URBAN TRANSFORMATION OF RIGA’S MICRORAYONS
FROM A SUSTAINABLE URBAN DESIGN PERSPECTIVE
CASE STUDY: MEŽCIEMS
JOMANTE VALIULYTE
2013
Spatial Planning with an emphasis on Urban Design in China and Europe
Blekinge Institute of Technology (BTH)
Karlskrona, Sweden

Institute for Sustainable Urbanism (ISU), TU Braunschweig,
Braunschweig, Germany

Tutors:
Prof. Jana Revedin (BTH);
Prof. Dr. Vanessa Miriam Carlow (ISU)

Pictures, maps and drawings are made by the author, the ones which are
used from other sources are explained in APPENDIX 2 of this thesis.
Copyright © Jomante Valiulyte (jvaliulyte@gmail.com)

CAD drawings were provided by ISU.
Today, almost every town in Europe has a district of mass housing estates. Especially European countries, which were in the former Soviet Union, are facing ample issues on dealing with mass housing districts, which cover a great part of cities. Most of them are in a critical condition and in necessary need of renovation. Nevertheless, they are strongly criticized by researchers, as uncomfortable places to live, which do not fit the human scale. These post – Soviet mass housing estates, which are called ‘microrayons’, is an immense headache to all post - Soviet countries.

Riga, which is the capital of Latvia and the biggest city in the Baltic States, can be considered as a special case because of its historical and political situation. While in the past, serving as a western hub for the former USSR, today it is an independent city which is located in a democratic country. Despite the fact that Riga’s historical center is included in UNESCO world heritage list because of its unique Art Nouveau/Jugendstil architecture, almost one third of the city is covered with post – Soviet mass housing estates. Mežciems is one of them. Once been a soviet ‘microrayon’, today Mežciems is a challenging place for sustainable urban reconstruction.

Sustainable transformation of ‘microrayons’ sounds like a promising future. Sustainable development is based on creating comfortable zones for humans, practicing the use of renewable resources and developing a nature friendly environment. While sustainability itself is focused on the future, not only the present.

In this project the case of Mežciems is investigated. Mežciems was chosen because of its unique location and surroundings. Crucial was it to find appropriate approaches of sustainability which could be implemented in Mežciems ‘microrayon’. The ones which extend the life of Mežciems, preserve the history and improve urban structure of the whole city, were used.

In order to understand the scale and the real situation of Mežciems, on - site investigation, literature studies and analysis were done. From these it was observed that Mežciems as well as other microrayons possessed many problems. Thus some strategies are used in this project to show that these problems can be solved in the most economic and efficient way. This ends by proposing a new design which if implemented, would transform Riga into an attractive and sustainable city. These strategies also have the potentials to transform other areas plagued by the problems associated with mass housing estates.

**Key Words:** mass housing estates, sustainable revitalisation, microrayon, urban transformation, sustainable urban design.
Two years of Master studies of Science Program in Spatial Planning with an emphasis on Urban Design in China and Europe at Blekinge Institute of Technology was full of new experiences. This program gave me the opportunity to gain new knowledge in the professional field.

This thesis would not have been done without an Erasmus Vocational Training Program, which gave me the possibilities to gain professional experience in the Institute for Sustainable Urbanism, TU Braunschweig, Germany. The thesis was made in a collaboration with two great professors: Prof. Jana Revevin and Dr. Prof. Vanessa Miriam Carlow.

I want to give great thanks to Dr. Prof. Vanessa Miriam Carlow, Institute for Sustainable Urbanism (ISU), TU Braunschweig, for giving me the opportunity to do a thesis in the ISU and for introducing me with many people in Riga, who made this thesis possible, and also for her guidance during my thesis work by sharing her knowledge with me;

I am equally grateful to Prof. Jana Revevin, DNS School of Planning, Bleckinge Institute of Technology, for guiding me the right direction, exchanging her knowledge with me and providing me with valuable advices.

A great amount of people has helped me during my visit in Riga. Without them this thesis would not look like it is today. I am particularly overwhelmed with their help.

Last but not the least I want to address a special thanks to my family and friends, who gave me their moral and financial support throughout my studies. Thanks for your encouragement!
## TABLE OF CONTENTS

### INTRODUCTION
- Riga - general facts.................................................................9
- Microrayons in Riga.................................................................10
- Riga - Official image...............................................................11
- Riga - in reality.......................................................................12

### INTRODUCTION TO THE PROBLEM
- Post-Soviet mass housing .......................................................14
- Mass housing districts in Riga................................................14
- Land ownership and privatization in Riga................................16
- New housing projects in Riga..................................................16
- Urban sprawl.............................................................................17
- Conclusions..............................................................................17
- Mežciems...............................................................................18
- Aim........................................................................................19
- Delimitations............................................................................19
- Research question.................................................................19

### THEORY AND METHOD
- Method..................................................................................21
- Literature review......................................................................21
- Mapping process......................................................................21
- Site visit................................................................................21
- Interviews...............................................................................22
- Theory and Background..........................................................23
- Microrayons – The beginning..................................................24
- Historical aspect.....................................................................24
- The establishment of Microrayon.............................................25
- Conclusions............................................................................26
- Microrayons in Riga...............................................................27
- The urge for renovation...........................................................27
- Possible participants in Renovation process............................27
- Renovation examples..............................................................28
- Bijlmermeer (Amsterdam, The Netherlands)..........................28
- Hellersdof – Marzahn (Berlin, Germany).................................30
- Conclusions............................................................................31
- Understanding the notion of comfortable living environment...32
- Work.....................................................................................32
- Dwelling..............................................................................34
- Self – worth...........................................................................35
- Evaluating the theoretical approach of qualitative living environment....37

### MICRORAYONS IN THE CITY’S CONTEXT
- Age of microrayons...............................................................39
- Landscape...............................................................................40
- Location of microrayons.........................................................41
- Connectivity..........................................................................42
- Motor roads:..........................................................................42
- Bridges:................................................................................42
- Bicycle routes and pedestrian network:................................43
- Transit services:....................................................................44
- The scale...............................................................................45

### MICRORAYONS IN DETAILS
- Self infill................................................................................48
- Local business - Self-transformation of flats..........................50
- Public spaces: challenges.......................................................51
- Public spaces: potentials.......................................................55
- Conclusions of the analysis...................................................57

### URBAN RENOVATION STRATEGIES FOR RIGA’S MICRORANS
- Study area: Mežciems 1977-1985.........................................58
- Mežciems in Riga’s context....................................................59
- Mežciems in Riga’s context....................................................60
- Surroundings.........................................................................61
- Mežciems built character.......................................................62
- General situation of public spaces.........................................63
- Built height...........................................................................64
- Built type..............................................................................65
RENOVATION STRATEGIES FOR THE STUDY AREA:
MEŽCIEMS.................................................................66

• Strategy Nr. 1: Better connection with the city center...............................68
• Strategy Nr. 2: Mixed use infill:.................................................................69
• Strategy Nr. 3: To create new and encourage existing forms
  of entrepreneurship..................................................................................70
• Strategy Nr. 4: Lively public spaces..........................................................71
• Strategy Nr. 5: The mix of functions within a walking distance..................72

DESIGN PROPOSAL FOR MEŽCIEMS......................................73

• IDEA: To improve bicycle links from the city centre to Mežciems............75
• IDEA: Removal of Gailezera iela and creation of extra speed
  reduction barriers in Sergeja Eizensteina iela and in Hipokrata iela........76
• IDEA: Renovation of houses by extending their size..................................77
• References of housing renovation............................................................78
• IDEA: Designing new buildings in the area..............................................79
• IDEA: More entrepreneurial activities in the area....................................80
• IDEA: Enclosed courtyards divided with small pockets of spaces..............81
• IDEA: Open public space with the variety of functions..........................82
• IDEA: Bus stops are located in that way so it would take 3 minutes
  to reach the destination..........................................................................83

EVALUATION OF THE DESIGN PROPOSAL..............................84

CONCLUSIONS........................................................................88

APPENDIX 1: BIBLIOGRAPHY..................................................89

APPENDIX 2: PICTURES.........................................................91
INTRODUCTION
Reconstruction of mass housing estates is a hot topic today. Facing the changes of climate, energy crisis and rapid urban sprawl in the 21st century, it became crucial to modify the urban planning system of the city. Radical visions on the urban planning structure born in the 20th century, which denied the setup of a traditional city.

The famous organization of the 20th century called 'CIAM' (International Congresses of Modern Architecture) with Le Corbusier in the front, had visions for the city, which structure supposed to work as a mechanism of a machine with ‘over scaled urbanism of freeways’ and ‘repeating, massive housing blocks’. His new concept of planning became ‘the lingua franca of internationalist modernisms’ proponents’. (Polyzoides et al. 2012, p.51). Therefore, the mass production of building is highly criticized these days.

Even though Stefanos Polyzoides (2012, p.56) asserts that these mass housing districts, which became common these days, usually are an architectural pieces of ‘lesser hands and minds’ than Le Corbusier, he still contends the conception of it: ‘For half a century, the measures introduced by most architects to ameliorate perceived urban problems have wreaked a level of chaos-by-design worse than the problems that invited architectural mediation in the first place’ (Polyzoides, 2012, p.56). Professor Jana Revedin criticizes mass housing if it neglects the human condition, the connection to the local culture and social dimension, to the historical and geographical character of the site. Sustainable Urbanism has, in her theory, to follow not only ecological and economical, but also cultural and social aims to become a planning that respects the populations necessity to flexibility and individual interpretation of dwelling, also through the creative occupation of the public ground and the self-building of necessary living and service spaces. She claims that mass housing of “international style”, at least in Germany and the Northern countries, pushed away the ideas of the reformatory Early Moderns (Tessenow, Taut, May, Sharoun, Poelzig, Gropius together with autarkist “social-green”-landscapers and urban planners as Schumacher or Leberecht Migge) which were focused on upgrading the dreadful urban living conditions of the industrial age (Revedin, 2009) instead of following dishuman masterplans that proved unaccepted by the populations and, unloved, aged badly, Jana Revedin proposes, in our times of migration and knowledge exchange, her theory of the “Radicant City”, an organic and homogeneous urban tissue that grows, as the radicant plants, where it needs nourishment and hold following the inhabitants true and individual needs, “creating itself and then continuously upgrading itself from within, using the simplest means”. (Revedin, 2013).

Kenneth Frampton (2007) denies the rightness of mass housing construction by drawing the reasonable comparison with the car production. According him, mass produced houses differs from cars because of their limited ‘spatial flexibility and technical refinement’. Additionally, dwelling cannot be mass produced because his framework does not fit into consumer oriented manner. While a car has a guaranteed market because of its ‘indispensable means of private transport’. A car itself describes a term ‘consumer good’ because it is not required to be connected to the site. While a house obviously cannot fit this term because of its necessity to be in a relation with the site. Finally, except the amount of fabrication, housing is not able to gain the same ‘benefits of industrial production’ (Frampton, 2007, p.124).

The theories of both researchers of course follow a school of philosophical thought who claims a difference between “building” and “dwelling” and shows that profound social and political development happens in a sustainable way only “subscribing to such values as Hannah Arendt’s work, Martin Heidegger’s dwelling and Ivan Illich’s self-worth.” (Revedin 2013). Thus this thesis focuses on the transformation of mass housing estates guided by the principles of sustainability.
Riga - general facts

Latvia Facts:

Country of a Baltic States;
Location: Eastern Europe near the Baltic sea;
Neighbors: Estonia, Russia, Belarus and Lithuania;
Population: 2,220,000 people;
Pop. density: 36.01 sq.km
Area: 64,589 sq km;
Capital: Riga;
Climate: Humid continental;

Riga Facts:

The capital of Latvia;
Biggest city in Baltic states;
Population: 706,413 people
Area: 304.05 sq km

Climate in Riga during the year

<table>
<thead>
<tr>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg Temperature</td>
<td>28</td>
<td>27</td>
<td>32</td>
<td>45</td>
<td>52</td>
<td>60</td>
<td>65</td>
<td>63</td>
<td>54</td>
<td>45</td>
<td>35</td>
</tr>
<tr>
<td>Avg. Max Temperature</td>
<td>31</td>
<td>31</td>
<td>38</td>
<td>53</td>
<td>61</td>
<td>69</td>
<td>73</td>
<td>72</td>
<td>62</td>
<td>61</td>
<td>53</td>
</tr>
<tr>
<td>Avg. Min Temperature</td>
<td>24</td>
<td>21</td>
<td>26</td>
<td>37</td>
<td>43</td>
<td>52</td>
<td>56</td>
<td>55</td>
<td>47</td>
<td>40</td>
<td>31</td>
</tr>
<tr>
<td>Avg. Rain Days</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>7</td>
<td>8</td>
<td>7</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>Avg. Snow Days</td>
<td>10</td>
<td>8</td>
<td>7</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>7</td>
</tr>
</tbody>
</table>

Ethnical composition of Riga’s inhabitants, year 2012

Source: www.sus.lv

Source: www.shipdetective.com/maps/eastern_central_europe.htm

Source: map base from www.wikimedia.org, modified by the author

Source: www.sus.lv
Microrayons in Riga are built on the periphery of the city, around the city ring, (fig.1). The purpose of the building program in Soviet times was to create as many square meters of living space as possible. The construction began in early 1960s and continued until the late 1980s, (Grava, 1993). Therefore, none of them were totally completed. Nowadays there is a lack of public buildings in microayons, as they were not completed during the construction period, (Leijnieks, 2013).

Nowadays Latvia is a member of European Union which means that Riga’s development should be implemented according to the instructions and spatial development principles of it. Currently Riga’s Spatial Plan is focused on sustainable and balanced development and creation of ‘active, vital and modern centre for business, tourism, trade, administration and recreation with a safe, comfortable and environmentally friendly system of transport preserving the characteristic natural values, as well as the cultural and historic heritage.’ (ed. Altrock et.al., 2006)

Riga is the biggest development region (ed. Altrock et.al., 2006) with a set development plan. In total, there are five regions, with set development plans. Currently the region has set three documents concerning the development, which consists of a long-term Development Strategy planned until 2025; zoning and land use planning for the year 2006 – 2018 and a mid-term planning and investment plan. The definite aim of these plans is to develop towards a sustainable city. Current Riga’s development plans look promising, however they tend to concentrate on the central part and river banks, while the outskirts, built with mass housing estates do not have a particular development plan yet thus leading to urban sprawl, where the city becomes more spread out and car dependent (see p.17).
Riga in tourist’s booklets and books is presented as a city which has a rich architecture because of its central part, which consists mostly from Art Noveaux buildings and is invoked into UNESCO world heritage list, (Unesco, 1997). Besides Art Noveaux architecture Riga also has an attractive medieval part, rich with churches.
Even 60% of Riga’s inhabitants live in mass housing estates, which were built under the Soviet Regime.

Mass housing estates in Riga are mostly divided into neighbourhood units called microrayons. Microrayon (neighbourhood unit) – ‘a complex of residential buildings combined with a variety of services and retail outlets meeting the population’s daily needs’, (Andrusz, 1985)
INTRODUCTION TO THE PROBLEM
Every post-Soviet city has at least one district built with houses from mass prefabricated panels. Those districts are called ‘microrayons’ (Rus. микрорайон, Eng. neighbourhood unit) because of their special planning purpose created in former Soviet Union. As Sigurd Grava (1993) explains, the idea of ‘microrayon’ planning concept came from classical British and American neighborhood theories, only these theories were adapted to the Soviet regime rules. Assuming the fact that former Soviet Union was under a totalitarian regime, this notion of microrayon was ‘unquestionably accepted as the primary structural planning unit’ (Sazonov, 1973). As a result, large amount of people are living in those dwellings today. Nevertheless, mass housing blocks are facing critical problems, including radically monotonous appearance of houses and unorganized parking spaces.

Riga is one of those post-Soviet cities, with a majority of city’s population living in ‘microrayons’ (fig.2). The situation of the city becomes intriguing considering the fact that a part of its city centre is listed in the UNESCO heritage list because of ‘its finest collection of art nouveau buildings in Europe’ (Unesco, 1997). The city centre consists of ‘capitalist’ districts, the ones built before WWII, which embodies only the small part of the city (Grava, 1993). Today Riga is divided into fifty-eight neighborhoods (Lat. apkaimes) (fig.3).
14 neighbourhoods from 58 has microrayons in their composition. According to the map of built area (fig.4), mass housing estates (microrayons) occupies one third of the residential area in Riga (Industrial area is not included). It shows that those mass housing estates actually forms a real character of Riga. Furthermore they were not upgraded since they were built.

Microrayons could be divided into two groups: mono and mixed (fig.5) according to their built character. Mixed microrayons are the ones which were built on already existing residential area and plays as infill between other buildings, while mono microrayons are the ones, which were built on a vast land and has a clear character of microrayon. However another aspect with mixed microrayons is that mass housing estates were built there without considering the existing situation and that is visible nowadays very clearly.

Figure 4. 1/3 of the built area is occupied with microrayons.

Figure 5. The typology of microrayons.
Land ownership and privatization in Riga

Another problem of these microrayons is the privatization of land. The land is divided by different owners and those houses are actually standing on the private land. In consequence, inhabitants are paying rents to the land owners and the local municipality is incapable to initiate the changes (J. Leijnieks, 2013). As a result, public spaces stays abandoned or made into private territory.

Municipalisation according to Lejnieks (2013) does not seem available possibility for Riga because, it might take up to three budgets of the state, for municipalities, to buy all the private land situated in microrayons.

New housing projects in Riga

Although, microrayons are left unreconstructed, newly built dwellings can be found inside. New houses do not help to update the existing condition of microrayons. New dwellings either are built as private houses inside the courtyards of microrayons, which become a fenced private property, either blocks of flats which are not adapted to the existing environment (fig.56) in some cases blocks of flats are also fenced with their own public space. This type of building inside microrayons can be named self-infill because their are made by individuals not considering the surroundings.

For example, new residential building built in one of the courtyards of Purvciems, steals public space from neighboring houses by placing a public space on the podium above the ground, which creates an access to the public space only to the inhabitants of the new house, (fig.7). In consequence, the value of neighboring blocks of flats decreases because they do not have such a good public space as the new house.
Urban sprawl

Even though during the past two decades Riga experienced a decline in population, the number of inhabitants in the suburbs has increased, (Jansons, 2011). Statistics show that people are actively moving to the outskirts of Riga. The population in 19 out of 23 of these municipalities experienced an increase in 2003. During the last decade some municipalities have experienced an increase up to around 20%, even though most of the inhabitants work in Riga. For example in Garkalne village, only 20 – 30% of the inhabitants works within the borders of the township.

People’s migration from city to the suburbs may lead to the loss of agricultural land and higher investments on infrastructure. Such consequences had already happened in USA. Urban sprawl in Riga can lead the city to the increase of traffic jams, air pollution and higher investments on car roads, since inhabitants of the suburbs mostly have works in the city. The daily migration creates the dependence from car and increase the expenses on fuel.

Conclusions

Some of the major problems which Riga and its mass housing estates are facing are mentioned above. The effects of these problems on the inhabitants makes it necessary to solve them. If these problems are not solved, Riga can get into bigger problems such as people moving to the periphery or even leaving the city. The complexity of these problems warrants a precise and logical approach in solving them.

A possible solution to these problems is proposed using Mežciems as a case study in the proceeding sections. Here Mežciems is examined and the principles of sustainability are used as a guide to upgrade the present situation into a more balanced living neighborhood.

Figure 8. Urban sprawl in 1990 (marked in black colour)

Figure 9. Urban sprawl in 2008 (marked in black colour)
The ‘microrayon’ of Mežciems is a potential and encouraging place for sustainable renovation. The great potential of Mežciems lies in its surroundings: it has forests lying in the west and east sides of the area and the lake in the north. Such objects as a car museum and car racing track increase the popularity for the area. The planning structure of Mežciems differs from other microrayons: it has a structured planning system with an architectural idea and a visible reflection of secret ambitions of architects. Therefore it faces the same problems as other microrayons in Riga and planning idea is still stuffed in the frames of ‘microrayon’ concept, which has strict planning requirements. Located relatively close to the city center, thus it is still disconnected from it with the forest.

Not only are the problems mentioned in the preceding section affecting the mass housing estates, but also are problems of smaller scale as shown in the analysis part of this work (p.38). Thus, in the case of Mežciems, a solution to all these problems is proposed.
Aim:

The main purpose of the thesis is to argue that the present conditions of post-Soviet microrayons has an outdated design for buildings and spaces between them. The buildings are too similar to each other and they create a monotonous and dull image of the neighborhood. In general microrayons lack individual appearance because of the same building design. The problems with spaces between the buildings is that they are not designed for the current people’s lifestyle. The parking lots are too small for the present situation, which is why public spaces are occupied by cars. The ones which are not filled with vehicles, are neglected in other ways. Usually it is just a big area of grass-land with outdated equipment from the Soviet times. In order to reach the sensible argument, the state of human scale and the principles of sustainable urban design should be analyzed.

Following various approaches of sustainable urbanism, certain, the most crucial, reconversion strategies, will be proposed for the typical microrayon.

The microrayon of Mežciems in Riga, Latvia will serve as a case of Soviet mass housing district which could be transformed into a sustainable urban structure, which increases neighborhood’s value and social interaction in it.

Delimitations:

The term sustainability is very wide and there are plenty of methods to transform mass housing districts into sustainable neighborhood. That is why the thesis will focus on the aspect of human scale in sustainable urban design. The transformation methods for microrayons will be designed according to the main challenges and opportunities, which occurs after the analysis of those mass housing estates.

Research question:

How does the concept of sustainable urban design and its aspect of human scale can be used as a transformation tool for the outdated design layout of microrayon?
Literature review:

Literature review on the planning system of microrayon was revised in order to understand the current problems, which microrayons in Riga are facing. Theoretical studies were made in order to understand the notion of human scale and critical regionalism in Sustainable Urban Design, in order to find reconstruction methods for the Mezciems microrayon.

Mapping process:

The map of Riga according to the scale 1:10 000 was made and printed out. The whole map was constructed using google.maps satellite view and constructing its pieces into Adobe Illustrator program. Google maps are made in such a way, that the map can be zoomed according to the scale needed. The design program called Adobe Illustrator has a ruler function, where the scale can be double-checked. The printed map of Riga in scale 1:10 000 was 2472mm wide and 3102mm long,(fig.10). The purpose of such map was to understand the real scale of the city of Riga and the microrayons. Later the digital version was used to analyze the current urban structure and its relationship with microrayons. In order to understand the general problems of microrayons, it is important to analyze their situation in the city context.

Site visit:

Site visit was made to analyze the current condition of microrayons built environment. The human scale can be best judged on the site. The photos and notes made during the investigation serves as a data for documentation of present situation in microrayons. The challenges and opportunities of those living estates were mainly found from the site investigation.

Figure 10. Map of Riga, scale 1:10000, made by an author.
Interviews:

To deepen the knowledge about microrayons and to get additional information, which was not found in literature, and to get personal opinion of the local professional, two people were interviewed.

Janis Lejnieks works as an Economic Development Manager in Riga’s City Council and has a deep knowledge about current property situation in the city of Riga. He lived in one of microrayons called Purvciems for twenty years and can compare the quality of life in Soviet times and in present days. Also he was involved in building process of microrayons, only in other cities of Latvia. He helped to understand the present situation of property ownership situation in Riga and to see into Riga’s microrayons with the eyes of local Riga’s inhabitant.

Artis Zvirgzdins is a chief editor of the website www.a4d.lv, which is the platform of Latvian Architecture and Urbanism. The website is a publisher of news and various discussions in the fields of Architecture and Urbanism. The website is very popular among the architects in Latvia. As an editor, Zvirgzdins is always updated with current situation and events in the field of Architecture. He did the presentation about microrayons to the students of Gent University, Belgium and lives in one of them for seven years already. As a current inhabitant of typical microrayon he told about his personal experiences of life there and his insights about present situation were helpful from a perspective of a young professional.
Theoretical chapter consists of two parts: first part analyses a socio-historical background of mass housing estates in former Soviet Union, in order to understand what reasons caused the concept to fail; the second one looks deeper into the theoretical aspect of human dimension in his living environment, which is the base for the sustainable urban design, and how does self-made environment affects him. Only the theoretical knowledge about the general comfort of human being can prompt to the good transformation solution of mass housing estates.

Nowadays a dwelling property in sustainable neighborhoods is accessible only for rich people but that is not equal, nor logical, considering that the primary idea of sustainability is not to be expensive (Bruntland Report, 1987), and in contrary sustainability should serve as a tool to create social equity in society. While mass housing estates are left to the ones who are socially vulnerable. Unfortunately, this situation extends the gap between the rich and the poor, which, in consequence, strongly affects cities by creating social segregation and insecurity among its inhabitants.

The situation of mass housing estates in former Soviet Union is slightly different from the Western countries because they were built on the ideology of socialism, where everybody is equal and the whole property used to belong to the government. However, nowadays, the result of living conditions is similar everywhere in Europe – inhabitants are unsatisfied. In order to reach a successful transformation of these estates, it is important to understand where the former government of Soviet Union failed, when it comes to a notion of comfortable living environment.

While, the right description of comfortable living environment is also important in order to transform unpopular mass housing estates into a successfully functioning and vibrant urban form. Jana Revedin argues that sustainable development can succeed amongst majority not by provision of basic needs or by the setting of certain rules, to which majority has to obey, but by inviting people to discover and create things together. She criticizes western mindset, which became spoiled because of it comfort, and have lost a belief that actually very simple things can make a change. It is not necessary to have expensive and innovative tools in order to come to the sustainable development, her given example about how citizens of one neighborhood called Zabbaleen in Cairo improved their dwellings just by collaborating together. A shanty town which was unsafe because of filthy and dark streets at night and shrinking businesses on the ground floors transformed into an attractive district full of light just because of a collective collaboration of its inhabitants. The collaboration which created independent light for the district, by making lamps which improved the urban condition of the district, created a safer environment and engaged people into work. ‘Sustainable development is not a question of high technology, but of the appropriate use of it’ - states Revedin (2013) and Zabbaleen is a great example of it.

The example of Cairo neighbourhood shows that simple actions, without the need of very expensive innovations are possible in order to create a sustainable neighbourhood. They succeeded because their collaboration was based on three values mentioned before: work, dwelling and self-worth. This type of success can also be reached in mass housing estates.
The development of mass housing dwellings dates back to 1920, when architects and urban designers generated new visions and ideas for the future cities. The political situation and the development of industrialisation had shaped the vision of the future in a totally different manner than before the 1920: ‘In the changed social and political conditions in Europe after the First World War, the limited pre-war efforts to make a more socially responsive architecture took a new and decisive turn’, (Mumford, 2002). The housing shortage and expanded birth rate made a great impact on the vision of the new urban city, (Mumford, 2002). That is when the idea of mass housing districts was born.

The housing shortage had drastically jumped in USSR as well. The actions of WWII had destroyed many cities in USSR. The investment policy created in 1930, which had a purpose to reduce housing shortage in the country, became complicated and the government had to make greater investments for building new dwellings. In order to accomplish the plan, the State had a strong motivation to make the process faster and cheaper. Industrialization of the whole process was considered as one of alternative solutions, (Andrusz, 1985).

In contrary with Western Europe, mass housing estates in Eastern Europe had emerged under Socialist setting which was implemented by Soviet Union. After the WWII such countries like: Poland, East Germany (now Germany), Czechoslovakia (now two separate countries: Czech Republic and Slovakia), Hungary, Romania and Bulgaria became Eastern Bloc countries, while Baltic countries: Lithuania, Latvia and Estonia were forced to join the composition of Soviet Union even before the war. It meant that Baltic States were under the full influence of this Political Regime. All operations in Soviet Union were maintained under the strict supervision of Communist party: ‘The Communist party was the originator, the prime mover, and the monitor of all activities’ (Grava, 1993). Communist party was the one taking all decisions, which shaped and built the nation towards the ideology of communism. In 1960s it was believed that the phase of ‘high socialism’ was already achieved, while the total communism, where every day needs will not be important, will be achieved after twenty years. (Buchli, 1997).

The ideology of USSR ruling regime was based on equal society, where the differences between the classes did not exist. However, everything was owned by the state and all decisions were made by it too. Government was in control of industry, housing provision, every day needs, people’s lifestyle and media. Literally government was controlling and shaping peoples lifestyle through their daily needs. (Grava, 1993) The borders of Soviet Union were closed and possible to cross only to a certain class and amount of people, while lives of common working class was based on government’s propaganda.

After 1917 Revolution in Russia communist party started to rule. It changed the values and the whole system which existed in the country before. The aim of the communist party was to create the nation of working people. The change started with a mass relocation of workers from barracks located in the outskirts of the city into the houses located in the city center, which belonged to bourgeoisie. Spacious apartments were transformed into shared flats, where every family was provided with a private room and shared kitchen and bathroom facilities. A vision of dom-kommuna was born, which had a purpose to create a collective life-style. (Andrusz,1985)

A vision (Andrusz,1985) of a collective lifestyle got a more realistic outlook after 1920, in parallel with constructivist movement in architecture, based on the mixture of art and technology, which in Russia was adapted to the ideology of Soviet Union (Palmer,2008). In 1925 a second competition for collective house design was organized. Architects came with various constructivist ideas of shared households. The main vision of ‘dom- communa’ (communal housing) became a woman’s liberation from ‘domestic slavery’, which meant a provision of ‘collectivized dining rooms, pre-school facilities, dormitories, laundries, a range of repair shops and centers for hiring whatever might be required to meet temporary needs.’ Freeing a woman from domestic work meant her integration into industrial work. There was a vision to gradually erase a patriarchic family structure through the changes of daily life style, such as collective facilities and women independence from domestic work. The aim of collective houses seemed as a solution to a better life, where all facilities are in place.

However, these ideas did not have opportunities to be established as Stalin gave a priority to the investments into heavy industry. He did not succeed to provide a proper home for workers, who exchanged their country life into the work in industrial sector. People were still living in crowded dwellings with poor conditions. The average living space per person in 1950 was as low as five square meters. (Morton, 1980)
Architects visions about a ‘dom-kommuna’ seemed unrealistic at that time because people’s relocation from country side into the city was much faster than the building processes. In addition, Stalin’s era was marked with a cult of his personality, which was expressed not only by propaganda and restrictions on freedom of citizens but also with oversized and richly ornamented architecture.

Loses of WWII worsened the situation in housing sector. The war damaged over 1710 towns, which was 70 000 000 m2 of living space, which even increased already existing housing shortage before the war. (Andrusz, 1985) These reasons caused the debates, which purpose was to contra pose a richly decorated architecture with a more economic and simplified solutions (Osborn, 1966). In order to eliminate these problems a good plan had to come up.

As a response to the critical housing shortage, government increased the investment in housing sector and industrialized the building processes. A proposal and implementation to build houses from industrially produced concrete panel blocks was Krushchev’s (Chief secretary of Soviet Union) solution to the problem. In his secret speech in 1954 Krushchev pointed out some specific factors, which indicates the need of change in building sector. His proposal accented the industrialized method of building and rejection of excessive decoration elements. He proposed to select a particular design for schools, kindergartens, shops and living houses which could be changed every five years in case a better design occurred.

As a response to the critical housing shortage, government increased the investment in housing sector and industrialized the building processes. A proposal and implementation to build houses from industrially produced concrete panel blocks was Krushchev’s (Chief secretary of Soviet Union) solution to the problem. In his secret speech in 1954 Krushchev pointed out some specific factors, which indicates the need of change in building sector. His proposal accented the industrialized method of building and rejection of excessive decoration elements. He proposed to select a particular design for schools, kindergartens, shops and living houses which could be changed every five years in case a better design occurred.

The establishment of Microrayon

Krushchev’s speech led to the approval of new rules for the city planning, which were called „Rules and Norms of Planning and Building Cities” (Pravila i normy planirovki i zastroiki gorodov) and was approved in 1958 by the State Committee on Matters of Construction (Gosstroi). Those new rules were quite strict and had a very precise technical information for every case of city planning and building. The rules were applied for all cities planned in USSR, except the ones situated in exceptional climatic zones. (Osborn, 1966). These „Rules and Norms of Planning and Building Cities” also approved a new conception of neighborhood unit called microrayon, (Osborn, 1966). Microrayon (Rus. Микрорайон, Eng. neighbourhood unit) can be described as ‘a complex of residential buildings combined with a variety of services and retail outlets meeting the population’s daily needs’, (Andrusz, 1985). Activated under the rule of Krushchev this type of neighborhood planning was proceeded by later leaders as well. Grava explains that the roots of microrayon planning concept can be found in the classical neighborhood theories of Great Britain and USA and they reached USSR through Scandinavia. Even though, the original idea of the planning layout was borrowed from the West and ‘superblocks’ of microrayons were an adopted version of Western mass housing districts, microrayon served as an extended version of ‘dom-kommuna’ (communal block). It meant that the ideology of communistic society was hiding behind the physical master plan. The main aim of the government was to form people’s attitude through their daily life basis, which meant that people’s daily activities were focused on creation of a collective profit instead of the fulfillment of everyone’s individual needs. The property was also collective. Nobody owned the land except the government, (Grava, 1993). This ideology was clearly implemented in the planning layout of microrayon, which main purpose was to shape inhabitants life’s on their daily basis by implementing public services within borders of microrayon. The original idea of microrayon was a combination of dwellings and various public services which was generated into one unit.

A planning layout was made up of a group of residential dwellings which created ‘a superblock’, (fig.11). Each superblock was enclosed by major car roads. Daily services such as day care centers, elementary schools, kindergartens and service centers were planned in the center of microrayon. Service center supposed to have such facilities like ‘a general retail store, a library, a drug store, cafeteria, meeting rooms, and ‘perhaps repair and rental places for equipment and appliances’(Grava, 1993).

Figure 11. A scheme of microrayon planing layout.
Service facilities were planned in a distance of 500 meters and could not exceed the size of 250 ha. Kindergartens were planned inside the neighborhood in order to save women time for work (Andrusz, 1985) and that children could reach them without crossing any roads. Around the schools are the housing blocks which are made up of a number of .sektsii: a core with lifts and staircases -.podezd- and the apartments itself. The entrances are located inside of the block and are served by small secondary roads -.proezdi-. (Volume 21, p.14, 2010). The design of “high-rise buildings in a park” (Grava,1993) in the west, which was adopted in Soviet microrayon, made the possibility to industrialize the building process, (Grava,1993). It became faster and cheaper. Today, one can see that many of those buildings were built from prefabricated concrete panel blocks, which are all of the same size and material with a slight variety of colors or patterns. The building construction from panel blocks was so common because it did not require an additional cost for transportation. Main parts of building construction usually were produced in the place of building, (Lietuvos Tarybinis Enciklopedija, 1981).

The new building plan (Morton, 1980) had increased the demand for housing because the perception of living had changed from communal living (one room for each family with shared bathroom and kitchen facilities) into a private flat with private kitchen and bathroom. The statistics of 1974 had shown that citizens of Soviet Union were experiencing the worst housing conditions in all industrialized nations at that time because even 30% of families who lived in cities were still sharing flats. A high demand of new housing created a very long queues in the waiting list, which meant that waiting period for a new flat reached 10 years and even more. The priority was given to those families who had as less as 5 square meters per person, while newly married couples had a very low chance to get a new flat immediately. Even after the fall of Soviet Union the numbers waiting lists were high.

After the fall of Soviet Union, which happened in 1991 the country shattered into fifteen different countries. The elimination of the ‘curtain wall’, which was built after the war of two strong powers, had caused the changes of ideology (Goldhoorn and Sverdlov, 2009) which led to an unavoidable changes in society. In consequence it affected peoples living environment, mostly in the negative way. The problems which already existed during Soviet Era had mixed with new problems from the west: ‘In order to adapt to the new condition, the typical Soviet neighborhood has acquired new paraphernalia’ (Goldhoorn and Sverdlov, 2009). Capitalistic ideology had brought social inequality to the neighborhoods, which caused insecurity, free market, which caused self-refurbishment of flats and building facades and totally changed the transportation system, which caused the expansion of private vehicles.

Conclusions

Even though mass housing estates in Post-Soviet countries are built according to similar model of the ones built in Capitalistic countries, they differ because they were built according to socialist ideology which do not fit the current, post-socialist times, based on capitalistic system. Current situation of mass housing in Post-Soviet countries shows that the living environment is not adapted to the present times. Capitalism brought a freedom to choose, what did not exist in soviet times. In Soviet times industrially produced mass housing blocks were accepted as a highest standard of life because there were no better option, while capitalism has brought new concepts of housing, which lowered the standards of mass housing estates. Even though the current situation of mass housing estates in Post - Socialist countries do not show social decline, as it is so common in Western countries, it is crucial to find appropriate solutions which could prevent social problems to emerge.

The case of Riga shows that the inhabitants of mass housing estates (microrayons) copes with existing problems, such as dull architecture and over scaled public spaces, through self-expression, by repainting facades of buildings, building external additions to houses and creating flower gardens by themselves, and etc. However these actions do not influence the quality of microrayons but it shows the necessity to upgrade them not only for the better life of existing inhabitants, but for increasing the popularity among other city dwellers as well.
Microrayons in Riga

In 1940 Latvia has lost its independency and was occupied by Soviet Union. It went into a composition of USSR and remained Latvian SSR until 1991, after it became “independent and democratic republic” (Municipal Portal of Riga, 2011).

Riga, the capital of Latvia, was set as the center of the western part of USSR in order to keep an eye on the Eastern Block and on main enemy NATO. The main government of Soviet Union had a plan to develop all Baltic States into a strong industrial center as fast as possible and very soon Riga became a main center of military, a main core of railway system and an air network in the Baltic region. Many large industries were also settled in this city. These actions led Riga to experience a high immigration rate of people from other Soviet countries.

The population had risen to 900,000 by 1985. Rapid population growth had caused a great housing shortage, (Grava, 1993). That is why the rapid building of microrayons in Riga was implemented as well.

After 1991, when Latvia became independent from the former Soviet Union, the political situation in country has changed and those changes strongly affected mass housing estates. Firstly, the collective ownership was eliminated and most of the flats were privatized and the land was given back to previous owners. A statistics of 1999 shows that 54% of flats in Riga were private. However, mass housing estates still faces privatization problems, due to the fact, that not all inhabitants are capable to privatize them. Some of them do not have appropriate documents, due to social or bureaucratic reasons, (Marana and Treja, 2002). Since the property is not entirely private, the question of responsibility within common sectors arises. Critical conditions of unmaintained staircases and outdated equipment show that neither the municipality, nor the private actors took that responsibility. Another problem existing in mass housing estates, which was mentioned before, is overlapping ownership which makes flat owners and local municipalities incapable to take care of the public spaces. Because of that, the environment in mass housing estates is in poor condition. Although, the positive factor is that the social composition in microrayons is highly diverse, consisting of different social statuses, different income levels, and different nationalities.

The urge for renovation

Present situation shows that microrayons in Riga are facing a stage of critical condition. The houses and environment were not maintained since they were built. During the Soviet Era the Government was focused only on the building sector, while today this action is in stagnation due to the unsolved problems in privatization and maintenance sector. It is obvious that those houses need a renovation and maintenance plan, otherwise the image of mass housing estates will continue to drop and it is very possible for it to reach the unpopularity level of the existing estates in the west. It is crucial to act, in order to stop the downgrading process.

Therefore, the negative factor is the present economy of Latvia, which budget doesn’t give such financial freedom as in Western European economies. Because of that, some approaches are not possible in Riga’s case, however an economic renovation version adapted to Riga’s funds can be reached.

Possible participants in Renovation process

As renovation examples in the Western Europe shows, the initiators of renovation plans are usually the government of the country and local municipalities. Inhabitants are taken seriously as the decision makers and transformation methods are selected according to inhabitant’s opinion. In Riga’s case the municipality of Riga and local municipalities of microrayons could collaborate with private owners of the properties in microrayons in order to reach an adequate solution. However this model can be complicated and be prolonged for many years because the composition of many actors can raise intersecting opinions, which raise the danger to delay the process. On the other hand it is difficult to find alternative collaboration solution for this type of situation.
Renovation examples

Two examples of implemented mass housing renovation projects are selected for a review: one case is from Western Europe, the Netherlands and another one is from former Eastern Bloc countries – Eastern Germany. These two cases were chosen in order to see the differences between capitalistic and socialist mass housing estates, however, both cases face more or less similar problems and renovation projects led to similar results, even though The Bijlmermeer high rise neighborhood (the Netherlands) had one large renovation project, while Hellerdorf – Marzahn (East Germany) had several different revitalization projects.

Bijlmermeer (Amsterdam, The Netherlands)

Bijlmermeer is one of the drastic renovation examples because the three quarters of the area was actually demolished. After the renovation Bijlmermeer reminds very little of what is used to be in the past.

Bijlmermeer is a high rise mass housing district located in the suburbs of Amsterdam. It was built between 1960s – 1970s, a decade when building large housing estates was booming in all Western Europe. The houses were designed in the shape of honey comb and the master plan was designed according to the ideas of Le Corbusier and to the movement of CIAM. However, the interest in mass housing estates ended very fast and these modern cities became the most problematic areas. The same happened to the Bijlmermeer. Unfortunately it never became popular among middle class families and half of the flats stayed empty (Helleman and Wassenberg, 2003). This factor caused rent prices to drop which determined the immigrants and poor people to move in. Very soon Bijlmermeer got a negative image of multicultural neighborhood (Sterk and Zahirovich, 2007). The primary vision of a ‘functional and radiant’ (Sterk and Zahirovich, 2007) neighborhood turned out to be a spring of problems instead, (Projectbureau Vernieuwing Bijlmermeer, 2008). According to Sterk and Zahirovich (2007) the failure of spatial structure caused middle class families to refuse to move in, and that decline caused ethnic minorities to inhabit the place. As Silvan Boer cited by Sterk and Zahirovich (2007) states, that this international environment has caused a radical change of neighborhood’s physical environment.

Helleman and Wassenberg (2003) distinguished 3 groups of problems which were in Bijlmermeer. First of all, the high rise neighborhood of Amsterdam was never completely finished. Part of planned public facilities was never realized. Secondly, the physical layout was not created for a comfortable life. The scale of buildings was too large to maintain safe and cozy public spaces. The same situation was with outdoor spaces, where the scale was too big. Too big scale led the neighbourhood to become uncozy, dark and difficult to maintain, in consequence it became a favorable environment for criminal activities. Third group of problems was inappropriate housing market. Bijlmermeer was oriented towards the middle class families but the middle class families preferred to live in a single family house with a private garden. The increasing economy and existing social situation oriented people towards individual life style which meant living in single family house, having a personal vehicle and etc. These factors were totally opposite to the ideology of mass housing, which advocated a collective life style instead. A serious renovation started in 1992 which purpose was to help those inhabitants who do not have possibilities to afford better housing because of their financial and social situation and to attract higher social class inhabitants with new high quality housing within the area.

Joined forces of state institutions came out with the idea to change a negative image of international neighborhood into a positive notion of multicultural community. The renovation plan was not only focused on the physical upgrade of the area but the socio- economical aspect also took an important place. Government took into consideration...
such serious factors as the upgrade of education level and provision of working places, (Sterk and Zahirovich, 2007).

A decision to demolish one quarter of flats was made due to the survey results, where the local inhabitants had to answer the questions concerning the neighborhood renovation. According to Helleman and Wassenberg (2003) people’s opinion played a major role in Bijlmermeers renovation process. According to the survey, demolition was seen as an advantage rather than damage. After demolition of high rises, the neighborhood was densely built-up with mixed use low rise buildings, with integrated public facilities such like business, recreation and shopping.

The Bijlmermeer got a more mixed-use environment than before (fig.12). Two level streets which excluded pedestrians from cars were modified, large car parks were partly demolished and public spaces were redesigned. Two master plans: before and after (fig.13) shows that the change of Bijlmermeer high rise district was dramatic. It lost its primary shape of honey combs and new buildings got a denser built pattern. Government also invested into maintenance of renovated neighborhood with the purpose to preserve the quality of renovated environment and to upkeep the appropriate level of security.

Today Bijlmermeer is facing a great question: whether the renovation plan found its success. Sterk and Zahirovich (2007) state that the success of renovation is not yet there because the notion of multicultural neighborhood is still in the theoretical stage. The lack of recognizable public spaces, such as squares and parks prevents the creation of multicultural interaction and the assortment of cafes and bars does not reflect the real character of the neighborhood’s cultural diversity. Loerakker (2013) Biljermmermeer’s renovation plan sees as ‘nothing less than just another technocratic ‘drawing board plan’ that waits to be written off as a success or a failure’. He argues that government’s decision to replace the greatest area of high rises with low rise family houses is affected by the wrong understanding, that the change of urban fabric will change the composition of inhabitants.
After the collapse of GDR in 1989 German government invested a lot of money in order to upgrade monotonous mass housing estates, which is now standing as a legacy of former Eastern Germany. German government started upgrading process from the renovation of building facades and the upgrade of flats.

Marzahn (led. Ciaffi, 2005) is a typical mass housing district, which was built in order to solve a housing shortage problem in former GDR. The construction period started in 1976 and ended in 1989, just before the fall of GDR. The mass housing district has 58,000 flats with applied socialist built concept, where the functions were separated. The height of buildings varies from six to eighteen story height. During the socialist era this Eastern German area was considered as a successful project and functioned as a fully-fledged local community, which consists of employed crowd and is socially diverse. Thus, this image totally changed after the shift of political situation in Eastern Germany. Expanded housing opportunities and changes in the economic sector led mass housing districts into decline.

Due to the spring of many problems in mass housing estates in the former Western Germany, which started to affect these neighborhoods already in 1980s, there was a lot of debates about the total demolition of mass housing estates in the former GDR territory. Still, the Senate of Berlin and the district of Marzahn took a decision to renovate mass housing estates of Marzahn, located in the east- Berlin. The district (Knorr-Siedow and Droste, 2003) took part in general revitalization program which was in action from 1993 until 2005, where buildings were entirely renovated with redesigned facades and entrances and most of the public spaces were upgraded. The revitalization program successfully upgraded physical pattern of the neighborhood, however the number of inhabitants continued to decrease. Firstly the decrease of inhabitants hit the renting sector in 1995 because after the renovation of houses rent prices increased. This factor led people to rent apartments in more central districts due to a similar price. Also a negative neighborhoods image from the outside led the demand for housing to decrease. These factors influenced a change of demographic composition, from middle class German population into immigrants and people with the low income. This factor strongly affected the quality of neighborhood.

As a response to the demographical change Government initiated second revitalization project in Marzahn (Feltins, 2012; Knorr-Siedow and Droste, 2003) called 'Urban Regeneration East'. The partial demolition of vacant settlements and sustainable development of the neighborhood took place, In order to attract new settlers. The project cost was 2.5 billion Euros within seven years. The project included the change of

Figure 14. Typical public space of Marzahn - before and after the renovation.
1700 flats located Marzahn North of which 1000 was planned to be completely demolished while 700 flats – newly built. In result 1670 flats were demolished (Feltins, 2012) and 406 were newly built, public spaces were upgraded (fig.14). Since public buildings, due to the change of economic structure after 1989, were left deserted – according to new ‘Urban Regeneration East’ a part of them were scheduled for demolition. The government pursued to bring a more suburban look into mass housing neighborhood. However this renovation project has helped to increase the growth of inhabitants, which now reached 1,8%.

Even though, the Government of Berlin and the administration of Marzahn-Hellersdorf invested into over 150 housing revitalization projects and spent billions of Euros for them, the current situation leaves a doubt, whether those revitalization projects were worth the price. Berlin’s ‘Housing Market Report’ shows that in 2009 Marzahn-Hellersdorf was still in stagnation phase, when it comes to the rental quotes. Rents here and in Neuköln and Spandau decreased the most significantly in comparison with the other districts of Berlin and have the lowest rent prices in the whole city. Despite that, Marzahn still occupies the first position, when it comes to an uninhabited flats. The situation looks better in ‘Housing Market Report’ of 2013, where the rent prices in Marzahn have increased and the interest in flats is slowly increasing as well, which according to experts is a sign that vacant lots are decreasing. However, rent prices here are still below Berlin’s average rent rate (Housing Market Report,2013).

**Conclusions**

These two mass housing revitalization cases are a great examples, which show that urban transformation does not erase the existing problems. Even though, these neighborhoods were renovated with different methods: Bijlmermeer had one revitalization plan and was reconstructed in one phase, while Marzahn needed several plans of revitalization; both of them had a purpose to get rid of the negative image of mass housing estates by actually erasing blocks of flats. However, the practice has shown, that the change of urban fabric does not make a high difference, while it is quite pricey method. The reputation of both districts was strongly affected by a specific composition of the population in the area. Both cases show, that once the neighborhood creates an image of poor and neglecting neighborhood, it is difficult to change it. Even though, Bijlmermeer was upgraded according to the opinions of inhabitants and social measures were taken into consideration in both revitalization cases, the findings of both show that those actions are not enough.

Therefore this shows the need for an alternative approach to solving these problems. An approach based on sustainability principles that uses both the transformation of urban form and other aspects such as social interaction, creation of working possibilities etc. is needed which is the focus of this thesis.

Before coming up with a a good proposal with high confidence, it is important to understand the notion of good quality living environment. The next section there for introduces the values of a good living neighborhood from the perspectives of experts in the field.
Understanding the notion of comfortable living environment

While analyzing the birth and failure of mass housing estates or so called ‘international style’ it is important to understand the reasons why the concept was declined by the city dwellers in order to propose an appropriate reconversion solution. It is obvious that the ideology of the international style do not profit people’s needs. It is crucial to understand human’s nature and the attitude concerning his/her living environment. The traces of humans attitude towards living environment are found in Heideger’s ‘thinking’, Arend’s work and Illich ‘self worth’. These three components are the main factors which determine human’s well-being and when the balance between these tree elements is destructed, then one feels discomfort in his environment. A theoretical part will look deeper into these three values in order to understand what reasons caused people to neglect this type of living environment and what elements creates a comfortable environment.

Work

According to Arendt (2nd ed.1998), the work and the labor are two different matters. The work is the action based on creative skills, abilities and talents and, she names it ‘homo faber’, while the labor is an action which is accomplished mechanically, which do not require any special skills and which multiplies one thing many times, and it has a name of ‘animal laborans’.

Philosopher criticizes current society of its perverted attitude to work. Mechanized work in factories has made people slaves of machines and created a new type of work, which purpose to do one’s duty, not to achieve a result. While the real purpose of work is to achieve a result. By tracing the roots of work and rediscovering the work purpose of craftsmen she suggests to rediscover the meaning and purpose of work.

‘Animal laborant’ or the notion of mechanized work

Arendt (2nd ed.1998) criticizes modern world, by stating that most things are produced ‘in the mode of labor’. The human being does not have possibilities to make things for himself, he has to work for the others, which makes his work a duty, something he must do, but not something where he can express himself. He is just a small detail in the mass production mechanism. Mass consumption of things consist from the indication of production and the final result. The problem of mass consumption is that the work of a worker never stops. The final product does not determine the work load of a person. Eventually the final product becomes an indicator again, which determines the annual salary and efficiency of a worker.

Arendt argues that the current mechanization of major part of human work and the people’s slavery to the machines are lying ‘in the factual situation of laboring’. This happens because the work of hands in the industrial age, where all processes are mechanized, loses its sense. The primary purpose of machines, which was to make the labor work easier, disappears as soon as laborer starts to use them. Philosopher raise the question about the real purpose of human life: is his main purpose in life to work, or work is just a tool to provide him with possessions, which helps him to survive. The question extends considering the mechanized work: does a person serve for the technology, or do the technology serve a man. Arendt argues that the difference between hand work and mechanized work is that tools by no means are serving the persons hand but the case of a technology becomes sensitive because a person has to serve for a machine in order to fabricate the product.

Arendt criticizes the invention of technology, because it made the human being to move off the natural processes and instead creating its own. The current level of technology, according to her, has gone so far that it irreversibly changed a work into a labor, because the tools of a hand work were designed according to natural processes of the nature. According to Arendt, the question is not whether the technology ‘serve the world and things’ but whether it started ‘to rule and even destroy the world and things’, (Arendt, 2nd ed. 1998).

Today’s world has become dependent on the technology. In order to make the technology dependent on the world, Arendt states, that is better to design machines for the production of certain objects instead of designing objects with respect to the type of machine. She criticizes the world of technology, because it became a ‘substitute for the real world’ and the danger of technology is that people become dependent from the processes of technology:

‘In the continuous process of operation, this world of machines is even losing that independent worldly character which the tools and implements and the early machinery of the modern age so eminently possessed.’ (Arendt, 2nd ed. 1998)
According to Arendt (2nd ed. 1998) the work of ‘homo faber’ is the right way to produce things, which means that a human being works for the purpose to achieve a result, not for the purpose of one’s duty. The work meaning of ‘homo faber’ is that he is unable to distinguish the utility from meaningfulness, where utility stands for the words ‘in order to’ and meaningfulness stands ‘for the sake of’, but in order to be useful, which is an inherent factor for a society of craftsmen, the core of the work becomes the meaning not the utility. Homo faber does things ‘for the sake of’ not ‘in order to’. (Arendt, 2nd ed. 1998)

Arendt argues that a working principle based on productiveness is not right because its working principle has a never ending process of ‘means’ and ‘ends’ and the final result is never achieved. The philosophy of productiveness is based on doing a work as a duty. Work becomes something necessary, something which one must do, in order to be able to do the things one likes afterwards. Eventually, the productiveness becomes a part of meaningfulness and in that way it loses its sense.

However, it is not possible to escape productiveness cardinaly, because all processes create a chain, and it is not possible to end that chain: (...) There is no way to end the chain of means and ends and prevent all ends from eventually being used again as means, except to declare that one thing or another is ‘an end in itself’. (Arendt, 2nd ed. 1998)

While the work of ‘homo faber’ consists of the purpose to have a final result is an inherent part of the process, the question arises, how the work of homo faber can function if it is not possible to achieve the final result? Arendt, states that then the work of ‘homo faber’ becomes a part of never ending processes, and he has a freedom to choose its own methods in order to achieve his own final result.

In order to change the work of ‘animal laborans’ into the work of ‘homo faber’, the current notion of a person as a user has to change into the notion of a person as creator. The person has to become the one who makes decisions (which breaks a never ending group of processes of methods and final results), only then the productiveness can become meaningful. However, after a human being is accepted as creator, the danger lies in becoming ignorant to the material world:

If man the user is the highest end, ‘the measure of all things’, then not only nature, treated by homo faber as the almost worthless material upon which to work, but the ‘valuable’ things themselves have become mere means, losing thereby their own intrinsic ‘value’. (Arendt, 2nd ed. 1998).

Arendt argues that current society has a wrong perception of work. Nowadays there is a small amount of people who are creating things and they can be called ‘homo faber’, while the bigger amount of people are just simple workers – ‘animal laborans’ who are in the process of multiplying the things which homo faber has created. The consequences of this structure is that human being becomes a laborer, he does work because of work, not because he wants to create a thing. He becomes connecting part of the mechanism of processes.

Considering Arendt’s (Arendt, 2nd ed. 1998) thoughts about work and labour, the suggestion, to achieve healthy and sustainable society, is to shatter the big corporations, which are based on mass production and the power of mechanical and unskilled labour and encourage small organisations based on craftsmanship instead. This does not mean that a person has to go back to the middle ages and go back to the hand work, this means that every person should feel the satisfaction from its own work and every person has a right to improve his skills and creativity through work. A true perception of work is not duty, which must be done, in order to be able to survive, a work is a process which develops one’s skills.
Dwelling

Heidegger (2001) describes the main values about dwelling. He argues about the primary purpose of the dwelling and the building and explains the relation between dwelling and building.

The meaning of dwelling

The building (Heidegger, 2001) gets the meaning of a dwelling, when it is accepted as a shelter. However, it can also be understood if the building is built for residential purpose, then it automatically gets a notion of dwelling, which means a shelter. Although, if building and dwelling are two separate actions, then what are the factors which distinguishes them. What factors determines the differences between building and dwelling?

According to Heidegger the true meanings of the word dwelling one should seek in the language. The old word bauen, means not only to build but it also means – to dwell. Also person itself understands a dwelling as a place where he lives, distinguishing it from the place he works. Eventually the working place has just a function of building because a person do not consider a work place as a shelter.

Why dwelling means shelter? This explanation can also be found in a language. The word ‘bauen’ also means ‘to cherish and protect, to preserve and care for’, (Heidegger, 2001). The purpose of a dwelling is to guard, while the building do not have such functions.

However, not the need to build makes people to dwell, but the purpose to dwell, makes people to build buildings. This is because to dwell has also a meaning to stay in peace, and people are the seekers of a shelter, which has a meaning of safe and peaceful place.

‘To dwell, to be set at peace, means to remain at peace within the free, the preserve, the free sphere that safeguards each thing in its nature. The fundamental character of dwelling is this spring and preserving,’ (Heidegger, 2001).

Human being has to dwell in a way that he would not harm the environment because human being is just a part of the nature. As Heidegger states, there are four components which creates a ‘fourfold’, which is ‘the earth, the sky, the divinities and the mortals’ (human beings), (Heidegger, 2001).

However, Heidegger, argues that one never considers those four components as one unit and whenever one speaks about the component of the other four, we exclude it from the other three. But in order to preserve the wholeness of the ‘fourfold’, one of the components should not be separated. If one look into the ‘fourfold’ from the perspective of mortals (human beings), one can see that mortals holds the fourfold together by dwelling. Dwelling plays a role of ‘preserving’ of the ‘fourfold’ by having a material shape, as Heidegger calls ‘staying with things’. However the material world do not serve as a fifth element, it is a part of a human beings nature. Human being and his material world creates the fourth element in the universe. That’s why dwelling has a preserving function to the human being, because it is an object of material world and it helps for human being to be a part of a universe.

The meaning of building

Since the building belongs to a material matter and dwelling – to a preserving matter of a ‘fourfold’, building becomes a physical element which holds the dwelling. The building serves a ‘gathering’ role of the ‘fourfold’. It means that building is a physical element which conducts nature powers.

‘The bridge gathers, as a passage that crosses, before the divinities – whether we explicitly think of, and visibly give thanks for, their presence, as in the figure of the saint of the bridge, or whether that divine presence is obstructed or even pushed wholly aside.’ (Heidegger, 2001).

In this case a bridge is a physical element which works as a space provider for a ‘fourfold’. A space of a bridge has an area and ways, which describes the purpose of the space.

The same happens for building with a purpose to dwell. The space to dwell is the room. The ancient meaning of the word room, which is raum, rum, means a space which is provided for a living and which was cleared in order to create a new area. However, the space do not determine the dwelling, because spaces are shaped according to their locations, which means that the dwelling depends of its physical measure, not of its ‘space’: ‘Accordingly, spaces receive their being from locations and not from ‘space’. (Heidegger, 2001).

According to Heidegger (2001), the purpose of a building is dwelling and a human being is capable to dwell only if he can build. However, it does not mean that people
now have to go back and start building houses with their own hands. It means that people have to accept a house as a part of nature, which complements the natural powers and creates a shelter for a human being.

Conclusions

The real meaning of dwelling do not lie in a sophisticated architecture or in a nice location of a house, in contrary building should serve as a shell for dwelling and as the part of a nature. Human beings should rediscover the purpose of dwelling by learning how to live with the respect to the nature: ‘The real dwelling plight lies in this, that mortals ever search anew for the nature of dwelling, that they must ever learn to dwell.’ (Heidegger, 2001).

Self – worth

Ivan Illich criticizes existing forms of society, such as capitalism, socialism, because they are created to be dependent and people are unavoidably shaped to be a part of existing system. When people lives are controlled by the system, they are forced to shape their lives in a particular way. Nowadays existing power systems are based on social inequality. Current world consists of the ones who have too little and the ones who have too much. As a contradiction to existing forms of society he proposes a convivial society, which is based on independence and balance in life. Life balance can be determined by a connection between human being and his means. It is a factor which preserves self – worth.

The current perception of technology

Illich (2001) proposes ‘conviviality’ as opposition to the technological age. He states that ‘conviviality’ produces freedom, which is achieved through independent collaboration among each other and within their surroundings. Every person needs freedom in order to achieve happiness, while mass production and consumption these days’ enslaved people instead. Big corporations have created a never ending process of mass production and engaged people to be never satisfied consumers.

He claims that society based only on mass production and consumption cannot fully cover all needs of population. It is because people’s needs do not end in getting things. People are more complex than just consumers. A person can fully satisfy his needs only if he is capable to express himself through everyday things he uses and everyday activities he does. As an example prisoners of rich countries are provided with many goods of mass consumption but the type and amount of things they get every day is decided by other people, so one of consisting parts of their punishment is that they lose the right to choose. Exactly the right to choose and express one’s self Illich calls a ‘conviviality’ because without ‘conviviality’ a human being becomes just a basic consumer.

Another side of mass production creates a system where people with less possibilities in life have to work for people of a higher class and higher income. The world has now a two class system – the ones who produce things and the ones who use those things. This system generates the slaves and the users. While, Illich ‘convivial’ work should be based on three values: ‘survival, justice, and self-defined work.’ This type of society would be based on people’s right to choose who they want to be and how they want to shape their lives. In convivial society one part of people do not serve for another part, of a higher class or higher spending freedom.

Somehow, along the way to the modern age (Illich, 2001) people had lost a right perception of technology. They accepted technology as a tool which changes human work into a machine work, unlike before humans were making everything by hands. However, this understanding about technology is not right, because eventually the technology do not change the work of a human being, it just modifies it. People of a lower class still serve to people of a higher class, as they did before the invention of technology. The only difference today is that all work is mechanized, and more goods can be produced than if they were made with human hands. The system of this type breaks the self-worth of those who have to work in order to provide better welfare for the others.

The right perception of technology

Illich (2001) proposes to change the perception of technology, which should be implemented as a tool of work, not as a tool changing human’s work. On the other hand, there should be a right balance between human beings involvement in work and technology’s role, otherwise the human kind has a dangerous potential to fall into another extremity – ignorance of the technology, as a creation of evil.
Before the technology (Illich, 2001) a certain amount of people from a higher class of society had a requirement of lower class people service for them. Before the invention of technology the work made by a human was much slower. Somehow on a way towards invention of technology people got the wrong perception of it. They understood a technology as tool which changes human work and release human beings from slavery. However it is not quite like that.

Convivial society does not claim that mass production is wrong and it does not deny the current system of distribution, which provides people with their everyday needs in their location. According to Illich it is not smart to minimize these actions to the basic survival level just because everybody would be equal players in the society. Instead he proposes more complex mechanism, which exists in our days as well, the difference, is that new mechanisms would be based on self-worth, which means that different balances between different systems should be kept.

**Preservation of self-worth**

However, there is still a thin line between balance and inequality. The question arises: what are the ways to preserve the balance?

Illich argues, that if a person do not seek a balance in life, very soon he can become a victim of his own creations and the enemy of the nature. In contrary from his expectations this leads him to a lower level of life. Principles of conviviality cannot be accepted as certain rules and norms which are designed to have only two options – to break or to obey, but it should be provided as an opportunity of choices which leads to a greater development.

In order to preserve a self-worth, People should not be accepted as machines of certain mechanism, being ruled by other people who tend to have greater power. In opposite, they should be accepted as a unique and even organism which has a right to shape its life and were all parts have a right to choose and debate by collaborating with each other. Each individual should have a right to shape their life the way they want, not in the way the system forces them to shape it.

There is a thin line when a person controls mechanisms and when they control a person. The mechanisms created with a human hands can take the power over the human being. A person can become a slave of his own creations without even noticing that: ‘the plow makes man the lord of a garden but also the refugee from a dust bowl’. (Illich, 2001).

Illich explains that actually the harmony is the main catalyst which determines the peaceful society. The harmony of life depends on five dimensions, where each dimension consists from certain tendencies, which, in order to maintain the harmony in humans life, has to be preserved in peace. A human being can usefully operate with forces of nature unless his powers and tools of his creation do not harm the nature. The benefits of various systems comes only when those systems are maintained in harmony and the harmony comes only when people keep a ‘delicate balance’ between their own actions and actions of technology.

Illich argues that the model of peaceful and happy society consists from wide range of opportunities, where every person has a chance to get education, to advance their level without a major restrictions and where the modernization becomes valuable when it takes into account the tradition, when it has a deep meaning and high security level.

**Conclusions**

Considering thoughts of illich (2001), some factors, which preserve self-worth, could be distinguished. Self- worth can be preserved when there is a harmony between human being and technology and when a human being has a right to choose. Without these possibilities a human being is just a small meaningless part in a great system of mechanisms.

There are two ways for a technology to develop (Illich, 2001): one way of development is when it helps a human being in his life and upgrades his quality of life, while the second way is when it does a work instead of a human being, which means that a technology subtracts the work from a person and limits his freedoms by taking the power over him.
Evaluating the theoretical approach of qualitative living environment

The base for human’s comfortable being is the right to choose. All analyzed thinkers claim that a human being in current civilization is employed into a whole net of mechanisms. That is a main factor were mass housing estates failed. They do not support the general values of human being, instead they took away their individualism and their right to choose. Governments created a mechanism, where people engage in monotonic jobs based in factories in order to support mass consumption mechanism and live in mass housing estates, were they support communal mechanism. Unfortunately, the net of mechanisms does not create equity in society. It increases the gap between the rich and the poor instead.

The mechanism of mass living failed because people lacked individuality and the freedom to choose. As Heidegger (1971) states, that living environment is like shell, obviously mass housing estates does not support this function because everything which is produced for masses, does not leave room for self-expression. While self-expression according to Illich (2001) is necessary for a human being to feel worthy. The concept of mass housing failed because it was designed to support only the basic people’s needs, however this type of design did not work. In that case one will always choose a better living environment when the possibility appears.

In urban design all these values should be taken into an account in order to avoid the failures, which happened to the concept of mass housing estates. For the implementation of the proposal (p.58) the values of the living environment as mentioned above are used.
MICRORAYONS IN THE CITY’S CONTEXT
The first microrayon: Agenskalns

<table>
<thead>
<tr>
<th>Name of a district</th>
<th>Year of construction</th>
<th>Number of inhabitants</th>
<th>Population density (inhab/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agenskalns</td>
<td>1958 - 1962</td>
<td>25 000</td>
<td>109</td>
</tr>
<tr>
<td>Daugavgriva</td>
<td>1960s</td>
<td>10 000</td>
<td>10</td>
</tr>
<tr>
<td>Sarkandaugava</td>
<td>1960 - 1975</td>
<td>22 000</td>
<td>174</td>
</tr>
<tr>
<td>Jugla</td>
<td>1961 - 1970</td>
<td>35 000</td>
<td>160</td>
</tr>
<tr>
<td>Kengarags</td>
<td>1961 - 1971</td>
<td>60 000</td>
<td>213</td>
</tr>
<tr>
<td>Imanta</td>
<td>1965 - 1975</td>
<td>60 000</td>
<td>157</td>
</tr>
<tr>
<td>Purvciems</td>
<td>1965 - 1975</td>
<td>65 000</td>
<td>201</td>
</tr>
<tr>
<td>Bolderaja</td>
<td>1965 - 1975</td>
<td>15 000</td>
<td>116</td>
</tr>
<tr>
<td>Ilguciems</td>
<td>1965 - 1970</td>
<td>37 000</td>
<td>157</td>
</tr>
<tr>
<td>Vecmilgravis</td>
<td>1968 - 1980</td>
<td>39 000</td>
<td>176</td>
</tr>
<tr>
<td>Mežciems</td>
<td>1977 - 1985</td>
<td>20 000</td>
<td>220</td>
</tr>
<tr>
<td>Plavnieki</td>
<td>1985 - 1990</td>
<td>60 000</td>
<td>200</td>
</tr>
<tr>
<td>Zolitude</td>
<td>1985 - 1990</td>
<td>25 000</td>
<td>109</td>
</tr>
<tr>
<td>Ziepniekalns</td>
<td>1990 -</td>
<td>22 000</td>
<td>125</td>
</tr>
</tbody>
</table>

The last microrayon: Ziepniekalns

Riga is a relatively small city. It is 304.05 Sq.km big (Municipal portal of Riga, 2011) with a population of 706,413 people. Nature occupies even 43.7% of the total Riga area: water obtains 15.7% and green areas - 28%, (Municipal portal of Riga, 2011) which means that Riga is a very green city.

The positive fact is that many microrayons are surrounded with nature. Almost all microrayons are built near the forest. According to Zvirgzdinis's personal experience, the microrayons in Riga are richer in nature than the ones built in St. Petersburg or Moscow. The landscape map of Riga (fig. 17) and the material of site visits show that the areas with very poor greenery are rather rare in the context of Riga’s microrayons. Sarkandaugava, Imanta or Jugla has at least one side which borders with nature, while Mezciems is surrounded with two forests.

The water in Riga is quite important element as well. It has a river Daugava, which goes along the whole city and splits it into two parts. Kengarags is the only microrayon, which is built near the river. It has a nice promenade built along the river of Daugava, which was renovated few years ago. As Zvirgzdins (2013) states it is the one of successful examples, showing the solution of problems, which brings social segregation. The promenade consists of bicycle path and pedestrian road. One side borders with the river, while the other side of promenade is equipped with benches, sports equipment and leisure facilities on the other. Zvirgzdins have noticed that after the reconstruction of the promenade, it became very popular among people, especially in the summer time. In his opinion it is wise to develop the area gradually, then inhabitants slowly get used to the changes, which prevents them from the local vandalism, (Zvirgzdins, 2013). Part of Daugavgriva microrayon is located near the river too but the riverfront is not developed.

Other types of water ponds are located in such areas like Mežciems and Jugla. Water pond in Jugla is well maintained and has a pleasant atmosphere. There are few benches built along the water and it is surrounded with newly built pedestrian road. On the day of site visit the water pond was occupied by several visitors, enjoying the water and the evening sun. Contrariwise, the lake of Mežciems feels neglected. The surroundings are planted with bushes, which creates difficulties to reach the lake. There are visible footprints of unfinished infrastructure of the water pond: deteriorated staircase with unfinished path and old concrete structure facing the water. Moreover, the water pond is separated from the residential district by two wide streets.
Location of microrayons

Microrayons are quite spread out and is in approximately 2-3km distance from each other. The closest microrayons to the city center are Purvciems and Sarkandaugava, the furthest – Vecmilgravis, Bolderaja and Daugavgriva. The microrayon Daugavgriva is even 9,5 km away from the city ring, (fig.18) The position were microrayons are situated, creates difficulties to reach the city center in an adequate amount of time. Gladly the city of Riga has a well-developed road system (fig.14).

Distance from the city centre:

200m - 1km : Purvciems;
1,5km - 2km: Sarkandaugava;
2,5km - 3km: Agenskalns;
3,5km - 4km: Kengarags, Plavnieki, Ilguciems;
4,5km - 5km: Mežciems, Jugla, Zolitude, Imanta;
5,5km - 6km: Ziepniekalns;
6,5km - 7km: Vecmilgravis;
7,5km - 8km: Bolderaja;
8,5km - 10km: Daugavgriva.

Figure 18. Microrayons position in the city according to the distance from the city centre
Connectivity

Motor roads:

Each microrayon is well connected with the city by motor roads, which gives the freedom of mobility to the residents. This type of road layout can be considered as the heritage of Soviet city planning system, since all microrayons had a requirement to be surrounded with motor roads. However this way of road planning design is not always advantageous. On one hand, it creates an easy connection to microrayons, on the other hand, the high dominance of motor roads in the neighborhoods prioritize car movement and builds boundaries between neighborhoods.

Another negative aspect is that there is no clear division between the roads in Riga city, in consequence it creates a conflict between the design and usage of streets. The ring structure within Riga is also not complete, in consequence the city center has no clear separation from high traffic flows. (Ministry of Transport Republic of Latvia, 2009). However the map was made from the analysis of Riga’s road map and google maps, to show the primary or fast lane roads, which were preliminary selected according to the width and speed limit in the street. The inner city ring is precisely selected as well.

The highway system is developed only on the southern part of the city, (fig.19) and they are not connected to the main parts of it. Even more, they are not well connected with each other. Nevertheless, there are five highway lines in total, which connects the city of Riga with other parts of Latvia and neighboring countries.

Bridges:

The river Daugava goes along the whole territory of Riga and it splits the city in two parts. However there are only three bridges, which connects the two river banks. Moreover, they are located only in one, central area. In consequence, the connection to such microrayons as Bolderaja, Daugavgriva or Ziepniekalns becomes complicated and the distance between microrayons becomes larger, (fig.19).
Cycling has already become a classical transportation system which will never become outdated. In such countries like Copenhagen this source of transportation is now experiencing a renaissance. It is unquestionably a sustainable mean of transportation. Cycling by professionals from various fields is evaluated as ‘energy efficient and non-polluting transport mode’ (Pucher, Komanoff and Shimek (1999) also it save space and prevents traffic jams. Other advantages are that it is cheap and healthy, (Pucher, Komanoff and Shimek (1999) in Wheeler and Beatley, 2009).

Therefore, cycling in Riga is not as popular as it is Copenhagen or Amsterdam, despite the fact that Riga is a compact city, where distances are relatively short. There are few factors which cause the average popularity of cycling in Riga. Main factor is that cycling grid in Riga is not well developed (fig.20), what creates an image of a car oriented city. Currently there are only five official cycling routes, which are not enough for the city of such size. In many cases cyclists use pedestrian sidewalks, (Ministry of Transport, Republic of Latvia, 2009). The developed bicycle paths are separated from the car roads and are user friendly but where the bicycle roads are not developed, cyclists have to use the same roads as cars and that increase the number of accidents.

Still, the positive aspect is that some microrayons, such as Imanta, Mežciems and Jugla are connected with the city center by cycling paths. Also there are three more routes in development process at the moment, which will build-up the connection to the city center from Kengarags and Ziepniekalns. The third route will create a connection from Vecmīlgrāvis microrayon to the seaside. Nevertheless, there are still nine microrayons left, where cycling paths do not exist. On the other hand, Riga’s development plan of 2006 – 2018 looks promising. The whole network of bicycle paths is planned to be built until 2018, (fig.20). However, if considering Mežciems, even development plan do not provide shorter and nicer bicycle track from the city center to Mežciems.

The pedestrian network is quite well developed. Pedestrian roads are mostly designed to lie along the motor roads and many places are easily accessible. Still the quality of walkways depends on the area in the city, (Ministry of Transport, Republic of Latvia, 2009).

**Figure 20. Bicycle routes**
Transit services:

There are five types of transit service (Cervero (1998) in Wheeler and Beatley, 2009) in Riga: trams, trolleybuses, bus transit and paratransit. The figure nr.21 shows that all microrayons are connected with transit services, which goes quite frequently as well. However, microrayons located in the northern part of the city are planned with routes of a quite low frequency. The figure nr.22 describes that transit service stops are quite densely planned in the city. This type of layout creates a high accessibility to the public transport. Only 5 – 7% Riga’s inhabitants and 3-5 % of employees need more than 5 minutes to reach the bus stop. On the other hand, this high coverage of bus stops prevents fast accessibility to the city by means of public transportation, (Ministry of Transport, Republic of Latvia, 2009). However, the transportation system looks well developed only on the paper and the high increacement of private vehicles every year, shows that people give priority to a private car.

Paratransit could work as a system to reduce car traffic in the city and as an alternative for busses which usually are slower than a car. Currently the paratransit system in Riga exists in the form of minivans and minibuses, however they are not so good in quality as other transit services (bus transit, trams, trolleybuses), with a poor paying system (usually you have to give cash to a car driver without a guarantee to get a ticket back), a bus driver stops only if the passenger express his wish to get off verbally - these factors are usually a quite strong to demotivate car owners to exchange their vehicles into paratransit.
The „Rules and Norms of Planning and Building Cities” (Pravila i normy planirovki i zastroiki gorodov) had set a fixed number of inhabitants in one microrayon. Usually one microrayon should fit 10 000 to 12 000 inhabitants and it should not exceed the size of 250 ha, (Grava, 1993). While the map of Riga shows that the largest microrayon Purvciems has a size of 430 ha. However, looking closer at each microrayon of larger size than 250 ha it is visible that it is several microrayons built close to each other. In such a way they are many independent units combined into one large whole. For example, Imanta is one big unit of 268 ha, which is divided into five smaller neighbourhood units, (fig.23). As it is seen from the scheme, car roads create a clear division between neighborhoods(fig.19). Each neighbourhood also has schools and kindergartens planned inside. Since there were strict norms on the neighborhood size, it is easy to distinguish which neighborhood is complex and which is just one single unit. Such microrayons like Agenskalns, Ziepniekalns, Boldera, Zolitude, Vecmilgravis, Jugla and Mežciems are created from one unit and do not exceed the size of 250ha.

Size of microrayons:

1. Purvciems - 430 ha
2. Kengarags - 318 ha
3. Imanta - 268 ha
4. Plavnieki - 239 ha
5. Jugla - 180 ha
6. Ilguciems - 166 ha
7. Sarkandaugava - 159
8. Mezciems - 112 ha
9. Vecmilgravis - 106 ha
10. Zolitude - 81 ha
11. Ziepniekalns - 74 ha
12. Boldera - 61 ha
13. Daugavgriva - 56 ha
14. Agenskalns - 19 ha

Figure 23. The size of microrayons

1. Daugavgriva;
2. Boldera;
3. Ilguciems;
4. Imanta;
5. Zolitude;
6. Agenskalns;
7. Sarkandaugava;
8. Vecmilgravis;
9. Jugla;
10. Mezciems;
11. Purvciems;
12. Plavnieki;
13. Kengarags;