Summita ATEs potratyat eshe 500 mill. *Rossiyskaya gazeta*, 19.03.2013.
- EDGAR, B. & TAYLOR, J. 2000. Housing. In: ROBERTS, P. & SYKES, H. (eds.) *Urban regeneration. A handbook*. London: SAGE Publication.
- EESC 2009. Territorial Cohesion. In: COMMITTEE, E. E. A. S. (ed.).
- ENGEL, B. 2006. Public space in the Blue Cities in Russia. *Progress in planning*, 66, 147-239.
- ENYEDI, G. 1996. Urbanization under socialism. In: ENYEDI, G. (ed.) *Cities after Socialism: Urban and Regional Change and Conflict in Post-Socialist Societies*.
- EVANS, J. A. B. & GEL'MAN, V. 2004. *The politics of local government in Russia*, Rowman & Littlefield.
- FOX SPORTS. 2012. A baby boom starts in the Russian city of Sochi thanks to the impending 2014 Winter Olympics. *Fox Sports*, 09.11.2012.
- FRENCH, R. A. 1995. *Plans, pragmatism and people. The legacy of Soviet planning for today's cities.*, London, UCL Press.
- GERTSBERG, L. 2013. Rol' gradostroitelstva v upravlenii razvitiem administrativno-territorialnih obrazovaniy. In: KLIMOV, D., GERTSBERG, L., GUTNIKOV, V., LDAVIDENKO, P. & KOGAN, L. (eds.) *The problems and directions of urban planning development in Russia*. Moscow: Russian
- GOKHBERG, L. & ROUD, V. 2012. The Russian Federation: A New Innovation Policy for Sustainable Growth. *The Global Innovation Index 2012*. Available: http://www.wipo.int/export/sites/www/econ_stat/en/economics_gii/pdf/chapter6.pdf [Accessed 05.11.2013].
- GOLUBCHIKOV, O. 2004. Urban planning in Russia: towards the market. *European Planning Studies*, 12, 229-247.
- GOLUBCHIKOV, O. 2010. World-city-entrepreneurialism: globalist imaginaries, neoliberal geographies, and the production of new St Petersburg *Environment and Planning A*, 42, 626-643.

- GOLUBCHIKOV, O., BADIYINA, A. & MAKHROVA, A. 2013. The hybrid spatialities of transition: capitalism, legacy, and uneven urban economic restructuring. *Urban Studies*.
- GOLUBCHIKOV, O. & MAKHROVA, A. 2013. Faktory neravnomernogo razvitiya gorodov v post-sovetskoy Rossii. *Vestnik Moskovskogo Universiteta: Seriya 5 Geografiya*.
- GOLUBCHIKOV, O. & SLEPUKHINA, I. 2013. Mega-events as the regime of spatial exclusiveness in Russia's modernization. In: GRIX, J. (ed.) *Leveraging Legacies from sports mega-events.*: Palgrave Pivot
- GRABOVII, P. & KHARITONOV, V. 2002. *Obnovlenie slogivsheisya zastroiki gorodov*, Moscow, ASV.
- GRATTON, C. & PREUSS, H. 2008. Maximizing Olympic Impacts by Building Up Legacies. *The International Journal of the History of Sport*, 25, 1922-1938.
- HALL, P. 1998. *Cities in Civilization*, London, Weidenfeld & Nicolson.
- HALL, T. 1998. *Urban Geography*, London and New York, Routledge.
- HAMM, M. F. (ed.) 1976. *The City in Russian History*, Lexington: University Press of Kentucky.
- HARVEY, D. 1985. *The Urbanization of capital*, Oxford, Basil Blackwell Ltd.
- HARVEY, D. 1989. From managerialism to entrepreneurialism: the transformation of urban governance in late capitalism. *Geografiska Annaler B*, 71, 3-17.
- HERSZENHORN, D. 2012. Putin's Ambitions Turn to the Far East. *The New York Times*, 06.09.2012.
- HILL, F. & GADDY, C. 2003. *Siberian Curse. How Communist Planners Left Russia Out in the Cold* Verginia, The Brookings Institution.
- HIRT, S. 2013. Whatever happened to the (post)socialist city? *Cities*, 32, 29-38.
- HITTLE, J. M. 1979. *The service city: State and townsmen in Russia, 1600-1800*, Cambridge, Harvard University Press.
- HORNE, J. & MANZENREITER, W. 2006. An introduction to the sociology of sports mega-events. *The Sociological Review*, 54, 1-24.

- IEYR, S. D. 2003. The urban context for adjustments to the planning process in post-soviet Russia: Responses from local planners in Siberia. *International Planning Studies*, 8, 201-223.
- INOZEMCEV, V. 2013. Ekonomika prostranstva: vozduh protiv relsa. *Vedomosti*, 11.06.2013.
- INTERFAX. 2012. ATEs-2012. Ugolovnoe delo na 90 mln. rub. *Interfax* [Online]. Available: <http://www.interfax.ru/society/txt.asp?id=274965> [Accessed 14.11.2012].
- JAMES, B. 2012. Turning Vladivostok around. *Moscow News*, 11.09.2012.
- KANEVSKI, M., POZDNOUKHOV, A. & TIMONIN, V. 2009. *Machine Learning For Spatial Environmental Data*, Lausanne, Switzerland, EPFL Press.
- KASHBRASIEV, R., SHIHAEV, A. & LIPSCOMB, C. 2011. A multi-criteria Analysis of Russian International and Interregional Logistics Centres. ERSA-2011. Barcelona.
- KINOSSIAN, N. 2012. 'Urban entrepreneurialism' in the Postsocialist City: Government-led Urban Development Projects in Kazan, Russia. *International Planning Studies*, 17, 333-352.
- KLIMANOV, V. 2013. Moscow as a Hub of Global Networks. *ERSA-2013*. Palermo.
- KOHONEN, T. 2001. *Self-organizing maps*, Berlin, Springer.
- KOLOSSOV, V. & O'LOUGHLIN, J. 2004. How Moscow is becoming a capitalist mega-city. *International Social Science Journal*, 56, 413-427.
- KONSTITUTION OF THE RF, 1993, Moscow: Yuridicheskaya literatura
- KOSAREVA, N., POLIDI, T. & A, P. 2013. Housing Construction Market in the Russian Federation: Current Status and Development Prospects. *VOPROSY ECONOMIKI*, 3.
- KOSENKOVA, Y. 2010. Formirovanie systemi upravleniya razvitiem gorodov v SSSR *Zodchii XXI vek*, 4, 80-83.
- KOZENKO, A. 2013. Gorod-stroyka, gorod-mechta: Sochi za god do Olimpiady. *Lenta.ru* [Online]. Available: <http://lenta.ru/articles/2013/02/19/sochi/>.

KOZYREV, O. & MALYZHENKOV, P. 2011. Industrial Clusters as the Form of the Territorial Organization of Economy in Russia and Italy. *European Journal of Economics, Finance and Administrative Sciences*, 42, 133-138.

KRASNODARSKIY KRAY. 2013. *Statistika po predstavleniyu obyektov nedvizhimosti* [Online]. Krasnodarskiy Kray's Department for the Preparations of the 2014 Winter Olympics. Available: <http://www.relocation.olympdep.ru/> [Accessed May 2013].

KRAVCHENKO, E. & GLIKIN, M. 2013. Sochi vypala "dvadtsatka". *Vedomosti*, 05.02.2013.

KUZNETSOV, V. 2008. *Zakritiy goroda Urala: istoricheskie ocherki*, AVIN.

LAND CODE OF THE RUSSIAN FEDERATION, № 136-FL, 25.10.2001

LAPPO, G. 2002. Formirovanie seti gorodov na territorii Rossii. In: MAKHROVA, A. G. (ed.) *Problemi urbanizacii na rubege vekov*. Smolensk: Oikumena.

LAPPO, G. 2012. *Goroda Rossia. Vzglyad geografa/ Russian cities. Goegrafier's view*, Moscow.

LATUHINA, K. 2012. Sleduyushaya stanciya "Olimpiyskaya". *Rossiyskaya Gazeta*, 10.12.2012.

LAWRENCE, R. Z., DRZENIEK HANOUIZ, M. & DOHERTY, S. 2010. The Global Enabling Trade Report 2010. Genova: World EconomicForum.

LAWRENCE, R. Z., DRZENIEK HANOUIZ, M. & DOHERTY, S. 2012. The Global Enabling Trade Report 2012. Reducing Supply Chain Barriers. Geneva: World Economic Forum.

LEFEBVRE, H. 1991. The production of space, Oxford, Blackwell Publishing.

LEFEVRE, S. 2008. Social role of the enterprises in Russia: A paternalism case? *The World of Russia*, 3, 168.

LEWIS, R. A. & ROWLAND, R. H. 1976. Urbanization in Russia and the USSR, 1897 - 1970 In: HAMM, M. F. (ed.) *The City in Russian History*. Lexington: University Press of Kentucky.

- LOVERING, J. 2007. The relationship between urban regeneration and neoliberalism: two presumptuous theories and a research agenda. *International Planning Studies*, 12, 343-366.
- LUBOVNIY, V. 2013. *Goroda Rossii: alternativi razvitiya i upravleniya*, Moscow, Ekonom-inform.
- LUBOVNIY, V. 2004. *Puti aktivizatsii sotsial'no-ekonomicheskogo razvitiya monopofil'nykh gorodov Rossii*. Moscow: MONF.
- MALLE, S. 2013. Economic modernisation and diversification in Russia. Constraints and challenges. *Journal of Eurasian Studies*, 4, 78-99.
- MANSOOR, A. & QUILLIN, B. 2006. *Migration and Remittance. Eastern Europe and the Former Soviet Union*. Washington D.C.: World Bank.
- MEDVEDKOV, O. 1990. *Soviet Urbanization* London, Routledge.
- MKRTCHAN, N. 2008. Statisticheskie istochniki informacii o migracii v Rossii. Naselenie i obshestvo. Demoskop weekly [Online], 335-336. [Accessed 26.01.2012].
- MOLODIKOVA, I. & MAKHROVA, A. 2007. Urbanization patterns in Russia in the post-Soviet era. In: STANILOV, K. (ed.) *The post-socialist city: Urban form and space transformations In Central and Eastern Europe after Socialism*. Dordrecht, The Netherlands: Springer.
- MOROZOVA, L. 2012. Letet nezachem: regionalmie aeroporti teryaut passagirov. Russian business newspaper 10.04.2012.
- MULLER, M. 2011. State dirigisme in megaprojects: governing the 2014 Winter Olympics in Sochi. *Environment and Planning A*, 43, 2091-20108.
- NABIULLINA, E. 2011. *Presentation at the Global solutions for Russian cities session, Moscow Urban Forum* [Online]. Moscow: Russian Ministry for Economic Development. Available: http://www.economy.gov.ru/minec/press/news/doc20111208_004# [Accessed December 2012].
- NABIULLINA, E. 2012. Defines the new Formula for Federal Urban Development Policy. In: TRAPKOVA, A. (ed.) *Urban agenda. Cities for People. Lessons from the Moscow Urban Forum, 2011*. Moscow: IRP Group.
- NEFEDOVA, T. G. & TREIVISH, A. 1999. New Urbanization Trends in Russia. *Studies on Russian Economic Development* 10, 561-567.

- NEFEDOVA, T. G., TREYVISH, A. I. & PALLOT, J. 2010. The "Crisis" Geography of Contemporary Russia. *Eurasian Geography and Economics*, 51, 203-217.
- NIJEGORODSKAYA, T. 2013. Snosnie usloviya. *Versiya*, 22.04.2013.
- NUNAN, T. A. 2012. Ecologies of socialism: Soviet Gradostroitel'stvo and late soviet socialism. *Journal of Eurasian Studies*, 3, 106-115.
- NUNES, D. M., TOMÉ, A. & PINHEIRO, M. D. 2012. *Urban Regeneration Strategies and Clusters as agents for establishing a new Urban Order*. EURAU'12.
- PACIONE, M. 2001. *Urban geography a global perspective*, London, Routledge.
- PEROV, M. & FINOGENOV, A. 2011. *Aggregate ranking for 100 Largest Russian cities* [Online]. Available: <http://urbanica.spb.ru/wp-content/uploads/2011/10/integraltop1001.pdf> [Accessed 08.02 2013].
- PISMENNAYA, E. 2011. Yarmarka ambiciy Putina. Kak sammiy i chempoinaty razvivajut regiony Rossii. *Vedomosti*, 15.05.2011.
- PIT, V. 2011. Towns Without the Future: Mono-profile Towns Post-Soviet Area: Russian North as Example. *Journal of US-China Public Administration*, 8, 1067-1073.
- PIVOVAROV, Y. L. 2001. Urbanizatsiya v Rossii v 20 veke: predstavleniya i realnost'. *Obshchestvennye nauki i sovremennost*, 6, 101-113.
- POLICY PRIORITIES OF THE GOVERNMENT OF THE RUSSIAN FEDERATION IN 2018, Available: <http://government.ru/en/info/761> [Accessed 20.10.2013]
- POLYAN, P., MKRTCHAN, N., KARACHYRINA, L. & TARHOV, S. 2005. Post scriptum. Perepis naselenia Rossii 2002 goda i demograficheskaja realnost' (PS. Russia's Census in 2002 and demographic realities). In: GLEZER, O. & POLYAN, P. (eds.) *Rossia i ee Regioni v XX veke: Territoria -Rasselenie- Migratsii (Russia and its Regions in XX Century: Territory-Population-Migrations)*. Moscow: OGI.
- PORTER, L. 2009. Whose urban renaissance. In: PORTER, L. & SHAW, K. (eds.) *Whose urban Renaissance? An international comparison of urban regeneration strategies*. London: Routledge.

PORTER, L. & SHAW, K. (eds.) 2009. *Whose Urban Renaissance? An international comparison of urban regeneration strategies*, Oxon: Routledge.

PORTER, M. E. 1998. *Clusters and the new economics of competition*, Watertown, Harvard Business Review.

President of the Russian Federation. Decree № 849 of May 13, 2000 *On the Plenipotentiary Representative of the President of the Russian Federation in a Federal District*. Effective as of May 13, 2000

PROCENKO, N. 2010. Caplya somneniy. *Ekspert*. Ekspert South.

PUSHKAREV, I. S. 2011. O budgete Vladivostokskogo Gorodskogo okruga na 2012. Vladivostok.

PUMAIN, D. 2004. *Scaling laws and urban systems*. Santa Fe.

PUTMAN, R. 1993. *Making democracy work: civic traditions in modern Italy*, Princeton, Princeton University Press.

RIA NOVOSTI. 2012. Objekty k sammitu ATEs stroilis bez polnogo komplekta dokumentov. Available: <http://ria.ru/economy/20121113/910584492.html> [Accessed 14.04.2013].

RIA NOVOSTI. 2013. Olimpiada 2014 daet shans Sochi stat' kruglogodichnym kurortom Available: <http://ria.ru/economy/20130228/925127044.html> [Accessed 14.04.2013].

ROBERTS, P. & SYKES, H. 2000. *Urban Regeneration: A Handbook*, London, Sage.

ROGERS, L. 2005. *Towards a strong urban renaissance*. In: BENNETT, J. (ed.). London: Urban task force.

ROGSIBAL. 2012. *Sochnoe Project Concept* [Online]. Moscow. Available: <http://en.sochnoe.com/text/index/id/1> [Accessed 14.11 2012].

ROMANOV, A. 2012. Pri podgotovke k sammitu ATEs poterjalo poltrilliona rubley. *km.ru* [Online]. Available: <http://www.km.ru/v-rossii/2012/09/06/ekonomika-i-finansy/pri-podgotovke-k-sammitu-ates-poteryalos-poltrilliona-rublei> [Accessed 14.11.2012].

ROSS, C. & CAMPBELL, A. 2008. *Federalism and Local Politics in Russia*, Routledge.

- ROSTAT 2012. *Regiony Rossii: Osnovnye Socialno-Ekonomicheskie Pokazateli Gorodov* 2011.
- RUDOLPH, R. & BRADE, I. 2005. Moscow: Processes of restructuring in the post-Soviet metropolitan periphery. *Cities*, 22, 135-150.
- RUSSIANOLYMPICCOMMITTEE. 2013. Games Concept. [Accessed 07.06.2013].
- RUSSIA. SPECIAL ECONOMIC ZONES, Available: <http://eng.russez.ru/> [Accessed 20.10.2013].
- SASSEN, S. 1991. *The Global City*, Princeton, Princeton University Press.
- SCHWAB, K., ALMUNIA, J., ANNONI, P., BLANKE, J., BROWNE, C. & NARDO, M. 2010. The global competitiveness report 2010–2011. Geneva, Switzerland: World Economic Forum.
- SILVA, B. & MARQUES, N. 2010. FEATURE CLUSTERING WITH SELF-ORGANIZING MAPS AND AN APPLICATION TO FINANCIAL TIME-SERIES FOR PORTFOLIO SELECTION. *International Conference of neural Computation*.
- SOBYANIN, S. 2012. A step to Understanding of Ourselves. In: TRAPKOVA, A. (ed.) *Urban agenda. Cities for people. Lessons from the Moscow Urban Forum, 2011*. Moscow: IRP Group.
- SOCHI2014.SU. 2012. Sochi-2014 will do for Russia what Beijing-2008 did for China, says Gosper. Available: http://xn---2014-hxe5bxa9c.su/index.php?option=com_k2&view=item&id=249:sochi-2014-will-do-for-russia-what-beijing-2008-did-for-china-says-gosper&Itemid=81 [Accessed 06.11.2012].
- SOCHI PRESS SERVICE. 2013. Megaproekt s mega naslediem. Available: http://www.sochiadm.ru/press_office/news/detail.php?ID=9938 [Accessed 14.04.2013].
- SOCIO-ECONOMIC INDICATORS OF THE RUSSIAN FEDERATION 1991-2012, Available: http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_1270707126016 [Accessed 15.09.2013].
- SOJA, E. W. 2010. *Seeking Spatial Justice*, Minneapolis - Londond, the University of Minnesota Press.

SOKOLOV, A. 2012. Da radi Olimpiady hot' v Sibir! *Sochinskie novosti. RF*, 03.11.2012.

SPRENGER, C. & UROSEVIC, B. 2011. The Housing Market and Housing Finance in Russia and Its Regions *In: BARDHAN, A. (ed.) Global Housing Markets. Crises, Policies and Institutions*. Wiley.

SLEPUKHINA, I. 2012. *Regional policy and Urbanization in the contemporary Russia*. ERSA. Bratislava, Slovakia.

STANILOV, K. (ed.) 2007. *The Post-Socialist City: Urban Form and Space Transformations in Central and Eastern Europe after Socialism*, New York, LLC: Springer-Verlag

STOLYAROV, B. & SEREBRYAKOVA, S. 2011. *Urban Index Russia 2011*. Moscow.

STARR, S. F. 1976. *The Revival and Schism of Urban Planning in Twentieth-Century*

STRASSENMEIER, W. 1962. Zur Planung von Wohngebieten in der Sowjetunion. *Deutsche Architektur*, 3, 152-153.

SÝKORA, L. 1999. Changes in the internal spatial structure of post-communist Prague. *GeoJournal*, 49, 79-89.

SYKORA, L. 2009. Post-Socialist Cities. *International Encyclopedia of Human Geography* 8. Elsevier.

SÝKORA, L. K. & BOUZAROVSKI, S. 2012. Multiple Transformations: Conceptualising the Post-communist Urban Transition. *Urban Studies*, 49, 43-60.

SZELENYI, I. 1996. Cities under Socialism – and After. *In: ANDRUSZ, G., HARLOE, M. & SZELENYI, I. (eds.) Cities after socialism. Urban and regional change and conflict in post-socialist societies*. . Massachusetts: Blackwell Publishers Inc.

TAUBMAN, V. 1973. *Governing Soviet Cities. Bureaucratic Politics and Urban Development in the USSR*, New York, Praeger Publishers.

TAYLOR, P. J. 2004. Regionality in the world city network. *International Social Science Journal*, 56, 361-372.

THE FEDERAL LAW "About general principles of local self-government in the Russian Federation", № 131-FL, 16.09.2003

THE FEDERAL LAW "About Special economic zones in the Russian Federation", № 116 - FL, 10.01.2006

THE STRATEGY OF INNOVATIVE DEVELOPMENT OF THE RF - 2020, The Government of the RF, № 2227-p, 08.12.2011 Available: <http://www.garant.ru/products/ipo/prime/doc/70006124/> [Accessed 21.10.2013].

TRANSPORT DEVELOPMENT STRATEGY OF THE RUSSIAN FEDERATION - 2030, The Order of the Government of the RF, № 1734-p. 22.11.2008.

TOKUNAGA, M. 2005. Enterprise Restructuring in the Context of Urban Transition: Analysis of Company Towns in Russia. *The Journal of Comparative Economics Studies*, 1, 79-102.

TOVKAYLO, M. 2013. Takoy dorogoy olimpiady eshe ne bylo. *Vedomosti*, 13.02.2013.

TREIVISH, A. 2005. A new Russian heartland: the demographic and economic dimension *Eurasian Geography and Economics*, 46, 123-155.

TREIVISH, A. 2009. *Gorod, rayon, strana i mir. Razvitie Rossii glazami stranoveda/ City, district, country and world. Russia's development by geographer judgment* Moscow, Novii hronograf

TRAPKOVA, A. 2012. A New Urban Agenda. Cities for People. Lessons from the Moscow urban Forum 2011. *Moscow Urban Forum*. Moscow.

TRUMBULL, N. S. 2012. Redevelopment and Conservation in the Built Fabric of Post-Socialist St. Petersburg. *Urban Geography*, 33, 370-400.

TSENKOVA, S. & NEDOVIC-BUDIC, Z. 2006. *The Urban Mosaic of Post-Socialist Europe / Space, Institutions and Policy*, Springer.

TUMANIK, G. 2001. Aktuelle Problem der Erschleibung Sibiriens In: ENGEL, B. (ed.) *Die Zukwnftder blauen Stadtle Sibiriens*. Cottbus: Brandenburgische technische Universitat.

URBAN-PLANNING CODE OF THE RUSSIAN FEDERATION, № 190-FL,22.12.2004

VAN BECKHOVEN, E. 2006. *Decline and Regeneration. Policy responses to processes of change in post-WWII urban neighbourhoods*. PhD, Utrecht University.

VAN DER BERG, L., BRAUN, E. & VAN DER MEER, J. 1998. National urban policy responses in the EU: towards a European urban policy. *European Regional Science Association 38th European Congress*. Vienna, Austria.

VILNER, M. 2013. Metodologicheskie osnovi formirovaniya gradostroitelnoi politiki. In: KLIMOV, D., GERTSBERG, L., GUTNIKOV, V., LDAVIDENKO, P. & KOGAN, L. (eds.) *The problems and directions of urban planning development in Russia*. Moscow: Russian Academy of Science.

VOJÁČEK, L., MARTINOVIC, J., SLANINOVÁ, K., DRÁZDILOVÁ, P. & DVORSKÝ, J. 2011. Combined Method for Effective Clustering based on Parallel SOM and Spectral. In *DATESO*

WEGNER, M. & KUNZMANN, K. 1996. New Spatial Patterns of European Urbanization. In: PUMAIN, D. (ed.) *Urban Networks in Europe*. London: John Libbey and Company Ltd.

ZEMLYANSKIY, D. 2011. Mono-Industry Towns in Russia. *Geographical Atlas of Russia*.

ZUBAREVICH, N. 2005. *Krupnyi biznes v regionakh Rossii: territorial'nye strategii razvitiya i sotsial'nye interesy*. Moscow: Nezavisimyi Institut Sotsialnoi Politiki, Pomatur.

ZUBAREVICH, N. 2010. *Regiony Rossii: Neravenstvo, krizis, modernizaciya*, Moscow, Nezavisimyi institut socialnoi politiki.

ZUBAREVICH, N. 2013. *Four Russias: Human Potential and Social Differentiation of Russian Regions and Cities*. *Russia 2025: Scenarios for the Russian Future*. Moscow.

Appendix

Urban engines

Cluster	City	Region	Cluster	City	Region
c55	Astrakhan	Astrakhan region	c55	Penza	Penza region
c55	Barnaul	Altay region	c55	Perm	Perm Krai
c55	Belgorod	Belgorod region	c55	Rostov- on-Don	Rostov region
c55	Vladivostok	Primorsky Krai	c55	Ryazan	Ryazan region
c55	Volgograd	Volgograd region	c55	Samara	Samara region
c55	Voronezh	Voronezh region	c55	Saratov	Saratov region
c55	Yekaterinburg	Sverdlovsk region	c55	Sochi	Krasnodar region
c55	Irkutsk	Irkutsk region	c55	Stavropol	Stavropol region
c55	Kazan	Tatarstan	c55	Togliatti	Samara region
c55	Kaliningrad	Kaliningrad region	c55	Tomsk	Tomsk Oblast
c55	Kemerovo	Kemerovo region	c55	Tula	Tula region
c55	Kirov	Kirov region	c55	Ulyanovsk	Ulyanovsk region
c55	Krasnodar	Krasnodar region	c55	Ufa	Bashkortostan
c55	Krasnoyarsk	Krasnoyarsk Territory	c55	Cheboksary	Chuvashia
c55	Lipetsk	Lipetsk region	c55	Chelyabinsk	Chelyabinsk region
c55	Naberezhnye Chelny	Tatarstan	c55	Chita	Trans-Baikal Territory
c55	Nalchik	Kabardino-Balkaria	c55	Yaroslavl	Yaroslavl region
c55	Nizhny Novgorod	Nizhny Novgorod region	c55	Novosibirsk	Novosibirsk region
c55	Novokuznetsk	Kemerovo region	c55	Omsk	Omsk region
c55	Novorossiysk	Krasnodar region	c55	Orenburg	Orenburg region

Strong cities

Cluster	City	Region	Cluster	City	Region
c35	Azov	Rostov region	c45	Engels	Saratov region
c35	Aprelevka	Moscow region	c53	Anadyr	Chukotka AO
c35	Berezovsky	Sverdlovsk region	c53	Beloyarskiy	Khanty- Mansi AO
c35	Bronnitsy	Moscow region	c53	Vorkuta	Komi
c35	Vidnoe	Moscow region	c53	Vuktyl	Komi
c35	Vsevolzhsk	Leningrad region	c53	Dudinka	Krasnoyarsk Territory
c35	Dedovsk	Moscow region	c53	Elizovo	Kamchatka Krai
c35	Domodedovo	Moscow region	c53	Zapolyarniy	Murmansk region
c35	Essentuki	Stavropol region	c53	Inta	Komi
c35	Zvenigorod	Moscow region	c53	Kogalim	Khanty- Mansi AO
c35	Kemerovo	Leningrad region	c53	Korjashma	Arkhangelsk region
c35	Korolev	Moscow region	c53	Langepas	Khanty- Mansi AO

c35	Krasnoarmiysk	Moscow region	c53	Leninogorsk	Tatarstan
c35	Kropotkin	Krasnodar region	c53	Magadan	Magadan region
c35	Lobnya	Moscow region	c53	Megion	Khanty- Mansi AO
c35	Mihailovsk	Stavropol region	c53	Monchegorsk	Murmansk region
c35	Pokrov	Vladimir region	c53	Muravlenko	Yamal- Nenets AO.
c35	Pyatigorsk	Stavropol region	c53	Nadym	Yamal- Nenets AO.
c35	Ramenskoye	Moscow region	c53	Nerungri	Yakutia
c35	Sergiev Posad	Moscow region	c53	Novodvinsk	Arkhangelsk region
c35	Serpukhov	Moscow region	c53	Noyabr'sk	Yamal- Nenets AO
c35	Sibai	Bashkortostan	c53	Nyagan	Khanty- Mansi AO
c35	Slavyansk- on- Kuban	Krasnodar region	c53	Petropavlovsk- Kamchatsky	Kamchatka Krai
c35	Solnechnogorsk	Moscow region	c53	Pokachi	Khanty- Mansi AO
c35	Sredneuralsk	Sverdlovsk region	c53	Polar zori	Murmansk region
c35	Tihoretsk	Krasnodar region	c53	Primorsk	Leningrad region
c35	Shatura	Moscow region	c53	Pyt-Yah	Khanty- Mansi AO
c35	Schlussemburg	Leningrad region	c53	Radugniy	Tyumen region
c35	Elektrougli	Moscow region	c53	Svetogorsk	Leningrad region
c45	Armavir	Krasnodar region	c53	North Kuriles	Murmansk region
c45	Balashiha	Moscow region	c53	Strezhevoy	Tomsk Oblast
c45	Berdsk	Novosibirsk region	c53	Tynda	Amur Oblast
c45	Verhnaya Pyshma	Sverdlovsk region	c53	Tyrnyauz	Kabardino-Balkaria
c45	Vladimir	Vladimir region	c53	Usinsk	Komi
c45	Vologda	Vologda region	c53	Ust-Ilim	Irkutsk region
c45	Gelendzhik	Krasnodar region	c53	Sharypovo	Krasnoyarsk Territory
c45	Dzerzhinsky	Moscow region	c54	Aznakayevo	Tatarstan
c45	Dolgoprudniy	Moscow region	c54	Almetjevsk	Tatarstan
c45	Dubna	Moscow region	c54	Angarsk	Irkutsk region
c45	Geleznodorogniy	Moscow region	c54	Blagoveshchensk	Amur Oblast
c45	Zhukovsky	Moscow region	c54	Volga	Volgograd region
c45	Zelenogradsk	Kaliningrad region	c54	Gubkinskii	Yamal- Nenets AO
c45	Ivanteyevka	Moscow region	c54	Magnitogorsk	Chelyabinsk region
c45	Krasnogorsk	Moscow region	c54	Murmansk	Murmansk region
c45	Lytkarino	Moscow region	c54	Nefteyugansk	Khanty- Mansi AO.
c45	Mytishi	Moscow region	c54	Nizhnevartovsk	Khanty- Mansi AO
c45	Odintsovo	Moscow region	c54	Salavat	Bashkortostan
c45	Orel	Orel region	c54	Saransk	Mordovia
c45	Podolsk	Moscow region	c54	Sosnoviy Bor	Leningrad region
c45	Pushkino	Moscow region	c54	Stary Oskol	Belgorod region
c45	Reutov	Moscow region	c54	Sterlitamak	Bashkortostan
c45	Sertalovo	Leningrad region	c54	Surgut	Khanty- Mansi AO
c45	Smolensk	Smolensk region	c54	Syktyvkar	Komi

c45	Tambov	Tambov region	c54	Urai	Khanty- Mansi AO.
c45	Troitsk	Moscow region	c54	Ukhta	Komi
c45	Fryazino	Moscow region	c54	Yuzhno-Sakhalinsk	Sakhalin Region
c45	Schyolkovo	Moscow region	c45	Sherbinka	Moscow region

Dynamic cities

Cluster	City	Region	Cluster	City	Region
c25	Alexandrov	Vladimir region	c43	Polevskoi	Sverdlovsk region
c25	Bor	N. Novgorod region	c43	Solikamsk	Perm Krai
c25	Verhniy Tagil	Sverdlovsk region	c43	Susuman	Magadan region
c25	Gatchina	Leningrad region	c43	Sukhoi Log	Sverdlovsk region
c25	Kaluga	Kaluga region	c43	Tikhvin	Leningrad region
c25	Kovylkino	Mordovia	c43	Trubchevsk	Bryansk region
c25	Korenovsk	Krasnodar region	c43	Fokino	Bryansk region
c25	Kotlas	Arkhangelsk region	c43	Tchaikovsky	Perm Krai
c25	Labinsk	Krasnodar region	c43	Jurga	Kemerovo region
c25	Mignard	Chelyabinsk region	c44	Arzamas	N. Novgorod region
c25	Nikolsky	Leningrad region	c44	Balakovo	Saratov region
c25	Novoaltaisk	Altay region	c44	Baltiysk	Kaliningrad region
c25	Novocherkassk	Rostov region	c44	Berezniki	Perm Krai
c25	Otradnoe	Leningrad region	c44	Veliky Novgorod	Novgorod region
c25	Polessk	Kaliningrad region	c44	Vladikavkaz	North Ossetia - Alania
c25	Semiluki	Voronezh region	c44	Vyborg	Leningrad region
c25	Suzdal	Vladimir region	c44	Gubkin	Belgorod region
c25	Taganrog	Rostov region	c44	Dzerzhinsk	N. Novgorod region
c25	Temruk	Krasnodar region	c44	Dimitrovgrad	Ulyanovsk region
c25	Timashyovsk	Krasnodar region	c44	Yoshkar-Ola	Mari El
c25	Shumerlya	Chuvashia	c44	Ishimbai	Bashkortostan
c34	Aleksin	Tula region	c44	Kamensk -Ural	Sverdlovsk region
c34	Birobidzhan	Jewish Autonomous Region	c44	Kashira	Moscow region
c34	Boksitogorsk	Leningrad region	c44	Klimovsk	Moscow region
c34	Venev	Tula region	c44	Kovrov	Vladimir region
c34	Verhnyaya Salda	Sverdlovsk region	c44	Kolomna	Moscow region

Cluster	City	Region	Cluster	City	Region
c34	Volokolamsk	Moscow region	c44	Kostroma	Kostroma region
c34	Voskresensk	Moscow region	c44	Krasnotur'insk	Sverdlovsk region
c34	Viksa	Nizhny Novgorod region	c44	Kstovo	N. Novgorod region
c34	Georgiyevsk	Stavropol region	c44	Mendeleevsk	Tatarstan
c34	Grjazovets	Vologda region	c44	Mozdok	North Ossetia - Alania
c34	Divnogorsk	Krasnoyarsk Territory	c44	Mtsensk	Orel region
c34	Efremov	Tula region	c44	Naro-Fominsk	Moscow region
c34	Zheleznovodsk	Stavropol region	c44	Nevinnomissk	Stavropol region
c34	Zhigulyovsk	Samara region	c44	Nizhny Tagil	Sverdlovsk region
c34	Zaraysk	Moscow region	c44	Novokuibishevsk	Samara region
c34	Ivangorod	Leningrad region	c44	Novomoskovsk	Tula region
c34	Ivanovo	Ivanovo region	c44	Obninsk	Kaluga region
c34	Kol'chugino	Vladimir region	c44	Octyabrskiy	Bashkortostan
c34	Kondopoga	Karelia	c44	Orehovo-Zuevo	Moscow region
c34	Krasnozavodsk	Moscow region	c44	Otradniy	Samara region
c34	Kulebaki	Nizhny Novgorod region	c44	Pervoural'sk	Sverdlovsk region
c34	Likino-Dulevo	The Moscow region	c44	Petrozavodsk	Karelia
c34	Mineral Waters	Stavropol region	c44	Pikalevo	Leningrad region
c34	Murom	Vladimir region	c44	Prohladniy	Kabardino-Balkaria
c34	Novoulyanovsk	Ulyanovsk region	c44	Rybinsk	Yaroslavl region
c34	Noginsk	Moscow region	c44	Svetliy	Kaliningrad region
c34	Pavlovsk	Voronezh region	c44	Severoural'sk	Sverdlovsk region
c34	Revda	Sverdlovsk region	c44	Electrostal	Moscow region
c34	Ruza	Moscow region	c51	Agryz	Tatarstan
c34	Serov	Sverdlovsk region	c51	Anapa	Krasnodar region
c34	Sosenskiy	Kaluga region	c51	Aramil	Sverdlovsk region
c34	Suvorov	Tula region	c51	Bataisk	Rostov region
c34	Syasstroy	Leningrad region	c51	Belebey	Bashkortostan
c34	Tutaev	Yaroslavl region	c51	Birsk	Bashkortostan
c34	Uzlovzya	Tula region	c51	Goryachiy Kluch	Krasnodar region
c34	Usole Siberian	Irkutsk region	c51	Gurievs	Kaliningrad region
c34	Shekino	Tula region	c51	Derbent	Dagestan

Cluster	City	Region	Cluster	City	Region
c34	Jasnogorsk	Tula region	c51	Yeisk	Krasnodar region
c43	Apatity	Murmansk region	c51	Izberbash	Dagestan
c43	Arsenyev	Primorsky Krai	c51	Kizlyar	Dagestan
c43	Arkhangelsk	Arkhangelsk region	c51	Kyzyl	Tuva
c43	Asbest	Sverdlovsk region	c51	Mamadysh	Tatarstan
c43	Achinsk	Krasnoyarsk Territory	c51	Makhachkala	Dagestan
c43	Bogdanovich	Sverdlovsk region	c51	Sisert	Sverdlovsk region
c43	Borodino	Krasnoyarsk Territory	c51	Khanty-Mansiysk	Khanty- Mansi AO
c43	Bugul'ma	Tatarstan	c51	Hasavyurt	Dagestan
c43	Volzhsk	Mari El	c51	Elista	Kalmykia
c43	Guy	Orenburg region	c51	Yadrin	Chuvashia
c43	Dal'negorsk	Primorsky Krai	c52	Bavly	Tatarstan
c43	Kamennogorsk	Leningrad region	c52	Bagratiyovsk	Kaliningrad region
c43	Kandalaksha	Murmansk region	c52	Baksan	Kabardino-Balkaria
c43	Karachev	Bryansk region	c52	Belokuriha	Altay region
c43	Kachkanar	Sverdlovsk region	c52	Berezovsky	Kemerovo region
c43	Kimovsk	Tula region	c52	Beslan	North Ossetia - Alania
c43	Kingissepp	Leningrad region	c52	Dyurtyuli	Bashkortostan
c43	Kireevsk	Tula region	c52	Yelabuga	Tatarstan
c43	Kirovo-Chepetsk	Kirov region	c52	Zainsk	Tatarstan
c43	Cola	Murmansk region	c52	Kaspiysk	Dagestan
c43	Yaloveni	Tambov region	c52	Kizilyurt	Dagestan
c43	Kumertau	Bashkortostan	c52	Labytnangy	Yamal- Nenets AO
c43	Kurgan	Kurgan region	c52	Meleuz	Bashkortostan
c43	Mezhdurechensk	Kemerovo region	c52	Neftekamsk	Bashkortostan
c43	Nazarovo	Krasnoyarsk Territory	c52	Nurlat	Tatarstan
c43	Nahodka	Primorsky Krai	c52	Tobolsk	Tyumen region
c43	Nignyaya Tura	Sverdlovsk region	c52	Tyimazi	Bashkortostan
c43	Novotroick	Orenburg region	c52	Ulan-Ude	Buryatia
c43	Orsk	Orenburg region	c52	Uchalu	Bashkortostan
c43	Pervoz	N. Novgorod region	c52	Nigella	Perm Krai
c43	Pechora	Komi	c52	Yugorsk	Khanty- Mansi A.O.
			c52	Yakutsk	Yakutia

Weak cities

Cluster	City	Region	Cluster	City	Region
c11	Ardatov	Mordovia	c23	Kirzhach	Vladimir region
c11	Belozyorsk	Vologda region	c23	Kirsanov	Tambov region
c11	Bobrov	Voronezh region	c23	Kiselevsk	Kemerovo region
c11	Bolotnoe	Novosibirsk region	c23	Kushwa	Sverdlovsk region
c11	Vitegra	Vologda region	c23	Morshansk	Tambov region
c11	Gorbatov	N. Novgorod region	c23	Miski	Kemerovo region
c11	Isil'Kul	Omsk region	c23	Ozyory	Moscow region
c11	Kalach	Voronezh region	c23	Prokopevsk	Kemerovo region
c11	Kargath	Novosibirsk region	c23	Puchezh	Ivanovo region
c11	Kargopol	Arkhangelsk region	c23	Ust-Kut	Irkutsk region
c11	Kologriv	Kostroma region	c24	Asha	Chelyabinsk region
c11	Kurganinsk	Krasnodar region	c24	Balahna	N. Novgorod region
c11	Kurtamysh	Kurgan region	c24	Boguchar	Voronezh region
c11	Luban	Leningrad region	c24	Vereshchagino	Perm Krai
c11	Liubim	Yaroslavl region	c24	Volosovo	Leningrad region
c11	Makariev	Kostroma region	c24	Gorodets	Nizhny Novgorod region
c11	Malaya Vishera	Novgorod region	c24	Don	Tula region
c11	Manturovo	Kostroma region	c24	Iskitim	Novosibirsk region
c11	Mariinsk	Kemerovo region	c24	Kamenka	Penza region
c11	Medyn	Kaluga region	c24	Kosterova	Vladimir region
c11	Nercinsk	Zabaikal territory	c24	Kuibyshev	Novosibirsk region
c11	Ney	Kostroma region	c24	Luga	Leningrad region
c11	Nikolsk	Penza region	c24	Maikop	Adygea
c11	Novorzhev	Pskov region	c24	Maloyaroslavetz	Kaluga region
c11	Novokhopersk	Voronezh region	c24	Michurinsk	Tambov region
c11	Nytva	Perm Krai	c24	Navoloki	Ivanovo region
c11	Nyazepetrovsk	Chelyabinsk region	c24	Nizhniy Lomov	Penza region
c11	Obluch'e	Jewish Autonomous Region	c24	Ob'	Novosibirsk region
c11	Okoulovka	Novgorod region	c24	Ostrov	Pskov region
c11	Soligalich	Kostroma region	c24	Pavlovsky	N. Novgorod region
c11	Sychevka	Smolensk region	c24	Pereslavl-Zalesskiy	Yaroslavl region
c11	Turan	Tuva	c24	Priorsersk	Leningrad region
c11	Uzhur	Krasnoyarsk Territory	c24	Roslavl	Smolensk region
c11	Cherdin	Perm Krai	c24	Serdobsk	Penza region
c11	Chulym	Novosibirsk region	c24	Sosnogorsk	Komi
c11	brouhaha	Kurgan region	c24	Sizran	Samara region
c11	Schuchie	Kurgan region	c24	Taldom	Moscow region
c11	Yuzha	Ivanovo region	c24	Uglich	Yaroslavl region

c12	Barish	Ulyanovsk region	c24	Chernogorsk	Khakassia
c12	Bogotol	Krasnoyarsk Territory	c24	Chudovo	Novgorod region
c12	Buturlinovka	Voronezh region	c24	Shuya	Ivanovo region
c12	Gavrilov posad	Ivanovo region	c31	Adygeysk	Adygea
c12	Elnya	Smolensk region	c31	Aleisk	Altay region
c12	Emva	Komi	c31	Borza	Trans-Baikal Territory
c12	Eniseisk	Krasnoyarsk Territory	c31	Borisoglebsk	Voronezh region
c12	Zavodoukovsk	Tyumen region	c31	Buguruslan	Orenburg region
c12	Ivdel	Sverdlovsk region	c31	Valuiki	Belgorod region
c12	Ilan	Krasnoyarsk Territory	c31	Vel'sk	Arkhangelsk region
c12	Kirillov	Vologda region	c31	Vorsma	N. Novgorod region
c12	Kolpashevo	Tomsk Oblast	c31	Gukovo	Rostov region
c12	Nazyvaevsk	Omsk region	c31	Dmitrovsk	Orel region
c12	Nevel	Pskov region	c31	Donetsk	Rostov region
c12	Onega	Arkhangelsk region	c31	Zelenokumsk	Stavropol region
c12	Poshekhonye	Yaroslavl region	c31	Ipatovo	Stavropol region
c12	Pustoshka	Pskov region	c31	Ishim	Tyumen region
c12	Spassk	Penza region	c31	Karasuk	Novosibirsk region
c12	Tayshet	Irkutsk region	c31	Kokhma	Ivanovo region
c12	Tot'ma	Vologda region	c31	Kudymkar	Perm Krai
c12	Ustyuzhna	Vologda region	c31	Łyskava	N. Novgorod region
c12	Kharovsk	Vologda region	c31	Mednogorsk	Orenburg region
c12	Shilka	Trans-Baikal Territory	c31	Nigniy Cergej	Sverdlovsk region
c12	Yuryevets	Ivanovo region	c31	Novozybkov	Bryansk region
c13	Ak- Dovurak	Tuva	c31	Rasskazovo	Tambov region
c13	Byelomorsk	Karelia	c31	Svetlograd	Stavropol region
c13	Beloretsk	Bashkortostan	c31	Suojärvi	Karelia
c13	Gremyachinsk	Perm Krai	c31	Teykovo	Ivanovo region
c13	Gusinoozyorsk	Buryatia	c31	Tosno	Leningrad region
c13	Dalmatovo	Kurgan region	c31	Usman	Lipetsk region
c13	Zavolzhs	Ivanovo region	c31	Sharjah	Kostroma region
c13	Karabash	Chelyabinsk region	c31	Mines	Rostov region
c13	Kataisk	Kurgan region	c31	Shakhun'ya	N. Novgorod region
c13	Kem'	Karelia	c31	Yalutorovsk	Tyumen region
c13	Krasnoufimsk	Sverdlovsk region	c32	Oleksandrivsk	Perm Krai
c13	Kurilsk	Sakhalin Region	c32	Balashov	Saratov region
c13	Leninsk-Kuznetsk	Kemerovo region	c32	Belovo	Kemerovo region
c13	Medvezhyegorsk	Karelia	c32	Bilohirsk	Amur Oblast

c13	Myshkin	Yaroslavl region	c32	Bogoroditsk	Tula region
c13	Nevyansk	Sverdlovsk region	c32	Bogorodsk	N. Novgorod region
c13	Novaya Ladoga	Leningrad region	c32	Borovichee	Novgorod region
c13	Novosokolniki	Pskov region	c32	Vichuga	Ivanovo region
c13	Olonec	Karelia	c32	Vol'sk	Saratov region
c13	Pitkaranta	Karelia	c32	Vyazniki	Vladimir region
c13	Poronaisk	Sakhalin Region	c32	Degtyarsk	Sverdlovsk region
c13	Pochinok	Smolensk region	c32	Zhukovka	Bryansk region
c13	Pitalovo	Pskov region	c32	Zima	Irkutsk region
c13	Rostov	Yaroslavl region	c32	Irbit	Sverdlovsk region
c13	Slavgorod	Altay region	c32	Klincy	Bryansk region
c13	Slavsk	Kaliningrad region	c32	Knyaginino	N. Novgorod region
c13	Starodub	Bryansk region	c32	Kozel'sk	Kaluga region
c13	Terek	Kabardino-Balkaria	c32	Kozlovka	Chuvashia
c13	Topki	Kemerovo region	c32	Kondrovo	Kaluga region
c14	Artemovskii	Sverdlovsk region	c32	Korsakov	Sakhalin Region
c14	Belyov	Tula region	c32	Kotel'nich	Kirov region
c14	Gorohovets	Vladimir region	c32	Kungurian	Perm Krai
c14	Emanzhelinsk	Chelyabinsk region	c32	Lahdenpohja	Karelia
c14	Zeya	Amur Oblast	c32	Lod pole	Leningrad region
c14	Kansk	Krasnoyarsk Territory	c32	Ostrogzhsk	Voronezh region
c14	Luhovitsy	Moscow region	c32	Petushki	Vladimir region
c14	Neman	Kaliningrad region	c32	Raichikhinsk	Amur Oblast
c14	Nizhneudinsk	Irkutsk region	c32	springs	Ivanovo region
c14	Osinniki	Kemerovo region	c32	Sasovo	Ryazan region
c14	Pokhvistnevo	Samara region	c32	Svobodniy	Amur Oblast
c14	Privolzhsk	Ivanovo region	c32	Spas-Klepiki	Ryazan region
c14	Satka	Chelyabinsk region	c32	Staraya Russa	Novgorod region
c14	Segezha	Karelia	c32	Sudogda	Vladimir region
c14	Ust -Katav	Chelyabinsk region	c32	Tchkalovsk	N. Novgorod region
c14	Shagonar	Tuva	c32	Chusovoi	Perm Krai
c15	Belinsky	Penza region	c32	Shadrinsk	Kurgan region
c15	Bolgar	Tatarstan	c32	Shimanovsk	Amur Oblast
c15	Vyatskie polyani	Kirov region	c32	Yartsevo	Smolensk region
c15	Zverevo	Rostov region	c33	Anzhero Sudzhensk	Kemerovo region
c15	Insar	Mordovia	c33	Bijsk	Altay region
c15	Kassimov	Ryazan region	c33	Valdai	Novgorod region
c15	Komsomolsk	Ivanovo region	c33	Velkie Luke	Pskov region
c15	Krasnovishersk	Perm Krai	c33	Volkhov	Leningrad region
c15	Krasnoslobodsk	Mordovia	c33	Vyaz'ma	Smolensk region
c15	Lakinsk	Vladimir region	c33	Gubaha	Perm Krai

c15	Lyudinovo	Kaluga region	c33	Gusev	Kaliningrad region
c15	Mikhailov	Ryazan region	c33	Gus Crystal	Vladimir region
c15	Nikolsk	Penza region	c33	Dunk	Lipetsk region
c15	Ozersk	Kaliningrad region	c33	Dorogobuzh	Smolensk region
c15	Podporozhe	Leningrad region	c33	Dyatkovo	Bryansk region
c15	Primorsko-Ahtarsk	Krasnodar region	c33	Chrysostom	Chelyabinsk region
c15	Temnikov	Mordovia	c33	Kameshkovo	Vladimir region
c15	Ussurijsk	Primorsky Krai	c33	Karabanovo	Vladimir region
c15	Kholmsk	Sakhalin Region	c33	Kineshma	Ivanovo region
c15	Chebarkul	Chelyabinsk region	c33	Krasnoznamensk	Kaliningrad region
c15	Shakhtersk	Sakhalin Region	c33	Krasnokamsk	Perm Krai
c15	Shack	Ryazan region	c33	Krasnoural'sk	Sverdlovsk region
c21	Abdulino	Orenburg region	c33	Kurovskoye	Moscow region
c21	Barabinsk	Novosibirsk region	c33	Lys'va	Perm Krai
c21	Vetluga	N.Novgorod region	c33	Nerehta	Kostroma region
c21	Volodarsk	N. Novgorod region	c33	Plavskiy	Tula region
c21	Galich	Kostroma region	c33	Reg	Sverdlovsk region
c21	Kamen-na- Obi	Altay region	c33	Safonovo	Smolensk region
c21	Kamyshlov	Sverdlovsk region	c33	Slanci	Leningrad region
c21	Kurlovo	Vladimir region	c33	Sloboda	Kirov region
c21	Mglin	Bryansk region	c33	Sovetsk	Kaliningrad region
c21	Melenki	Vladimir region	c33	Sortavala	Karelia
c21	Novaya Lala	Sverdlovsk region	c33	Spassk Ryazan	Ryazan region
c21	Novoshahtinsk	Rostov region	c33	Fourmanov	Ivanovo region
c21	Novy Oskol	Belgorod region	c33	Chapaevsk	Samara region
c21	Ochansk	Perm Krai	c41	Alatyr	Chuvashia
c21	Petukhovo	Kurgan region	c41	Alexeevka	Belgorod region
c21	Sloi	Chelyabinsk region	c41	Apsheronk	Krasnodar region
c21	Povorino	Voronezh region	c41	Belorechensk	Krasnodar region
c21	Pochel	Bryansk region	c41	Budennovsk	Stavropol region
c21	Sevsk	Bryansk region	c41	Buinsk	Tatarstan
c21	Sergach	Nizhny Novgorod region	c41	Gorno-Altaysk	Altai
c21	Soltsy	Novgorod region	c41	Davlekanovo	Bashkortostan
c21	Spas-Demensk	Kaluga region	c41	Dobryanka	Perm Krai
c21	Tavda	Sverdlovsk region	c41	Elets	Lipetsk region
c21	Tatarsk	Novosibirsk region	c41	Krymsk	Krasnodar region
c21	Cherepanovo	Novosibirsk region	c41	Kuvandyk	Orenburg region
c22	Alapayevsk	Sverdlovsk region	c41	Kuznetsk	Penza region
c22	Aleksandrovsk	Sakhalin Region	c41	Liski	Voronezh region
c22	Babaevo	Vologda region	c41	Mayskiy	Kabardino-Balkaria
c22	Buy	Kostroma region	c41	Menzelinsk	Tatarstan

c22	Velikiy Ustyug	Vologda region	c41	Novokubansk	Krasnodar region
c22	Verhnyaya Tura	Sverdlovsk region	c41	Novopavlovsk	Stavropol region
c22	Gurievs	Kemerovo region	c41	Rossosh	Voronezh region
c22	Dal'nerechensk	Primorsky Krai	c41	Ribnoe	Ryazan region
c22	Danilov	Yaroslavl region	c41	Sorochinsk	Orenburg region
c22	Dno	Pskov region	c41	Chaplygin	Lipetsk region
c22	Zherdevka	Tambov region	c42	Blagodarniy	Stavropol region
c22	Inza	Ulyanovsk region	c42	Bryansk	Bryansk region
c22	Karpinsk	Sverdlovsk region	c42	Busuluk	Orenburg region
c22	Lesozavodsk	Primorsky Krai	c42	Gagarin	Smolensk region
c22	Mihailovsk	Stavropol region	c42	Gorodovikovsk	Kalmykia
c22	Mogocha	Trans-Baikal Territory	c42	Kinel	Samara region
c22	Njandoma	Arkhangelsk region	c42	Kislovodsk	Stavropol region
c22	Oktjabrsk	Samara region	c42	Kozmodemyansk	Mari El
c22	Ocher	Perm Krai	c42	Kishtim	Chelyabinsk region
c22	Petrovsk - Zabaikalskii	Trans-Baikal Territory	c42	Lebedian	Lipetsk region
c22	Ples	Ivanovo region	c42	Lesosibirsk	Krasnoyarsk Territory
c22	Rudnia	Smolensk region	c42	Livny	Orel region
c22	Solvychegodsk	Arkhangelsk region	c42	Mamonovo	Kaliningrad region
c22	Taiga	Kemerovo region	c42	Miass	Chelyabinsk region
c22	Tulun	Irkutsk region	c42	Minusinsk	Krasnoyarsk Territory
c22	Turinsk	Sverdlovsk region	c42	Nartkala	Kabardino-Balkaria
c22	Cheremhovo	Irkutsk region	c42	Osa	Perm Krai
c23	Abaza	Khakassia	c42	Pioneerskiy	Kaliningrad region
c23	Artem	Primorsky Krai	c42	Rubcovsk	Altay region
c23	Asino	Tomsk Oblast	c42	Tetyushi	Tatarstan
c23	Volchansk	Sverdlovsk region	c42	Uvarovo	Tambov region
c23	Gavrilov - Yam	Yaroslavl region	c42	Ust-Labinsk	Krasnodar region
c23	Graivoron	Belgorod region	c42	Tchistopol	Tatarstan
c23	Kizel	Perm Krai	c42	Shebekino	Belgorod region