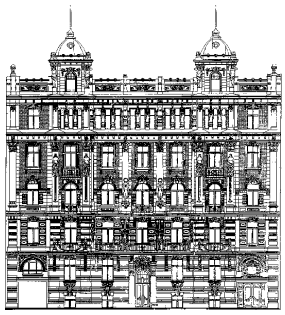

STOCKHOLM SCHOOL OF ECONOMICS IN RIGA

DEVELOPMENT OF INFRASTRUCTURE EXACTION CALCULATION METHODS FOR RIGA CITY COUNCIL

Stockholm School of Economics in Riga

Riga 2005

Table of Contents

INTRODUCTION

Background

Urban development is current and also a complicated topic. More and more people are striving to move to larger cities in search for jobs, service and convenience. On the one hand living in cities gives some advantages and economies of scale on the other the more people and companies are located on the limited space the more complicated is interaction between different members of urban society and institutions providing different services.

The demand for services is increasing in terms of both quality and quantity. The exact measuring of consumption of certain services is still very difficult or even impossible. It is easy to calculate amount of consumed water if you have a meter but it is not so easy to measure consumption of street lights or the amount of fresh air. Therefore many cities are dealing with the problem of fare distribution of costs related to the consumption of public goods and services. The main problem here is to measure consumption and fairly charge the real consumers of different utilities.

In Riga currently all companies, institutions and private persons doing development within the borders of Riga city are charged certain amount of money for infrastructure they are provided from Riga city. This money is collected in to the city development fund that is afterwards financing different improvement projects. At the same time also providers of infrastructure are charging a certain amount of money for building and connecting of utilities necessary for development. The principles used by each provider are different and are analysed later in the paper.

For calculation of infrastructure charges Riga City Council (RCC) is using the calculation method developed in 1993 and there are certain doubts about the appropriateness of this model[1]

Some facts about Riga

Riga, the capital of Latvia, was officially founded in 1201. Riga is divided into six administrative districts: Centra, Kurzemes, Ziemeļu, Latgales, Vidzemes and Zemgales districts.

Riga is located along the Baltic Sea at the southern coast of the Gulf of Riga, on the Riga coastal plain. The historical core of Riga is situated on the right bank of the Daugava River, about 10 kilometres from where the Daugava flows into the Gulf of Riga. The natural terrain of this area is a flat and sandy plain, about 1 to 10 meters above sea level.

---

1 See Appendix 2 for the formula

Area

The area of Riga covers 307.17 km2, including:

- Residential areas 67.00 km2 (21.8%)
- Industrial areas 52.45 km2 (17.0%)
- Streets and roads 24.64 km2 (8.0%)
- Parks 57.54 km2 (19.0%)
- Water 48.50 km2 (15.8%)

· Inhabitants

There are 747,2 thousand inhabitants residing in Riga[2]

AIM OF THE SURVEY

The aim of the survey is to develop a method for calculation of infrastructure charges that would ensure coverage of all direct and indirect costs for all involved parties and also ensure sustainable development of Riga City by providing optimal conditions for developers.

It is also expected that the survey will act as an explanatory tool for RCC to be used for explanation of the charges. The goal is to create a transparent system that would eliminate different misunderstandings and misinterpretations.

The results of the survey can be used as a strategic tool to reach the main goals of City development namely:

- Economical
- Social
- Environmental

GENERAL APPROACH

After the initial discussion with representatives of RCC it was identified that there is only a general opinion about all parties involved in providing, regulating and consuming infrastructure. Therefore the first step of the survey would be to identify the system with all it's elements and links between those elements. In other words it is suggested to use systems approach for the survey.

---

[2] Riga City Homepage, www.riga.lv

METHOD

In order to reach high reliability and validity of the research several methods will be involved. It will include integrated use of both quantitative and qualitative methods. Data verification cross analysis and interpretations also will be employed.

Preliminary research.

The first step in the research process is preliminary research or pre-research. The main purpose of this stage is to increase competence and understanding of the research team. Pre- research will include interviews with infrastructure providers, consumers, customers and representatives from RCC. Those interviews will be unstructured and the main goal would be to gather as many different opinions and facts as possible. The results of pre-research later will be used for fine-tuning of the main part of the method.

Outline of the survey.

To the large extent this part of the research will be developed on the base of preliminary research. Even though general outline has been identified before the final techniques will be developed on the base of the results of the pre-research.

Identification of system elements, attributes and links.

This would include interviews with representatives of RCC, infrastructure providers (both private and public) in order to identify all elements, links and also the environment of the system and its interface.

General questions to answer: who is providing infrastructure, who is consuming it, who is building and who is maintaining infrastructure, what institutions are regulating and controlling provision of infrastructure, what subcontractors are involved in providing infrastructure etc.

Analysis of flows between elements.

- After the system is identified the next step would be to gather all the necessary data for analysis of flows present in different links. Some examples for such flows are: water provided to the consumer (link from infrastructure provider) and money paid for water supply (link from infrastructure consumer).

This will be done by interviewing:

a. representatives of the structures within RCC responsible for providing infrastructure:

b. consumers of the provided infrastructure

General questions to answer: what kind of infrastructure (services) is provided to different elements of the system, who is consumer of the infrastructure, can it be measured, who is paying for the consumption, is the charge fixed or variable, what influences amount charged, any market imperfections etc.

However it should be stated that no exact figures will be measured in the flows. The focus will be more put on basic principles, strategies, interactions, methods and models.

Preparation of the framework for analysis.

This will include scanning of theoretical models and preparation of the theoretical framework. Those most probably will be models on Public Finance and Managerial Economics. One of the major questions which has already arisen is related to taxation. Many aspects of infrastructure are financed through taxes. But the optimal relation between tax and fee or charge is not identified.

Gathering of the information about international experience:

Riga is having an extensive co-operation with other cities both in Europe and other parts of the world. In many cities the problem of infrastructure development has been addressed. Therefore it is planned to gather all available information about experience from other cities. This will be done mainly in a form of interview and/or questionnaire that will be sent to the respondents. It also planned to survey homepages of different cities in order to acquire experience, principles and comparative data about charges and fees applied.

Analysis

In this part of the survey all data and information will be analysed. The focus will be put on the reliability and validity of results. Consequently only data that are considered reliable will be taken in to account. This is relevant for both quantitative and qualitative data.

DEFINITION OF INFRASTRUCTURE

Infra- in Latin means below[3].

Structure- in Latin means build, construct, place together, arrange.[4]

Infrastructure by definition includes transportation and communication systems, power plants, waterworks, waste disposal police and fire protection, schools, prisons and post offices.[5] In different

[3] http://www.infra-red-systems.com/whatis-ir.html

[4] http://www.lexfiles.com/basic-latin-l-v.html

[5] S.Butler, Infrastructure Exactions on Development of Real Estate.

countries distribution between public and private infrastructure providers differs. In general it can be stated that the main difference is the proportion between public and private providers.
Previously all infrastructure providers in Riga were public and now there is an ongoing change towards more privatised companies. It is supposed that private companies are more efficient in managing resources and therefore able to ensure a better service and lower price. It has been recognized by the number of researchers that will be shortly discussed later in the paper.
However many of those providers are monopolists and therefore they are controlled by a special governmental institution the Public Utility Commission[6].

PUBLIC SECTOR VS. PRIVATE SECTOR

The public sector as a whole can be viewed as one big 'monopolistic' organization that takes advantage of the lack of competition by partly omitting needs of general public and resisting serious changes and innovations within sphere of operation.
One should not forget about the distinctive characteristics of public sector. In their book Febrile *et al* (1996, p.226) have stressed the primary purpose of a public service organization, which is to provide a service, not to make profit. Moreover, these organizations have no right to choose their primary purpose as private sector organizations may do to some extent. Nor can they select their market and only deliver their services to some users and consumers. Most public sector organizations are publicly funded[7]. However it should noted that money for public financing is collected from the private persons in form of taxes.

OPERATING PRINCIPLES OF MUNICIPALITIES

The current system of municipalities in Latvia is administered by the law in force since June 9th, 1994. Apparently, the legislative norms have been amended several times since passed in May 19th, 1994; nevertheless the basic principles have remained unchanged. First, the municipal governments must be elected in democratic elections. Second, Vanags has outlined a set of elements that characterises the municipal governments: (1) a distinct administrative territory, (2) a permanent set of residents, (3) a democratic governing body (council, board, assembly), (4) a chair of the governing body who has been elected by citizens or appointed by the governing body, and (5) an independent budget (Vanags E. 1997, p.7 cited in Grandans & Skadina).
According to the Law municipalities are also responsible for provision of infrastructure services within

6 The summary of the role of PUC can be found in Appendix 3
7 Grandāns&Skadiņa, 2002

their area of responsibility[8]. Those include water supply, sewerage, road maintenance etc.

The Organisation of Municipal Governments in Latvia[9]

The nucleus of a municipality consists of its governing body – the municipal government, which consists of members elected by the citizens of the corresponding municipal territory. The number of members in each municipal government may vary and is set according to the law administering the elections in the particular administrative territory. The primary aspect that determines the number of municipal government members is the size of the municipality, which is measured by the number of residents. The members of municipal governments are compensated for their participation in the work of the government, committees and other activities of the governing body.

Municipal Government Regulation

The work of each municipal government is managed according to the municipal government's regulation that is developed in compliance with the law "On Municipal Governments" and the "Model Regulation for Municipal Governments" passed by the Cabinet of Ministers in May 31, 1994 and approved by the members of the corresponding municipal government.
The regulation of a municipal government must make provision for the administration structure, the territorial division of the municipality, the rights, obligations and responsibilities of the members and regular commissions, as well as the work routines of the municipal government.

Chair of Municipal Government

Any of the elected members can become an elected chair of the municipal government if they get more than a half of the other members' votes. In addition, there is also a deputy-chair of the municipal government who is elected by the members of the municipal government.

Municipal Government Meetings

The work of the municipal government is organised into open meetings that are run by the municipal government chair. The residents of the corresponding municipality, journalists and officials of state and municipal institutions situated in the corresponding municipality may attend these meetings.

Municipal Government Committees

Each municipal government in Latvia has several committees, the main duty of those is to prepare questions for open meeting discussions. The number and scope of action of the regular committees is

8 http://www.likumi.lv/doc.php?id=57255
9 Based on Grandans and Skadina

determined by the municipal governments with the exception of two regular committees that have to operate in each and every municipal government: the financial committee and the committee of social, educational and cultural affairs. Other committees may be established in accordance to the regulation of the municipal government.

The meetings of regular committees are open only for the members of the municipal government.

Currently in Riga there are the following 10 active committees:

- Financial
- Security and public order
- Education, youth and sports
- Committee of residential affairs
- Culture, art and religion
- City development
- Municipal property and privatisation
- Traffic and transport
- Social
- Environmental[10]

First of all those committees prepare questions for consideration at Riga City Council meetings. They are also entitled to

- give opinion on questions pertaining to their competence;
- control the work of organisations and enterprises under their supervision;
- consider budget drafts of organisations and enterprises supervised, control budget fulfilment, approve and control cost estimates of municipal organisations and enterprises;
- work out long-term development strategies on issues falling within their competence;
- come up with proposals as to the management of municipal property;
- ensure guidance of supervised organisations and enterprises by means of resolutions of Riga City Council or orders of Riga city mayor;
- assign Riga City Council executive bodies with tasks concerning the preparation of Riga City Council resolutions;
- perform other functions in accordance with these Regulations and Riga City Council

[10] Riga City home page

resolutions[11].

The Functions of Local Municipal Governments

The municipal governments are subject to public law when realising the local municipal administration, whereas in the field of private law they have the status of legal person. Municipal governments are controlled by the Cabinet of Ministers.

There are a number of regular functions that municipal governments must fulfil according to the law[12] The most important ones are concerned with providing the residents with utilities, education, health care and social help. Others include preserving culture, promoting entrepreneurship, registering civil status, supervising construction and land usage and other. Municipal enterprises and institutions provide most of the services and utilities. However there is a trend to involve more private companies The fulfilment of the regular functions must be financed from the budget of the municipality. However the regular financing from the budget fails to meet the increasing demand for services. Therefore alternative financing must be employed. One such alternative is direct charges or fees.

The Economic Basis of Municipal Governments

Municipal Budget

Municipal governments plan their economic activities by preparing a budget for each financial year. "The aim of the municipal budget is to ascertain and motivate the volume of financial resources that is needed for the fulfilment of the functions defined by the law, assignments and voluntary initiatives in the period that these resources are allocated for" (Republic of Latvia, Law "On Municipal budgets", Clause 2). This means that in practice the municipal budget aims to divide the available resources for the fulfilment of tasks in a fiscal period according to priorities defined by each municipality. The fiscal year of municipalities starts on January 1st and ends on December 31st.

Municipal budget includes:

- Planned undertakings, projects, service plans;
- Assessment of the available resources and income sources;
- Evaluation of the necessary public spending for financing the planned undertakings.

Riga City budget consist of the primary budget (about 90% of total spending) and special budget (about 10% of total spending). Primary budget is the main part of the whole budget since it is formed

[11] http://www.riga.lv/EN/Channels/Riga_Municipality/Riga_City_Council/Committees/default.htm

[12] For the complete list in Latvian see: http://www.likumi.lv/doc.php?id=57255

by tax revenue, non-tax revenue and state grants. The special budget revenues come from special sources for specific purposes (incomes from privatisation fund, environmental resource tax, excise tax, harbour income), as well as from funds approved by the municipalities.

Flow of Funds

The law defines four major sources of income for municipal budget. Firstly, municipalities receive direct municipal tax income in the form of resident income tax and real estate tax. The second source is indirect municipal tax, for example, gambling tax. Non-tax municipal income is the third income source, e.g., income from entrepreneurial activities and property, municipal duties and fees, penalty payments, income from property sale and other. The fourth income source is grants by the State government budget.

Municipal Enterprises and Institutions

Municipal enterprises and institutions are the units that receive funds from the municipal budget and use them in their operations of providing utilities for the public. These include water, plumbing, housing, education, and other.

Financial Equalisation of Municipalities

Since 1995 Latvia has introduced a mechanism of financial equalisation among the municipalities. The purpose of this system is to provide somewhat equal possibilities for municipalities in carrying out their functions regardless of the local socio-economic differences.

Financial equalisation is carried out by a special fund that re-distributes financial resources coming from municipal instalments and grants from the state budget. In other words, the fund of financial equalisation of municipalities serves as a mediator between the rich municipalities and the poor ones. Riga City currently is the largest donor in the fund and contributes about 25 mln Lats each year.

PUBLIC PROVIDERS OF INFRASTRUCTURE SERVICES IN RIGA

Public transport

Consists of two providers- b/o SIA Tramvaju –Trolejbusu Pārvalde responsible for trams and trolley buses and SIA Rīgas Satiksme providing bus transportation.

There is also train transportation available but currently it is not integrated in to the public transport system. The company responsible for train transport is called Latvijas Dzelzceļs and it is owned by the state and Riga municipality has no rights to influence that company. However as it has been stated by

Rudite Revelina Director of Public Transport Unit[13] it would have been an advantage if trains could have been integrated in public transportation system of Riga city.
Both existing providers currently are subsidized by municipality. The reason for that is very extensive discount system. Currently there are around 15 different groups entitled for discounts. For that reason the total income is not sufficient to cover real transportation costs. Another reason is rather inefficient co-operation between TTP and RS.
The distribution of passengers served currently is as follows: electrical transport is serving 67% and buses 33 % of public transportation needs supplied by Riga City.

Links.

As it was stated earlier the main flow from municipality is financial subsidies for transport providers. Transport companies in turn are providing public transport according to rules Nr 370 Issued by Cabinet of Ministers. This includes also discounted or free transport for certain groups of passengers.
Public transport department is also linked to the private transport providers. This link is a regulating one i.e. the department is regulating both routes and also fees for transport services. Currently private transportation firms are serving about 7 % of all public transport needs. This is an official figure and it can be estimated that the real figure is about 50% higher. This is due to the reason that in many cases transportation service is provided without ticket.
Passengers in turn are paying for the transportations.

Traffic department

The main responsibility of traffic department is development, control, maintenance and supervision of all traffic and transport development in Riga. First of all it is responsible for maintenance of streets in Riga but only public ones. Streets and pedestrian ways located between houses are in responsibility of owner or local area municipality.
Daily maintenance is done within limits of budget that is being prepared every year. Renovation of streets is done by state Traffic Department and financed from the budget.
Owner of the utilities does all reparation of underground communications. They are also responsible for complete replacement of the pavement after the finishing the reparation. Those services are usually outsourced to professional road construction companies.

---

[13] PC 23.09.2004.

There have been attempts to coordinate all works related to destruction of the surface but so far it has not been possible[14].

Traffic department is also responsible for control of parking places in Riga.

Larger projects can be developed together with Ministry of Traffic. Larger renovations of main roads are also co- financed by Ministry of Traffic (Satiksmes Ministrija). Therefore it can be concluded that to some extent the road infrastructure in Riga is financed by the state.

Links:

Traffic department is the main controller of streets and all issues related to that. All projects for traffic development must be approved by Traffic Department. This includes also signs, lights etc. The opposite link towards developer is an approval for the project and other co-ordination and regulating activities.

Traffic department is also closely linked with subcontractors responsible for daily maintenance and renovations. The link from the department in that case will be an order or tender. The subcontractor in turn is providing the necessary service for traffic department[15].

Street lights[16]

Responsibility for street light infrastructure in Riga is put on company Rīgas Gaisma.

This is a municipal agency owned by Riga City. All financing of the agency is provided from the budget i.e. from the tax money. Currently Rīgas Gaisma is servicing about 46000 different lighting units and 1200 km cables.

Links:

All new developments are approved by Rigas Gaisma and there are no conflicts. So the link from developer is a project and the opposite comes approval. If necessary Rigas Gaisma might request some change in the project in order to ensure the necessary qualities.

Building of new street lights is usually financed from the budget.

Role of City Property Department

City Property Department is responsible for management of all properties that belongs to the municipality. This includes also management of public spaces like streets etc.

---

14 PC Arturs Silins, 08.09.2004.

15 PC Andris Binde 15.09.2004.

16 Based on PC with Maris Jekabsons, Rigas Gaisma

The current strategy of City Property Department is to ensure that all cables and pipes are installed along with borders in order to minimize influence on future development of the property.
Currently fees are not applied for infrastructure providers for use of land. This situation might change in the future. There are two approaches possible: On the one hand take some rent for land use. This will increase income for Municipality but will negatively influence developers as it will increase costs. Another approach would be to allow providers use land free of charge. According to Benita Prikasa Head of Property department[17] the second approach would be more favourable since every additional infrastructure increases value of the land. Consequently Riga City will be able to increase revenues from renting out highly developed land. However the decision on between those two alternative is not made and will be subject for discussions in the nearest future.

NON MUNICIPAL PROVIDERS

Communication and data transmission providers

There are both private and public companies providing Riga city with communications e.g. Optron, Lattelekom, LMT, Tele2, Baltkom etc.
This includes different kind of data transmission including voice, fax, internet, cable TV and others. The main interaction between communication providers and municipality is project development and project approval. The main operator in this field currently is state owned company Lattelekom. It provides different services for both private persons and companies as well. Currently Lattelekom is extending their activities and increasing the provided services. All connection fees are fixed and the only condition that influences the possibility to get access to Lattelekom information and data networks is technical availability of the service.

Legal aspects.
There is also law regulating use of land for infrastructure needs. The law is called Aizsargjoslu Likums. This law regulates use of land. No regulations are applied on cable and other objects installed above the earth. This is also one of the problematic issues since many small communication companies are developing their cable networks without any approvals or even projects.

[17] PC September the 21st 2004.

Links:

Communication companies are supplying the customer with data communication. This includes voice, fax, data transmission, Internet, cable TV and others. Customer of those services in most cases pays some connection fee and later on is obliged to pay monthly fee for the service.
The link to RCC is project for network development. The opposite link is project approval. Once again it should be noted that not always the link is present which leads to uncontrolled development of different data networks.

Electricity supply, Latvenergo[18]

All electricity is supplied by state owned company Latvenergo. The company has developed a procedure for calculating connection fees. That has been approved 11th of December, 2002. According to that procedure customer has to pay 60% of the real costs for the project as well as connection.
In some cases (central part of Riga) some discounts can be applied in cases when the transformers are placed on the land owned by the customer.
Interaction between City Council and Latvenergo is very limited. Mainly it is related to project approvals and also some common projects. Only in some cases they might be involved in some common projects. No common strategies for development are created.

Links:

From customer to Latvenergo comes request for electricity as well as payments for supply. Latvenergo in turn is providing connection to the electrical line and then also supplies the electricity as well.
RCC is linked to Latvenergo is a following way- for project approval it is necessary before the installation.
Latvenergo is also a subject for regulations from Public Utility Commision. The link from Latvenergo is prepared calculation for the tariffs that are evaluated by PUC and decision is channelled back to Latvenergo.

Latvijas Gāze, natural gas

Connection fee is fixed. There are some differences depending on type of customer e.g. If the customer is a private person or an industrial consumer of gas. The real costs for building have to be covered by

[18] Information retrieved from Latvenergo home page

customer. The lowest price for building is ensured through tender procedure. The tender is organised by Latvijas Gāze.

Even here co-operation with Municipality is very limited and mainly related to project approvals and land use. Land use is free of charge since it increases value of land and consequently gains Riga City. Tariffs for gas supply are also a subject for regulation done by Council for Regulation of Public Services.

Links:

LG is providing customer with gas and receives money for the product and service. RCC is involved as a controlling institution to approve a project.

The link from LG to CRPS as in case of Latvenergo is similar. Latvijas Gāze is preparing the calculation for the tariffs that are either approved or denied. In other words the opposite link is a regulation that must be fulfilled.

There is also a link to subcontractors involved in building and installation of the necessary gas utilities. Either Lavijas Gāze or the customer can pay the service. Subcontractors must be certified.

Rīgas Ūdens, water and sewer

Providing water supply and sewerage services as well as rainwater drainage through closed pipes. The counters count the amount of water consumed. The sewerage is counted equivalent with water. The exception is companies using water for production for example breweries and others.

Rīgas Ūdens is financed also from the city development fund but only to some rather small extent.

The status of the company is SIA, Limited Liability Company. The ownership is 100% Riga City Council[19].

There is a strategic development plan for Rigas Ūdens. The first phase was mainly focused on the improvement of the quality of water supply. Now the company is focusing more on development of the networks in new areas like Marupe, Mezaparks, Vecaki Bolderaja and Darzciems.

There is also some co-operation with traffic department which is responsible for rainwater drainage. In that case RU is responsible for pipes and their maintenance. This is relevant for central part of Riga. In other parts of the city rainwater drainage is separated from the sewerage system.

The development of the company is ensured by extensive investments in different projects both related to the improvement of the existing system and widening the network as well. The payback period (planned) for investments is about 7-8 years.

For industrial/commercial customers RU is not assisting in investments. Developer must pay all the

---

19 PC Viktors Juhna, Production Director Rigas Udens. 12.10.2004.

real costs for building installation and connection. Then everything is handed over to RU which later on responsible for all maintenance. In case of private customers RU is also participating with some part of investment. However there are no clear rules to what extent (some % of total investment or other rules) RU will participate.

Currently all tariffs are equal for users independently on whether they are private persons or legal entities. Tariffs are approved by Public Utilities Commission.

One of the main problems for RU is City Development plan that is still not approved. Therefore it is impossible to predict what kind of water consumption is to be expected in different areas.

Another problem is difficulty to calculate the amount of consumed water. Usually there is some difference between RU figures and figures calculated by customers. On average this difference is about 20% . Similar situation is also in other cities both in Latvia and abroad.

Some financing for RU is received from Municipality. No sufficient financing is received from the development fund in spite the fact that certain amount of money received from developers is for water supply (see the formula in Appendix 2).

The co-operation with other departments is sufficient. RU is regularly sending the plans to related companies and departments to inform them about planned reparations and others. There is also co-operation on the project development stage as well. This means that related companies are able to adapt their plans in order to reach some savings and increase efficiency.

The main partners are Traffic Department, Latvijas Gaze, Rigas Siltums, Rigas Gaisma.

There are also many controlling institutions for water quality, environmental aspects of water supply and other. LRVP, SES, Geologists.

The decreasing water consumption is also causing different problems like slow circulation of water in pipes. This might lead to some quality problems as well. The main reason for decreased consumption is disappearance of industrial consumers. Previously about 40% of water was consumed by this group. Now only about 10-12%. This fact and also possible economies of scale are the main factors that have to be considered when calculating connection fees.

Another important issue is related to the new ownership structure. In many cases water is supplied for private houses and consumed by tenants. The tenant usually has a contract with RU but not always this is the case with owner of the house.

There are also problems to agree with land owners in case when water pipes are to be installed across the privately owned land. In each such case a special agreement must be reached.

Rīgas Siltums, heat[20].

Currently 49% of Rīgas Siltums belongs to the municipality, 49 % belongs to the state and 2% to Baltijas Tranzītu Banka

The main regulating institution is Utility and Residential department (Komunālais departaments) of Riga City.

Currently there are no common projects carried out by Riga City and Rigas Siltums. Rīgas Siltums is operation on the free market basis and currently is in dominating position but not monopoly.

The only project where Riga Municipality was participating was change of heat exchange system in schools.

Heat supply in Riga is generally linked to the house ownership. To the difference from Rīgas Ūdens where the contract is signed with every owner of the apartment Rīgas Siltums have an agreement with property owner or manager. All heat supplied is exactly measured and the price calculated thus ensuring revenues.

The general principle for connection of the new projects is very simple if the total investment is equal to the revenues for the next 10 years + 10% then Rīgas Siltums will provide the heat. No special connection fees are used for the developers and private builders.

In general it can be said that previously in many development projects Rigas Siltums was not taken in to account. Now there is more coordination on that issue and developers must get approval for the project from Rīgas Siltums.

There are also some interactions between Rīgas Siltums and Latvenergo and Latvijas Gāze. Latvijas Gāze is supplying the natural gas for the heat production. Now LG is allowed to sell the gas at the lower price since Rīgas Siltums is buying a lot of gas. Gas is burned in TEC (Heat-electrical power stations). Thus Rīgas Siltums is able to sell the electricity to the Latvenergo.

Cooperation with Rīgas Ūdens is limited. Rīgas Siltums is warming up the water supplied by Rīgas Ūdens. The money for the heat is collected through property manager or owner of the house.

OTHER INFRASTRUCTURE SERVICES.

Security is mainly the responsibility of the state. This is ensured through the police and other institutions. However there is also a municipal police in Riga that is mainly responsible for control of internal rules and regulations. This includes also control of parking.

---

[20] Based on interview with Aris Zigurs, Chief Executive Rīgas Siltums 14.10.2004.

Fire department is in complete responsibility of the state. There are no municipal fire department services. The same can be said about health care that is also financed by the state and private consumers.
Waste disposal is completely private enterprise. Service consumers who are paying for certain amount of disposal finance it.
Post office and prisons are also in responsibility of the state.
Schools and kindergartens are also within responsibility of Riga City. Financing of those is done from the budget. Similar situation is with hospitals.

FINANCING INFRASTRUCTURE.

Theoretical aspects of financing.

When discussing infrastructure the first theoretical issues to be considered are related to the basic economic theories about supply and demand. As it was already described before the situation is rather complicated on both sides. The supply of infrastructure is in many cases provided by the monopolistic companies. Those companies are regulated by PUC (Public Utility Commission). The price of the services in such cases is not defined by general demand.
Another example of the market imperfections is the fact that many of the supplied infrastructure services are public goods also called collective goods. These are a very special class of goods which cannot practically be withheld from one individual consumer without withholding them from all (the "nonexcludability criterion") and for which the marginal cost of an additional person consuming them, once they have been produced, is zero (the "nonrivalrous consumption" criterion)[21]. The classic example of a nearly pure public good is national defence: you cannot defend the vulnerable border regions of a country from the ravages of foreign invaders without also simultaneously defending everyone else who lives within the borders. The inability of potential providers to exclude people who refuse to pay from nevertheless consuming and benefiting from an expensive public good usually means that very many of the consumers of the good will act as free riders and choose not to help pay for its provision. Consequently private production of the good or service may prove unprofitable, and the good or service thus may not be provided at all by the free market -- even though everyone might concede they would be better off with some positive level of production of the good in question.

---

[21] See “Financial dictionary” [http://www.specialinvestor.com/terms/2658.html].

Actually, the public goods problem is not quite as hopeless as the simple version of the theory makes it sound. Various social arrangements have evolved to encourage the provision of public goods. The non-profit "third sector" of the economy devotes considerable effort to the provision of public goods financed by voluntary contributions that are motivated by appeals to people's "civic conscience" (or to their desire for the honours and respect that the community spontaneously accords to "public benefactors"). Voluntary contributions may also be gathered from those people most intensely and deeply concerned about the particular social need being addressed or from those who can be "shamed" into it by informal social pressures that withdraw status and respect from people identified and stigmatised as free riders.

In addition to these non-profit approaches, the provision of public goods may often be handled through ordinary market forces if some way can be found to link the consumption of the public good to the consumption of some other good that does not suffer from the "non-excludability" problem and hence can generate a profit. A shopping mall offers good examples of such "tying" arrangements. The mall management provides such public goods to shoppers as security protection, a clean and pleasant environment, public water fountains and rest rooms, entertainment, etc. without direct charges -- but, since these amenities attract larger crowds of customers to the mall and increase sales for the stores located there, the mall's owners are able to command higher rents from their tenants.

The classic "solution" to the problem of under-provision of public goods has been government funding through compulsory taxation (often, but not necessarily, accompanied by actual government agency production of the good or service in question). Although this may substantially alleviate the problem of numerous "free riders" that refuse to pay for the benefits they nevertheless love to receive, it should be noted that the political process does not provide any very plausible method for determining what the "optimal" level of provision of a public good actually is. When we cannot observe what individuals are willing to give up in order to get the public good, how can we (or the politicians) assess how urgently they really want more or less of it, given the other possible uses of their money? So any given public good will still most likely be either under-provided or over-provided under government stewardship. Note also that the "public goods" problem is an extreme special case of the more general problem of externalities. There are two main sources of financing taxes and direct fees. The taxation is in responsibility of the state. However some taxes are directly transferred to the local municipality. The main part of Riga City budget comes from income tax and real estate tax. Those two sources generate about 90 % of the total income from taxes.

INTERNATIONAL EXPERIENCE

In order to assess the most common practices in other cities the authors made an analysis of both primary and secondary data. Primary data were acquired from co-operation partners of Riga city and secondary data were gathered from the internet. Also some information from the developers was retrieved.

Building permits

The approach used by different cities varies a lot. The easiest system is a flat fee for a permit. However this approach is used only for the residential developments. In some cases the fee can differ depending on the size of the house. Some examples from Sweden are:

Municipality	**Fee**
Boras	30360 SEK (2700 EUR)
Lidingo (Stockholm)	30906 SEK (2707 EUR)
Trollhattan (Gothenburg)	18105 SEK (1620 EUR)
Trelleborg	27 096 SEK (2438 EUR)

In many cases building permits include a part of the payment for infrastructure development. However it is the choice of each municipality to specify the amount paid for each post or not.

In the USA and Canada such a method also is used but it is a common approach to specify where the money is to be spent (earmarking):

Municipality	**Service**	**Amount**
Niagara (CAN)	General Government	51$
	Emergency	15
	Medical services	67
	Police services	2753
	Sub Total	2886
	Water (if available)	1230
	Waste water (if available)	384
	Total	4500 $
Kingston (CAN)	Protection	359

Roads and related	2930
Transit	248
Parks and recreation	1632
Libraries	354
Social housing	6
Administration	79
Total	5608 $

In Sweden only a more general explanation for the charges is usually provided. At the same time developer's charges are not used for extensive financing of services not closely related to the development like libraries or protection.

For commercial and industrial development the flat fee is not used due to the large differences in size of the buildings. There are two common approaches for the building permit charges for industrial and commercial buildings:

- The charge is linked to the size of the building in m2 or square feet.
- The charge is linked to the value of the building as a % of total.

An example:

Current non-residential development charges Guelph (Canada)

Commercial and institutional per m2	$62.65
Industrial per m2	$17.52

A combined approach of fixed charge and a variable part is also widely used in cities in Europe and the US and Canada.

In Finland in Kimito the following approach is used:

For the new building 150 EUR plus additional 2.5 EUR for each square meter.

Other researchers have addressed the problem of infrastructure financing and charges as well. One such example is a survey done by the Worcester research group. The main findings are represented below:

Comparative Analysis of Building Permit Costs in Fourteen Towns Participating in Research. Comparison done for a 2,000-square-foot (184 m2) single family home with construction costs of $45 per

square foot unless indicated otherwise. The table shows a considerable variation in the fees charged by each town.

City	Building Permits	Cost
Auburn	$6 per $1,000 of valuation	$540
Charlton	$5 per $1,000 of valuation	$450
Douglas	$250 plus $0.06 per sq. ft. of living space	$370
Grafton	$35 minimum or $0.12 per sq. ft.	$240
Hubbardston	$8 per $1,000 with set construction costs of $50 per sq. ft. (first floor) and $40 per sq. ft.(second floor) For a house with 1,000 sq. ft. on first floor and 1,000 sq. ft. on second floor= $720	
Northboro	$6 per $1,000 of valuation	$540
Oxford	$0.05 per sq. ft.	$100
Princeton	$25 plus construction value x $0.003	$295
Shrewsbury	$5 per $1,000 of construction cost	$450
Sturbridge	$5 per $1,000 of construction cost	$450
West Brookfield	$275 plus $0.10 per sq. ft.	$475
Westborough	$5 per 1,000 valuation	$450
Winchendon	Up to 1,500 sq. ft.	$375-575
	Up to 2,500 sq. ft.	$650-950
	Up to 3,000 sq. ft,	$1,050-1,125
Worcester	Up to 1,500 sq. ft.	$150
	Up to 2,500 sq. ft.	$200
	Up to 2,500 sq. ft.	$250

Prepared by: Worcester Regional Research Bureau

The above-described examples can be considered as rather simple when the developer charge is

related to the value of the building. In some cases local communities are developing special formulas to calculate different fees to be charged. The main reason for that is an attempt to influence the development by using different adjusting variables that might increase or decrease the charge for different developments. Many examples for such an approach can be found in Sweden:

Solveborg

Total charge = G x n x OF x F

where

G is the basic charge. This is decided every year by the community

n is a justifying variable that is supposed to adjust the level of cost covering from the charge

OF is the size variable (multiplier) related to the size of the building e.g.

101-130 m2 OF= 6

131-160 m2 OF= 7 etc

F is a regulating variable for building permit, building request, planning request etc.

As it can be seen from the example the main tool for adjustment of the charges to the time span is the basic charge G which can be increased every year depending on inflation and other factors. In some cases municipalities are deciding in advance what charges will be valid in the future.

The example from Toronto (Canada)

Current Schedule of Development Charges

Column 1	**Column 2**	**Column 3**	**Column 4**
Unit Type/ Non-residential Use	**July 28, 2004 to Dec. 31, 2004**	**Jan. 1, 2005 to June 30, 2005**	**July 1, 2005**
Residential Development Charge Per Unit			
Single detached and semi-detached dwelling	$4,370	$6,723	$9,075

Apartment unit- two bedroom and larger	$2,816	$4,351	$5,886
Apartment unit- one bedroom and bachelor unit	$1,802	$2,730	$3,658
Multiple dwelling unit	$3,544	$5,383	$7,222
Dwelling Room	$ ---------	$1,172	$2,345
Non-Residential Development Charge Per Square Metre			
Retail Use	$ ---------	$36.44	$72.87
Industrial, office and institutional use	$ ---------	$ ---------	$ ---------

As can be seen from the above inflation or some other indicator does not motivate the increase in charges. The increase in some cases is as much as 50%! in 6 month.

Similar examples on the specified contribution scheme can be found in Europe. An example from Dublin:

Public infrastructure development	EUR per residential unit	EUR per square metre of industrial/commercial development
Roads infrastructure and facilities	2588.65	24.76
Water and drainage infrastructure and facilities	6,592.95	63.06
Parks facilities and amenities	412.85	3.95
Community facilities and amenities	771.65	7.38
Urban regeneration facilities	1133.90	10.85

and amenities		
Total	11500.00	110

Connection charges

In many of the analysed cities the municipal companies and departments provide utilities. The approaches for the charging of those services are very different. However it should be stated that in most of the cases the developer is charged a connection fee. For water supply and sewer it can be fixed for the building or variable depending of the size of the meter. In Sweden and Finland the fixed charge is used more often:

Solveborg (Sweden), residential, private house

For Water connection	27 000 SEK
For Sewer	31 500 SEK
For Drainage	9 500 SEK
For Storm water drainage	9 500 SEK
Total	77500 SEK or about 7000 EUR

For other buildings the charge is related to the size of the land and the size of the building:

For Water	of 3:10 SEK per m^2 land lot above 1 000 m^2
	of 23:00 SEK per m^2 for building above 300 m^2
For Sewer	of 4:- SEK per m^2 for land lot above 1 000 m^2
	of 28:- SEK per m^2 for building above 300 m^2
For Drainage	of 1:- SEK per m^2 for landlot above 1 000 m^2
	of 8:- SEK per m^2 building above 300 m^2
For Stormwater	of 1:- SEK per m^2 landlot above 1 000 m^2
	of 8:- SEK per m^2 building above 300 m^2

In other cities in Sweden the following charging system is used

For residential building, per building in SEK:

	Nacka	*Trelleborg*	*Nynashamn*	*Sollentuna*
A charge for providing Water, Sewer, Drainage	23100	71125 TOTAL W, S, D	30000	25000
A charge for connection point	16170		30000	33750
A charge per m2 land	32,34		30	43,57
Charge per apartment	24255		25000	18750

For other non-residential buildings SEK

	Nacka	*Nynashamn*	*Sollentuna*
A charge for providing Water, Sewer, Drainage	34650	40000	25000
A charge for connection point	23100	40000	33750
A charge per m2 land	57	90	62,5

In the USA and Canada connection charges are mostly dependent on the size of the meter to be installed:

Meter Size	**Overall Average Fee**
5/8”	$2,032
¾”	$2,948

1”	$4,208
1.5”	$9,949
2”	$13,831
3”	$40,218
4”	$53,286
6”	$123,559
8”	$139,072
10”	$251,204

Those figures were collected in the state of Virginia where information from about 50 providers was obtained.

There are examples alternative methods of calculating charges Coal Creek (US)

A. Water Local Facilities Charge: $4,500.00 per lot or $43.50 per lineal foot of frontage on the water main of the real property to be served, whichever amount is greater:

B. Sewer Local Facilities Charge: $4,500.00 per lot or $48.50 per lineal foot of frontage on the sewer main on the real property to be served, whichever amount is greater.

All examples described above clearly showed that cities are using different approaches for charging developers. There is no clear cut approach and in each case there are certain goals the municipality is striving after.

Charges for roads and streets

According to the general guidelines of the EU Commission a price should reflect the costs to the community. Costs to the community can be assessed in monetary terms. The table below shows the cost levels generated by a heavy goods vehicle covering 100 km on a motorway in open country at off-peak times. Estimates are made of the costs of air pollution (cost to health and damaged crops), climate change (floods and damaged crops), infrastructure, noise (cost to health), accidents (medical costs) and congestion (loss of time).

External and infrastructure costs (euros) of a heavy goods vehicle travelling 100 km on a motorway with little traffic:

External and infrastructure costs	Average range EUR
Air pollution	2.3 – 15

Climate change	0.2 –1.54
Infrastructure	2.1 – 3.3
Noise	0.7 – 4
Accidents	0.2 – 2.6
Congestion	2.7 – 9.3
Total	8 –36

Source: Directorate-General for Energy and Transport

Road transport costs

Cost category	Social Costs	
	Internal Private Costs	External costs
Transport Expenditure	Fuel and vehicle costs; Tickets and fares	Costs paid by others e.g. Free parking provision
Infrastructure costs	Tolls and user charges; vehicle taxes; fuel taxes road taxes	Non recovered infrastructure costs
Congestions costs	Personal time costs	Delays and time costs imposed on other road users
Accident costs	Costs covered by insurance; own accident costs	Pain and suffering caused to others (accident victims)
Environmental costs	Personal disbenefits	Non-recovered loss of amenity; noise and air pollution costs

As can be seen from the example there are different kind of costs involved. However only few cities are trying to charge some of those costs mainly congestion. Congestion charges are introduced in Stockholm (Sweden), London (UK), Oslo, Bergen, Trondheim (Norway). This charge is also used in cities in Canada and the US.

Another example of additional charges can be found in Germany. According to Dr. Jürgen Murach[22] in 01.01. 2005 in Berlin area the "km – orientated" toll for heavy lorry vehicles using highways ("Autobahnen") will be introduced. This can be seen as one more attempt to charge the real consumers of infrastructure.

Situation in Israel[23]

The current production cost of 1m2 apartment building is about 800 USD. About 150 USD is building tax. This is a tax that is supposed to cover all necessary costs related to the development including infrastructure.

Building permits always include all infrastructure exactions.

Already application for getting the building permit is related to some payments. Usually a couple of thousands USD. This money primarily is spent on preparation of documentation.

Building permit means that all approvals are received and all infrastructures are available:

Infrastructure:

- Water supply
- Sewerage
- Drainage
- Roads
- Parking
- Parks and gardens
- Electricity

The above mentioned is provided by municipal services. The police and fire departments belong to the state and consequently are financed from the general tax revenues.

Payment for sewerage is done according to average calculations. No linkage to water consumption.

The developer will be denied the building permit if some of infrastructure is not available. In order to get the building permit in such situation the developer must build the necessary infrastructure on his own costs.

The payment for roads is related to the cost of ½ of pavement (middle axis)

If the road is not available the developer is paying the same tax of 150 USD and road is built by municipality.

All payments must be cleared before building starts.

---

22 PC November 2004

23 Based on PC with S.Rubanenko, MD of BKN nami

In case of bank guarantee the payment time can be prolonged but not less than 10 % a month must be paid.
If some infrastructure is built even existing owners of neighbouring buildings must pay for the provided or improved infrastructure.
Electrical department of municipality is responsible for street lights as well. It is also involved in planning of the necessary power supply.
All departments are calculating costs and preparing the bills for charging. Bookkeeping department collects charges.
Major part of the schools is build by the state. But also municipalities are allowed to build their own schools. Financing of the schools is also provided by the state.

For bettering tax.
In case the zoning allows a certain building but developer wants to exceed the limits he might be entitled to do that. But in that case the developer will be charged additional charges. The amount is negotiated in each separate case. The reason for such a tax is additional burden created by developer.
Municipalities are not paying VAT therefore most of the works are done through special agencies in order to minimize loss of money.
Parking:
In general there is a rule that there should be 2 parking places on each department. Outside the centre it might be just 1.5-1.75. If the residential building can not fulfil that demand developer must pay about 10 000 USD for each of missing parking places.
All commercial tenants (including also public institutions) are paying a special tax about 2-2.5 USD/month above all other costs and taxes.
Healthcare is complete responsibility of the state.

FORMULA DEVELOPMENT:

Road and related infrastructure

Roads are among the most important attributes of the modern city. In Riga they can be considered as one of the most problematic ones. First of all because of the fact that the existing roads were mainly built during Soviet time and now are both physically and morally outdated. Traffic load is increasing all the time leading to the increased traffic problems and consequently losses for the City and inhabitants.

The exact consumption or the road infrastructure is very difficult and expensive to measure. In spite of that we can see an attempt to distribute the cost burden in relation to the consumption. There are different financing models used in other cities to ensure sustainable development of roads and related infrastructure. In many cities that have been analysed previously the developer's contribution (fee) for roads and related infrastructure is one of the largest. In some cases the fee is calculated in some case local municipality is setting the fee in order to ensure the necessary financing.

For Riga City the approximate calculation will be made. Two factors will be taken in to account[24]:

- Size of the land lot
- Size of the building

Size of the land lot determines the length of road adjacent to the property. The larger is the land lot the longer is the road necessary to ensure access to the land lot as well as properties located in the area. Currently in Riga 8% of all surfaces are roads. If this proportion will remain traffic problems in Riga will grow. This is due to dramatic increase of car and truck traffic[25].

	1995	2003
Trucks	17511	33905
Busses	5962	3495
Cars	119714	223767

The size of the residential buildings determines generated traffic. The larger is the building the more people will be living in it and driving their cars. On average there are 304 cars on every 1000

[24] Adapted from H.L. Leung.
[25] Riga In Figures 2004, p. 122

inhabitants. In 1995 this figure was only 148[26].

Commercial and industrial buildings are also traffic generators. Visiting clients, deliveries of raw materials and services are increasing car and truck traffic. As an example in Appendix 6 are provided figures on traffic generators in the USA.

Taking in to account all mentioned above as well as cost for building on m2 of road the suggested contribution is following:

CM= S land * Epr * Cprop* Proad* T*Pdisc- Sroad*30

Where:

		Value
Cprop	Proportion of roads in Riga	0,2
Proad	Costs of 1 m2 of road	30
Pdisc	Discount for the existing road network	0,7
Epr	(Sbuild*'N')/Sland	
Sland	Size of the land m2	
Sroad	Size of the road outside development (public) m2	

Currently roads in Riga cover about 8% of the total surface. In relation to the built areas roads constitute 17%. With a slight increase the number of 0.2 will be used as a base for charge calculation. The cost for road development 30 lats per m2 has been retrieved from experts[27] That includes all related infrastructure like sidewalks, lights, signs etc.

Environmental variable.

Each building raised in Riga is negatively influencing the environment. First of all by eliminating all oxygen producers beneath the buildings. Consequently the amount of oxygen supplied is decreasing thus decreasing the quality of the air for general public. Consequently larger proportion of the costs related to the development of environmental projects has to be covered by the developer. This money later will be used to develop parks and green areas that will compensate the loss caused by developer. The cost for establishment of 1m2 of green area is 5 lats per square meter. This amount has to be compensated by developer for each m2 that is covered by buildings, roads and other elements that are

26 Ibid.

27 I. Romanovskis, Manager in ACB, E. Daniševskis, Expert in Road Construction

not “green”.

The proposed calculation is valid only for cases when development is not generating any additional emissions.

Developer can also influence environment positively. First of all by planting trees and other oxygen generators. Therefore it is suggested to introduce special discounts for every planted tree. According to M.Vikmane trees are of major importance for improvement of urban environment.

Some facts: 1ha forest in one hour can produce enough oxygen for 200 people. At the same time trees are also cleaning the air from CO2, dust, metan and other polluters. Therefore it is vital importance to retain and increase the amount of threes in the city

The introduced discount will stimulate developers and also private builders to plant more trees thus reducing size of the charge. The suggested discount for every tree is 3 lats.

Summary of the charge calculation:

Environmental charge	VM= (Sbuild*5-Gt*3)*T

Where:

Sbuild	is the size of the land covered
Gt	amount of new trees planted
T	variable for the type of the building

Storm water drainage

Riga is located very low in relation to the sea level. That is one of the main reasons why storm water drainage is a significant problem. The existing drainage system has been developed during Soviet time and there are problems related to the function of the system.

Every new development is worsening the situation because every building, road and other elements that close natural water drainage increases amount of water that has to be drained. Therefore it can be stated that it is not correct to lay the whole cost burden to the citizens that are no influencing amount of water to be drained. The larger part of the costs has to be covered by developers influencing the rain water drainage.

According to the calculations done by Environmental Department of Riga[28] the average cost for building rain water drainage is about 2 lats per m2 meter of land.

Some amount of water can naturally drain through the soil. Consequently charge for rain water drainage will be the size of the surface covered times 2 Lats.

Summary of the charge:

---

[28] PC E. Millins, Environmental Department

Storm water charge	LUn= (Sbuild*2)*T

Contribution to the improved quality of the urban environment and public institutions.

According to the formula used so far the total contribution has been calculated per person. Due to the latest development of the registration system for citizens nowadays it is quite impossible to identify amount of persons living or working in the building. Therefore it some changes have to be made. The more accurate and also socially acceptable approach would be to calculate fee on the base of the size of the building. Such an approach would mean that owners of the larger buildings would give a relatively larger contribution. In 1993 the charge per person was 35 Lats (15 for education and 20 for heath care). Recalculating this sum in relation to the average size of the buildings the charge will be about 1,9 Lats per m2. The inflation during that time has been about 50%[29]. In order to make an indexation the figure of 1,9 Lats should be increased by 50%. However there is another aspect namely the main consumers of heath care and educational services are related to the residential development. But in order to decrease a cost burden for this group and make cost coverage more even it is suggested to apply the figure of 2 lats per m2 for every type of buildings developed.

Summary of the charge:

Urban environment charge	PVM= Sbuild*N*T*2

Where:

N is number of storeys

Coordination fee

In the previous system analysis (see Chapters 8 and 9) the role of Riga City council in the development of the urban environment has been identified. All infrastructure providers are closely related to the municipality. A lot of work has to be done for coordination and regulation of the all activities in order to ensure sustainable development of urban environment in Riga. In order to ensure more appropriate financing it is suggested to introduce the new variable to the formula namely co-ordination fee. Internationally similar approach is used in several cities. However the name of the charge e.g. general government or administration as well as the type (fixed or variable) might differ in different cities. Unfortunately the exact calculation of such a fee is not possible. In order to determine the appropriate figure the brainstorming session with participants from City Council and Stockholm School of Economics in Riga was carried out. As a result a fee of 10% was suggested to be the most appropriate in relation to the amount of resources necessary for coordination of infrastructure development

[29] Statistical Year Book of Latvia, 2004, p. 65.

projects.

Summary of the charge:

Coordination fee	IKM= SUM(CM+VM+LUn+PVM)*10%

DISCOUNTS AND SCHEDULE FOR CHARGE COLLECTION

Sustainable city development is a very complicated task where many aspects have to be taken in to account. On the one hand the introduction of the new charging system will change infrastructure development cost burden. Previously larger portion of the real costs were covered on the expense of all tax payers. The increased charge for developers will change the proportion in order to charge the larger amount of money from the real consumers of the infrastructure. This is relevant also for the developers who will not consume the infrastructure but who's projects will generate increased demand for different utilities.

At the same time it is important to ensure attractive climate for developers. Therefore it is suggested to limit the total fee to be charged. The limit would be 12 Ls per m2. Currently the average cost to produce 1m2 of building is about 300 Ls. Thus the limit of 12 Ls ensures that the total fee will not exceed 4% of the total investment.

Limiting the charges cannot be observed in many other cities. In Dublin for example municipality depending on the market situation sets charges. If the market is booming all developers will have to pay sufficient charges. At the same time during the recession developers might even get tax discounts in order to attract more investments.

The next step towards minimising the impact on the developer will be possibility to postpone the payment. Such approach is also widely used internationally.

Even thought the total charge always is limited in order to eliminate the negative influence on the developer in addition to that it is suggested to collect the payment according to the following schedule

40 % of the charge prior to the building permit issue

30 % before the end of the permit, (but not later than final approval of the building)

30 % when building is finished and approved.

If the building is finished before the end of the permit validity time the last two payments will overlap.

The important aspect is the general public good created by different type of development. Therefore different discounts are used for different type of development. Largest discounts usually are given to the non profit organisations. The main reason for that is the fact that those organisations are contributing to the general public good without receiving any profit.

Non profit organisations	0,1
Industrial developers	0,4
Commercial and service	0,7
Residential	0,7
Not planned development	3

Not only discounts will be applied. For developments done not according to the general development plan but permitted the coefficient of 3 will be applied. Such increase can be explained by the negative impact of developments that are not according to the city development plan and consequently will negatively influence public environment in Riga.

The proposed change is rather significant compared to the previous system. Therefore it is suggested to apply additional discount for the first year of the introduction of the new method. Until the end of year 2006 the charge will be discounted by 30%.

However it should be noted that the suggested formula have to be revised every year and if necessary-adjusted. The prices for different infrastructure service are changing (increasing) all the time therefore it is important to revise the model every year. If there have been some significant price change i.e. the price for road construction increased from 30 to 40 Lats per m2 the necessary corrections have to made in order to keep the balance between tax and charge financing of the infrastructure developments.

DISCOUNTS FOR PUBLIC INFRASTRUCTURE DEVELOPMENT

As it can be seen from the formula there are some discounts applied for development of public good. For example if the developer is building roads outside the property he is entitled to receive a discount equal to the size of the public road. The discount can be applied only if the road is built in accordance to the technical specification and connected to the road with similar pavement. Responsible institutions in Riga City Council must approve the project for such development.

If the total investment in public roads exceeds the charge calculated the developer can be entitled to receive the money back in the future. However the return of the investment can be done only when other development is taking place in the adjacent area. For that development the infrastructure charges will be applied and some amount will be returned to the previous developer. Considering the coordination role of Riga City Council it is suggested that the amount returned should not exceed 90% of the investment in public good.

The complete summary of the formula and some examples can be found in Appendix 7.

IMPACT ON CITY DEVELOPMENT

At first sight it might seem that the increased infrastructure charges might negatively influence city development because of the increased costs for developer. This risk has been recognized internationally and some research has been carried out to address the issue. Nelson and Moody have achieved the most comprehensive results[30]. General conclusions from the survey are:

- Property tax revenues increasingly fail to cover the full costs of the infrastructure needed to serve new development.
- Impact fees, like user fees, offer a more efficient way to pay for infrastructure than general taxes, and ensure benefits to those who pay them.
- Impact fees increase the supply of buildable land
- Impact fees have complex effects on housing prices
- Impact fees do not slow the job growth.

Now we will analyse the situation in Riga in the light of the above mentioned.

Property tax revenues

Property tax revenues in Riga constitute the largest part of total income. At the same time it has been recognized that those revenues are not sufficient to meet increasing demand for infrastructure. The situation in Riga is even worse than other cities because of the specific taxation system. For residential buildings tax is calculated only for land. The taxation value is determined by State Land Register (Valsts Zemes Dienests) and it is not a secret that in almost all cases the taxation value is much lower that the real market value. Residential buildings are not subjects for taxation at all.
For industrial and commercial buildings total tax is calculated based on balance sheet value of the building. Thus the bookkeeper of the company to some extent can influence the taxation value and the tax to be paid.
As a result the financial flow from the tax revenues is not sufficient to ensure sustainable development of public infrastructure services.

Economic efficiency

The economic efficiency of the infrastructure charges has been recognized internationally. The main reason for efficiency is the fact that fees make the economic linkage between those paying for and

[30] A.Nelson, M.Moody, Paying For Prosperity: Impact Fees and Job Growth, 2003.

those receiving benefits. If the developer will pay a certain amount for road development this money will be used to improve roads and related infrastructure. This will increase attractiveness of the area and Riga as well. Attractiveness in turn will lead to increased demand and also prices for the property. During interviews with developers it was suggested[31] that the collected charges should be earmarked in order to ensure efficiency and transparency. At the same time from the point of view of economic efficiency in some cases financial resources must be accumulated in order to reach the necessary efficiency and economies of scale. In order to satisfy the developers' interests and also the need for efficiency the following model is suggested:

- Charges are collected and accumulated (counted) separately
- Average spending during three-year period should be at least 80% of the money collected.
- Each year the report on collected and spent money should be prepared and publicly available.

Supply of buildable land

According to the study done by Nelson and Moody[32] infrastructure charges increase the supply of buildable land. This is explained by the fact that Municipalities have a better possibility to provide infrastructure in the areas where it was not available. Consequently those areas become more attractive for development. But this will not happen overnight, mainly because of the very limited resources previously available for infrastructure development and also the condition of the infrastructure networks. In some cases e.g. streetlights the financing has been so poor that no sufficient improvements of the network have been made for quite a long time. So the first need would be to improve the existing lighting system and then develop it to the other areas.

Impact on housing prices

According to the survey done by Nelson and Moody[33] the impact of the charges might be twofold- on the one hand the prices for land might drop for the amount equal to the charge. In Riga case it difficult to predict the impact. First of all because the fee is limited to the level that is small enough and should not leave a negative impact on the developers decision. Additional argument to be provided here is the fact that infrastructure fee will be charged only when the real development will start. The charge can be

---

31 PC F. Gronvold, Director of Operations, Linstow
32 Paying for Prosperity, A.C. Nelson, M. Moody, 2003
33 Ibid.

paid in several parts during the process thus lowering the impact even more.

Impact fees and economic development

The study we are referring to has found that infrastructure fees do not leave negative impact on the local economies. The increased financing for the infrastructure will increase the possibility to build better and wider infrastructure networks. This in turn will increase the amount of construction works supplied.

CONCLUSIONS

During the current survey it has been identified that direct infrastructure charges are widely used in different cities around the World. Those charges allow local municipalities to meet increasing demands for different infrastructure services and ensure sustainable development of the urban environment.

For the calculation of charges different approaches are used from the pure political decision to the exact calculation of the necessary future investments and proportion to be covered by the developer. Earmarking of the collected money as well as accumulation of funds for larger projects ensure the economic efficiency of the system.

Increased infrastructure financing in the long run will improve urban environment that in turn will increase prices of the real estate and gain the developer. In the short run some dissatisfaction from the developers side might appear. In order to minimize the negative perception special introduction discounts as well as limits for the charge will be applied. The new system is also more transparent thus eliminating space for different interpretations and misunderstandings. Formula for the calculation will be publicly available and all investors will be able to calculate the charge in advance that will be an advantage for financial analysis of the project.

Another significant improvement is related to the investment in public infrastructure done by the developer. If the amount invested in to the public infrastructure will be larger than charge calculated the developer would be able to get back 90% of the difference.

Finally the new method will increase the efficiency of the infrastructure development. All the funds will be earmarked thus increasing the responsibility of the Riga City Council.

APPENDIX 1
List of secondary sources

APPENDIX 2

REPUBLIC OF LATVIA RIGA CITY COUNCIL

RULES

07.03.1995 Nr. 14

RULES FOR CALCULATION OF SINGLE INFRSTRACTURE CHARGE

To state that each developer (company or private person), having intention to implement some development project (building, recontruction, modernisation, improvement etc) according to the Riga City Council rules Nr 97 from 23.12.1993.

independently from the land ownership has to make a single contribution to the city infrastructure (utilities, public services, parks and green areas, transport etc) development.

The size of the charge is calculated according to the formula:

Table Nr 1

F O R M U L A

for calculation of the single infrastructure contribution.

Nr.	Name	Calculation formula
1.	Water supply	M1...3 = N1...3 x K1...3 x K4 x R
2.	Sewerage	----------"----------
3.	Rain water drainage	----------"----------
4.	Air pollution	M4 = N4 x K4 x R
5.	Environmental impact	M5 = (N10 x L x N5 x S) x k4 x R
6.	Health care	M6...7 = N6...7 x S x K4 x R
7.	Education	----------"----------
8.	Public transport	M8 = N8 x (Kt2 x S x Kt3) x Kt1 x K4 x R
9.	Roads	M9 = N9 x Kt4 x Kt1 x K4 x R
	Single contribution M	M = E M1 + M2 + ... + M9

N1...N10 normative variable (Table Nr 2)

K1...K4 limiting variable (Table Nr 3)

Kt1...Kt4 limiting variable for roads and public transport (Table Nr 3)

R discounting variable (Table Nr 4)

S Number of workers

L Size of land, ha

Table Nr 2

NORMATIVE VARIABLES

Name	Description	Unit	Limits	Charge Ls
1	2	3	4	5
Utilities				
Water supply	N1	m3/day	> 600	1200
			21-600	600
			0-20	200
Sewerage	N2	m3/day	> 500	1800
			21-550	900
			0-20	300
Rain water drainage				
	N3	ha land	> 1.00	1500
			0.21-0.50	600
			0.01-0.20	300
Transport development				
Public transport	N8	per inhabitant		20
Roads and streets	N9	per inhabitant		30
Environmental				
Air pollution	N4	t/year	non toxic	2000
			moderately toxic	3000
Environmental impact	N10	ha land		500

	N5	per worker	20
Health care	N6	per worker	15
Education	N7	per worker	20

Table Nr 3

Limiting variables

Name	Description	Limiting variable and unit	Limits	Variable
1	2	3	4	5
Water supply	K1	Distance to the connection point m	> 500	0,5
			10-500	0,8
Sewerage	K2			
Rain waterworks drainage	K3			
			1	2
Transport	Kt1	zoning of the landlot	2	1
			3	0,5
Public transport	Kt2	related to the work		1,25
		related to culture	retail 100m2	4
	Kt3	and everyday life	catering 100 sts	5,6
			Hotels 100 plcs	4
Roads	Kt4	usage of road	parking 1 plc	0,1

			parking	
			short time	1,4
			gas station	
			one pump	14
			retail	
			catering 10 plcs	1,4
			other	1
Employment	K4	Nr of workers	1-10	1
			11-50	0,75
			> 50	0,5

Discounting varaible R

Name	Variable
Non profit organisations	0,1
Heavy industrial development	0,3
Production development	0,4
Industrial development	0,5
Services for children	0,6
Production of local products	0,7
Services	0,8
Attīstītāji, kuru darbība orientēta uz tirdzniecību	0,9
Luxury services	1,0

APPENDIX 3

Public Utilities Commission

Public Utilities Commission (PUC) was established in 2001 in order to regulate the following state-owned monopolistic utilities: telecommunications, power industry, post and railway (household waste management, water supply, sewerage and heating industries are regulated on local government level by institutions established by the respective municipalities). The goal is to maintain adequate quality of utilities for a reasonable price, stimulate efficiency and sustained development of the utilities, and promote economically justified competition. This is achieved by the following measures:

- Setting the tariff calculation methodology,
- Issuing licenses and supervising implementation of the set conditions,
- Supervising compliance of utilities with requirements for quality and environmental protection, technical regulations, standards;
- Performing preliminary extrajudicial examination of disputes settlement, etc.

In deciding on all of these functions, PUC takes into consideration the entrepreneurial activity in the utilities sectors that it does not directly regulate (water supply, heating, etc).

PUC is reasonably independent of private and public influence. Financing comes from charging companies under its legislation: “the annual rate of the State fee for the regulation of public services may not exceed 0,2 per cent in the State regulated sectors, and 0,4 per cent in the local government regulated sectors of the net turnover of the public services provided by an undertaking in the previous financial year.”

Power supply

There are over 50 providers of energy, and over 60 providers of gas. A ceiling is set for the end sales prices of the commodity; it is based on transmission and distribution costs for energy, and transmission, storage, and distribution costs for gas. The prices are calculated in a similar way for both electricity and gas.

Balance sheets are made based on forecasts of demand and supply for the electricity. The idea is to equate the energy/gas received from transmission network (less the energy used for technical purposes and energy losses) to the demand by eligible users. The balance sheet is then further divided to calculate individual figures for different systems: voltage (6-20 kV 0.4 kV) for electricity or pressure for gas.

The costs that are included in the tariff are operational costs, costs of capital, and taxes.

Cost of capital includes calculations of depreciation and required return on capital (Regulatory asset base * WACC). The gross profit of the company is, therefore, calculated using return on capital and tax rates. Operational costs include personnel and social costs, payments for losses, maintenance costs, and economic costs.

The costs for each type of electricity are then divided by the estimated demand, thus giving the ceiling tariff. The tariff ceiling within the review cycle is raised based on the CPI development; efficiency or other unexpected changes are also taken into account.

Sales end tariff is calculated based on the costs of transmission and distribution, including fixed profit margin approved by regulators.

Telecommunications

There are over 200 licensed operators in Latvia. Along with tariffs, PUC has special methodic to check quality of the services provided.

PUC controls the majority of prices for basic services. The prices are set in accordance to the cost reports that are submitted to PUC by telecommunication service providers. The standards of the report (costs that are included) are similar to those in the methodology of cost calculation for *Power sector*. Changes for the tariffs are based on the weight of a service in the basket of total services, and CPI.

Quality assessments include fixed line-, mobile-, and public phone services, for both national and international calls. The main criteria are the time it takes to connect calls, number of unsuccessful attempts, quality of sound and volume during connection.

At the moment, there are various projects for implementing new universal tariffs; furthermore methodology for electronic communication is being developed.

Postal services

There are around 30 postal service providers in Latvia. The tariffs are set according to the costs incurred by the sector (similar to previous types of public services). The changes to the tariffs are made in accordance to the CPI and changes in demand for different services.

Railway

There are five companies providing railway services in Latvia. The tariffs are calculated on the

basis of expenses per passenger, and are explicated in terms of price per kilometer that a passenger travels.

The total revenues of the railway operators include income from usage, subsidies from the government and other incomes. Each of the income sources is categorized by routes.

The calculations are based on the assumption that costs should be equal to the income. The costs are calculated on the basis of routes by assigning weights (km of the route/total km).

PUC also determines tariffs for using the railway infrastructure by providers other than "Latvijas Dzelzcels" – owner of railway system. The cost calculations include technical specifications of the trains, depreciation rate inflicted by trains, amount of energy consumed, etc. The base for calculating costs is the sum of maintenance, development, and taxes costs for each of the 3 categories of infrastructure. Costs for each of the categories are calculated separately.

APPENDIX 4

Regular Functions of Town Municipal Governments

The regular functions of Latvian town municipal governments are as follows:

- Organisation of utilities for the residents;
- Organisation and maintenance of its administrative territory and cleanness thereof;
- Regulation of the usage of the forests and waters in public use;
- Providing education;
- Being responsible for culture, preserving the traditional cultural values and furthering the development of people's art;
- Providing the accessibility of medical care, as well as promoting a healthy life-style;
- Providing the residents with social help (social care);
- Dealing with protection, guardianship and adoption issues, as well as issues concerning foster-families;
- Assisting the residents in settling housing issues;
- Promoting entrepreneurship in the corresponding administrative territory, decreasing unemployment;
- Issuing permissions and licences for entrepreneurial activities (if warranted by law);
- Taking responsibility for public order, fighting heavy drinking and depravity;
- Setting the order of land usage and construction in accordance to the plan of the corresponding administrative territory;
- Supervising construction in the corresponding administrative territory;]
- Undertaking the registration of civil status acts;
- Gathering and submitting the information for state statistics;
- Organising the elections of court assessors and conducting the necessary undertakings for municipal government elections;
- Participating in providing civil protection activities;
- Undertake the registration of the children living in the corresponding administrative territory;
- Realising the protection of children's rights in the corresponding administrative territory.

APPENDIX 5
List of interviewees.

Andris Binde, Traffic department

Artūrs Siliņš, RCC

Normunds Strautmanis, RCC

Ervīns Timofejevs, RCC

Ilmārs Grīntāls, RCC

Viktors Juhna, Rīgas Ūdens

Benita Prikaša, RCC Property Department

Rudīte Reveliņa, RCC Public Transport Unit

Āris Žīgurs, Rīgas Siltums, Heat Company

Eduards Milliņš, RCC Environmental Department

JC Cole, American Chamber of Commerce

Frode Gronvold, Linstow

Jānis Davidovskis, Neste

Smuel Rubanenko, MD of BKN nami

Juris Berzins, RC Financial Department

Jānis Skalbe, Rīgas Raugs

Māris Jēkabsons, Rīgas Gaisma

Jānis Vidiņš, Education, youth and sports Department

Ivo Romanovskis, ACB road construction company

Elmārs Daniševskis, Expert in Road Construction

APPENDIX 6

Trip generators by land use type.

• Land use type	• Average per day	• Peak hr
• General light industry	• 6.97/1000 sq.f GFA	• 1.08/1000 sq.f. GFA
• Heavy industry	• 1.50/1000 sq.ft GFA	•
• Industrial park	• 6.97/1000 sq.ft GFA	• 0.86 / sq.ft GFA
• Single family detached	• 9.55/unit	• 1.01/unit
• Townhouse • Low rise apartment	• 5.86/unit • 6,59/unit	• 0.54/unit • 0,62/unit
• High rise apartment	• 4.20/unit	• 0.40/unit
• Hotel	• 8.70/occupied room	• 0.76/occupied room
• Elementary School	• 1.09/student	• 0.28/student
• Daycare	• 79.26/1000 sq.ft GFA	• 16.28/1000 sq.ft GFA
• Hospital	• 16.78/1000 sq.ft GFA	• 1.42/1000 sq.ft GFA
• Office building 10000-800000 sq.ft	• 24.60-8.46/1000 sq.ft GLA	• 3.4-1.08/1000 sq.ft GLA
• Business park	• 14.37/1000 sq.ft GLA	• 1.62/1000 sq.ft GLA
• Shopping centre * 10000 sq ft. • To 1600000 sq.ft. (Saturday)	• 215.39-32.61/1000 sq.ft GLA	• 20.63-3.24/1000 sq.ft GLA

- GFA = Gross Floor Area
- GLA = Gross Leasable Area
- Source: Adapted from the Institute of Transportation Engineers

APPENDIX 7

Forumula summary and examples

Formula	Total charge= CM+VM+LUn+PVM+IKM			
Road charge	CM= S land * Epr * Cprop* Proad* T*Pdisc- Sroad*30			
Environmental charge	VM= (Sbuild*5-Gt*3)*T			
Storm water charge	LUn= (Sbuild*Scov)*T			
Urban environment charge	PVM= Sbuild*N*T*2			
Coordination fee	IKM= SUM(CM+VM+LUn+PVM)*10%			
				Value
Explanation of coeficients	CM	Cprop	Proportion of roads in Riga	0,2
		Proad	Costs of 1 m2 of road	30
		Pdisc	Discount for the existing road network	0,7
	VM	Scov	Size covered by building	5
		PK disc	Discount for planted tree	3
Building	**Unit**	**Descr**		
Size of land lot	M2	S land		
Land covered	M2	S build		
Storeys	Gab	N		
Type of building	Coef	T		
New trees planted	Nr	Gt		
Public road developed	M2	S road		
Proportion of building		Epr	(Sbuild*'N')/Sland	

Single family house	Unit					
Size of land lot	M2	S land	1200			
Land covered	M2	S build	100	0,17	Epr	
Storeys	Nr	N	2			
Type of building	Coef	T	0,7			
New trees planted	Nr	Gt	5			
Public road developed	M2	S road	10			
		Year	2005	2006	2007	2008
		%	70,00%	70,00%	100,00%	100,00%
Road charge	CM		288	288	288	288
Environmental charge	VM		332,5	332,5	332,5	332,5
Storm water charge	LUn		140	140	140	140
Urban environment charge	PVM		280	280	280	280
Coordination fee	IKM		104,05	104,05	104,05	104,05
Total inc. discount			801,19	801,19	1144,55	1144,55

Coef. For type of the building						
Non profit organizations			0,1			
Industrial buildings			0,4			
Service			0,7			
Residential			0,7			
Non planned development			3			
Limit	4,00%		3200			

Factory	Unit					
Size of land lot	M2	S land	50000			
Land covered	M2	S build	10000	0,2	Epr	
Stories	Nr	N	1			
Type of building	Coef	T	0,4			
New trees planted	Nr	Gt	25			
Public road developed	M2	S road	200			
			2005	2006	2007	2008
			50,00%	50,00%	70,00%	100,00%
Road charge	CM		12800	12800	12800	12800
Environmental charge	VM		19950	19950	19950	19950
Storm water charge	Lun		8000	8000	8000	8000
Urban environment charge	PVM		8000	8000	8000	8000
Coordination fee	IKM		4875	4875	4875	4875
Total inc. discount			26812,5	26812,5	37537,5	53625
Coef. For type of the building						
Non profit organizations			0,1			
Industrial buildings			0,4			
Service			0,7			
Residential			0,7			
Non planned development			3			
Limit	4,00%		120000			

Trade Center	Unit					
Size of land lot	M2	S land	70900	Epr		
Land covered	M2	S build	13500	0,3808181		
Storeys	Nr	N	2			
Type of building	Coef	T	0,7			
New trees planted	Nr	Gt	5			
Public road developed	M2	S road	200			
			2005	2006	2007	2008
			70,00%	70,00%	100,00%	100,00%
Road charge	CM		73380	73380	73380	73380
Environmental charge	VM		47232,5	47232,5	47232,5	47232,5
Storm water charge	Lun		18900	18900	18900	18900
Urban environment charge	PVM		37800	37800	37800	37800
Coordination fee	IKM		17731,25	17731,25	17731,25	17731,25
Total inc. discount			136530,63	136530,63	195043,75	195043,75
Coef. For type of the building						
Non profit organizations			0,1			
Industrial buildings			0,4			
Service			0,7			
Residential			0,7			
Non planned development			3			
Limit	4,00%		324000			