

# Greater Kaunas in pursuit of coherence

Unlocking regional competitiveness and balanced development through regional spatial strategy



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Delft, June 2013

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Master thesis report  
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# Introduction and working framework

The first part of the booklet describes framework of the graduation project defined in the beginning of the year.

It explains personal motivation for choosing the studio and the research topic, and societal and academic relevance related to this research.

Problem field is explained and summarized to provide the reader with an insight in current socio-economic processes taken place in post-socialist region and country in general.

Following research objectives and research questions are supported by several specific objectives which are thought to have special value while achieving broader sustainability goals in the region.

Last part of this chapter explains theoretical framework and research methods used for research of this project.

# Personal motivation

The motivation for this thesis is two fold. Firstly it originates from a desire to understand the effects of spatial transformations taken place after regained independence in Lithuania (current development trends of post-socialist country shaped by capitalism and the global economies) and possible methods for addressing them. Secondly, it arises from a belief that if an urban growth was more embedded in the regional development perspective, it would improve mobility and accessibility of services and amenities to the rural society, while mitigating urban development pressures to the environment and sustaining more cohesive economic and social growth of the regions in Lithuania.

## Choice of the studio

“Traditionally cities were at the core of their hinterland regions, linked to smaller towns and settlements through a pattern of radial routes and a hierarchy of centres revolving in a centripetal fashion around the regional core. Place effects were experienced through dimension of physical proximity. The closer were two phenomena in actual space, the greater their impact on each other. The city centre was seen as the site of greatest synergy, and the periphery site of greatest isolation.” (Healey, 2007)

Though the process of urbanisation is almost finished in Europe, still a considerable amount of population lives in the areas, which are called “rural”. Moreover after many decades of urban expansion, a growth of the rural areas re-appears (Clark, 2003) as a consequence of spatial processes of globalization. Rural areas are not places of production anymore; instead, they became as complex as urban systems, dealing with interrelated issues of social well-being, economic growth, ecology and sustainable growth, energy production and many others.

## Structure of the thesis

This master thesis is a research, planning and design project in the academic field of urbanism.

Research is centred on the Kaunas as a secondary city in the post-socialist region. The main interest of this project is feasible future scenario for urban growth in the region with the growing economic wealth, but negative demographic trends that would facilitate more cohesive and sustainable development patterns. Considering the width of this objective, focus is brought on certain problems which occur in many developed countries as well: suburbanisation and de-concentration, increasing car dependency and economic and social inequalities between urban centres and periphery (Stanilov, 2007; Tsenkova, 2006).

Until recently spatial policies and strategies had envisioned urban and rural development as separate spatial entities, where the cities were surrounded by green, open landscape and rural development was bound to the agriculture activities (Hidding and Teunissen, 2002; Korf and Oughton, 2006; Terluin, 2003). However as current dynamics of the network society and growing complexity of spatial organization within and between urban-rural regions indicates - “rural development is no longer the ‘monopoly of the farmers’” (Korf and Oughton, 2006, p. 278). Instead, according to Gallent et al. (2008) rural spaces become “increasingly important to regional economies and to environmental quality and liveability” (p. 28).

Rural and urban areas become complex and diverse systems with growing economic, social and spatial interrelations. Separated urban and rural development cannot ensure coherent region growth anymore, therefore integrated strategic spatial planning becomes an important tool to organise the city regions and to ensure economic, spatial and environment sustainability.

Research focuses on two main themes: historical development of the region and its settlements and current socio-economic trends and shifts of development in post-socialist region.

Occurring economic concentration on regional scale on the one hand and sprawling of the city on local scale on the other are characterized as unsustainable development, however existing poly-centric settlement system and still present network of public transport and services can be seen as potential and indeed is an objective for many countries seeking sustainable regional development.

This thesis seeks to identify and find ways to employ the existing assets of the poly-centrism in the region which could enhance resilience and life quality in the region and contribute towards broader sustainability goals. This is done through analysis of the five study cases of the most characteristic living environments and distribution of economic potential in the region. As a result, strategic guidelines for regional development are introduced.

Further work consist of application of the strategy to aforementioned five study cases in order to investigate the actual potential of the proposed strategy. Design for

## Aim of the master thesis

The major aim of the master thesis is to learn the principles of academic research in the field of urbanism and to develop critical and analytical skills necessary in the practice or academic work in the areas of spatial planning and urban design. It also intends to provide an insight to a variety of research methods and techniques and practice them in academic field. Lastly this thesis aims to understand governance principles of urban region and planning tools, which could be applied to the geopolitical situation of Kaunas region.

Research, strategy and design objectives

The aim of the research is to understand the underlying principles, characteristics and effects of the regional transformations in the post-socialist Kaunas region. In the context of current regional development trends special interest is placed on the historically formed living environments in the region, their interrelations, functional links, assets and their capacities to facilitate future urban growth. In this way research part facilitates strategic planning with a goal to steer current development trends towards more sustainable regional development.

Being aware that sustainable development in general is a wage concept, the strategic planning is expected

one study case is carried out in detail to show possible and desirable outcomes of the strategic planning and to illustrate the effect of the governance of such project.

Reflection summarises the thesis (research, strategy and design) and discusses the feasibility of the proposed strategy in the current planning context in Lithuania. Lastly it explains the contribution of the thesis to the existing body of knowledge.

to bring particular focus on social and environmental sustainability (where liveability and resilience are the key objectives) in regional development agenda.

In terms of social sustainability, the goal of the strategy is to enhance liveability of diverse living environments in the region by improving quality of public space, accessibility of services and economic potential.

In terms of environmental sustainability the goals focus on supporting poly-centric development as more resilient form of development (in terms of economic development and production and consumption patterns). This is expected to be achieved through steering growth within the designated urban growth areas where it would commit the least ecological and economic damage and retaining and providing incentives for more sustainable regional mobility patterns (public transportation).

Subsequently the main role of the design proposals would be to illustrate possible outputs of the regional spatial strategy: to envision the most characteristic physical and functional features of desirable transition as well as to test the probability and possibility of the strategy.

Relevance

Societal relevance

As current dynamics of the network society and growing complexity of spatial organization within and between urban-rural regions indicates - “rural development is no longer the ‘monopoly of the farmers’” (Korf and Oughton, 2006, p. 278). Instead, according to Gallent et al. (2008) rural spaces become “increasingly important to regional economies and to environmental quality and liveability” (p. 28).

Yet in Lithuania's' case, the post-industrial reality where there is no fundamental living quality differences between the village and the city, is yet to come: remote rural regions experience economic and social backwardness comparing to urban ones, underinvestment and decay or even desertion of rural settlements due to extreme rural population loses. Lack of planning perspective, individual pursue of fast economic profit, dependency on private transportation, societal norms and increasing

life standards result in rapid suburban expansion around previously compact cities and increasing tension in land use between urban and rural areas by consuming and fragmenting the landscape and increasing economic and social homogeneity of rural settlements.

These economic and spatial processes affect nearly a million rural inhabitants and are incompatible with a country's pursue for economic, social and environmental sustainable development goals set in Comprehensive plan of the territory of the Republic of Lithuania (Ministry of Environment of the Republic of Lithuania, 2004). Rural areas can no longer be seen as places of production; instead environmental agenda, rural economic vitality and increasing physical quality in the rural environment should become equally important to urban development while seeking cohesion in regional development.

Academic relevance

Past decade marks an increasing academic interest in the ongoing transitions in the post-socialist cities. Socio-economic processes and cultural changes have been analysed in major urban centres in the post-socialist countries in the works of Stanilov (2007), Tsenkova (2006) among others.

However the researches on spread of the post-socialist cities are quite new. Analyses of Daily Urban Systems of Ljubljana and Belgrade (Pichler-Milanovic and Krevs, 2010; Stamenkovic and Gataric, 2010) are one of few early examples of the urban region in transformation in the post-socialist countries. In Lithuania, only Vilnius region has been analysed in similar manner (Ubareničienė,

Burneika and Kriaučiūnas, 2011).

This thesis aims to develop an academic approach towards more balanced and compact regional growth and intends to add collected academic and empirical observations, gained during the research, planning and design, to the existing body of knowledge of regional development concepts in post-socialist countries, hoping that it would contribute to more integrated spatial-economic regional development strategies in the future.

Lastly it is hoped that proposed spatial strategy for Kaunas region could be at least partially adapted to other regions in Lithuania that face similar issues of unbalanced socio-economic growth and rural population outmigration.

1. “Lithuanian village sinks into non-existence”

2. Vilnius - the largest housing supply growth since 2009

3. Extensive closure of village schools - what's next?

4. Unemployment - the largest issue in rural areas

1. Source: <http://www.lzinios.lt/Tyrimas/>  
2. Source: <http://www.lrytas.lt/>  
3. Source: <http://www.15min.lt/naujiena/ziniosgyvai/mokslo-metas/>  
4. Source: <http://www.15min.lt/naujiena/aktualu/lietuva/>



# Problem field

## Polarisation and deconcentration

Past two decades have marked significant political, socio-economic, spatial and cultural changes in Lithuania as well as in other post-socialist countries (Kay, Shubin, & Thelen, 2012). Yet despite the historical legacy, on-going spatial transformations in the urban and rural areas in Lithuania are similar to the processes occurring in many capitalist based countries. Driven by free-market economy, increasing importance of networks and competition for global attention, economic growth concentrates in urban centres while creating vacuum in the periphery, thus economic and social disparities between urban and rural areas become even greater now than during the socialist regime (Tsenkova, 2006) (image 1). Moreover lack of public planning, individual pursue of fast economic profit, dependency on private transportation, societal

norms and increasing life standards result in rapid suburban expansion around previously compact cities and increasing tension between urban and rural areas.

On the one hand polarization on the regional scale occurs: locations with highest concentration of population, skilled labour, capital and access to global communication- the capital and the few largest urban centres attracts people, concentrates urban activities and experience economic growth (Stanilov, 2007). Rural areas are affected depending on their proximity to urban centre: more remote rural areas experience economic and social backwardness comparing to urban regions, underinvestment and decay or even desertion of rural settlements due to extreme rural population loses (image 2). Proximate rural areas experience population

growth, spatial and economic development and growing recreational industry. However proximity of urban centre has negative effects on rural development as well: due to sparse rural population and better-developed service sector in the cities, services in adjacent rural areas encounter difficulties to sustain. Vicinity of urban centre creates dependency on the city for employment, accessibility of commercial and social services and cultural activities thus increasing homogeneity in rural areas. Kaunas District Development Strategy (2008) states that already 42 per cent of towns in Kaunas district can be counted as satellite cities –sleeping areas of Kaunas.

As map no. 1 indicates, such suburban areas are located on the highest accessibility routes - highways, or in the attractive environment - near rivers, lakes, yet still close to the city.

On the other hand, dispersion occurs on the local scale due to suburbanization around previously compact cities. Suburban expansion decreases amount of agricultural land and demands extensive infrastructure development.

Map no. 2 indicates new areas, where, according to comprehensive plans of the municipalities, agricultural land use can be changed to residential. Major developers in Lithuania are private investors that favours small scale residential development. Not all areas will be converted, but it is most likely that owners of the best accessible areas will use their chance to pursue short term profit and built a house to sell. It means more agriculture land will be converted to residential use.

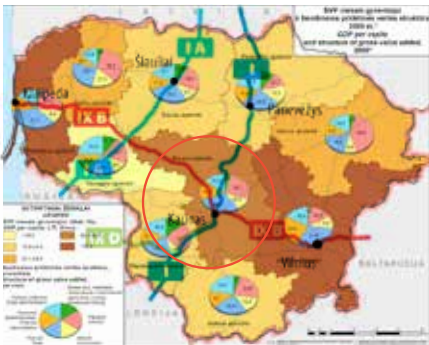


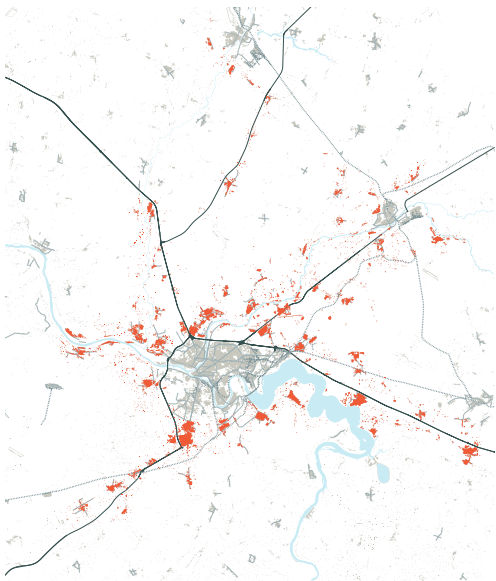
Image 1. Income differences between growing urban regions and peripheral rural areas indicates the increasing gap.

Source: Department of Statistics, www.stat.gov.lt, 2010



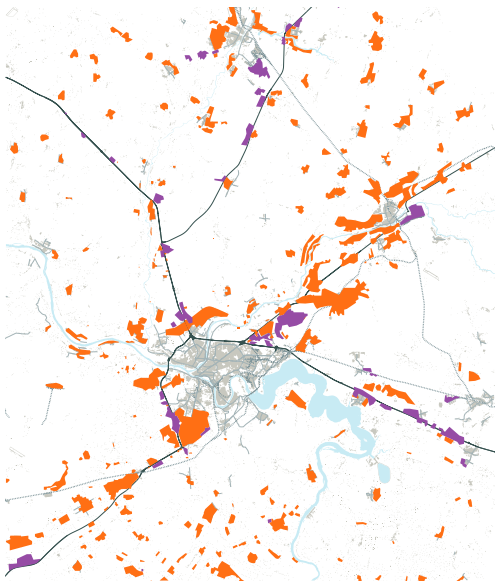
Image 2. The scheme on the left shows the most attractive and unattractive regions. Mapping is based on nett migration saldo from and to the region for 2006-2008. Attractive regions that have population growth, are those in the vicinity of urban centre. The rest of the regions in most cases loses population.

Source: Lithuanian Institute of Agrarian Economics, 2010



Map 1. Places that developed high dependency on the city.

Source: image by author



Map 2. Land dedicated to conversion from agriculture to residential land use. Map is based on the comprehensive plans of municipalities

Source: image by author



Suburban development issues

Images on the right (p.17) illustrates the consequence of “spot master plans” that appear due to considerably easy process of land use change.

Residential areas, that appear in-between the agricultural land usually have no city infrastructure, or basic services, like water, sewage, internet, cable.

Due to insufficient civic planning perspective, suburban areas are extremely mono-functional with little physical, economic and social diversity and activities. Moreover, due to a suburban growth, maintenance of infrastructure, public transportation and social services in suburbs become less effective and more costly for a city, thus increasing demand for private transportation furthermore.

Suburban expansion not only changes rural landscape around the cities but also strongly affects the inner city as well. Social mix, achieved due to socialist regime, decreases as wealthier and more mobile people exchange the city life to the suburban dream leaving weaker social class in the inner city. Secondly as the inner city depopulates, its residential areas start decaying, thus making the city even less attractive to stay.

The graph below shows that cities grew between 1959 - 1989, however since 2001 growth is oriented only in the suburbs.

Decrease in the use of public transportation



source: Kaunas General Plan, 2003

Increase of the number of cats per inhabitant



source: Kaunas General Plan, 2003

Source: Jonauskis, 2010



Fig. 2. Migration of citizens from the cities to the suburbs in 2001–2009 (source: Lithuanian Statistical office 2009)

Urban and suburban growth before and after independence

Source: Department of Statistics, www.stat.gov.lt, 2010

Right. “Spot master plans” near Kaunas city

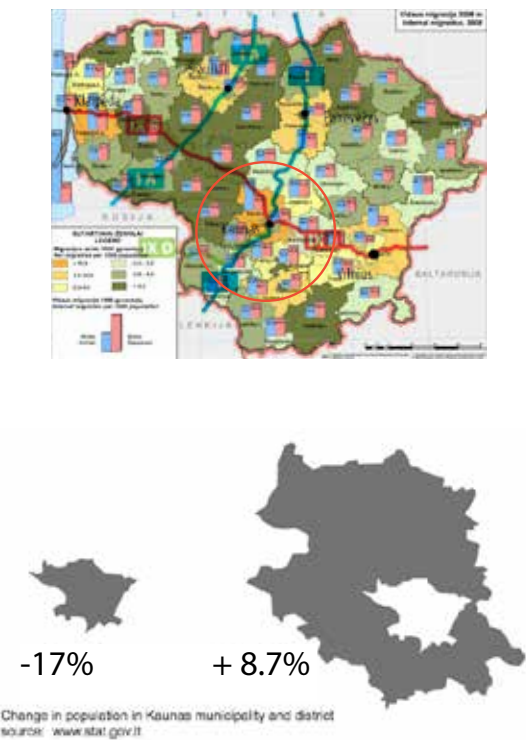
Source: <http://www.bing.com/maps/#>



Demographic trends and market demand

Recent official statistical data shows that only one city - capital Vilnius manages to hold unchanging number of residents. The rest of the cities experience population loses. Kaunas among them experience considerable loss of inhabitants - between 2001-2009 decrease of population in Kaunas was 17%. It is nearly 67 400 inhabitants. The large amount of residents migrate from the country however still considerable number of inhabitants move to the suburban areas around Kaunas.

Lastly, current pace of new residential development is far beyond the actual need for housing in Kaunas region. The diagram below indicates implemented new residential single family projects and amount of prepared plans in the last decade in comparison to an actual need for housing counted according to predicted population in 2017. In Kaunas district alone prepared single suburban house plans already exceeds demand five-fold. This inadequacy will result in oversupply in near future.



Source: Department of Statistics, www.stat.gov.lt (2010)  
Scheme by Buinevicius, 2011

Conclusion of the problem field

Despite the historical legacy, on-going spatial transformations in the urban and rural areas in Lithuania are similar to the processes occurring in many capitalist based countries. Economically growing urban centres experience inadequate to the market demand suburban growth which, having in mind current demographic processes, induces depopulation of the inner city.

Furthermore, maintenance of infrastructure, public transportation and social services becomes less effective and more expensive for an urban region as society ages and relies on private transportation. The expenditures tend only to increase in the future.

Due to insufficient civic planning perspective, new areas are largely mono-functional with little physical, economic and social diversity and activities.

Lastly, the lack of coherent vision in the larger context, results in higher fragmentation of the rural landscape, especially around urban centres, where conflicts between space uses are the strongest.

Diagram showing residential housing supply in relation to actual demand.

Scheme by author. Source: Kaunas District General Plan, 2007

Values

This thesis focuses on several themes of sustainable development believing they are among the most relevant objectives to pursue for Kaunas region well-being in the long-term development. These themes can be broadly grouped into social and environmental targets.

Social sustainability targets:

- Liveability,
- Quality of life,
- Endogenous economic development, local employment and economic clustering.

Environmental sustainability targets:

- Efficient use of resources;
- Resilience,
- Environmentally responsible production and consumption;
- Reuse of land
- Low-impact transportation mode.

This thesis adopts the following definitions of some of the aforementioned targets:

Social sustainability is “development (and/or growth) that is compatible with harmonious evolution of civil society, fostering an environment conducive to the compatible cohabitation of culturally and socially diverse groups while at the same time encouraging social integration, with improvements in the quality of life for all segments of the population.” (Polese and Stren, 2000, cited in Bramley and Power, 2009, p. 15)

Liveability is daily life environment with access to services, income, education, health care and socio-cultural facilities as well as physical quality of the space. Place quality is “related to matter of place identity and social cohesion as well as material welfare” (Bagnasco and Le Gales, 2000). Liveability of the region can be translated as possibility for an individual to choose living environment that meets his lifestyle and expectations the best.

Quality of life includes subjective as well as objective determinants, such as healthiness, community life, material well being and job security among others to determine the quality of life.

Endogenous development, according to Picchi is “local development, produced mainly by local impulses and grounded largely on local resources (Picchi, 1994, p. 195, cited in Terluin, 2003, p. 332). Emphasis in this model is put on “rural (economic) diversification, bottom-up approach, support for local business and encouragement of local initiatives and local enterprises” (Lowe et al., 1995, p. 91, cited in Terluin, 2003, p. 332).

Environmental sustainability definition is grounded in efficient use of resources and adopted from the most common definition of sustainable development, “i.e., “meeting the needs of the current generation without compromising the ability of future generations to meet their needs,” by alternating it to “meeting the resource and services needs of current and future generations without compromising the health of the ecosystems that provide them.” (Our Common Future, 1987, cited in Morelli, 2011, p. 23)

Resilience, “understood as an integral characteristic of social– ecological sustainability” can be described as ability of the system to be exposed to hazard or a stress without permanent damage. In the context of the region, resilience can be understood as region’s adaptive capacity to withstand future shortages of energy and food and adapt to climate change through dispersed economic and spatial development (Bugovich, 2012).

Research questions

Main research question

Following research question arises from aforementioned values that are set as key targets while pursuing more cohesive and sustainable development:

How to steer the future growth in the region in order to enhance liveability in the diverse living environments, unlock regional competitiveness and improve environmental quality through regional spatial strategy in the context of declining urban structure in Kaunas region?

Sub-research questions

Main research question is expected to be answered through four major topics:

- Regional development
- Regional economic potential
- Regional ecological structure
- Regional governance

Regional development

- What characteristics define an urban region and can this definition be applied to Kaunas region?
- What are the actual needs for urban growth in relation to future demographic changes?
- What is the role of mobility and networks in relation to socio-spatial processes in the region?
- What spatial development model is the most relevant to Kaunas region in current development trends?
- What capacity does current urban structure have to sustain sustainable future growth?

Regional economic potential

- What are the capacities of the region for endogenous development?

Regional ecological structure

- What are natural environment assets that could form a backbone for region strategy in Kaunas?

- To what extent landscape urbanism theory is valid in a region with low density and sparse development patterns?

Regional governance

- To what extent legal acts and planning can influence spatial development of the region?
- To what extent can regional and local government cooperate and what benefits could such cooperation bring to regional development?

The following question is answered in the literature review paper, issued in January, 2013 as a part of graduation thesis:

- What were the major drivers affecting regional development in socialist period and what rural development concepts could contribute to a more cohesive development of the urban-rural regions in the post-socialist countries?

Theoretical framework

This thesis is based on two main groups of theories.

The first one focuses on transformations in economic, spatial and social dimensions in socialist and post-socialist cities and countries. The works of Stanilov (2007), Andrusz et al. (2011), Tsenkova (2006), Vanagas et al. (2002) Kay et al. (2012) among others are analysed and outcomes are included in review paper. Review paper provides better recognition and evaluation of the context in which current socio-economic trends take place.

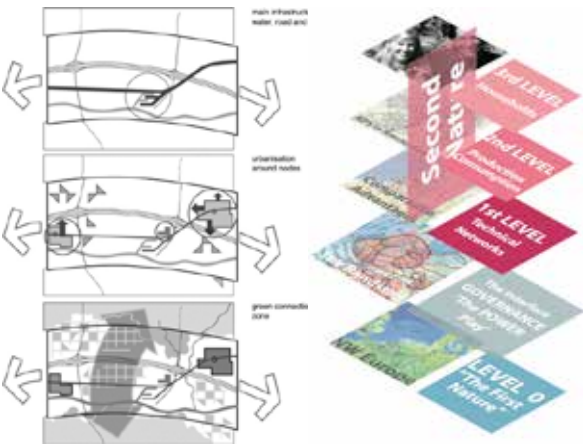
Second group of theories focuses on later phase of the project, which includes defining the guidelines for the spatial strategy and the strategy itself. This group consists of the landscape urbanism (Waldheim, 2006), urban networks (Dupuy, 1998; Rocco, 2007) and rural development (Terluin, 2003; Ploeg and Renting, 2000, Gallent et al., 2008).

Landscape urbanism aims at an integrated approach of the urban and nature functions, where infrastructure as carrying structure to organise different functions “does

open up possibilities for new combinations of rural and urban development” (Hidding and Teunissen, 2002, p. 302).

Urban networks development concept, according to Hidding and Teunissen (2002) can help achieving a more balanced regional development as they “subscribe to principles like concentration of urban functions, spatial differentiation and spatial coherence” (p. 307). Similarly poly-centric development aims at “diminishing urban disparities to enhance cohesion” (Meijers et al., 2007, p. 4).

Although in general network and poly-centric development concepts are aimed at European and national scales, they can contribute to regional development through improving urban-rural partnership and strengthening links between agricultural and non-agricultural sectors. As Murdoch (2000) states, rural development strategies have to benefit from networks by strengthening rural economies.



Scheme 1 (left). City landscape concept, which preserves qualities of a landscape while constructing urban development Source: Hidding and Teunissen, 2002

Scheme 2 (right). The levels of spatial analyses based on the Levels of Network Operation (Dupuy, 1998) with two supplementary levels: The First Nature and Governance. Image by Rocco, 2007 Source: Rocco, 2007

Theory paper abstract

**Review question:**

- What were the major drivers affecting regional development in socialist period and what rural development concepts could contribute to a more cohesive development of the urban-rural regions in the post-socialist countries?

**Changing landscapes of post-socialism. A review on rural space evolution and rural development concepts**

The transition from socialist to market-oriented democratic society brought numerous socio-economic and spatial changes to Central and Eastern Europe (CEE) countries. On the one hand despite the historical background, post-socialist countries enter the common globalization path characterized by economic growth related to open market and re-establishment of private property, increasing social welfare (mobility, accessibility of services, education and private housing) and rise in entrepreneurship. On the other hand market-driven economy increase disparities between urban and rural areas furthermore (Stanilov, 2007). Moreover vicinity of urban centre and changing social behaviour brings pressure to rural economic activities and fragments the countryside (Nuissl and Rink, 2005). The aforementioned issues on urban-rural relationship affect nearly forty per cent of CEE population (Eurostat, 2012), moreover they do not contribute to sustainable rural development in post-socialist countries.

The aim of this paper is to review the main drivers changing the rural space and to evaluate possible rural development methods, which could contribute to a more cohesive development of the urban-rural regions in the post-socialist countries.

The fundamental political, economic, social and spatial trends, which apply both to the urban as well as rural areas, are highlighted in the literature exploring post-socialist cities by Stanilov (2007), Tsenkova (2006) Andrusz et al. (2011) Vanagas et al. (2002) and others. Works of Terluin (2003), Ploeg and Renting (2000), Hidding and Teunissen (2002), Korf and Oughton (2006) and others will provide comparative review and critical analyses of European rural development theories and practices.

The outcomes of this paper are: i) evaluation of rural spatial transformation trends in the post-socialist countries (positive as well as negative) and ii) the most relevant spatial-economic development perspectives for rural areas in the post-socialist countries. It is anticipated that the recommendations, provided at the end of this paper, would contribute towards more coherent development vision for the rural areas in CEE countries.

**Keywords** – post-socialist rural space; periphery; inequality; rural development; rural development perspectives



Methods and techniques

Literature and case studies

In the large body of literature on rural transformations in the post-socialist countries, rural changes are mostly explored through a narrow perspective of an agricultural and land ownership reforms (Kay et al., 2012). However the fundamental political, economic, social and spatial trends apply both to the urban as well as rural areas and are highlighted in the literature exploring post-socialist cities by Stanilov (2007), Tsenkova (2006) Andrusz et al. (2011) Vanagas et al. (2002) and others. Rural development concepts and economic, spatial and social rural development perspectives by contrast, are well documented in a large volume of works. Works of Terluin (2003), Ploeg and Renting (2000), Hidding and Teunissen (2002), Korf and Oughton (2006) among others will be studied as their researches provide comparative review and critical analyses of European rural development theories and practices. Literature regarding network based development model and landscape urbanism theory will be reviewed to form draft guidelines for a regional spatial strategy.

Additionally, current regional and rural development policies, strategies and their evaluations (when available) will be reviewed to understand to what extent do they impact development in Kaunas region and whether they bring positive effects to sustainable regional development. It is hoped that successful development examples in terms of economic, social and environmental sustainability, will give an insight to which direction could rural areas in Lithuania develop and what economic and spatial consequences it would bring to them.

Statistical data

Statistical information on economic profile, demographic processes and spatial restructuring will help to evaluate current trends in the region. Information will be used from official department of statistics of Lithuania and Statistical Office of the European Union (Eurostat, 2012). Additional information from regional policy documents (Kauno Rajono Vietos Veiklos Grupė, 2008) (Ministry of Agriculture, 2007) and others) will be used in case of a lack of data.

Mapping the region

Mapping will be used to show results of analyses of statistical data. Analysis on the Kaunas region size and its influence to the surrounding rural areas will be translated into drawings as well.

Observations

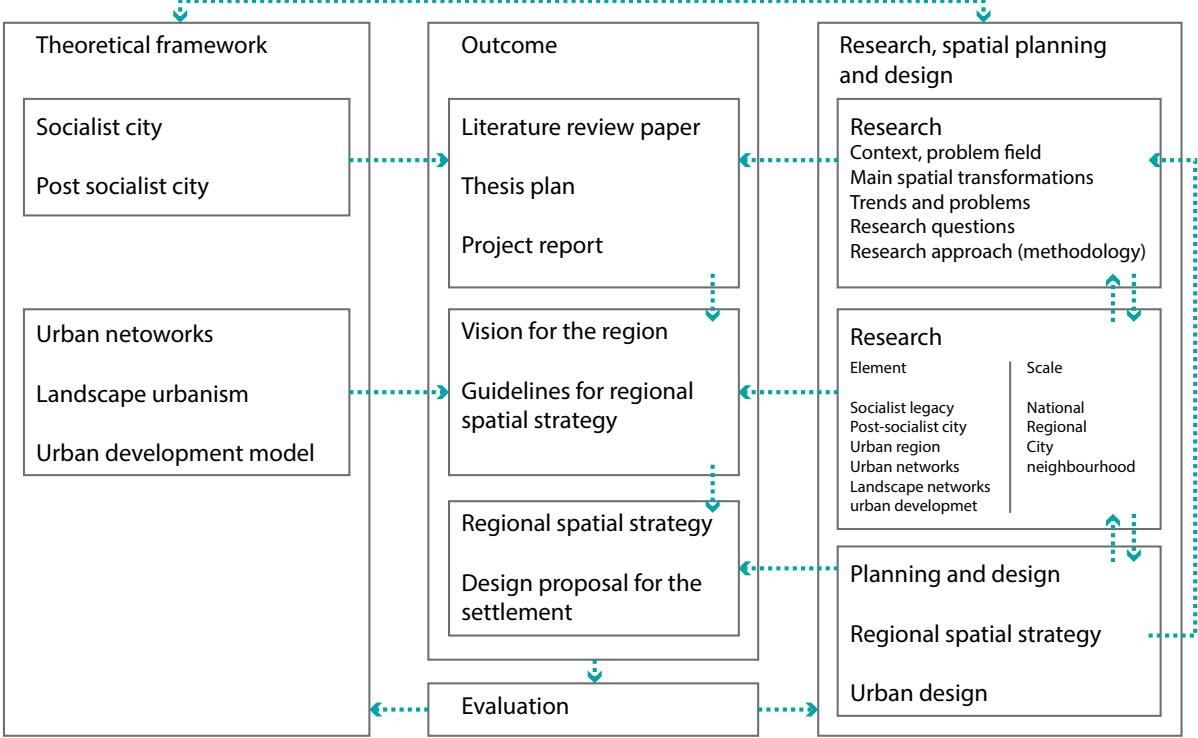
General observation about the issues and problems in the region will be made from personal experience, being familiar with region as a former resident of Kaunas.

Design/ drawing

Design proposal a method of communicating between a strategy and its implementation will be used to test whether a strategy is viable and suitable for an area. This evaluation can be used in reversed order as well: strategy can be improved according to a design proposal.

Case studies

Several typical living environments in Kaunas region will be analysed to understand the capacity of urban structure to sustain future growth. Case studies also will help to evaluate to what extent diversity of such living environments and their liveability could be enhanced in the region through strategic planning.



Above: Principal scheme of project framework

Left: principal use of methods during the research/ design and evaluation phases  
Schemes by author

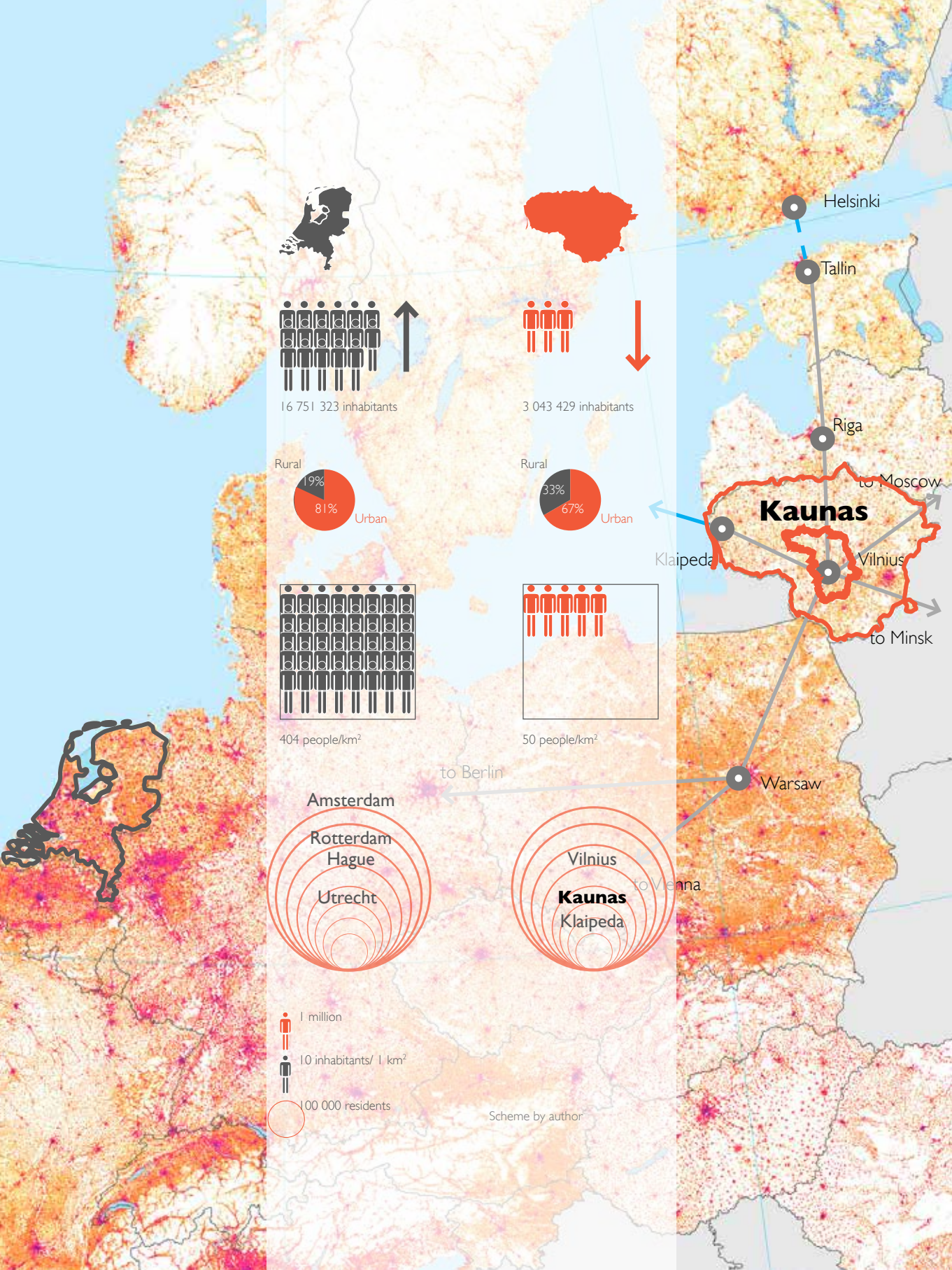
# Context

Lithuania is the biggest of the three Baltic countries. It has five cities with population over one hundred thousand which makes it different and unique from the other Baltic states where the capital (Riga the capital of Latvia and Tallinn the capital of Estonia) is the biggest and most important city. Therefore secondary cities in Lithuania have potentials and are already the local economic, social and cultural centres of the surrounding regions.

Kaunas region is the second largest in Lithuania however more than half of its citizens are living in Kaunas city. Geographical position of region created good conditions for industrial activities to be located along main infrastructures. Industry is the main economic sector which is located mostly in Kaunas and in other bigger cities.

Regional planning in Lithuania is implemented through Comprehensive Plans for each county as well as national and regional policies and development programmes (e.g. Kaunas Regional Development Plan, Strategy of tourism development in Kaunas Region; Strategy of Kaunas Region Image, Rural Development Programme)





# Lithuania in European context

## Geographical context

Located in-between central and northern European countries, Lithuania, together with Latvia and Estonia is referred as Baltic States. Differently from Latvia and Estonia, Lithuania's population and economic activities are equally distributed throughout dense network of cities and towns due to Even Settlement system, implemented since 1960s. Such poly-centric model provides regions in Lithuania with an opportunity to be self-sufficient economic, social and cultural centres, which at a certain degree they already are.

Lithuania and especially Kaunas region is considered to be a transit country due to the location on the main connections between southern and northern parts of Europe and Baltic sea and Asia.

## Political context

Since 1990 Lithuania has re-established its independence from the USSR and now is a democratic republic with elected parliament.

Though in the current political context Lithuania is referred as Eastern/Baltic/ or sometimes even part of Northern countries, in the political-economic context of post-communist countries, Lithuania is regarded as a Central and Eastern European Country (CEE).

## Socio-economic context

Due to Even Settlement system, implemented since 1960s, today two thirds of population in Lithuania lives in urban areas. Having in mind that the urban share did not exceed 20 per cent in 1940s, the urbanisation during the last 70 years occurred at an incredible speed and many urban residents are only the first generation city dwellers. Due to changed geopolitical and economic situation in a country population started shrinking as a consequence of economic crisis in the beginning of 1990s. Extremely huge losses occurred since 2004, after entering European Union (EU) and NATO. Absence of borders induced massive outmigration to search for better economic situation in other European countries.

However economic situation was stabilized and between 2003 - 2007 Lithuania had one of the fastest growing economies in Europe until the economic crisis in 2009. Today economy in Lithuania is stabilised again and grows steadily.

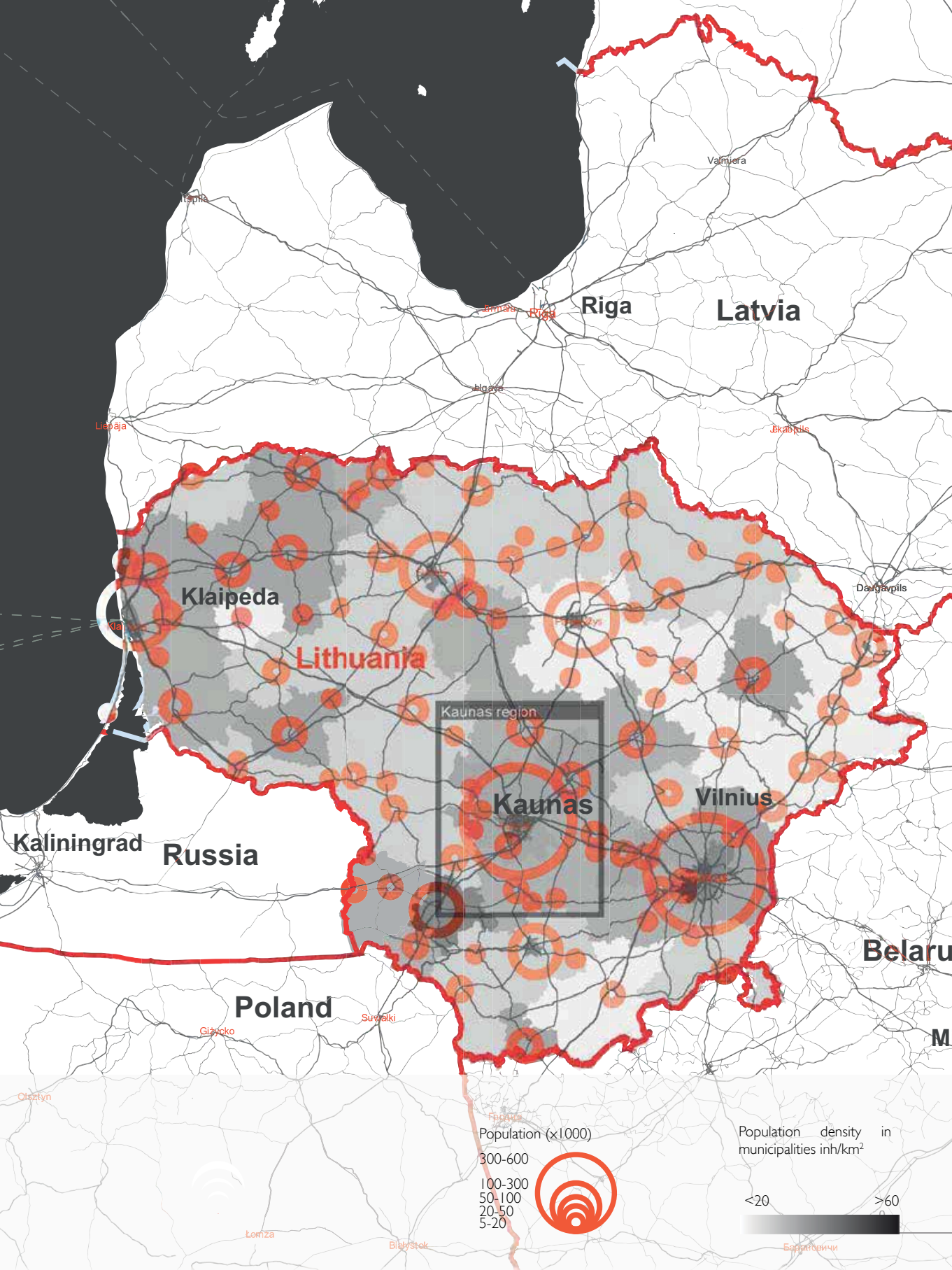
Despite the overall growing prosperity and stabilized economic situation, nearly 70 per cent of GDP concentrates only in the three largest regions: Vilnius, Kaunas and Klaipėda. This polarization of economic activities grows yearly and increases gap of growing versus lagging regions in Lithuania.

The effect of economic disparities is visible in outmigration trends: recent years shows slight stabilization in outmigration patterns, however still considerable amount of people leaves rural areas and economically weak regions yearly. Rural areas experience largest losses due to weaker economic development, poorer opportunities for education, smaller and less flexible jobs market and poor physical quality of living environments. Though currently service sector employs largest share of population and creates highest Gross Value Added in Lithuania in general, rural areas are still highly dependent on primary sector, as it still employs one third of rural population.

Major economic sectors in Lithuania are (In decreasing order by Gross Value Added per sector) (Department of Statistics, 2011):

- 60% - services (health care, education, public/social services, administration), construction, real estate operations, science and research related businesses, finances related businesses, recreation industry, and other activities,
- 37% - manufacturing and industry,
- 3% - agriculture, forestry and fishery.





## Kaunas region in national context

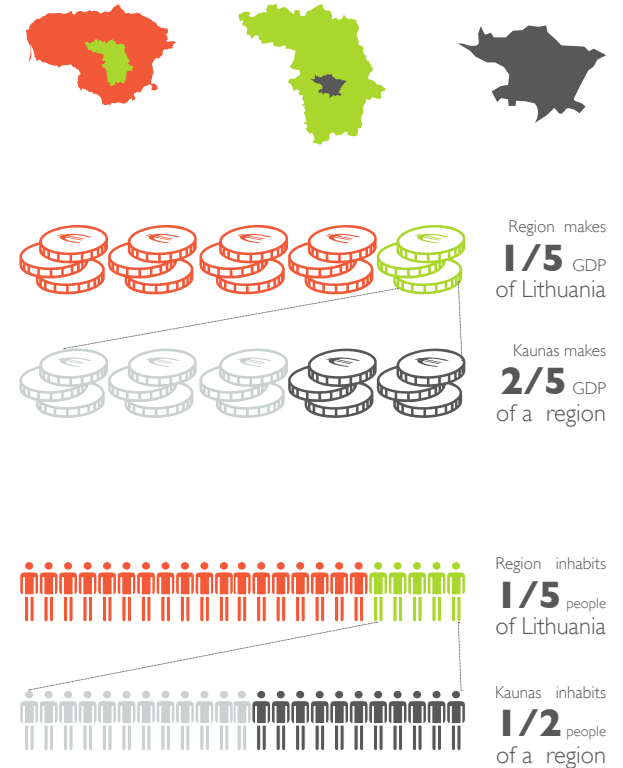
### Population

Kaunas region is the second largest in Lithuania both in area and population. Though due to Even settlement system model, population was distributed evenly throughout the region, currently similarly to economic concentration population concentrates around Kaunas city as well. Out of 600 thousand inhabitants, half lives in Kaunas city. Another 90 thousand resides in the rural areas around Kaunas city.

### Economic situation

Situated in the centre of the country, on the most important transport arteries and on the confluence of the two biggest rivers, Kaunas region historically evolved from an important economic centre for trade (Kaunas - Hansa city in 14th century) to an industrial and production centre (during the socialist regime between 1940s and 1990s). Today Kaunas region shifts towards service based economy with a strong emphasis on logistics, trades and distribution of goods. International airport, recently established free economic zone and numerous appearing logistic centres around Kaunas city creates huge potential for regional economic growth, however this growth is basically concentrated only around Kaunas.

The shift from previous poly-centric distribution of economic activities towards concentration in one area is clearly visible in Gross Added Value distribution in the region: Kaunas region generates one fifth of country's GDP, yet half of it is produced in Kaunas city.



Scheme by author



Right: Crystaller's central place theory model adapted to Lithuania. Source: Vanagas, J. 2003

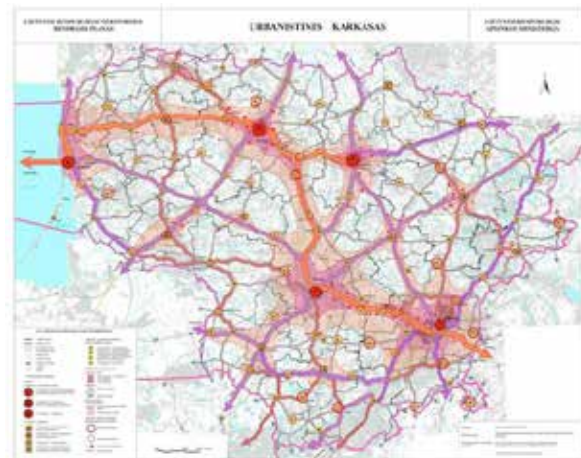
Left: source: Jonauskis, 2010

# Regional planning

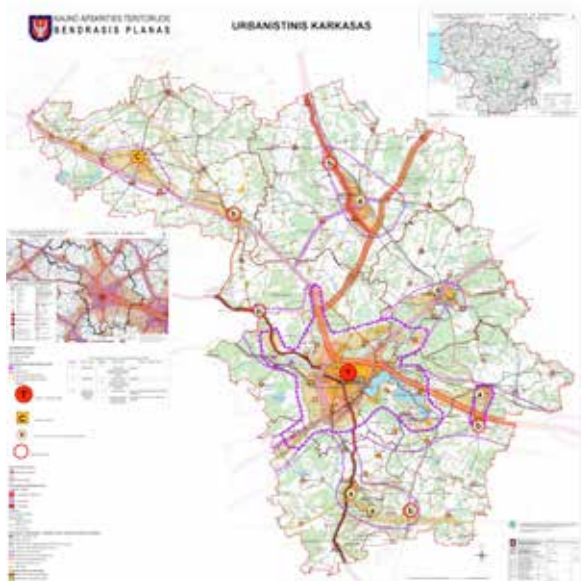
Regional planning in Lithuania is based on Comprehensive Plans for each county as well as national and regional policies and development programmes (e.g. Kaunas Regional Development Plan, Strategy of tourism development in Kaunas Region; Strategy of Kaunas Region Image, Rural Development Programme). Yet implementation of planning solutions is often weak and vague. The higher the level of planning- the less feasible the plan itself.

This chapter gives an overview of current planning system, its levels and tools, related to regional planning, in Lithuania. It also briefly compares various planning systems and their levels in a few countries in Europe and draws conclusions, related to spatial and regional planning in Lithuania.

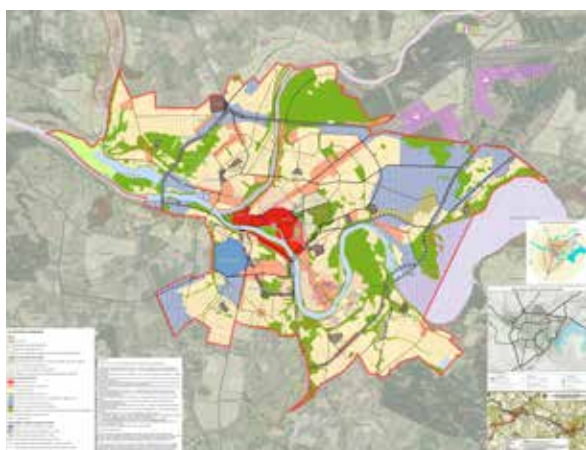




National level. Urban structure of the territory of Lithuania and future growth axes. Source: Comprehensive plan of the territory of the Republic of Lithuania, 2002.



Regional level. Urban structure map as part of Comprehensive plan of Kaunas County. Source: Comprehensive plan of the territory of Kaunas County, 2007.



Local level. Kaunas city plan, draft of functional priorities. Source: Comprehensive plan of the territory of Kaunas, 2013.

## Planning system in Lithuania

Until 1990 regional planning in Lithuania was based on planned economy model, which considered development to be adequate throughout the whole country.

In 1995, new Law on Territorial Planning was issued, which divided planning into four levels:

- national (country),
- regional (county),
- local (municipality)
- physical/juridical (detailed plan).

Special planning (for land and water bodies, cultural and social development, infrastructure, nature and culture heritage protection) was not separated as separate sector; therefore theoretically and practically it was allowed in all levels. Planning objectives according to this law were the same for all sectors: form an adequate, healthy and harmonious living, work and leisure environment in an effort to create a better and equal living conditions throughout the whole territory of Lithuania. The law did not foresee when comprehensive plans in national and regional level had to be prepared, but had defined many cases when detailed plan in local level was necessary, therefore soon largest share in planning consisted of detailed planning and government became reactive (controlling detailed planning) instead of proactive (planning itself).

In 2000 new tendencies appeared in planning system as a consequence of preparation to EU. Regional planning became of higher importance and Law on Regional Development was issued.

Until 2004, both laws influence regional planning in Lithuania, but from a bit different perspective: Law on Territorial planning determined regional planning as comprehensive plan of a county, while Law on Regional Development focused on economic and social development policies of the region (still counting county level as a region in which policy has to be implemented).

However new issue of Law on Territorial Planning in 2004 tried to merge strategic and territorial planning by obliging territorial planning to include regional strategic planning decisions. Besides legal basis, there are some

evidences that strategic planning approaches territorial planning in practice as well, as shown in the strategic plan of Vilnius city 2002-2011, however they are not yet fully merged (COMMIN, 2005).

There are three types of planning in Lithuania:

- general (comprehensive),
- special (sectoral) and
- detailed (law separates it as a type, not level).

The first two types of planning has the most equivalent goals to the objectives of this project and are defined as follows:

“General territorial planning – a comprehensive planning for establishing the territorial spatial development policy, the priorities in the use and protection of a territory as well as the principal means of its management.

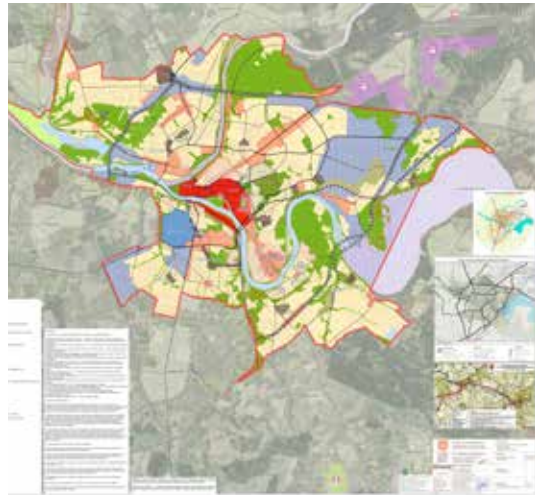
Special territorial planning – planning of means related to spatial organization, management, use and protection of a territory necessary for separate types of activities.” (COMMIN, 2005, p. 12)

Three levels of planning, namely national, regional and local are discussed further to explain their scale of intervention, objectives and implementation.

National level

All planning in regional or local level in Lithuania is based on the Comprehensive plan of the territory of the Republic of Lithuania issued in 2002. The document presents the main solutions of the territory in the following main directions:

- common territorial structures;
- specialised territorial structures;
- spatial integration of the development of the territory of the state;
- reserving the territories for the common needs of the state.



Kaunas city plan, draft of functional priorities. Source: Comprehensive plan of the territory of Kaunas, 2013.

1st case

Kaunas district plan. Source: Comprehensive plan of the territory of Kaunas district, 2007.

2nd case

Jonava district plan. Source: Comprehensive plan of the territory of Jonava district, 2007.

“The Comprehensive plan:

- is obligatory for state governmental institutions taking decisions on national level related to the use, management and protection of the territory of the country, forming regional policy;
- forms planning conditions for national level special plans, long term programmes and strategies and for regional level comprehensive and special plans.

All development strategies of economy sectors, other strategic plans and programmes of state institutions have to rest upon the Comprehensive plan of the territory of the Republic of Lithuania.” (Ministry of Environment of the Republic of Lithuania, 2004, p.68).

Regional level

Between 2007-2012 all counties had prepared comprehensive plans. These plans include guidelines for land uses, priorities for spatial growth, infrastructure, forestry, agriculture, recreation and ecological structure development guidelines. Though these plans are embedded into national planning level and are legally binding, their actual implementation depends on the planning issued on the local - municipality level.

After Administrative reform in 2010, regions in Lithuania do not have one administration anymore. This was done partly because of the large number of in-effective administration, partly because of overlapping functions between counties' Councils administrations and other institutions. Functions from County Governor's administration, which do not involve EU funding, for example health care and education were delegated to local – municipal level. Other functions. E.g. land reform, coordination of EU support at regional level were transferred to central level - ministries.

The abolishment of Counties Councils reduced administration staff and shortened some procedures, however it creates some problems in regional governance due to the spread of functions between local

and national levels. For example, infrastructure related project which passes both urban and rural areas cannot be co-ordinated by one institution, because responsibility for infrastructure is distributed hierarchically: city council is responsible for roads inside the city, rural district council is responsible for roads in the rural areas, however, Ministry of Transport and Communications takes responsibility for the roads of national importance.

Overall, objectives of comprehensive plans as well as special plans, both in national and regional levels, are considerably vague, e.g.:

“develop city economy, culture, science and education and other ranges, based on the concept of sustainable development, create a healthy, comfortable to live in and safe environment, unique cityscape, and foster nature diversity; strengthen democracy and city self-governance, unite citizens into communities. Integrate city community needs and co-operate with local civic organisations; initiate and participate in international municipal co-operation projects.” (Comprehensive plan of Vilnius city, 1998, cited in COMMUN, 2005, p. 18)

Municipality level

All municipalities in Lithuania are obliged to have comprehensive plans for their territory and these documents have legal binding as well. The plans at municipal level have to incorporate decisions from the national and regional level planning documents and the regional planning itself encourages municipal co-operation, however it does not work to a large extent. As an example of lack of co-operation, two cases are analysed: first between Kaunas city and Kaunas district and the second one between Kaunas district and Jonava district.

In case of Kaunas city and Kaunas district municipality, there is some relation between their planning documents. Comprehensive plan of Kaunas city takes into account the context of Kaunas district, e.g. proximate urban areas, international airport, recreation areas, and adapt

Comprehensive plan of the inner city accordingly.

However in the second case of adjoining municipalities, Kaunas district and Jonava district, planning gives little regard to the context. For example, both municipalities dedicate large areas for urban extension. It is allowed to change nearly 4000ha of agricultural land in Kaunas district, whereas share in Jonava district is even larger. Scale of land use changes in Kaunas district can be partially explained by municipal wish to attract upper class residents from Kaunas city by allowing low density suburban growth. Whereas scale of land use changes in Jonava district is underestimated: most of dedicated areas are at least 15 km from Kaunas city and extremely large, which means that large areas of agricultural land are allowed to be extremely sparsely urbanized with no possibilities to ensure public transport and services.

Municipalities compete to attract new residents by allowing extensive suburban development, yet lack of mutual agenda results in unbalanced development, which will be harmful to both, Kaunas and Jonava districts in the long term. Urban expansion of Kaunas district is little regarded in Jonava planning document and vice versa.

Besides lack of co-ordination among municipalities, other issue is the feasibility of municipal comprehensive plans. First of all, financial substantiation needed to realize the plans is often too vague and tenuous and municipal administrations with current budget are not able to cover even half of the expenses related with implementation of the plan. On the other hand, implementation could be partly feasible through co-operation between private and public sectors, yet it has not developed into fruitful collaboration yet.

There are two main policy tools for regional development in Lithuania at the moment:

1. From EU perspective: Structural EU regional policy.

Lithuania reaches only 55 per cent of EU average GDP per person (EU27, 2010). The main tool to raise the level of socio-economic development is through Structural Funds (Cohesion policy implementation through State investments).

2. From national perspective: regional development policy.

With the issue of Regional Development Law in 2000 increasing disparities of development level within the country were recognized (for example Taurage reaches 49 per cent of LT average GDP, while Vilnius - 153 per cent) and policy was aimed at reducing them.

Aforementioned policies are incorporated into numerous development plans for the region. For example, Kaunas Regional Development Plan was prepared for 2003 – 2013 as a tool to enhance regional competitiveness and to use structural funds from EU. Since EU budget is formed for 7 years period, the development strategy is formed for the same period. New budget will be accepted for 2014-2020 period, therefore new Kaunas Regional Development Plan for the year 2014-2020 is being prepared at the moment.

There are several other development documents for Kaunas region reflecting the same situation with EU support: Strategy of tourism development in Kaunas Region 2007 – 2013; Strategy of Kaunas Region Image 2007-2013, etc.

Strategic development plans are prepared at municipal level as well, for example Jonava District development plan, Rukla development plan, Kaišiadorys District development plan, etc.

Since large amount of areas in Lithuania are considered as rural, rural development programmes is an important tool in regional development as well. Rural Development Programme 2007-2013 is discussed a bit further as an example to draw conclusions to that extent it can be effective for regional development.

The Rural Development Programme 2007-2013 (RDP) of Lithuania is prepared following the National Strategy Plan of Lithuania for the period 2007-2013, which subsequently is based on a set of measures in accordance with aforementioned axes of the European Rural Development Policy 2007-2013.

The main (in the RDP referred as “global”) objective for rural development in Lithuania is “to ensure growth through improving the competitiveness of agriculture and forestry sectors as well as creating possibilities for diversification of economic activities and improving the quality of life in rural areas meanwhile enhancing the human, environmental and other countryside values and reducing disparities between rural and urban areas as well as separate regions” (Ministry of Agriculture, 2007, p. 52).

This, in general a very broad objective, is a repetition of European Rural Development Policy 2007-2013 with no individual adaptation for the case of Lithuania. However the following more specific objectives are based on concrete problems of the country. The fundamental issues concerning spatial development of rural areas are related with improvement of the environment, both natural and man-made. Threat towards the environmental and cultural heritage, unused agricultural land, quality of drinking water in the dug wells, decline of biodiversity and need to combat climate change are among the key priorities while improving the environment of the countryside (Ministry of Agriculture, 2007). Over-dependence on agriculture, insufficient social and physical infrastructure and need to preserve rural heritage are listed as priority issues regarding quality of life in rural areas and diversification of the rural economy. Though these issues are not directly related with spatial problems, the latter ones greatly depend

on socio-economic conditions of the area, therefore improving socio-economic conditions can help increase the physical quality of the space.

Mid-term evaluation carried out in 2010 emphasizes that though measures related with agriculture competitiveness and modernisation absorbed the assistance of EU funds, no funds were distributed in the areas such as “village renewal and development” or “implementation of local development strategies” (European Commission, 2010). In addition, over a 1000 jobs were created or preserved in agricultural, forestry and food sector while only 13 jobs were created in non-agriculture area. Evaluation concludes that impacts of the RDP were smaller than planned, both due to the exogenous factors (economic crisis) and internal reasons (underrated demand for certain actions). It is also stated that the Rural Development Programme “is likely to have a positive impact on increasing competitiveness of the Lithuanian agriculture, a positive effect on changes in the number and structure of rural inhabitants, employment, income” (European Commission, 2010, p. 5)

This brings to the conclusion that nonetheless RDP enables economic growth of agricultural sector; it does not contribute to the spatial development and increasing physical quality of the rural areas. Neither it contributes to the diversification of activities: “no impact on employment growth in the non-agricultural sector” (European Commission, 2010, p. 3).

Accordingly to this conclusion, additional remark could be made: though all development policies and programmes aim to improve liveability and economic prosperity in the regions (though some target especially rural areas) in Lithuania, other tools are crucial as well, especially: co-ordination among municipal planning, stricter regulations on new development and mutual guidance of economic and residential development patterns.



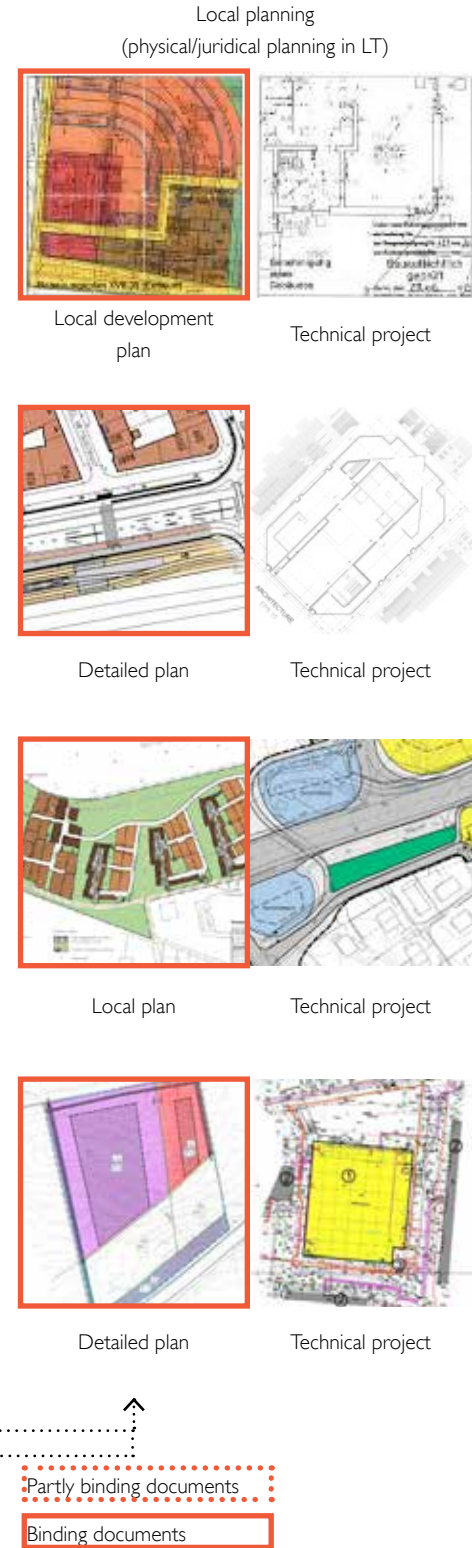
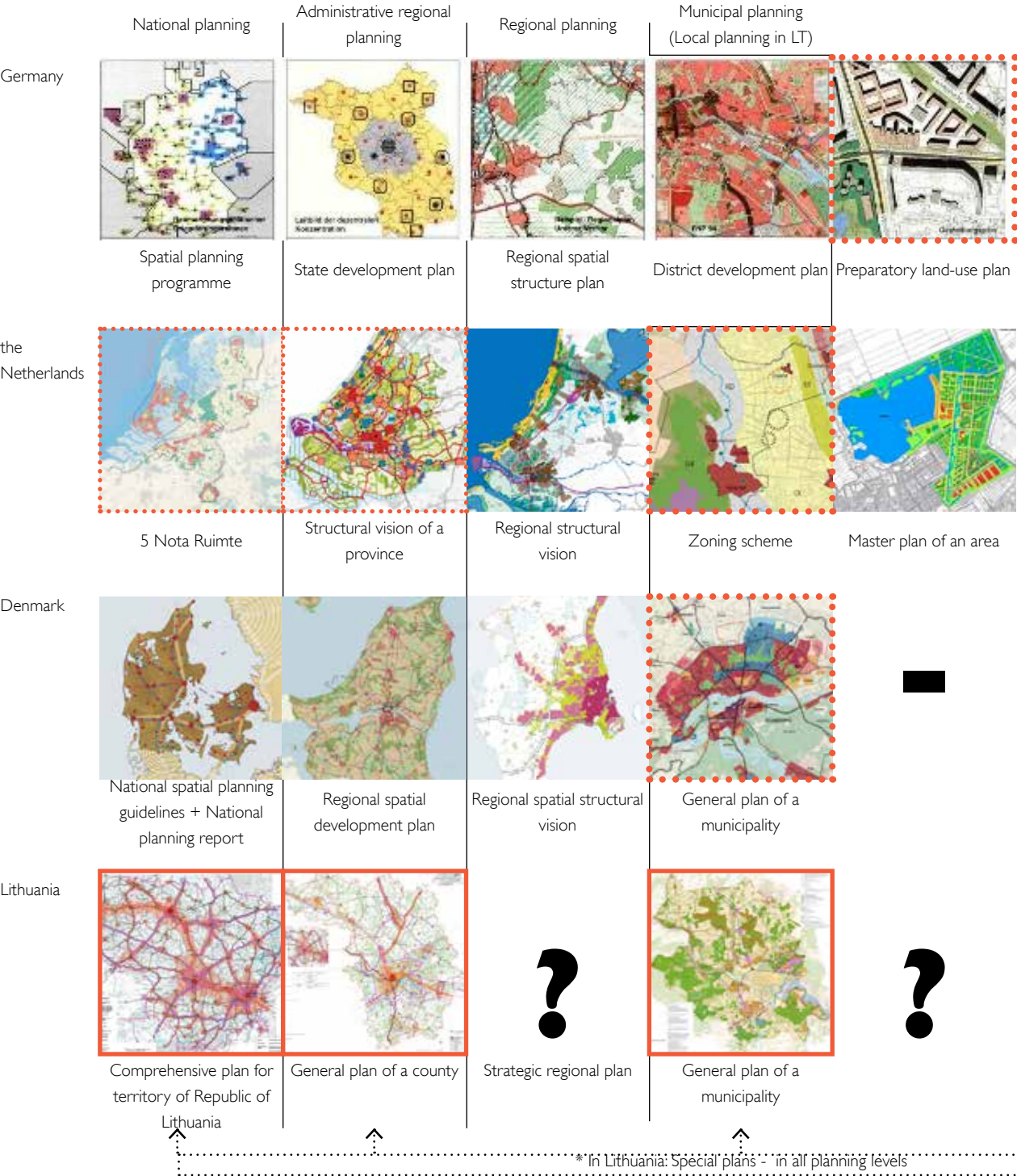


Table on the left summarizes planning levels in Lithuania and compares them to ones in some EU countries (Germany, the Netherlands and Denmark). There is visible lack of intermediate scales in planning theory and practice Lithuania: regional planning and planning in neighbourhood scale.

State audit report on planning and organisation, issued in 2010 states some major flaws and problems regarding planning system in Lithuania:

1. Previously approved lower-level planning documents prevents a higher-level documents from determining the general direction of development of the region and carrying out the general spatial planning challenges.
2. The coordination of territorial planning documents is complicated, often repetitive, important documents needed for spatial planning policies are often not approved in time.
3. The process includes public and private sectors that are subjected to different requirements. Sets of planning conditions are issued over a longer period than it is prescribed by law.
4. The most of the planning conditions, issued by the authorities, are abstract with no specific planning requirements and criteria or parameters. On the other hand, the law does not provide clear criteria for determining the specific detailed planning conditions. This is a crucial detailed planning problem, allowing corruption.
5. Planner is often forced to align solutions to the existing property owners. Such spontaneously formed plot owners often prevents from designing continuous and functional urban structures. Unfortunately, land consolidation is not widely used in practice and the neighbour with the neighbour rarely agree on the solutions. Due to the low mentality of society, areas, needed for public use, are rarely preserved and designed. Although legal act allows to take the land for public interest, it is rarely applied due to lack of funds or the procedure is misused.

## Conclusions

Several conclusions are drawn from the analysis of planning system in Lithuania, especially with regard to regional planning. They are as follows:

1. Lack of integration of broader objectives in regional planning, especially with regard to integrated rural areas development.
2. Planning became a regulatory tool, with lack of criteria for effectiveness and balanced development.
3. Lack of public interest and involvement in the planning process, especially where private sector dominates.
4. No distinction between planning of urbanisable and non-urbanisable areas.
5. Lack of instruments (system and financial) to ensure cohesive regional development (infeasible regional as well as local development plans).

## Targets

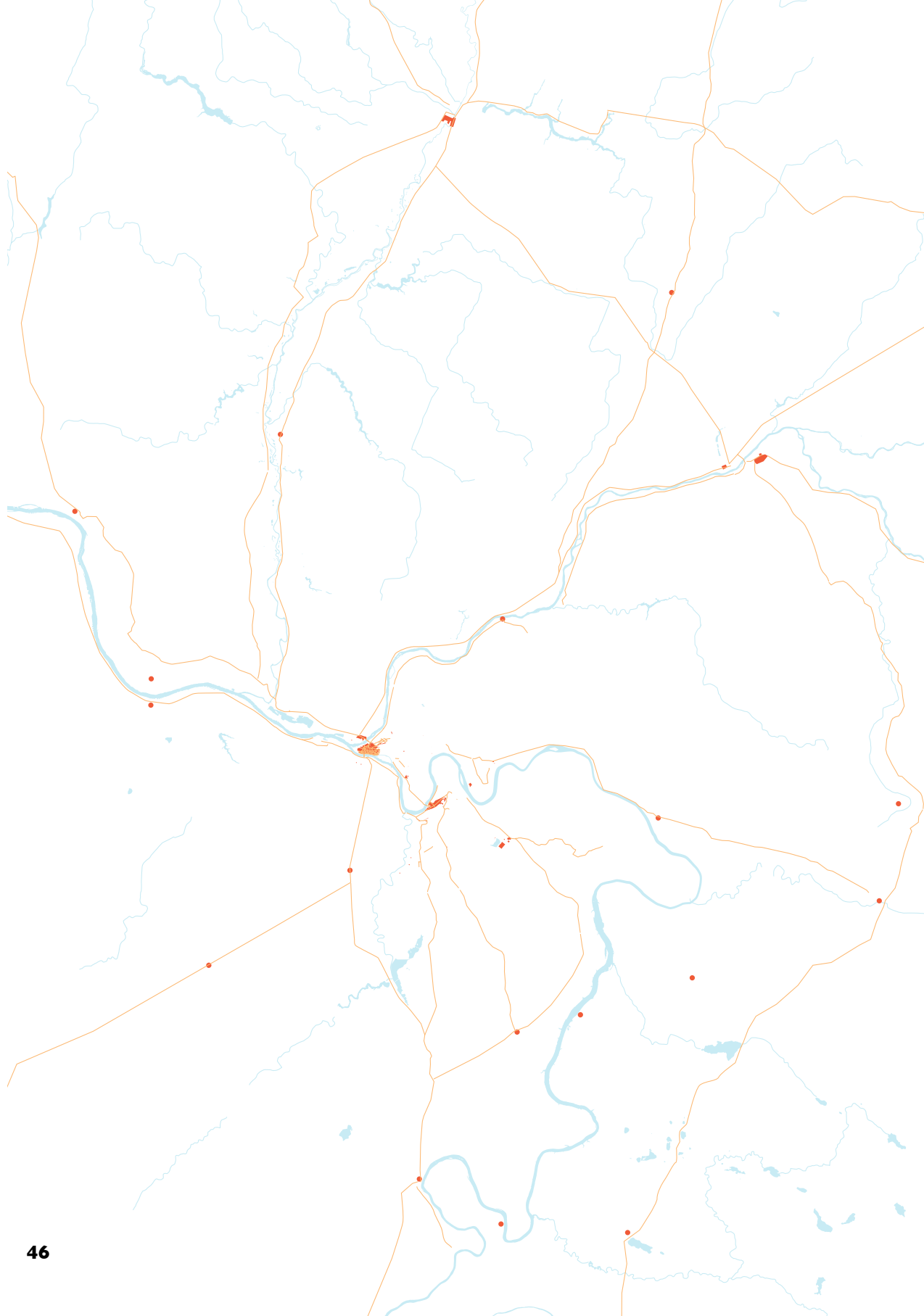
Desirable process would be:

1. Minimum private property interference in the planning process.
2. Minimum political influence to the approval of the decisions of the territorial planning. This could be achieved if approval right is transferred to the professional group, which consults the public.

# Development of the regional structure

Kaunas region, as well as other regions in Lithuania, has polyc-centric urban structure consisting of diverse living environments, which formed due to numerous socio-economic and political processes.

This chapter gives an overview how the regional urban structure formed, what types of living environments were formed in different historical periods and shortly explains criteria for selecting most dominant types of living environments for further analysis.



## Medieval region (14th century - 1795)

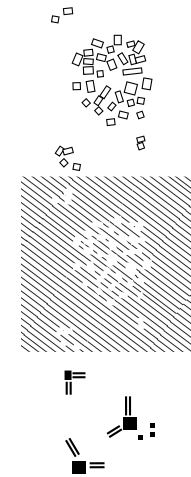
City planning



Source: miestai.net

compact urban development  
based on water and post-roads infrastructure

Countryside (agriculture, forestry, living environments, infrastructure)



Schemes by author

small scale ownership  
archaic land-use

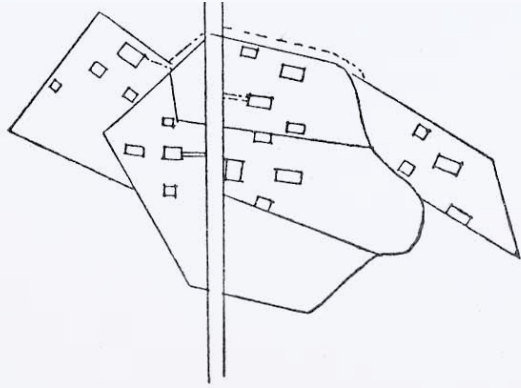
large forest massive  
developing forestry

archaic cluster village  
manor's serf ownership  
scattered farmsteads

major post-roads  
small local roads



## Typical rural settlement: cluster village



Cluster village consists of freely located farmsteads that have no clear plan. In some cases lands of the neighbours overlaps. Cluster village formed by the natural boundaries - the hills, forests and lakes. Road going through the village did not create a connecting axis.

Many of the cluster villages were created around manors and churches. They were the self-sustaining centres for education, culture, production and consumption.

Later cluster villages gradually transformed into linear villages and church towns.

Today cluster villages in Kaunas region are almost entirely vanished





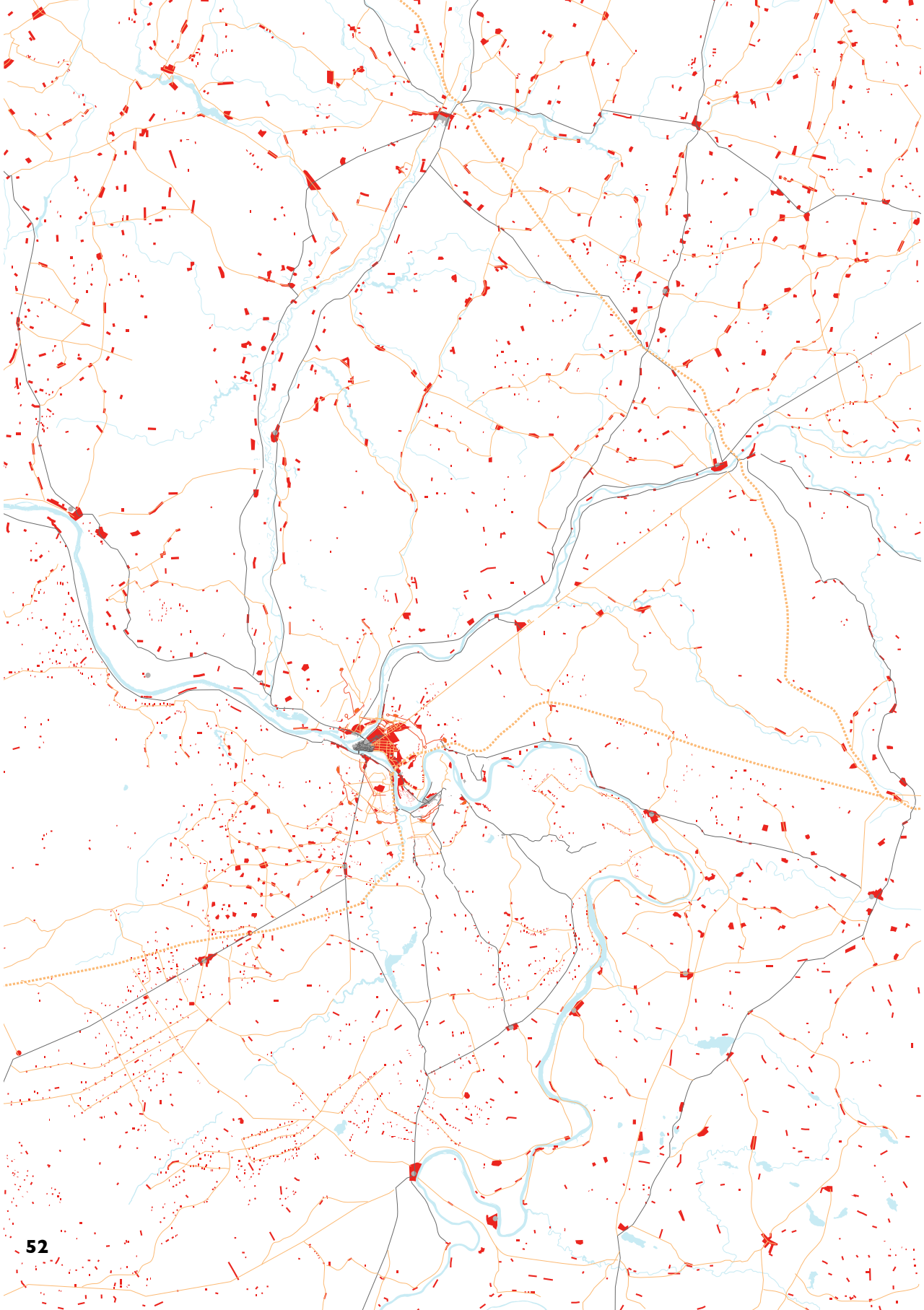
## Urban development: medieval city

Kaunas city was firstly developed as a compact city based on water trading and merchant activities in the inner city. Small scale environment was developed for the reason of being closer to the water and to each other.

Today old town still have the character compact and small scale environment which now is used for tourism, cultural activities and high quality residential living. Car free environment creates pedestrian friendly spaces which provides quality for the local residents.







## Period of Tsarist Russia (1795 - 1905)

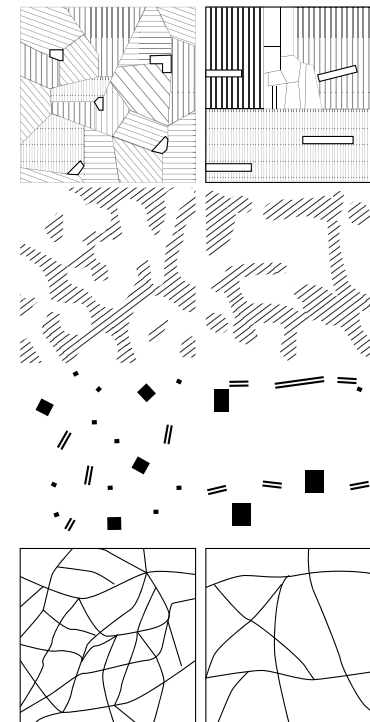
### City planning



Source: miestai.net

- first railway lines
- horse-tram lines
- first industrialization
- new urban neighbourhoods
- built fortifications around Kaunas

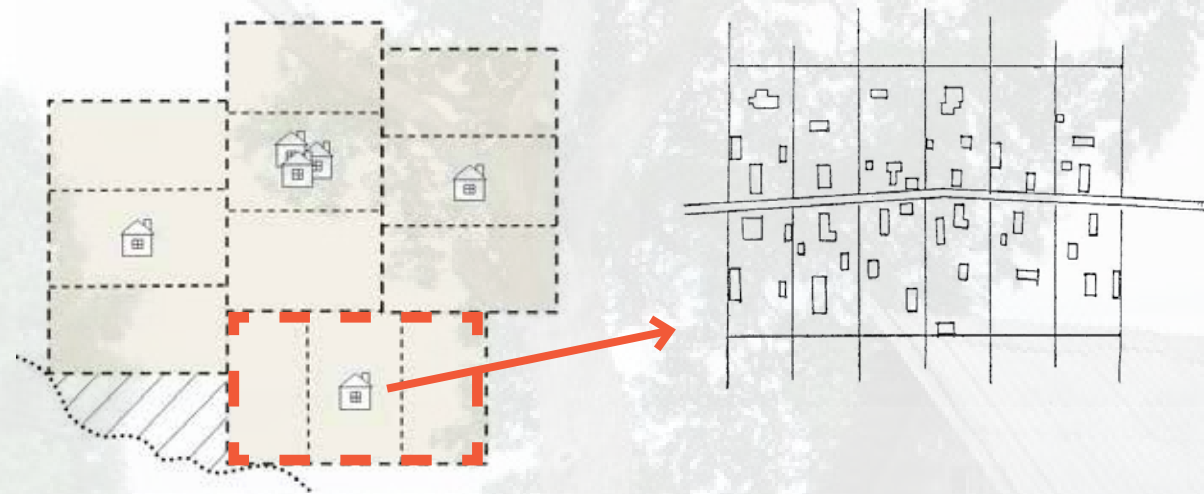
### Countryside (agriculture, forestry, living environments, infrastructure)



Schemes by author

- agriculture reform to intensify land-use
- forestry intensification
- growth of farmsteads and villages
- abolishment of bondage from the manor
- national infrastructure growth
- local infrastructure network intensification

## Typical settlement no.1: linear village



Land reform in 1557 set guidelines for new type of rural settlement: linear village. It became predominant type of village in the second half of 19th century. The underlying purpose of creating new type of the villages was to bring order in hectic agriculture, however this change had much wider results: brought to European standards land use, land ownership and agriculture, and most importantly - entrenched serfdom.

Since the land reform in 16th century part of historical villages were relocated to the newly formed villages that were based on three land parcels (fallow area, winter cereals, spring cereals.) Each relocated household was given a strip of land, in each part of village land (approx. 21 ha in total). The households settled in the middle part of the villagers' land, houses built on the slim and long stripes, which ended up to a main street.

Today there are just a few linear villages in Kaunas region: some of the linear villages gradually became church towns while most of them were transformed into collective farm settlements.





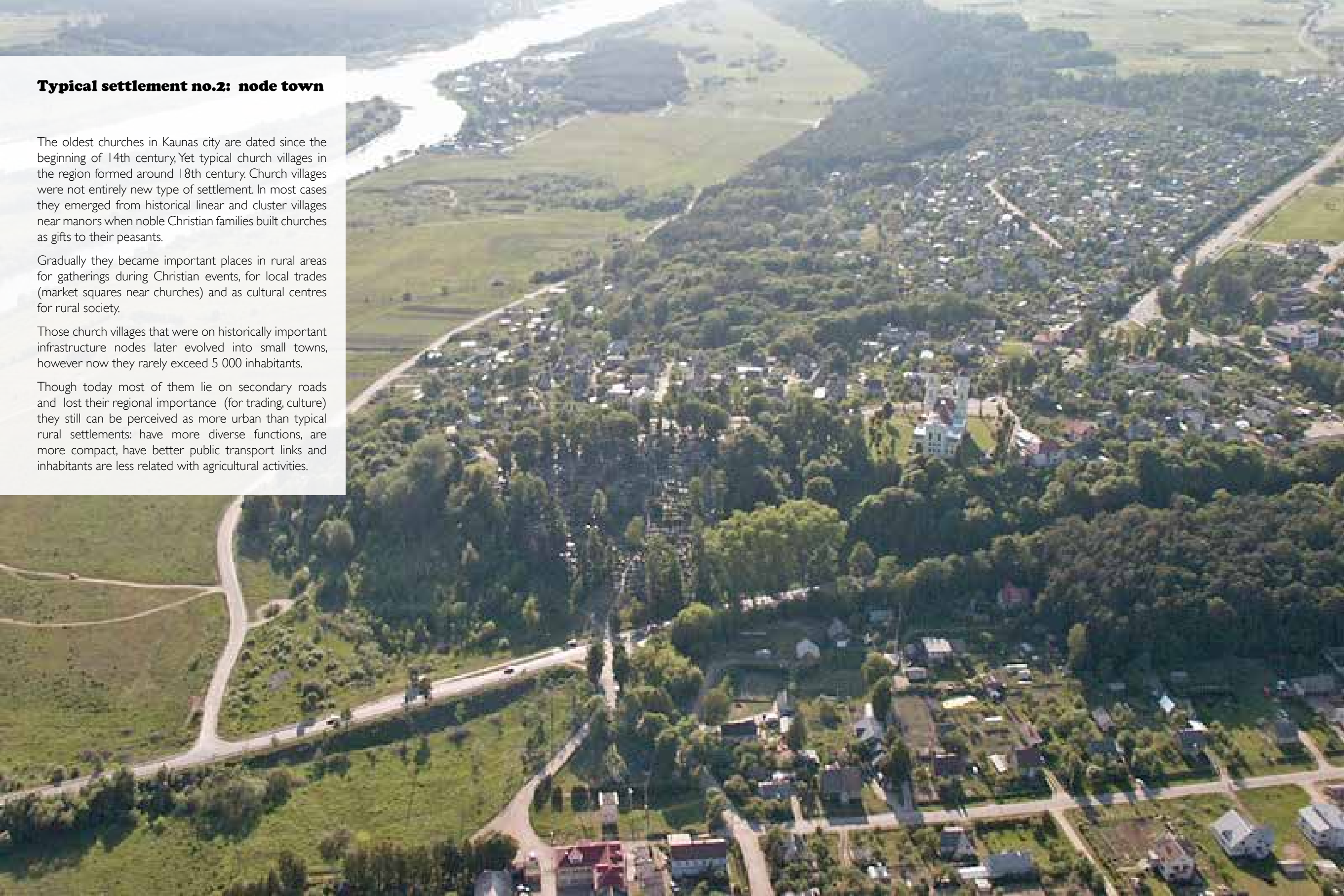
## Typical settlement no.2: node town

The oldest churches in Kaunas city are dated since the beginning of 14th century, Yet typical church villages in the region formed around 18th century. Church villages were not entirely new type of settlement. In most cases they emerged from historical linear and cluster villages near manors when noble Christian families built churches as gifts to their peasants.

Gradually they became important places in rural areas for gatherings during Christian events, for local trades (market squares near churches) and as cultural centres for rural society.

Those church villages that were on historically important infrastructure nodes later evolved into small towns, however now they rarely exceed 5 000 inhabitants.

Though today most of them lie on secondary roads and lost their regional importance (for trading, culture) they still can be perceived as more urban than typical rural settlements: have more diverse functions, are more compact, have better public transport links and inhabitants are less related with agricultural activities.

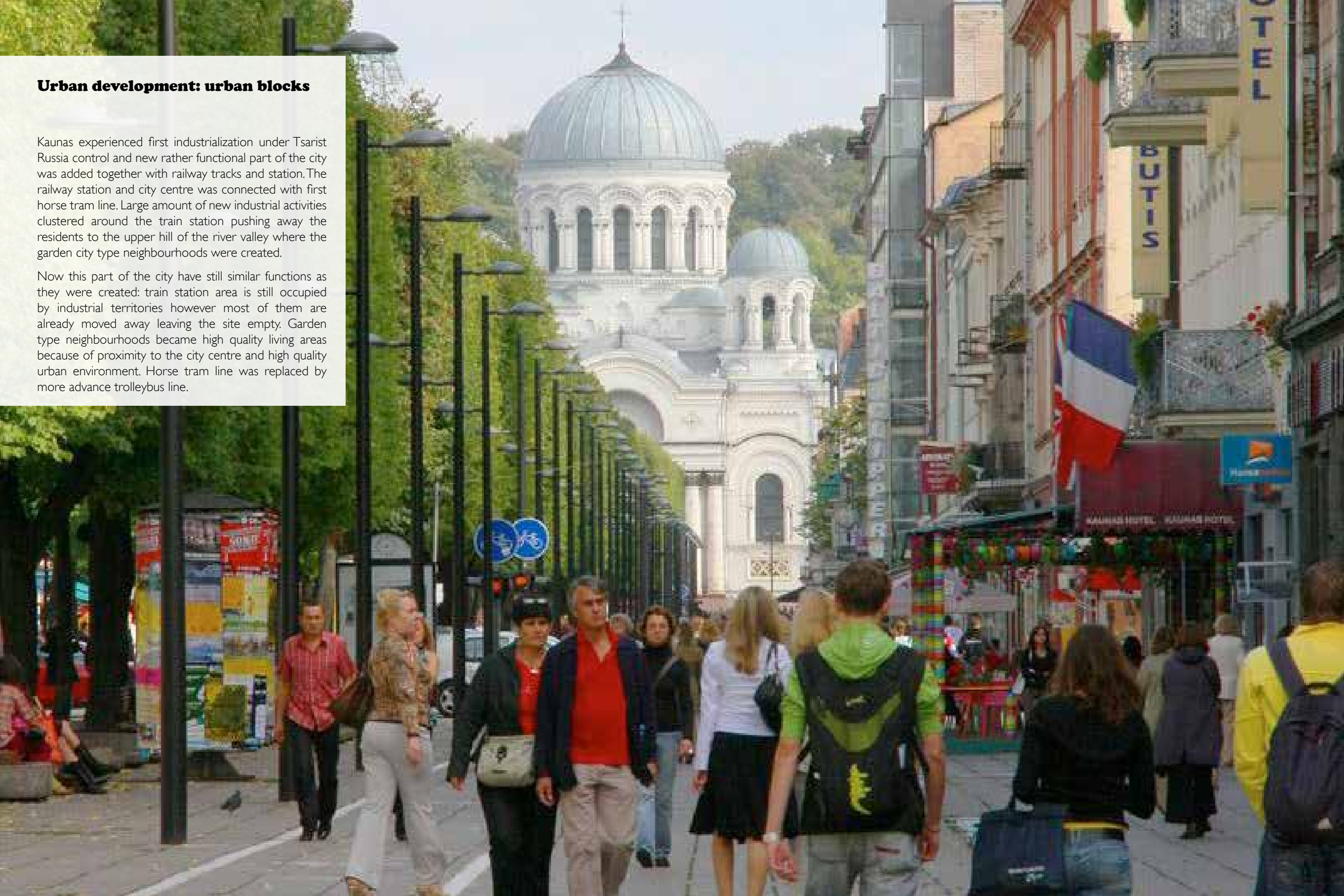


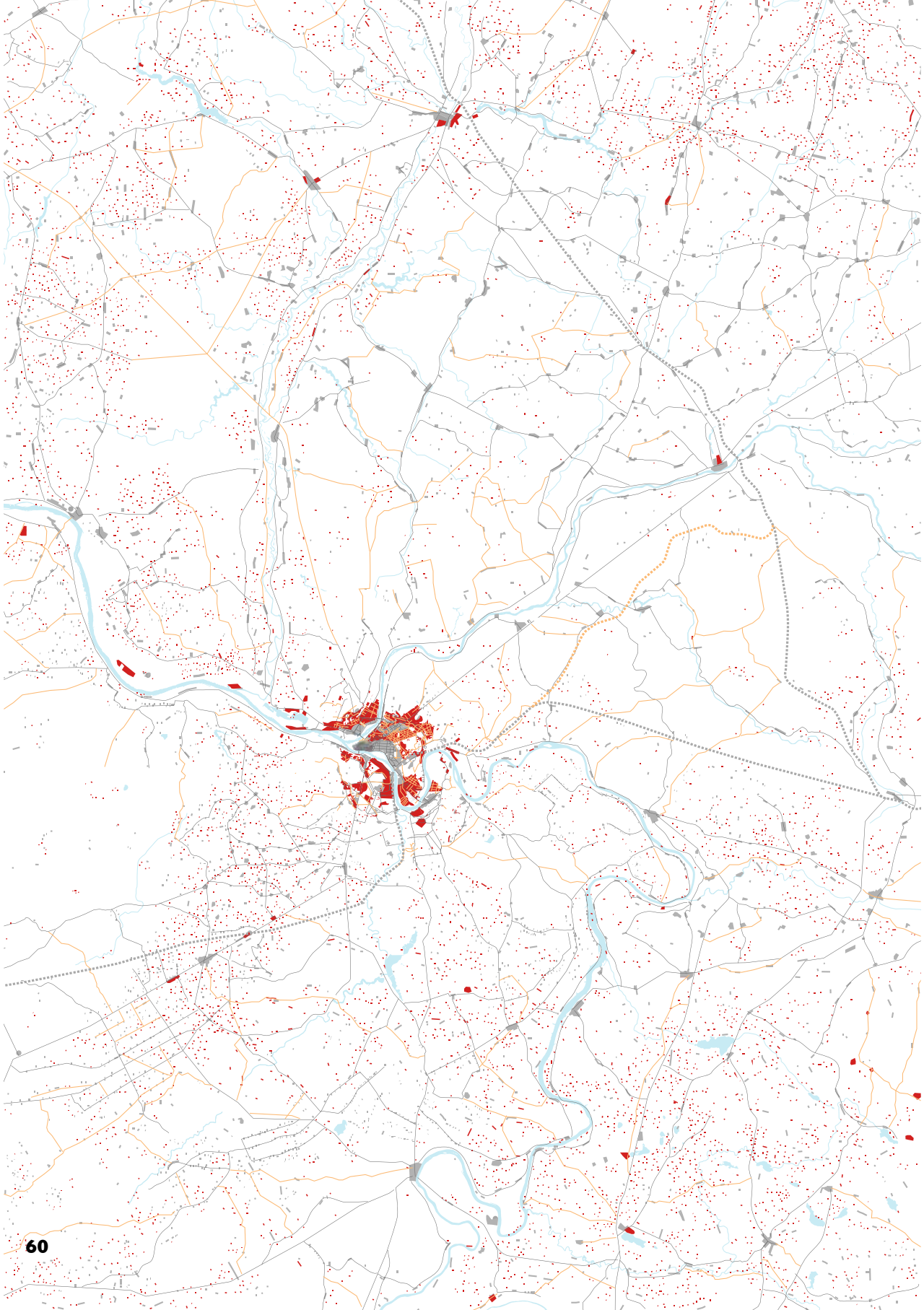


## Urban development: urban blocks

Kaunas experienced first industrialization under Tsarist Russia control and new rather functional part of the city was added together with railway tracks and station. The railway station and city centre was connected with first horse tram line. Large amount of new industrial activities clustered around the train station pushing away the residents to the upper hill of the river valley where the garden city type neighbourhoods were created.

Now this part of the city have still similar functions as they were created: train station area is still occupied by industrial territories however most of them are already moved away leaving the site empty. Garden type neighbourhoods became high quality living areas because of proximity to the city centre and high quality urban environment. Horse tram line was replaced by more advance trolleybus line.





## Period of land reforms (1905 - 1940)

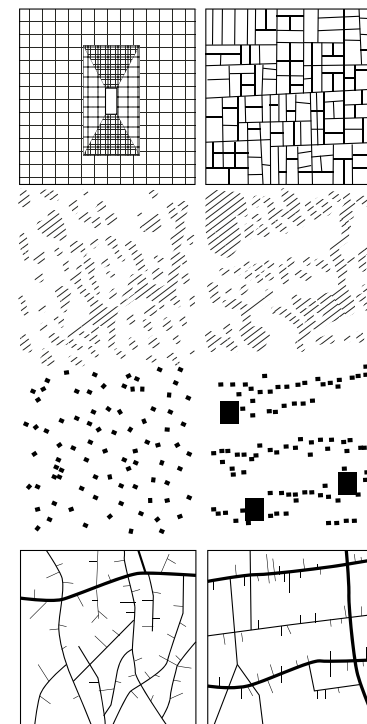
City planning



Source: miestai.net

completed railway lines  
trolleybus lines  
new industry  
garden-city neighbourhoods  
improved public spaces

Countryside (agriculture, forestry, living environments, infrastructure)



Schemes by author

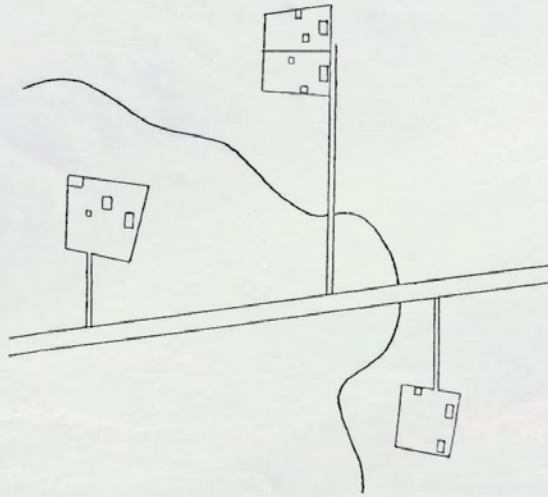
agriculture reform to provide landless farmers with land

Forestry intensification at expense of arable land

land reform promoting single farmsteads  
decomposition of historical villages

clearer infrastructure hierarchy  
local infrastructure network intensification

## Typical settlement: single farmstead



Rural serfdom was abolished in 1861. Land reforms set before and after WWI intended to provide land to landless villeins by parcelling former manor land. One of many outcomes of this reform was creation of single farmsteads and decomposition of historical villages. In 1944, nearly 300 000 (nearly 80 per cent) of rural inhabitants already lived in such stand-alone farmsteads in Lithuania.

As land in Kaunas region is considerably fertile, socialist conducted collectivization and intensive agriculture affected this type of settlement to a large extent: today most of single farmsteads in Kaunas region are vanished as a consequence of forced rural inhabitants relocation to collective farm settlements.



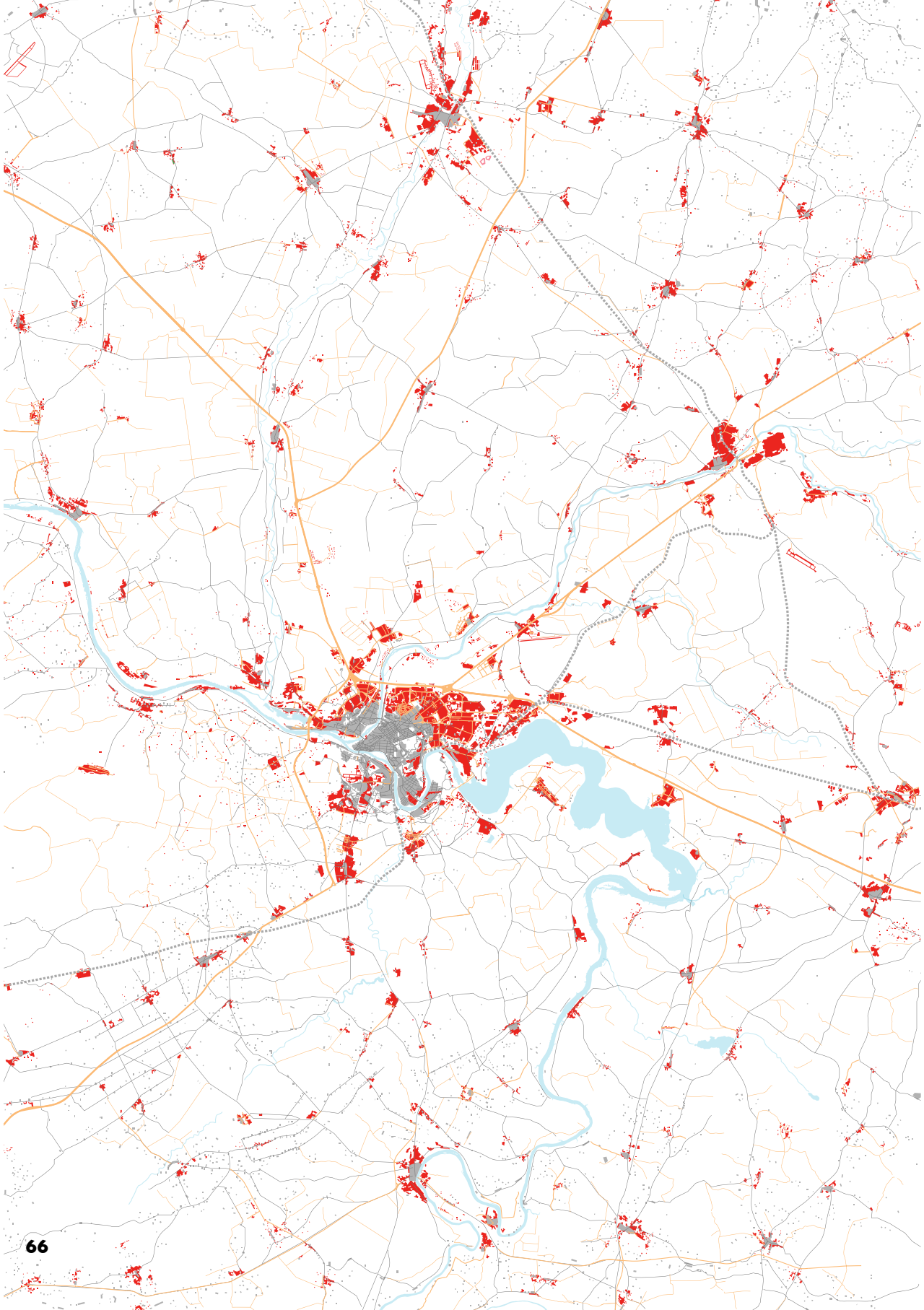


## Urban development: garden city

Kaunas was the capital of the first republic of Lithuania therefore big plans were made to improve the city. Continuing the expansion of industrial territories along the railway lines more factories were opened and river was still one of the networks that was used to transport the goods. Residential city parts were expanded to the north side according to the garden city type principles. New green neighbourhoods were connected to the city centre with funiculars which reduced the inconvenience of hilly environment and provided clean and healthy living environment which was still close to the city centre. Car use was already growing in numbers however the distances were still kept short for pedestrian convenience. Beautification of the squares and the streets were the main visual improvements of the city. New botanic gardens were added and new parks were created.

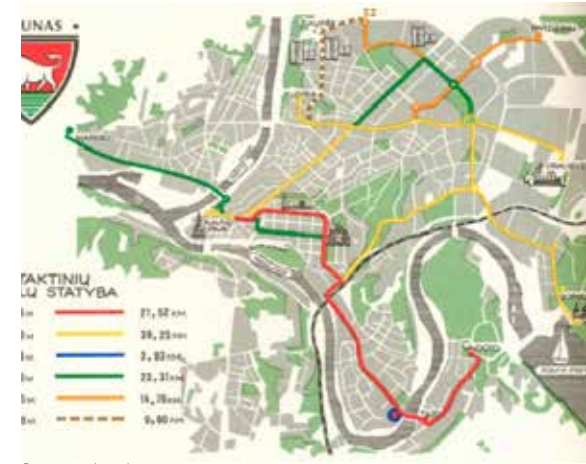
Today garden city type residential neighbourhoods in Kaunas are popular among residents due to human scale considerable green environment and proximity to the centre.





## Socialist republic (1940 - 1990)

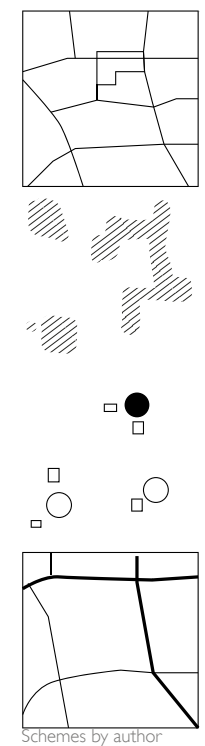
City planning



Source: miestai.net

- public transport
- intensified industry
- functional neighbourhoods
- mono-functional development
- urban population growth

Countryside (agriculture, forestry, living environments, infrastructure)



Schemes by author

- agriculture intensification
- land reclamation (no private ownership)
- forestry intensification
- decomposition of villages and farmsteads
- collective farming and industry centres
- infrastructure hierarchy
- local infrastructure network intensification

## Spatial transformations during socialism

Annexation of the Eastern Block countries in 1940s immediately brought their spatial and economic structures into line with the USSR. This meant centralisation of the government and economic restructuring based on the principles of planned economy in the Soviet Union, with a disregard to the local conditions, historical and national traditions and economic efficiency (Stanilov, 2007).

Due to a strong political influence to economic state and planning, spatial changes between annexation of Lithuania and its regained independence were extremely rapid and large scale.

One of the major political drivers of the rural space transformation since 1940s were nationalisation, which resulted in the abolition of private property, and the establishment of the collective farms. Between 1940-1950s numbers of previous historically formed villages were re-planned and adapted to serve as a central settlements and to accommodate management and other major facilities of the collective farms (Kocik, 1996). At the same time other villages and farmsteads were abandoned due to relocation of rural inhabitants to central settlements (Vanagas et al., 2002).

Collectivization was followed by large-scale land reclamation that was implemented in the following few decades in order to provide more arable land. Until 1978, 2 million ha land was reclaimed in Lithuania (which consist nearly one third of all area in a country).

Though economic objectives were reached (drained fields in some regions appeared to be as productive as in Western European countries, the effect for the environment was intense: regulation of water streams, destruction of valleys due to the construction of dams, and large-scale reclamation significantly reduced natural habitats, like meadows, marshes and swamps, resulting in biodiversity decrease and damage to ecological corridor systems.

Land reclamation was, and is, at times very strictly criticized. From the perspective of today's concept of environmental exposures and requirements, land reclamation patterns should have been adapted to the landscape, not vice versa.

Besides direct changes of the rural space, caused by collectivization and land reclamation, rural areas were affected by transformations of urban system as well. In 1967 Lithuania introduced even development system based on Christaller's central place theory, which enabled rapid urban population growth: in less than 30 years (between 1940 and 1970) previously considerable small urban population, reaching only 20 per cent, levelled and finally exceeded rural inhabitants. In Lithuania's case urban population grew mainly at the expense of rural population (Vanagas et al., 2002). This was done in two ways: a) by artificially joining adjacent villages to cities or b) the urban growth was impossible without huge



Image on the left shows the town in Kaunas district, Lithuania that was expanded and built-up with uniform socialist housing to accommodate newcomers. During the occupation, Ziezmariiai town was the central settlement of Kaisiadorys collective farms, specialized in horticulture and had largest flower plantations in Lithuania. Today the small town is shrinking though the horticulture industry managed to survive restructuring.

amounts of blue-collar workers; therefore numbers of redundant rural inhabitants migrated to urban areas (Tsenkova, 2006) (Juškevičius, 2003).

Furthermore, as Enyedi (2011) indicates, accelerating urbanisation was penetrated by heavily taxed agriculture, which resulted in a low standard of living of rural population. It is important to mention that such poly-centric urbanisation was driven first and foremost by centrally planned industrial growth.

As a consequence, forced urbanisation resulted in broken social ties in former rural communities and in drastically reduced rural population.

Positive aspect of poly-centric development model, that was implemented in Lithuania is that it halted expansion of the biggest urban centres in this way avoided growth of only one strong centre (as it happened in the case of Latvia).

However some deviations in Lithuania's poly-centric settlement system occurs as well as top-down administration had huge influence on urbanisation process: central government had influenced development of this poly-centric urban system by orienting industry to central state, not to region and decentralizing it, this way preventing region to become independent (Vanagas, 2003).

Residential extensions was the most significant element of the socialist construction. This development was based on the modernistic planning principles of high rise residential blocks in green surroundings. However adapted to soviet ideology and practicalities such as shortage of housing, enforced industrialization and urbanization as well as limited financial capacities, it produced extensive mono-functional areas with dense patterns of identical apartment blocks, much more dense and monotonous than their western counterparts (Dimaio 1974).

Socialist housing neighbourhoods in the cities as well as in the rural areas were built starting from the sixties until the late eighties. These neighbourhoods are

also called sleeping districts because of mono functional, residential only functions. Over time Kaunas grew most in this period from 80.000 to 450.000 therefore most of the people were placed in these new neighbourhoods.

New housing areas were planned according to modernistic principles with high rise residential blocks in the green environment. Moreover public transport was the main feature which enabled to spread these neighbourhoods further away from the industrial areas, where most jobs were concentrated and enabled to connect them with the city centre.

Effects of spatial - economic processes on social structure are more difficult to measure, however, their impact is visible in current behaviour patterns of post-socialist society.

Socialist ideology expected that uniform living standards will diminish any social inequalities and will bring social equality to the nation. Moreover destruction of historical settlements and national language subordination were considered as tools among many others to weaken and finally eradicate national traits of the society (Vanagas, 2003).

As a consequence, resistance to imposed lifestyle was strong, but manifested the strongest only after regained independence.



## Typical settlement: collective farm village



New socio-economic territorial unit - collective farm village was formed during the socialist period. Between 60s and 80s large share of rural inhabitants were relocated to uniform collective farming villages, which were distributed evenly throughout the region, based on intensive agriculture and industry. Since Kaunas region is highly suitable for intensive agriculture, collectivization here was extremely intense.

Collective farm villages had main daily services (school, medical care, administration, shop, culture house, public transport). However their maintenance was highly related to planned economy principles and investments distribution on national level, therefore as soon as socialist regime collapsed, public facilities in collective farm villages started decaying as well.

Today large number of these villages in the region are decaying and shrinking. Though in some villages socialist farming estates hold small agriculture and service companies, most of these derelict buildings are abandoned and villages has weak economic activities.





### **Typical recreational development: collective summer gardens**

Collective summer garden areas were established during the socialist period (starting in 1960s) to provide urban residents a plot for local food production and recreation (at least partially cover shortages of food in the cities).

Typically they were created in the areas most unsuitable for agriculture: hilly slopes, river valleys, wet lands, etc. Default family plot was 6a and though originally they were designed only for gardening, later residents were allowed to build dachas there.

After socialism, some of the residents started adapting/rebuilding their small summer houses to suit for all-year-long living. New building law in 2004 allowed registering these houses as residential. As collective summer gardens have only electricity, new houses have autonomous water and sewage systems. The lanes in-between small plots are narrow, pedestrian orientated.

Today more and more residents choose to move to these gardens for permanent living because of their attractive green structure.





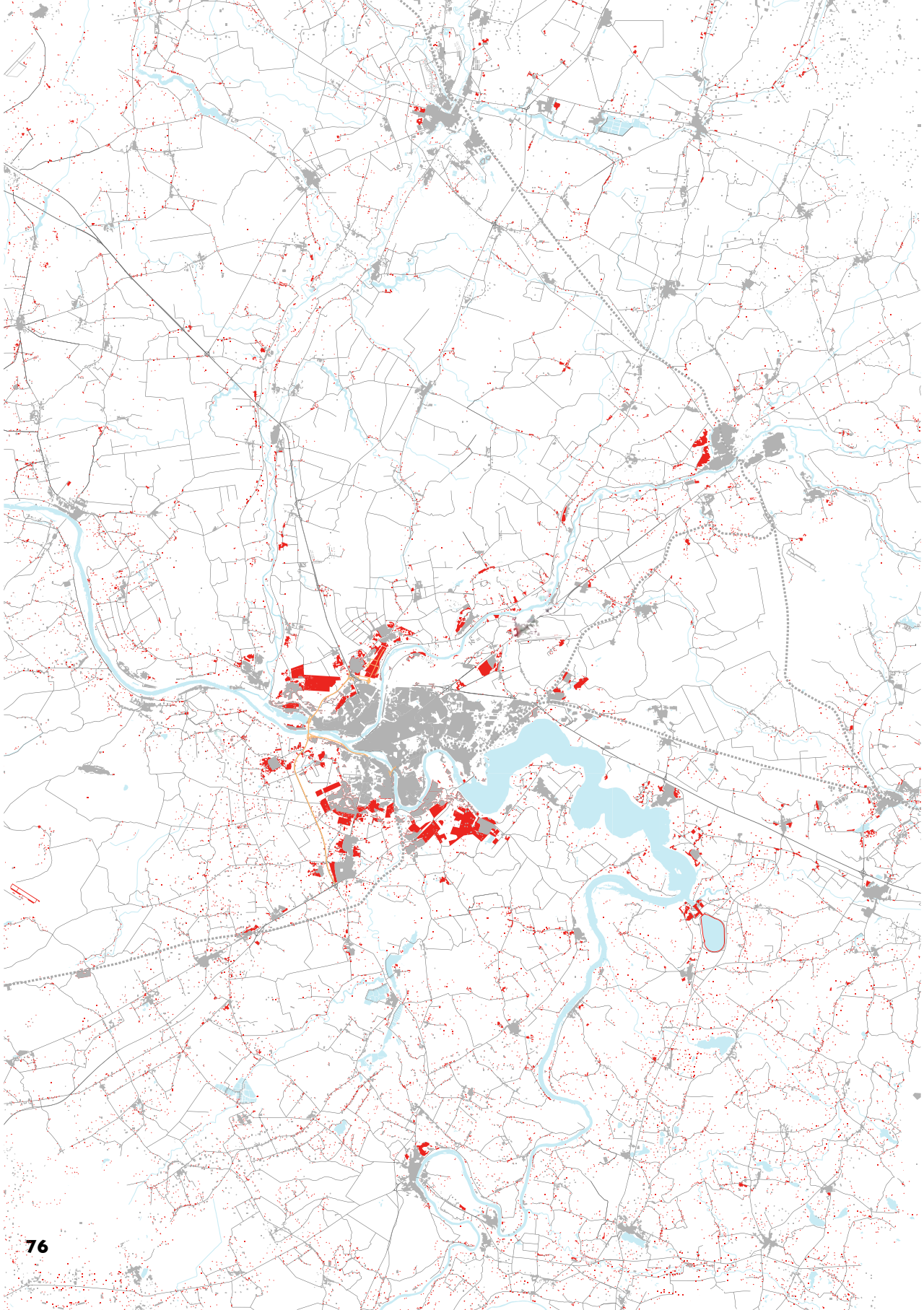
## Urban development: socialist housing

Socialist city was a continuation of industrial city however in much more larger scale. The expansion was based on public transport which enabled to place industrial territories and residential ones further away from each other. Modernist design principles were used for new residential projects therefore large and dense urban blocks were placed in the green environment and only residential neighbourhoods were provided with daily centres while the city centre provided non everyday functions and activities. Industrial territories were meant to be only working districts.

Today socialist neighbourhoods are one of the least attractive destinations for residence due to lack of private space, inflexible typologies and poor quality buildings.







## Independent republic (since 1990)

City planning



Source: miestai.net

private transport  
suburban growth  
commercialization  
urban population decline

Countryside (agriculture, forestry, living environments, infrastructure)



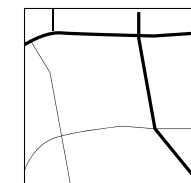
privatization  
small-scale farming



re-forestation  
re-naturalisation



shrinking villages  
suburban growth  
rural growth based on accessibility and proximity to city



Schemes by author

development of regional infrastructure

## Spatial transformations after socialism

Socialist regime was as extremely repelling to the society as an example of countries of Western Europe was appealing, therefore after 1990, resilience to ideologically imposed norms transformed into desperate wish to become "like the others". As Stanilov points out: "the post-socialist reforms in the CEE region can be depicted as an attempt to make a desperate leap from totalitarian existence to capitalism in a matter of only a few years. Therefore, it is not surprising that the post-socialist city takes on many of the characteristics of the North American patterns of urban development, rather than settling in on the more balanced model of Western European urbanization." (Stanilov, 2007, p. 7)

Spatial structure in regional scale shifts from poly-centric model towards concentration: Kaunas attracts most of the economic development while periphery becomes less active part of urban structure. Moreover, there is a tendency of de-concentration: some functions shifts to the ring of Kaunas and a core becomes less compact. To sum up, shift in activities concentration changes the whole urban model of a country: morphologically even development structure is still there, however functionally it becomes less effective.

After the fall of Soviet Union, Lithuania re-established political, fiscal and administrative decentralization in order to make governance both more democratic and more efficient. However the downside of this trend was "the general retreat of public authorities from urban planning" (Stanilov, 2007, p. 10).

On the one hand democratic government system allowed transferring part of the power and responsibility for urban planning, management, maintenance of infrastructure, public and social services to local governments, thus providing more freedom for regions to grow and develop economically (Tsenkova, 2006).

On the other hand due to weak public support for comprehensive planning and lack of funds needed for planning activities, "the effectiveness of urban development regulations has been seriously undermined and the provision of public services drastically curtailed." (Stanilov, 2007 p. 10).

Decentralization of government caused unequal urban development patterns between and within the regions in Lithuania. Economically stronger regions (capital Vilnius and a few largest cities) had the economic and social capital to maintain public facilities and economic activities, while weaker ones faced difficulties sustaining employment, educational, health care and other public facilities due to the increased local governments' expenditures and lower governing knowledge (Tsenkova, 2006; Stanilov 2007). This differentiation especially visible between urban and rural areas. On the other hand services (especially commercial) in the city expands yearly.

Secondly, privatisation Law, issued in 1994, caused rapid fragmentation of resources in the whole Lithuania affecting rural space and rural economy, previously dominated by the collective farming estates and industries. Socialist state enterprises and farms were based on extensive hand labour, lacking innovation and urging for re-organisation, moreover emerging multiple owners found it difficult to find mutual agreements to continue economic activities in socialist corporations. Consequently only a few agricultural and industrial businesses managed to be reorganised – in most cases socialist-based farms and industry collapsed (Vanagas et al., 2002) leaving a lot of derelict buildings.

Vast numbers of poorly maintained or abandoned land or real estate properties from socialist era not only degrades the countryside but also sometimes become even the cause of death. Picture 1 illustrates one of the recent accidents, when two Czech cyclists were fatally injured in one of the socialist ruins in Kaunas region.



Though there are many of such crumbling relict across the rural areas, the situation changes very slow. In most of the cases any efforts to regenerate decaying properties and land are put down due to lack of political support or (and) funding.

Though some rural areas experience the decline and poorer accessibility of social services, private development patterns in other rural areas increases yearly. There are several underlying reasons why suburbanisation flourishes in Lithuania.

1. Some authors name privatization as a driving force for suburban expansion (Stanilov, 2007; Tsenkova, 2006).

2. Other authors (Bardauskienė, and Pakalnis, 2012) claim that national planning system creates the backbone for sprawling development. This claim in general is true: as of the year 2009, not all municipalities had comprehensive development plans while longer term strategies and visions can be found just for a few cities (Vilnius region, Kaunas, Klaipėda and few others).

The development after 1990s was driven merely by privately developed detailed plans, where citizens or investors had their parcels and their own vision. Even now due to lack of motivation for a long-term planning, most of the master plans in municipalities foresee extreme suburbanization. On the other hand society shows no interest in changing that as a private estate in a countryside is a part of a social mentality.

Picture 1. Unattended ruins of socialist heritage that caused fatal injuries for two Czech cyclists, trying to hide from the storm.

Source: <http://www.15min.lt/gallery/show/Kauno-rajone-dviratininku-is-Cekijos-nelaime-12443?p=2#21>

This fragmentation is intended to increase furthermore: according to the future urbanisation plans, Kaunas could settle 1.4 times more residents than has now and Kaunas region could increase even 2.5 times.

Although the demographic situation is completely opposite to the development trends and in some cases it would wise to revise extreme urbanisation plans, it is not an easy task to reject the foreseen "hyper – development", largely because of the landowners who think that it is their "legal expectation" (Bardauskienė, and Pakalnis, 2012).

The insufficient investigation into the demographic trend, overreacted expectations of municipality authorities and citizens pursue to have as many territories as they want for their bare land investment do not contribute to sustainable growth of the region. Instead they push environment of the region to the further exploitation.

3. Moreover, intention to use the land for construction is being considered as the perfect investment in comparison with the agricultural use. Pursue of fast economic profit is considered as one of the driving forces of suburbanisation.

4. Rapid increase in automobile ownership and decrease in public transport uses are among the most important suburban development reasons as well.

Not only suburban growth has direct effect on land fragmentation and provision of public services in Lithuania, it affects rural society as well.

Firstly as the focus of development is concentrated to serve the needs of the newly emerging upper and middle class inhabitants, investments are concentrated in certain, more prestigious places (Stanilov, 2007). This leads to spatial and social stratification of the rural areas where segmented individuals replace rural communities.

Secondly significant decrease of public transportation services pushes marginal rural communities further down the edge: those, who cannot afford a private transport, encounter difficulties accessing and using social services.



## Urban development no.1: apartments

Development of post-socialist city can be summarized by two types of residential development: first type introduces new residential typologies (cottages, smaller apartment blocks) in underdeveloped land in the city. Though new apartments have better quality than socialist period prefabricated blocks, their price is often quite high. New inner city development currently is accessible only to small per cent of population, therefore the share of new typologies compared to overall amount of new projects in the region is still quite low.

The other reason for low per cent of inner city development, besides the price, is the decaying image of the city as healthy place to live and deep-rooted societal preferences for the second type of residential development: private house, which is affordable if placed outside the city.







## Urban development no. 2: suburbia



Owning a house has deep-rooted societal traditions in Lithuania, it is a state of wealth, mobility and manifestation of a good life.

Since regained independence wealthier urban residents try to escape from socialist housing estates to greener more private environment. Due to the lack of suitable typologies in the inner city and high estate prices, new lifestyle based development expands from the city to a countryside.

Though situated in rural areas, it has no direct relations with them. As most of new suburban residents use city on daily basis for work, shopping, children education, free time activities, and spend nights in their fenced plots, communities there do not form strong ties. Due to low density sparse and single plot development, these areas have no public services as well.

Historically formed types of living environments in Kaunas region



Cluster village



Medieval city



Linear village



Node town



Urban blocks



Single farmsteads



Garden city



Collective farm village



Collective summer gardens



Socialist housing



Suburbia



Apartments

Aforementioned types of living environments in Kaunas region differ not only by historical conditions and morphological structure, they also attract peculiar societal groups, can offer different range of economic activities, and their potential for transformation varies.

Moreover, some of them are considered more attractive over the others: e.g. inner city core has highest real estate value, while apartment in new apartment blocks can be up to twice as expensive as in socialist housing estate.

In addition, these types inhabit different share of population in the region, therefore their place in regional urban development, differs. E.g. socialist housing blocks houses nearly 200 000 inhabitants, whereas permanent residents in collective summer gardens does not exceed 20 000 in the region.

Density and concentration of services and functions are among the variables to express the degree of urbanity of these types. This is important to understand to what degree can these types become more self-sufficient and what position can they take in regional poly-centric network.

Lastly available space for transformation and potentials for new economic activities are important indicators to understand these settlements potentials to adapt to changing socio-economic conditions.

The living environments are evaluated according to the following variables, which are expressed from the lowest to the highest value:

- Population living - 0 - 200 000 inhabitants in the region;
- Attractiveness (expressed in real estate prices index) - 0 means low, maximum value means highest prices in the region ;
- Services (expressed in degree of available services in the typical living environment area) - 0 means no services, maximum value means all possible services;
- Space for transformation - maximum value means high per cent of area in the typical living environment can be converted/regenerated;

- Potentials for new economic development - maximum value means high potential. Though in every type different economic development is relevant, in general this variable means general possible creation of new employment places and introduction of different economic activities, services, etc.

Evaluation of types of living environments in Kaunas region shows that following environments have combination of available space for transformation, potential for economic development and available services:

- Socialist housing;
- Suburbia;
- Church (node) town;
- Collective farm village;
- Single farmsteads\*.

\*Though not having access to services, single farmsteads hold great potential for economic development, therefore they are included.



Evaluation of living environments



Cluster village



Linear village

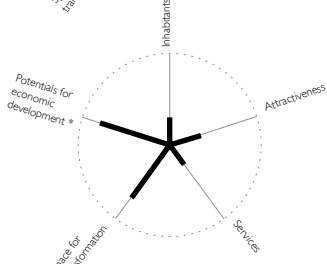
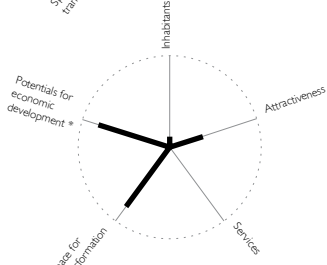
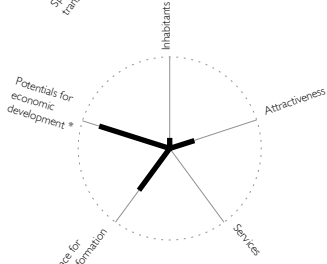
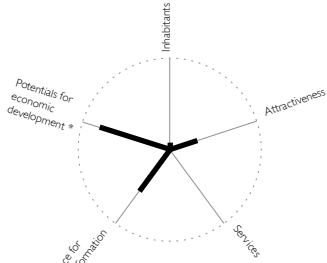


Single farmsteads



Collective farm village

Schemes by author



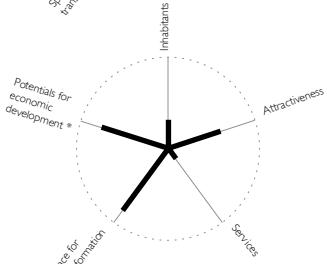
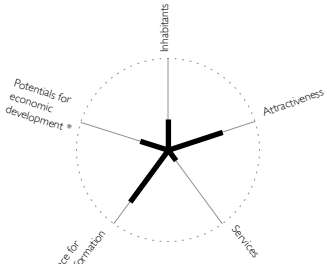
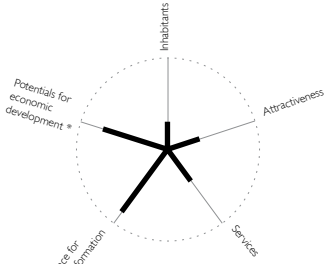
Node town



Collective summer gardens



Suburbia



Medieval city



Urban blocks



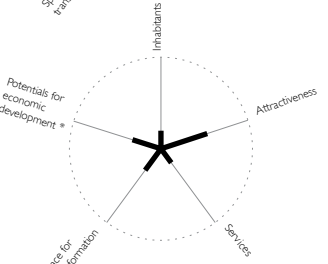
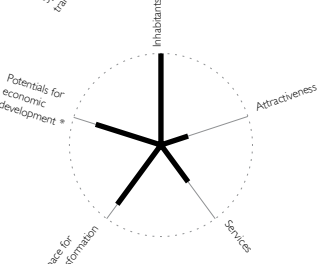
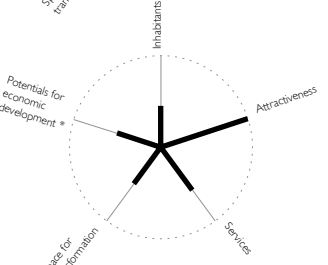
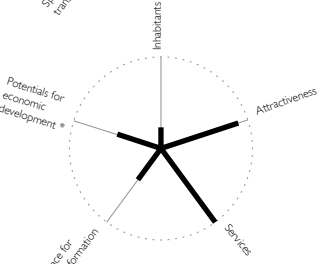
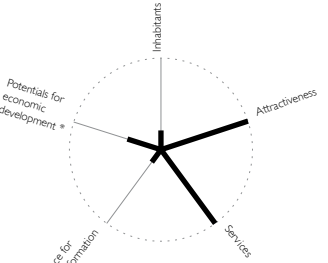
Garden city



Socialist housing



Apartments





The most relevant types



Socialist housing



Suburbia



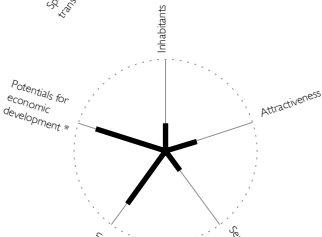
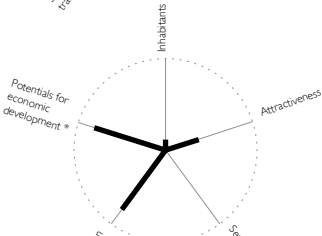
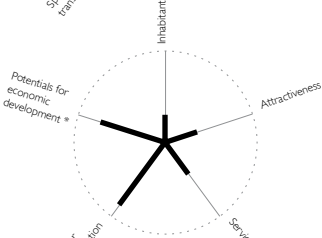
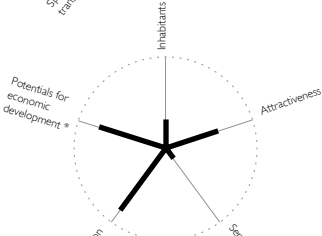
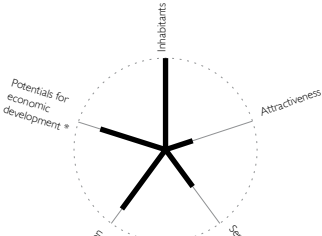
Node town



Single farmsteads



Collective farm village



Conclusions

Region has diverse types of living environments both in the city and a countryside that were shaped by constantly changing political and economic conditions throughout the history.

Some of them are more adapted to current socio-economic processes and have working infrastructure and services available, like church towns and inner city areas (old town, urban blocks and garden city development).

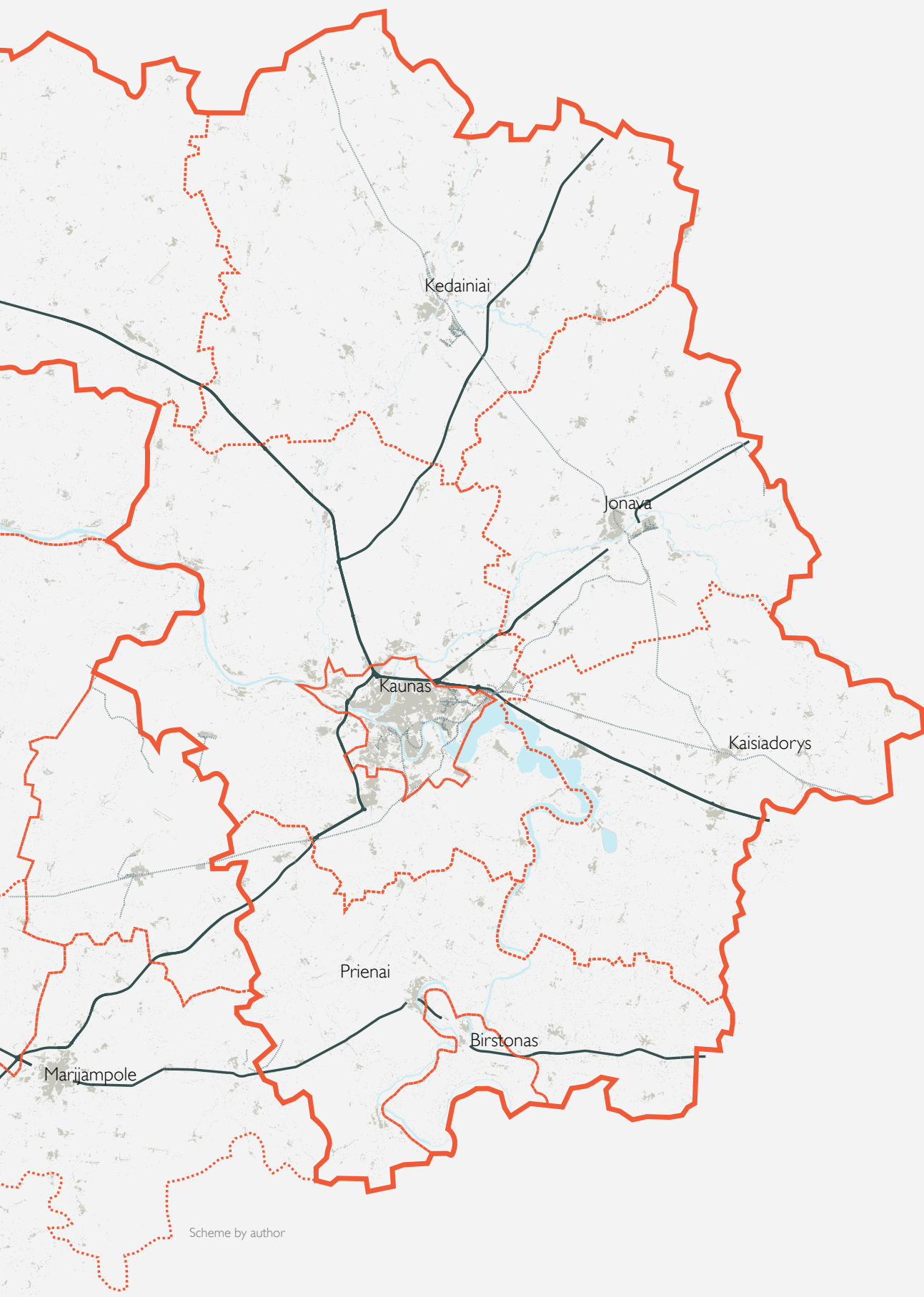
Other places become less and less attractive and become vulnerable places (e.g. collective farm villages, socialist housing estates).

Though collective summer gardens have almost none public services they attract large number of former urban residents for permanent living.

Remaining single farmsteads in an open landscape have barely no public services or facilities as well, however traditionally they were farmers residences and nowadays they still maintain this purpose. However single farmsteads become attractive places to live for former urban residents as well (due to green landscape lost of private space and quite environment). Currently due to considerably easy land use change process, easily accessible and close to city agricultural landscape host more city dwellers than actual farmers.

All aforementioned types of settlements represent distinctive and diverse living environments that can be found in Kaunas region. However only five of them (which have combination of available space for transformation, potential for development and degree of services) will be analysed further to understand what role can they accept in regional strategy, what potential do they have to adapt to new changing socio-economic conditions and to what extent can they do that.

Schemes by author



Scheme by author

# Region now

This chapter presents region's green structure, economic development, public transport system and functions and employment distributions.

Current trends in regional development is illustrated by transport flows in the region, new economic and residential development orientation within existing framework.

Demographic changes and planning system issues in Kaunas region are concluded with two major movement trends in the region, which allows predicting future regional structure and define the problem statement.



# Ecological structure

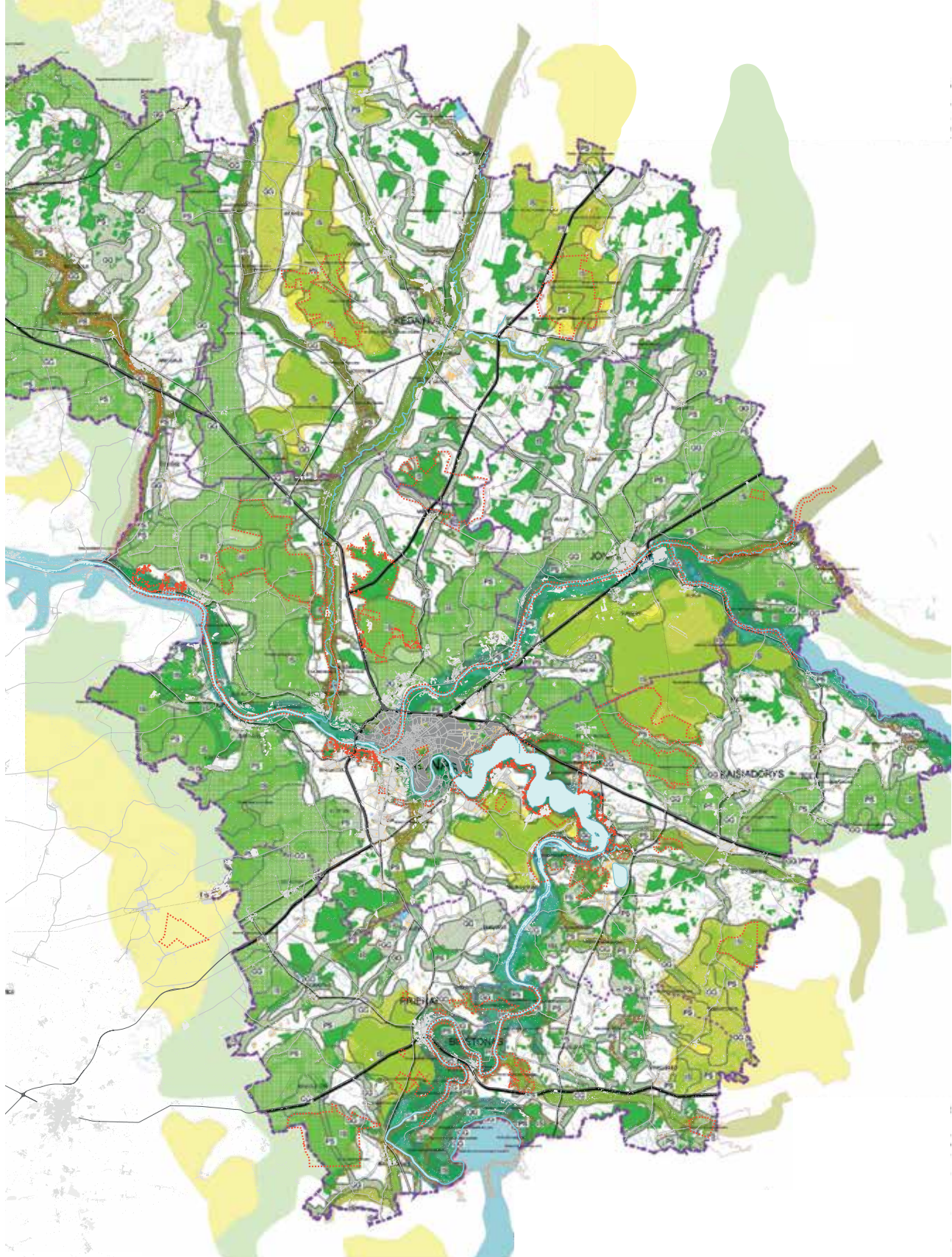
Kaunas region is located on the confluence of the two largest rivers in Lithuania - Nemunas and Neris. In 1960 hydro-power plant was built and Nemunas river was dammed. 20 villages in the west of Kaunas had to be relocated due to the formation of Kaunas lagoon. Today Kaunas Lagoon is among the protected environments in Kaunas region.

Forests cover nearly two third of the whole land, the second largest group is agricultural land. The land productivity rate is one of the highest, therefore level of land use in Kaunas region is one of the most intensive in the country.

Intensifying agriculture in the north of the region and spatial development around Kaunas city pose a threat to ecological networks



- geological divisions
  - migration corridors
  - inner stabilization areal
  - geological divisions of regional importance
- Migration corridors
- national importance
  - regional importance
  - micro-regional importance
- Inner stabilization areal
- regional importance
  - micro-regional importance
  - protected areas



Scheme by author



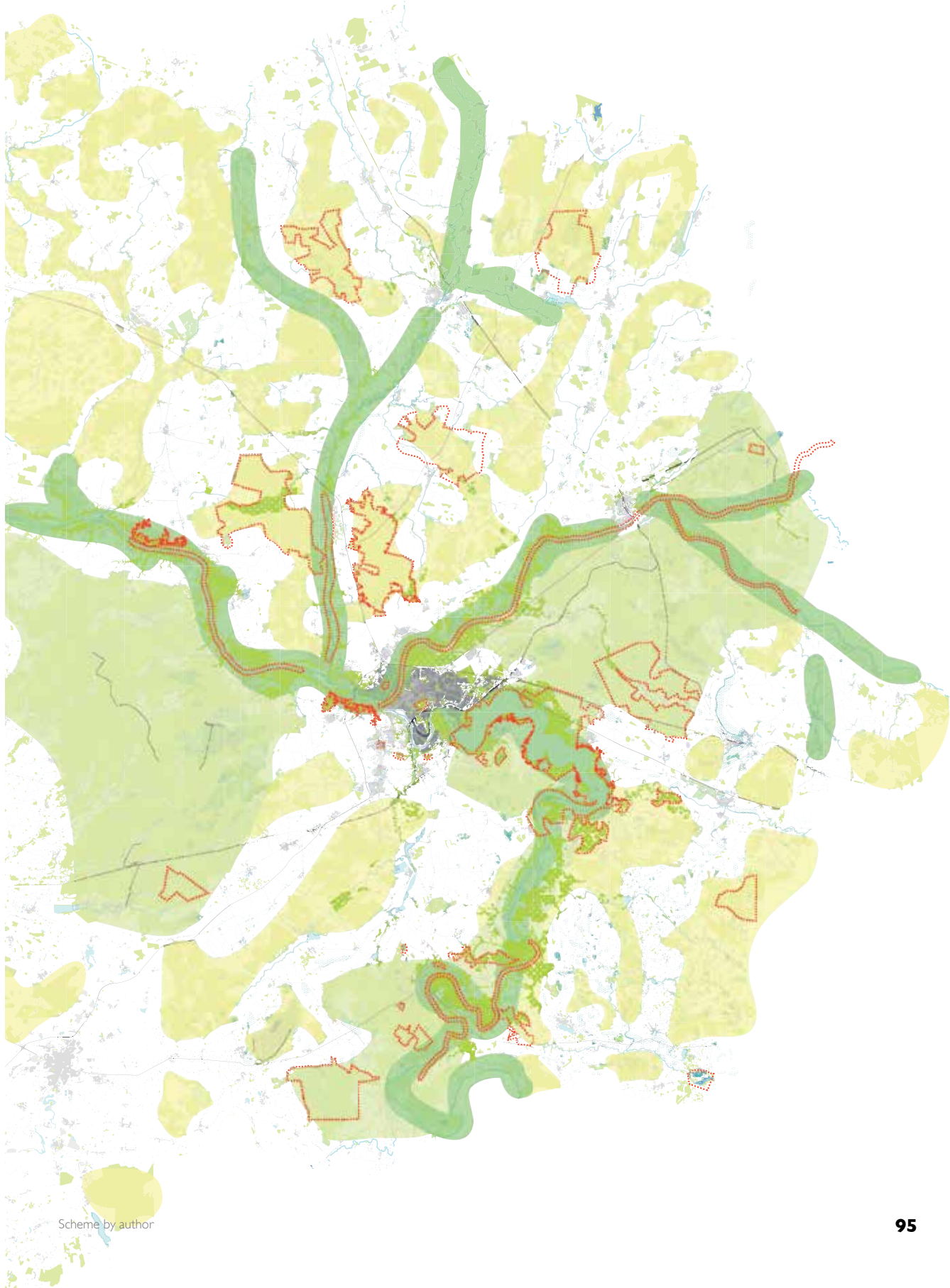
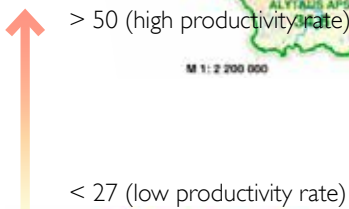
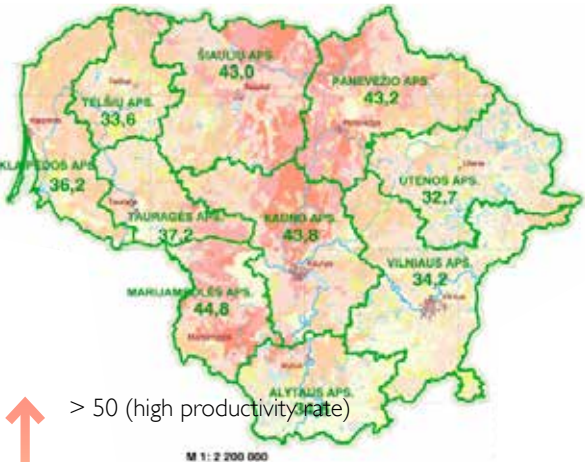
# Landscape elements

Region has diverse landscapes, which degree ranges from natural to cultural, intensive agriculture landscape:

- natural: (continuous forests, water bodies, low level of agriculture activities
- mixed: discontinuous forests, average size farms low level of natural quality
- cultural: intensive agriculture, low level of forests, largely homogeneous landscapes

Since land in Kaunas region is fertile and is highly productive, most of the landscape in the region is adapted to agricultural activity. Change from natural to agricultural landscape was extremely prominent during socialist regime, when land reclamation reached its peak and agriculture became extremely intense.

Currently certain measures are taken to recover part of the deployed landscape by protecting certain areas. On one hand protection intends to increase quality of the landscape, on the other hand, numerous restrictions discourages proper use of these protected areas.



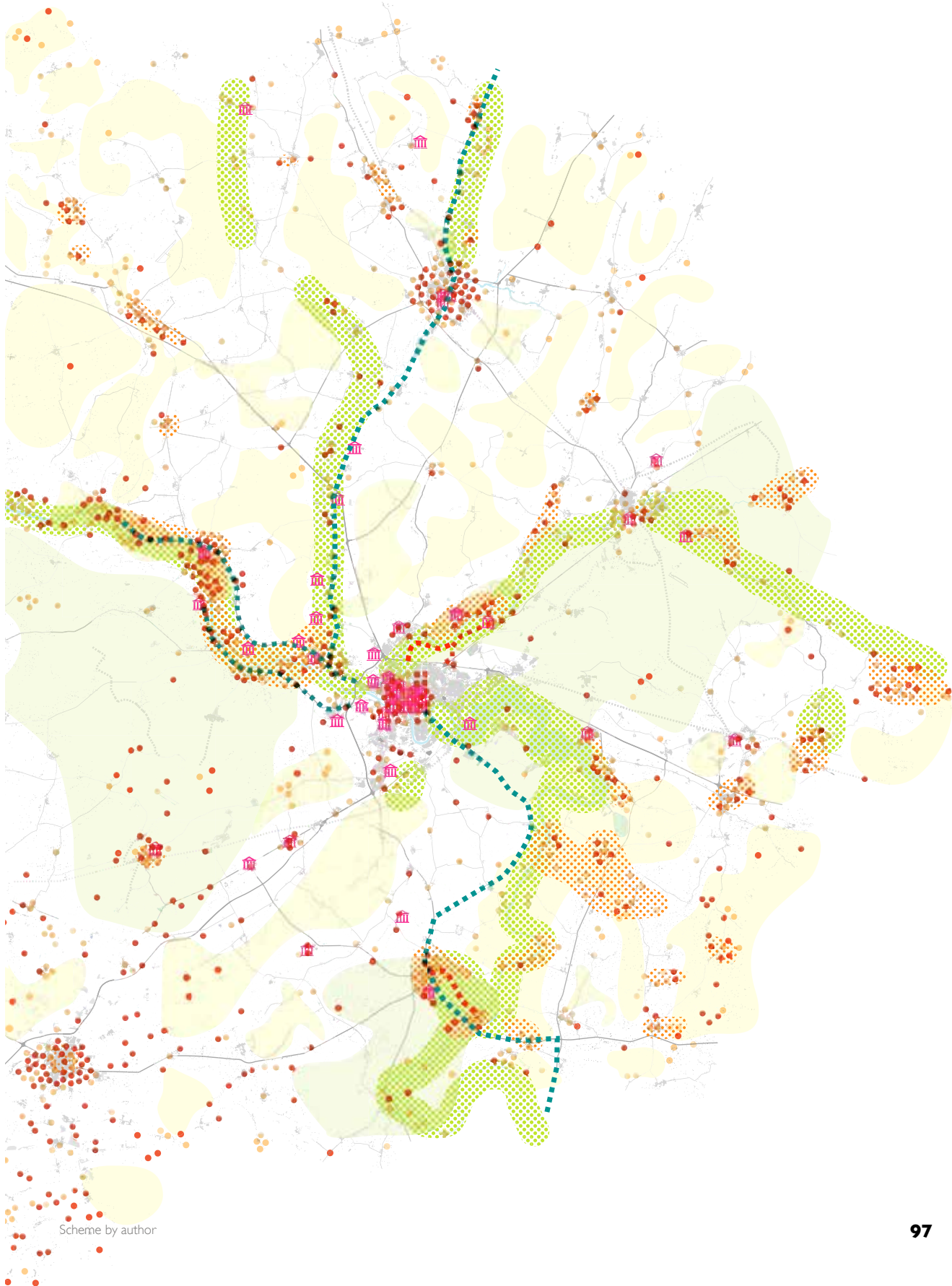


# Cultural heritage

Major concentrations of cultural heritage are near river valleys and old post roads, around the oldest settlements, since these areas were the background in regional development until train and automobile transportation.

Numerous manors and churches, among other cultural heritage objects, are scattered throughout the whole region, however their physical condition in most cases is poor. Municipalities own the largest share of these objects, but due to lack of financial support are unable to maintain them in good condition. Efforts were made to sell some cultural heritage objects to private owners, which have the financial power to restore them, however extreme regulation on preservation and renovation discourages investing in such objects. Costs for legally sound preservation projects are too high and in many cases cultural objects are left to decay - it becomes the only feasible solution.

On the one hand there are some good examples of restoration and adaptation of cultural heritage objects to new uses. E.g. Raudondvaris castle is renovated and now used for events, celebrations, exhibitions, etc. On the other hand, good practice consists only small part of the large number of objects, that could be re-used and adapted to new functions.



# Regional economy

Region is finishing its transition from industrial to service based economy - besides the logistics and transportation, region has well developed light and heavy industry and service sector. Region produces one fifth of Lithuanian GDP.

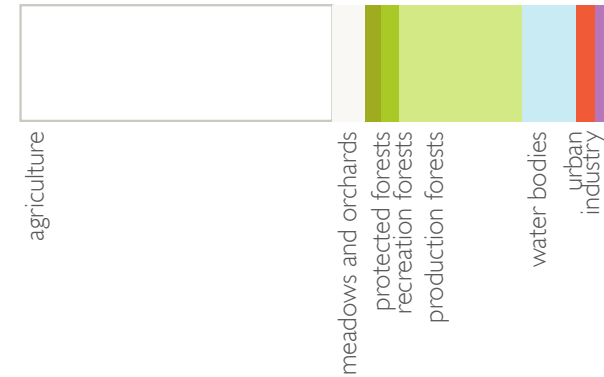
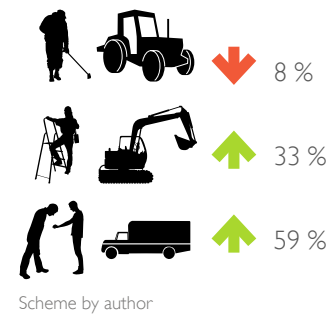
The main economic sectors (input to GDP) in Kaunas region are:

- Agriculture 4%
- Industry and Construction 34,5%
- Services 60,2%

The most important products produced in region are:: furniture, yarn, pharmaceuticals, meat and its products, milk production, flour, combined fodder, sulphuric and phosphoric acids, lasting food products, building bricks, industrial wood, peat, paper, beer and non- alcoholic drinks and liqueur products, textile, mineral waters.

Kaunas has concentration of manufacturers; Kėdainiai district has well developed canning industry; the largest fertilizer producer is in Jonava and Kaišiadorys has well developed meat production.

Only 7 per cent of region's population is employed in agriculture. Main production in primary sector consists of livestock, horticulture and agriculture, however primary sector adds only four per cent to regions GDP – one of the lowest values in the country.

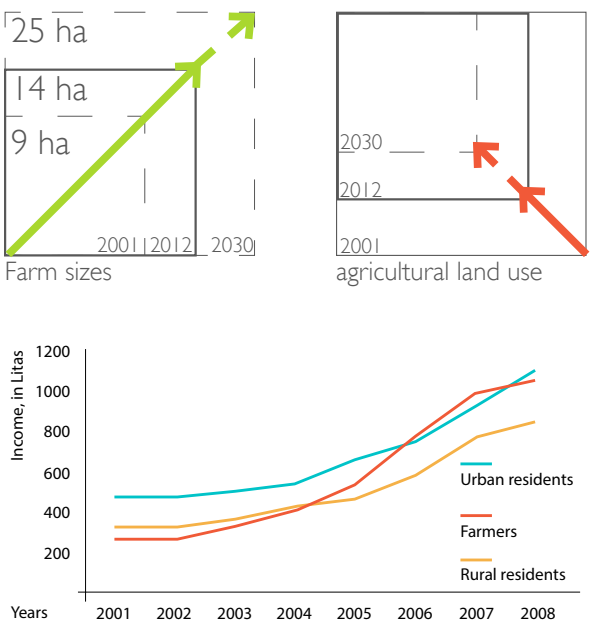


# Rural economy

Until recent years rural areas in Lithuania were dependent on primary economic sector, such as agriculture, forestry and fishery (Vanagas et al., 2002). In the context of increasing demand for services, economic state, based on primary sector, became a halt for utilizing economic potential of an area.

The last few decades' technological progress and production intensification allowed agricultural sector employing less rural inhabitants while increasing economic growth. Emerging excess of rural workforce was a relevant stimulus for rural economy to be diversified, to offer new services for increasing social needs.

However, differently from the western democracies, rural areas in Lithuania experience some issues in the transition to service based rural economy. For example, instead of experiencing economic growth, less skilled and less flexible rural society (compared to the urban one) experiences growth of unemployment and income polarization, where few residents involved in agricultural activities have higher incomes than urban inhabitants, while at the same time large part of rural inhabitants not involved in agriculture gain only half of income of those in cities (Department of Statistics, 2010). This trend is shown in a table below.



Source: Lithuanian Institute of Agrarian Economics, 2010  
Scheme by author



# Services distribution

Current network on public services were planned and distributed evenly throughout the region together with collective farm villages establishment. Its maintenance was dependent on centrally planned economy, therefore after collapse of socialist regime, services lost continuous support and due to unprofitable work, started closing.

Shrinking rural population and its low economic potential cannot support current amount and distribution even of the most daily services, like schools, shops, not mentioning health care facilities.

Between 2004 and 2008 educational reform induced closure of smallest schools in rural areas. This had larger effect on other regions in Lithuania, where rural population consist up to 70% of the whole population, nonetheless some schools were closed in Kaunas region as well.

Currently the network of public services is optimized, but continuously shrinking rural population puts a threat that second wave of closures may occur in the near future.

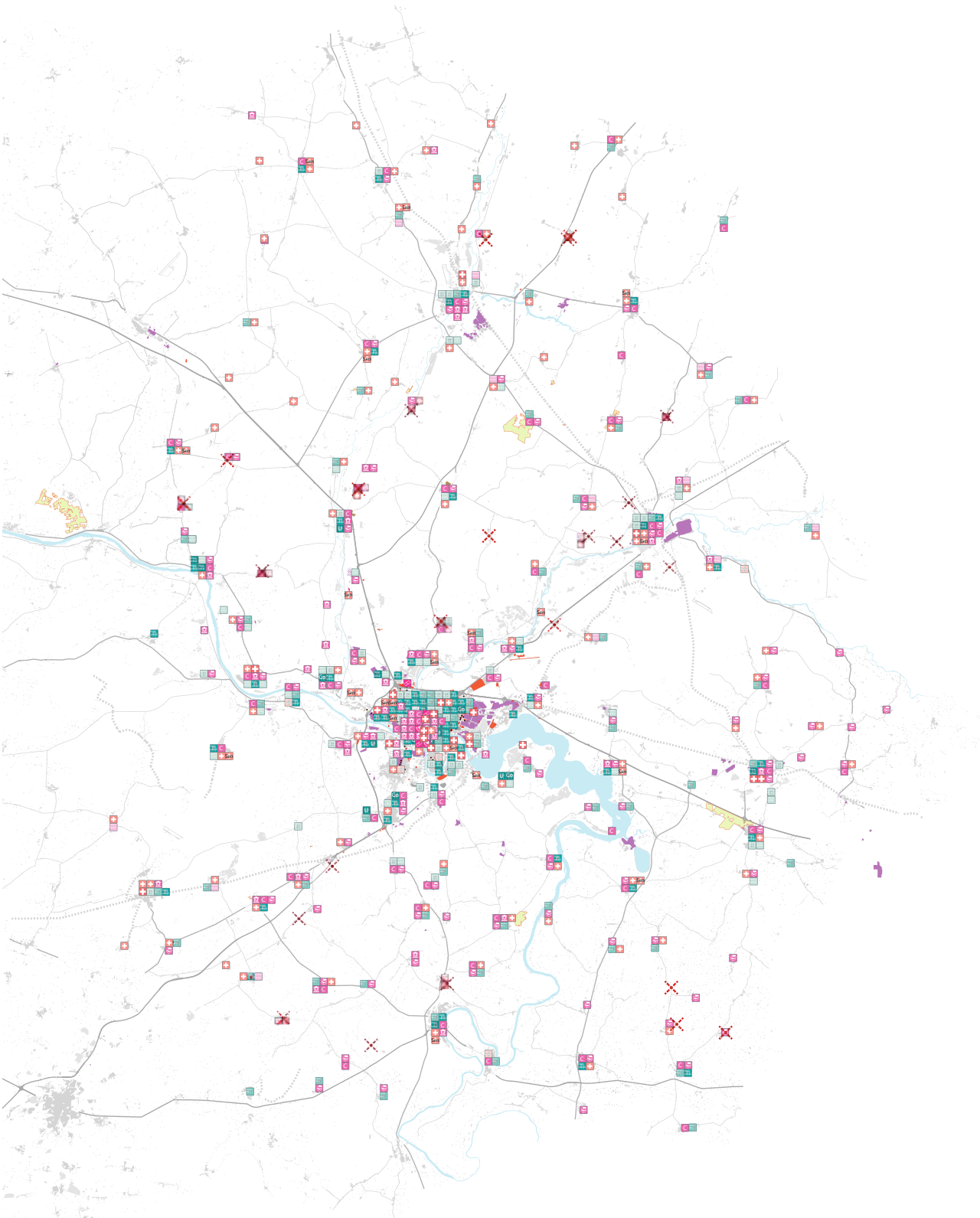


Central collective farm's settlement. Expanded with uniform socialist housing  
Source: <http://www.miestai.net/forumas>



Dainava central square now.  
Source: <http://www.miestai.net/forumas>

- Closed schools
- Services
- Cultural centre
- Museum
- Library
- Primary school
- Secondary school
- High school
- College
- University
- First aid centre
- Hospital, clinic
- Elderly house
- Sanatorium



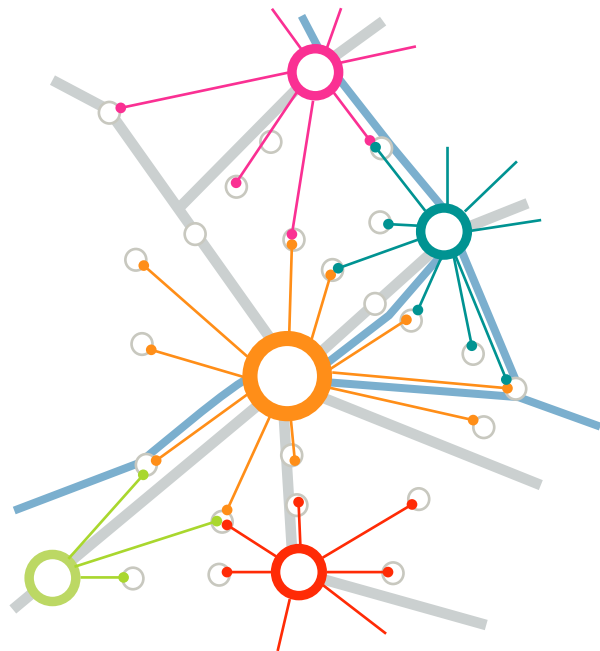
Scheme by author

# Public transport in the region

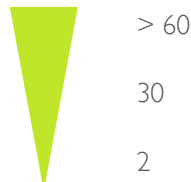
Public transport system is another socialist period heritage. Following poly-centric development model, each town had its own public transportation system, which provided services to the surrounding settlements.

Today system is adapted to market economy, yet functions similarly. Each larger city has its own public transport provider, but besides official companies, peri-urban settlements are also serviced by network of smaller private carriers.

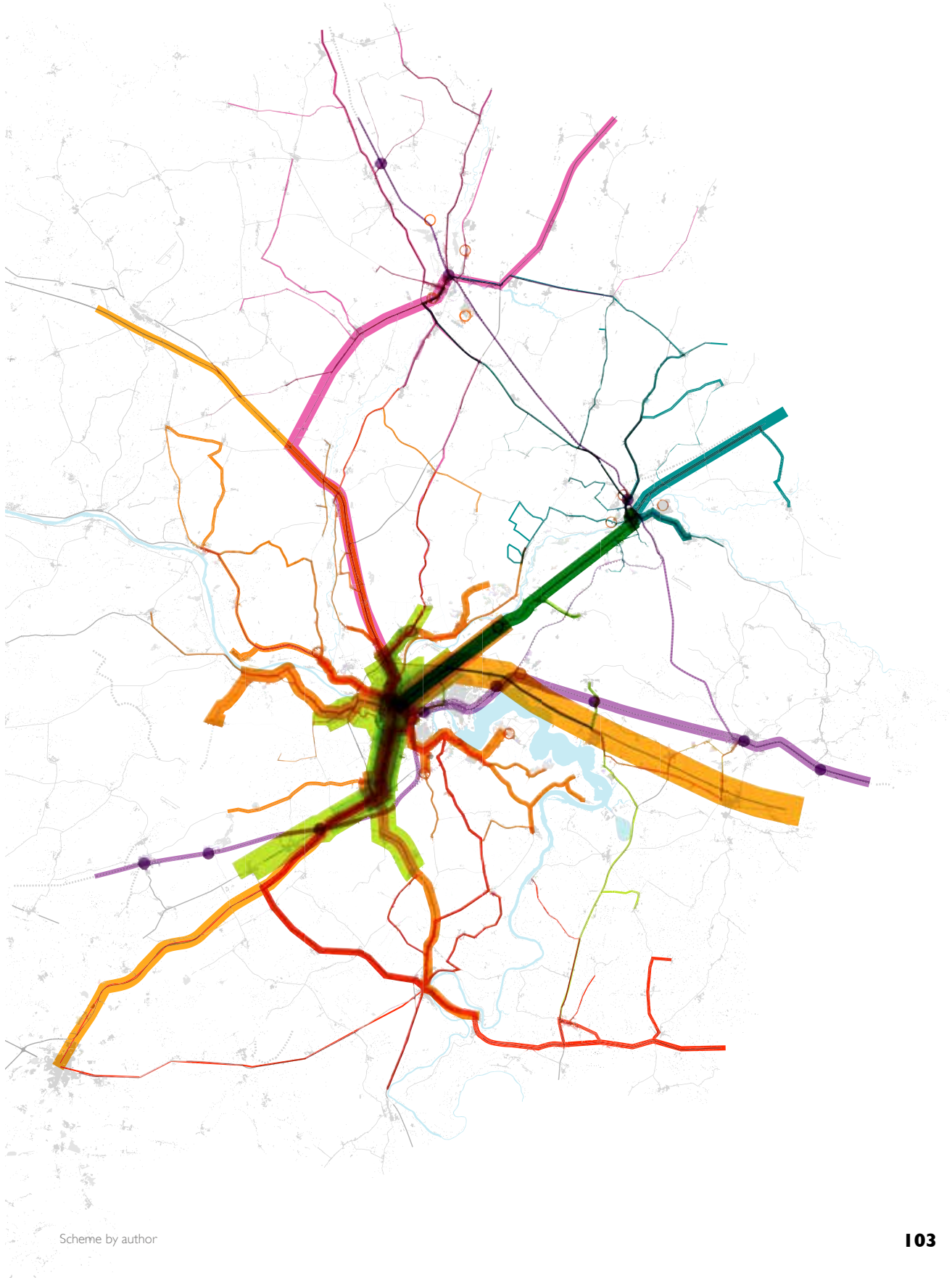
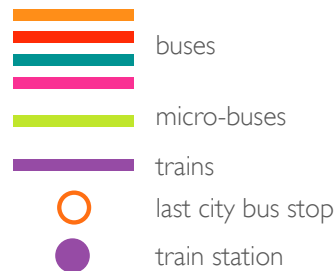
Public transport is easily accessible in proximate to city locations, however it is extremely scarce in more remote areas.



Public transport frequency, times per day



Commuting cars to Kaunas city, per day



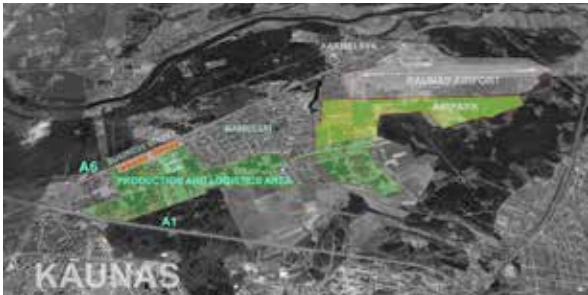
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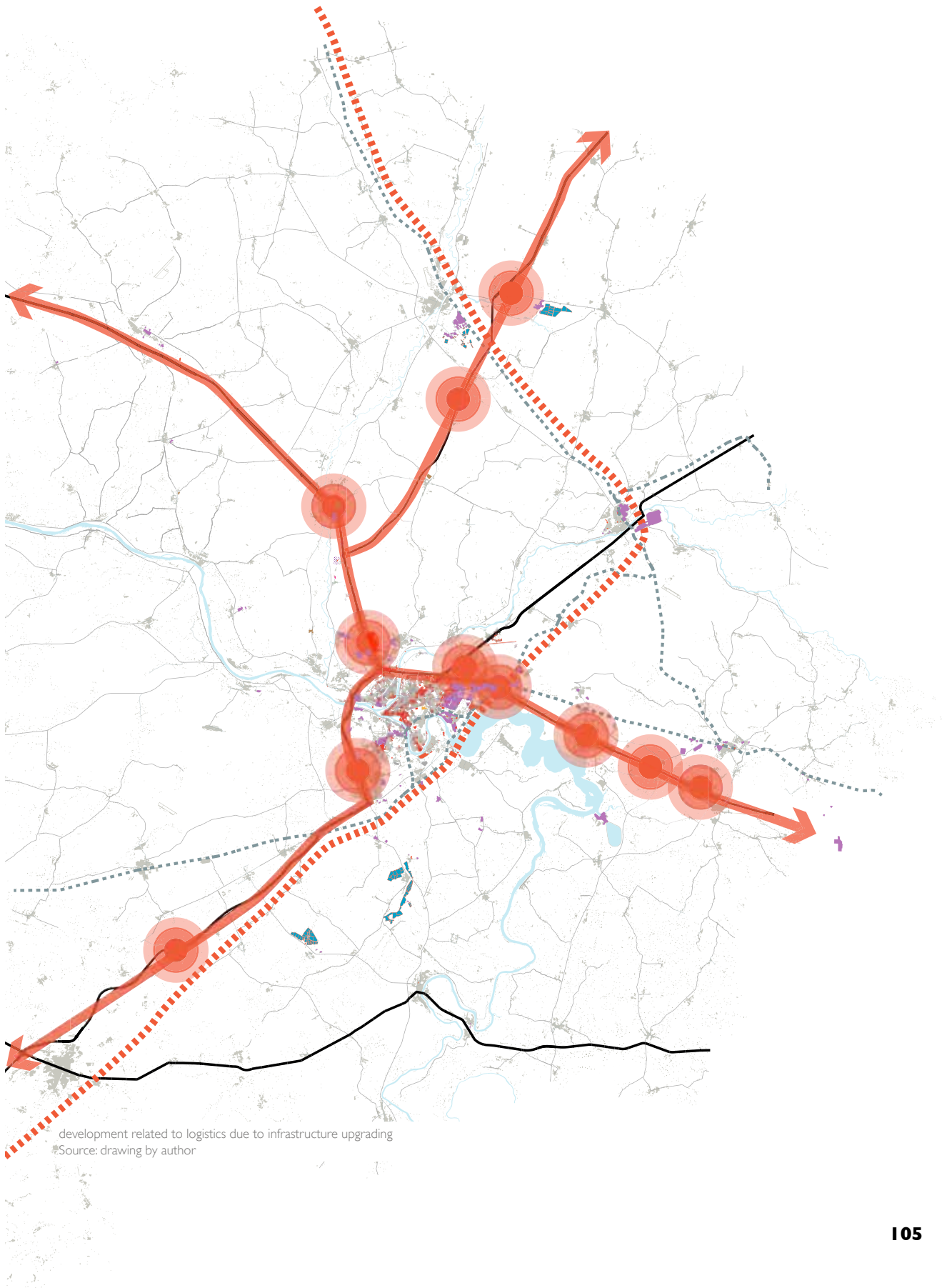
# Infrastructure based commercial development

The largest and most important projects in the region are related either with commercial activities, logistics or infrastructure development. They are distributed along the major infrastructure arteries, as good and fast accessibility by private transport plays a key role in attracting clients and customers.

As services shift from the city centre towards the main arteries, so do employment places. This has large effect on commuting patterns in the region: not only people commute more due to dispersing development, but also travelling to work becomes more and more time consuming.



commerce and logistics centres along the axes  
source: google.com





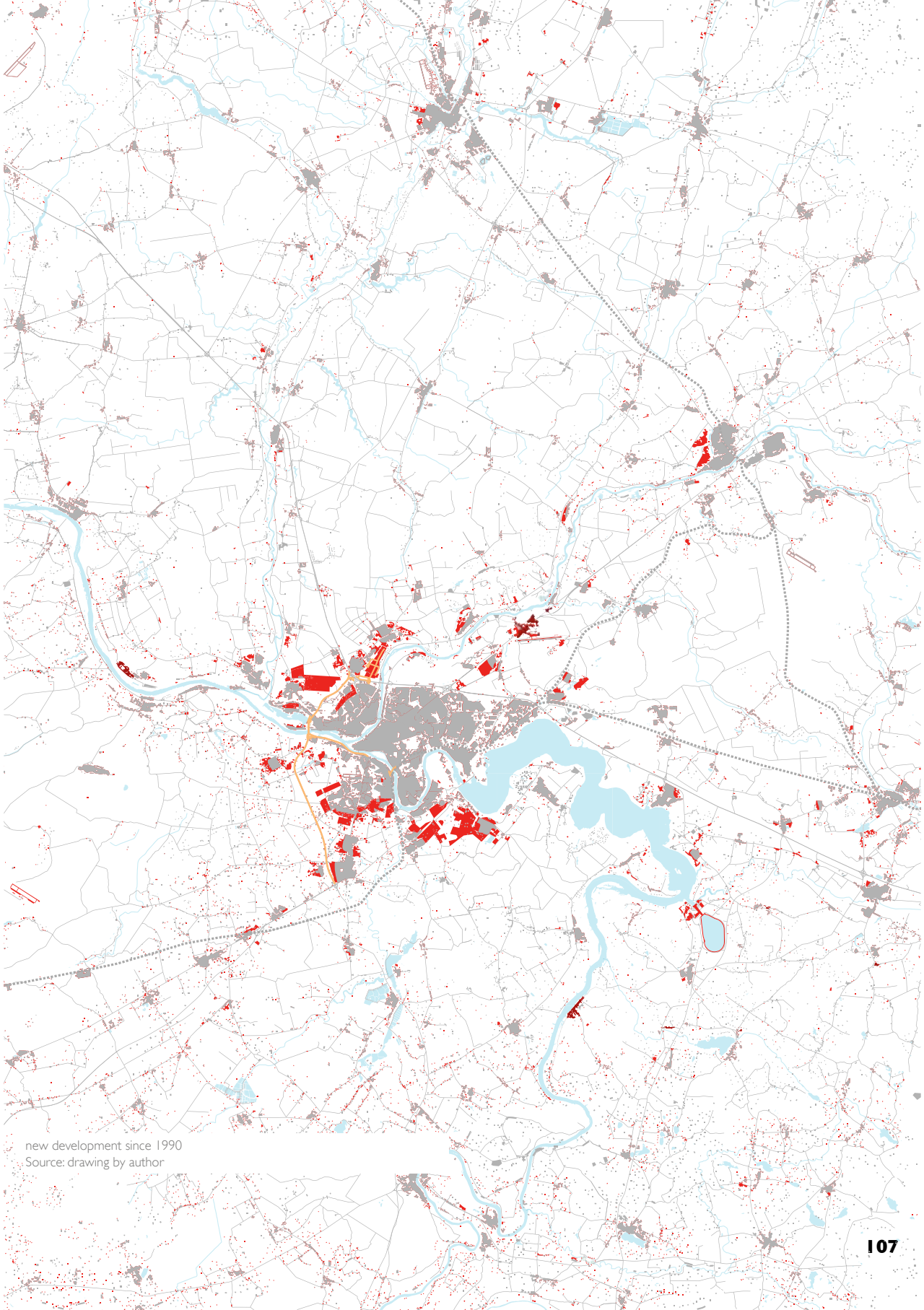
# Car-based residential development

Increasing importance of infrastructure based development is visible in urban development patterns as well. Mobility patterns after socialist period changed at extreme pace and private transport became up to 9 times more used than before. As society became more mobile, distances to work and services became less important. People tend to choose to live outside the city, where is space for single family house with large plot and to commute to city on daily basis.

This results in spreading city, with emptying inner areas and growing suburban development. On the one hand a wish to own a house is part of a cultural mentality and it is extremely difficult to change. Besides the share of affordable and attractive typologies within city limits is low. On the other had supply to a certain extent reflects the demand, i.e. if one has to choose between suburban house and apartment block, even of good quality, typical resident in Kaunas region is expected to choose the first option. Thus current real estate market is shaped not only by real demand for housing in suburbs versus housing in the city, but also by cultural preconditions.



residential development based on private transportation  
source: google.com



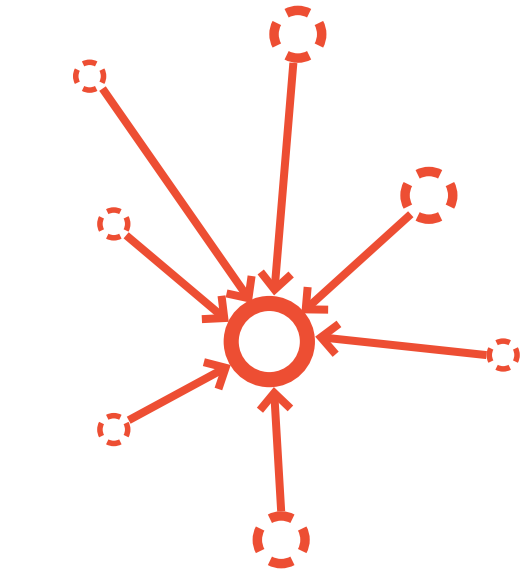
new development since 1990  
Source: drawing by author

# Employment distribution

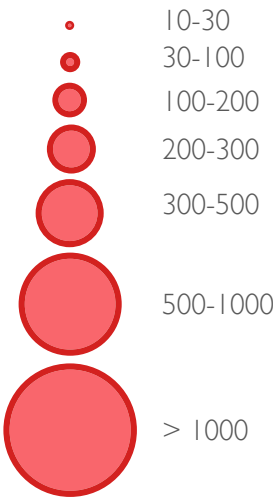
Lithuania experienced second wave of industrialization during the socialist regime. Between 1950s and 1980s industry, production and other economic activities were distributed among newly formed network of cities.

Today this poly-centric distribution of economy can still be found in Kaunas region: Major employment concentration is in the former industrial cities (Kaunas, Jonava and Kedainiai) and though service sector employs the largest amount of region's population (60 per cent), light and heavy industry still plays important part in employment opportunities, especially in peripheral areas in the region.

Large share of rural inhabitants still works in agriculture (30 per cent, whereas average number of employed in primary sector in the region - 8 per cent)



Number of employees per workplace



Major workplaces concentration in the largest cities  
Source: drawing by author

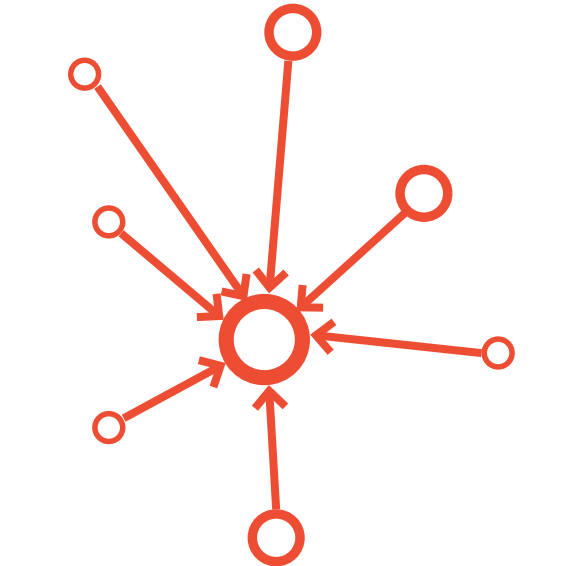


# Transport intensity

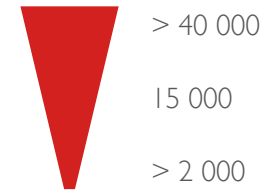
Transport intensity map illustrates to what extent region has shifted from industrial to service based economy and what role does network play in the regional development.

Though poly-centric urban structure is still visible spatially, commuting patterns show that functionally it shifts towards network based model. Major employment places and economic activities do not match living environments anymore. This induces extensive commuting which increases yearly.

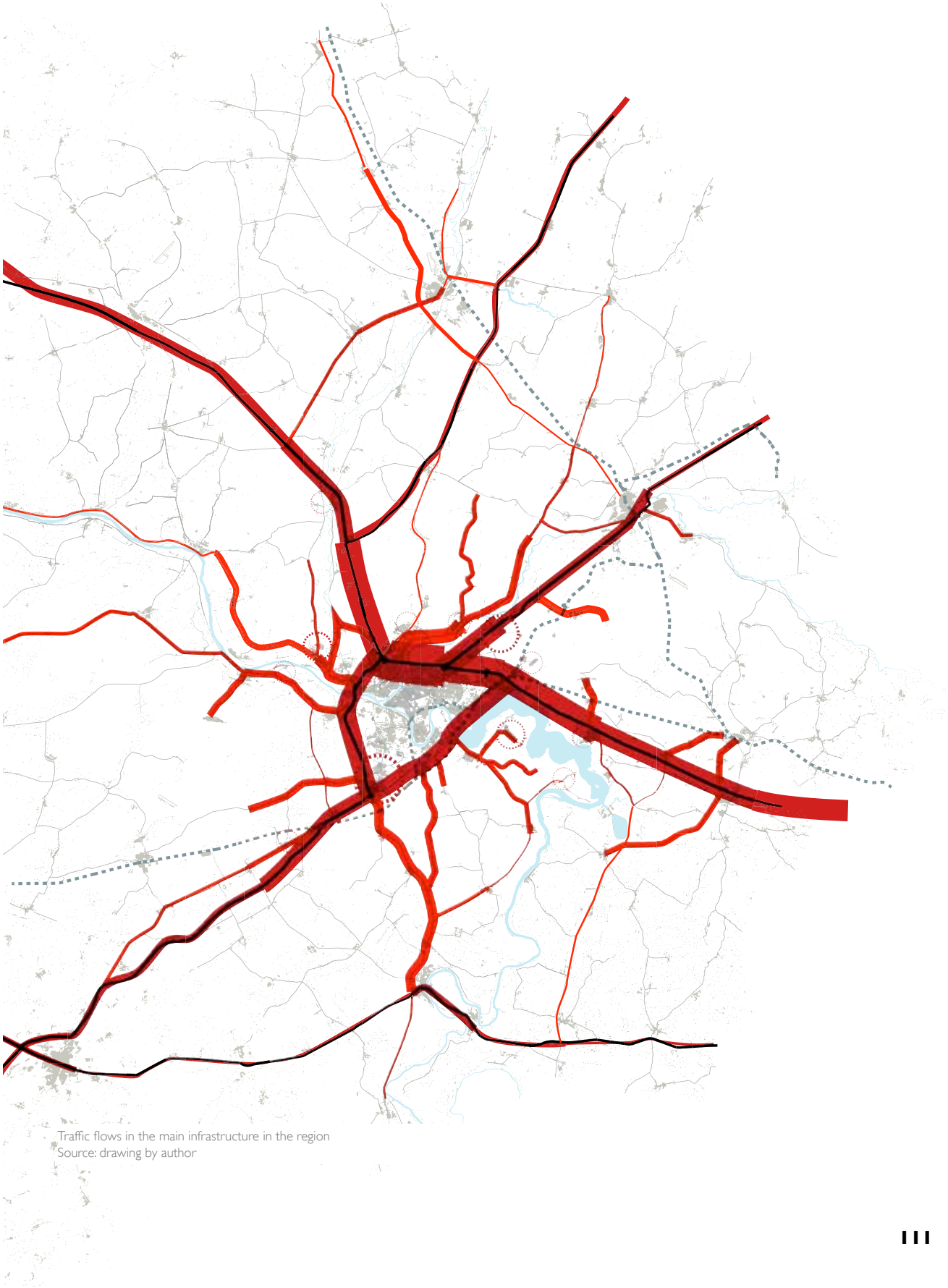
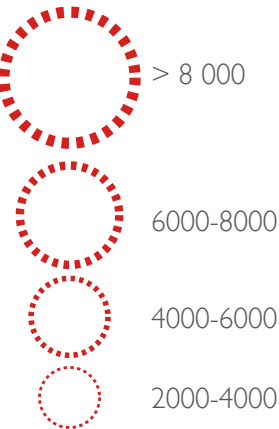
The largest commuting patterns are among Kaunas city and surrounding small towns, villages and suburban areas as they became satellite towns of Kaunas city.



Transport frequency per road section, per day



Commuting cars to Kaunas city, per day



Traffic flows in the main infrastructure in the region  
Source: drawing by author

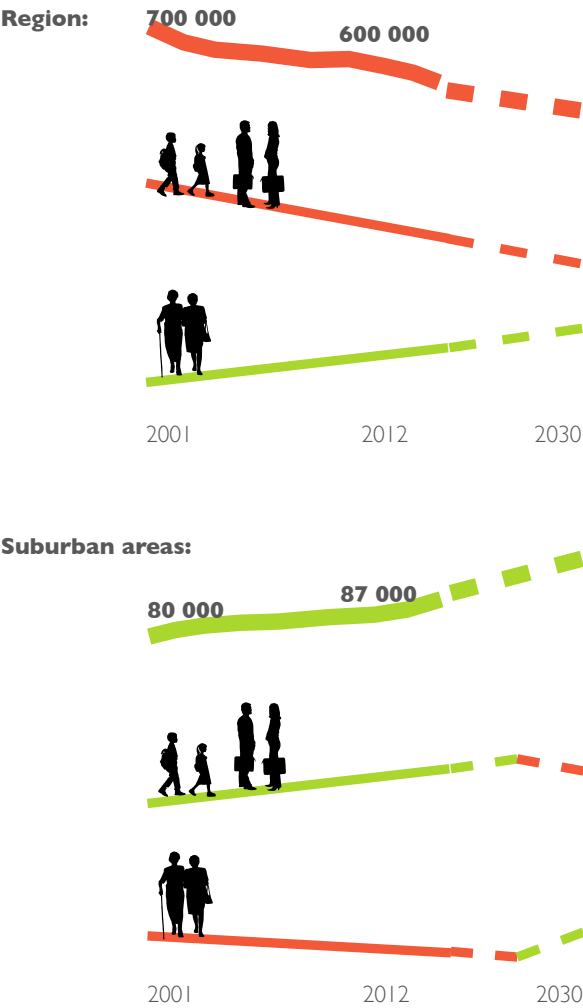
# Demographic changes

In general population in the region shrinks, only areas around Kaunas city gains population that migrates from Kaunas and surrounding periphery.

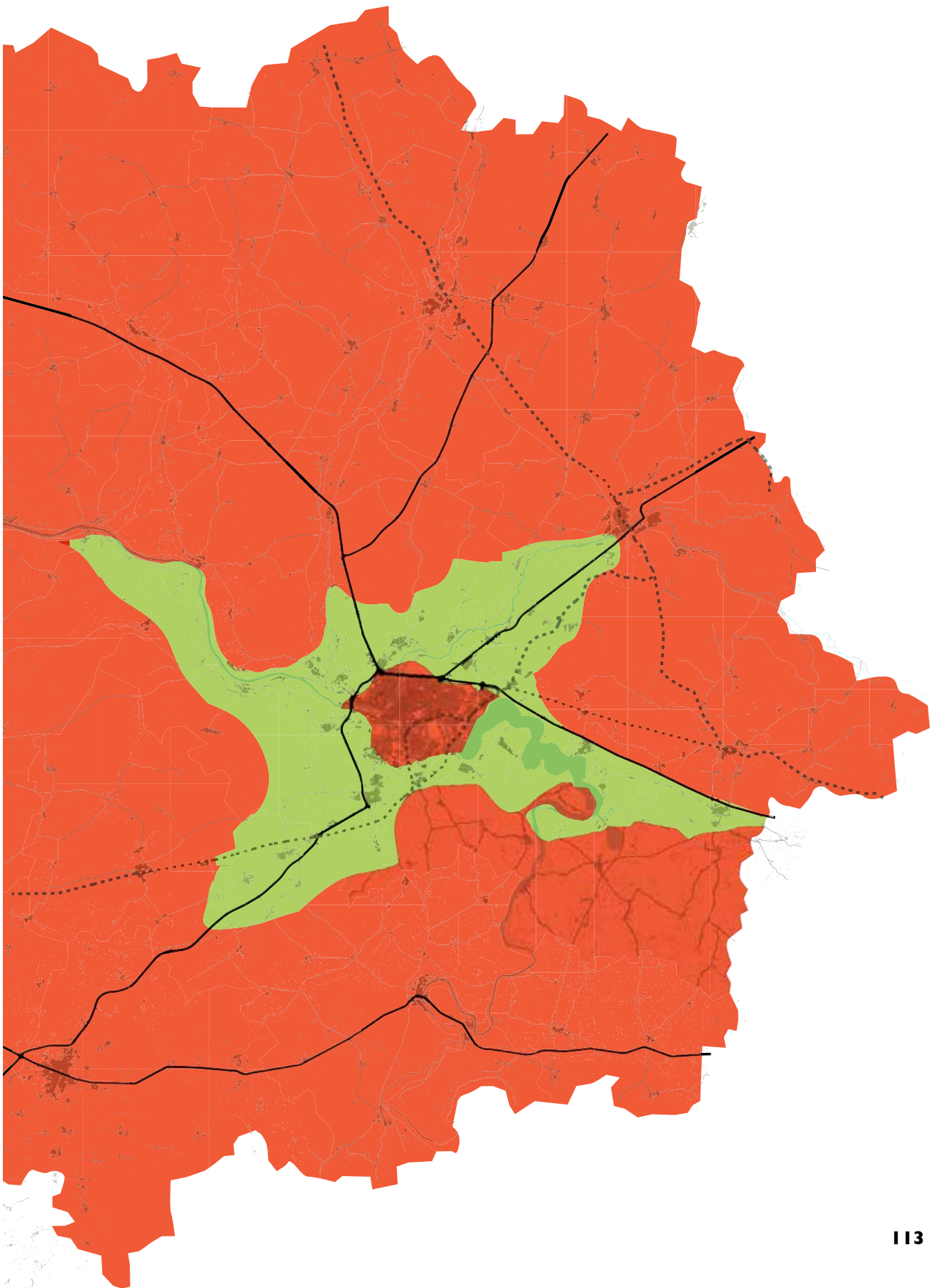
There is a tendency of shrinking and aging population in rural areas. The decreasing number of rural inhabitants brings difficulties in sustaining public services (education, health care, commercial facilities) and especially will cause problems of providing health care services to elderly and more vulnerable rural residents in the near future.

Population in the areas around Kaunas city increases and the age of the residents are above average due to large number of couples and families with children moving to the suburban areas.

It is estimated that by the year 2050, population in the country will decrease to 2.5 million whereas seniors will constitute more than a half of the population. Having in mind these tendencies, there is a possibility that currently new suburban areas will not be fuelled by young generation anymore and will start aging. Since the public infrastructure now (public transport, schools, kindergartens, health care facilities) there is quite difficult to reach, there is a risk, that after a few decades suburban residents will become less mobile and issues of accessibility of services will only increase.



Demographic changes in the region  
Source: drawing by author





# Regional planning

The general trends in regional planning are:

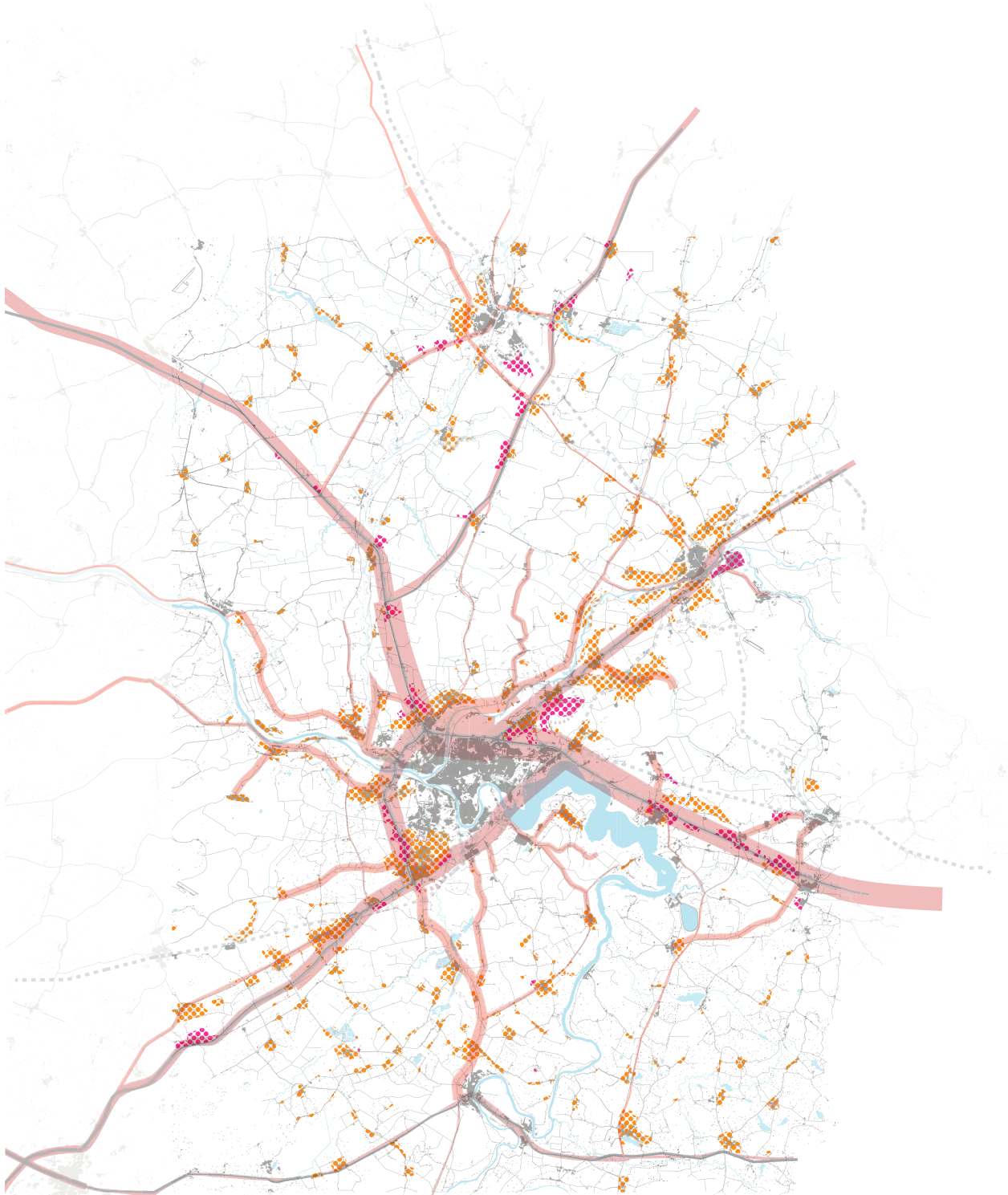
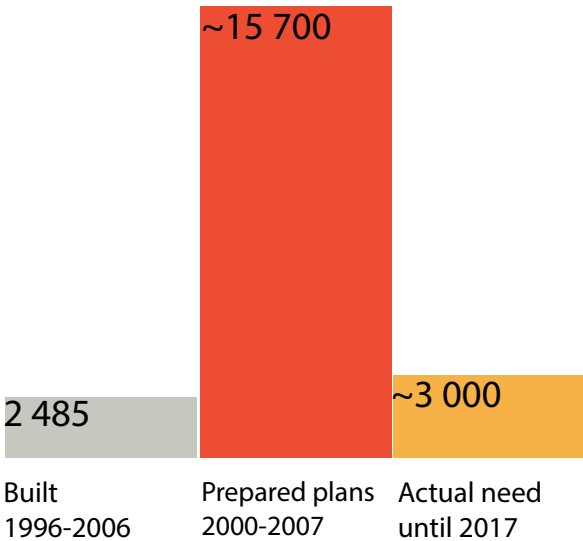
- Insufficient control over changing land uses (encourages privately driven development)
- Separated economic and residential development (Increasing distances to daily services and work)
- Investments in infrastructure not related to urban development
- Lack of cooperation among municipalities
- Planning inadequate to the market demand in the long-term
- Scattered development is fuelled by loose planning:

There is a visible trend of municipalities trying to attract as many new residents as they can in Kaunas region, therefore new development is allowed in large areas.

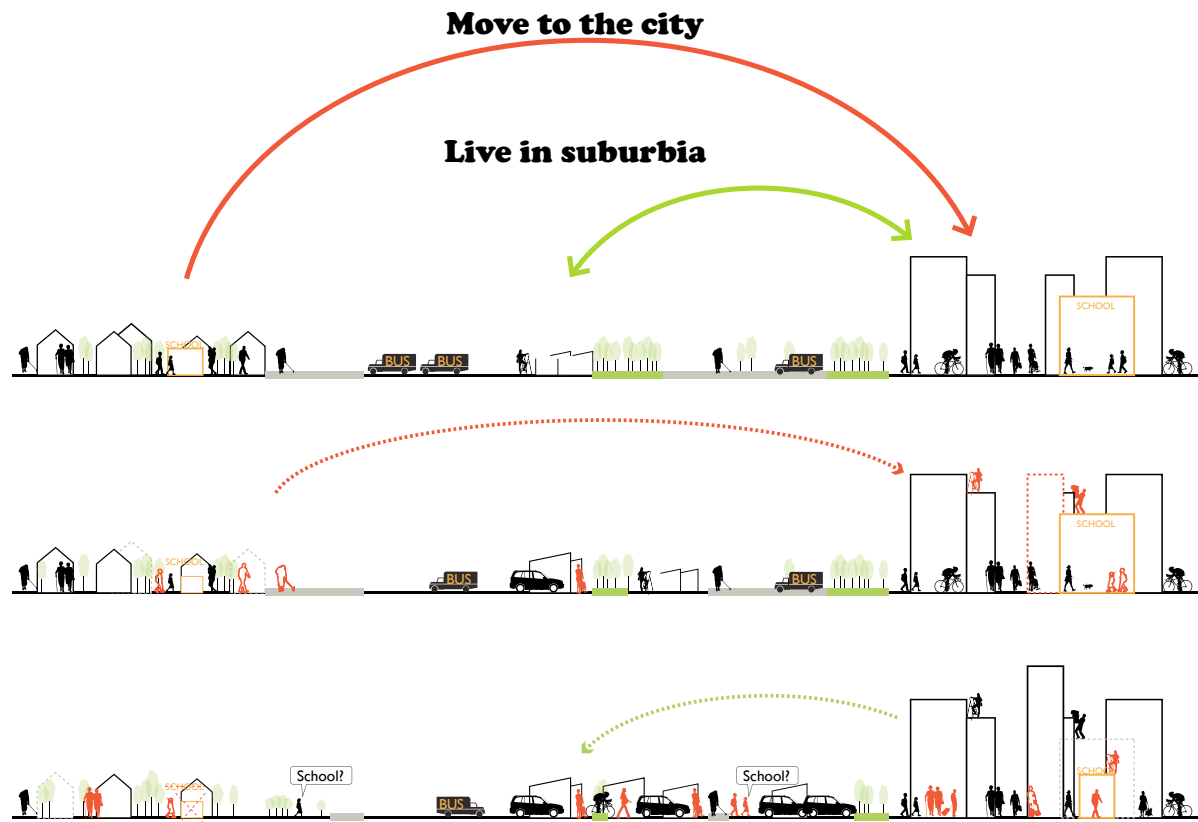
Such de-concentration can result in a lot of problems in the future: need for infrastructure, poor accessibility of services, loss of productive land.



New spot master plans scattered outside urban areas.  
Source: Kaunas district plan, 2007



Areas where new development and land use changes are allowed  
source: drawing by author



## Conclusion

Current socio-economic processes (service economy based on accessibility and social capital, growth based on private development, increasing car dependency, cultural preferences for owning a house) can be summarized into two different migration trends:

1. Rural inhabitants move to the city
2. Urban residents move to the suburban areas.

Underlying reasons for moving to the city are related with decreasing rural life quality: employment opportunities and range of available jobs in the rural areas become more scarce. Range of daily services shrink, especially in the lowest density areas. Though cultural and recreation facilities play secondary role in choosing living location, they are important for young people, who make up the largest part of city immigrants.

On the other hand urban residents intend to exchange city to have better living conditions: they wish for more space, greenery and private yard. At the moment the market of diverse residential housing in the inner city is limited, besides real estate prices are quite high. The most importantly, still prevailing rural mentality for owning a house and living in a countryside makes suburban lifestyle (based on private housing and extensive car use) attractive to the majority of urban residents, especially for wealthier and more mobile ones.



# Transition of the regional model

According to the current development trends and development plans of municipalities in Kaunas region, the future regional structure would probably develop further towards highly concentrated region on the regional scale and highly dispersed region on the local scale due to growing clusters of low density residential areas around few major urban and economic centres. This general shift is generated by two major directions of regional development:

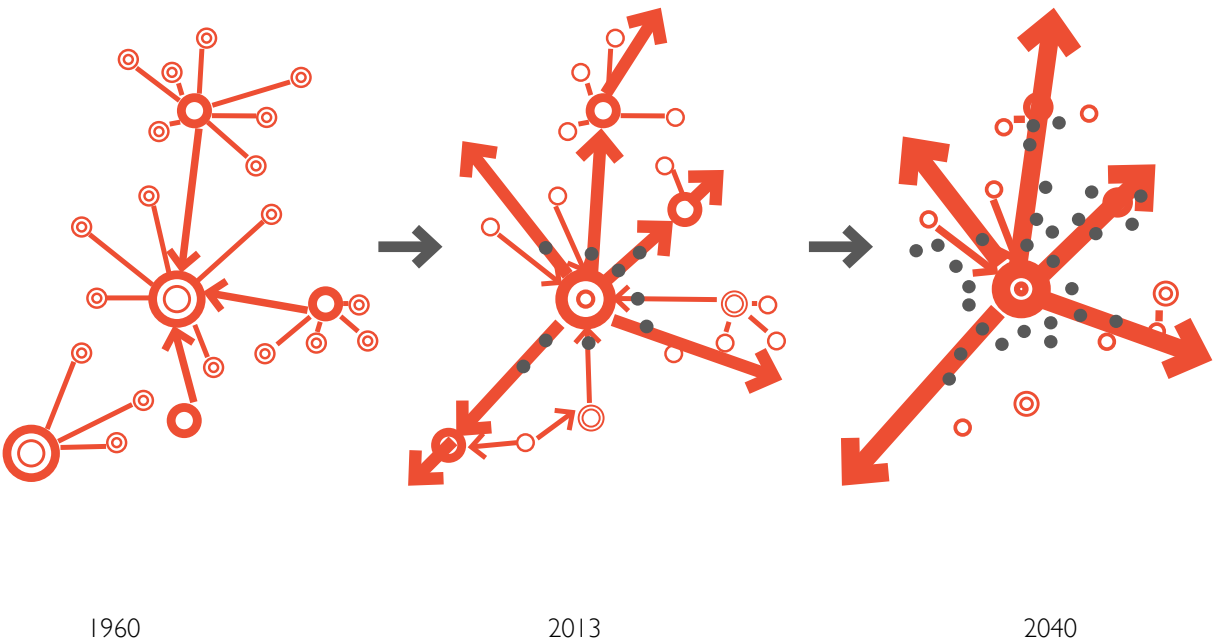
- Spreading post-socialist cities in terms of structure
- Concentrating in urban core in terms of economic growth

These two directions shift regional model away from sustainable regional objectives because:

- Working and living patterns due not match anymore,

which triggers increasing commuting distances, car dependency and need for more infrastructure

- Services provision becomes inadequate because cannot keep up to migration patterns
- Concentration of social capital and economic power makes region more vulnerable to external as well as internal factors (in case of economic crisis, food or energy shortages, unrest, etc.)



# Problem statement

Kaunas experiences inadequate to the marker demand suburban growth which, having in mind current demographic processes, induces depopulation of the inner city areas.

Furthermore, maintenance of infrastructure, public transportation and social services becomes less effective and more expensive for a region as society ages and relies on private transportation. The expenditures tend only to increase in the future.

Due to insufficient civic planning perspective, new areas are largely mono-functional with little physical, economic and social diversity and activities.

Lastly, the lack of coherent vision in the larger context, results in higher fragmentation of the rural landscape, especially around urban centres, where conflicts between space uses are the strongest.

To sum up, current path of short-term oriented extensive development is and will get even more expensive and region cannot afford it to continue furthermore.



- need for more infrastructure for less people
- increasing car-dependency



- decreasing access to public services and amenities
- highly dispersed mono-functional suburban development
- shrinking villages



- socially degrading rural areas
- weakening rural economic potential
- loss of social capital in villages



- no coherent planning vision
- market driven development with no public interest protected
- decrease value of landscape quality

# Potentials in the region

Potentials in the region are based on previously expressed targets that regional development should be based upon. The objectives are socially sustainable development, (based on liveability, quality of life and more endogenous economic development through economic clustering) and environmentally sustainable region (advocating efficient use of land and resources, environmentally responsible production and consumption, resilience and low-impact transportation modes).

Therefore potentials include spatial assets in the region, such as ecological and urban structures as well as existing functional links among them, expressed through employment, services and social capital distribution, public transport connections and available investments.

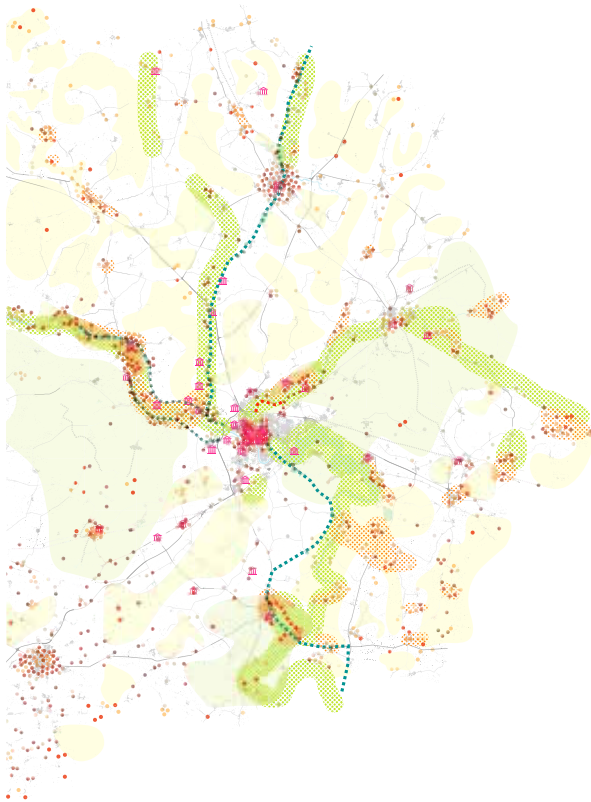
Potentials mentioned in this chapter is an important background for regional development strategy as they can help to achieve more balanced socio-economic development and increase liveability and competitiveness of the region.



# Potentials in the region

## Natural landscape and cultural heritage

- Diverse natural landscapes
- Rural cultural identity
- Range of living environments (possible diverse lifestyles)



## Historical legacy

- Range of living environments (possible diverse lifestyles)



Node town



Collective summer gardens



Single farmsteads



Socialist city



Collective farm settlement



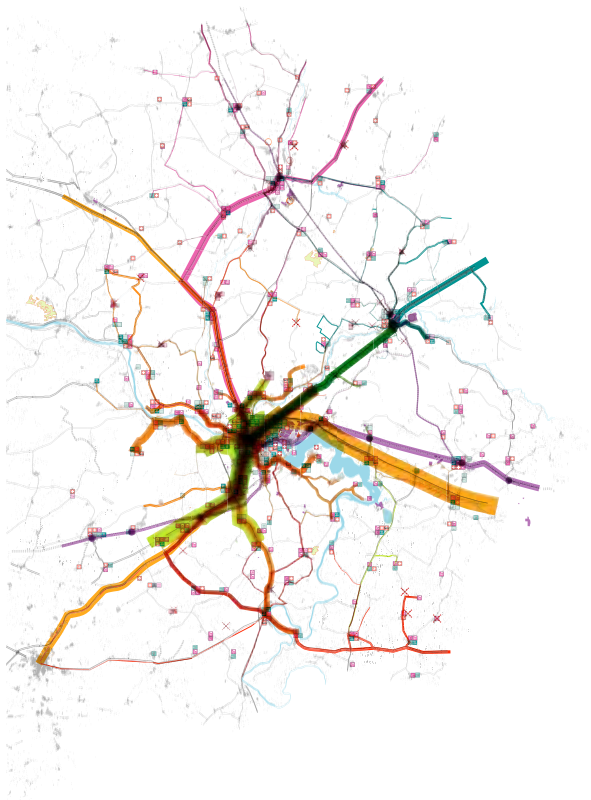
Suburban area

## Socialist legacy

- Still functioning public transport network
- Distribution of public services

## Post-socialist development

- Private investments in residential and commercial development in the countryside
- Public investments in infrastructure and economic development



## Post-socialist development

- Private investments in residential and commercial development in the countryside
- Public investments in infrastructure and economic development



Potentials for regional economic specialization

As economic activities concentrates in the region leaving peripheral areas unproductive, local context becomes significantly important in order to strengthen regional economy and especially to enable countryside to be active participant in economic development. One of the tools to achieve regional competitiveness is to increase regional specialisation in economic development. This can be done by involving interlinked activities of complementary firms and their cooperation with public, semi-public, and private research-and-development institutions. Such cooperation, commonly named as clusters, creates synergies, increases productivity, and leads to economic advantages.

“Clusters represent a new way of thinking about national, state, and local economies, and they necessitate new roles for companies, government, and other institutions in enhancing competitiveness. <...> They are geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (e.g., universities, standards agencies, trade associations) in a particular field that compete but also cooperate.” (Porter, 2000, p. 15)

Porter (2000) ( figure 1) explains wine industry cluster in California as an example of an extensive cluster where wine growing and producing companies are related to much broader supporting industries of supplementary products and to educational, research and trade organizations as well as to country’s tourism industry. All companies and related businesses in this cluster benefit from each other through production realization, sharing of social capital and investments and increased productivity and competitiveness.

This example of cluster orientation offers a favourite strategy in the field of economic development. According to Location Competitive Advantage theory (Porter, 2000) there are several conditions needed for economic clustering:

- Access and place created conditions ( natural,human and capital resources and physical, information and scientific and technological infrastructure);

- Presence of related and supporting industries (of capable, locally based suppliers and of competitive related industries);
- Context for firm strategy and rivalry (local context that encourages appropriate forms of investment and sustained upgrading; and vigorous competition among locally based rivals);
- Demand conditions (demanding local customers; unusual local demand in specialized segments that can be served globally).

Kaunas region has advantage of well developed infrastructure, educated population, higher education facilities and range of economic activities, already taking place within the region, that could form a background for economic clusters.

Accessibility and connectivity: two international and two national transport corridors cross Kaunas region. Kaunas region has a developed railway infrastructure. There is a local waterway Kaunas-Birstonas and one of the most important waterways connecting Kaunas with sea port. However water network is relatively underused. Kaunas International Airport is the biggest cargo airport in the Baltics. It can serve practically all types of aircraft and has passenger air connections to major cities in Europe. There are also several local airports that are widely used for aerial tourism (Pociunai Airport in Prienai district, Darius and Girenas Airport in Kaunas city).

One fourth of population in the region has higher education, and more than 75 per cent speaks at least one foreign language.Though in general city residents are better educated than rural inhabitants,overall population in the region is well skilled.

Education and innovation: region has 13 universities and higher education schools, 15 specialized education colleges as well as agriculture, fisheries and medical research and innovation centres. Numerous universities and research centres have the capacity for innovation and cooperation with businesses which is necessary to support production of highly specialized products and increase regional competitiveness.

Economic activities in the region vary from production of primary goods (e.g. crops, timber, dairy, flowers, vegetables) to end products, like furniture, metal products, meat and milk products, beverages, fertilizers, clothes, etc.) There is a growing sector of specialized products in the region as well, including pharmaceutical and medical products and services, laser industry, aero-related services and IT technologies and services. All these activities has some degree of concentration in the region, however the potentials of economic clustering could be explored to much greater scale.

Besides the advantages, there are several conditions that need to be enhanced in order to support regional specialization through economic clustering.These are:

- Improving social capital in rural areas. It is important, in order to develop economic potential of the countryside.

- Supporting cooperation between public-private sectors and between businesses and research institutions. Such cooperation leads to increased productivity and increased competitiveness.
- Implementing economic policies to reduce taxation/ or allow incentives for businesses clustering in desired locations, especially in the countryside.This allows to improve both economic potential and social capital in the periphery in the region.
- The role of government in micro and macroeconomic stability, in particular through governance, is crucial, because strength and vitality of clusters lie not only in the presence of clusters itself, but in personal relationships, that facilitate linkages, foster open communication, and build trust (Porter, 2000, p. 32) needed to ensure productivity and growth of economic competitiveness.

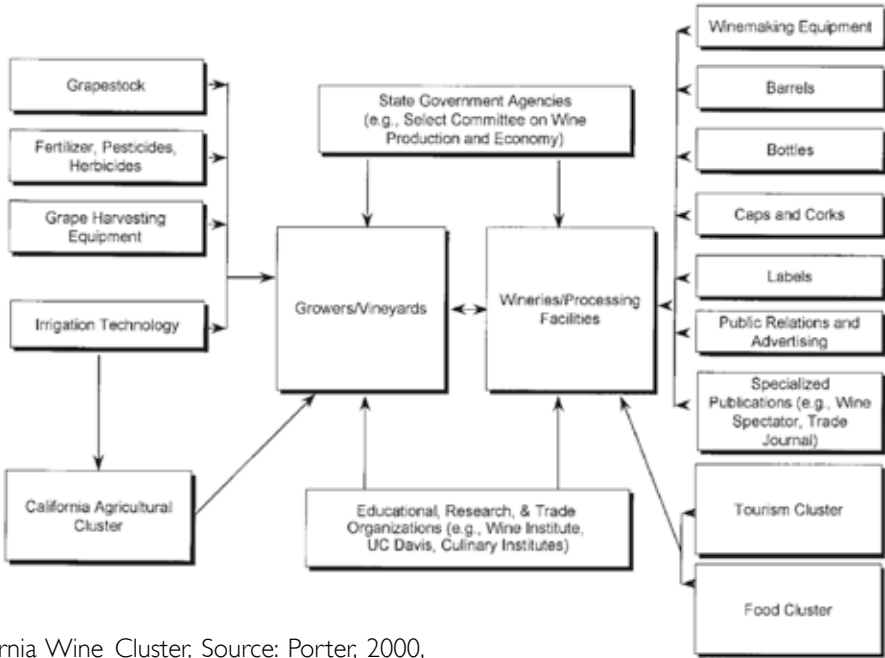


Figure 1. California Wine Cluster. Source: Porter, 2000, p. 17 based on research by Harvard M.B.A. students R. Alexander, R. Arney, N. Black, E. Frost, and A. Shivananda.



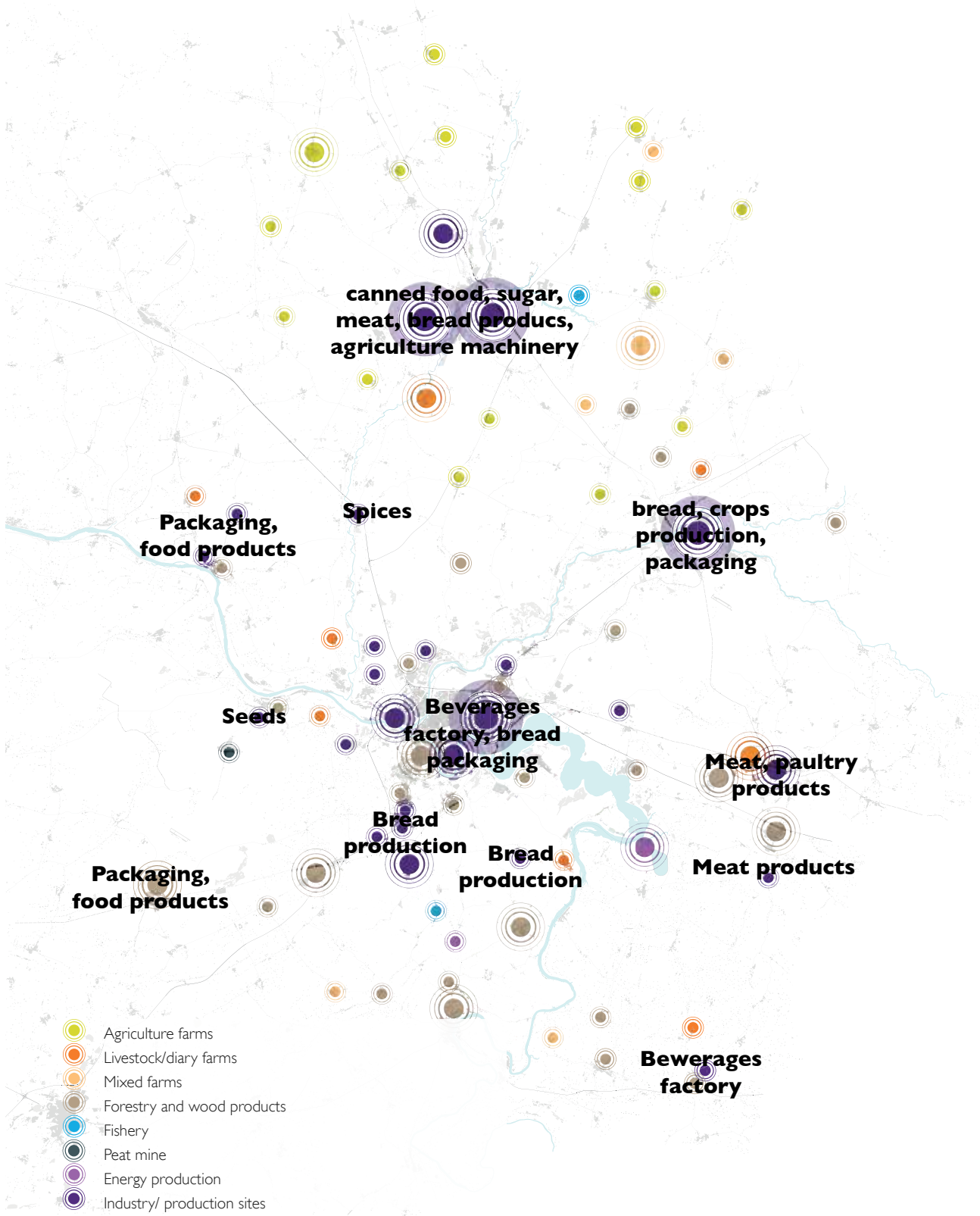
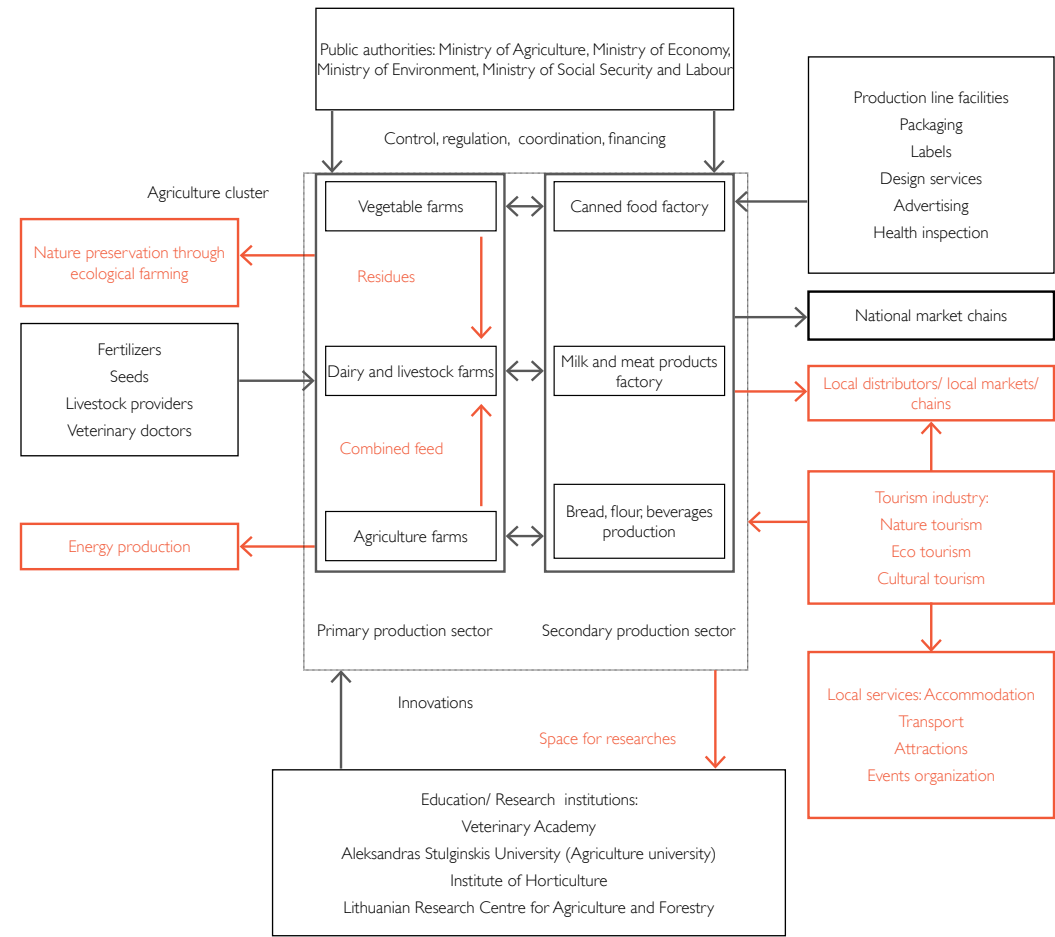
Clusters in Kaunas region

When talking about cluster development and regional specialization, much attention is often given to increasing competitiveness through developing innovative industries based on high added value products, such as IT services, biomedical products or narrow specialization services, however as Porter (2000) claims, all clusters can have the potential to contribute to prosperity of the region (or a city, or any given scale of place for that matter). Therefore attention should be given in already existing and emerging clusters instead of creating new ones.

In Kaunas case, there are already existing traditional clusters based on agriculture and industry.

Scheme explaining agriculture cluster is given below as an example. Red additions of complementary industries in the scheme show potential niches that could appear in this cluster thus strengthening productivity and regional competitiveness.

Image on the right shows spatial concentration of the largest secondary production companies from agriculture cluster; whereas farms are distributed throughout the whole region.



# Approach and regional vision

Ambition is to shift the course of current regional transformations towards more sustainable regional structure by shifting the focus of current separated residential and economic development patterns towards more embedded development that is integrated in existing ecological and urban structures with particular emphasis on the quality of living environments in the region and local economic development.



# Approach

## Place and quality matters

From uncontrolled development based on free market to guidance for development based on regional agenda for sustainable development.

- Though accessibility nowadays becomes more and more important measure in development patterns, proximity still plays important role for choosing locations for economic growth, housing and services distribution. However development should be based not only on proximity and accessibility of the areas, but also on existing potentials in each location, e.g., development of the areas that are highly accessible but important for ecological structure, should be based on preservation and enhancement of natural areas, whereas places that have high economic potential, but low ecological value should be used to increase economic competitiveness in the region.
- Investments in variety of living environments and their quality are important in order to attract social capital and increase competitive advantage of the region.
- Protection of ecological structure is important to sustain ecological balance in the region and country as well as to ensure healthy living environments.

## Integrated planning - territorial management

From sectoral planning towards:

- integration of economic and social development;
- integration of ecological and urban structures;
- planning beyond land uses.
- Sectoral planning (separated investments for infrastructure, services, housing and economic development) does not ensure coherent development of existing and new settlements
- Integrated territorial management could allow more efficient distribution of investments, would help to increase social capital and economic competitiveness in rural areas and would protect sensitive ecological structures from unnecessary development

## Countryside as the backbone for regional competitiveness

From problematization of decreasing rural economic activities to problematization of the diversification of rural economy:

- Economic development in the region shows weak integration to the rural areas (rural areas become places of 'non-existence')
- Countryside is not seen as potential resource for strong regional economy (not only for agriculture, but for health tourism, energy production, creating high quality specialized goods, etc.)
- Perspective of economic growth in the region should see rural areas as places not only for production, but for consumption as well, i.e. should be based on exploiting potentials of the countryside.

## Changing aspect of governance

From reactive to proactive governance:

- Currently regional planning reacts to demands for housing by allowing land-use changes and dispersed development that is not followed by provision of public services and amenities
- Existing settlements in the region are not seen as potential places for investment (or the investments are made only to improve basic infrastructure)
- Public sector is not involved in residential and economic development to a large extent
- Public sector investments in existing settlements economic viability should be seen as a priority task to improve liveability of these areas and as a tool to attract social capital there.

# Vision

## Compact more endogenous region

A compact more endogenous region is based on compact region model where new economic and residential development takes place within existing urban framework and is embedded to region's ecological framework to increase regional competitiveness and resilience to internal as well as external socio-economic factors.

### Compact region in terms of urban structure

Compact region is based on mixed-use living environments that offer diverse lifestyle choices, adapted to walking and connected by efficient public transport system.

### Specialised and more endogenous region in terms of economic growth

Increase in regional competitiveness is related with increase of productivity that relate to such endogenous factors as: territorial competitiveness, economy of scale and entrepreneurship, innovations and human capital potential, management and dynamic cooperation among the involved parties. In endogenous development theory, development of the region "is defined by the ability of the local production system to respond to external incentives and its ability to adapt to short-term and long-term trends in the national and global economy, and to use them to its own advantage." (Kalnina-Lukasevica, 2012, p. 13). **In this model, human capital is a main driving force of development.**

Human capital is considered to be one of the main driving forces in cohesive regional development, therefore the major objective in achieving the vision is to create attractive living conditions throughout the region. Attractive living conditions can have many definitions depending on the target group it is oriented to, however in a broad sense they depend on fulfilling such universal objectives as healthy environment, quality of natural areas, social cohesion, security for job, income and education.

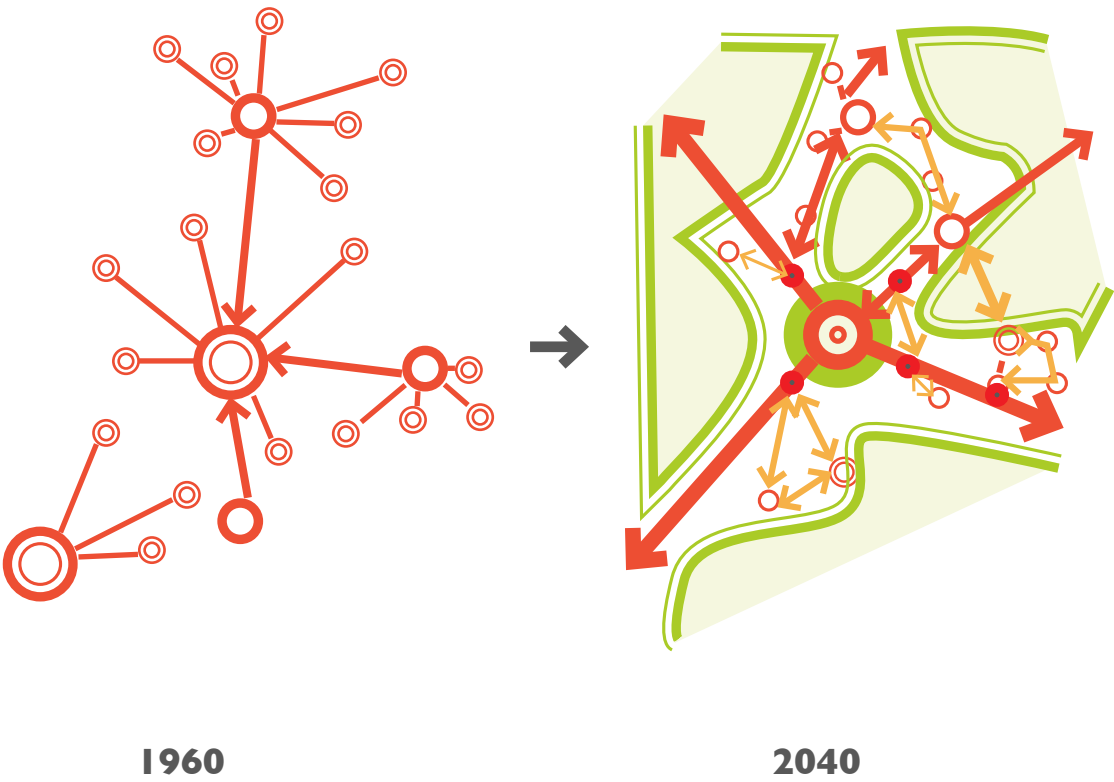
These objectives are to be achieved through 4 broad themes that are developed in the regional scale:

- Natural and cultural landscape as carrying structure for development. Developing areas in the region based on environmental sustainability goals instead of short-term economic profit strengthens ecological structure, which will generate more benefits in the longer term.
- Developing compact poly-centric network. Steering growth in existing urban structure strengthens existing villages and prevents further urban expansion into agricultural landscape. Good quality public space, accessible services and stronger local economy increase liveability of existing villages and make them more attractive for new residents to come.
- Improving public transport model. Public transport re-organization into regional and local improves its efficiency and frequency and strengthens node towns as sub-centres. Local mobility hubs in villages allow using collectively shared transport instead of private one.
- Growing regional competitiveness through more endogenous economic development. Supporting local economic development and entrepreneurship strengthens more endogenous development, diversify rural economies and bring work places closer to rural residents thus making rural areas less dependent from the city. Stronger rural economy would strengthen economic links between cities and villages, as villages can offer new functions to city residents, such as recreation facilities, local food market, local energy production and similar.

Each of these themes are explained and illustrated in the regional scale in the following pages.

Proposed new regional model is expected to achieve better integration of landscape and new development and to decrease currently existing economic and social disparities between Kaunas and surrounding areas. It is expected that following objectives will be achieved as well:

- Reduced suburban expansion;
- Increased usage of public transportation;
- Reduced usage of private transportation to access daily services;
- Improved public spaces and adapted streets to pedestrians in the existing settlements;
- Increased employment in rural areas;
- Strengthened ecological structure in the region.





# Guidelines for regional development

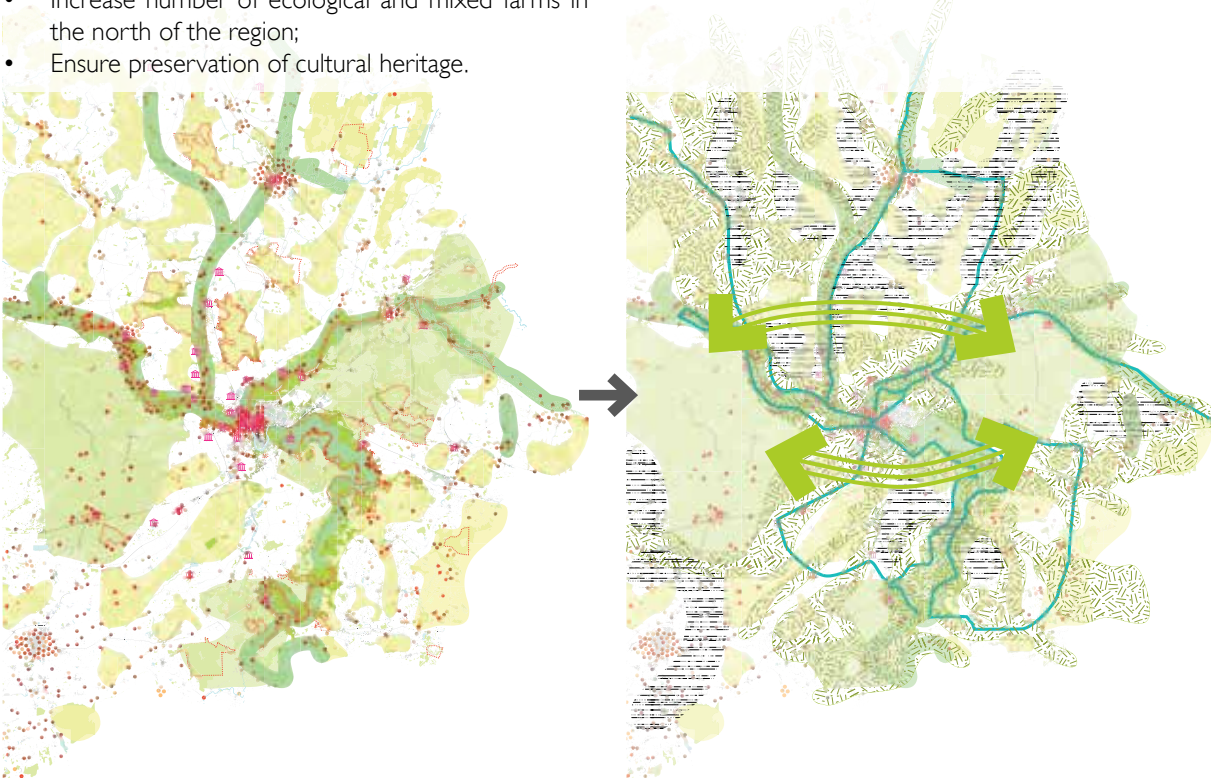
## Natural and cultural landscape as carrying structure for development

### Guidelines:

- Using natural resources efficiently;
- Limiting intensive agriculture in ecologically sensitive areas;
- Use forestation strategy to restore open agriculture areas;
- Restoring previously drained areas where it is unprofitable or undesirable to maintain intensive agriculture;
- Maintaining clear edges between urban and natural areas;
- Adapting cultural heritage for new uses.

### Goals:

- Reduce intensive agriculture between two major forest areas and habitats;
- Decrease size of open land areas, exposed to erosion;
- Increase number of ecological and mixed farms in the north of the region;
- Ensure preservation of cultural heritage.



Developing areas in the region based on environmental sustainability goals instead of short-term economic profit will strengthen ecological structure, which will generate benefits in the longer term:

- Ecological and mixed use farming in ecologically sensitive areas will increase quality of soil, which subsequently will allow more effective patterns of production in the future.
- Forestation strategy in open agriculture areas will reduce risk of soil erosion.
- Restoration of previously reclaimed areas into nature parks will increase recreational potential in the area. Combined with use of cultural heritage for tourism, recreation, events, education, temporary living and other activities, it will strengthen local economy and local employment.
- Adaptation of cultural heritage for new uses will reduce the costs of its preservation as well.

## Compact polycentric urban network

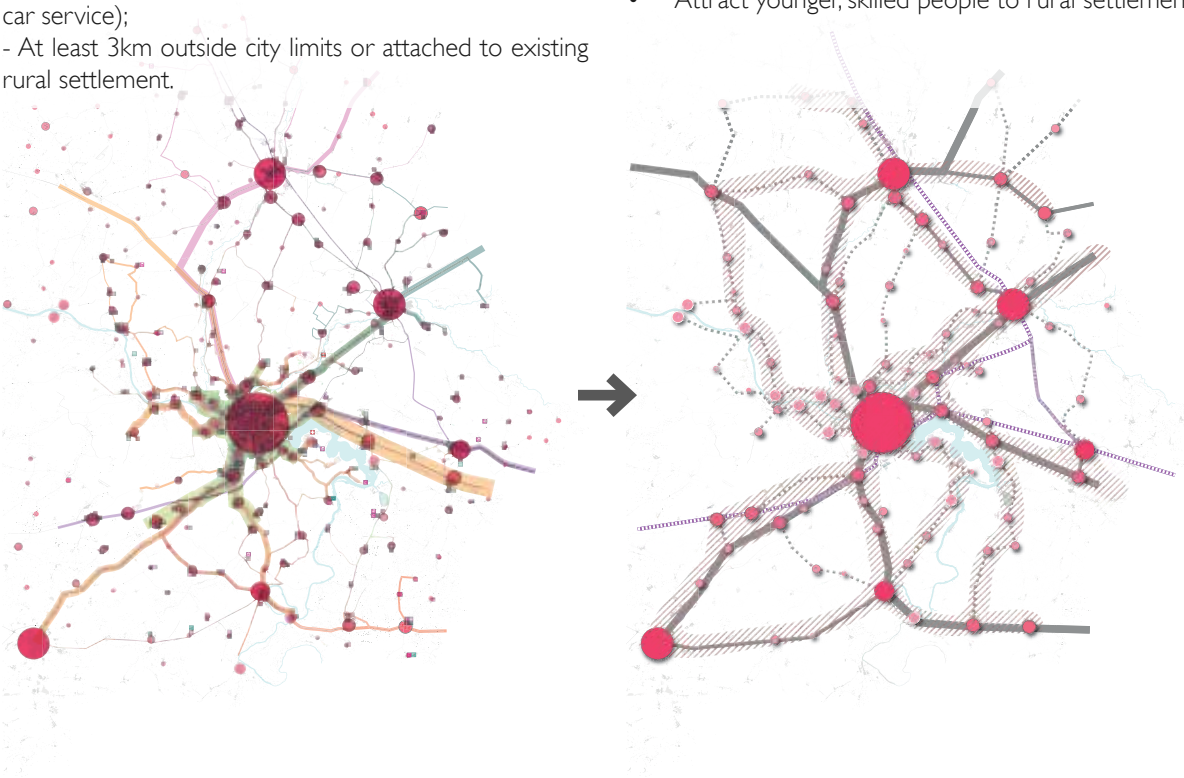
Strengthening existing settlements can provide background for regional competitiveness through exploitation of local potentials and local social capital.

New development is steered to those settlements, that:

- Have good physical accessibility;
- Have public services and amenities (school, shop)
- Have or are close to public transport connection.

Rules for new residential development:

1. New development only within settlement limits;
2. Direct connection to main infrastructure (but limited interference with it);
3. New development < 20 %, reuse >80 % if possible;
4. Greenfield residential development only with fully autonomous system and when planned as:
  - For more than 300 inhabitants;
  - Less than 2km to school/kindergarten (or provide one);
  - Less than 1km to public transport (or provide shared car service);
  - At least 3km outside city limits or attached to existing rural settlement.



New residential development in rural areas outside limits of the settlements can appear under several conditions:

- If it is directly related to farming activities (farmsteads)
- If designed according to local ethno-architecture standards as group of buildings - homesteads.
- If damage for ineffective land use is covered through green tax.
- If it replaces any derelict building within 5km radius (rule: erase one - build one).

Goals:

- Decrease or keep the same travelling time to daily services in priority settlements compared to 2013;
- Preserve landscape around Kaunas city from suburban development;
- Limiting residential development in non-priority urban (and especially green) areas;
- Attract younger, skilled people to rural settlements.

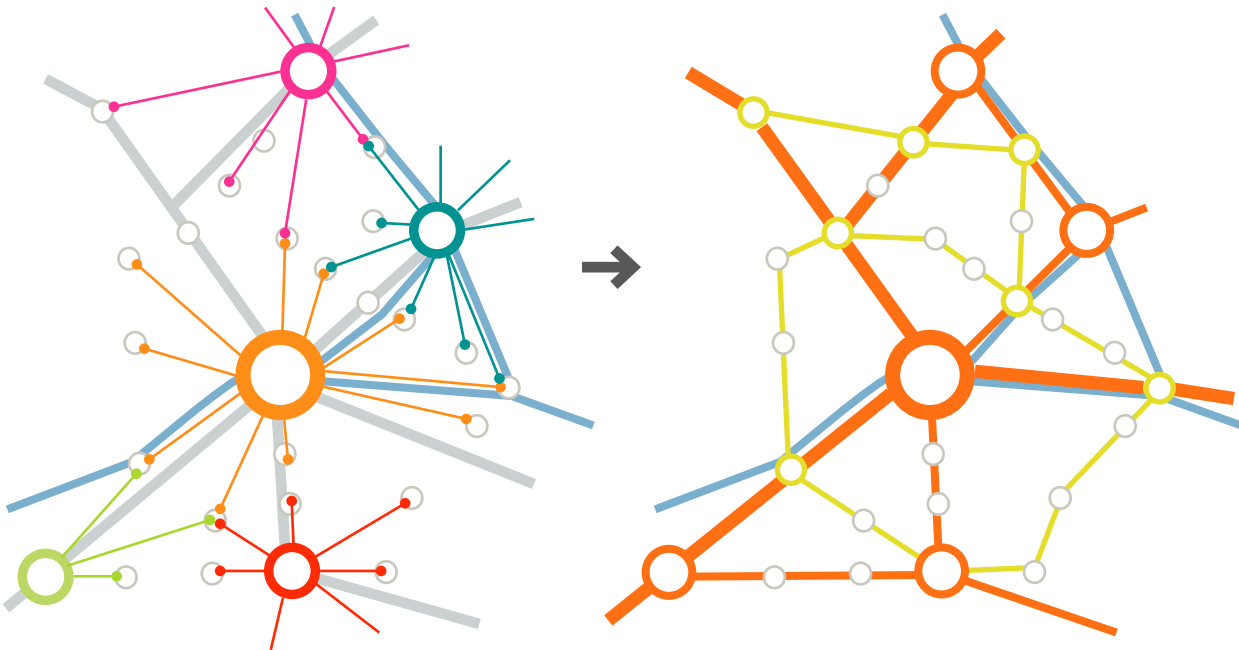
Regional public transport

Strategy no. 1:  
Reorganising public transport model

Proposed model for regional transport combines existing systems that currently serve each city separately into one regional system. This allows to optimise routes and increase their frequency between priority settlements. New regional model combines two levels of public transport:

- Regional - connecting major cities in the region (fast and frequent);
- Local (connecting secondary settlements within urban network with regional transport level - more frequent and better accessible than current public transport).

Since regional model seeks to ensure better public transport accessibility in priority settlements within strengthened urban network, accessibility in the non-priority and more remote areas is ensured through implementation of the following strategy.



Strategy no. 2:  
Community transportation hubs

Community transportation hubs are implemented in the non-priority and more remote settlements to improve accessibility of regional transport. The hub is shared transport service that local community can use when necessary. It consists of shared cars and bicycles that are connected in regional network of transportation hubs. Community transportation hubs can be implemented through public-private initiatives and cooperation and locally maintained, thus creating local employment.

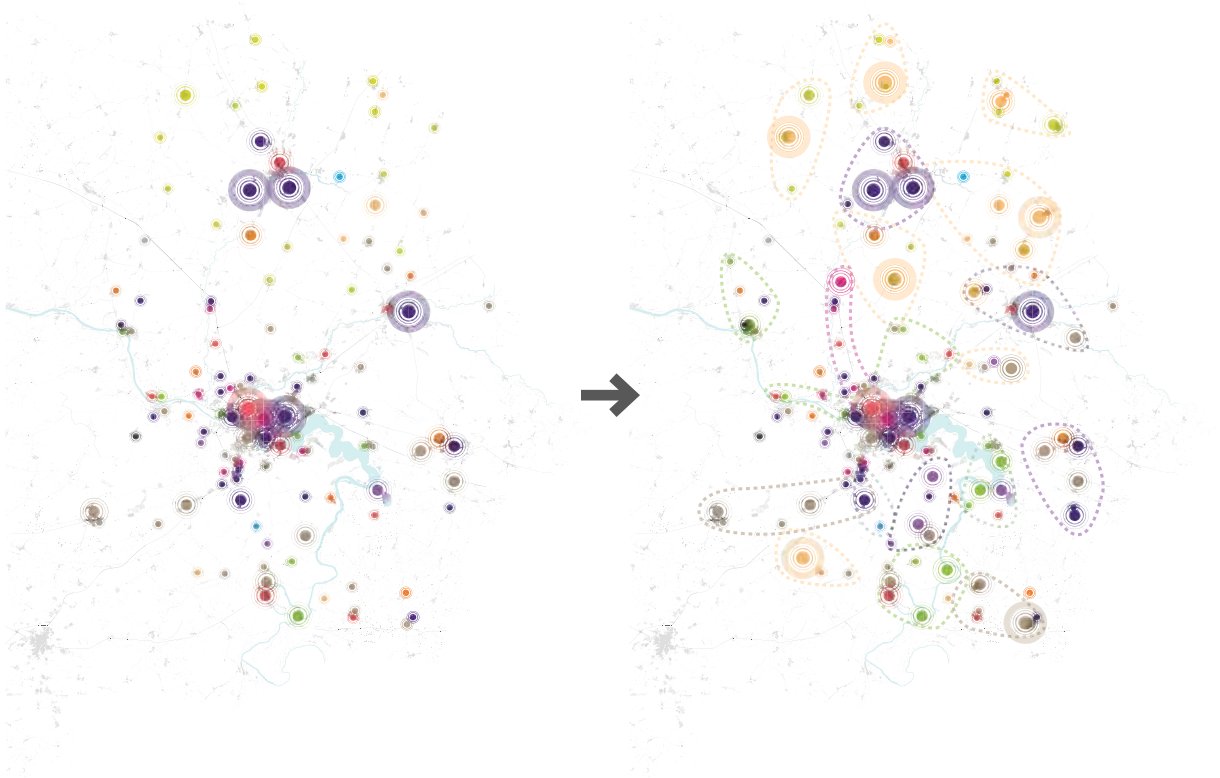
Goals:

- Optimise public transport routes in the region;
- Increase frequency of public transport in rural areas;
- Increase mobility of rural inhabitants outside public transport reach.

Regional competitiveness and more endogenous economic development

- Guidelines:
- Strengthening existing economic clusters;
  - Employing potentials that are available within and around living environments to increase economic activities;
  - Investing in more local energy production.
- Goals:
- Increase employment opportunities in rural areas;
  - Strengthen entrepreneurship among rural communities;
  - Strengthen regional economy.

- Agriculture farms
- Livestock/diary farms
- Mixed farms
- Forestry and wood products
- Fishery
- Peat mine
- Energy production
- Industry/ production sites
- Logistics concentration
- Health care services
- Research institutions
- Recreation facilities
- Agricultural sector
- Forestry sector
- Energy production sector
- Industry sector
- Health care and tourism sector





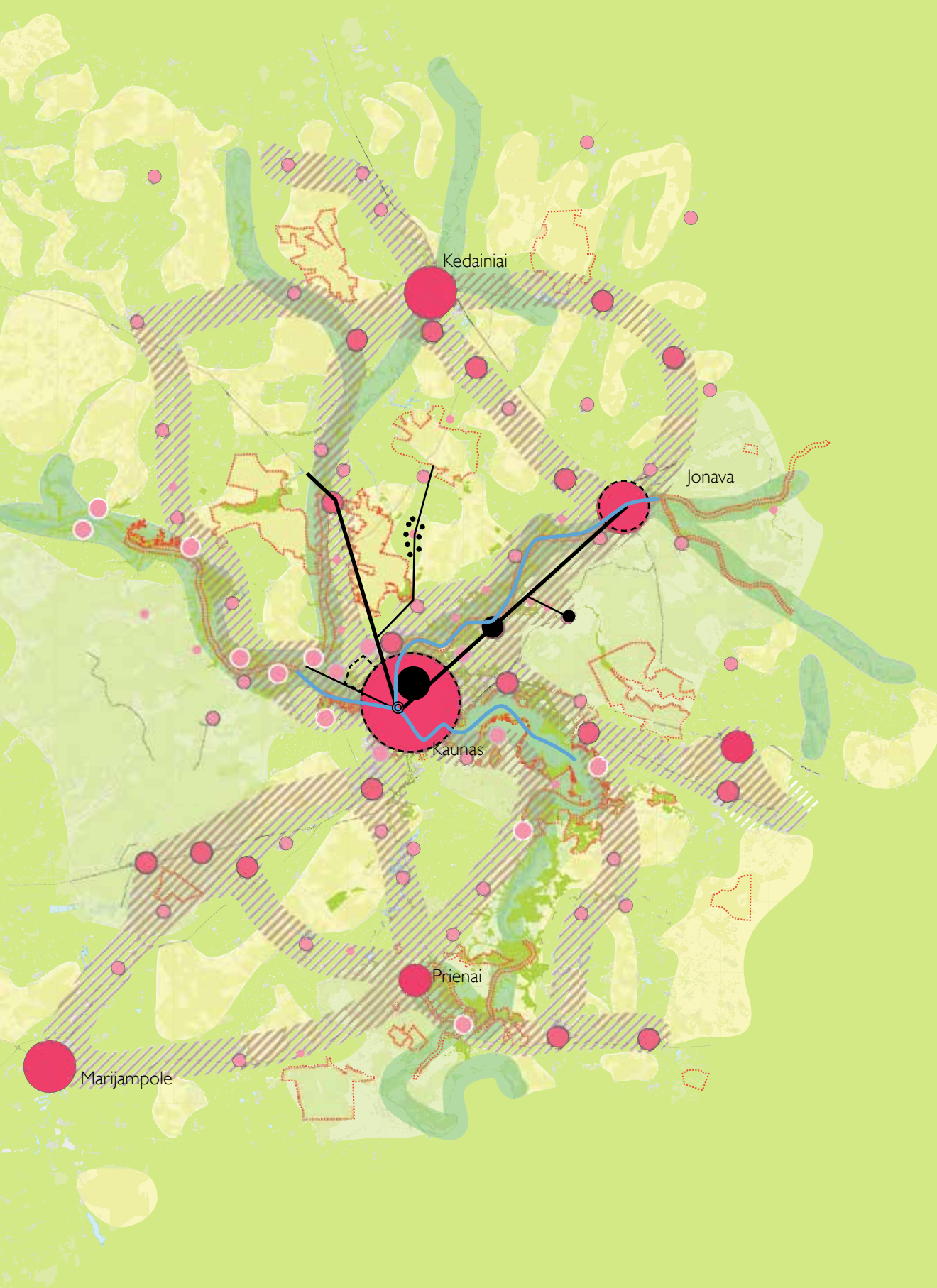
# Living environments and their development guidelines

This chapter presents five types of living environments in Kaunas region, that have combination of available space for transformation, high potential for development and eligible degree of services. Each of living environment is analysed through specific study case, namely:

- Kalniečiai district in Kaunas city as socialist housing;
- Vijukai neighbourhood as suburbia;
- Karmelava as church (node) town;
- Užusaliai village as collective farm village;
- Area around Didieji Ibenai settlement as single farmsteads.

Each study case is evaluated according to its role in regional context as a typical living environment within Kaunas region; existing conflicts in the area; actors there and potentials for transformation.

As existing potentials differ in each location, each type of living environment develops different vision for future development. Subsequently, different set of the strategic guidelines are relevant for different locations.



Local development

Kaunas region has range of small towns and villages with long history, traditions and local communities, embedded to natural and productive landscapes, with space for economic development and unexplored recreational possibilities.

All of them have different characteristics, however five previously selected types of living environments (socialist housing, suburbia, church-node town, collective farm village and single farmsteads) have combination of available space for transformation, high potential for development and eligible degree of services. These living environments are most likely to maintain services in the future, they can offer diverse lifestyles and have capacity to attract social capital and investments if planned integrally.

Planning based on exploring these potentials and embedding them within regional urban structure would not only increase their quality, but would be beneficial to the whole region through growing economic competitiveness.

Strengthening existing poly-centric urban structure, based on these living environments can also increase regional resilience to external as well as internal factors, such as food and energy shortages, unstable global economic conditions and similar.

The following goals and changing governance objectives are set as strategic guidelines for socially, environmentally and economically sustainable development of existing settlements.

- Accessible public services (Possible strategies: intensification; mixed use development; creating transport hub, strengthening centralities);
  - Social mix in neighbourhoods (Possible strategies: mixed use development; new residential typologies; regeneration; soft mobility network);
  - Strong local communities (Possible strategies: community based public services; Local Action Group (LAG) projects);
  - Public space quality and streets for the people (Possible strategies: downgrading streets; public space regeneration).
- Maintained clear edges between built up areas and landscape (Possible strategies: taxation/tax incentives; regeneration; intensification; compact development);
  - Restored ecological structure in the most intensively used areas (Possible strategies: tax incentives; forestation, extension of protected areas).
- Local economic clusters and place identity (Possible strategies: developing unique vision; Local Action Group (LAG) projects);
  - Self sustaining settlements (Possible strategies: local energy production; high quality/specialized goods production cluster; network of farmers markets; local/ eco-tourism route).

Tools for local development

There are different tools to achieve aforementioned objectives for local development.

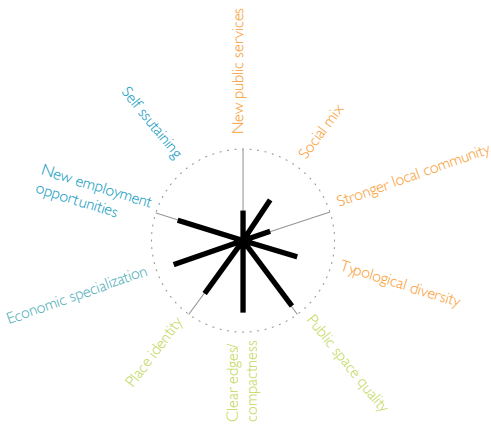
- Policy tools include housing, economic development and taxation policies as well as various development programmes (Kaunas Regional Development Programme; Rural Development Programme among others);
- Planning tools include zoning plans and structural visions in regional scale as well as design guidelines in local scale;
- Economic tools, which vary from prompting public and foreign direct investments (FDI) to allowing tax incentives for establishing and running small and middle sized companies in desirable locations;
- In addition, changing aspect of governance as a tool plays vital role in regional development. Public-private cooperation and support for local initiatives (bottom up approach) is equally if not more important in developing poly-centric network and achieving aforementioned objectives in Kaunas region.

As selected settlements (socialist housing, suburbia, church-node town, collective farm village and single farmsteads) are diverse and their capacities and potentials differ, some of the guidelines and strategies are more important for one type, while the others are more relevant to the other.

In order to define which set of guidelines is relevant to each type, following pages gives a short analysis of study cases that represent typical selected living environments.

Subsequently the most relevant objectives are determined according to the local potentials, conflicts and chances of transformation and expressed in diagram (example below).

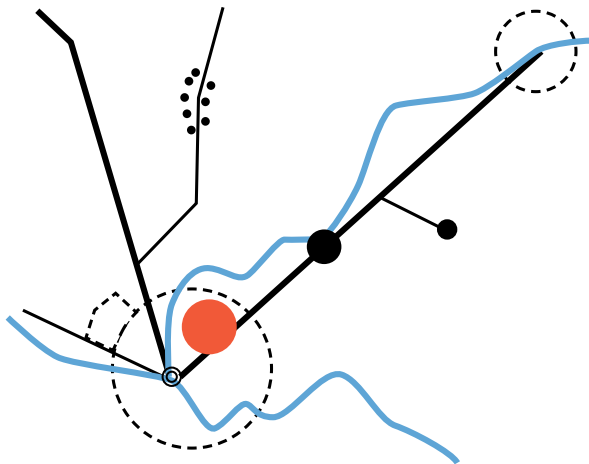
This approach allows developing settlements based on local potentials instead of applying general rule “one fits all”.





# Socialist housing. Study case Kaunas (Kalneciai distr.)

Size: 400 ha  
Population: 21 100 inhabitants, shrinking  
Density: 5 275 inh/km2\*  
Ownership: 90 % owner-occupied, 10 % rent



## Role in regional context:

- Kaunas region municipality
- Typical example of socialist neighbourhood

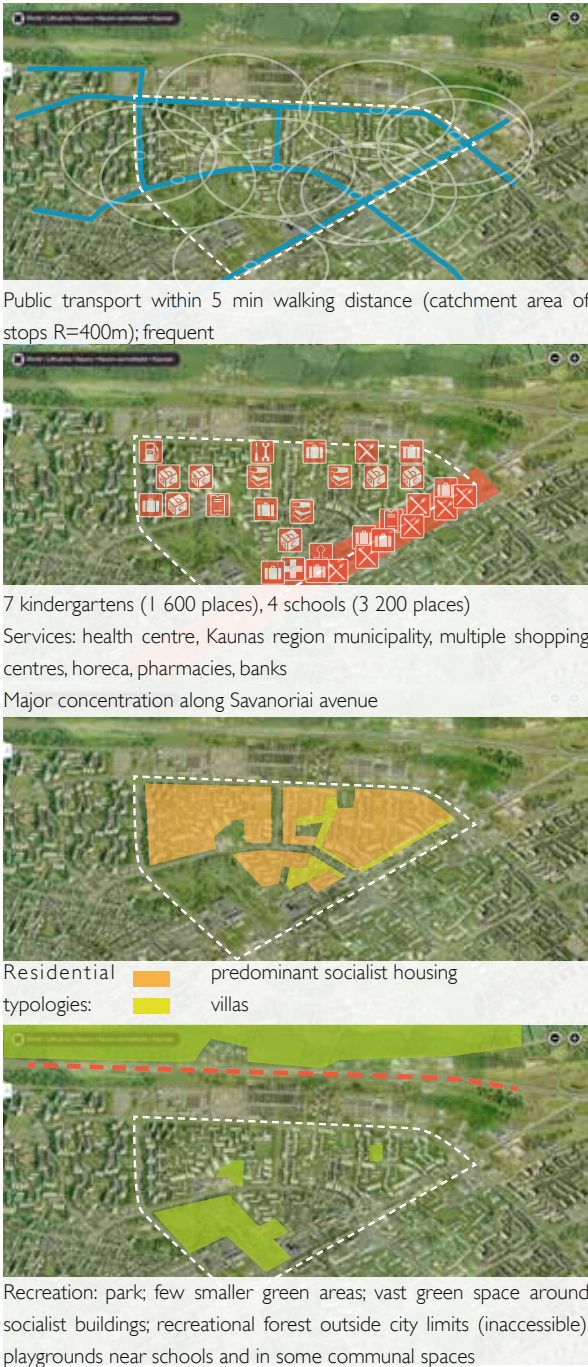
## Local potentials:

- High density of functions
- Social mix in socialist housing
- Good public transport connection
- Close-by large recreational forest
- Good accessibility to city centre

## Actors in neighbourhood:

- Kaunas city, Kaunas district municipalities
- Schools, kindergartens communities
- Kalneciai hospital;
- Horeca and cafés (Mc Donalds, Pizza Jazz, Legenda and many others)
- Banks (Swedbank, SEB)
- Other local businesses and companies
- Local communities

\*Selected area



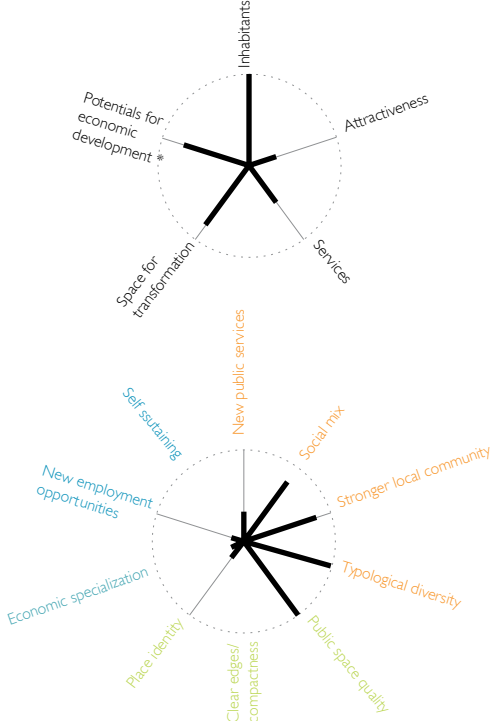
## Chances of transformation:

\*\*\*\*\*

- Available surplus of communal space in-between socialist housing for new development
- Savanoriai avenue concentrates city-related public functions. This axe and adjoining functions can become city's sub-centre

## Ambition for future:

- More diversity in residential typologies
- Better adapted infrastructure for pedestrians and bicycles
- Maintained social mix
- Stronger local communities



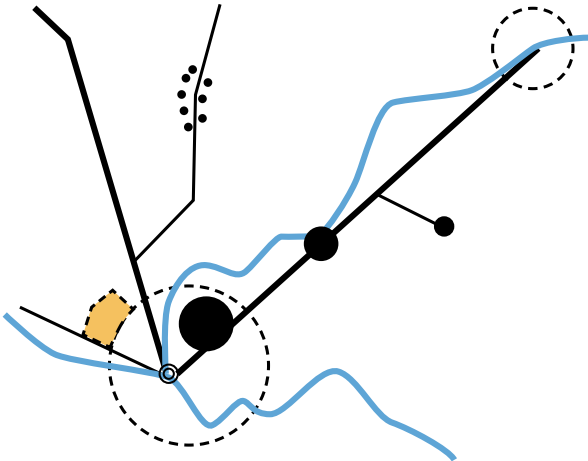
## Conflicts (adapted from Buinevicius, 2011):

- Poor quality of communal space in-between socialist housing due to lack of maintenance and extensive parking
- Lack of private spaces (lost feel of control)
- Lack of housing typologies
- Multiple ownership of houses and land
- Commercialization displacing cultural functions
- Pedestrian movement within neighbourhood is complicated
- Bicycle unfriendly infrastructure



# Suburban area. Study case Vijukai near Romainiai

Size: 200 ha  
Population: ~1 000 inhabitants, growing  
Density: 500 inh/km2\*  
Ownership: 100% owner-occupied



## Role in regional context:

- peri-urban northern boarder of Kaunas city
- Giraite armanent factory nearby

## Local potentials:

- Higher and middle income social group
- Growing population
- Close to city
- A lot of unoccupied space

## Actors in neighbourhood:

- Kaunas city, Kaunas district municipalities
- School, kindergarten communities
- Local businesses and companies
- Local community



\*Selected area

## Chances of transformation:



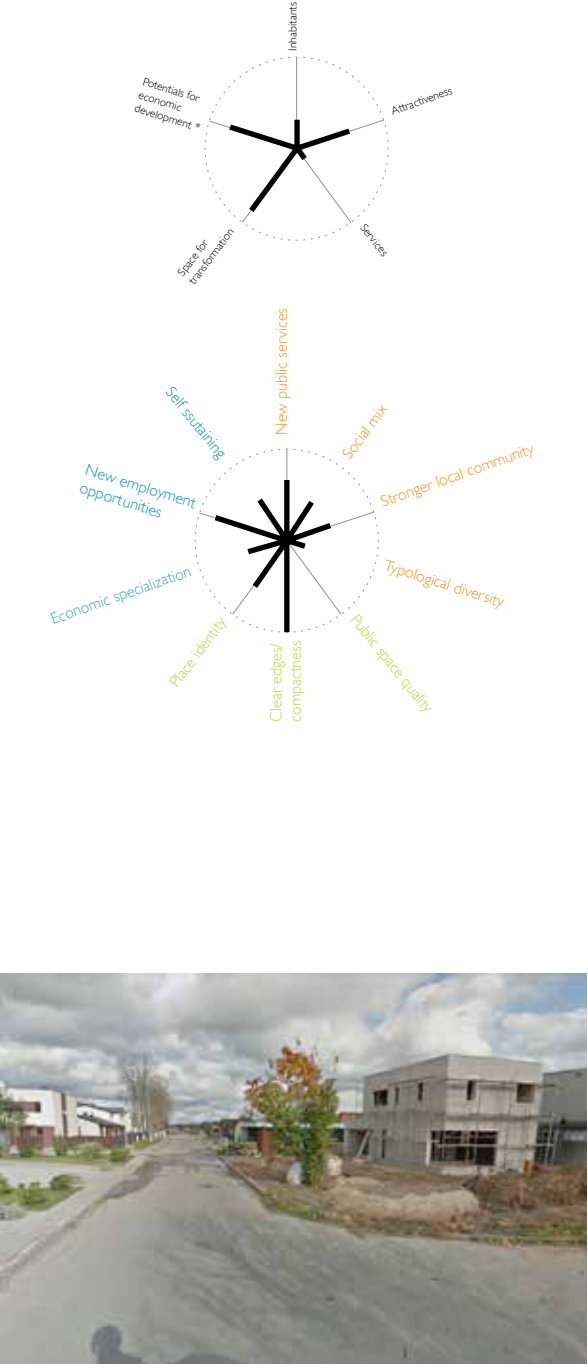
- Available unoccupied land for local food production
- Nearby forest has potential for recreation (can be attraction to city residents)
- Specialized hospital as centre of health care cluster

## Ambition for future:

- Daily services in the neighbourhood
- Local employment opportunities
- Clear edges between neighbourhood and surrounding landscape

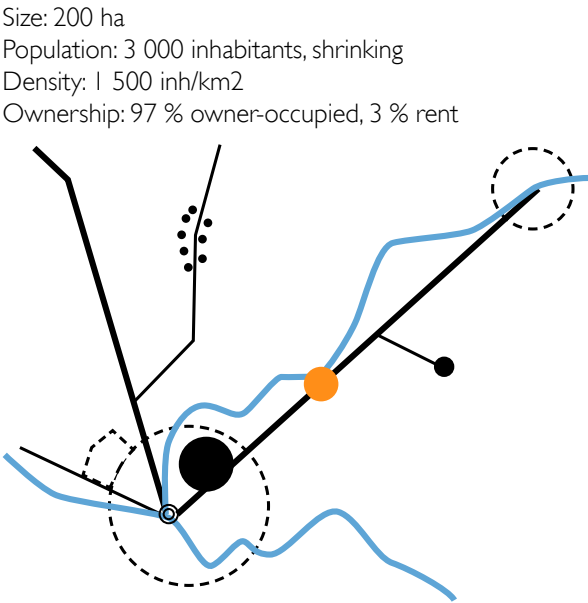
## Conflicts:

- Poor quality streets
- Lack of public space
- Lack of social mix
- Multiple ownership of houses and land
- Pedestrian movement within neighbourhood is complicated
- Large distances to public facilities
- Poor public transport access due to low density
- Major employment places in the city





# Church (node) town. Study case Karmelava



## Role in regional context:

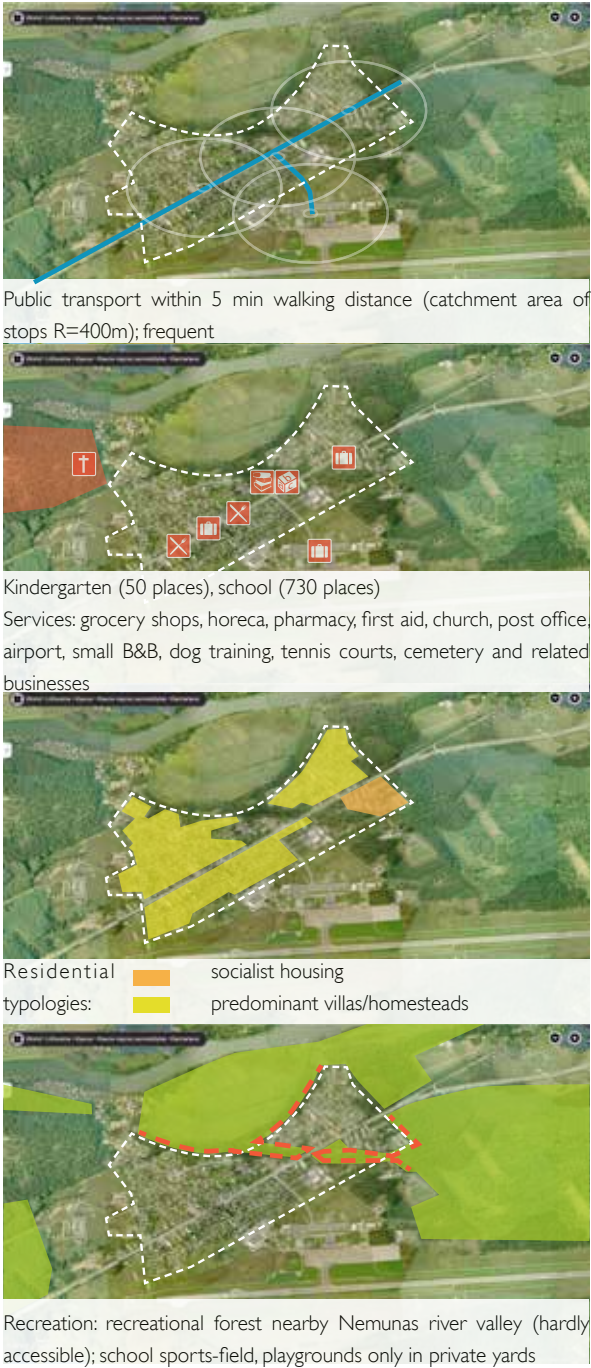
- Kaunas international airport
- Kaunas biggest cemetery

## Local potentials:

- High nature and recreational areas potential
- Good public transport accessibility to city
- Existing range of services
- Airport expansion plans with new programme

## Actors in town:

- Kaunas district municipality
- Karmelava;s parish
- Airport
- School, kindergarten communities
- Local businesses and companies
- Local community



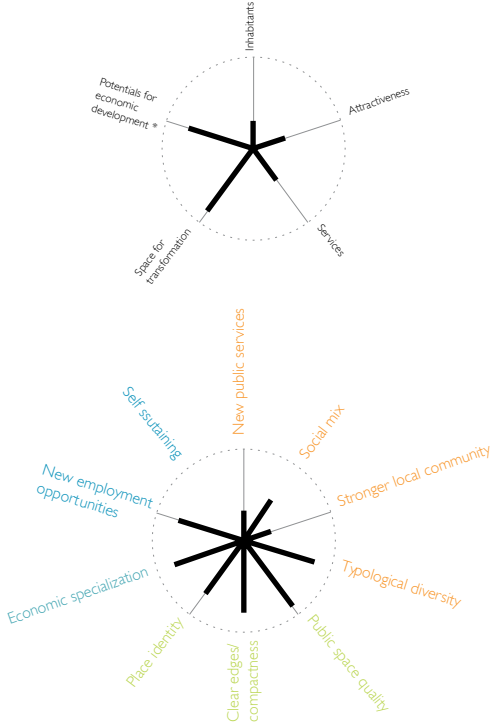
## Chances of transformation:



- New bypass road will unload part of traffic, possible downgrading of main street. This allows revitalizing public space, creating new programme and strengthening town's centrality
- River valley for recreation and nature park
- A lot of unused land between town and airport can be developed to attract new businesses to town (bringing airport new programme to the town)

## Ambition for future:

- Town with distinctive identity - Node town
- Network of public spaces along the main street
- Businesses street - new employment opportunities
- Diverse residential typologies to accommodate different social groups (starters, businessmen, young families)



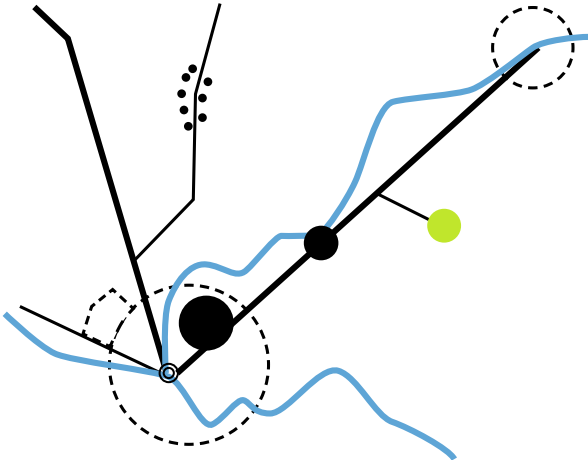
## Conflicts:

- Main street pedestrian and bicycles unfriendly,
- Intensive main street is difficult to cross
- Public space along the street occupied by cars
- Multiple ownership of houses and land
- Major employment places in the city



# Collective farm village. Study case Uzusaliai

Size: 300 ha  
 Population: 580 inhabitants, shrinking  
 Density: 190 inh/km2  
 Ownership: 100% owner-occupied



## Role in regional context:

- Agriculture, wood production

## Local potentials:

- Water potential for recreation, water habitat reserve
- A lot of uncultivated land around
- Wood production company, livestock farm and peat mine nearby - background for cluster

## Actors in the village:

- Kaunas district municipality
- Karmelava's parish
- School community
- Local businesses and companies
- Local community



Public transport within 5 min walking distance (catchment area of stop R=400m); rare



School (120 places)  
 Services: grocery shop, post, church, culture centre, wood production, livestock farm



Residential typologies: predominant socialist homesteads



Recreation: Uzusaliai dam and its waterfront (accessible and suitable only in small section); basketball field in school; playgrounds only in private yards

## Chances of transformation:



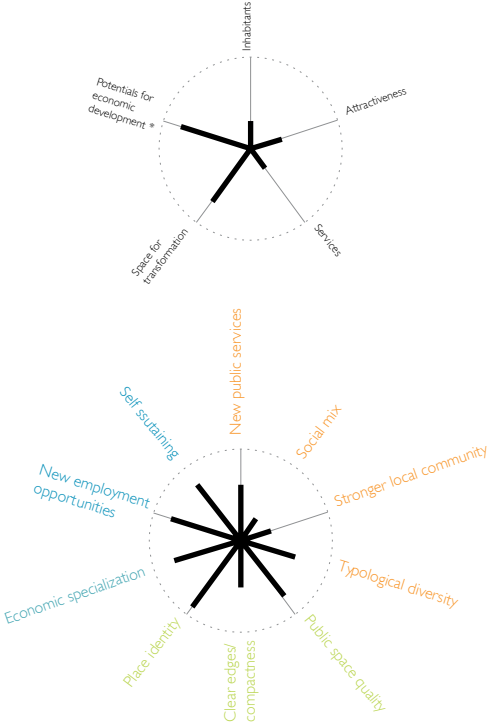
- A lot of available land and existing agriculture and forestry businesses - opportunity for agriculture/energy production cluster
- Uzusaliai dam for attractive new housing

## Ambition for future:

- Strong local agriculture/energy production cluster
- Attractive central market square - production village distinctive feature
- New services (mobile health care service, bank cash machine, community centre with wi-fi and rented workplaces)
- Mixed housing development for elderly, young families and social housing.

## Conflicts:

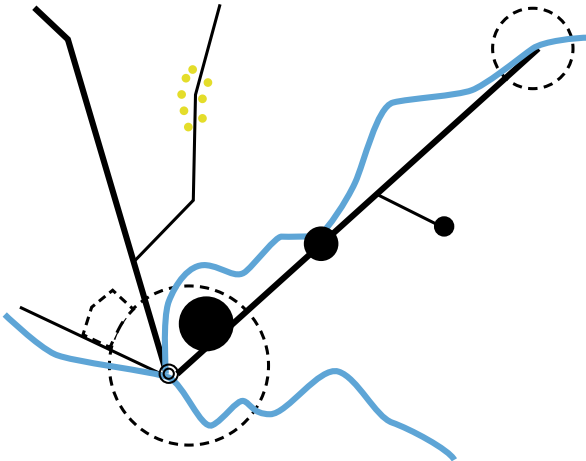
- Shrinking and aging population
- Rare public transport
- Limited range of employment in the village





# Single farmsteads. Study case Didieji Ibenai

Size: 1 900 ha crop area, 500 ha selected area  
 Population: 140 inhabitants, shrinking  
 Density: 28 inh/km2  
 Ownership: 100% owner-occupied



## Role in regional context:

- Agriculture, wood production

## Local potentials:

- Protected area's extension to restore natural ecosystem in drained land
- Family farming activities
- Agricultural production, guest house
- 20min by car to Kaunas city
- Quite natural environment
- Fertile land

## Actors in the area:

- Kaunas district municipality
- Ministry of Environment
- Local businesses and companies
- Local community

\*Selected area



## Chances of transformation:

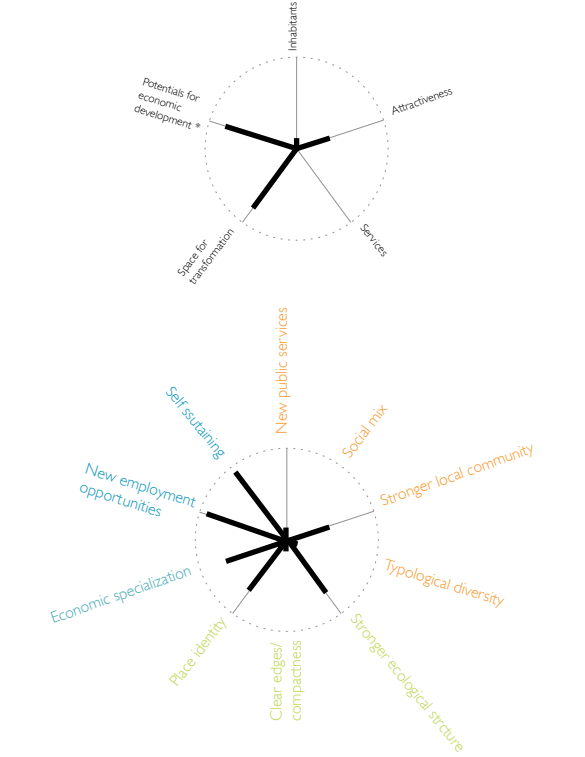
- Existing family farms, guest house and nature regeneration potential - opportunity for local eco-tourism cluster
- Middle-sized farms can adapt mixed farming practice (agriculture combined with livestock and dairy production)

## Ambition for future:

- Restored ecological structure in previously straightened and meliorated river beds - created nature habitat protection park in between agricultural land - one of attraction points of recreational eco-tourism route
- Ecological and mixed farming production realization in local community farm shop - one of attraction points of recreational eco-tourism route

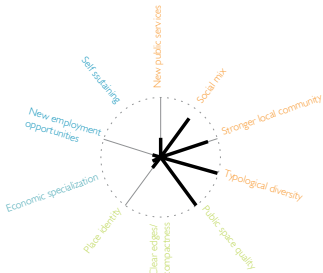
## Conflicts:

- Shrinking and aging population
- Rare public transport
- Limited range of employment choices in the village

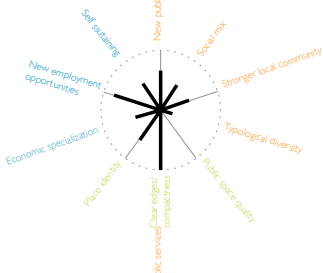


Overview

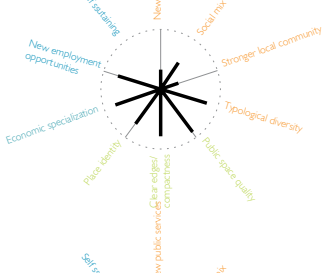
Socialist housing



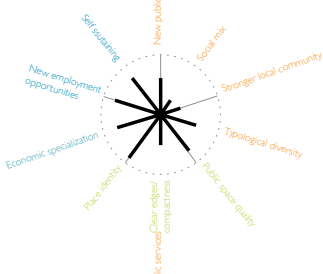
Suburbia



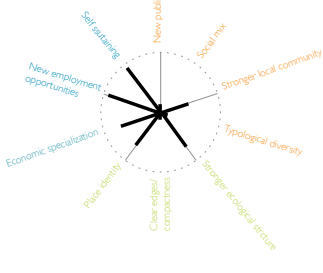
Node town



Collective farm village



Single farmsteads



Applicable strategies

	Socialist housing	Suburbia	Node town	Collective farm village	Single farmsteads
Intensification	↘		↘		
Mixed use development	↘	↘	↘		
Transport hub			↘		
Strengthening centralities			↘		
Regeneration	↘		↘	↘	↘
New typologies	↘	↘	↘		
Soft mobility network	↘	↘			
Downgrading streets		↘	↘		
Public space regeneration	↘	↘	↘	↘	
Community based public services		↘		↘	↘
Local Action Group programme		↘		↘	↘
Network of farmers markets			↘	↘	↘
Eco-tourism route		↘		↘	↘
Specialized production cluster		↘		↘	↘
Ecosystem restoration		↘			↘
Forestation		↘		↘	↘
Renewable energy production		↘		↘	↘



# Local strategies for living environments

This chapter briefly illustrates how the most applicable and relevant sets of strategies can be applied to different living environments.



## Strategy for socialist housing

### Strategies:

- Intensification
- New typologies
- Soft mobility network

### Actions

- Redeveloping under-used inner areas
- Integrating public space with new development
- Downgrading inner residential streets

### Stakeholders

Governmental: National government, Municipality, Ministry of transport, EU funds for infrastructure projects

Society: Land owners, Local residents

Investors: Local developers, Local enterprises





## Strategy for suburban area

### Strategies:

- Public space regeneration
- Community based public services

### Actions:

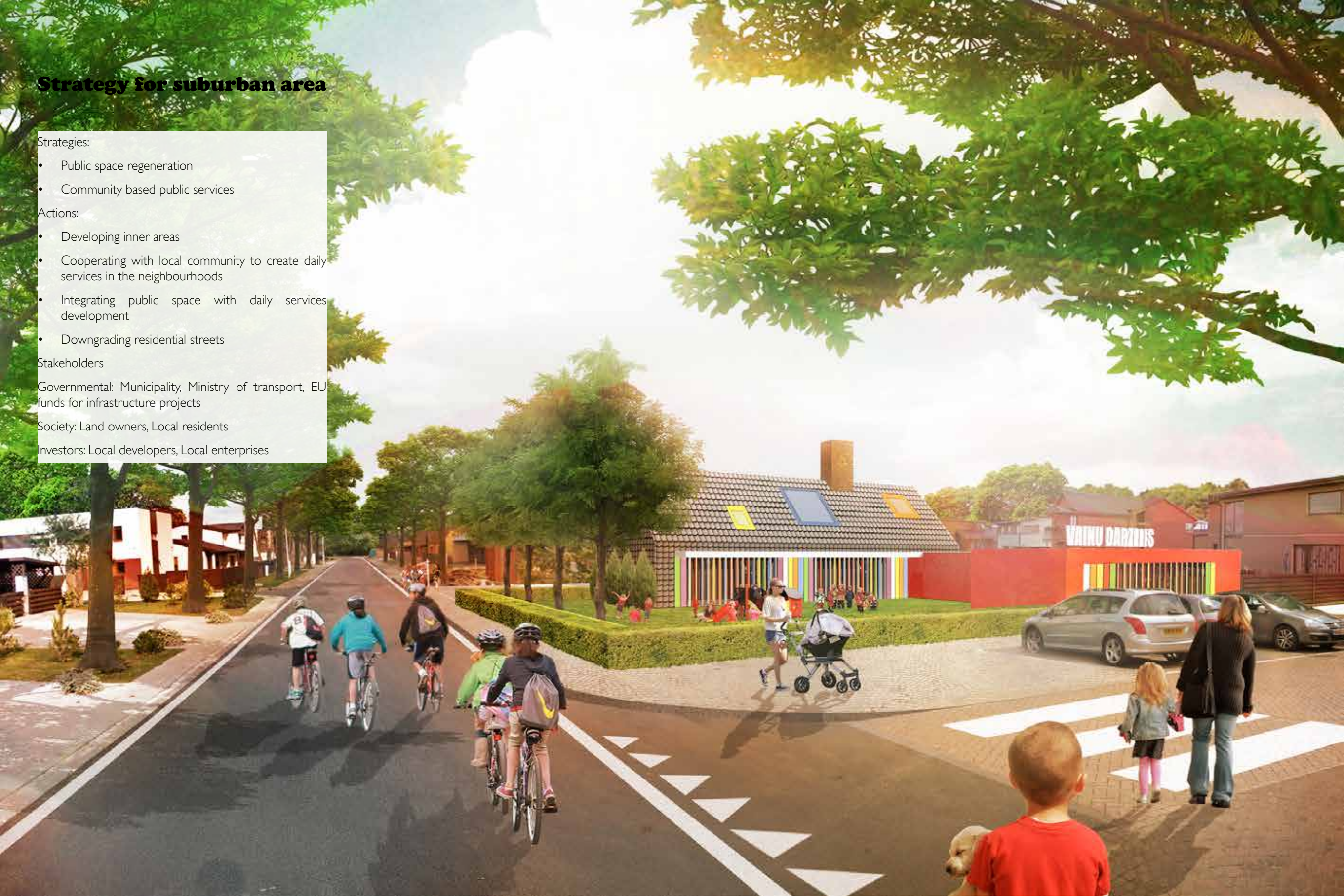
- Developing inner areas
- Cooperating with local community to create daily services in the neighbourhoods
- Integrating public space with daily services development
- Downgrading residential streets

### Stakeholders

Governmental: Municipality, Ministry of transport, EU funds for infrastructure projects

Society: Land owners, Local residents

Investors: Local developers, Local enterprises





## Strategy for node town

### Strategies:

- Intensification
- Strengthening centralities
- Transport hub
- Public space regeneration

### Actions:

- Downgrading main street profile to make it pedestrian friendly
- Cooperating with local entrepreneurs to create commercial activities in the town centre
- Redeveloping empty land around school to create public park and new mixed use development with new typologies
- Integrating public spaces redevelopment with new economic development
- Connecting green structure crossing the town with network of public squares

### Stakeholders

Governmental: Kaunas district municipality, Local administration, Ministry of transport, Transport companies, EU funds for infrastructure projects, EU cohesion funds

Society: Land owners, Local residents, local activity groups (LAG)

Investors: Local developers, Local enterprises, international investors





## Strategy for collective farm village no. 1

### Strategies:

- Public space regeneration
- Network of farmers markets

### Actions:

- Strengthening public transport accessibility
- Attracting new developers and integrating public space regeneration with new developments
- Developing natural areas for new recreation uses

### Stakeholders

Governmental: Local administration, Ministry of transport, EU funds for infrastructure projects, EU cohesion funds

Society: Land owners, Local residents

Investors: Local developers, Local enterprises





## Strategy for collective farm village no. 2

### Strategies:

- Specialized production cluster
- Renewable energy production

### Actions:

- Production of high quality goods
- Agriculture intensification
- Economic clustering
- Financial support for alternative economic activities and energy production

### Stakeholders

Governmental: Local administration, EU cohesion funds, EU funds for rural development

Society: Land owners, Local residents, local activity groups (LAG)

Investors: Local developers, Local enterprises, international investors





## Strategy for single farmsteads

Strategies:

Ecosystem restoration

Forestation

Actions:

- Adapting ecological structures to multiple space use
- Energy production
- Ecological agriculture
- Preventing open landscape from residential development

Stakeholders

Governmental: Municipalities, Local administration, Ministry of, Ministry of agriculture, EU funds for infrastructure projects, EU cohesion funds

Society: Land owners, Local residents, NGOs, public organisations, Initiative groups

Investors: Local developers, Local enterprises, Local industries

Ecosystem restoration, forestation





# Strategy and design for Karmelava - node town

This chapter will show the pilot projects for Karmelava, based the local strategy for the node town.

Spatial and functional analysis is explained in order to evaluate the area and to show what local potentials are in this town.

Local strategy is alternated and adapted for Karmelava case and 4 key pilot projects are formed within its framework.

One pilot project is elaborated further: its phasing, planning process, actors and stakeholders are explained.

Finally feasibility of this pilot project is evaluated t to what extent explained transformations would be possible and adaptable to other node towns.

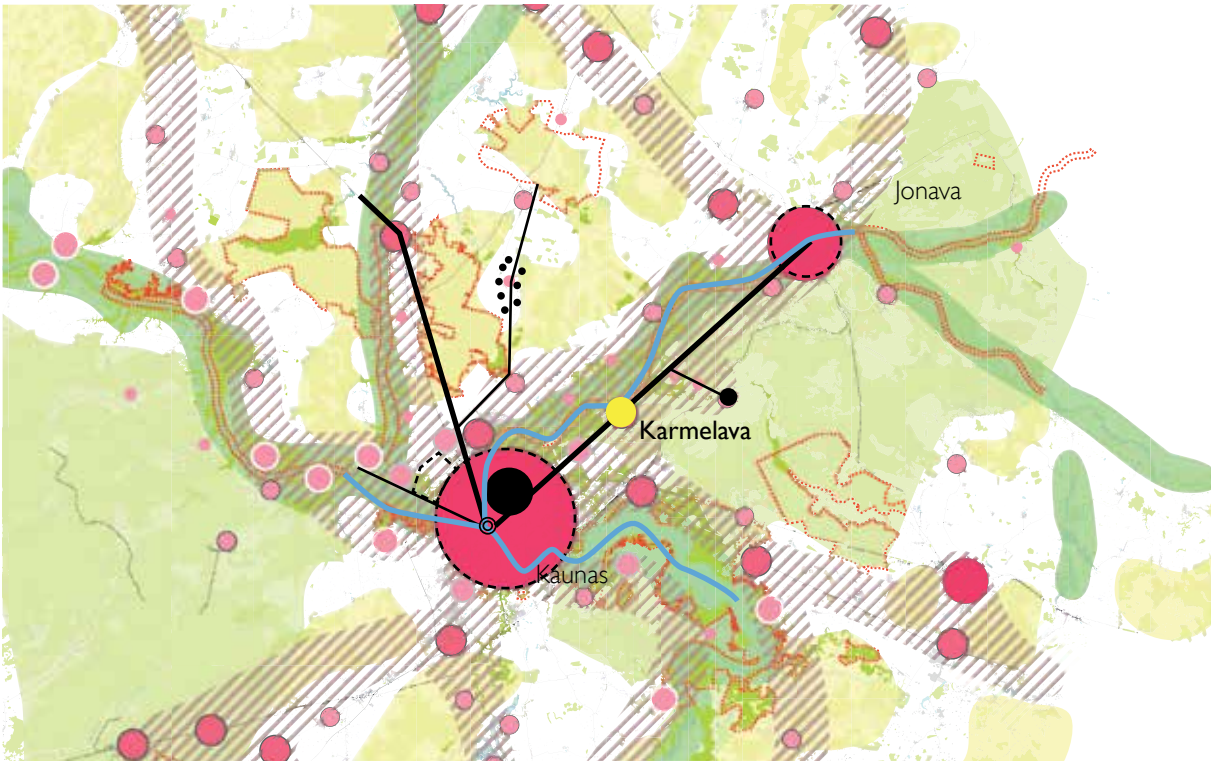


# Analysis

## Situation in the region

Karmelava is a typical church- node town situated close to Kaunas city. Originally town has started as a fishermen village by Neris river; however in 1832, during the Tsarist ruling period, new post road was built. Today this road is one of the main regional highways - A6. It connects Kaunas to Jonava and further to Daugavpils (Latvia). the road is heavily used not only for commuting between Kaunas - Jonava, but for transportation of good as well. Besides, main public transport routes from Kaunas to eastern part of Lithuania uses this road, therefore passes Karmelava. As a consequence town is really good accessible, yet experiences a lot of noise and pollution from heavy traffic.

On the other hand adjoining Neris river valley creates special conditions for the town: surrounding natural landscape has protected nature forest - park status, thus has high quality for recreation.



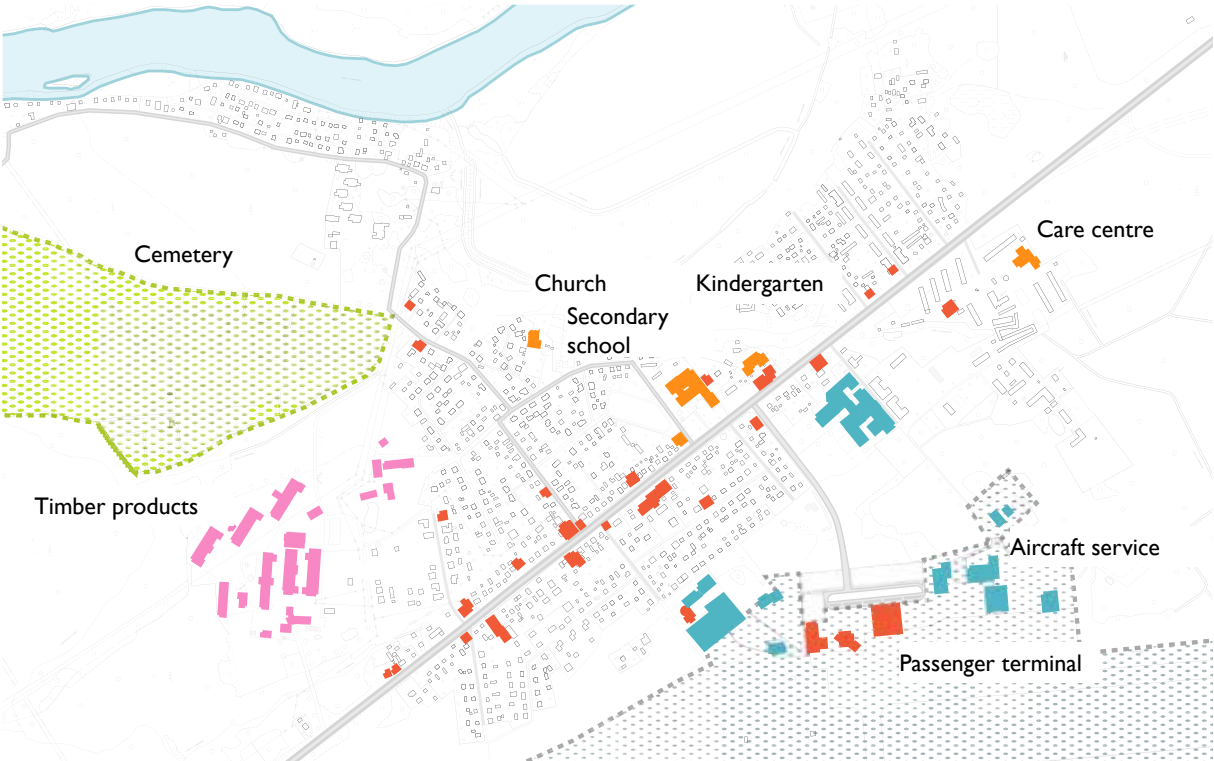
## Distribution of functions and services

Karmelava has diverse commercial activities: cemetery services, timber and furniture production, car repair service, fast food cafés and grocery shops. Largest number of commerce is distributed along the main road and is oriented to car users (commuters from other cities). Airport related services and companies locate either in reused buildings near the main road or in newly built buildings around airport.

Town has range of daily services - secondary school, kindergarten, care centre and frequent public transport connection as well as non-daily services - parish administration, cemetery, church and small B&B. Though public services are located in the central part of the

town, they do not form strong centrality. The main road is the most important factor while choosing location for new business.

Most of commercial activities along the main road are located in private houses, which are expanded and adopted to fit new functions.

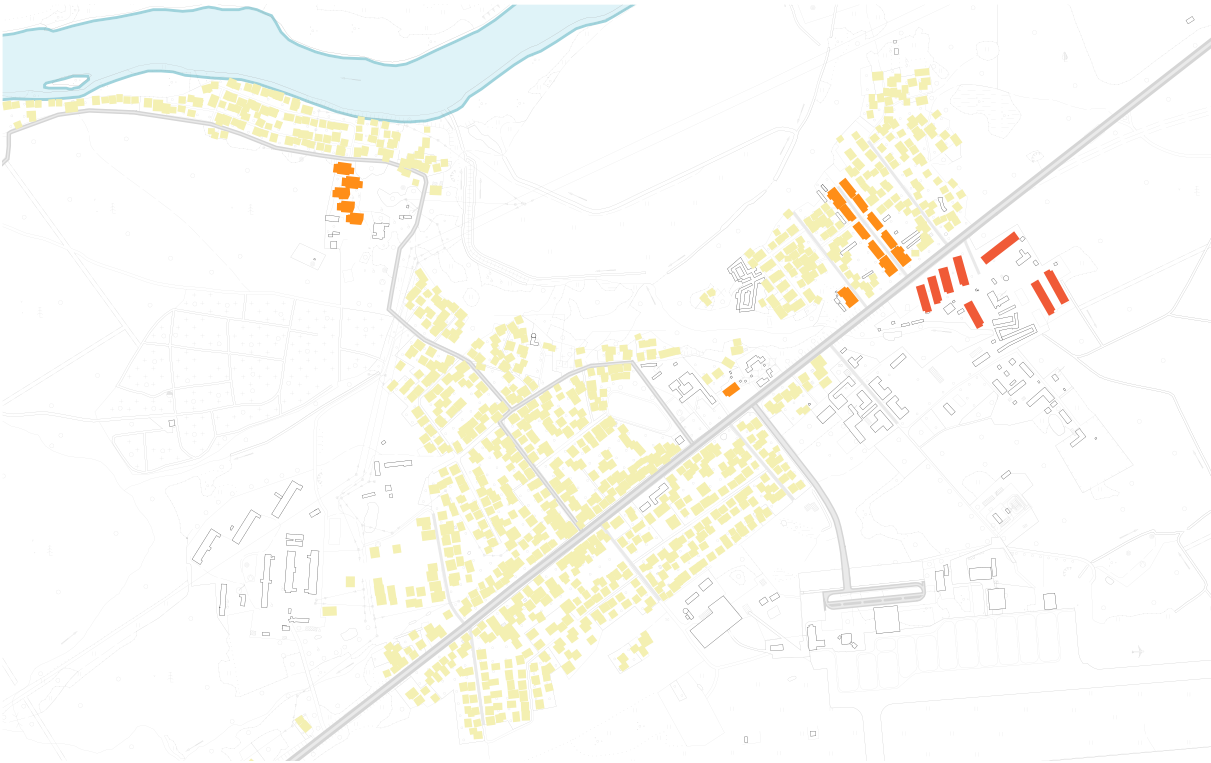
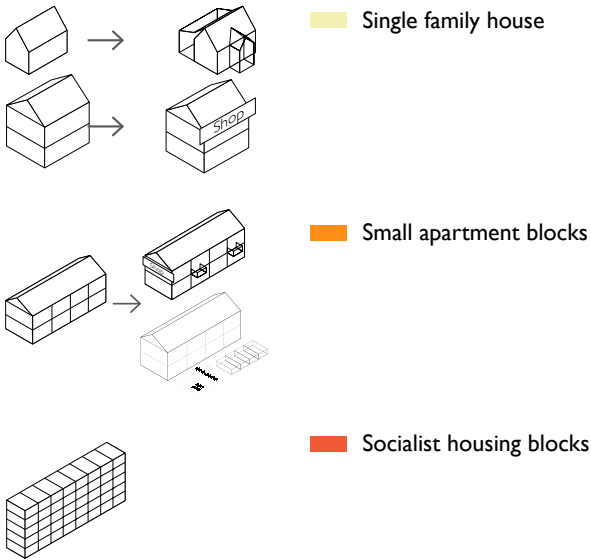


# Residential typologies

The largest amount of residents in Karmelava lives in single family houses, many of which are expanded to fit extended family or commercial facilities.

Small apartment blocks are less favoured due to less control over privacy and lack of privately owned land, yet residents in these apartments maintain relation with the surrounding space by occupying and using it for private purposes (growing vegetables, recreation, storage).

Socialist apartment blocks are the least attractive housing typology - they have no private space, are small, inflexible and public space around them are poorly maintained. Eastern part with predominant socialist blocks has the lowest real estate prices in town and largest concentration of social problems.



# Green structure and recreation

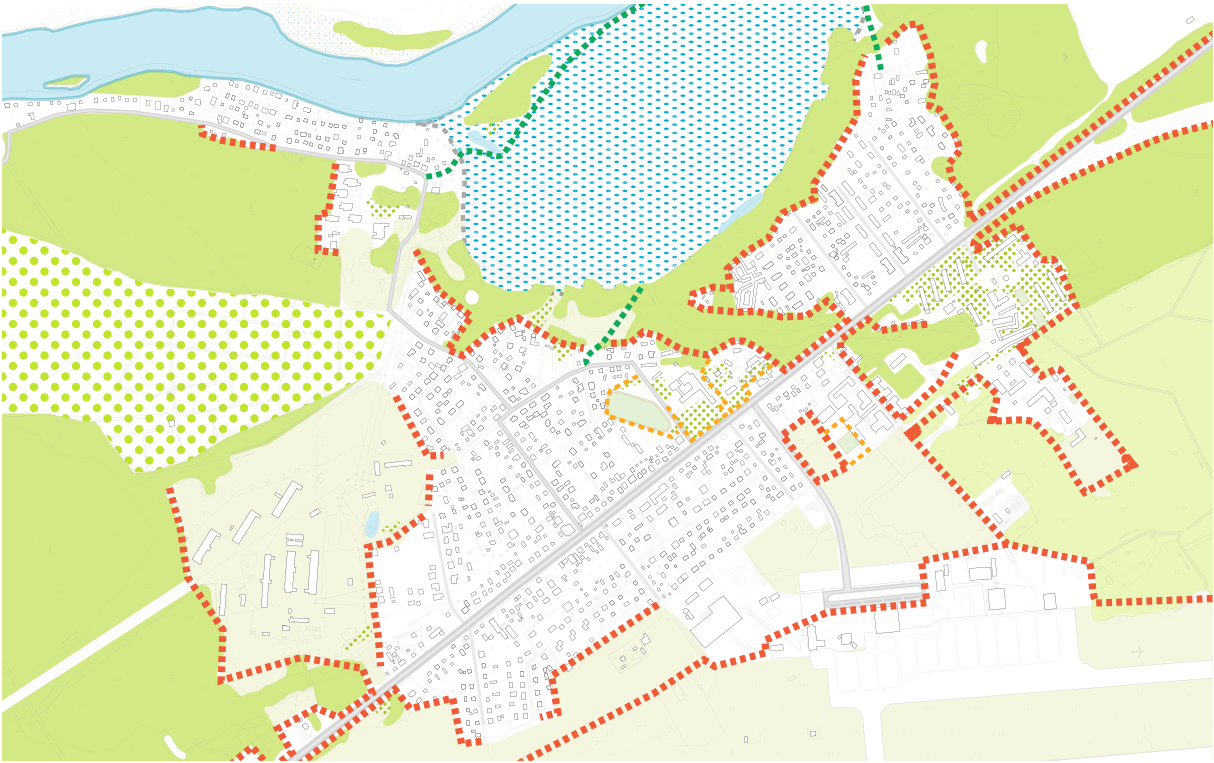
Karmelava is situated near one of the region's ecological corridors and is surrounded by diverse types of green structure (forest, river valley, wetland). Local river valley that connects flood-able meadow with woodland in the east crosses the town and cuts it in half creating high value nature area within town limits.

However the valley as well as other surrounding recreational green areas are inaccessible either due to private plots or due to physical boundaries (fences, bushes, unclear entrances, etc.).

One of the few access points to these areas are unclear and difficult to find for non-local visitors.

There are no dedicated bicycle paths within and outside the town, however local roads going to the forest in the north are occasionally used for recreational biking.

Overall, Karmelava has huge potential for developing recreation facilities and services based on surrounding green structure, yet little is actually done.





**View to Neris valley near Karmelava in early spring after the flooding period**



Public spaces

Karmelava has a network of public spaces (pocket squares) of which most are clustered along the major road. Largest part of surface in these pocket squares is consumed by parking lots in front of commercial facilities and only a small part is adapted to pedestrians (have hard surface pavements or any separation from car traffic and parking).

Though Karmelava extends only 2 km and everything is within walking distance, main road that contains major traffic flows is poorly adapted to pedestrians. Car oriented road profile is extremely unattractive to walk and even unsafe therefore street is rarely used by pedestrians. Main road and adjoining private plots are separated by green strip however, its quality is poor due to low maintenance and its non-defined purpose.

Park around school is extremely large and not used. It has sports facilities in the southern side and perishing orchard as socialist legacy on the other (orchard in school area - common practice for education and occupation of students).

Public space around socialist housing at the edge of the town is poorly maintained and in some places used for parking.

- Street-scape
- Car oriented pocket squares
- School park
- Public space around socialist housing
- Commerce





Road intensity

Currently highway A6 is one of the most intensively used infrastructure arteries in the region. It is constantly being upgraded to increase its permeability and speed limit, however in certain segments as in Karmelava's case upgrading of the road is not feasible and even more not desirable: though faster connection would be beneficial for economic development, it tremendously decreases quality of life within settlement. Recent demographic shift shows sound evidence of this trend: A6 becomes more and more important link in the region, yet population in Karmelava dropped by 10% in the last decade.



Regional infrastructure development plans

Solution for infrastructure bottleneck in Karmelava town is proposed in new development plans for A6.

Projected new by-pass between the town and the airport is expected to shift part of the traffic that is currently crossing the town by providing faster and safer route.

However there is a risk that unloading traffic from the main road could affect local businesses negatively due to reduced number of commuters.

On the other hand, new by-pass provides town an opportunity to regenerate core area - less traffic allows downgrading main street at the same time acting as a catalyst to regenerate adjoining network of public spaces.



Moreover proposed branch of new regional railway track to connect airport and Kaunas by rapid public transport connection can be seen as a potential to increase mobility of the whole town by creating inter-modal transportation hub (bike, car, bus, train, plane).

Transportation hub is an opportunity to strengthen town's position in regional network as a node town as well.

- New by-pass
- Prospective rail branch to the airport
- Access to by-pass

**Airport development plans**

Kaunas international airport is used for both passengers and cargo transportation.

Following infrastructure development plans and also due to growth in cargo transportation, airport has developed a vision for expansion.

Vision consists of two phases: first oriented in terminal expansion, airport and aircraft related services and the second, long-term phase is based on developing Airport park on the south of current airport area.

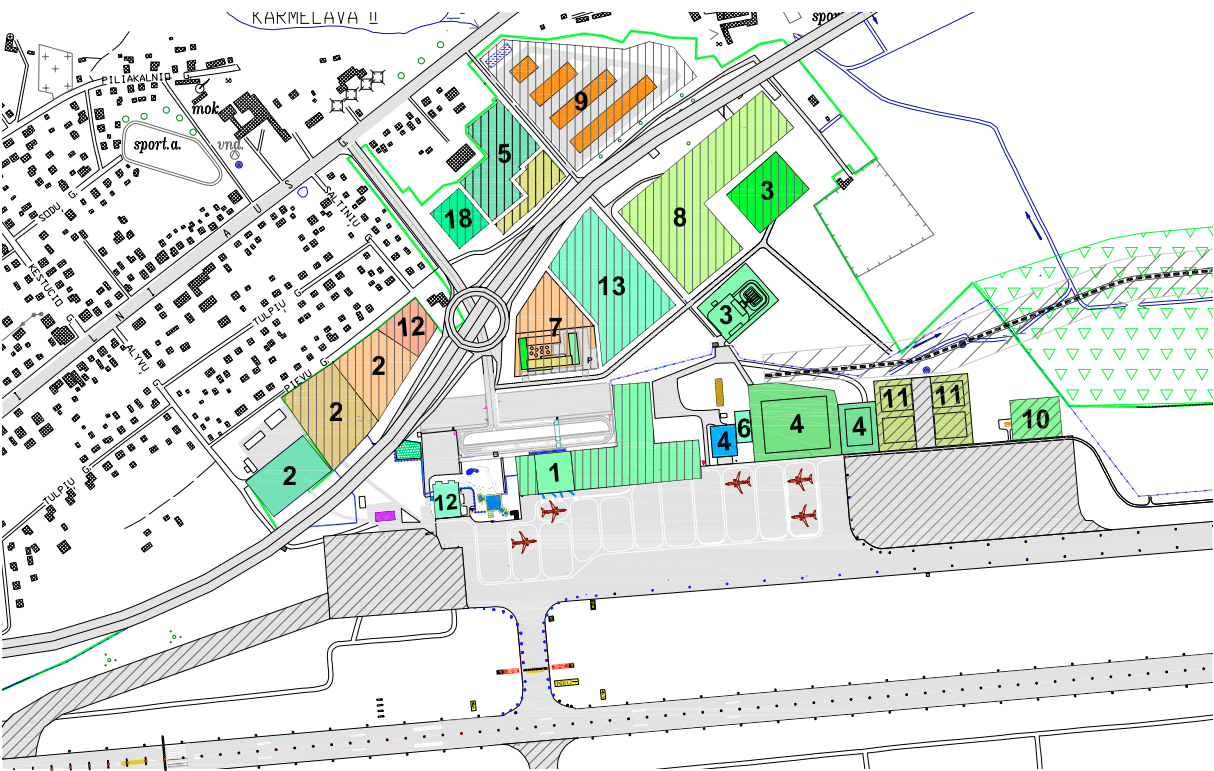
First phase contains programme for :

- New logistics ( 10 000 m2);
- Economy class hotel (70 beds);
- Office space (2 000 m2);
- Shopping and leisure centre (30 000 m2);
- Multi-storey parking (15 000 places);

- Helicopter MRO, aircraft repair and storage hangars (20 000m2);
- Expo centre;
- Other related services.

Such concentration of new programme opens up huge possibilities to strengthen the town even more. However current development scheme shows little relation between new programme and the town. It is mostly oriented around the airport and new by-pass.

Integrating new programme within town development agenda should be seen as a priority objective in order to improve its quality.



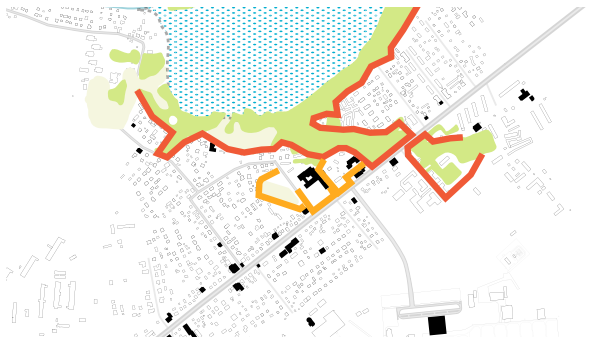


# Considerations

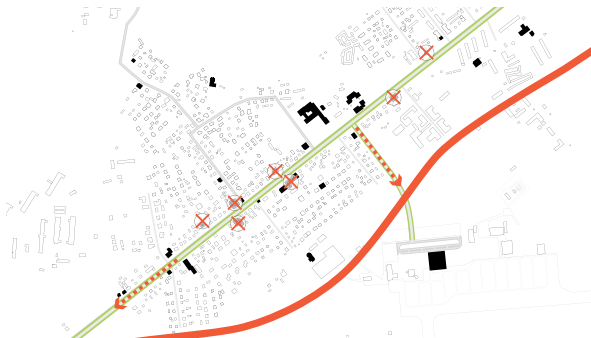
Pocket squares along the main road, but poor quality.



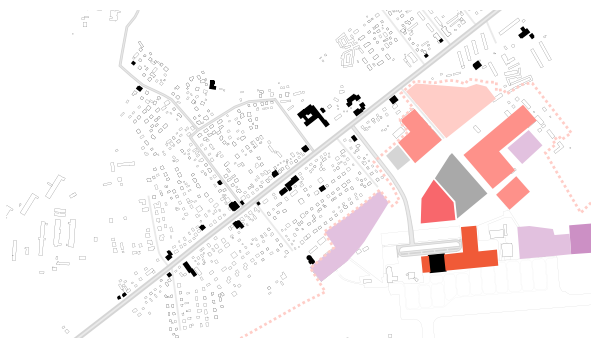
Valuable green structure inaccessible, especially from public space.



New by-pass gives an opportunity to downgrade the road, but poses a threat for commercial activities along it.



New airport development programme gives an opportunity for town's development.



# Vision

Vision for Karmelava integrates development guidelines set in regional strategy. These guidelines cover 2 broad development targets - economic growth and spatial development.

Targets oriented towards economic growth integrates strengthening local economy by creating new employment opportunities and more specialized cluster development.

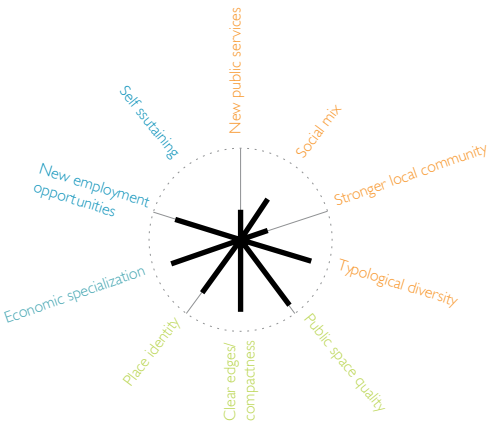
Whereas spatial development objectives emphasizes need for stronger place identity, compact development with maintained clear edges and good quality public space.

Following these regional development guidelines, vision envisions Karmelava as an attractive compact town with high quality, pedestrian friendly public spaces and streets, accessible recreation facilities, diverse economy and strong social capital.

In order to achieve this vision, next pages presents strategies for future development of Karmelava.

New masterplan will show possible new projects for the town that derive from implementation of the strategies

Last pages of this chapter will explain the most important pilot projects in Karmelava development.



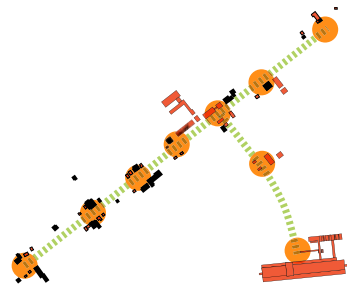
# Strategies

New infrastructure and airport development plans offer great opportunity for Karmelava to be upgraded.

Strategy for Karmelava defines 5 strategic layers that are related to revitalization of public spaces, redevelopment and intensification of the central part of the town as well as strengthening local entrepreneurs and integrating new airport programme within town's agenda. Green structure is seen as essential underlying structure that connects new projects in town and provides attractive living environment for new residential development.

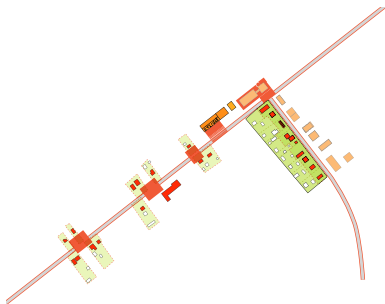
## New public backbone

Main street is downgraded to create space for pedestrians and cyclists. Existing pocket spaces along the road are converted to network of public squares. New public squares are easily recognisable and become attractive gathering places for local inhabitants. Central part of the town is strengthened with new public functions and the main entrance to the opened city forest park.



## Integrated development

Empty and unused area between strengthened town centre and the airport terminal is developed to fit new offices and businesses. Road connecting these two areas is narrowed in order to provide space for local entrepreneurs. Attractive public squares along downgraded main road and municipal cooperation encourages residents to start small businesses and new small scale commercial activities concentrate around these squares.



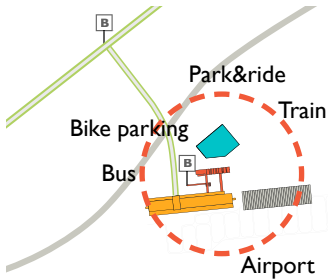
## Landscape as carrying structure

River valley forest is opened to the public and connected to the adjoining public squares. This way new city forest park is created that offers high quality natural area within the city. New residential development takes place in vacant and poorly used areas around this park.



## Transportation hub

New transportation hub is created in the airport. Flight, train, bus, car and bicycle routes interconnects here offering convenient and easily transfer between different modes of transportation. New multi-storey parking with park & ride facility and safe soft mobility route from the town's centre offers better possibility to use public transport for commuting.



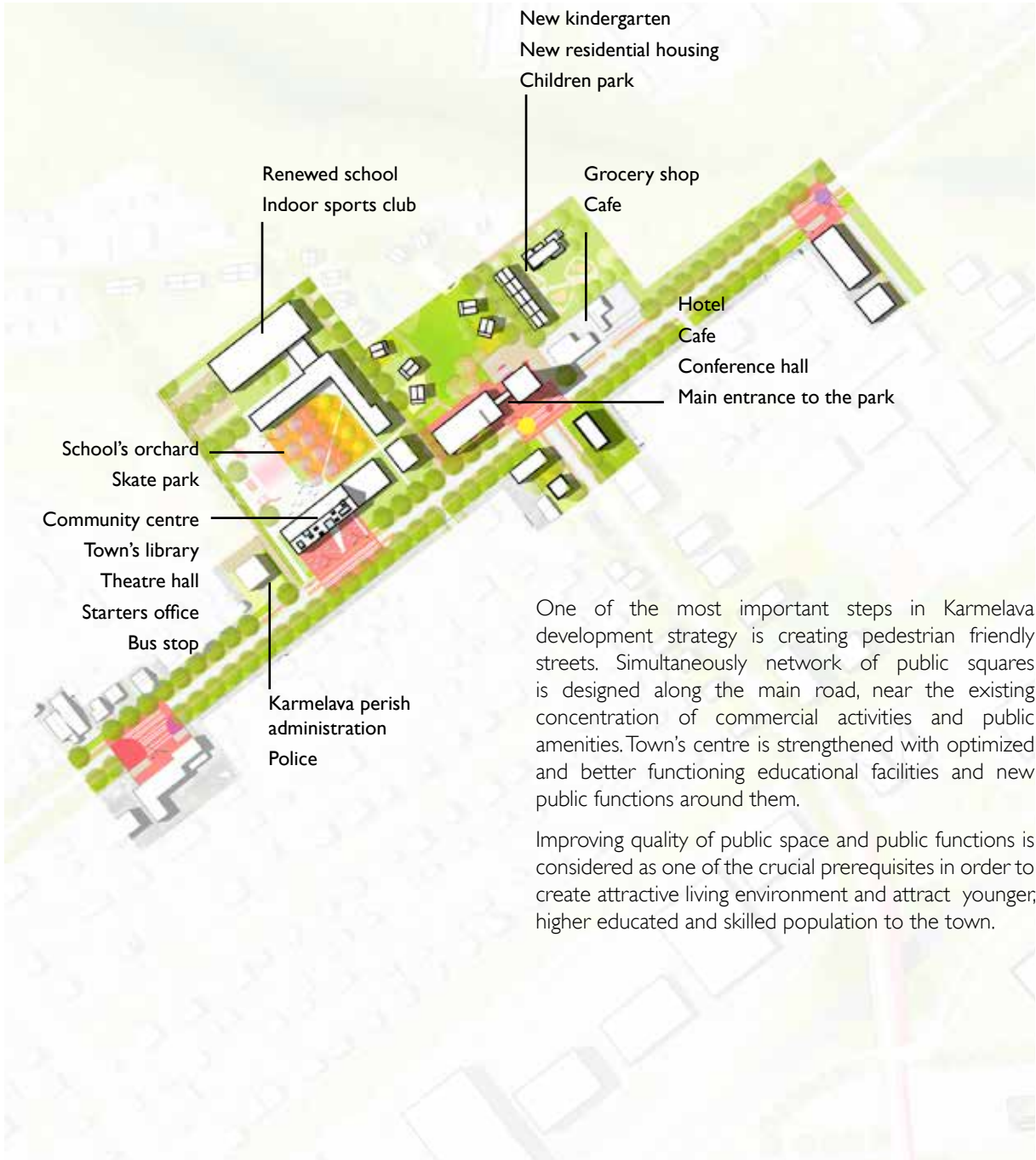


Development scheme





**New public backbone**



**Streets for the people**

First of all, simultaneously to the new by-pass project around the town, main road is downgraded. Since current road profile is extremely wide, yet has no space for pedestrians and cyclists, driving lanes are reduced from 2x2 to 1x1 to create space for safe walking and biking. Newly added dedicated slow traffic lanes are separated from driving part with green strip, which can accommodate parking where necessary (e.g. near commerce).

Green space on both sides of the road is widened and continuous tree line is used to strengthen its green profile. Green space along the road can be used by residents from adjoining plots for expanding commercial activities or otherwise converted into park-like green street scape.



Current situation.



Proposed profile.



## Network of public squares

Network of public squares are created along the main street where concentration of existing and newly added functions exist.

Town's centre is strengthened by cluster of community and public functions. Renewed school building accommodates indoor sport club and outdoor sports fields are extended with new playgrounds and skate park.

Previously unused school land along the main road is developed to accommodate new public facilities: community centre, town's library, small theatre hall, and starters office. New orchard garden in-between school and community centre serves as local park for both students and visitors of community centre.



## Stakeholders involved

### Public sector:

Ministry of Transport

- Financial support for redevelopment of the road

Ministry of Culture and education

- Financial support for school renovation and community centre

Kaunas district municipality

- Financial support for implementation and maintenance of the public squares

Karmelava parish administration

- Owner of the land and infrastructure
- Coordination of the project
- Developer for new kindergarten and housing

School administration

- Owner of the land
- Manager of indoor sports facilities

### Civic society

Residents

- Participation in the design process of the squares

School community

- Participation in the design process and maintenance of the new school orchard and outdoor playgrounds

Local community

- Participation in the design process and maintenance of the new community centre

### Private sector

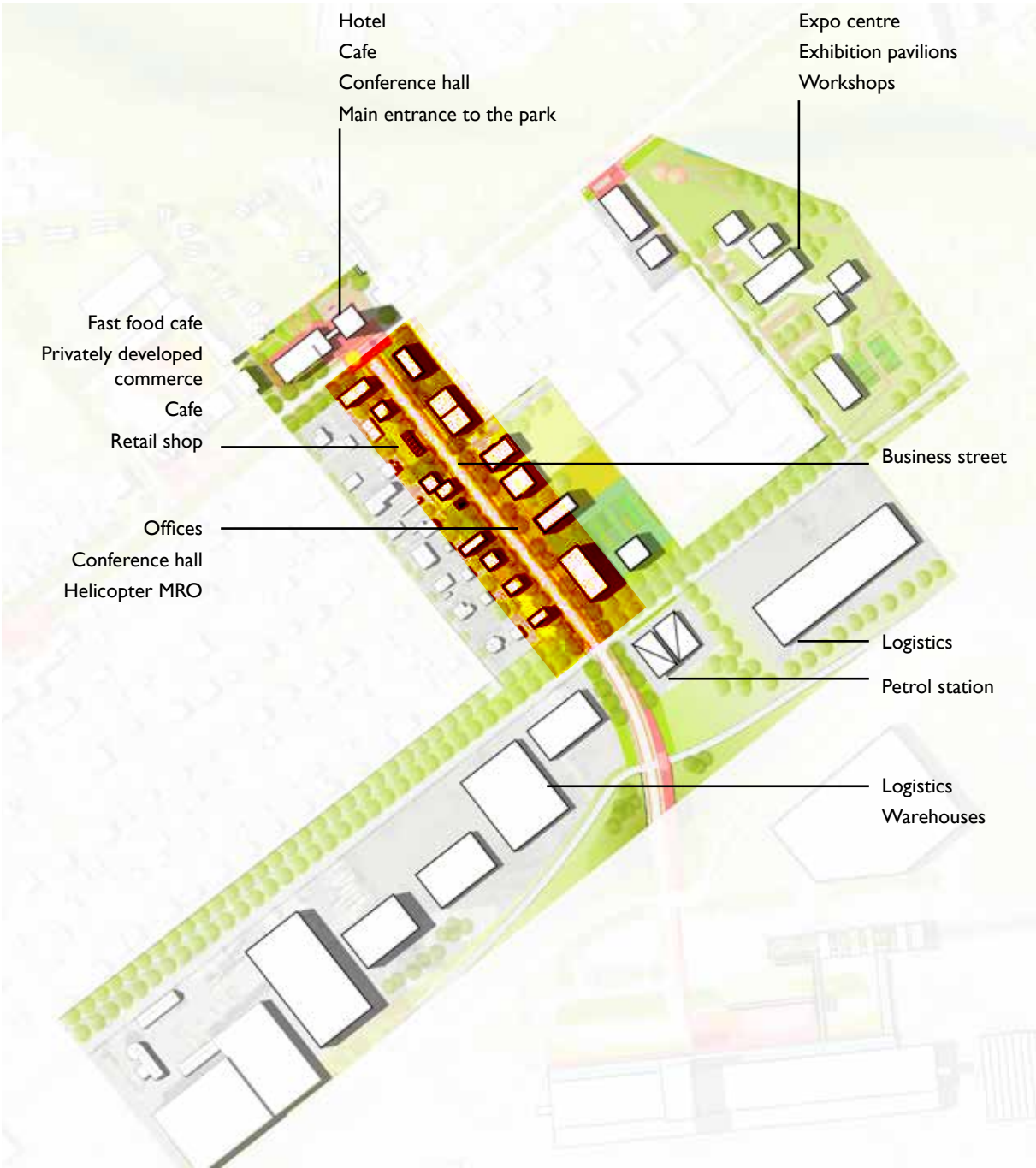
Real estate developers

- Cooperation and financial support for the implementation of the project

Local entrepreneurs

- Participation in project implementation
- Establishment of new local businesses around public squares

# Integrated development



# Stakeholders involved

Airport development plans offers opportunity for the town to increase its economic viability and attractiveness. It is done by integrating new programme to the towns structure.

Airport related new programme (logistics, helicopter MRO, aircraft repair and storage hangars, fuel station) is located close to the airport, between residential area and new by-pass. Large scale programme is separated from residential area by large green strip of trees and private from local street driving path.

It is expected that these measures will mitigate inconvenience for residential neighbourhood for experiencing heavy vehicles traffic and possible noise as much as possible.

Street going from the town's main road towards the airport is important connection between town's centre and airport terminal. It is strengthened by concentrating new offices buildings, conference hall and airport related companies headquarters.

This street also provides space for entrepreneurship for adjoining local residents. It is done by alternating existing street profile and giving maximum space for local development.

New hotel is developed on the main intersection of Karmelava. Tall hotel building acts as a landmark going from and to the town's centre and accommodates cafe, restaurant and observation deck with a view to the city park and unfolding panorama towards the wetlands and Neris river valley.

Expo centre buildings are located on the southern side of city park. Since Kaunas city lacks of good quality exposition centres, therefore attractive and green environment in Karmelava, proximity to Kaunas (15 min drive from Kaunas) and good regional public transport connection (by bus, train, plain, car) allows using new expo centre in Karmelava for national as well as international exhibitions and events.

## Public sector:

Ministry of Transport

- Financial support for redevelopment of the road

Kaunas district municipality

- Financial support for implementation and maintenance of the business street

Karmelava parish administration

- Owner of the hotel land and infrastructure
- Coordination of the project
- Developer for new kindergarten and housing

## Civic society

Residents

- Participation in the design process of the logistics
- Commercial development along the business street

## Private sector

Airport

- Owner of the land (logistics, business street, expo centre)
- Cooperation with parish administration

Real estate developers

- Cooperation and financial support for the implementation of the project
- Development of hotel, offices, rented commercial units

Local entrepreneurs

- Participation in project implementation
- Establishment of new local businesses around public squares



## Town centre landmark





Landscape as carrying structure



Local river valley forest is part of ecological structure as it connects Neris river valley with the woodlands in the east of Karmelava town. It crosses the town in the centre and can offer green recreation space if adapted to recreation purposes sensitively.

The quality of this ecological structure and new uses are combined by creating network of forest paths that starts in the entrance points from neighbourhoods and in the newly formed public squares and continues around the edges of the forest. In order to keep low impact of visitors, only a narrow strip of the forest is opened to use, the rest maintains the natural structure with wild plantation and access to these areas is limited.

Unused land around school and kindergarten in the central part of Karmelava is developed to residential housing in the city park. New residential development covers the costs of implementing city park, thus the town gets attractive green space without high costs.

Unattractive socialist neighbourhood in the east of the town is upgraded by extending forest into its communal space. Closest to the park housing is transformed into terraced apartments. Currently poorly maintained and partly vacant garage blocks that lie between forest and housing are replaced by low rise row housing and semi-detached housing. Old warehouse that lie in the middle of the blocks and has identity is preserved and converted to workshop and starters office space. Soft mobility network through park and main street ensures good accessibility to the town's centre and green park environment encourages its use. Neighbourhood playgrounds are restored.

Redeveloping of the poorly used houses and inner space allows regenerating public space in this neighbourhood: new residential housing can cover costs for neighbourhood sports field and children playgrounds and rent from starters and workshops in old warehouse can cover maintenance of the green space.



## Adapting inner streets

Inner neighbourhood streets that adjoins the forest are softened and alternated to park lanes to extend the park inside the neighbourhood.

Currently these streets are adapted only for car users, they have no pedestrian paths and their profile is quite narrow. Project proposes keeping the size of these streets but alternating the surface to create shared lane for cars, bikers and pedestrian: instead of creating wide, rarely used street profile, multiple uses are separated by different surface material. This allows dedicating more space for green structure along the streets and widening tree lines.

Implementation and redevelopment costs of this infrastructure project can be partially covered by new residential housing that is developed around the forest in used school and kindergarten land.



Current situation



Proposed profile.

## Stakeholders involved

### Public sector:

Ministry of Environment

- Financial support for development of forest recreational structure
- Owner of the forest land

EU funds

- Financial support for development of forest recreational structure

Kaunas district municipality

- Financial support for implementation and maintenance of the forest

Karmelava parish administration

- Owner of the land
- Coordination of the project
- Developer for school and kindergarten land **Civic society**

Residents

- Participation in the design process of the park
- Cooperation for new residential housing in the park

School community

- Participation in the design process and maintenance of the surrounding park

Local community

- Participation in the design process and maintenance of the park

### Private sector

Real estate developers

- Cooperation and financial support for the implementation of the project

Local entrepreneurs

- Participation in project implementation



**New residential area and city park**



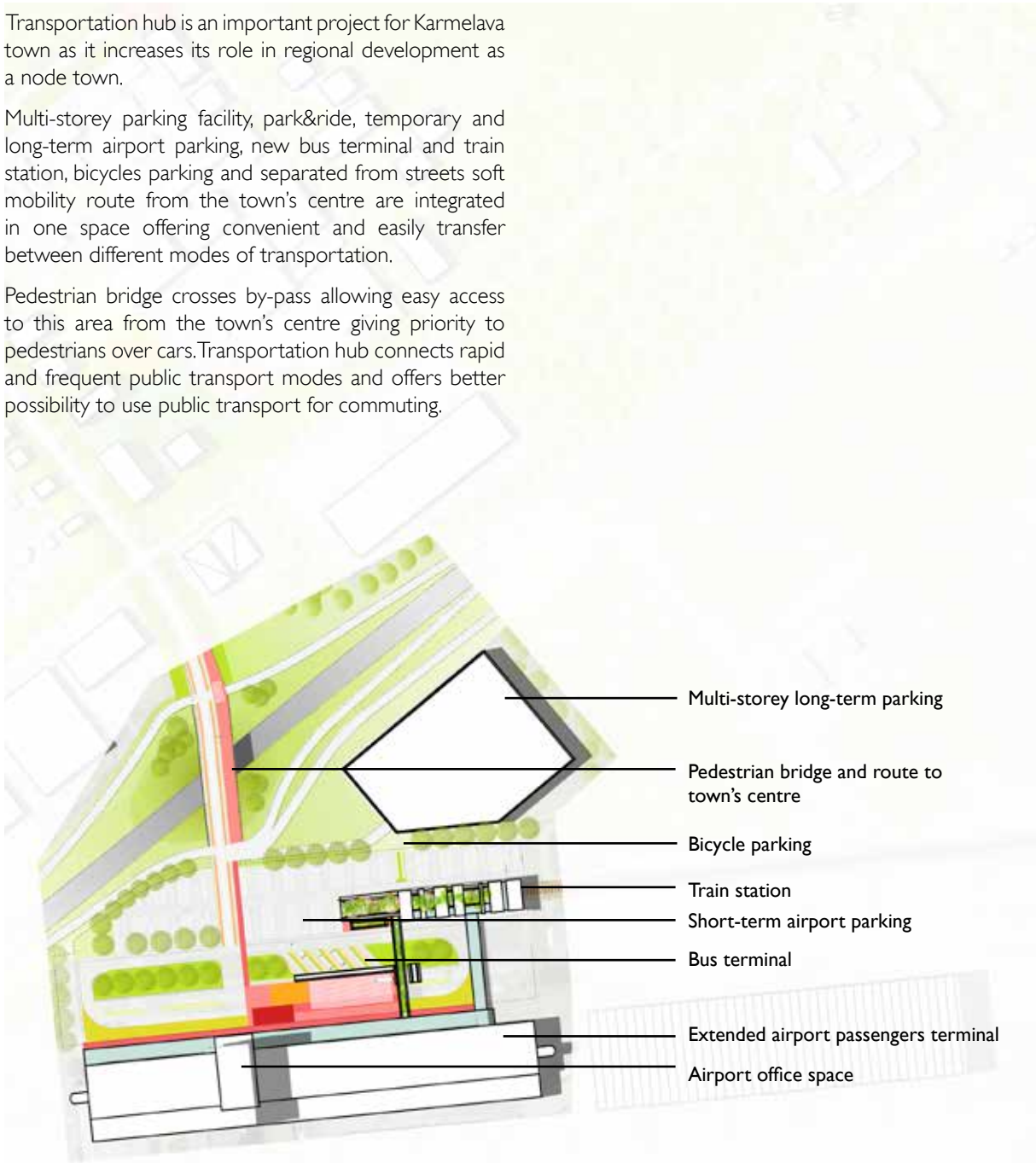


# Transportation hub

Transportation hub is an important project for Karmelava town as it increases its role in regional development as a node town.

Multi-storey parking facility, park&ride, temporary and long-term airport parking, new bus terminal and train station, bicycles parking and separated from streets soft mobility route from the town's centre are integrated in one space offering convenient and easily transfer between different modes of transportation.

Pedestrian bridge crosses by-pass allowing easy access to this area from the town's centre giving priority to pedestrians over cars. Transportation hub connects rapid and frequent public transport modes and offers better possibility to use public transport for commuting.



# Stakeholders involved

## Public sector:

Ministry of Transport

- Financial support for bus and train terminal

Regional government

- Operator of regional public transport system

EU funds

- Financial support for train connection

Kaunas district municipality, Karmelava parish administration

- Coordination of the project

## Civic society

Local community

- Participation in the design process of soft mobility route

## Private sector

Airport

- Owner of the land
- Cooperation with parish administration
- Operator of passenger terminal

Real estate developers

- Cooperation and financial support for the implementation of the parking facility



## Transport hub





**Karmelava master plan**





Evaluation of strategies for Karmelava

Effect on Strategies and pilot projects	Public services	Housing diversity	Public space quality	Social capital	Community	Recreation	Place identity	Economic specialization	Job creation	Mobility	Compactness	Other
<b>New public backbone</b> Street downgrading Network of public squares Community centre Renewed school with sports club Kindergarten redevelopment School orchard park Starters office	+++	++	+++	+	+++	+++	+++	+	+	+	+	
<b>Integrated development</b> Hotel Office and business street Space for entrepreneurship Expo centre Airport related programme	++		++	++	+		+++	+++	+++		+++	Expo centre to accommodate regional events
<b>Landscape strategy</b> Forest adaptation to recreation City park New housing in the park Warehouse workshop space Redeveloped socialist blocks Extended park to redeveloped socialist neighbourhood inner area	+	+++	+++	+	++	+++	+++		+	+	++	
<b>Transportation hub</b> Train station Bus terminal Multi-storey parking Route to town's centre	+++		+			+	+	+++	+	+++	+++	Regional role as node town



# Application of strategies to other node towns

## New public backbone

New public backbone strategy can be applicable to other node towns to a large extent.

Regeneration of public spaces can be funded by developing municipal land, which in most of the cases is underused and in central locations of the towns. Another possible method is attracting private developers within town's limits to develop residential and mixed use housing with integrated public spaces and new public functions. Private developers can be encouraged to do that by effective public-private cooperation, tax incentives and other applicable tools.

Purpose of this strategy is not only to beautify public spaces, but to create attractive living environments within existing urban fabric thus promoting it over the greenfield development.

## Integrated development

Integrated development strategy is crucial in order to increase economic activities within existing settlements in Kaunas region and especially to strengthen economic potential in smaller towns, which struggles to compete for attracting social capital.

Essential tool in implementing this strategy is public-private cooperation between local authorities and private investors and developers.

Though Karmelava's case is partly unique in regional context due to the airport and the amount of the programme it can offer, yet every node town has existing potentials for attracting new economic activities and strengthening existing ones.

## Landscape as carrying structure

Most of the node towns in Kaunas region can use and adapt landscape strategy to some extent. As region has diverse elements of landscape adjoining and crossing node towns, these ingredients can be used to strengthen towns' recreational potential and offer new housing typologies in attractive environment within the limits of existing urban structure.

Integration of landscape within urban structure and intensification is essential tools to increase spatial quality of the node towns.

## Transportation hub

Transportation hub strategy can be applied to other node towns, yet the scale and size of interconnecting means of transportation may be much smaller than in Karmelava's case.

In most node town's available modes of transportation are only private car and bus connection. Nonetheless regional public transport strategy offers possibility to strengthen node towns as public transport interchange nodes, which simultaneously increases accessibility and regional importance of these towns.

# Reflection

This chapter reflects the whole process of graduation project and highlights the main discoveries and findings while analysing Kaunas region. Potentials in the region are used to formulate strategic guidelines for the regional development, which are embedded into local development guidelines and translated to local development strategies for selected types of settlements.

Strategy for one selected type - node town is elaborated in more detail and following by proposed design for this town. Applicability of this strategy to other node towns is shortly explained as well.

The distance is taken is taken form the project in order to have a critical reflection and situate the work in wider scientific context.



## Regional spatial strategy: key themes

The initial problem statement set in the beginning of research pointed out the major problems that region faces now, i.e. inadequate to the demographic processes urban expansion to the countryside, programme and investments concentration only in the largest cities, decaying rural landscape and its weakening economic links to the urban areas. To address these issues concepts of endogenous rural development model (Terluin, 2003) (in terms of regional economic development) network based development model (Rocco, 2007) (in terms of accessibility and functional links) and landscape urbanism theory based model (Waldheim, 2006) (in terms of spatial organization) could be feasible alternatives for

regional development in current economic, social and spatial conditions in Kaunas region. Further elaboration on the relevance of these concepts within the context in regional scale and especially within particular case studies (defined as types of living environments in Kaunas region) brought forward a set of leading themes that form a framework for proposed regional strategy. The complexity of aspects related to the leading themes of rural economy, rural mobility, concentrated spatial development and place quality could be seen as main priority towards the comprehensive regional strategy.

To start with, comprehensive research using literature and media review, interviews with local spatial planning specialists, mapping and site visits helped evaluating the drivers of change and development trends in the region and identifying the major problems that should be seen as a priority while formulating the vision. Literature studies on economic rural development concepts, network based development models and landscape urbanism theory gave essential theoretical knowledge and helped formulating a vision and development guidelines that would integrally address emerging issues in the region.

regional spatial development and enhance social, economic and environmental sustainability through their implementation on local scale, however strong political will and cooperation of private, public and civic society is crucial.

In the next step, historical analysis was made to understand the underlying reasons for current urban structure in the region. This analysis helped defining most prevailing types of living environments and identifying their qualities and existing potentials for future transformation. Inter-scalar analysis of the site-study cases representing diverse living environments in the region helped identifying which issue (mobility and accessibility of services, spatial expansion, level of economic activity and place quality) is the most relevant in each (regional and local) scale, thus allowing to formulate regional strategy guidelines and local strategic development guidelines for diverse living environments that specific study cases represent.

Background knowledge and personal observations helped evaluating which theory-based guidelines (both regional and local scale) are valid in the context of Kaunas region and which would not bring desired outcomes. Most suitable strategic guidelines were applied to selected study cases of five selected living environments that represent settlements with highest potential of transformation.

Development strategy and design for chosen site-case study is based on development guidelines for a node town, illustrated with Karmelava church town and shows how strategic guidelines on regional scale can be embedded into physical change of space in the local scale.

Evaluation of the design showed that proposed strategic guidelines on regional scale could affect the

## Project: research, design and methodology

Complex Cities Studio theme in relation to Kaunas region

Complex Cities Studio emphasizes the need to understand ongoing complex economic, spatial and social processes in the built environments and aims at formulating tools, strategies and designs that would have positive impacts on these processes leading towards a sustainable and responsible development. As interrelating actual needs for land and trends in its consumption (not to forget actual power and governance structures that affect these processes) become increasingly complex both in the city and in wider context, strategic planning becomes an important tool in organizing space in order to balance diverse interests, objectives and needs. Due to globalization previously defined boundaries of the countries or cities are not valid anymore; instead, city region becomes the most relevant scale.

Chosen subject of Kaunas city region and proposed spatial development strategy corresponds to the aims set in the studio: to develop the region in a more coherent way by steering economic and spatial development that would be beneficial for society in longer perspective.

Chosen methodology in relation to Complex Cities Studio approach

Approach of the studio is based on research – design – evaluation. Studio offers variety of methods to carry out the research and design, e.g. mapping, system dynamics, network analyses, spatial modelling tools and planning methods, spatial phenomenology, etc. Evaluation and ability to reflect on personal work is considered an important method in the research and design process. Chosen method for the graduation project corresponds to the general path of research – design – evaluation process.

# Contribution to the body of knowledge

Kaunas region as secondary city region in post-socialist country

Despite the considerable number of literature carried out on post-socialist cities (Stanilov, 2007; Tsenkova, 2006; Andrusz et al., 2011; Vanagas et al., 2002 and others) the researches on spread of post-socialist cities are quite new. Analyses of Daily Urban Systems of Ljubljana and Belgrade (Pichler-Milanovic and Krevs, 2010) are one of few early examples of the research on urban region in post-socialist countries. In Lithuania, only Vilnius region has been analysed in similar manner (Ubareničienė, Burneika and Kriaučiūnas, 2011). The case of Kaunas region shows similar development trends to other regions in post-socialist countries. However status of a secondary city, affects the scale of changes in Kaunas region to a large extent and it is not always appropriate compare capital cities with Kaunas, instead collected academic and empirical observations and some of the elements of the proposed strategic development guidelines would be more relevant to spatial-economic development strategies in similar secondary regions in Lithuania or other countries that face comparable socio-economic and spatial challenges.

Kaunas as a poly-centric region

Socialist's even settlement system has changed in the last two decades adapting to capitalist and market driven economy. Despite the fact that urban structure in the region lost its functional links to each other, physical network of settlements and more important infrastructure is still there. As infrastructure is one of the key elements in spreading economic vitality instead of concentrating it to one centre, existing physical network opens up a possibility for poly-centric network development model. Of course this model validates to a certain extent and only part of the measures could be fully integrated in the region due to low density in the rural areas.

Kaunas as a compact region

Compact cities definition refers to urban environments, however a compact region developed according to similar principles (growth accumulation, good public transport accessibility among settlements, mixed use environments development) could contribute to social, economic and environment sustainability in larger regional scale as well as in existing settlements. Growth accumulation and steering to desired locations could prevent rural countryside from degrading and increase social capital.

Governance revitalises urban structure

Current regional governing process is hectic and segmented. Region has fragmented administration system that separates city area from the rural areas thus creating obstacles to implement regionally sound decisions. Planning from private sector lack coherence among each other both in local and regional scale; public sector plans often are one-dimensional and civic sector is often excluded from planning process whatsoever. Municipalities, parishes and especially local authorities should be proactive in planning processes by taking initiative and attracting private and civic sectors to cooperate. Proactive planning would allow to some extent revitalize existing settlements and stop current negative degradation processes.



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# Greater Kaunas in pursuit of coherence

Unlocking regional competitiveness and balanced development through regional spatial strategy

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Master thesis report

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