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STUDY AND IMPLEMENTATION OF SUSTAINABLE URBAN TRANSPORT PLAN FOR ORADEA CITY

in the project *SEE/B/0004/3.1/X "ATTRACTIVE URBAN PUBLIC TRANSPORT FOR ACCESIBLE CITIES" acronym ATTAC*, SOUTH EAST EUROPE TRANSNATIONAL COOPERATION PROGRAMM 2007-2013

BENEFICIARY: SC OTL SA
CONTRACT: no. 12044/2012

NOVEMBER 2013

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CONTRACT: no. 12044/2012 - „Study and implementation of sustainable urban transport plan for Oradea city"

BENEFICIARY: SC OTL SA

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Cuprins

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Annexes

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SUMMARY

DEVELOPMENT SUSTAINABLE URBAN MOBILITY PLAN ORADEA

Considering 2009 European Parliament Resolution concerning Action Plan on Urban Mobility

(code 2008/2217-INI-2010/C 184 E/09)

And Provisions contained in:

- 2007 Commission Green Paper „Towards a new culture for urban mobility", and Resolution of 9 July 2008 on the same issues,
- 1988 Resolution concerning pedestrian's protection and European Paper of pedestrian's rights,
- 2001 Commission White Paper entitled „European policy for transport for 2010: Time to decide",
- 2006 Commission Communication entitled „Thematic Strategy on the Urban Environment",
- 2007 Commission Communication entitled „Towards Europe-wide Safer, Cleaner and Efficient",
- European Parliament and Council Directive on clean and energy-efficient road transport vehicles,
- 2008 resolution on 2008 Spring European Council regarding Lisbon Strategy,
- Directive 2008/50/CE of the European Parliament and of the Council on ambient air quality and cleaner air for Europe,
- 2009 Committee of the Regions Notice on Action Plan on Urban Mobility,

SUMP development is possible if urban transport aspects are analyzed in the following circumstances:

I. **From the strategic point of view** it is necessary to adjust the main recommendations of sustainable development (as they were stated in Rio Declaration on environment and development) to urban reality:

1st Recommendation: The people are in the center of urban mobility concerns. The citizens have the right to a healthy and productive life in harmony with nature.

2nd Recommendation: Cities have the right to exploit and organize their own material resources according to their environment and development policies, only if the activities within their jurisdiction or control do not cause damage to the local environment or to the areas in close proximity.

3rd Recommendation: The right to development must be accomplished so as to meet developmental and environmental needs of the present and future generations.

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4th Recommendation: To achieve sustainable development environmental protection shall constitute as a part of development process and can not be considered apart of this.

5th Recommendation: All central and legal institutions should cooperate in order to eradicate poverty as essential requirement of sustainable development to reduce disparities between standards of living and to better meet the needs of most people.

6th Recommendation: Priority must be given to special situation and disadvantaged local areas needs of the cities. Actions related to environment and development should address to interests and needs of all the citizens.

7th Recommendation: To achieve sustainable development and a better quality of life for all the citizens, urban local administrations should reduce and eliminate unsustainable patterns of production and consumption and to promote appropriate demographic policies.

8th Recommendation: Local authorities have to promote the internalization of environmental costs and economical instruments use, considering the approach according to which the polluter should bear the cost of pollution.

9th Recommendation: Environmental issues are best handled with the participations of all citizens at the relevant level. For this, each individual shall have appropriate access to information held by public authority, including information on hazardous materials and activities in their communities and each individual shall have the opportunity to participate in decision making. Leadership at all levels should facilitate and encourage public awareness and participation making information available at the widest level.

10th Recommendation: Both sexes participation in all activities concerning urban development is essential for harmonious sustainable development.

11th Recommendation: Young people involvement should be an objective of local administrations, so as to create a global partnership for sustainable development and to ensure a better future for all.

12th Recommendation: Local communities have a vital role in environmental management and global development (due to knowledge and traditions): central authorities should recognize and support their identity, culture and interests and enable their effective participation in the achievement of sustainable development.

13th Recommendation: Social peace, municipality development and environment protection are interdependent and inseparable.

II. **From the tactical point of view** it is necessary to identify the context of analyzed field:

A. urban transports are very important in all transports;

B. European directives and regulations have an impact on urban transport and their coherence must be ensured through a specific approach of mobility / travels;

C. European plan concerning the climate adopted by European Council in 2007 which sets as targets 20% reduction in energy consumption, 20% reduction in greenhouse gas emissions, to ensure 20% energy from renewable sources in total energy consumption by 2020; this can not be met without a properly adapted strategy to urban transport.

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D. cohesion and structural funds finance urban mobility programs but have two drawbacks: on the one hand these are not based on a European strategy and objectives of urban mobility and, on the other hand they are distributed unevenly across the UE.

E. urban areas have privileged pole of intermodality and interconnections between trans-european transport network which should contribute to general objectives for mobility.

F. urban areas issue can not be approached through modal policies but through an approach that focuses on users and integrated transport systems offer;

G. need for strong strategies in urban mobility in order to optimize the relevant instruments by creating intermodal platforms and integrating various mobility systems;

H. a sustainable and efficient urban transport policy for the benefit of European citizens and European economy can not be achieved only by ensuring equal treatment for freight and passenger transport and also for different transport modes;

I. urban areas are major economic centers where urban transport is, on one hand, vital for population supplying and on the other hand has difficulties caused by limited capacity for transport, storage and short timeframes allocated for delivery;

J. the essential requirement that traffic to be substantially reduced by urban planning which take into account social, geographical and demographic changes;

K. it is necessary that statistical data to be more reliable and systematized in order to make possible local public policies and best practices exchanges in urban travels;

L. different techniques used in urban transports have an important economic and technological for European Union competitiveness and trade.

III. **From a procedural point of view** it is necessary accumulation of data regarding decision makers and citizens behavior on transport sustainable development issues and first of all mobility ensuring – as a fundamental right of each individual and not less than of human community.
In particular specific actions were made having as purpose mainly the “land” situation establishment and the identify decision makers behavior – also population behavior – concerning any kind of mobility issues on Oradea urban area:

1. An analysis based on historical data, but developed through mathematical models of prediction, which to confirm or refute SC OTL SA fears regarding negative aspects exacerbating of transport phenomena in municipal area

- ✓ there is mathematically proved that population of Bihor county will increase in the near future with 34 000 to 41 000 people (travel needs will increase and population regular movements organization issue will increase in intensity).
- ✓ It is obvious the trend – confirmed by the history of western towns – to establish the largest part of population in the urban area; population of the city grew by 41 000 to 64000 people emphasized the previous conclusion.
- ✓ Electric transport (public) can be credited with an increase in activity benefit of minimum 7% and maximum 14% which should not be neglected in the necessary fleet sizing calculation (but also rail transport network case in which 14% is for Oradea about 6 km on two lane transport, approximately double number of millions euro).
- ✓ Actions – intentional or accidental – of the authorities and/or entrepreneurs have brought out the transport of general administrative or economic concerns (because the decrease in total economic activity is about only 1.70 times, the "fall" is obviously lower than that recorded in transport which had a fall of 2.8 times).

2. Oradea rank setting in the sustainability hierarchy compared with other cities in Romania.

Sustainable development assessment model – on Romania urban areas which will be change by Incertrans according to the purpose – contains a set of indicators and multiple dimensions (or development pillars) **aggregated into a composit indicator** (the methodology for the set of sustainable development indicators belong to Commission for Sustainable Development of United Nations. "Sustainable development framework" consists in four main dimensions (economic, social, environmental, institutional) and multiple topics and subtopics related to these dimensions. EU recommended way to calculate and aggregate different indicators of this topics and subtopics is called "Dashboard Sustainability Software"[1]. **This software was created to present objective results, providing to experts and researches around the world or to the interested persons, the opportunity to create their own sustainability index.**

The program is called "board" because it offers the users, like a car dashboard, visual information about the status of analyzed system (a country, a town, a business) and gives him the opportunity to drive to desired destination – in this case, sustainable development. It is the result of research conducted by "Quality of life research institution" and the purpose is: to provide a basis, a foundation

[1] Sustainability dashboard is provided as a non-commercial software, freely distributed by the Joint Research Centre – European Commission and International Institute for Sustainable Development which can be downloaded from the following address: http://esl.jrc.it/envind/dashbrds.htm.

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for future strategies, local sustainable development plans, detailed analysis of differences in development between territorial units.

The first published result – for Romania – it was the one in which "Quality of life research institution" determined the relative rank of country's county in terms of sustainable development[2]. Taking into account:

- Social dimension: health, education, poverty, habitation (access to utilities).
- Economic dimension: GDP, employment, personal income level (salary) and company's revenues.
- Environmental component: global warming, green spaces protection in cities and energy.
- Institutional dimension: institutional framework for sustainable development, population access to information and telecommunications,

was created country's county distribution, the obvious interest being focused on Bihor county – where is Oradea.

Conclusions:

- Sustainable development synthetic indicator chart shows a very good rank for Bucharest followed by Cluj and **Bihor only ranked 20**.
- Bihor county is in the middle ranking, the last being Botoşani.

The rank is relevant for Oradea compared with other cities in Romania.

Considered indicators to form a hierarchy like the one above were chosen only from transport elements thus[3] resulting a list of 117 detailed numerical values for 31 cities belonging to Romanian Union of Public Transport. In detail, the values of these indicators and required calculations (in Excel) are attached to the paper. The figure below shows cities' hierarchy according sustainability index (in terms of transport):

[2] "Sustainable development index in Romania for county and regional level" in Social Innovation Review no. 1/2009, article that is attached.

[3] List extension was due to the lack of complete information about many activities of the cities. Even for Oradea there were hardly found values for first order indicators such as number of trips made by public transport.

31 Romanian cities hierarchy

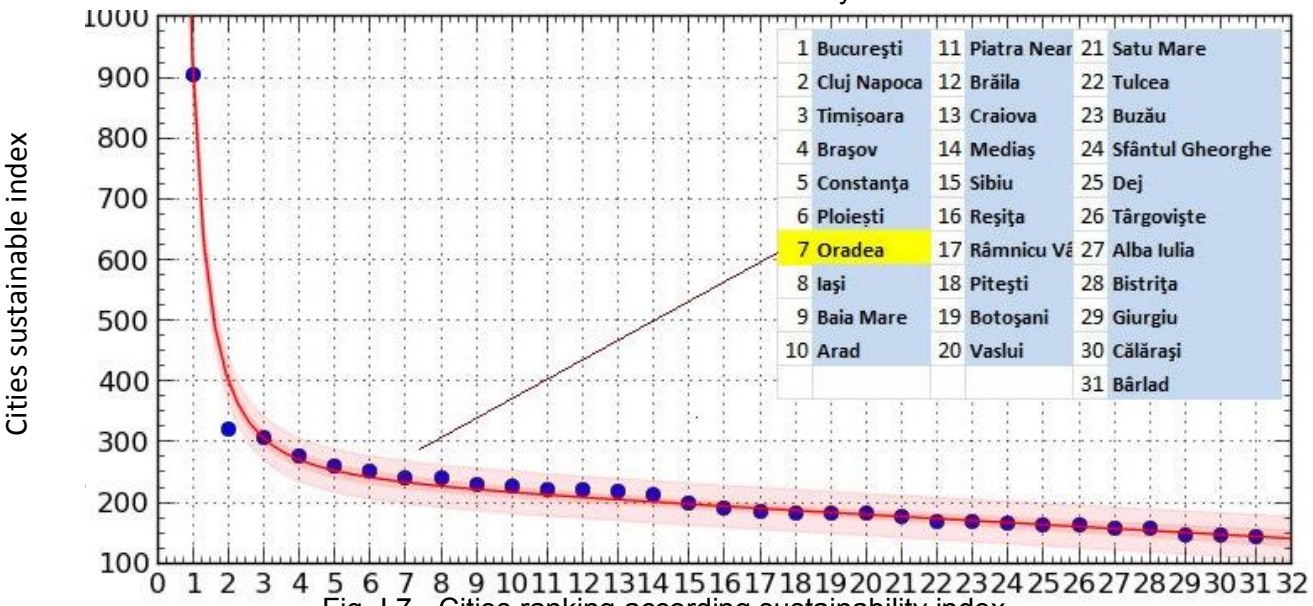

Fig. I.7 - Cities ranking according sustainability index

The conclusion after cities distribution analysis:
Oradea is ranked upper than most cities of the statistics:

…

6	**Ploieşti**	251,1330653
7	**Oradea**	241,5302613
8	**Iaşi**	240,181843

…

The rank difference between Oradea and the nearest city ranked 6 in hierarchy – up to Oradea – (Ploieşti) is 4.10 percent. Rank difference between Oradea and the next city in hierarchy – lower than – (Iaşi) is less than 1 percent.

3. National/regional impact framework assessment on issues having major influence on Oradea's mobility: The list of consequences with positive impact on SUMP (the list resulting from national or local framework)

Based on the Oradea area objective realities, it can be considered that Oradea population's well-being evolution itself depends on how sustainability principles will be included on local policies.

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Narrowing the researched area to urban mobility issues it can be revealed following indicators (tab. I.6)[4]:

- The roads length, the railways lengths, the railways density and the length of the modernized urban roads have values ranked in “good” extreme of indicators, but
- Public transport vehicles number is – comparatively – unsatisfactory leading also to the next indicator, **public transport number of passengers, to 1-3 of Cluj county achievements**.

[4] The information are from the works and papers presented at “Workshop with local communities representatives from North Transilvania” by North-West Regional Development Agency, Radaia Village, no. 50, Cluj county, Phone: 0264-431550 Fax: 0264-439222

Tab. I.6 – Development indicators

Indicator	TOTAL	REG NW	BH	BN	CJ	MM	SM	SJ
GDP per inhabitant (PPS)	11000	10100	10200	9000	13900	7600	8000	8600
Number of industrial parks	55	7	2	0	4	0	0	1
Budgetary revenues of APL (millions lei)		5368,5	1245,8	616,4	1505,5	870,3	653,7	476,8
Budget expenses of the Local Public Administration APL (milllions lei)		4991,4	1180,3	542,8	1389,9	817,6	630,3	430,5
Structural Funds accessed by APL within 2007-2013 (millions lei)		1466806665	274690942	246582670	256918441	271016907	151173544	266424161
The population connected to water supply	11931011	1591467	311555	142096	622247	230888	187078	97603
The population connected to sewerage networks	9354902	1149533	249648,00	92385,00	425529,00	165208,00	140168,00	76595,00
Life expectancy at birth (years)	73,47	73	72,27	74,14	74,85	72,93	70,51	72,23
The rate of natural increase (‰)	-2,2	-1,5	-1,80	0,60	-1,50	-1,20	-2,50	-2,30
Fertility rate	39,4	40,5	42,8	43,3	39,6	38,1	37,9	42,7
The employment rate of the population	62,8	64,9	71,4	59,7	69,5	58,4	60,1	63,4
Unemployment rate per county	4,6	3,9	3,5	4,3	3,8	3,7	4,1	5,1

Tab. I.6 – Development indicators

Indicator	TOTAL	REG NW	BH	BN	CJ	MM	SM	SJ
Number of students	673001	96998	17497	1680	57595	5728	1776	425
Number of pupils	2682489	84701	82406	44010	76905	68693	48463	32566
The length of roads (km)	82386	12322	2975	1509	2699	1778	1647	1714
Roads density (km/100 kmp)	35,1	36,5	39,4	29,5	40,8	28,3	37,3	45,3
The length of railroad network (km)	10785	1668	500	320	240	207	218	183
Railroad density (km/100 kmp)	45,9	49,1	66,3	59,8	36	32,8	48,7	50,7
Number of the public transport vehicles		814	208	46	370	95	47	48
Number of passengers transported by the public transport (thousands)	1819191	264098	58357	3768	165718	17141	7018	12096
The length of the modernized urban roads (km)		2332	538	217	577	571	267	162
Green areas (ha)	22005	2782	355	184	1228	533	368	114
The average labor productivity (lei)	59583,5	50065	47384	48418	62734	42087	42226	45197
The average labor productivity (deaths per 1000 inhabitants)	12,1	11,8	12,5	10,5	11,6	11	12,4	12,7

Tab. I.6 – Development indicators

Indicator	TOTAL	REG NW	BH	BN	CJ	MM	SM	SJ
Infant mortality rate (deaths under 1 year per 1,000 live births)	9,8	8,9	9,5	9,1	6,1	10,5	10,5	9,5
Number of hospital beds	130691	17937	3978	1390	6658	2852	1741	1318
The share of Romani population	3,2	4,6	6,1	4,4	3,4	2,7	6,9	5,3
Number of retired persons	4717473	624181	159812	54126	159040	113939	79498	57766
The exports value (FOB - mil. Euro)	36479916	5875985	1385150	474800	2378537	667432	672628	297438
The share of population employed in agriculture	29,15%	31,55%	33,05%	33,97%	22,09%	37,16%	37,81%	35,35%
The share population employed in industry	20,71%	23,00%	24,70%	23,02%	20,58%	23,68%	24,04%	23,43%
The share population employed in constructions	7,50%	6,34%	5,04%	6,87%	8,43%	5,54%	6,40%	3,80%
The share population employed in services	42,65%	39,11%	37,22%	36,13%	48,89%	33,62%	31,75%	37,41%
Total number of accommodation places	311698	26103	9152	2626	6960	4368	1616	1381
The net use index of accommodation capacity (%)	25	23	38	19	17	13	35	17

AT THE LEVEL OF GENERAL PERCEPTION it is obvious that the situation inconsistent with the principles of sustainability in the transport sector must have a correspondence in the planning documents of the local authorities – in the sens of reparative answer, otherwise, the agglomeration of the public transport means, namely the traffic congestion phenomena (due to a failure in providing of an attractive transport) will increase.

AT THE LEVEL OF SPECIFIC PERCEPTION, the indicators presented in the above tables, allow to generate the following hypothesis:

- The city confronts with significant problems regarding habitation, intense traffic / congestion, unattractive and environmental public transport.
- The metropolitan area can be characterized by concentration of population and economic activities, especially real estate (partly caused of lack and some caused by excess – depending on the analyzed area) which lead to the growth of regional disparities.
- The development strategies of the municipality and the metropolitan area remain at the level of intentions, particularly because of the lack of funds.
- The connections between urban terminal poles and rural areas satellites are deficient, due to the underdeveloped transport infrastructure – almost there are no commune-commune communication links, all the traffic being carried through county residence towns).
- The process of suburbanization of some "adjacent" areas is at the limit of chaotic, requiring appropriate territorial planning.
- Despite of a constant progress, the structures of administration are incipient and only partly functional.

Reviewing and selecting only the **aspects** contained in **"The National Strategy for Romania Sustainable Development– Horizons 2013-2020-2030"** highlighting the negative aspects which concerns the community in Oradea according to their importance - results:

- road traffic increase in Oradea municipality and in Oradea metropolitan area is continuous;
- the commercial speed of urban transport is 12-15 km/h, the public transport not being able to provide the alternatives to the individual means;
- grants absorption is slow;
- in the public transport are maintained vehicles physically and morally outdated due to lack of modern, environmental transport means;
- it has not been established either nationally nor in Oradea which is the **minimum accessibility level in the dispersed areas;**
- nothing has been done towards the transition to overnight delivery services of the manufacturers – large consumers of goods.
- the urban passenger transport market is entrusted to a single transport operator.

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To the immediately inferior level, the diagnosis analysis of the transport sector, contained in **Development Plan of Bihor County 2007-2013** highlights statistical type data (with emphasis on the negative aspects) as follows:

- the public roads density is 35.3 to 100 km², much lower than the European average and a percentage of 85% of the modernized roads network has the service life expired, so that their viability status is unsatisfactory (even a part of the national roads have the service life expired).
- the lack of alternatives routes for animal drawn vehicles, agricultural or cyclists, makes the road traffic to be difficult and unsafe.
- the central and urban road network (roads) suffer because of traffic congestion and excessive pollution, whilst parkings are insufficient.
- the rail network has a length of 474 km, but from this network, 453 km are with one way and only 21 km are with 2 ways;
- the county does not have electrified railways, although is the infrastructural territory which links Romania to Western Europe.
- achievement in a small degree of workings to infrastructure maintenance and modernization of rolling stock significantly alters the railways quality;
- the railway infrastructure to the limit of underdevelopment and not modernized to European standards affect the safety and quality (exasperating travel times), creating pressure on road infrastructure and **seriously affecting mobility within the county.**
- in the county there is a county residence airport - Oradea: in absolute terms are recorded yearly a passenger traffic of approx. 30,000 of which 2/3 internal traffic
- the airport potential is much larger, but it remains untapped due to the under-investment for infrastructure development of that airport, as well as due to the lack of regional airlines in order to ensure linkages with other airports in the country.
- the largest amount of goods transported from Oradea airport was several hundred tons, which compared with other airports in the north-western region creates the premises for a functional specialization of Oradea airport on cargo transport.

Deepening the analysis at local level it has been taken into account the elements contained in the "General Urban Plan". **The PUG basic idea** is that Oradea is a dynamic city with the largest population and area among the cities in the north-western Romania, being included territorially and economically in the growth poles Cluj-Napoca,Timisoara from Romania and Debrecen from Hungary.

Oradea 2030 builds its future on incontestable values and features: a place with a rich and varied urban structure with a dynamic center which includes buildings and urban areas of high architectural and historical value backed by significant resources of balneoclimateric factors for tourism development but also reserves of lands located in the metropolitan area used for new investments, but also for agricultural activities.

From the perspective of this document the public transport is framed within the following limits:

Pluses

Local passengers transport company (O.T.L. S.A.) with a long tradition, with only one owner – Oradea Municipality;

- well structured public transport lines system with a good coverage of areas (only) of interest;
- adequate service frequency (time for arrival at peak hours of 6-12 min / line);
- good public information (routes graphics, digital billboards for passengers information (40 stations equipped, 85 stations within a program in progress);
- modern monitoring and dispatching system (and information services for passengers) via GPS;
- vehicles fleet under renewal and adaptation (regarding transport capacity and comfort level) to current needs;
- level of service appreciated by the traveling public as (at least) generally satisfactory (90%) also regarding the lines structure and departures frequencies;
- recent developed sociological study which reveals people's perceptions on public transport - the basis for increasing the level of service;
- proper and responsible attitude towards the importance of the public transport development;

Minuses

- part of the historical center deficient covered by public transport;
- traffic regulations discouraging public transportation (eg. stationary on Primariei and Independenței Streets);
- reduced opportunities to create dedicated lanes for public transportation vehicles;
- lack (with some exceptions) of modalities / systems for prioritizing the public transport vehicles;
- costs (tickets and subscriptions price) relatively high (but not in comparison to other cities in the country);
- cities of the suburban area poorly connected to the local transport system of Oradea Municipality;

Perspectives

- favorable public opinion and attitude to the development of the public transport authority;
- U.E. funding sources oriented towards public transportation development (infrastructure and vehicles fleet);
- cooptation by the operator of experienced and competent human resources;
- expanding of the tram network to access some development areas (University, Eastern Industrial Platform).

Barriers

- expanding habitation on the suburbs (especially towards Iorga and Podgoria neighborhoods)
- the low population density and dispersion on large areas are not favorable for public transport service;
- the loss of favorable conjunctures for public transport development;
- loss of skilled human resources involved in the public transport activity;

- limited possibilities for the increasing of the public transport attractiveness by infrastructure developing (the major road network) and / or general circulation reorganization.

After phase of intentions in sustainable urban mobility plan development, SC OTL SA should be aware that SUMP will be insubstantial if the mobility is "transport down" analyzed: in other words: the strategic plan that can bring solutions on mobility should consider **integration principle** (which is originated in the observation: life quality can not achieved by this type of narraw approach – "transport down"); for example:

- city gas supply system setting means less problems in traffic and more space for public transport vehicles;
- grocery store construction in a neighborhood which has not one (grocery store) means travels by foot instead traveling by public transport;
- merging in theatre ticket cost the cost of travel by public transport means less problems with private cars parking and to release roads of parked cars.

Essentially, **integration** should not be understood as a condition that extend the transport borders "up and multilateral" because:

- vertical approach – between different levels – of mobility planning for an urban area which is part of a wider transport framework, that exists at local administration level, but in other compartments than transport;
- territorial approach – a SUMP should relate to the territory for which it is done – but it has to take into consideration what means the territory for passengers and traffic flows generated by network of higher grade (**bus station Oradea is en example of "not so"**);
- horizontal approach – in the same level, between different politics / key actors / departments[5] involved in SUMP development and implementing - allows efforts concertation to a common goal;
- intermodal approach – SUMP should assure / provide links between different modes of travel (PT, private car, walking, cycling) and to assure a beneficial development with non-urban transport systems: suburban and interurban.

Summarize the entire "experience" that can result especially from national framework analysis, the most important aspect for SC OTL SA is to understand how decisions can be influenced – decisions made by higher bodies than Oradea transport public company – and in what extent. The figure below shows a statistic of "responsability" for urban policies (it stands out the means that SC OTL SA has): public transport infrastructure, traffic management, public transport operation. In other words: **tramway and light rail construction (plus suitable mobile devices), an optimized dispatching of public transport vehicles and rational bus routes, well-equipped vehicle routes,** these should represent strategical actions of public transport operator. From the tactical point of view public transport operator will focus on a continuous pressure on cities administration concerning the other aspects, especially pricing policy.

[5] Departments responsible for spatial planning and economic departments (materials supply at night), police departments, healthcare units.

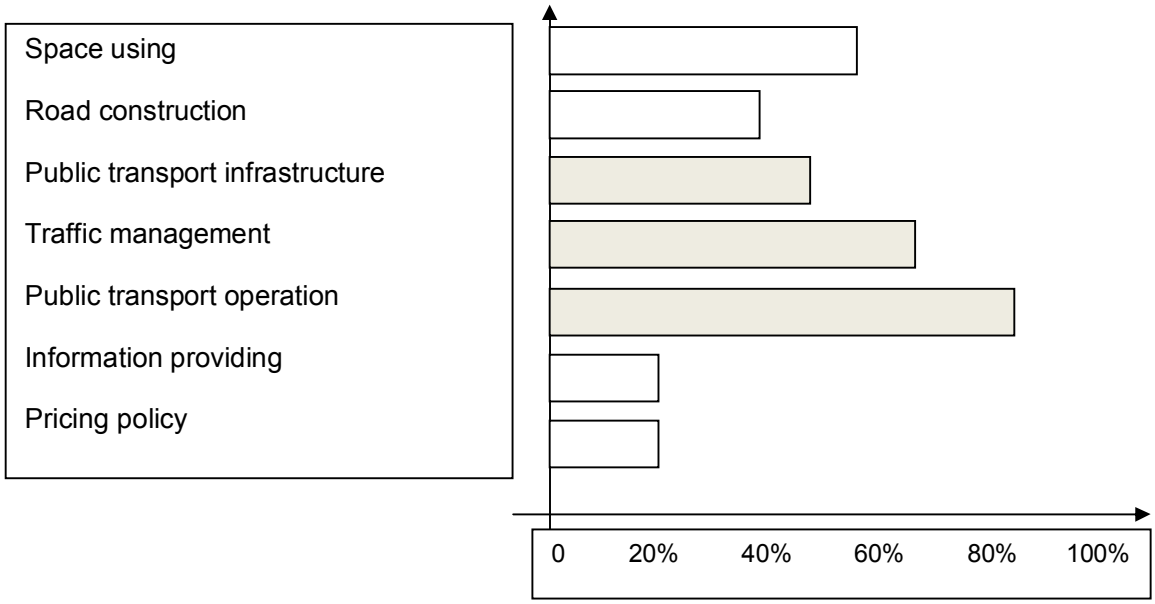

Fig. I.8 - Cities own responsibility

So, SC OTL SA **should consider itself a "player"** and not a passive entity, because in a globalized world – keeping the dimensions: a globalized world for Oradea entire perimeter – nothing of what concern the city should be consider "without importance for a public transport operator". "Thinking" on this issue, SC OTL SA itself will be in a defensive position; how, after so many problems of performance process, is the recommendation to an involvement also in other issues of cities? **YES**, OTHERWISE THE CITY'S PROBLEMS WILL ARISE AND THEIR RESOLUTIONS WILL BE EVEN MORE DIFFICULT AS THEY AROSE UNEXPECTLY.

Finally: IN A DEMOCRATIC SOCIETY, INTERVENTION OF A STRONG PARTICIPANT IN CITY LIFE CAN ONLY BE ORIGINATED IN DEMOCRACY. **Citizens involvement** in SUMP planning is not only a requirement stipulated in EU directives or in international convention; it is the **fundamental duty of SC OTL SA to assure itself the legitimacy and the quality of decisions making** by people's voice. This activity is the following of the clear link between **mobility** opportunities **offered** to people – and people's perception (and not the one of local administration) about decision-making quality regarding **mobility need.** General objectives of involvement:

- Encourage citizens to join the dabate and collective decision making;
- Provide a maximum transparency, democratic and participatory decision making along SUTP development;
- Design sustainable and supported solutions which improve life quality for each citizens and create a LARGE PUBLIC OWNERSHIP OF SUTP;
- Improve SUTP quality by general discussion with citizens on arguments of politicians, officials and technicians;

- Enhance the civil society and local political culture.

Having as "background" the request of several thousands citizens, SC OTL SA demands will have another echo in local council meetings than the mere presence of one of the SC OTLS SA directors. Of course, some of citizens' demands can not be taken into consideration uncritically – such as reffering to new bus stations or routes – but the requests for infrastructure improving or public transport fleet renewal are more than legitimate.

4. Comparison of the current state of mobility – FOLLOWING A CERTAIN TYPE OF PLANNING – with the situation revealed by needs for transport services

Of course, the way how planning is made could be exposed by inserting of procedures which will bring at same coordinates different directions and services of Oradea Local Authority and SC OTL SA but … it would be a delusion to accept only relevant work of the bureaucrats. More important is the result of planning work – in transport or a simple travel, and the first aspect in mobility research is the ACCESIBILITY of passengers urban transport system. Mathematical approach of **nodal accessibility** is an important preceding element of transport service analysis. Accessibility involves the ability to find a proximity between two points. As a result, spatial accessibility can be expressed in different ways, depending on the distance. Places that have a low accessibility are that (defined by appropriate operational accessibility form), more distanced in space of a particular benchmark. In social systems there are different ways to cover distances, depending on areas development and the presence of transport systems which lead to time-space convergence effect. Public transport system **should ensure individuals equal opportunities,** in terms of spatial accessibility of points which can meet their needs.

In this way spatial accessibility can be approached like a generator of space reorganization process and it is defined as process according to which individual localizations adopt their functions (social, economic and political) in a spatial system, closely related with relative changes in connectivity[6] and accessibility[7] of the system as whole.

Based on mathematic there were undertaken some actions that changed municipality geography = work map into a graph[8] on which there have been applied specific algorithms and useful to our purpose: determining actual distances between travels origins and destinations, obtaining quality characteristics of nodes and arcs – see annex 0. IN THIS CONTEXT CHARACTERIZED BY OBJECTIVITY (but necessary for understanding the phenomenon) IT WAS PROCESSED THE GRAPH OF STRUCTURE FOR ORADEA AREA – 331 nodes, taking into account only significant nodes for each neighborhood. The results for each neighborhood – fig. I.12 can be summarized as follows:

- the most accessible neighborhood is Calea Aradului – thanks its topological aspect which puts it on one hand in the center of the city and on the other hand in the area where some routes serve the public interest centers (supermarkets);

[6] Connective = by which, from separate entities arise systems.
[7] Accessible = that is easy to get to.
[8] Graph = geometric representation of the points of interests of the city (which become nodes) and links between them (which become arcs) in a network structure – which can be mathematically modeled.

- next are: **Olosig, Oraşul Nou** and **Universitate** neighborhoods which can be consider north-south axis of the city;
- at the opposite pole of accessibility: Episcopia Bihor – the last, Zona Industrială de Est (East Industrial Area) – penultimate, Oncea – antepenultimate, Zona Industrială de Vest (West Industrial Area) – before antepenultimate.

The map indicates the directions in which transport system should be developed in a next phase for raise accessibility level of city structure – fig. I.13 and I.14

Poor accessible neighborhoods

accessibility coefficient	code	neighborhood name	rank	first series	second series
0,363993	**15**	Ioşia nord	20		
0,256684	**22**	Ioşia sud	25		Penultimate
0,390731	**31**	Ioşia	16		
0,283779	**42**	Europa	22		
0,746524	**45**	Univesității	4		
0,640998	**58**	Subcetate	8		
0,231373	**64**	Nufărul	26		Last
0,602852	**69**	Dorobanți	9		
0,381818	**75**	Salca	17		
0,419608	**77**	Grigorescu	15		
0,65205	**91**	Seleuş	7		
0,267023	**93**	Dragoş	23		Before antepenultimate
0,733333	**96**	Velența	5		
0,557932	**107**	Eminescu	11		
0,065597	**111**	Zona I Vest	29	Penultimate	
0,509091	**118**	Decebal-Dacia	12		
0,86631	**133**	Olosig	2		
0,701604	**156**	Podgoria	6		
0,25918	**159**	Doja	24		Antepenultimate
0,344029	**168**	Iorga	21		
0,146524	**177**	Oncea	28	Antepenultimate	
0,174332	**190**	Zona I Vest	27	Before antepenultimate	
0,819251	**198**	Oraşul Nou	3		
0,572906	**206**	Cantemir	10		
0,376471	**208**	Tokai	18		
0,363993	**215**	Rogerius	19		
1	**300**	Calea Aradului	1		
0	**318**	Episcopia Bihor	30	Last	
0,507665	**320**	Calea Sântandrei	13		
0,444207	**338**	Sp. Crişanei	14		

Fig. I.12 - Oradea's map – neighborhoods

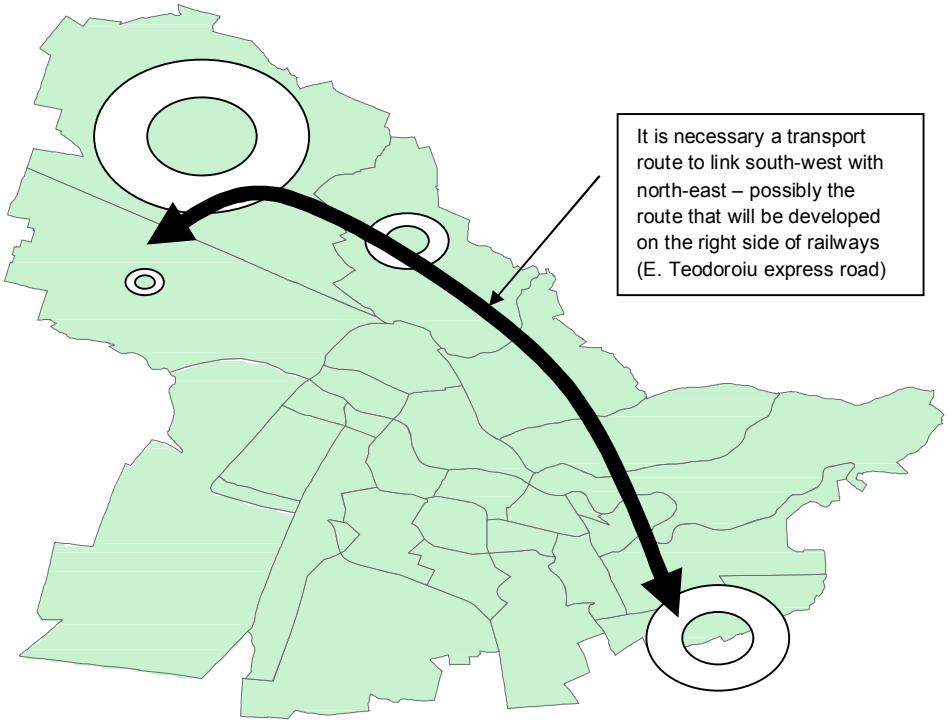

Fig. I.13 – The first series of neighborhoods with an unacceptable accessibility

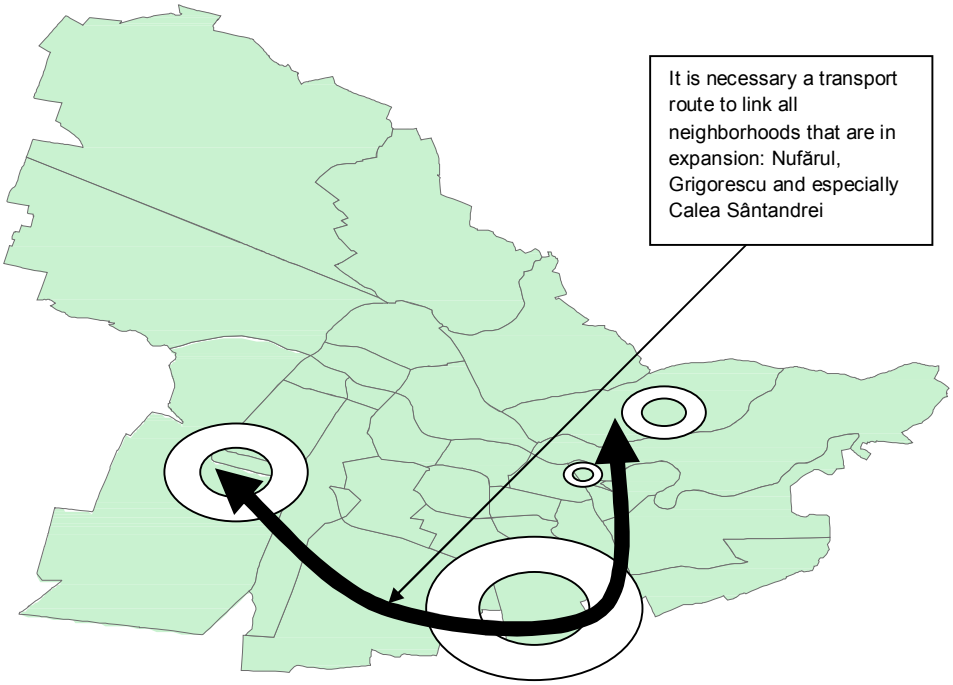

Fig. I.14 – The second series of neighborhoods with a poor accessibility

ALSO IT WAS ANALYZED THE INFORMATION REGARDING NEIGHBORHOOD'S EXTENT AND THEIR POPULATION. The results can be summarize as follows:

- neighborhood with highest density is **Decebal-Dacia**
- follow: **Rogerius, Ioşia Nord and Cantemir** neighborhood
- and: **Dragoş Vodă, Velența, Oraşul Nou, and Sp. Crişanei**
- at the opposite side: Zona Industrială Est – the last, Calea Sântandrei – penultimate, Zona Industrială Vest – antepenultimate, Ioşia Sud – antepenultimate

The map indicates the measures for transport system development in the next phase for increase the public transport operation in Oradea – fig. no. I.15 and I.16

Conclusions:

- action aimed the "local assessment of transport planning"
- the analysis revealed that public transport operation in Oradea's neighborhoods is made without an objective justification:
  - ✓ dense neighborhoods without appropriate transport service,
  - ✓ inaccessible neighborhoods without satisfactory transport service.

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Neighborhood	Code	Population	Surface	Inhabitants / ha	Hirarchy	Densely neighborhoods Series 1	Densely neighborhoods Series 2	Neighborhoods with low density
Ioşia Nord	**15**	9577	52	184,18892	3	3		
Ioşia Sud	**22**	55	40	1,3884	27			Preantepenultimate
Ioşia	**31**	14445	208	69,450808	10			
Europa	**42**	212	16	13,28325	17			
Univesității	**45**	387	189	2,0512381	23			
Subcetate	**58**	1055	93	11,346065	18			
Nufărul	**64**	18191	377	48,252637	11			
Dorobanți	**69**	7939	105	75,6144	9			
Salca	**75**	3678	125	29,425536	13			
Grigorescu	**77**	1634	798	2,0476692	24			
Seleuş	**91**	2510	121	20,750975	15			
Dragoş	**93**	1794	17	105,54353	5		5	
Velența	**96**	8162	79	103,32562	6		6	
Eminescu	**107**	2535	102	24,857176	14			
Zona I Est	**111**	0	282	0	30			Last
Decebal-Dacia	**118**	32915	88	374,04273	1	1		
Olosig	**133**	8769	217	40,411742	12			
Podgoria	**156**	1180	802	1,4714963	26			
Doja	**159**	3199	479	6,6800167	20			
Iorga	**168**	4639	502	9,2418167	19			
Oncea	**177**	4501	831	5,4171119	21			
Zona I Vest	**190**	355	1252	0,2840607	28			Antepenultimate
Oraşul Nou	**198**	9088	115	79,032	7		7	
Cantemir	**206**	7148	60	119,1354	4	4		
Tokai	**208**	992	454	2,1854009	22			
Rogerius	**215**	46496	203	229,04654	2	2		
CAlea Aradului	**300**	6522	343	19,015382	16			
Ep. Bihor	**318**	3354	1984	1,6908206	25			
C. Sântandrei	**320**	419	1559	0,2692264	29			Penultimate
Sp. rişanei	**338**	2131	28	76,133143	8		8	

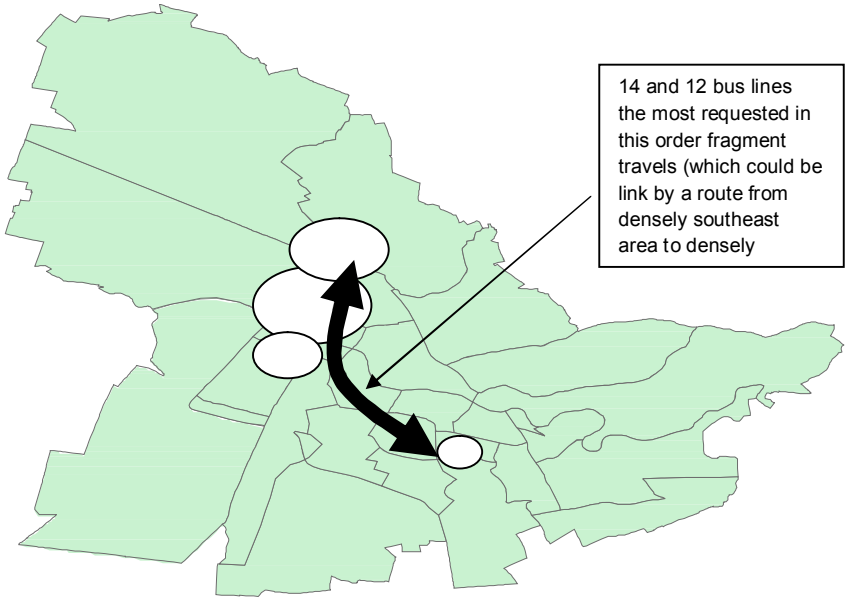

Fig. I.15 – The first series of neighborhoods with a high density of population

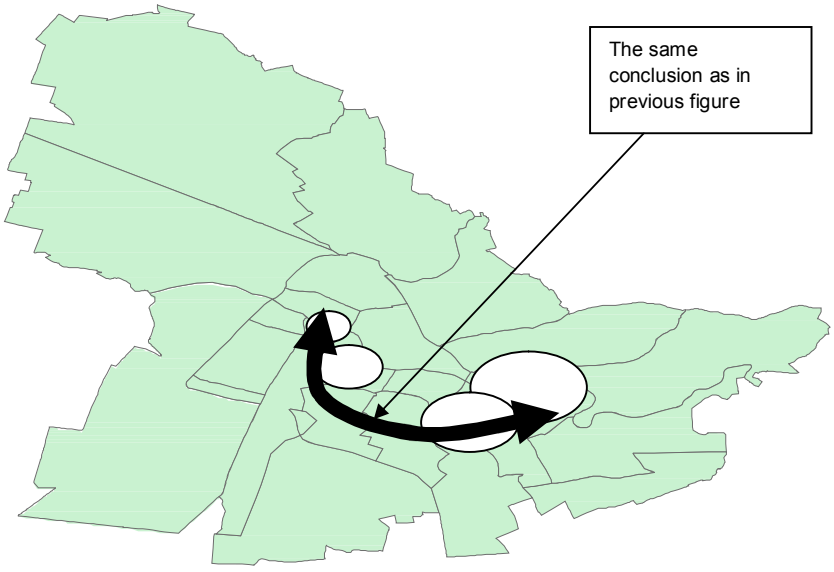

Fig. I.16 – The second series of neighborhoods with a low density of population

As knowledge regarding population mobility and urban transport is often fragmented and incomplete, before deciding on future politic, it is essential to know where is placed the city in terms of urban transport. Data and information synthesis should then enables the description of **what it will happen**, in order to identify the present issues that will characterized this future.

Next is an essential analysis to define appropriate politics to provide the **necessary basis to measure the progress**. In theory the analysis should be as much as comprehensible as it could but also managed with existing resources.

And the first indicator of mobility in a city is….the mobility of the population. The mobility is the average number of trips made by a city's inhabitant in a year. To describe the population mobility it is necessary to start from the source that generate travels: the potentials of transport.

The potentials are the expressions of possible actions, without it could tell whether these actions will be materialized or not. The concretization is reflected by population mobility.
As differences exist between population categories, it is neccessary to determine, by statistical evaluation, at least two types of mobility: cumulative active population – city, town, suburbs and transit; inactive population – town and suburbs. Mobility η value is determined based on following considerations: each inhabitant make a number of trips (departure from home and returning); every trip (travel) is made on certain distance.

Theoretical analysis (confirmed by observations and surveys) shows that if people who gravitate to a certain polarization center would distribute into groups, by lenght of traveled distance, then greater distance is, less numerous group will be, which is explained by the fact that every city inhabitant normally look that work place or rest / fun place to be somewhere close to home. This finding could be put in a graph with x-axis – traveled distances by foot or by car and ordinate axis – number of people which travel on these distances (percent of all traffic) – fig. I.38 But, at every class of travel (to work or daily personal needs) there are trips that could be made by foot or by transport means. Distances made by foot influence mobility value, from the transport system point of view. Trips by foot should be at an average of 0,3 km and not more 0,7 km. Actually they are larger, reaching an average value of 0,8 km with a maximum value of 0,8 km.

The annual number of trips repoted only to active residents have to be at least equal to twice working days number with a reduction due to walking, but also an increasing due to another types of travel (not only travel to work), ie:

$$(365 - 110)*2=510 \text{ round trips}$$

For middle size cities, it is acceptable a intermediate value:

$$510*(1 - 0,32) = 346 \text{ trips per year;}$$

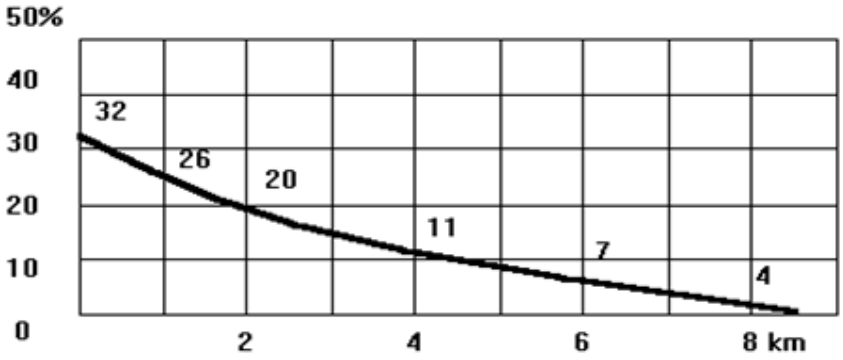

Fig. I.38 Trips by traveled distances (middle size city)

Daily trips number for all city's residents, from youngest to eldest, it can be considered up to two per day, with a walking area increased up to 2 km, because lower importance of time factor in these trips.

For a middle size city:

365*2*[1 - (0,32 + 0,26)] = 306 trips per year.

Mobility should be calculated taking into account w_1 and w_2 coefficients (tab. I.29):

- w_1 characterizes the city transit transport value: approx. 5% in big cities, then approx. 10% in middle size cities and a insignificant percent in small cities;
- w_2 characterizes the city penetration transport value: approx. 10% in big cities, then 10% in middle size cities and a insignificant perent in small cities.

Tab. I.29 Population mobility alternative calculation

City type	% active population	% inactive population	Trips for work	Trips for personal interests	w_1	w_2	Global mobility per inhabitant
Big	50	50	382	394	5	10	0,5*382+394+0,1*382+0,05*394 = **642**
Middle size	45	55	346	306	10	10	0,45*346+306+0,10*346+0,10*306 = **526**
Small	40	60	326	262	-	-	0,40*326+262 = **392**

Concretely:

- Oradea is in border category between a small city and a middle size city (Cluj-napoca is in middle size city category – 300000 inhabitants; Bucureşti is out of range);
- So, Oradea population mobility to be satisfied by motorized transport is at least of 392 trips/year/capita and not more 526 trips/year/capita[9];
- These values are transformed into a number of daily trips, in relative accordance with estimations based on statistical extrapolation:

- minimum $mob = \frac{204000 \cdot 392}{365} = 219090$ [trips per day in both directions]
- maximum $mob = \frac{204000 \cdot 526}{365} = 293980$ [trips per day in both directions]

Surveys results conducted in Oradea indicate approx. 173000 daily trips in public transport, with over 20% less than minimum value[10]. It is to underlined that reduced mobility revealed by above calculations does not includes trips made by special transport services – which have an weight not important but significant to be considered[11].

Further, the research of transhipment phenomenon was done based on gravitational determining transports needs method:

Mathematical relationship is using a **calibration coefficient** *k*, which store human behavior local specific in relation to social and economic and specific contact neccessity:

$$C_{ij} = k \frac{P_i * P_j}{D_{ij}^2}$$

where:

C_{ij} is travel needs between *i* transport micro-zone and *j* transport micro-zone

P_i - *i* transport micro-zone population
P_j - *j* transport micro-zone population
D_{ij} -distance separating "mass population" centers of the two transport micro-zones;
k - specific constant value for every city.

[9] In Western Europe there are city with value 4 for the mobility; for Oradea this value is a little more than 1 (Bucharest has over 2).

[10] Possible explanations:

- High level of city's motorization (over 440 cars per 1000 inhabitants, but more correctly approx. 60000 cars per 90000 families=households).
- High density population per ha (18 for Oradea, Debretin 4, Szeged 6).
- Relatively large number of pensioners.

[11] However the mobility level consider as value itself could not be changed except with few percent

Knowing the population for each neighborhood – considered transport micro-zone – and the distances between each concentration center of neighborhood demographic characteristics, it was determined the start values of shifts trips, under a unitary coefficient *k* (using Excel). Model calibration was done by varying the k coefficient up to 0.00003558, fact which assured **trips determined by manual counting** on all public lines in Oradea. On the other hand it was created a "database" which revealed every neighborhood's links with a number of transport lines which assure travel possibility of the inhabitants inside or outside the neighborhood (it has resulted a very complex chart very useful for the action); in this way it was possible to create an excel calculation program to determine transhipments number necessary to travel from one neighborhood to another (mathematical model to estimate the number of transhipment requires as basic law that exist a constant probability ρ that a transhipment action to become necessary to a trip: because of this the number of transhipment is considered by size order).

In this case the ordering was by zero, one or maximum two transhipment. There was obtained:

- 78,4% of trips involve no transhipment;
- 16,9% of trips involve a transhipment;
- 4,7% of trips involve two transhipment.

For effective exchange of trips, it could be determined the amount of trips which include in their structure the change of transport means: 26468 trips with one transhipment, less than 100 trips with two transhipments. Number of simple transhipment is 26468 what means approx. 15% of public transport trips require 2 means of transport between the origin and destination of trip; significant examples for line transport change necessity are shown below. It is to note that the largest share of these trips is given by efforts to achieve the goal trips in relation to some neighborhoods that are lacked by public transport: Grigorescu, Zona Industrială Est (East Industrial Zone), Nicolae Iorga **(which is a proof that the concern of the local municipality administration for mobility is not based on traffic studies which to ensure free mobility to the citizen).**

5. SWOT analysis of local framework

SWOT analysis of some general aspects concerning Oradea and some detailed aspects concerning local community highlights some of STRENGHTS AND WEAKNESSES in a SUMP development. As objectives of specific approach were chosen some sectors that generate problemes or solutions for general approach of Oradea population mobility. Bellow there are shown the conclusions only for:

SWOT analysis for Oradea industry
SWOT analysis of social sector
SWOT analysis for security and public order
SWOT analysis of local administration
SWOT analysis of public transport

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So that - with different degrees of impact – to identify **ways to ensure link between population – administration -** PUBLIC UTILITY which give to mobility needs the possibility of materializing.

At operational level, regarding the results of this phase of the study, there are to mentioned the next specific elements related to SUMP.

STRENGHTS (to capitalize):
Oradea is located close to border with Hungary.
Organization of an extended transborder transport service for local border traffic (at least the extension of the service to Borş)
Middle size city in terms of population with a density over national density.
Expansions elements of mass public transport (tram.
Land rezerves in the city and metropolitan area able to offer space for new activities or economic activities relocated from the central area.
Economic recovery and units relocation are "the source" of local transport company profitability.
Significant potential for tourist services, especially health tourism, cultural and religious.
Diversification of transport market by organizing specific transport services (first of all taking service to Felix and 1 Mai).

The existence of a complex and complete university education system (public and private).
Transport lines for students in suitable qualitative conditions.
The existence of a continuous planning process, including public investment projects and support local economic development.
Continuous and coherent planning - framework for decision making modernization of SC OTL SA.

WEAKNESSES (to avoid):
Lack of a ring-road to take heavy traffic and transit.
Urban roads congestion phenomenon emphasizing.
Slow and insufficiently metropolitan public transport network keeping.
Periurban transport in Oradea Metropolitan Area remains an auxiliary intercity transport.
The existence of strong urban barriers, determining the isolation of some neighborhoods.
Physical segregation of population by railways and Crişul Repede and lack of perspective regarding mobility improvement.
Not including religious buildings as parish museums in tourist circuit.
Religious destinations (appreciated by most of people) exclusion of among destinations possible to reach by transport public services
Insufficient developed educational infrastructure – lack of campuses.
Campuses generate and attract travels.
Lack of an integrated waste management.
Artificial agglomeration of transport routes (and obvious pollution).
The disappearance of vineyards and orchards on the northern slopes of the city and replace them with villas.

Villa neighborhoods are not suitable to public transport.
Lack of tools for managing the urbanization operations of agricultural land and urban restructuring.
Isolated neighborhoods with no traffic studies remain outside the area covered by public urban transport.

6. Customize the planning process at Oradea local level

What kind of planning methods were used in the world? Cities differ depending how decisions are made but the methods were developed over time rather than being formally prescribed. Based on literature there are three main methods: the pursuit of a vision, the pursuit of consensus, following a plan.

The methods of vision's pursuit involve a person (usually the mayor or **according the SC OTL SA provisions – transport company management**) which must have a clear picture about what city wants to become – from the mobility point of view – and strategical tools necessary for this vision. As a conclusion: WITH A VISIONARY LEADER, THE SUCCESS IS ASSURED.
The methods of consensus's pursuit involves discussions among participants to set an agreement at every level of decision levels:

- objectives to be achieved and their importance,
- how to approach the problems,
- appropriate policy instruments choice,
- how to combine and apply them in the context of overall strategy.

As a conclusion: A MOTIVATED GROUP ENSURES THE MISSION'S SUCCESS.

Plan following method involves objectives and issues specifying, assimilation of a procedure to identify and rank the possible solutions and to select those that are expected to give the best results. The issues are presented as gaps in the present conditions or as prevent goals in the future. This list of issues can be discussed with the SUMP originator to see if there is a common or different perception on issue (in this case the objectives are properly redefined). As a conclusion: A LUCRATIVE COMMUNICATION LEADS TO A SUCCESSFUL OUTCOME.

In this theoretical context and considering the strengths and weaknesses of developing a SUMP, Incertrans considered that plan following method is most proper for study. The customized planning process optimization proposed by Incertrans comprises the following steps:

Section (1) objectives and indicators defining;
Section (2) objectives and indicators are used to assess the issues;
Section (3) to identify future alternative situations, scenarios can be used;
Section (4) the first three stages suggests possible instruments as well ways to overcome the arising problems;
Section (5) identify barriers to development or implementation according instruments through which the strategy is expected to be applied;
Section (6) the strategies are developed in order to minimize the impact of obstacles;

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Section (7) single instruments impact assessment or general strategies assessment by using estimation models;

Section (8) solution resulted after previous stages are compared by using a method of determining the probability of achieving / obtaining the assumed objectives;

Section (9) (throughout the entire process - 1-8) there are identified the ways how tools and strategies can be improved;

Section (10) at this stage it will use optimization techniques to help to identify the best strategies;

Section (11) it is decided if iterations number applied to the process is enough and then pass to application;

Section (12) assessment applies to instruments or preferred strategy and its performance is related to goals (if these results can serve to scenarios improvement);

Section (13) a monitoring program appreciates the changes in problems, based on objectives.

And it has logical structure already depicted above.

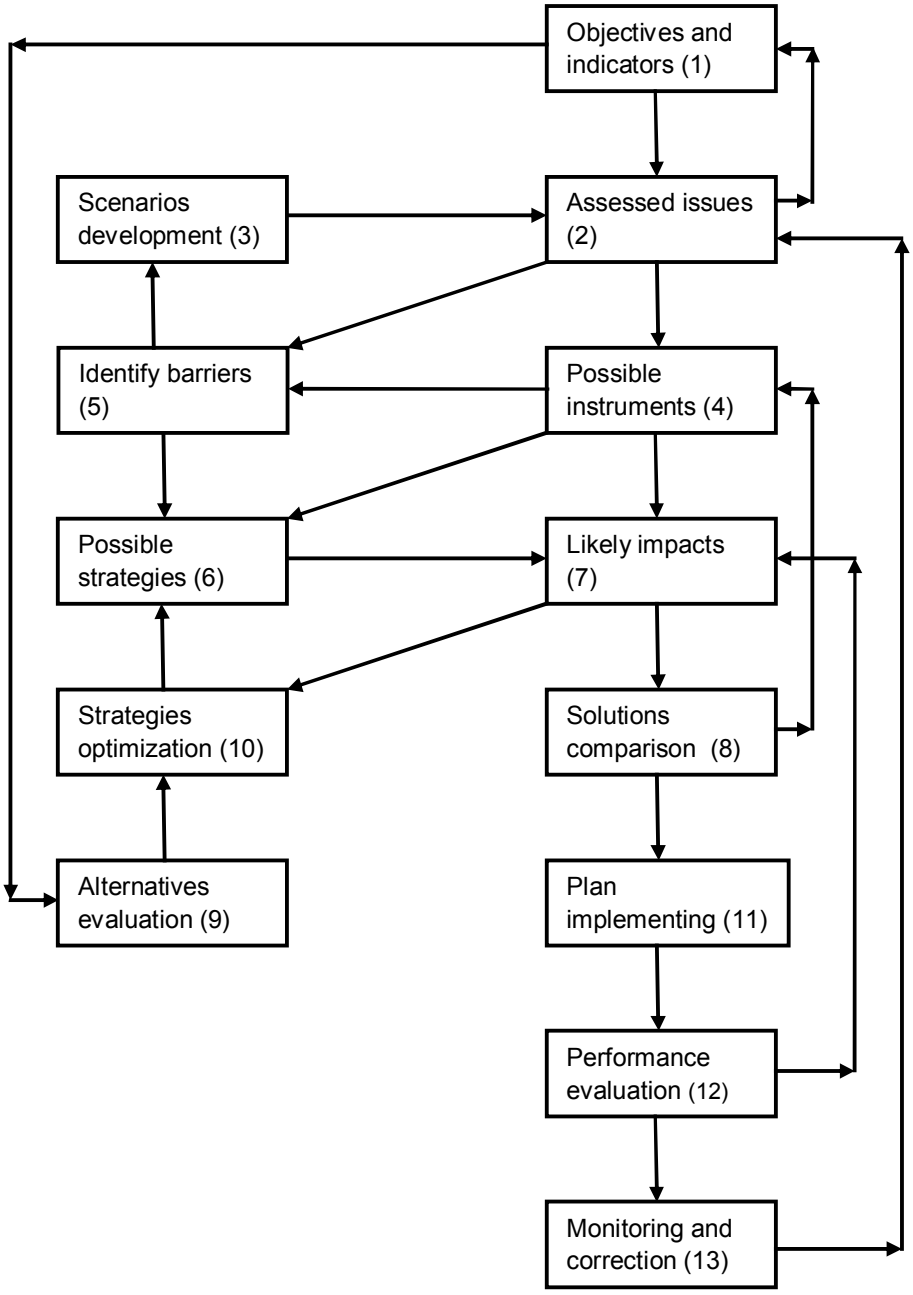

Fig. I.17 – Planning process proposed by INCERTRANS

7. The SUMP development chronology

A problem can be strategical, tactical or operational. From this point of view the differentiation of the problems is not simple because logical classification effort has to be reported to at least three distinctive features of the problem, each of them owning gradually analyzable features: **the registry, area and orientation**.

A problem has a more emphasized strategic character, the more difficult is to modify or replace the solution. The more the effect of solution takes less, the more tactical nature of the problem is more urgent. A problem is more strategic, the more the part of the organization under investigation, affected by problem solving is higher (as the part of the organization is smaller, the problem may easily qualify as tactical). A problem belongs rather of the strategy than the tactics, if playing an important role in determining intermediate and final goals of the entire organization which emerged the SITUATION. Here it shall be revealed that by provided solving, all issues establish the ways and means by which the desired goal can be achieved, but the most problems start from imposing the goal from "outside": these issues possess a strong tactical structure. Whether the problem aim, but mostly the objective, does not appear among the «initial data», but should be created during solving (ie consecutive not sequentially), then the problem is of a strategic nature.

Finally:

- if the effect of the solution does not require or can not impose permanent modification of the current (and repetitive) technological processes, then the nature of the problem is operational;
- if the part - affected by the solution - of the organization is restricted to a single consistent entity (customizing for transport field: a vehicle, a route, a depot etc.) the problem can be classified as operational;
- if the purpose is only the **effective recovery process**, within the limits about are knew to be effective, "prior" the SITUATION, then the problem is operational.

The three features (the register, the aria, the orientation) do not always provide a clear demarcation, therefore a problem may have a tactical character in relation to a issue and strategically in relation to each other (and sometimes the operational nature can be out of the question):

- technology issues are most of the time the preserve of tactic not of the strategy;
- planning issues are most of the time the preserve of of the strategy and not tactical.

The breakdown simultaneosly with the customizing of the SUMP development process, leads to taking in account of at least 4 levels of activity:

- organizational level
- informational level
- technological level
- procedural level

which are presented in the table below, inclusively the **CHRONOLOGY OF THE SUMP DEVELOPMENT PROCESS.**

Tab. I.13 – Action levels for SUMP elaboration

Organizational level	Informational level	Technological level	Procedural Level
Evaluarea conjuncturală a tipului problemei	Obținerea, pregătirea şi analiza datelor Stabilirea categoriei din care face parte problema	Obținerea datelor Filtrarea şi completarea datelor Formularea situației Formularea problemei Definirea situației-problemă	1. Assess the potential for a successful SUMP. 2. Define the development process and the aims.
	Completarea datelor privind problema Stabilirea contextului în care problema va intra orizontul cercetării	Cuantificarea factorilor şi conexiunilor Structurarea situației-problemă Definirea scopurilor şi criteriilor Definirea condițiilor Corelarea şi evaluarea componentelor problemei Reformularea problemei	3. Analyze the situation of mobility and of development scenarios. 4. Develop a common vision.

Organizational level	Informational level	Technological level	Procedural Level
Elaborarea alternativelor	Elaborarea metodelor şi modelelor de rezolvare Estimarea alternativelor Prognoza asupra rezultatelor Definirea criteriilor pentru alegerea alternativelor optimale	Căutarea, elaborarea şi alegerea modelelor adecvate Elaborarea metodelor de rezolvare a problemei Elaborarea alternativelor decizionale Gruparea alternativelor după scopuri si conditii Prognoza şi evaluarea realizării alternativelor Definirea criteriilor şi preferintelor decidentilor Ordonarea alternativelor	5. Establishing priorities and measurable objectives. 6. Achievement of efficient measures packages. 7. Setting the responsibilities and funds allocation.
Luarea deciziei	Alegerea alternativei agreate Analiza soluției	Alegerea solutiei Interpretarea şi evaluarea solutiei	8. SUMP monitoring and evaluation. 9. SUMP approval

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Obviously, the area on which works public transport urban service of SC OTL SA – should be part or „urban agglomeration". Compulsory, this area – of Oradea components where is public transport – will be considered like a planning object not only for SC OTL SA, but for local authorities (perhaps regional) which are responsable for city's future[12]. Explicitly, if the proximity area of every transport link covered by SC OTL SA vehicles is considered to be on few hundreds meters in transversal direction line, the planning area for public transport company – ignoring any administrative influence as like the one depicted in fig. I.18.

In principle, the sustainable urban mobility process should be adapted to local situation. This includes as essential step, defining the geographical scope of the plan, scope which ideally should refer to a functional urban agglomeration. As a general rule, SUMP should refer at a specific territory on which will be implemented. Any definition will be used for „urban agglomeration", probably always there will be more or less justified objections on it; more than that: there is no postulate or demonstration in analysis and studies that the specific territory on which will be focused mobility plan actions is reduced on „urban agglomeration". At the question „how far from the city center should be localized actions' origin for delineate the SUMP geographical area?" the answer is possible analyzing the **whole area that generates passengers** in local public transport.

[12] Once more: if all the responsibility is taken only by SC OTL SA management, the planning can not solve the citizens mobility, because mobility refers also to land administration – inside and entravilan – and to tax policy, excise, pollution and the impact of new utilities or not in neighborhoods that demand that utilities.

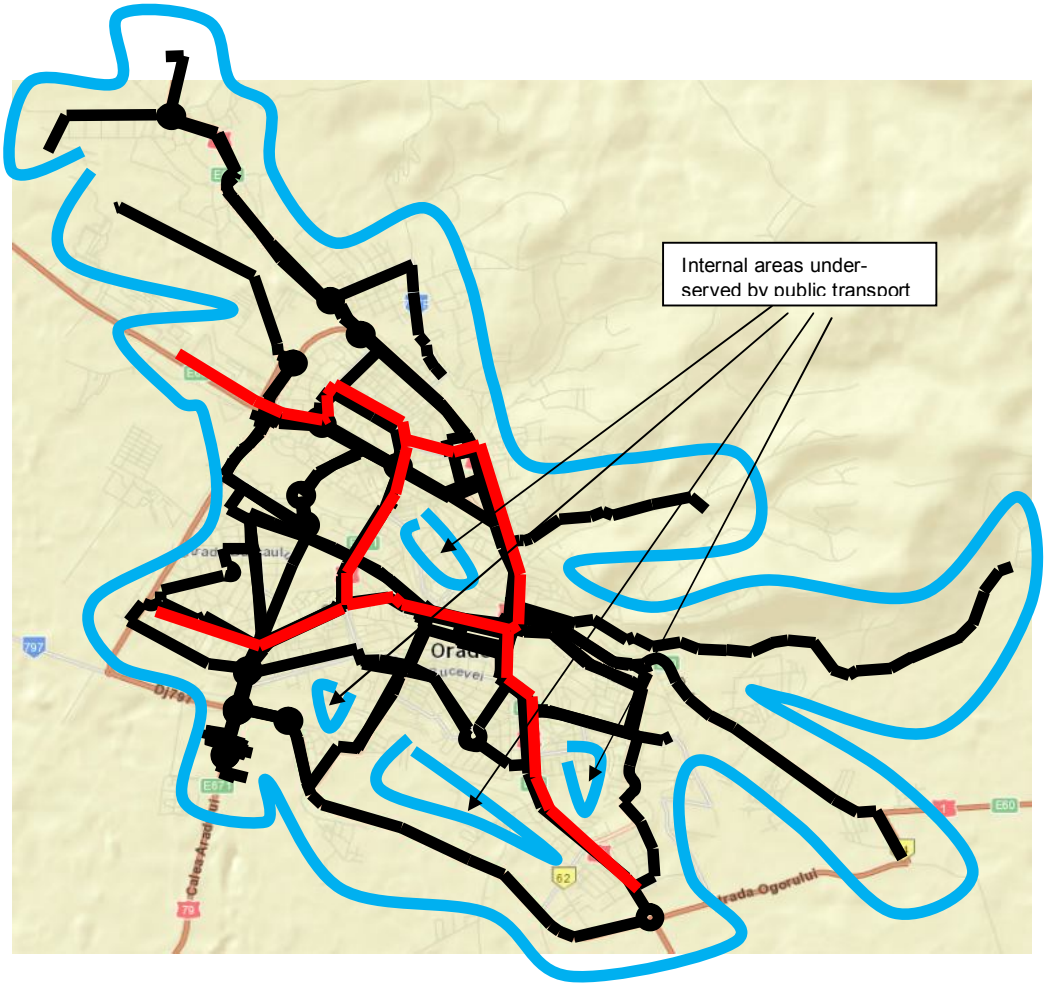

Fig. I.18 – The figure of the area „taken" by SC OTL SA (black=bus lines, red=tram lines, blue=area covered by public transport routes)

Globally, this area is not even THE city official territory – fig. I.19

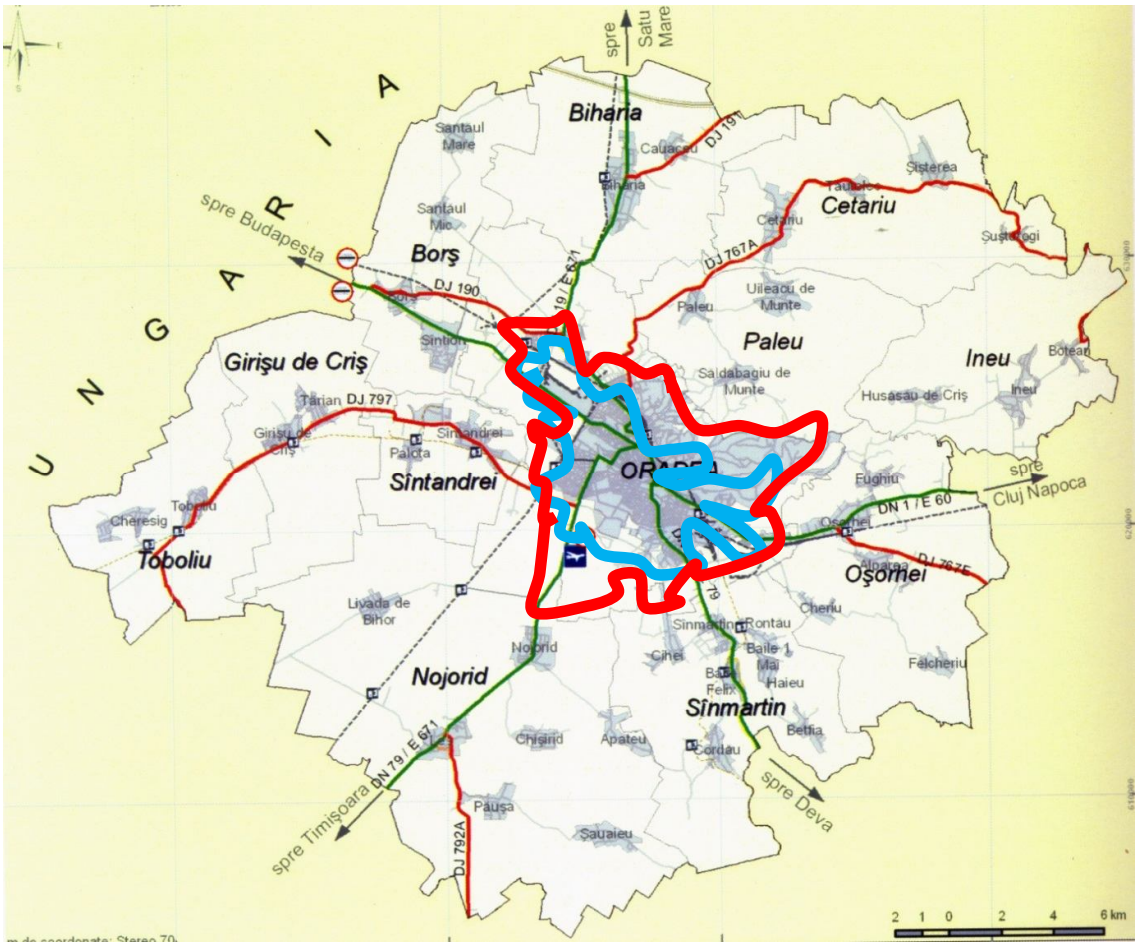

Fig. I.19 – The relative identity between city's area (with red) and area where public transport services work (with blue)

The geographical analysis of transport system must take into consideration the complexity of transport system classification, because it includes a wide range of variables as: different communication ways, different objects, complete or incomplete transport infrastructure, geographical levels, without neglecting other involved factors. **Transport is one of the most important components of socio-economic life**, the connections between functional areas is made by transport means and ways.

Transport system is all means, facilities and transport equipment grouped by various criteria: technical, geographical, organizational, transport object, integration in production process. By transport system, public transport companies offer public transport services on passengers's demand. The **definition of integrated transport system** refers to that accesibil transport service, which allows free mobility on multiple networks, between are possible correspondences located in a urban or territorial arrangements designed in a holisctic manner.

Practically, **the link between the rural and urban areas** is ensured by ways of transport which facilitate the direct relationship between them. Therefore, it is necessary a detailed analysis of available communication ways and the extent to which these ways meet the needs of urban, peri-urban and interurban area, correlation level of public transport means from territory to city and vice versa. According to some recently developed theories "area of influence of two close localities will increase to the limit to which these two localities record same intensity of relations with the outside or to the limit to which one's influence to other is close to zero". Based on this assumption, the proposed method for determining Oradea urban influence areas appeals to the principle that two localities attract **buyers on transport market** from a space direct proportional with masses and inversely proportional to the square of the distance. Since there is no centralized data on total sales volume, for calculation of Oradea influence area it was used Reilly-Converse formula (J. Beaujeau – Garnier, 1997), which is based on the ration between measured distance on roads and population, which can be expressed by formula:

$$d_A = \frac{d_{A-B}}{1 + \sqrt{\frac{P_B}{P_A}}}$$

where:

d is the measured distance on roads;

A şi B – cities;

P – population.

As a result, Oradea influence area (city A) behaves differently from a adjacent village to another:

Village	Population	Distance	Oradea's population	Distance to which the Oradea's influence is present	%
Borș	3684	11	204822	9,699208198	0,881746
Biharia	3934	13	204822	11,41764024	0,87828
Paleu	1964	9	204822	8,197299988	0,910811
Oșorhei	6432	11	204822	9,344138581	0,849467
Sânmartin	8918	7	204822	5,791523394	0,82736
Nojorid	4689	9	204822	7,817219581	0,86858
Sântandrei	4176	8,5	204822	7,437949497	0,875053

but in relative values the extension is up to 82-91% of separation distance.

In other words:

- Almost completely the link with the village is a "matter" of city's local transport;
- Regarding the **villages**, care for links ensuring is village's concern.

Conclusions:

- The most appropriate area for a sustainable urban mobility plan can not be resumed to urban area;
- The extension up to 26 km to city's center has not enough consistency due to the lack of some localities which to gravitate economically around the city;
- Distances's increase to which SC OTL SA has show its interest should includes 7 of 11 Oradea Metropolitan Area villages: Borș, Biharia, Paleu, Oșorhei, Sânmartin, Nojorid și Sântandrei.

9. Proposal[13] on urban policy in accordance with sustainable development principles

Urban-periurban development is a relatively recent phenomenon in Romania, which was almost ignored both literature and practitioners. The experience of other countries regarding urban-periurban development shows that there are negative effects associated with this phenomenon, especially when planning assembly is defective or lacking.

Urban-periurban development is defined as a transition form urban to rural areas, which can occurs within city's limits and also in surrounding rural communities; usually it has a low density; „**ah-hoc**" **unplanned periurban development of a city rural surrounding communities favors cars dependence:** and the vehicle „introduced in the city" will contributes to congestion, pollution etc. Worldwide, starting with 1960s there were emerged two political currents regarding metropolitan planning which attempts to reconcile two divergent objectives:

- The need for continous need of development and expansion of the cities, on the one side and
- Concerns for environment protection, appropriate public services and aesthetics on the other side.

These two political currents are:

MDU = urban development management

DPI = periurban smart / intelligent development.

although many authors consider that currently these two currents overlap, it has to be mentioned that there are some differences:

- **MDU** (originally appeared in the 1960s, but it has expanded and it has been put in practice in the coming decade) aims to preserve rural / natural areas or urban city periphery by imposing strict cotas for the future urban expansion (for example it is settled that for a year it will be approved new houses contruction).
- **DPI** was appeared last two decades and aims to control suburban development by imposing quality standards. For example, it is allowed the development of new quasi-urban communities in rural areas, but it is required a compact design, integrated into the surrounding architecture, maintenance of unfragmented green areas etc.

There is critics on these two currents which states that both are too general, idealistic and no not take into account the current preferences. As a known american author (Gillman 2003)

[13] To send primarily to local authority. The proposal of this section is according with urban policy guidelines promoted by PUG - pending approval – and will be part of SUMP VISION.

mentioned, the subject is delicate mainly because it brings into question **on one side** the right to free initiative, to property, the consumers preferences, **and on the other side, the** rights of administrative structures while public interest[14] is aimed. It can be seen that:

- MDU insists on urban area „narrow", while
- DPI insists on rural area "preparation".

Theoretical analysis of these two concepts led to their extrapolation to a single one, called extended urban planning = PUE.

The ideea is originated in United States where it was for first time used by Maryland governor (Parris Glendening) to describe statal authorities strategy to finance new investments for infrastructure only in those areas considered desirable and, in the same time to encourage land conservation in other areas. The concept was taken and used in many countries, currently it designates a set of strategies and policy instruments that are actively trying to redirect urban and suburban development into specific objectives; in this regard, PUE appears as as a retroactive response to the negative effects geberated by **unplanned urban extension** and by **uncontrolled periurban development.**

Another useful definition for this work is: PUE embodies a set of principles and practices planning and urban development which have as a result more **efficient planning and transport system** (the consequence of the structure of principles and practices is: PUE is an alternative to chaotic suburban development characterized by low density, dispersed constructions which favors cars' dependence); the most interesting conclusion: PUE concept can be applied in various locations, from city centers to suburban and even rural areas. This remark is important because often those who oppose PUE argues that all these policies do not recognize or oppose to development that occurs outside the existing cities' borders. So:

- first of all, PUE is the deliberate and planned intervention of administrative structure by which is seeked to control the volume, rate, type, time of future developments in metropolis;
- PUE seeks to maintain a **balance between development and preservation/conservation,** between new contructions/neighborhoods and available infrastructure, between the demand of new investments in infrastructure and utilities and available financial resources, between progress and social equity;
- sustainable development programs have the difficult mission of trying to find a balance between divergent goals and interests: **public interest versus individuals fundamental rights and freedoms; economic development versus natural resources conservation; efficiency versus social equity etc..**

[14] Pay attention to the sense: the public interest is an objective goal; public interest is a subjective goal.

10. Prioritization of the options considered appropriate (after analysis conducted by the working groups)

The hypothesis from which we started in prioritizing the options is that, at least at restricted level, performing the mobility design, it contributes to achieving of great benefits for transporters and beneficiaries. In this case, the design means a set of coordination activities that ensure through the created conditions, that transport performance is within the limits of expected performances (capacity speed, integrity, pollution, etc.). This fact is equivalent to the relations - expressed in words:

$$value\ of\ the\ performance = \frac{(Quantity + Quality)}{Cost}$$

Although, most often the quality is fixed by intuitive judgments and / or assessments the performance values may be characterized by objectivity, if one takes into account the three dimensions in which the transport must be framed, (fig. below): from the point of view of space **(where?)**; from the perspective of population groups **(who?);** from the perspective of the effects **(what?).** The 3 questions applied to axes from the figure below lead to the **idea of scenario.** A scenario is a prognosis of the future of a complex heterogeneous activity (if it were only a homogenous activity - mathematics would have solved the prognosis). The preponderantly technical and partially economic scenarios represent the so-called "further solutions after the study ends" which may cover / must cover the options.

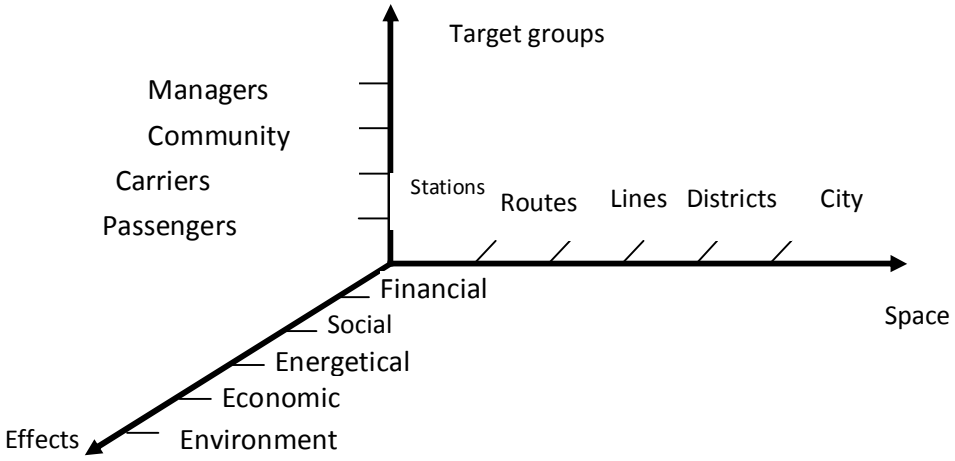

Fig. I.29 – Aspects which lead to idea of scenario

THE FIRST OPTION has been the sustainability of initiatives provided in SUMP. But sustainability means consistency in implementation and supporting a measure. Who can establish the consistency: the population.

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As a consequence, the development of scenarios has to start with a "box" (ie a matrix) that can count the way **population take part, perceive and accepts the measures** - see below the table header.

Population					

A SECOND OPTION has been the fight against the introduction of new pollutants in the city. But polluter – in SUMP case - means a fossil based fuel mean of transport to be replaced with an electric-based transport means. How can be established the pollution level: by monitoring the air, water, soil, buildings, state of health, etc.

As a consequence the development of scenarios has to contain a table box wich allows the tracking of the pollution parameters in the city - see the table head below:

Population	Pollution				

THE THIRD OPTION has been „polluter pays principle". But, in this case polluter means a transport mean which cannot be replaced (for private cars for which the switching to hybrid or full electric means is a too far dream). How to apply the option: by fragmenting the city in "free" areas = suburbs which have larger areas and at least one edge towards exterior - relaxed - of the city namely "controlled" zones = densely populated central districts, but with reduced surfaces and surrounded on all sides by constructions and buildings.
As a consequence the development of scenarios has to contain a „text box" which will introduce variables to ensure at least the appearance of a protected perimeter where the entrance will be achieved on a fee basis – see the table header below:

Population	Pollution level	Topographic limits			

A FOURTH OPTION was the principle of equal opportunities. In the modern society equality is translated by economic development which should ensure all of individuals' personal fulfillment possibilities. How to apply the option: by entering in the horizon concerns of the element 'sustainable economy of the area analyzed "(reducing the transport concept and appealing to rough simplification: it is desirable that economic agents locations to fill the current structure of neighborhoods - residence, focused on job or transit - legacy of the communist past – so that the number and length of the trips to be reduced BUT WITHOUT LIMITATION OF MOVEMENT FREEDOM OF THE INDIVIDUAL = TO THE REST OF HUMAN ACTIVITIES: recreation, the active leisure, entertainment, etc.).
As a consequence the development of scenarios has to contain a „text box" which will take into account the various directions that local economy may take – regarding the mobility phenomenon - see below the table header.

Population	Pollution level	Topographic level	Economy		

THE FIFTH OPTION was the setting up of a list of the mobility issues. The list takes the place of the series of measures projected to be applied for "text translation" of the SUMP to a sustainable mobility. How can be applied the option: through the technique of setting up scenarios which is based on taking into account the behaviour of decisions makers factors of municipality leadership which can choose an attitude: without interventions, with routine interventions, with independent interventions, with combined interventions.
As a consequence the development of scenarios has to contain a „text box" in which to be revealed the level of engagement in SUMP implementation – see below the table header.

Population	Pollution level	Topographic limits	Economy	The profundity of the actions	

Finally: is inconceivable a mobility development plan in a city without taking into sight of the local public transport operator.
As a consequence, the development of scenarios has to be initiated with an audit of SC OTL SA which to reveal the possible means that they have **and more importantly** the latent possible means that could raise the other plans – of intensive and extensive manner – the activity of SC OTL SA – see below the table header.

Population	Pollution level	Topographic limits	Economy	The profundity of the actions	SC OTL SA

11. The possible instruments for materialisation of changes

In the development of a way to use the space and a transport strategy is essential to clarify the expected outcome. **The objectives are the main improvements pursued by a city in space usage and transport strategy.** Therefore, they are the starting point for the logical structure that should lead to the SUMP. They have the following functions:

- help identify the problems to be overcomed;
- provide guidance depending on the type of solution;
- act as a constraint by highlighting of what should be avoided,
- provide the basis for the assessment of alternative solutions,
- facilitate the progress in implementation

The objectives specify the directions of improving, but not the means to do this. Therefore, in setting goals, it is important to avoid the inclusion of indications or preferred solutions (eg better

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environmental conditions through a better public transport). This could makes the other appropriate tools to be neglected.

The objectives are abstract concepts, it is therefore difficult to measure the performance related to them. **The indicators are modalities of objectives quantification.** For example, the number of accidents would measure the overall safety objective, increase of the degree of pollution would measure a part of environment objective. It is also possible to define the initial indicators that measure what has been performed (for example, the length of the new bus lines) and process indicators which describe the reaction related to transport system (such as the number of bus users). When those are useful to understand the process, they are less useful in assessing of performance and say nothing about the impact on key targets. To be effective, the results indicators should be comprehensive and to include the full range of specific objectives, to make available to decisions makers sufficient information and to be sensitive to changes in strategy.
Thus it becomes clear when it has been reached an objective and it is possible to measure the level of an achievement by observing the conditions by which the situation differs from objective. But: if the values are set only for certain objectives, this may lead to less attention in relation to other objectives. Conversely, setting values for all objectives can be misleading into terms of importance against each other.

Instruments are modalities which can be applied to overcome problems and achieve the objectives. These include conventional methods of transport, such as new infrastructure, traffic management and pricing policies, but also involve changes in attitudes and use of information technology. In equal measure the changes in space usage may contribute significantly to reduction of transport problems. The instruments may be implemented either in the whole city (for example, the price of travel tickets) or to a particular area (for example on a new trolley line) or in a new specific period of the day (for example, parking restrictions or gratuity granting).
Rarely a tool will approach all city issues or will meet all the objectives. It is necessary therefore to develop tactics that combine the instruments. In the literature are mentioned several tens of types of instruments. These may be classified in several ways. Further are described and accepted by the working groups for Oradea:

MEASURES FOR LAND USE,
MEASURES FOR THE DEVELOPMENT OF INFRASTRUCTURE,
MEASURES AFFECTING THE CAR USE,
MEASURES THAT FAVOR PUBLIC TRANSPORT,
MEASURES RELATING TO TAXATION,
PROPAGANDA MEASURES (PROVIDING INFORMATION, ATTITUDE CHANGE, BEHAVIORS CHANGE TOWARD THE CITY AND ITS CITIZENS),
MEASURES LEADING TO BIKE USE AND TO RETURN TO WALKING,
MEASURES RELATING TO FREIGHT TRANSPORT WITHIN THE CITY.
And the following matrix exposes - generic - the tools that increase their benefits and some to others that can help the overflows of financial and political barriers, or to compensate disadvantaged ones (**the instruments from the lines support column instruments**):

Tab. I.27 Corroboration between instruments

Instruments	Contributions to these instruments					
	Space use	Infrastructure	Management	Information	Attitude	Taxation
Space use	-	Increased benefits				Increased benefits
Infrastructure	Increased benefits + Compensations for disadvantaged	-	Reduced barriers			Reduced barriers
Management		Increased benefits	-		Increased benefits	Increased benefits + Reduced barriers+ Compensations for disadvantaged
Information	Increased benefits	Increased benefits + Reduced barriers		-	Increased benefits	Increased benefits + Reduced barriers
Attitude	Increased benefits		Increased benefits + Reduced barriers		-	Reduced barriers
Taxes	Increased benefits + Compensations for disadvantaged	Increased benefits + Reduced barriers + Compensations for disadvantaged	Increased benefits+ Reduced barriers + Compensations for disadvantaged	Reduced barriers		-

12. Identifying factors whose participation could better influence the development of a SUMP

INCERTRANS has found - based on specialty literature - that a wide participation of "actors" in political, administrative, economic, social, cultural life, apart from wide participation of those who represent "the spectators"– the whole population whereas in the mobility issues there are no "non participants" to the phenomenon of mobility – it is a prerequisite for the development of a successful SUMP and to facilitate the acceptance of a change of substance regarding the transport phenomena at the moment of SUMP implementation.

The ideea of "sustainable urban mobility plan" – is used with various senses, depending on the field, through a multitude of agreements granted however to a clear concept: the development of a predictive suite of operations destinated to lead, by planning, organizing and ranking of the requiered and sufficient actions, to achieve a specific purpose; the purpose may be reduced, only from **the declarative point of view,** to meet the present and future mobility needs of people, in a better qualitative background for the life in cities and the surrounding areas. Going beyond the declarative stage, it is found that SUMP will have the characteristic of inconsistency if mobility is analyzed "transport down"; in another words: the strategical plan which may bring solutions regarding the mobility must take in account the **participations** (since the quality of life can not be achieved by boundedness "transport down")[15].

The citizens participation in SUMP planning is not only a requirement stipulated in EU directives and international conventions; is the **fundamental duty of the local authorities to ensure the legitimacy and quality of decision process**. This activity is the result of the obvious link between possibilities of **mobility offered** to the people – and the people's perception (not of the administration) about the quality of the decisional act regarding the **mobility need**. General purposes of participation:

- encouraging people to join the debate and collective decision making;
- ensuring of maximum transparency more democratic and participatory decision making during the SUMP process;
- designing of durable and supported solutions which would improve the quality of life of every citizen, as well as development of a WIDE PUBLIC PROPERTY OF SUMP
- improvement of SUMP quality usually by discussing the arguments of politicians, officials and technicians with citizens;
- strengthening the vitality of civil society and local political culture.

In order to obtain an overview of the area of stakeholder identification is necessary to classify them on the basis of their position given by the specific power in the process:

- the main group of factors (which will be affected – positive or negative – by the new transport measures; i.e., the citizens generally various social groups or professions, certain neighborhood organizations, branches of activity);
- the secondary factors group (key-actors): those who have political responsibility (mayors, counselors, other levels of authority) and holding the financial resource (public and

[15] Perhaps, before participation should be standed integration, but about this, we have already referred.

private funds); furthermore: those who have the authority (by field or territory) and those who have the skills and experience (Universities); and finally those acting in related areas (land use, environment, education, health, tourism);

- the tertiary group of factors: those who will implement the policy of transport (passenger carriers, government, police); furthermore, those who carry out other activities of important transportation (freight carriers) and finally: those who shall inform and report about the transport (the media).

The groups of stakeholders involved in transport projects of this type are:

Tab. I.15 – Groups of stakeholders involved in transport projects

Authority	**Companies / Operators**	**Communities**	**Others**
Local authorities	Carriers / Public transport operators	NGO-s (for ex. environmental)	Research institutions
Cities that already have SUMP	Transport advisors	Associations of cyclists	Universities
Local Transport authorities	Car rental companies	Unions	Training Institutions
Traffic Police	Bicycle rental operators	Media	Experts from other cities
Communitarian Police	Other providers of mobility	Forums of local authorities	Foundations
Politicians	Patronage	Local interest groups	
Partner organizations	National / international Companies	Public transport user groups	
Project managers	Regional / local Companies	Citizens	
Emergency services	Small enterprises	Persons with disabilities	
Health and Safety Managers	Retailers	Parents / Children, Students / Elderly	
Ministery of Transport	Utility services (eg electricity, telecommunications)	Land owners	

Organizations which have been agreed with SC OTL SA in order to build - in the first form - groups of stakeholders are:
MUNICIPALITY OF ORADEA
MUNICIPALITY OF ORADEA – TRAFFIC COMMISION
MUNICIPALITY OF ORADEA –TRANSPORT DEPARTMENT

MUNICIPALITY OF ORADEA – COMPANY "OWNERS ASSOCIATION"
COUNTY COUNCIL BIHOR
COUNTY COUNCIL BIHOR –TRANSPORT DEPARTMENT
ORADEA METROPOLITAN AREA
ORADEA METROPOLITAN AREA – ADI "TRANSREGIO"
THE COUNTY POLICE INSPECTORATE BIHOR – TRAFFIC DEPARTMENT
UNIVERSITY OF ORADEA
CHRISTIAN UNIVERSITY PARTIUM ORADEA
COUNTY ENVIRONMENTAL PROTECTION AGENCY BIHOR
DEPARTMENT OF PUBLIC HEALTH BIHOR

(to be mentioned are:
BIHOR COUNTY PREFECTURE
ROMANIAN ROAD AUTHORITY – BIHOR AGENCY
ROMANIAN AUTO REGISTER – BIHOR
COUNTY DEPARTMENT FOR STATISTICS BIHOR
have declined their participation

13. The portofolio of teams involved in SUMP development

Summarizing a range of information contained in the specialty literature, INCERTRANS concluded that for supervision of the SUMP preparation for Oradea Municipality it is necesary to be constituted at least 7 workgroups:

- the first working group consisting of representatives - from the first echelon – belonging to Oradea Municipality and Prefectures, namely to the Oradea Metropolitan Area:

a representative of the Prefect of Bihor
manager of Oradea Metropolitan Area
vice mayor

The result= the group of the partner institutions

- the second working group consisting of representatives - from the second echelon – belonging to the County Council, Municipality, Police, namely university environment:

a municipal advisor
a City Hall manager
police commissioner
a professor

Result = Group of decision makers competent partners

- The third group is comprised of representatives - the first level - belonging to the only City Hall:

a deputy mayor
a manager from the City Hall

The result= the group of urban policies

- The fourth group is comprised of representatives - the first level - belonging to the City Hall, Oradea Metropolitan Area, department of statistics, namely the universitary environment:

a City Hall Manager
the chief architect of the municipality
a chief from the traffic or transport service statistician
a proffesor
Result = the group for urban planning

- The fifth group is comprised of representatives - from the second level - belonging to the City Hall respectively to the civil society:

An architect
A NGO representative
Result = the group for zonal and geographical analysis

- The sixth group is comprised of representatives - from the second level - belonging to the City Hall, Public Health Department, Environmental Department, i.e. to the civil society:

a chief from the public relations service
a representative of the Public Health Department
a representative of the Environmental Department
an NGO representative
Result = „actors" group

- The seventh group is comprised of representatives –from the first level – belonging to the City Hall, SC OTL SA, respectively INCERTRANS:

a vice mayor
a groups moderator (Manager of SC OTL SA)
a secretary of the group (project responsible)
Result = the group of the joint activity coordination

Coroborating this component to the device involved in research by INCERTRANS, the following work departments are foreseen:

- Technical: in which will be enabled persons with **coordination positions to put into service new lines or technologies or work procedures, etc.**
- Statistical: in which will be enabled persons with **coordination positions of the verification actions of the profitability measures**;
- Economical: in which will be enabled persons with **planning positions in the investitional field** (investment volume proven by the urban mobility dynamics revealed by the prognosis);
- Logistical: in which will be enabled persons with **responsibilities for ensuring the link between the human and material availabilities** of the institutions that are temporarily in cooperation;
- Environmental: in which will be enabled persons with coordination position in order to input the new modalities of **the city dowry protection**;
- Media: in which will be enabled persons with **representative functions in relation to third parties (public, media, etc).**

In its whole ensemble „the local project team[16]" is expected to adopt – or to reject the proposals so far – specially regarding the urban policy – or future proposals – referring to the measures required to improve the mobility in Oradea. In order to bring at the same denominator of over 30 people involved in the development SUMP, the teams activities should be conducted in the presence of a clearly defined methodology. Such a methodology must be economically justified and fit to the described theoretical scaffolding through a pertinent analysis of the context. The chosen methodology for presentation workgroups seeks to provide an objective criterion of prioritizing of the measures to increase competitiveness by calculating the gaps between the opportunities and tasks for each of the systems and subsystems of the city transport at the level of several indicators and criteria. **This was the most important methodological premise. The second methodological premise** was that a large gap indicates a higher need of intervention. Of course, this choice involves also some limitations. For example, it is possible that a smaller gap does not indicate a performance of that system. But the initial assumption was that to all the indicators will be assigned the same importance (indicators are considered equal between them). **The third methodological premise** was the combination between hard indicators (statistics) to soft indicators (answers to surveys[2]). In this way it is combined statistic - where the comparable data sometimes have a history of two to three years, with the perception of reality by those directly interested in increasing competitiveness - namely the passengers.

The forth and the last methodological method has been that the competitive stages can not be avoided. Since the chosen methodological approach has been horizontal (not vertical, hierarchical), in the calculations should be used the weights corresponding to the stage of development in which the services of Oradea are currently: the fact that the economy is based mostly on factors and less on investitions, while innovation is present only in some cases, the chosen weighting for the used indicators will take into account the current situation, following mostly the intensive exploitation of factors, the shift under the economic reality pressure, from the factors to innovation and just as a forward look, for ensuring the project competivity, the transition to investments.

INCERTRANS reported that a set of activities needed for the project is subjected to the following goals:

- Accurate collection of a quantity of information in order to create a real image of mobility in Oradea (for example there are no statistical information on the volume in tons*km cargo transport within the municipality, it is not known which is the profitability of each urban transportation line, etc.);
- Undoubtable setting of those routes which could be suitable for tram routes, namely, which are the zones (neighborhoods) in which trolleybuses may be placed on a possible route;
- Identify the organizational boundaries of the SC OTL SA availability in terms to suplimentary serve, which the public transport operator may perform to extend the area covered in Oradea Metropolitan Area.

The achievement of these goals requires a series of actions partly successive, partly simultaneous, described in the following table. If the public participation in solving of the urban

[16] The INCERTRANS staff forms the external team of the project.

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transport has been already emphasized, it is time to be briefly stated the manner of participation of the works partners. Through their participation, the main beneficiaries of the project - SC OTL SA and the CITIZENS of the MUNICIPALITY – are involved in the development of a transport common strategy. In the following table is presented a minimum number of meetings required for SUMP development:

Tab. I.19 – Timeline for the working groups activity performance

Procedural level	**Operational breakdown / 2013 month:**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1. Assessment of the potential for a successful SUMP	1.1 Commitment to the principles of mobility 1.2 Impact assessment of national / regional framework 1.3 Achievement of the self-assessment 1.4 Revision of resources availability 1.5 Defining of a timeframe 1.6 Identification of key actors and stakeholders	WITHOUT COMMON ACTIVITIES								
2. Defining the development process and plan purpose.	2.1 Investigation beyond their own borders responsabilities 2.2 Preparation of the policy coordination and planning integrated approach 2.3 Planning of the actors and citizens involvement 2.4 Corroboration of working methods and management			INTERNAL GATHERING OF THE WORKING GROUPS FOR SETTING THE COMMUNICATION MODE						
3. Analysis of mobility status and development scenarios.	3.1 Problems and opportunities analysis 3.2 Development of scenarios				ANALYSIS OF CLAUSE 3.2 = SCENARIOS AND OPINIONS EXPRESSION					
4. Establishing a common vision.	4.1 Developing a common vision on mobility 4.2 Public information					THE FIRST GENERAL MEETING (WITH SC OTL SA AND INCERTRANS)				

Procedural level	**Operational breakdown/ 2013 month:**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
5. Establishing priorities and measurable objectives.	5.1 Identifiying the mobility priority 5.2 Setting of intelligent targets					ANALYSIS OF CLAUSE 5.2 = THE TARGETS AND THE OBJECTIVE EXPRESSIONS				
6. Achieving of effective action packages.	6.1 Identification of the most effective / efficient measures 6.2 Analysis of the others experience and results 6.3 Setting the best solution for funds are used 6.4 Creation of integrated package of measures						ANALYSIS OF CLAUSE 6.1 = THE MEASURES AND OPINION EXPRESSION			
7. Setting the responsabilities and funds distribution	7.1 Responsibilities and resources assignment 7.2 Actions and budgets preparation						INTERNAL GATHERING OF THE WORK GROUPS FOR RESPONSABILITIES DEFINING			
8. The monitoring and evaluation of the plan.	8.1 Arrange for monitoring and evaluation							INTERNAL GATHERING OF THE WORK GROUPS FOR ACCEPTANCE OF THE BUDGET		
9. Approval of SUMP.	9.1 Check the quality of the plan 9.2 Adopt the plan 9.3 Plan promotion								GENERAL MEETING: SUMP ADOPTION	

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14. Ensuring transparency and interactivity (communication plan)

The purpose of the communication plan is to inform target public about the need for a sustainable transport system in the extended area of Oradea municipality to facilitate the safe, fast and efficient mobility of people and goods by services at European standards and ensuring a high level of environment. Starting from the stated purpose of the communication plan, the following objectives may be defined:

- **1st general objective**: growth of the information level of the partners and final (existing and potential) beneficiaries, involved in elaboration and implementation of the SUMP, developing infrastructure and improving the quality of services in the local passenger transport.
- **2nd general objective**: increase the level of transparency actions leading to setting up of the SUMP by informing the public about the innovations and repairing measures in the field of services that directly or indirectly influences the population mobility in Oradea.

The general objectives are divided in a total of 4 objectives:

- **1st specific objective**: to inform the partners and final beneficiaries, on the priorities, measures and expected results of SUMP but also on responsibilities they hold regarding to the adaptation of their own actions to the mobility requirements.
- **2nd specific objective**: ensuring a high level of transparency for the activities of SC OTL SA and INCERTRANS in order to develop the management actions of SUMP (it is envisaged the general public information about the general purpose, importance, priorities specific measures and outcomes provided by the SUMP).
- **3rd specific objective**: ensuring the internal communication and inter-institutional coordinate information measures in order to about the measures reciprocal and advertising conducted between development and especially during implementation period of the SUMP.
- **4th specific objective**: SUMP promotion of features which emphasize environmental protection and the development of equal opportunities for all individuals (that reach the extended area of Oradea).

SC OTL SA identified the following institutions which will become target groups – tab. I.20 (to be noticed that the target groups need specific information which can be ranked in three levels of detail). Each institution constituent of target groups must get and provide data, information, opinions, comments, proposals their express agreement or disagreement, etc. through various channels, **toward the nucleus consisting of SC OTL SA and INCERTRANS.**

Tab. I.20 Groups consisting the factors in the development action

stakeholders	Organizations	Level of information		
		high	medium	low
Partner institutions	Oradea Municipality City Hall	X		
	Oradea Intercommunity Development Association		X	
competent partners with major power to influence	Bihor County Council	X		
	Bihor County Police Inspectorate			X
	University of Oradea		X	
„actors" group which may give public legitimacy to SUMP	County Environmental Protection Agency Bihor			X
	Department of Public Health Bihor			X
	Organization of guidance and control for owners associations		X	
working group dedicated to the sustainable urban mobility planning	Partium University		X	
	Oradea Municipality City Hall	X		
SUMP beneficiaries	Citizens	X		

Below is stated the nominal composition of the working groups:

Partner institutions
Vice Mayor Mircea MĂLAN – City Hall
Manager Ciprian BARNA – OMA

Decision makers competent partners group
Councelor Szabo Iozseff – County Council .
Manager Florea Eduard – City Hall
Commissioner Ciuclea Claudiu – Oradea Police
Assistent Liviu Bucur – Univ. Oradea

Urban policies group
Vice Mayor Ovidiu Mureşan – City Hall
Manager Ionuț Sărac – City Hall

Urban planning group
Architect Dorina Milici – City Hall
Manager Leontin Patcaş – City Hall
Manager Ciprian Barna – OMA
Prof. Szekedi Levente – Partium University

Zonal and geographical analysis group
Architect Ioana Iencuț – City Hall
Dr. Aurelia Dumiter – ADDePT Bihor

Group of "actors"
Head of service Cristian Ile – City Hall
Manager Adriana Calapod – APMBH
Manager Daniela Rahota – ASP Bihor
Manager Dragoş Dan - Ecoplannig

Joint activity coordination group
Coordinator – Vice Mayor Ovidiu Mureşan – City Hall
Moderator Dir. OTL Istvan Csuzi – SC OTL SA
Secretary eng. Luigino Szecsy - Incertrans

Regarding the "targeted group" = the citizens, three proper way of access are expected to their opinion:

- general information (through publications, media, etc.) on SUMP, namely the general
- programs and projects;
- information in an understandable format, concerning specific projects and plans pursued;
- get the "feed-back" after completion of each intermediate information stage.

In annex 22 there are presented the main means of disseminations used until the completion of the SUMP promotion measures:

- Posters in public transport means
- Flyers distributed to citizens by SC OTL SA staff – 3 types (to citizens, amateur drivers and teenagers)
- Presentation poster located in the lobby of City Hall

plus series of interviews on local radio and TV of the NW region of Romania.

"Simultaneously" with this action has been developed a document containing the vision to be adopted by the City Council of Oradea.

15. The selection of relevant indicators

Since knowledge of population mobility and urban transport fields is often fragmented and incomplete, before deciding on future policies, it is necessary to know where the city is ranked – due to mobility and urban transport. Data and information synthesis should allow after to describe **what it will be,** in order to identify the current problems which will characterized the future. It follows a analysis activity, essential to define appropriate policies and to provide the necessary basis upon which progress is measured. **In theory,** the analysis should be as comprehensible as possible, but also should be managed with existing resources. **In practice,** before any formal considerations, mobility background is the PRICE of the ticket.

Surprisingly, the most pursued objective is (or it should be) the customers' loyalty. **The research has shown that it is much harder to recruit new customers than to keep serve the existing customers**. It was already argued enough, that for all kinds of services, customers' diclaimer (and their mistrust) should be carefully monitored in order to assess customers' satisfaction. Based on the same ideas, it was proposed a model of "chains of profits from services", which links financial performances and customers' loyalty to system. This model is briefly described bellow:

- Services internal quality determines employees' satisfaction.
- Employees' satisfaction determines loyalty.
- Employees' commitment leads to work's efficiency, to performance.
- Employees' performance determines the prices.
- The price determines customers' satisfaction.

- Customers' satisfaction determines loyalty.
- Customers' loyalty leads to profitability and growth.

As a result, comparative analysis with other cities ticket price revealed a very high ticket price for local transport charged by SC OTL SA:
Just in Lugoj – public transport is free.
No city with the price of the ticket less than 1 leu.
21 cities with the price of the ticket less than 2 lei.
11 cities with the price of the ticket more than 2 lei.
In top of the list **Oradea the only ciy** with price oh the ticket by 2,5-3 lei.

The conclusion: the price can not be considered attractive, so the passengers are legitimate to choose - if they have the financial possibility – travel with their own car[17].

Other indicators about "city state" in terms of mobility are:

Total routes length (km)	Trams	71,9
	Buses	214,6
Total network's length (km double track)	Trams	36,8
	Buses	68,25
Ends of lines number	Trams	4
	Buses	18
Medium length between stations (km)	Trams	0,48
	Buses	0,62
Comercial speed (km/h)	Trams	14,3
	Buses	20,1
Medium length of trip (km)	Trams	1,50 – 2.53
	Buses	1,31 – 4,27

[17] AND A ANALYSIS OF TRANSPORT BY TAXI UTILITY – APPROX. 2000 OF ISSUED AUTHORIZATIONS - MAY REVEALED THAT THE "TREND" TO SUSTAINABLE DEVELOPMENT IN ORADEA CITY IS RELATIVE.

Although these aren't proper indicators, it should be mentioned the mobile means available for SC OTL SA:

- a fleet by 70 trams which type is: type TATRA KT4D - 20 pieces and T4D + B4D - 40 sets, plus Siemens ULF 151-10 pieces.
- a bus fleet consisting of 48 vehicles (heterogeneous types and age).

Back to monitored indicators it can be enumerated:

- Taking into account the target information there are context indicators and program indicators.
- In relation with process stages there are resources indicators, output indicators, result indicators, consequence indicators.
- By the assessment perspective there are efficiency indicators, relevance indicators, sustainability indicators, impact indicators and performance indicators.

Obviously, it might refine this manner to define indicator term, but for practical reason it is necessary not to omit the global picture: **indicators should characterize the city by citizens perspective[18]. Unfortunately there is no unanimous accepted list by all researchers, meaning there was no agreement on a mainly set of indicators recommended for SUMP.** After the analysis of published data by municipalities from four country (France, Germany, United Kingdom, Italy) plus **UITP database,** and information obtained from the **TISSUE project** it was reached to the following list of indicators.[19] :

(public urban transport indicators)

1. total number of trips in public transport;
2. accessibility of public transport vehicles;
3. trams/buses/trolley routes (number, length, density, coverage);
4. electricity consumption in relation with energy consumtion from fossil fuels – in public urban transport;
5. length of tracks for public transport in the total urban network;
6. the ration between total population and public transport fleet;
7. commercial speed of public transport at peak hours;
8. closing time for public transport;
9. cost per km of trip in public transport;
10. number of employees in public transport company;

[18] Of course the number of liters of burnt diesel fuel for a passenger*kilometer is an important indicator for a city, but this value does not say anything to the passengers: if the indicators refers to decrease percent (estimated, real) of polluting emissions for every passenger*kilometer, then the issue become understandable and for interest for citizen.

[19] There is to note that for some indicators "crisis cells" establishment was necessary because currently there are no systematically collected data and for what there are no official database.

(alternative transport indicators)

11. motorization degree in the city;
12. number of parking places (exclusively residence places);
13. cycle route (length, density, percent of road network);
14. number of rent byke points;

(indicators of sustainability for urban area)

15. km of streets built or rehabilitated;
16. kmp of extension of the city border;
17. built area development versus green areas (mp/mp);

(general traffic indicators)

18. hourly traffic on city's street with the highest values of traffic flow;
19. noise level on city's street with the highest values of traffic flow;
20. emissions and dust level on city's street with the highest values of traffic flow;

(direct progress indicators)

21. the ratio between medium income and the price of the ticket;
22. one hour parking cost compared to the cost of 5 km trip by public transport;
23. time requested for travel 5 km by public transport vehicles compared to the average time to travel the same distance by car;

(indirect progress indicators)

24. delinquency level;
25. freight traffic in the city's area (tones*km/day).

From the perspective of available database for the researchers in the field it is found:

- The values of some indicators can be identified even at this time.
- The other indicators values are only of process – this means that between two different moments of the implementing action (km of built streets or rehabilited; kmp of extension of city's border; built area development versus green areas – mp/mp); **fort these 3 indicators it is necessary to be created a "cell" to monitor the values – probably by the working group which concern is planning.**
- Another indicators values regard social-economic environment (the ratio between medium income/salary and ticket's price; freight traffic in the city's areas – tones*km/day); **for these 2 indicators it is necessary to be created a "cell" to monitor the values – probably by the working group of competent partners in decision making.**

In the context of dynamic monitoring of some indicators from the first line of the "filed" open by municipality in order to improve the mobility – it is to mentioned a proceeding – that even it hasn't became yet a procedure – it is of great utility, especially for the cities not having yet a monitoring system of traffic flows which could characterize the mobility (which is currently used in New York).

Key assumptions of the proceeding are described below:

- there is a reliable database which contains complete informations about vehicles flows, passengers, pedestrians, cyclists, taxis, freight vehicles etc. from all major sections of major network of streets;
- this database is consistent – offers a accurate image, a global image of mobility;
- any real change – by a size **within certain limits** (previously procentual established) measured for real, of mentioned flows, like a result of some actions in mobility local plan development is not followed by a reaction in another flows. In other words: if the number of bicycle in the total amount of bicycle (number recorded in an intersection) increases, it is considered that the increase is the result of some people's rally to this kind of mobility; initially these citizens weren't included in database;
- if the real change is of a size which overcomes the percent previously established, then, the action is considered accompanied by a reaction (the increase recorded for a certain flow is due to another flow decrease).

The basic idea of the proceeding is that periodic and random selection of certain city's points where complete and specific surveys to be performed, by direct counting. Comparison with standard values of database allows to establish the likely trend for type or types of analyzed flows; extrapolating data for entire city's area it can get global information on mobility development.

The proposal that INCERTRANS makes to SC OTL SA is: 3-4 people/1 day/month placed in 2-3 relevant points of the city for Oradea traffic. These people will survey:

- vehicles flows in a certain intersection,
- or pedestrians who cross a certain street,
- or freight vehicles passing through a certain section of the street,
- or cyclists passing through a square,
- or the number of a park visitors etc.

After 4-5 months of survey – immediately started = July 2013[20] - could create a flows distribution, which verified in comparison with existing major study ("Study on Oradea public transport use and public satisfaction on Oradea Transport Local SA services" made in 2010 by Partium University or INCERTRANS surveys for this study) will provide a clear picture of city's mobility, as SUMP will be implemented.

[20] This part of the study was made in June 2013.

16. Qualitative and quantitative development of the 4 compulsory scenarios ("do nothing, "as before", "of minimalist alternative policy", "of engaging alternative policy")

This project component is a prior action to mobility development vision for Oradea (in fact the first stage of the project is to develop a **vision** of mobility); it aims to make collected information synthesis in documents preparation stage – part of work – solution of the contract signed between SC OTL SA and INCERTRANS; it aims to describe perspective dynamic context, so that it can provide the possibility of **CHOOSING** which leads to emerging development in analyzed area, between these two situations:

- one situation takes into account the starting point: the data availability.
- other situation takes into account the path to destination[21]: attitude to future.

The strategic context should allow to beneficiary – SC OTL SA, SUMP stakeholders and not least the public themselves to assess the plans and intensity of (tactical) measures which to ensure city's mobility and a civilized environment for citizens (in the sense o sustainable development). In this study the overall objective of SC OTL SA was interpreted by INCERTRANS as: **ensuring of the conditions for a safe, flexible, sustainable and efficient urban transport system** which let the city's residents to access to specific utility standard which characterizes at the moment only western European cities. Either, the starting point for this action is UNRESTRICTED CONTACT ASSURING INSIDE THE CITY AND IN RELATION WITH OUTSIDE. For proposals's clearing it will be used two INSTRUMENTS: **scenarios** (for contractor's position clearing) and **alternatives** (for purcharser's position clearing) according to below structure:

Tab. I.39 – Points of view which stake out the scenarios development

Time	Behaviour (development characteristic)	Scope	Social and economic specificity of measures*
2016 (short) 2021 (medium) 2026 (long)	No actions = zero development **("do nothing")** Independent actions = inconsistent development **("as before")** Intensive/extensive actions = coordinated development **("minimalist policy")** Coordinated actions = sustainable development **("engaging policy")**	Mobility by public transport system stabilizing. Mobility by public transport system balancing.	Pessimistic **(decline)** Realistic **(neutral)** Optimistic **(growth)**

***it is to note that pessimistic, realistic, optimistic attitudes refers to impact of measures, which, by various reasons leads or not leads to desired result.**

[21] In principle the destination is known: let be better then now, regarding mobility.

IN ADDITION THE FOUR SCENARIOS CHOSEN TO BE DETAILED WILL BE DISTINGUISHED BY DISTRIBUTION OF TASKS FOR ONE OR MORE PUBLIC TRANSPORT OPERATORS (scenarios can be developed combining the elements presented in the next selection: there are possible 3*4*2*3*2=144 scenarios):

1st Scenario – one single public transport operator is involved
- time: SHORT (2016)
- socio-economic specificity: in a PESSIMISTIC context
- development characteristic: NO ACTIONS
- scope: mobility by STABILIZING of public transport system and the city's traffic.

2nd Scenario – one single public transport operator is involved
- time: MEDIUM (2021)
- socio-economic specificity: in a OPTIMISTIC context
- development characteristic: INDEPENDENT ACTIONS
- scope: mobility by STABILIZING of public transport system and city's traffic.

3rd Scenario – several public transport operator is involved
- time: LONG (2026)
- socio-economic specificity: in a REALISTIC context
- development characteristic: INTENSIVE/EXTENSIVE ACTIONS
- scope: mobility by BALANCING private public urban transport system and freight transport within the city.

4th Scenario – one single public transport operator is involved
- time: MEDIUM (2021)
- socio-economic specificity: in a REALISTIC context
- development characteristic: COORDINATED ACTIONS
- scope: mobility by BALANCING private public urban transport system and city's traffic while land-use policies converge with sustainable development objectives.

Introducing of the actions from the field in which inputs can occur – variables of first impact being **population, economy, public transport system revenues, city's area, type and combination of actions and the pollution –** allow in a rudimentary modeling, to analyze comparatively the effect on a probable reality, fig. I.47-I.50.

Anticipating the end of analysis - which ruled in favor of a suite: 2nd scenario followed by 4th scenario – below the graphs are inserted the descriptives considerations which stake out the scenarios (the description of the two scenarios is in tab. I.41 and I.43):

The two graphs below depict the CHOSEN ALTERNATIVES which are provided by the entity which is legitimate to decide (Oradea Municipality – in opinion of INCERTRANS or SC OTL SA). These are:

- no intervention – **is excluded,** the present project being o proof of legitimate concerns of public transport operator;

- minimal intervention – the present project is a part of an attempt to identify new opportunities and resources for improving urban transport activity, in another words, minimal intervention (of SC OTL SA) **is mandatory**;
- intervention on the base of economic sustainability – in which case it is aimed and it is added to list of actions the projects that could provide rentability for public transport services, including subsidy (when this effort suits on local conditions and is justified by social importance of public transport service for the community) – it might be a choice **too ambitious at first attempt**;
- intervention on the base of environmental, social, economic sustainability – it might be a choice **legitimate to be applied in the next stage** in which SC OTL SA measures reached their limits.

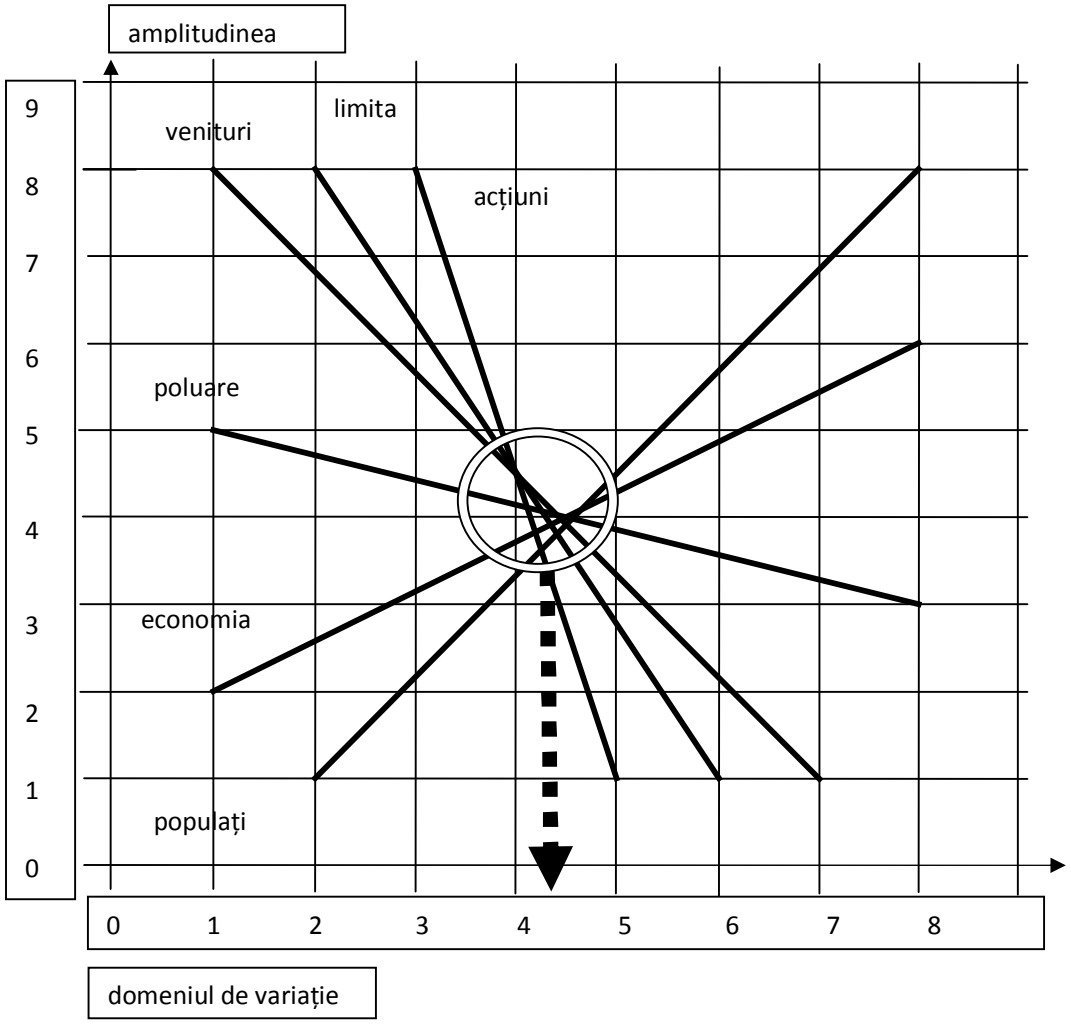

Fig. I.53 – 2nd scenario: multidimensional analysis of the results – x-axis, in relation with amplitude of variations – y-axis (the effect is placing in variation field in the formal defined area of approx. 4.5)

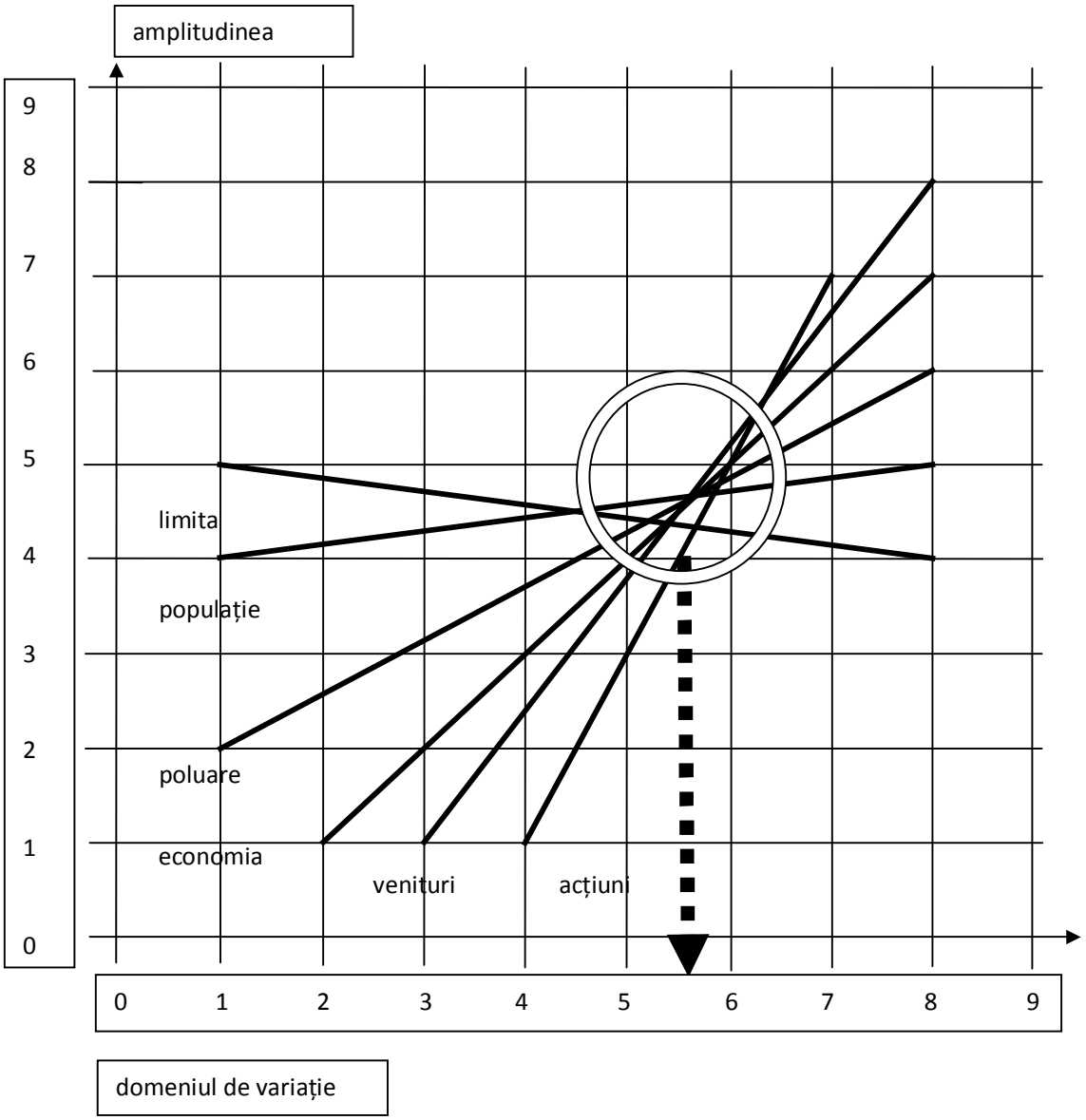

Fig. I.55 – 4th scenario: multidimensional analysis of the results – x-axis, in relation with amplitude of variations – y-axis (the effect is placing in variation field in the formal defined area of approx. 5.5)

Tab. I.41 – 2nd SCENARIO

Population is the same	Economy is the same			SC OTL SA's revenues increase		City's area is the same	There are applied independent actions	The pollution level decreases
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
The number of cars decreases by „Rabla" type programs, number which overcomes the number of registrations (there is not yet a „atitude" of sustainability).	The number of trips by public transport increases in disadvantage of transport by car.	The speed of traffic increases.	There are no modifications in taxes regulations – in decrease – of public transport vehicles.	New vehicles are introduced in public transport fleet	There is no discussion about „black spots" on the urban routes	The resources are taken only by municipality: so, segregation phenomenon of Oradea Metropolitan Area is being amplified	The neighborhoods have an acceptable level of utilities (lighting, drainage etc.)	Yet there are no actions to have as final target – standards for pullution: the city is aired depending cars number decrease.
There are introduced lanes dedicated to public transport vehicles: the attractiveness of public transport increases.	Customers' structure in public transport diversifies.	The same flow of vehicles (or even lower) having a higher speed determines a light decrease of congestion.	Streets network handles cars flows (although there are no measures for rehabilitation of infrastructure).	Additional routes are introduced in areas with low public transport level.	The quality of public transport is enhances.	Residential areas are increasingly well served by public transport.	Start-Finish trajectories optimize themselves, demographical density increases, new oppotunities for public transport arise	Public transport services for neighborhoods with low density (decreasing of the importance of private transport)

Tab. I.41 – continuation

1	2	3	4	5	6	7	8	9
Parkings will reduce the dinamic dimension of streets width: traffic capacity is reduced; in combination with a higher speed in traffic, randomly parking imply a general mobility at the same level with start point.	**The mobility by public transport increases.**	Transport system is stabilized to a upper level than that recorded in 2011.	**Mobility by private cars decreases**	Public transport new vehicles develop increasingly higher speeds: origin-destination travel time decreases.	Mixed vehicles, old and new, also less cars driving to keep the phonic pollution in the current limits.	SC OTL SA can not have – in principle – the competence and the force necessary for develop and implement light rail system and trolleybus system.	Deliquency has conditions not to exacerbates.	Low reduction of car dependency
Appear signs of a „critical mass" of pedestrians which can support the measures of car using, in the field of preventive or economical driving.	There are real opportunities for small street trade to be enhanced. This fact can be an obstacle for pedestrian (phenomenon that will diminish the pedestrian's mobility).	Population's health will not worsen due to public transport.	Less congested traffic determines less car accidents.	The residents have more free time: leisure, social contact, cultural contact, all these are enhanced.	The lack of traffic management leads to lack of real time information about SC OTL SA services: wrong and late restarting interventions.	It is probable to be developed a more advanced and generalized ticketing system which will improve the passengers conditions, but intermodality will continue to be affected.	Lower qualitative utilities of the neighborhoods will enable the activities over a long period of the day: time of the last stop of public transport vehicles goes to late hours	There is no preservation of cultural monuments (touristic interest is reduced, financial flows opportunities for city's budget are lost, there is no possibility to rise subsidy of public transport).

Tab. I.41 – continuation

1	2	3	4	5	6	7	8	9
Car-sharing companies appear but still no trend to accept this kind of mobility.	Population increases in number, but economy is still the same: there are no conditions for measure the mobility need reduction.	Only boarding-unboarding stations "in open air"	The resources of healthcare system are support also by car accidents diminution	Socialization phenomena appear. These increase the public satisfaction (with consequences on general health), respectively knowledge is improved (which determine more qualified workforce = higher taxes)	The lack of „intelligent" traffic light system determines less regularity of public transport vehicles in total traffic flows.	It is possible that SC OTL SA to implement a passengers information system: unnecessary trips will be eliminated, with advantages for the capacity of the public fleet and better quality in urban transport.	Without actions to reduce the disparities between urban and rural, it can not be taken in periurban transport profitable routes as Felix and 1 Mai.	The fight against pollution – without coordinated actions – has no finality: for examples, without public campaign to support use of bicycles, sedentariness increases, fact which contributes to congestion of public transport vehicles.
Parkings are not necessary.				No additional services for passengers	There are no major express lines – which could develop upper speeds in comparison with lower speeds secundary lines.	There are no interchange points (railway station – urban transport or airport – urban transport).	The city does not benefit by its position as intermodal regional center: as a consequence there is a reduction of the revenues of tertiary economic sectors.	

Tab. I.41 - end

1	2	3	4	5	6	7	8	9
				Pricing policy in public transport aligns to economic tendencies.	Justification of deserved subsidy is made on base of citizens' mobility.		Institutions' policies not include the issue of road specialization: so that the transit through the city grows forced.	Without actions, freight vehicles will continue to congest the routes, increasing congestion and pollution.
				Retirees' facilities are reduced to one-two periods off peak hours.			**Without measures, „day by day" utilities localization will be made randomly, increasing the disparities between new neighborhoods and old neighborhoods and generating unnecessary in another conditions: artificial mobility phenomenon appears.**	
				There are no measures to promote loyal passengers.			For low used routes there are taken measures to make them profitable (the capacity of the vehicles corresponding to demands of transport, transport services is concentraded for the time in which it is justified by economic necessities etc.). There are not foreseen measures to reduce the need of mobility.	

Tab. I.43 - 4th SCENARIO

The population is the same	Economy grows			SC OTL SA revenues grow		City's area is the same	Coordinated actions are applied	Pollution is reduced at a low level
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
The number of cars is the same, but city's motorization is focused on low pollution vehicles (it appears an „attitude" of sustainability)	The number of trips by public transport increases in disadvantage of private transport.	The speed of traffic increases.	There are made modifications in taxes regulations – in decrease – of public transport vehicles.	The fleet is renewed with latest vehicles (regarding pollution, comfort, reliability).	Measures for „black spots" elimination.	The resources are allocated by distribution and cooperation and for the areas linked to city: it gets to pre-integrating stage for Oradea Metropolitan Area.	Neighborhoods are brought to an acceptable level of the utilities (lighting, drainage etc.).	Actions occur that have as a result pollution standards: city's environment is improved naturally and consciously.
There are introduced lanes dedicated to public transport vehicles: the attractiveness of public transport increases.	Customers' structure in public transport diversifies.	The same flow of vehicles (or even lower) having a higher speed determines a light decrease of congestion.	The network of streets is rebuilt (widenings, correction of curves, uneven passages etc.).	New additional lines are introduced in all city's areas.	Public transport quality is enhanced.	Residential areas are well served by public transport.	Start-finish trajectories are improved, population's density increases, new opportunities for public transport occur.	Public transport services are developed in neighborhoods with low density (diminishing the private transport importance).

Tab. I.43 - continuation

1	2	3	4	5	6	7	8	9
Parkings on active networks of streets will no longer be allowed; in combination with higher traffic speed, rational paking involved a high general mobility.	**The mobility by public grows**	Transport system is balanced in a demand-responsive area placed to a upper level than the 2011 situation.	**Also mobility by private car grows.**	New public transport vehicles develop speeds comparable with the speeds of cars; the time for origin-destination trips decreases.	New public transport vehicles and competitive cars reduce significantly phonic pollution.	SC OTL SA has the competence and the force to implement light rail on 2-3 routes; first trolleybus line is inaugurated.	Delinquency level has premises not to exacerbate.	Renouncement to the cars preffered for off jobs relations.
„Critical mass" of citizens involved radical measures: No Car days, penalties for reckless drivers up to forbid the using of car for 1-2 months etc.	There are removed all obstacles that could interfere with pedestrians; the measures to facilitate disabled' mobility are mandatory. (ie.: low platform vehicles).	General health will be improved due to safety level imposed by severe standards.	Less congested traffic leads to a decrease of car accidents number.	Available time of the citizens increases: leisure, social and cultural contact are enhanced (generating at their turn trips).	Traffic management is implemented. It improves traffic regularity and reduce traffic jams.	Ticketing system both for urban and periurban transport.	Upper qualitative utilities of the neighborhoods will enable the activities over a long period of the day: time of the last stop of public transport vehicles goes to late hours.	Cultural monuments reservation is being considered now (touristic interest increases, financial flows for the city are obtained, OTL's subsidy could increase).

Tab. I.43 - continuation

1	2	3	4	5	6	7	8	9
Car-sharing companies appear but still no trend to accept this kind of mobility.	Population is the same but economy grows: there are conditions for measures to decrease mobility need (work from home, administrative businesses solving, values transfer etc.).	Modern designed boarding-unboarding stations.	Health system resources are supported also by decrease of accidents number.	Socialization phenomena occur. These rise the public satisfaction (with consequences on health) respectively the level of knowledge (which leads to a better forcework qualification=upper taxes).	„Intelligent" light system is implemented, first on light rail lines and after in the entire city.	Is is well designed and implemented a passenger informational system.	Routes to Felix and 1 Mai and to border are taken in periurban transport.	The fight against pollution achieves its goals: new cycling tracks, a protected area in the city's center, rent byke points; „park and ride" and „park and bike" systems implementing.
New parkings are not necessary.				With additional services (multiannual card for transport, special transport lines for students etc.).	Major express lines are implemented – with higher speeds than speeds of secondary lines.	Interchange points are developed (station – urban transport or airport – urban transport).	The city benefits by its position as intermodal regional center: so that a increase of all economic sectors revenues occurs.	

Tab. I.43 - end

1	2	3	4	5	6	7	8	9
				Price of the urban transport ticket is reduced.	The justify of the subsody is based on travels recorded by ticketing devices with electronic transmission to center control.		The institutions regulates the issue of specialisation in roads: the tranSit through city is eliminated.	The freight vehicles make the supplies at night, reducing much more congestion and pollution.
				Facilities for the retirees are reduced to one-two periods of time off the peak hours.			**„Day by day" utilities localization are implemented: the disparities between new neighborhoods and old neighborhoods are equalized (no more unnecessary displacements and artificial mobility phenomenon increases).**	
				Loyal passengers promoting measures are developed.			For low used routes profitability measures are developed (the capacity of the vehicles corresponding to demands of transport, transport services is concentraded for the time in which it is justified by economic necessities etc.). The measures to reduce the need of mobility start to work.	

17. The vision of the Oradea's mobility

According to DEX (Explanatory Dictionary of the Romanian Language), vision means:

- virtual representation
- of a representative model for the analyzed ensemble
- perception is made from **top to bottom** corresponding to tangible goals.

In principle, a vision provides the basis for all intermediate stages between present and the time when the vision is translated to facts, enabling:

- definition of partial objectives and of the potential means, respectively,
- feasible measures development and finally
- turn into actions,

which have to overlap as exactly as it can the future situation over estimated structure.

In this case VISION consists in a synthesis applied to all information put in this summary. The ideas of vision can be seen in the below figure.

The vision embodied in this project provide a qualitative description of a desirable future urban environment and of the services related to it. The vision provides a proper guidance of development by appropriate, rational and efficient planning measures. Our basic assumption for vision „infrastructure" is that of placing the mobility „in background", in the wider context of urban and social development. Also, the vision was prepared considering the most perspectives of urban policy identified in Oradea and not the least of the city's general policy: the vision was considered as a **guidance element** only in case in which it will be widely accepted among stakeholders and citizens: therefore it is essential to create a common ownership of the vision. Below figure shows the **development by cooperation** of Oradea's mobility common vision.

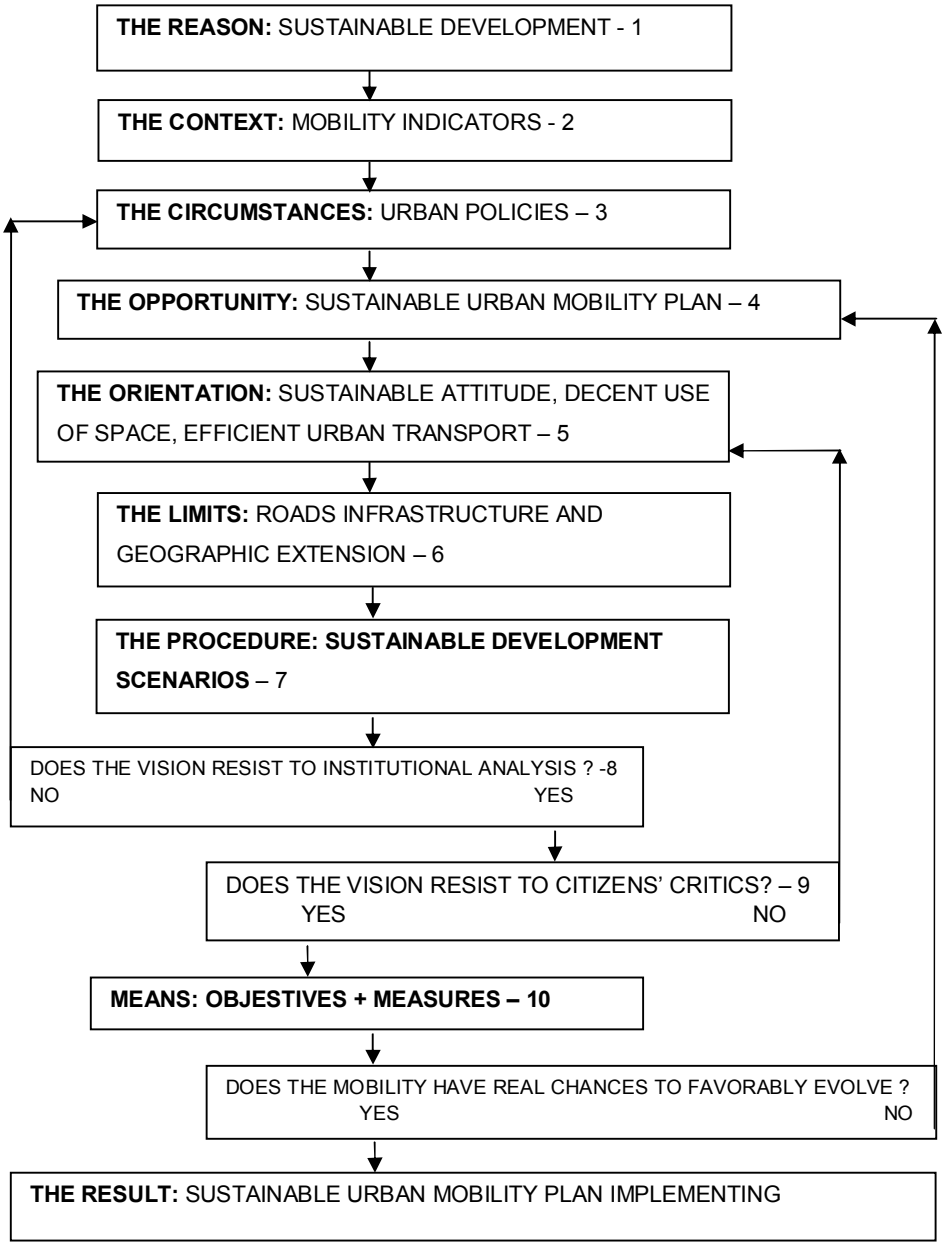

Fig. II.1 – Vision establishing blocks

(the number 1 ... 10 explaining most of the blocks)

1 the ability to meet present generation needs without compromising the ability of next generations to meet their own needs.
2 (only mathematically) the mobility is the average number of trips made by a city dweller in a year.

3 one of the succesful urban policies is **extensive urban planning:** a set of strategies and urban policy instruments that actively try to redirect urban and periurban development towards the goals that eliminate negative effects of unplanned urban expansion and uncontrolled peri-urban development.

4 SUMP - represents a set of measures to meet current and future mobility needs of people for a better quality life in cities and their surrounding areas.

5 transport in cities is a subsidiary of economic and demographic development; which links these two aspects is **the use of urban space;** SUMP is from the beginning unrealistic unless it is accompanied by a continous intervention program consisting in **awareness raising and behavioral changes**

6 neither by organizational harsh measures congestion in urban traffic can be reduced: the solution to this problem is possible by actions up to the limits placed „outside the city" in order to reduce the lack of space effects

7 a scenario represents a complex prognosis based on mathematical models, logic and experience concerning the future of an activity

8/9 the vision should ensure the accomplishment of present and future mobility needs for better quality life in cities and their surrounding areas

10 THE OBJECTIVES AND THE MEASURES WILL FOCUS ON:

- ✓ the proportion to which efforts will focus on areas of application (city's center, close suburbs, distant suburbs, metropolitan area)
- ✓ intensity of dosage efforts on four key elements for every transport strategy (reducing the need for transport, reducing car use, public transport improvement, road network improvement)

In below figure there are developed the information revealed by Fig. II.1 of the work, indicating the perspective – of a SUMP development – for its completion: the vision will enable the elaboration of some **objectives** (with appropriate indicators) which will create conditions for **measures** specifying that can turn intentions into reality.

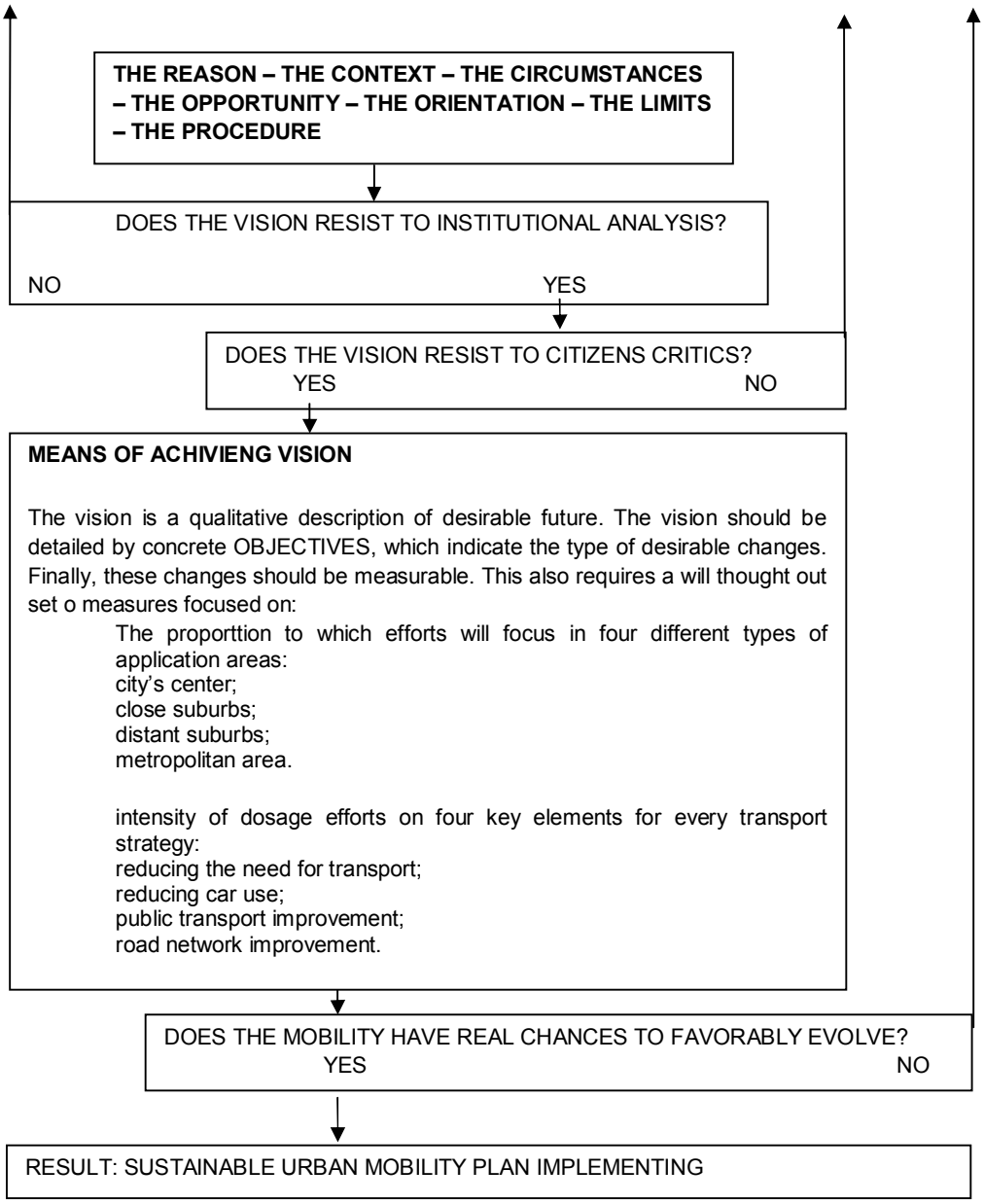

Fig. II.20 – Details of vision development

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Further reasoning on above figures it should be noted that THE TRANSITION FROM „TRANSPORT" TO „SUSTAINABLE TRANSPORT" IS AN ACTION NOT EASY AT ALL, FROM THE FORMAL POINT OF VIEW, BUT VERY DIFFICULT FROM THE PROCEDURALLY POINT OF VIEW. The following considerations will aim to stake out the ways to obtain the characteristics that can motivate and support the transformation.

First, the transport is a service. Theoretically, connected to socio-economic environment, the transport is an attribute of the community, a public service in which social considerations should prevail, on the one hand and on the other hand, a economic business, in which, private initiative, competition and costs are intended to be the drivers. Actually, due to special attributes of transport, it has made a mix of the two options (without decide whether to approach transport as a auxiliary of other economic sectors or as a stand-alone sector). Consequently, transport is approached according to geographical considerations, to its own characteristics, to present political and social conceptions, different from one city to other and focusing on either advantageousness or preferential service to some categories of citizens.

Second, to understand the transport phenomenon it is necessary to explain the relations between transport system and the systems of activities, and this fact is achieved only if to transport is being attached a function that will condition it. This function can be defined:

- in relation to production and consumption – which allows the link btween the transport development and economic development;
- in relation to demography – which highlights the extent of transport modes;
- in relation to the served area – one that emphasizes the role of transport in the structure of space;
- in relation to socio-economic activity (general, including education, recreation etc.) – which first highlights the link between transport and other services but also the relation to other industrial activities.

Thirdly, the four basic obligations of public transport (the duty of transport – opportunity, continuity; the obligation of transport operation service – rhythmicity, speeds; the obligation of publicity – price, timetables; the obligation of equal treatment – on streets or of points of interest) highlights the following dilemma: the potential marginalized users or non-users disturb by the transport phenomenon, have or don't have the right to a share **distributed in some way** of commnunity's expenditure, to benefit by the price and transport conditions which could put them in equal treatment as potential users advantaged by localized system in a inhomogeneity inherent to any conurbation ? There is no formal answer to this questions, neither at local level nor at central level.

Once appropriated the structure of conditioning function, it is possible to aware the relation between satisfaction of the needs of transport and technological possibilities of the transport

process, namely between demand and supply. The assessment of decision, regarding the modification of phenomena generated by transport or of activities ensemble, should be made depending the consequences on interests of different groups:

- users – characterized by number, geographic position, socio-economic category, the reason and the nature of trip;
- carriers/operators – differentiated in relation to the mode of transport and type of activity;
- riverains – affected by the physical presence of transport;
- spatial development agents – differentiated by activities (politic, economic etc.) and responsible for the size and localization of activities;
- communities – sensitive when social options are felt by taxpayers.

Fourth, the anticipation of the consequences of some decisions that change the transport system and/or activities, is necessary in order to assess the vision in the context in which the options on transport system and/or activities have effects in traffic: the traffic prognosis given the existence of complex phenomenon of transport. This is a essential issue of transport analysis. As time passes, it becomes increasingly clear that the system of streets (urban and peri-urban) won't be able to satisfy the levels of forecast traffic and the network extensions will exacerbate the negative consequences on environment (natural and artificial). The solutions to adapt the offer to demand do not seem to be able to ensure results and to promote exclusively the public transport and traffic selective restrictions could – from case to case – to have limited applicability. IT HAS TO BE SEARCHED ALSO SOLUTIONS THAT GO BEYOND TRANSPORT:

- **zero key issue:** SUSTAINABLE URBAN PUBLIC TRANSPORT;
- **first key issue:** SPATIAL PLANNING FOR CORRELATE THE TRIPS TO SEVERAL PURPOSES;
- **second key issue**: URBAN PLANNING SCHEME TO ENCOURAGE SHORT DISTANCES TRIPS (WHICH CAN BE CONVENIENTLY BY WALKING OR BY BIKE);
- **third key issue**: WORK AT HOME USING COMPUTER TEHNOLOGY ETC..

Some solutions, desiged by **engineers in services**, to achieve a sustainable transport system could include:

- To reorient the investments from roads/streets to urban railways (respectively to trams or light rail) pre-urban and regional[22], generally to mass transport.
- Roads maintenance instead of building new roads because the the existing network is generally well served – in condition of develop at least two rings around the „historical centre" and uneven passages in some key points of the city.
- New bicycle tracks in urban areas and not only.
- Full assessment of the environmental impact of any transport infrastructure project.

[22] Transport services to Băile Felix and Băile 1 Mai.

- Programs of sustainable education in transports in order to create new competences in choosing the transport alternatives, favorable to collective use of public transport.
- New transport legislation that promote green modes of transport and to limit emissions and noise within Oradea.

Adopting this agenda, some European cities are being confronted with urban transport challenges, starting from different points of view on specific problems pressing, institutional framework, and the availability of tools and instruments. While some cities seem to have greater success in this field, there can be identified a number of shortcomings that affect the ability of responsible factors involved in solving transport problem – for other cities. These shortcomings refer to:

- the lack of citizens's participation and involvement, but also of civil society (major companies, associations, NGOs) in all stages of planning process – from the analysis of the problems and objectives defining up to measures implementing – therefore a low legitimacy of plans and projects = **fourth key issue;**
- the lack of interdisciplinarity thinking and mutual understanding between involved sectors (transport, land planning, environment, social and economic affairs, healthcare, education, informational technologies) and a real separation between sectoral planning practices and policies, usually rooted in respective professional fields, having "their" educational processes and proper training (civil engineering), spatial planning, environmental sciences etc.) = **the fifth key issue;**
- deficit in coordination and cooperation between neighboring administrations (city and surroundings, conurbations at borders between different regions and countries) and between national hierarchical authorities (local, regional, national) regarding plans and politics of each of them = **the sixth key issue;**
- orientation toward specific projects and measures which become a scope by itself (or a tool of local policies), which leads to lose sight of issues – of mobility – which have actually be solved = **the seventh key issue;**
- limited consideration of possible policies and measures for all relevant sectors which influence effectively and efficiently mobility and transport development= **the eight key issue;**
- the lack of tools and practices for verify the progress that has been made and if there are necessary changes to be made on plans and projects that are been underway = **the ninth key issue.**

INSTEAD CONCLUSIONS. How does the VISION respond to strategic requirements already formulated by influential people of Oradea administration (first of all the Urbanistic General Plan)? The approached themes within the vision are also the themes of interest for Oradea's citizens: public qualitative services, network of public functional utilities, seif and affordable, unpolluted city, cultural and recreational activities. Starting from these requirements SUMP vision includes two of three directions of intervention of Urbanistic General Plan:

- First direction is the one of reducing disparities, **Oradea, city of cohesions,** within are formulated politics for spatial differences of urban equipping and for the disparities among groups of residents, from the point of view of equal opportunities but also integration of disadvantaged groups in the social and economic city's life.
- Third direction, **Oradea a seif and functional city,** consists of integrated network of transport urban infrastructure and public utilities, in terms of energy efficiency by which Oradea becomes an attractive urban territory for economic activities, habitation, recreation or visiting[23].

The extent in which this vision is in accordance with general line of Oradea Urbanistic General Plan can be determined relatively easily, by reference to the four **URBAN DEVELOPMENT POLICIES** already adopted by the municipality:

Tab. II.11 – Overlapping SUMP guidelines on strategic objectives of Urbanistic General Plan

UGP	**SUMP**
1st Strategic Objective – Oradea, accessible city	2nd Orientation = use of urban space 3rd Orientation = urban public transport
2nd Strategic Objective – Oradea, competitive city	**(partial)** 1st Orientation = awareness and change of behavior
3rd Strategic Objective - Oradea, efficient and functional city	2nd Orientation = use of urban space 3rd Orientation = urban public transport
4th Strategic Objective - Oradea, well managed city	1st Orientation = awareness and change of behavior Orientarea 2 = use of urban space

In the same sens, it can be seen that orientation of vision for SUMP are consistent with the priorities of European Territorial Agenda, Europa 2020, which requires the approach of a customized – integrated – concept consisting of[24]:

(1). Polycentric and balanced territorial development;
(2). Integrated development in urban areas and in their areas of influence;
(3). Territorial cooperation in urban – peri-urban border areas;
(4). Ensuring global competitiveness based on strong local economies;
(5). Improving territorial connectivity for individuals, communities and businesses;
(6). Management and connection of the areas with ecological, cultural and landscape values.

[23] The second direction of development (economic), **Oradea, competitive city,** overcome the SUMP framework (public policies target the capitalization of investments by creating tehnological parks and „green" economy development, with production and services in research, agriculture, industry and cultural tourism).
[24] Measures proposal will be made strictly in accordance with Europa 2020 recommendations.

18. Objectives

Vision is a **qualitative description** of a desired future; this approach is not sufficient for SUMP consistency - which can not be a qualitative construction; SUMP will be implemented:

- in the context of relevant estimations,
- with differentiated impact values for specific areas of the city,
- perform in specified domains,
- with appropriate intensities, adapted to targets identified as lucrative,
- on the basis of the identified resources,
- depending on the ways that can transform the mobility situation in one in line with sustainable development,
- etc..

but the explanations should be quantitative – even if there is a certain degree of uncertainty.

The vision must be seen as a "LEGISLATIVE" of sustainable mobility for Oradea.

Natural continuation of the vision must be „IMPLEMENTING OF THE REGULATIONS" within the analyzed territory, meaning that framework which **by specifying the priorities to highlight the results** that characterized the turning of vision into reality: general objectives, that indicate the type of desired changes – and finally, of achieved changes – parameters must be measured, in this way making possible the possibility to adjust/direct the process (and this fact requires the selection of a thoughtful set of indicators). Defining objectives means mention of those social, economic and environmental areas necessary for the mobility development, specifying precisely as possible what must be „EXCLUDED", „REDUCED", „MAINTAIN", „INCREASED", „INTRODUCED". The objectives are high level goals of SUMP (for example, the reducing of congestion caused by cars), while measures (for example implementing a new light rail route) are the means to achieved them[25]; in addition: measures must be temporal established, not objectives.

Reanalysing the orientation of the vision (AWARENESS AND BEHAVIORAL CHANGE, URBAN SPACE USE, PUBLIC URBAN TRANSPORT) INCERTRANS research team concluded that there are 12 fields to be considered as OBJECTIVES:

(regarding awareness and behavioral change)

I. to reduce congestion (including the reducing of general traffic)

[25] It is to note that this fact contrast with an approach of „planning" type which focuses on providing systems and infrastructure, without reference to higher-level objectives. .

II. to eliminate freight traffic at peak hours simultaneously with renewing of general fleet registered at municipal institutions;
III. to reduce the need of travel;
IV. to develop sustainable modes of transport (les polluting): walking and cycling;
V. to reduce carbon emissions (including traffic management)

(regarding use of urban space)

VI. to discipline the planning of built spaces (and of the utilities made by authorities)
VII. to innovate parking management (such „Park and Ride" system)
VIII. to improve road safety
IX. to improve the city's roads infrastructure

(regarding public transport)

X. to develop local public transport system:
- network
- means
- timetable
- concentrated support (depot)
- widespread support (boarding-unboarding stations)

XI. to ensure operational expansion of local transport market (the plan for the commuters)
XII. to ensure the conditions for a higher intermodality of transport services within the city

Although the list of objectives is extensive and seems to encompass all the elements, the truth is not so:

- it could be easily found fields which to become objectives (for example: to support economic growth, the implementing of a traffic system information, tax systems that provide benefits to loyal users, systems which advantage „carpooling" users, rearrangements of the sidewalks to ensure free mobility for pedestrian, restructuring the assembly of pedestrian crossings, solving the issues of disabled, pograms of architectural rehabilitation, conditions like: a car can be purchased only if the owner has a parking place at residence etc.).
- available physical time **for the first variant of sustainable urban mobility plan** was and is insufficient; in the below figure it is depicted the sequence in SUMP development according to guidelines.
- financial resources for support a wide range of measures can never be considered priori sufficient.

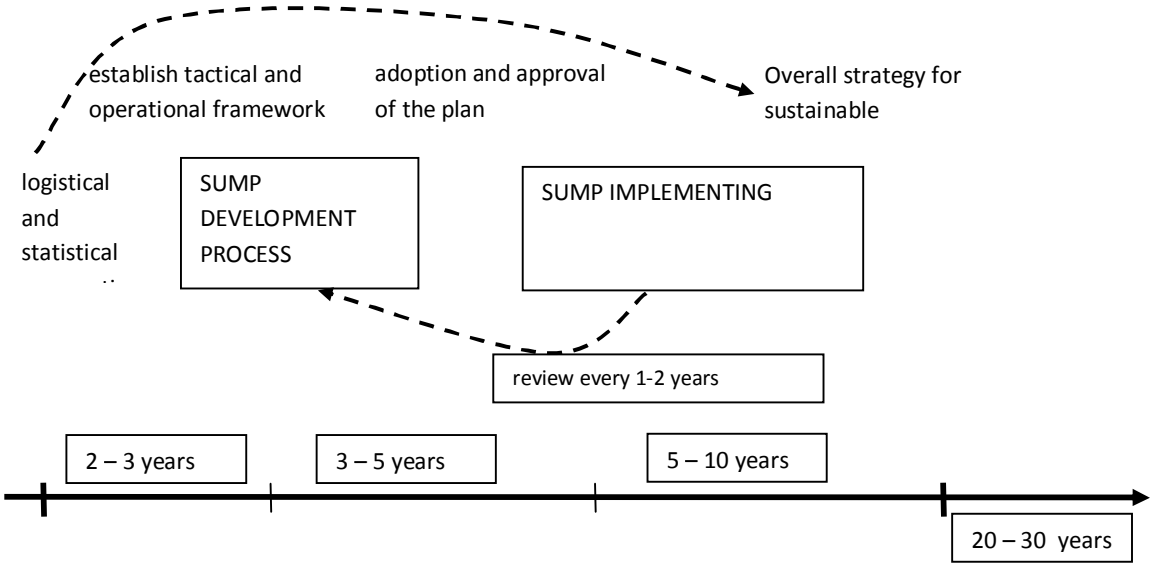


Fig. II.21 – Overview on full SUMP process

19. SMART targets (specific, measurable, applicable, realistic, time-bound)

The objectives are concrete forms of commitment in a SUMP, but **without specify** the desired level of change within a given timeframe. Targets are needed to assess whether a measure – WHICH WILL BE ADOPTED[26] – really achieves the desired outcomes. Detailing:

- Specific = which is customizable for Oradea and consistent with infrastructural characteristics and with institutional organization and mostly with population's feed-back to a certain change in life style. Targets must be accurately described using qualitative and/or qualitative terms, which are understood by all stakeholders.
- Measurable = to which can be determined or assess the value – of whole or one relevant indicators, in relation to the pursued interest. Generally, all imaginable rational parameters related to mobility phenomenon can be measured; however, in practice:
  - ✓ some parameters are not included in usual list of official statistics; for example, tons*km done within the city.
  - ✓ other parameters do not have unit of measure; for example the level of smell for emissions of internal combustion engine is not measurable.

  (it is to underline that **resources are, also, able to measure** the presumed qualitative/quantitative changes that occur).
- Applicable = that can be implemented (with real opportunities to be achieved); for something to be applicable in the space of rationality it has:

[26] The sequence is: objectives – overcome stage, targets – stage in progress, measures – forward stage.

- ✓ to be necessary
- ✓ to exist **the procedure, means, framework and opportunity** (all these can be achieved after periods of long and intense efforts): implementation involves technical, operational and financial abilities, especially AGREEMENTS BETWEEN STAKEHOLDERS, RESPECTIVELY COMMITMENTS AND RESPONSABILITIES.

- Realistic = that is based on complete reflection of reality by objective essential information.
- Time-bound = that indicates time under two aspects: time of initiation or time of action progress (which can be unlimited); in other words, the key dates for achieve objectives are exactly specified.

The targets are essential for organize the SUMP monitoring and assessment and can not be separated from the **selection of indicators** by which monitoring and assessment will be done. Moreover, targets and associated indicators establishing assures transparency and clarity on what it is intended to achieved, in terms of city's mobility change.

Next theoretical example taken from SUMP guidelines will explain the concept of "target":
theme: traffic congestion.
objective: reducing the traffic flow in a section of major city's route with highest level of traffic flow at peak hours.
target: growth rate of traffic flow passing through the section between 6:00 am and 9:00 am does not have to exceed a limit value of 5% (at the end of every 2 years period from implementing the measure to reduce congestion)[27].
THE ABOVE IDEA UNDERLINES THE FACT THAT IT IS UNREALISTIC TO THINK THAT THE APPLICATION OF SOME DEMOCRATIC MEASURES – OF ANY NATURE – WOULD RESULT IN LOWER VEHICLE FLOW: THE SLOWDOWN IN THE GROWTH RATE OF VEHICLE FLOW IS A SUFFICIENT RESULT SO AS THE APPLICABILITY OF MEASURES TO BE A SUCCESS.

The main task of this activity is to "force" the formal adoption of the objectives, as part of action plan and SUMP budget plan.

Concerning the number of targets, "orientation plan" for local transport in United Kingdom (second edition) suggests that:

- to include a large number of targets for final or intermediary objectives is likely to be counter-productive;
- optimal numer of indicators in an efficient set is seems to be between twenty and fourty, mainly determined by the size and plan characteristics (this is a general indication in UK).

[27] It is to note that "measure" was not explicitly mentioned because it is not necessary for the notions as theme, objective, target. But this aspect highlights that *theme, objective, target, measure* sequence will not run one single time because it is possible, but less probable, **from the start,** that targets would have to be taken into account all parameters, all limitations, all successful possibilities etc, which could characterize a given situation.

But many experts involved in SUMP projects – on the continent – consider that working with fewer targets could prove more effective in certain contexts, particularly for "newcomer" cities who do not have extensive resources or experience determine development of SUMP – **attitude which will be adopted by INCERTRANS in resolving ongoing contract.**

Regarding the change rate of parameter values which indicates the closeness to the TARGET or contrary, the remoteness to it, INCERTRANS considers that, although it is not a general rule on development model, however there are circumstances which lead to "logistic function of development".

Optimal structure of the **mix of measures** mobility benefit could be determined if there is a criterion that allows analyzing and comparison of unused opportunities when demand decreases, respectively losses and delays when demand increases. On the one hand, the structure of the **mix of measures** depends on public transport service opportunities; on the other hand the efficiency achieved on the base of a certain level of demand is different from the efficiency achieved in the case of other level od demand (most likely, use of the possible values up to limit of opportunities, involves high levels of efficiency, **but not necessarily the highest).** Practically, the clarification of some aspects related to demand is linked by the explanation of EXPECTED LEVEL OF THE RESPONSE TO INTERVENTION[28].

The optimal level of intervention can be defined as the effort that a technical-economic and administrative system can achieve, in the conditions of resources efficient usage on long terms, taking into account a certain type of traffic structure and certain **qualitative** indicators of activity – primarily the transport and **which has an answer depending on level of introduced resources.**

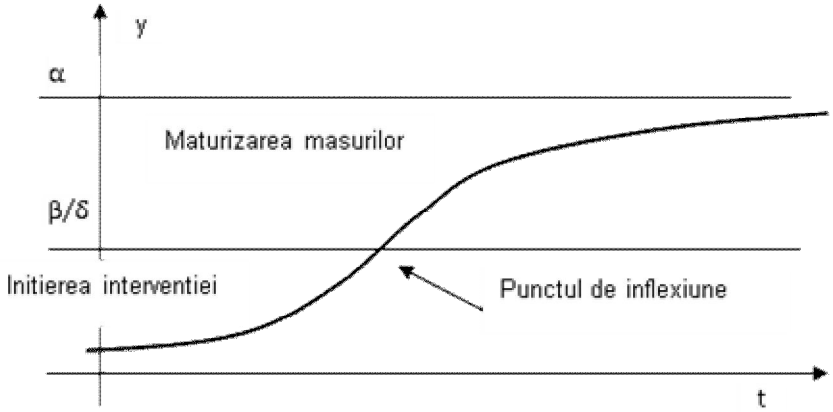
In a descriptive way the situation is: at the beginning of the intervention, the amount of material resources, human factor quality, level of organization, the level of understanding the community's needs etc. require a certain effort, most likely parameter/parameters value/values being to a lower level and the any king costs are larger. In time, parallel with intervention maturation (means, methods, technological capabilities, financial involvement) the mix of measures becomes more substantial and appropriate to reality (as penetrating strength not by volume) and beneficial consequences on transport occur. However there is a time when a certain social-economic stability leads to a balance between demand and offer that causes a slowdown of the mobility improvement or even the stabilization (to a upper level than before the intervention, but stabilization), according to a level of conjuncture – case in which the process of refining of initial

[28] The idea is: today is being introduced a new bus line; no one can pretend that starting tomorrow to appear an additional number of passengers equal with transport capacity ensured by new bus line; obviously there is a time of reaction, after this will be registred increases of passengers' number IF THE LINE WAS INTRODUCED SO AS TO MEET A REAL DEMAND (contrary the new bus line will not bring in system new additional trips – that means there is no reaction to intervention).

SUMP measures should be resumed.

Mathematically, the situation can be represented by the so called **logistic function of development** (the aspect revealed by the logistic function of development is depicted below):

$$y = \frac{\alpha}{1 + e^{\beta - \delta t}}$$



**Maturizarea măsurilor = maturation of measures; Inițierea intervenției = initiation of intervention; Punctul de inflexiune = inflection point.*

Fig. II.56 – Logistic function of development image

In the analysis which followed the elements of logistic function will be determined for each cas by reference to the above technique.

Taking into account:

- the conclusions made when “to follow” synthesis indicators list was done and which could justify the efforts and expenses required for Oradea SUMP implementing,

and taking into account:

- that in many cities, the objectives for urban transport and mobility **reflect thinking more than wish,**
- although it seems “to be ambitious”, it has to honestly assesss what can be achieved with resources and assignable experience[29],
- considering that the chosen targets should reflect the issues that are most important to Oradea and at the same time, should enable to compare progress with other municipalities progress from the country and abroad,
- that SUMP refers not only to transport policies, but in particular to agendas and sectoral measures affecting future mobility in an urban agglomeration, such as land use plans, economic development strategies and concepts of tourism,
- that SUTP will not make a "master plan" for transport: the spirit of SUMP must be included in all plans and programs which official local authorities are required to produce,

[29] In both “power” center: to INCERTRANS and to SC OTL SA or to every other municipal institutions).

- also, SUMP does not end with the adoption of the plan containing innovative transport measures, because largely, SUTP represents the direction in which current planning practices should focus continuously to improve the development of sustainable urban transport,
- **FINALLY:**
  - ✓ **TAKING AS A TERM OF REFERENCE THE TIME OVER 6 YEARS SINCE THE PRESENT MOMENT (2 YEARS OF LOCAL CURRENT LEGISLATURE AND ANOTHER CYCLE OF 4 YEARS),**
  - ✓ **BUT FRAGMETING THAT 6 YEARS INTO PERIODS OF 6 MONTHS – TO ALLOW TIME FOR MEASURES MATURATION AND TO SEE THE SYSTEM REACTION TO THE TAKEN MEASURES**
  - ✓ **INCERTRANS considered that CALCULATED values of increases or decreases should be INDICATED by absolute or percentage change values, valid for each period of 6 months,**

In the following there are the SMART **TARGETS** determined by INCERTRANS.

TOTAL NUMBER OF TRIPS BY PUBLIC TRANSPORT

It can be appreciated that an increase of 75,000 passengers over the start value of 173,000, namely a goal of 248,000 daily trips in the public transport system at the end of the 12 time periods = 6 years, is acceptable.

ACCESSIBILITY IN PUBLIC TRANSPORT VEHICLES

Urbanistic General Plan 2013: "in terms of space, it is to achieved a balance between the number of dwellings and number of existing and created jobs, in order to avoid traffic pollution and also the REDUCING UNDER ½ HOUR OF THE TIME REQUIRED BY TRIP FROM RESIDENCE TO JOB, promoting the use of (1) tram, (2) bicycle, or (3) walking"

BUS/TRAM/TROLLEYBUS ROUTES (NUMBER, LENGTH, DENSITY, COVERAGE)

Synthetically**,** all these parameters can be characterized by **isochronous.** On the one hand, using the mathematical relations in 1st phase, activity 3.1 = Preparing an analysis of problems and opportunities and using AutoCAD software for the calculation of area covered by this isochronous, it was determined that only 3,450 hectares of the 11,550 hectares of the city can consider public transport under cover of SC OTL SA (less than 30% of the city). On the other hand, a target of 100% coverage by 30 minutes isochrones is not possible - taking into account the configuration of the city - but attaining the value placed to 50% of city's area - 5,775 ha under isochronous - although ambitious, it may be feasible - at the end of 6 years of supervision.

ELECTRIC ENERGY CONSUMPTION IN RELATION TO CONSUMPTION OF ENERGY FROM FOSSIL FUELS – IN PUBLIC URBAN TRANSPORT

For 2012 this ratio is obtained by dividing the 8,670,140 kWh to 1,118,884 liters of fuel, resulting 7.7489. For example, after 6 months, electricity consumption increased by 2% simultaneously with decrease of fuel consumption by 1% brings the pointer to the value of 7.9837 with

improvement of more than 3% towards achieving the target (the table is around of 10.3318)[30].

LENGTH OF LANES DEDICATED TO PUBLIC TRANSPORT IN THE TOTAL OF MAIN NETWORK OF STREETS

The proposal for this indicator is linked to the bus fleet holds by SC OTL it at every moment of analysis (from 6 to 6 months). Concretely:

- in 2013 bus fleet is of 48 pieces/vehicles, number of km of public transport lanes is zero and bus network length is 68.25 km;
- this information leads to the value of 68.25 / 48 = 1.42 km per bus;
- on the date on which the fleet will grow through new acquisitions should be self-imposed by municipality's ambition to provide the first dedicated lane in length of 1.42 x number of purchased buses[2] namely **on those streets where the commercial speed of public transport is the lowest;**
- in addition: no matter how many buses are taken out of fleet owned by urban transport operator, the value of cumulative length of dedicated lanes should not decrease.

THE RATION BETWEEN TOTAL POPULATION AND PUBLIC TRANSPORT FLEET

For this indicator the target would be at least at the level of the 6th lowest ratio recorded in the country[31].

COMMERCIAL SPEED ACHIEVED BY PUBLIC TRANSPORT

Commercial speed currently achieved by the local public transport operator varies between 14.18 km / h - the tram line 3 and 27.00 km / h - the bus line 20. In this context, **if it is accepted that the hope of commercial speed improving is based on evolution and not revolution**, it can be established a difference - for speeds to achieved after the application of mobility measures - that lasts from 14.18 - value which is a certainty to 28.05 - maximum statistical value (if it is accepted that values which are subject to a Gaussian distribution laws) which presents only 5 percent above what is possible for the current circumstances, in other words: 21.12 km / h **average speed suitable as a target**.

PUBLIC TRANSPORT PROGRAM END TIME

In European cities end time for public transport program is around 00:00 am. For Oradea end time for public transport program is around 10:00-11:00 pm. Up to 00:00 am there is an average of 2 hours to be covered. Consequently, in each of the 6 years **the target** is to "delay" cease service with 20 minutes FOR MOST VEHICLES, for each year of operation[32].

COST PER KM IN PUBLIC TRANSPORT

Currently the cost per km of travel in Oradea is 6.26 lei / km. This cost is determined by the annual operating costs related to the number of km traveled by public transport during the year. Practically it is proposed as target for the "cost per km" indicator the decrease within six years

[30] This target is not in full compliance with entitling *energy consumption/energy consumption* and there is the possibility to transform liters of fuel in kwh, but the calculations would be artificially complicated.
[31] General situation of Oradea public urban transport system sustainability ranked the city on 7th among the cities of country.
[32] To see also the target regarding to delinquency.

by 0.60 lei / km (the required level is too low to be necessary mathematical growth on control intervals - from 6 to 6 months).

NUMBER OF EMPLOYEES IN THE PUBLIC TRANSPORT COMPANY

The target for the number of employees is: percentage increases to be lower than quantitative increases of operator's own transport system; for example, if there are recorded 10% increases in number of trips, while there was a 8% increase of fleet, then for the number of employees it may be allowed a increase of maximum 8% (note: it is allowed the increase of number of employees only if there are increases for both indicators).

THE LEVEL OF MOTORIZATION IN THE CITY

It can not be accepted any increase of car numbers to 1000 inhabitants. Actions like "Rabla" Program, aggressive taxation of old car, support green cars/hybrids owners by benefits should allow to maintain at a "frozen" level the current level of motorization.

PARKING SPOTS (EXCLUDING RESIDENCIAL PARKINGS)

For "parking spaces" indicators it is appropriate to introduce a degree of "parking": the number of parking spaces to 1,000 inhabitants[33]. It can not be accepted any increase in the number of parking spaces with economic-social-cultural destination for 1,000 inhabitants; but unlike the previous target, **no parking spaces will be removed,** unless there is verified information that their use is not confirmed by fees.

BIKE TRACKS NETWORK (LENGTH, DENSITY, PERCENTAGE OF TOTAL STREET NETWORK)

Currently in Oradea there are less than 18 km of byke tracks. Byke tracks network is 3.6% of **total street major network**. There are projects to build 42 km of byke tracks – in different stages of execution. There were submitted proposals for another 29 km. In these conditions it can be established as a target for this indicator the COMPLIANCE to commitments already made.

NUMBER OF BICYCLE RENTAL POINTS

At the time of 2013 it can be noted – by a random and restricted selection – the following development of this service:
Berlin – 130 renting points
Amsterdam – 33 renting points
Wienn – 13 renting points
Florence – 4 renting points
Bucharest – 3 renting points
Timişoara – 2 renting points
Iaşi, Constanța, Sibiu – 1 renting point
The proposed target is to create conditions for development of a bicycle rental point for every

[33] At the time of 2013 there are approx.. 7000 of parking spaces for approx.. 204000 inhabitants, so 34.4 parking spaces to 1000 inhabitants.

year of SUMP monitoring. Thus for 2014 can be recommended – as a first renting point – the campus[34] (which have the requested conditions for a "market" of this service).

KM OF BUILT OR REHABILITED STREETS

The target for this indicator is the number of rehabilitation projects, projects carried out successfully for the neighborhoods lacked by penetrability and permissiveness, under the obligation that at the end of 6 years of SUMP monitoring the level reached by these to be at least one step higher than for the present.

SQUARE KILOMETERS OF CITY LIMITS EXPANSION

The discipline in managing the urban space forces to cease any expansion of city's official area.

BUILT-UP AREAS VS GREEN AREAS (Square Meters / Square Meters)

Any approval of a new construction – building, deposit, utility (food market, electric power station, fuel station etc.) should be given only if it will exist the guarantee of expansion the city green area with the same built area (square meters). This guarantee should be given directly by the owner, builder, designer or indirectly by the local authorities.

HOURLY TRAFFIC ON THE CITY'S TRAFFIC ARTERY WITH THE HIGHEST LEVEL OF TRAFFIC FLOWS

Growth rate of vehicles flow passing through Piața Independenței between 6:00 am and 9.00 am does not have to exceed a limit of 5% (at the end of each period of 2 years since the moment of implementing the measures of reduction the congestion)[35].

NOISE LEVEL ON THE CITY'S TRAFFIC ARTERY WITH THE HIGHEST LEVEL OF TRAFFIC FLOWS

Target to be established is: level of noise pollution on these arteries should fall, at the end of the 6 years, within following limits (according to Government Emergency Ordinance no. 152/2005 concerning prevention and integrated control of pollution, approved with amendments by law nr. 84/2006):

- for indicator L_{den} = 65 dB;
- for indicator L_n = 50 dB.

LEVEL OF EMISSIONS AND DUST ON THE CITY'S TRAFFIC ARTERY WITH THE HIGHEST LEVEL OF TRAFFIC FLOWS

According to the report on air quality in the Bihor county, there were no exceedances of SO_2, NOx, O_3 (ozone), CO, C6H6 (benzene), Pb in Oradea city. There were exceedances of dust

[34] INCERTRANS considers that the local municipality shoul take into account setting up a structure with this main activity, and the fleet of bicycles administration – purchased even by Oradea City Hall – should be entrusted to a student associations.

[35] It will be unconceivable that once accepted the target, at the time of appearance of a new artery with high traffic flow, to continue to analyze traffic increase only in Piața Independenței.

emissions (PM10). The target that should be established is to reduce dust emissions (PM10) up to the level (law 104/2011):
- **50 µg/m^3** – daily limit value for the protection of human health;
- **40 µg/m^3** – annual limit value for the protection of human health.

THE RATION BETWEEN THE AVERAGE WAGE AND TICKET COST

The proposal – **given that at the 2013 moment in Oradea is selled the most expensive ticket for a trip from all over the country –** is to annualy reduce the cost of the ticket according to value of inflation during the 6 years of SUMP[36] monitoring.

THE PRICE OF AN HOUR PARKING RELATED TO THE PRICE OF A TRIP BY PUBLIC TRANSPORT

In 2013 the price of one hour parking is of 2 lei. After a survey made in February 2013, the average trip length was estimated to be 3.5 km; in 5 km it should be included the price for two trips – if there are paid separately the two purchased tickets, respectively one single trip – if the pass/supscription is paid. As a result: the cost of a trip on 5 km distance can be consider as a maximum 6 lei or minimum 1 leu, namely an average of 2.7 lei[37]. I can be seen that **the ration between the two costs (about 0.75) is unfavorable for sustainable development** whereas, in a superficial approach of the situation, travel by car in the city's center seems to be at parity – in financial terms – with round trip by public transport. In the same vein: even one, the ration is still unfavorable to sustainable development, because, from the psychological point of view "the driver" will count the convenience of his journey as a top benefit of reducing the fuel costs:

- conclusion: reversal of the ration – from 2/2.67 = 0.75 – to 1.34 could represent a target for SUMP.
- consequence: whereas for the 6 years of SUMP monitoring it was proposed (above indicator) a target for the price of a trip, 2 lei value, that means in 6 years the STANDARD hour for the parking should vary between:

  3 lei * 1.34 = 4 lei and

  2 lei * 1.34 = 2,70 lei

simultaneously with the introduction of progressive taxation.

Practically, it should start immediately[38] that parking hour to be charged with 4 lei and after that, annually – along with the decrease of ticket – the cost of the first hour of parking to decrease simultaneously with the decrease of the ticket, but the cost for the next few hours to remain 4 lei etc. (so, after 6 years the cost of the ticket will reach at 2 lei, the first hour of parking toll will reach to 2.70 lei, but with passing hours the parking taxes will increase up to the 4 lei above mentioned).

[36] The situation after 6 years in which the inflation would be at an average of 5%, would bring the price of the ticket from 2 to 3 lei, what is acceptable – in the context of other price for tickets recorded in country.
[37] The average was calculated alo considering the proportions of selling the tickets, the passes/subscriptions.
[38] According with the recent increase of the ticket cost.

THE NECESSARY TIME FOR TRAVEL 5 KM BY PUBLIC TRANSPORT VEHICLES REPORTED TO NECESSARY AVERAGE TIME TO TRAVEL THE SAME DISTANCE BY CAR

In a SUMP, the target for this indicator should be "one" – calculated on multiplication of two complementary values:

- the time required to travel 5 km in public transport vehicles – on those routes on which there are NO dedicated tracks – related to average time to travel same distance, on the same routes by car, **could offer a supraunitary level;**
- the time required to travel 5 km by public transport – on those routes on which are / will be dedicated lanes – related to average time to travel same distance by car **should offer a subunitary value;**

the conditions under which public transport is performed = favoring, respectively the conditions under which the rest of the traffic is performed = regulated reduction of the speed, ensuring the balance of the result of multiplication of the two ratios (for example: 17/13 on routes on which there are no dedicated tracks for public transport, respectively 14/18 on the routes on which there are dedicated tracks)[39].

LEVEL OF DELINQUENCY IN THE CITY

The above established target regarding the end time of daily public transport service is relatively connected to the issues of delinquency:

- those 20 minutes of work schedule represents – in relation with the 16 hours of public transport activity – approx. 2%
- therefore it is proposed as a target the decrease of delinquency level by 2 percent for every year of 6 monitored by SUMP.

FREIGHT TRAFFIC IN THE CITY'S AREA (TONS*KM/DAY)

Subscribed to this project the target is simple to be established:

- if it is necessary to organize freight only between 18.00 and 6.00 there is no value to monitor.
- if it will be required to organize freight traffic based on city-vignette then the freight traffic will be adjusted on the base of city-vignette price which will be modified every year and at the end of the 6 years the number of tones*km/day will reach half the value of 2014 – **the first year when city-vignette will be applied and statistics will be carried out in the specific field.**

[39] The values mentioned in the exemple take into account the average speed achieved so far = 18 km/h and the estimated speeds for the future = 21 km/h according to the proposed target for increasing commercial speeds.

20. Options with possible measures

According to DEX (Explanatory Dictionary of the Romanian Language) the measures are procedures used to achieved a certain objective[40]. Criticism:

- procedures itself can be used only if there are resources for implementation („can we defeat the mentalities inconsistent with the principles of sustainable development? – yes, but only if we have sufficient resources"; otherwise the measures are to be taken only at descriptive level and although they may be used to achieve the objective, they are not enough).
- as used in this context, the measures are ways by which IT WOULD BE POSSIBLE to reach the materialization of the objective FROM A CERTAIN PERSPECTIVE. Therefore, measures are closely related to agreed indicators, which were specified through SMART targets: **when one target is achieved it can be only said that the analyzed objective was achieved?** NO! It can be only said that developed measures reached the pre-set level for indicators characterizing the expected stage of achieving the objective, objective that remains in the sphere of concern later

Concretely, the feasible measures for Oradea have been already envisaged in Chapter 5.1; also the indicators considered appropriate in the Chapter 3.1, also the targets considered sufficient to achieve an adequate level of mobility – in Chapter 5.2. The main problem is to create a synthesis which to bring the whole „measures-indicators-targets" to a level of aggregation **so that to allow the measures to manage geographic, demographic, social and economic framework – analyzable through indicators, at the level of targets (once again, if if there are resources).**

The procedure used is as follows:

- Compile an incidence matrix with 25 rows – corresponding to the number of indicators – and 95 columns – corresponding to the number of objectives – see Annex 23.
- It is filled the contain of the 25*95 locations of matrix with binary values Δ_{ij} defined as:
  - ✓ Δ_{ij} = 1 if **the objective** has a major incidence (and preferably direct) on
  - ✓ the **target**
  - ✓ Δ_{ij} = 0 otherwise:
- There are carried the totals on columns: the resulted values indicates the **influence area of measure =** the rank of a certain objective in 25 possibilities:
  - ✓ greater the value derived on a particular column, the more the objective influences the level reached by these indicators (finally, even more the objective contributes to multiple targets); in other words: the effort in implementing of measures which materialize the objective has influence on several indicators.

[40] And DEX makes no reference to degree of achievment (partial or temporary – because total or final is/are possible, only theoretically): in other words there is no explicit level of achieving the objective, since, most times, an objective is explained only at a general level (for example: „to improve mobility" is an objective so general that any actions will be done, always will be unfulfillments to some indicators which can characterize the intension to achieve the objective) .

- ✓ the reverse situation indicates that the effort in measures implementing which can be porposed, will have a punctual impact.

- There are carried the totals on rows: the resulted values indicate the possible – not yet probable – **synergies** contained by the measures involved by several objectived focused on the same indicator:
  - ✓ greater the value resulted on a certain row, the more indicator can be influenced by more ways (and some of the combinations of materialized objectives by measures, can benefit of the quality to be in synergy with each other).
  - ✓ the reverse situation indicates how difficult will be to influence the indicator: in this case the problem han no more in itr center the synergy but the way – maybe the unique one – to achieve the target.

In this latest finding it is found the key of measures materialization:

- it is choosed the lowest value on the column (for example: the level of delinquency in the city);
- there are identified the objectives which can influence the indicator (for example: the only two objectives are „combined projects to assure the utilities for each neighborhood" with a total of 5 on its column, respectively „create the framework for tele-activities and teleworking" with a total of 3 on its column);
- it is decided in favor of the objective for which it is estimated that simultaneously it is perfect feasible and can greatly change - in the desired direction – the nearness of the indicators to pre-set target (for example: it is decided to initiate projects which to ensure utilities in each neighborhood – supply, kindergarten, clinic, efficient street lighting system etc.);
- subsequently, in the location placed at the intersection of analyzed row and its corresponding column, it is customized the measure – the objective is directed to the benefit of the indicator (for example: the end time for utilities is „pushed" to late hours so that the presence on the street of several persons to discourage the potential aggressors).

It is to highlight that the entire procedure is resumed after the removal of analyzed row and the corresponding column of the objective, from the incidence matrix (with the corresponding change of the values on rows and columns. Because there are more columns then rows, the procedure continues up to elaboration of the first 25 measures, so that each indicator to have assigned at least a measure. Then the matrix is restructured – without 25 of initial objectives – and continue the determination of measures – IN NUMBER ESTABLISHED BY A LOCAL AUTHORITY OR DEPENDING ON IDENTIFIED RESOURCES – **starting with the objective with highest value on its column,** the measures losing their feature of particularity, become even more general, higher their registry.

INCERTRANS ceased the procedure after the extraction of the 75 measures – of greatest impact on Oradea mobility.
The combined matrix „objectives-targets" (annex 25) led to achieving the **support measures –** 25 in number = one for each target – and subsequently to **strenghtening measures –** restrict the volume to 25 measures (from a total of 95); and finally as **reinforcement measures** there

were selected[41] also 25, so that it can be made a subsequent selection at least from the financial possibility to implement.

On the synthesys of various above information result the following tabel:

Tab. II.17

	Measures to the level of local authority			Measures to the level of SC OTL SA		
	Support measures	Strenghtening measures	Reinforcement measures	Support measures	Strenghtening measures	Reinforcement measures
	alfa measures	beta measures	gama measures	alfa measures	beta measures	gama measures
Measures that bring money	I-16, II-2, X-12, XI-7, XI-8	I-18, III-1, V-8, VII-2	I-12, V-7, XI-9	-	X-18, X-19, XI-2	I-21, X-23
Measures without money	I-3, I-9, I-11, II-3, III-5, VI-1, VI-4, X-10	I-4, I-8, I-13, III-8, VII-1	I-2, I-17, I-19, III-7, IV-3, VII-3, XI-5, XI-6	X-14, X-17	I-10	I-5, X-5, X-9, X-20, XII-3
Measures that require money - financial effort being moderated	**-**	**I-7, III-2, V-1, VI-3, VI-6**	**I-1, I-15, VIII-3, XII-1**	**IV-1**	**-**	**V-2, X-11**
Measures that require money - financial effort is considerable	**I-14, I-20, VII-4, IX-1, IX-3, X-8, X-15**	**V-3, IX-2, X-3, X-21, X-22**	**X-1**	**X-6, X-7**	**V-5, VIII-1**	**-**

From the technical point of view it is necessary to explain – separately – support measures, strenghtening measures, reinforcement measures: the strategy used by cities which are on second or third edition of SUMP included a mix of measures, different from case to case, but in all the cases practical actions were initiated with the most „profitable" – that could create at least a revolving fund for actions that consume money. Next there are presented the measures that

[41] The selection was made based on „influence area of measures" = given by the ranking obtained on the base of multiple intervention criterion on targets (the sum on vertical); for example, one of the measures has a influence on 20 targets, another measure only on 10 targets: therefore, it will be preferred the first measure, with numerous possibilities to bring simultaneously enhacements in several fields. Regarding the sum on horizontal = „the level of synergy" given by the numer of objectives that influence one target, the values will be used for compiling the packages of efficient measures.

can determine this revolving fund, followed by neutral actions in this respect[42]. **Generally, the actions that customize the way to SUMP refers to:**

- In terms of form, at each above measures – according to the category (support, strenghtening, reinforcement)
- In terms of their substance being customized below:

A) support measures

(the measures that can not be applied unless the financial source is identified)

I-20 = THE DEVELOPMENT OF A CENTER EQUIPPED WITH A MANAGEMENT TRAFFIC SYSTEM IN THE CITY = without additional parameters of identification.

IX-3 = THE DEVELOPMENT OF SEVERAL PROJECTS THAT AIM TO ENHANCE THE CAPACITY OF MAIN NETWORK OF STREETS – STARTING WITH STREETS THAT NOW HAVE THE LOWEST CAPACITY TO TAKE VEHICLES FLOWS = in first stage can be included:

- the construction of Oradea ring road that also links OMA (Oradea Metropolitan Area) villages
- Roman Ciorogariu
- Traian Moşoiu
- Ady Endre
- Eroul Necunoscut
- Tudor Vladimirescu
- Oneştilor
- removing the pedestrian crossing on D. Cantemir Street (in front of Episcopal Cathedral)
- passages building at the intersection Ogorului Street and DN 76, DN 79, DJ 797, DC 62, DC 66 and also over the railways.

I-14 = IMPROVING SOME STREETS (PLANNING AND FUNDING) AND CHANGING THEIR CLASSES INTO UPPER CLASSES – POSSIBLY WITH ONE-WAY TRAFFIC – IN ORDER TO INCREASE THE TRAFFIC CAPACITY = in first stage it can be included the following streets:

- **one-way streets:**
  - Călăraşilor with Tudor Vladimirescu
- **upgrade**
  - Matei Corvin (in Episcopia Bihor area);
  - Uzinelor;
  - Ecaterina Teodoroiu;
  - Depoului;
  - Constanței, etc.

X-6 = IT IS NECESSARY TO ENSURE THE SECOND ACCESS TO TRAM DEPOT; IN THE SAME VEIN: IT IS TO CONSIDER A „SHED" FOR TRAMS IN ORDER TO REDUCE THE TRAVEL DISTANCES FOR THE WITHDRAWN TRAMS AT THE END OF PEAK HOURS = no additional parameters identification.

X-7 = IT CAN GET A HIGH ELASTICITY IN PUBLIC TRANSPORT OPERATION IF IS MADE THE THIRD „TRIANGLE" TO SERVE LINE 2 = no additional parameters of identification

[42] Another point of view is the one of the time the measures reach their maturity and can be seen changes in the level of observed indicators.

X-8 = FROM THE POINT OF VIEW OF EFFICIENCY, THE MAIN ROUTE WHICH CAN BE SERVED BY A TRAM LINE IS BETWEEN THE POINT OF INTERSECTION OF TRAM LINE 2 WITH CENTRAL RING AND THE SECOND ACCESS OF DEPOT (POSSIBLY TWO MORE OTHER ROUTES) = as:

- Emanuel – Decebal – Stadium – Universitatii – Cemetery – Ceyrat – Atelierelor – Depot
- Aradului (in 3 stages: up to Ogorului Street, up to commercial area, up to airport)
- Sinteza – Eurobusiness.

X-15 = IT IS RECOMMENDED TO INITIATE A PROJECT FOR MODERN BOARDING-UNBOARDING STATIONS (TO STANDARDIZE – TO CUSTOMIZE THESE CONTACT POINTS BETWEEN THE PUBLIC TRANSPORT OPERATOR AND THE PUBLIC) = no additional parameters identification

VII-4 = REGULATE THE „PARK AND RIDE" TRANSPORT SYSTEM = it can be implemented only following a **study** which will establish the protected area (at the limits of this area it will be done the interchange between private car and public transport means)[43].

IX-1 = COMPLETION OF A NETWORK OF BICYCLE ROUTES WHICH WILL INCLUDE Oradea Metropolitan Area = it can be done only following an **analysis** in order to determine the connected graph which will bring together the available routes with under construction routes and with projected routes.

IV-1 = PURCHASE A MEDIUM CAPACITY VEHICLE – AN ELECTRICAL VEHICLE – INITIATING AN ECUMENICAL ROUTE INSIDE THE CITY = it is implemented only after fixing of a number of historical monuments of great interest for the tourists. One proposal should include:

(Walking)

- ✓ Moon Church + Synagogue + Theatre + City Hall + Greek Catholic Palace

(By bus)

- ✓ Partium University
- ✓ Children's town
- ✓ Central Station
- ✓ Roman Catholic Diocese
- ✓ Crişul Store
- ✓ Orthodox Monastery

(Walking)

- ✓ Citadel + st December Park

(Bz bus)

- ✓ Lotus center
- ✓ SC OTL SA Depot
- ✓ Oradea University
- ✓ Military Museum
- ✓ Zoo
- ✓ The Malls (end of Calea Aradului)
- ✓ Airport
- ✓ Moon Church

So that touristic circuit is like the one shown below:

[43] INCERTRANS opinion is that the protected area should coincide with "central ring" proposed in Urbanistic General Plan (but also can be another configurations).

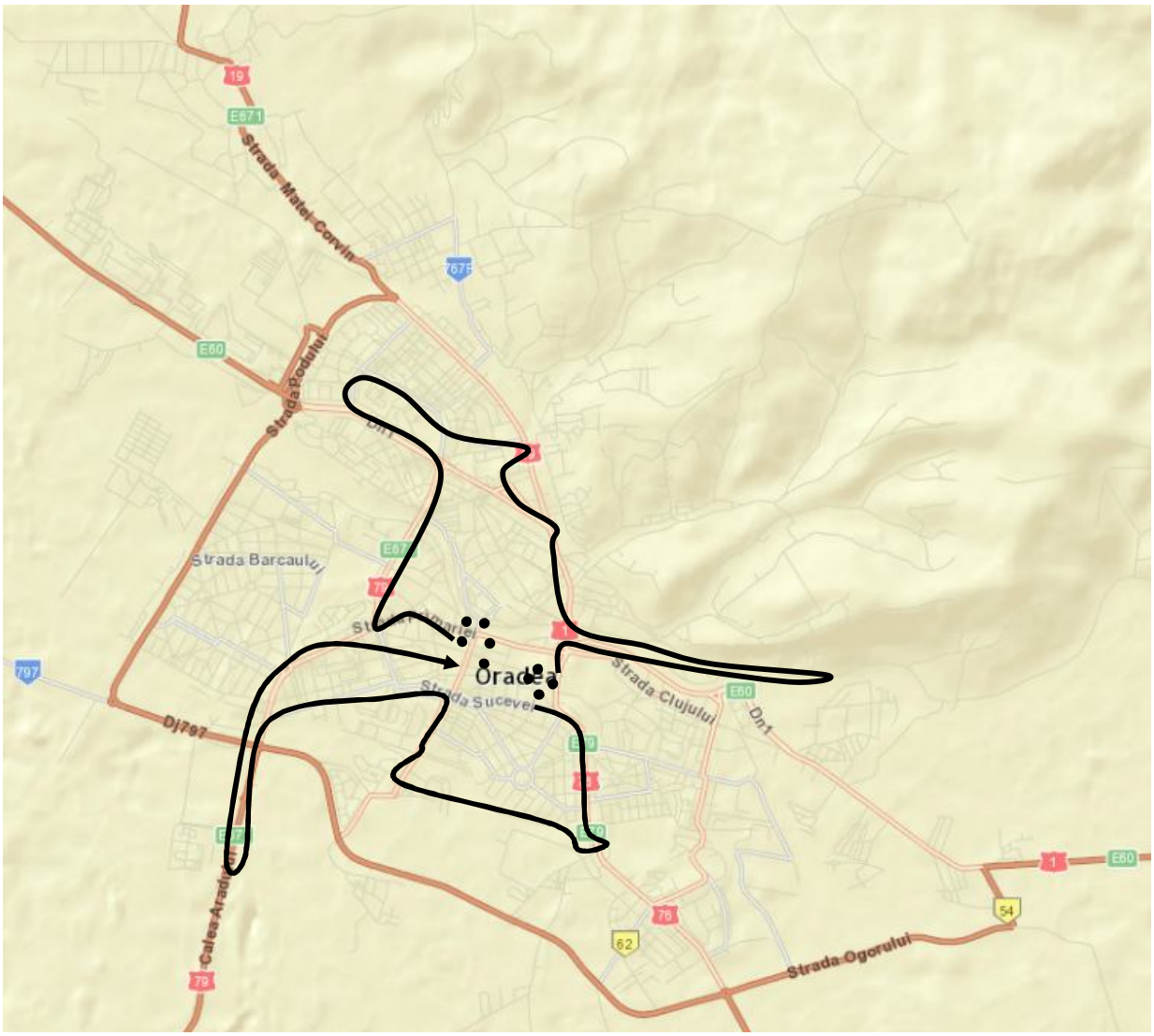


Fig. II.73 – The proposed touristic route

(measures that can create funds for mobility)
I-16 = TAXATION OF CARS PASSING THROUGH A „PROTECTED RING" IN THE CITY'S CENTER = no additional parameters of identification
II-2 = TO ANALYZE THE POSSIBILITY OF IMPLEMENTING OF A SYSTEM TYPE „CITY-VIGNETTE" IN A CENTRAL AREA OF THE CITY - FOR FREIGHT FREIGHT TRANSPORT VEHICLES = no additional parameters of identification

X-12 = GENERAL INTERESTS OF THE CITIZENS – NOT THOSE SPECIFIC TO A PART OF THE CITIZENS – REQUEST TO REASSESS THE GRATUITY AWARD SYSTEM FOR RETIREES = no additional parameters of identification
XI-7 = ACTIONS AND RULES AGAINST „PIRACY" (unauthorized urban public transport by private cars) ON URBAN TRANSPORT MARKET = no additional parameters of identification
XI-8 = SHOULD BE INTRODUCE A TAX / FEE – CONTRIBUTION OF THE NON-LOCAL TRANSPORT OPERATORS IN ORDER TO COVER THE COSTS OF MAINTENANCE THE BOARDING-UNBOARDING STATIONS USED BY THEM = no additional parameters of identification

(measures that can be considered neutral regarding financial effort)
X-10 = LOCAL AUTHORITY HAS THE OBLIGATION TO TAX AT THE LOWEST LEVEL THE SC OTL SA VEHICLES = no additional parameters of identification
X-14 = SC OTL SA HAS TO MAKE A PROJECT PROPOSAL FOR THE FIRST LANES DEDICATED TO PUBLIC TRANSPORT = on Republicii Boulevard it can be immediately implemented the steel-tracked fixed guideways for tram lanes which will have major repercurssion on communication speed of 1 and 3 tram lines.
X-17 = IT IS NECESSARY A NEW PRICING POLICY (WHICH TO ENVISAGE ALSO REWARDING THE LOYAL PASSENGERS) = no additional parameters of identification
VI-1 = DEFINITIVELY SETTLE (long term – 20-30 years) THE ORADEA RING ROAD = no additional parameters of identification
VI-4 = the necessity to create a UNIT – CONSTRUCTION – INFRASTRUCTURE FOR MOTORIZED AND NON-MOTORIZED ACCESS AND GREEN AREA (FOR EVERY NEW BUILDING/CONSTRUCTION) = no additional parameters of identification
I-11 = IT WOULD BE RECOMMENDABLE THAT LOCAL AUTHORITY TO DEVELOP A REGULATION THAT NOT ONLY TO ALLOW THE PUBLIC PRESENCE BUT TO ENSURE THE PUBLIC PRESENCE IN THE DECISIONS REGARDING THE COMMUNITY = no additional parameters of identification
I-3 = to activate and stimulate the activity of department working with citizen's associations (regular meetings organization) = no additional parameters of identification
I-9 = REGULATE AND PROMOTE CAR-SHARING AND CAR-POOLING (INCLUDING TAX INCENTIVES FOR RENTAL COMPANIES WHICH DECLARES AS AN ACTIVITY OBJECT THESE ACTIVITIES) = no additional parameters of identification
II-3 = REGULATE THE CITY TRANZIT – AFTER COMPLETION OF INFRASTRUCTURE WORKS FOR ORADEA RING ROAD AND THE ROAD WHICH WILL ENSURE THE LINK BETWEEN THE VILLAGES WITHOUT CROSS THE CITY = a study is required which mathematically provide the national routes which, on the one hand, intersect less other flows vehicles, on the other hand to protect the urban network of streets.
III-5 = it is recommendable to modify the opening & closing times of big stores = it can be implemented the following tactic:

- ✓ In working days the opening hour of the stores along the urban public transport lines should be at least 10.00
- ✓ The times „lost" by merchants in working days are recovered through extended programs – even all the night – Saturday and Sunday.

As a whole, the 25 above particularized measures influence at least one indicator and CONTRIBUTE IN CHANGING OF SOME ATTRIBUTES OF THE MOBILITY. THEY ULTIMATELY INFLUENCE THE SPEED AND LEVEL OF THE INDICATOR TO THE TARGET VALUE. The renouncement at one of the measures can be done in the following conditions:

- If in the set of strengthening or reinforcement measures (or even in the 20 unselected measures, possibly another measure non envisaged in the work) there is one that has a certain influence on the indicators for which was intended, then the above unaccepted measure (the one to renounce to) can be replaced with another.
- In case of negative response it is necessary to investigate in the set of support measures if is one thaT has a certain influence on the indicator for which was intended, then it can give up to unaccepted measure without replacement.
- If unaccepted measure is the only one that influences the indicator for which is intended, it is not possibly to disclaim the measure unless disclaim also the indicator attached to it.

B) strengthening measures

(measures that can not be applied unless financial source is identified)

III-2 = BUDGETING THE DEVELOPMENT OF PUBLIC TRANSPORT = no additional parameters of identification (the action covered by this measure refers to include in Oradea local authority annual budget a percentage constantly increasing of amount allocated for transport its modernization).
V-5 = IT IS NECESSARY A STRATEGY TO RENEW THE PUBLIC TRANSPORT FLEET = one example of strategy can base on intervention on two plans:

- A plan for replacing the vehicules with consumption higher then 20 liters / 100 km, for example;
- Second plan is for replacing the fleet that exceeded 5 years old (by operational leasing on 50 years, for example);

V-3 = STREET INFRASTRUCTURE REHABILITATION = no additional parameters of identification[44] (for example: asphalting the streets with cracks)
VIII-1 = SC OTL SA HAS TO MAKE A PLAN FOR DESIGN, REDESIGN AND IMPROVE THE INFRASTRUCTURE OF TRAMS = no additional parameters of identification[45] (for example: to extent Căii Ferate Streets up to Ogorului Street – measured also proposed in Urbanistic General Plan)
IX-2 = PROMOTE A PROGRAM OF RE-CONSTRUCTION THE ELEMENTS OF STREETS INFRASTRUCTURE (STREETS WIDENING, MODIFICATION OF CURVES RADIUS, MODIFICATION OF INTERSECTIONS GEOMETRY IN ORDER TO INCREASE THE PUBLIC TRANSPORT SERVICE OPERATION ETC.) = no additional parameters of identification[46] (for example: underground passagee – measure proposed also in PUG)

[44] Rehabilitation means to restore the initial parameters.
[45] Actions have to take into account the modification of the initial parameters.
[46] The improvements focus not only on infrastructure but also adjacent buildings

X-22 = THE ANALYSES COULD REVEAL WHICH ONE OF THE TRAMS LINES TO BE TRANSFORM IN LIGHT RAIL LINES = the tram line between Nufărul and Piața Independenței or even up to Central Station could be easily to transform – this transformation could bring improvements on multiple plans.

X-21 = CONSIDER THE IMPLEMENTING OF TRANSPORT SYSTEM BY TROLLEYBUSES = for the first trolleybus line we can advance the idea of takeover the surplus of trips estimated by some prognosis models[47] through implementing of a structure indicated in the below figure (concretely, the measure envisages to achieve 2 additional branches on city's general network, starting from the central ring):

- one extension on Muntele Găina/Războieni Streets which aims to connect Velența neighborhood to center and an intermodal connection at Gara de Est.
- One extension on H. Ibsen Street from Densuşianu, Vlădeasa, Sucevei-Basarab, A. Iancu, … Streets which aims to connect the south-west area – served – by historical center through direct route – in opposition with the current line 10 which makes a unproductive detour moving away from the center and then return – figure below

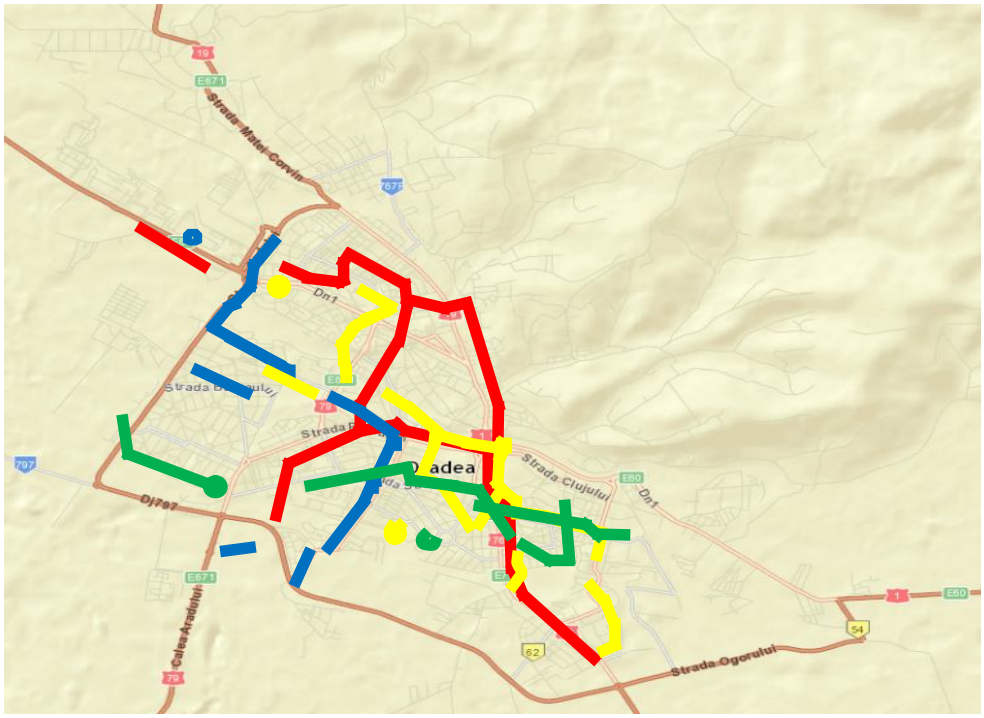


Fig. II.74 The green line is a possible trolley route (the main bus lines are in yellow and blue, the tram lines with red; additional some of the current transport lines – fully proved unprofitable are removed)

[47] The information is taken from the study made for Oradea Metropolitan Area Authority.

I-7 = SET UP BICYCLE PARKINGS = currently the bicycle routes are not connected, but when the projects already prepared will be implemented there will be conditions for parkings in all the nodes in which the current routes will meet.
V-1 = NEW PEDESTRIAN AREAS = there are relevant proposals in PUG (Urbanistic General Plan) (for example: changing in pedestrian area the section of Republicii Blvd. between Dunărea and Gheorghe Magheru Blvd., changing in pedestrian area the Piața Unirii, str. Vasile Alecsandri and the entire adjacent area of Crişul Repede)
VI-3 = PROJECTS TO ENSURE THE UTILITIES IN EVERZ NEIGHBORHOOD = the goal of such measure is not identify with the fields in which "the utilities" are considered from PUG perspective (88.86% of the population has access to water, ie 92.88% of the population has access to sanitation, 70% receive heat); **the mobility issues include other fields,** including food markets, healthcare centers etc.; following the distribution of the utilities on city's map it can be determined where should be placed such points of interest for the population – rational placing is beneficial for mobility.

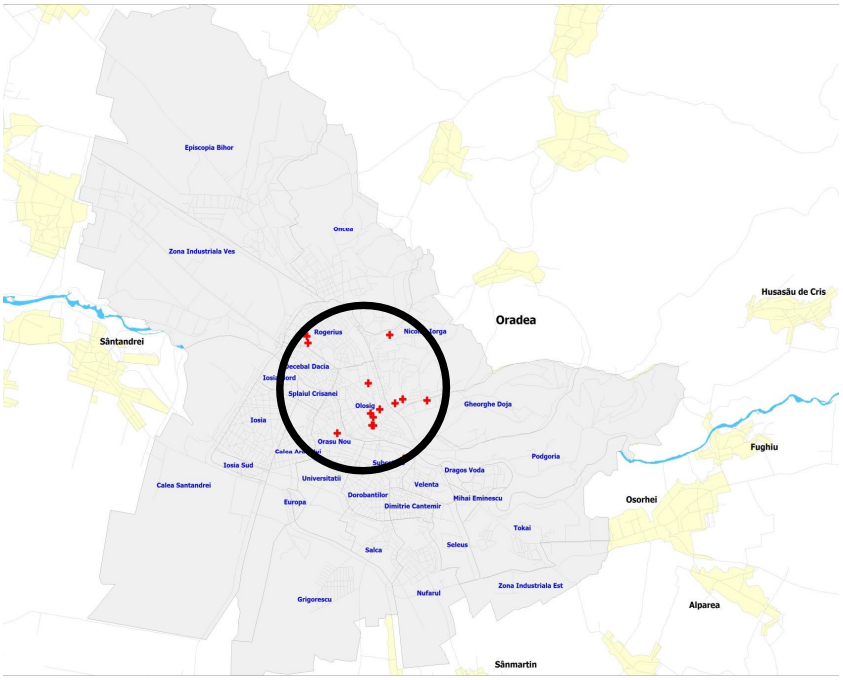


Fig. II.75 Grouped location of healthcare centers

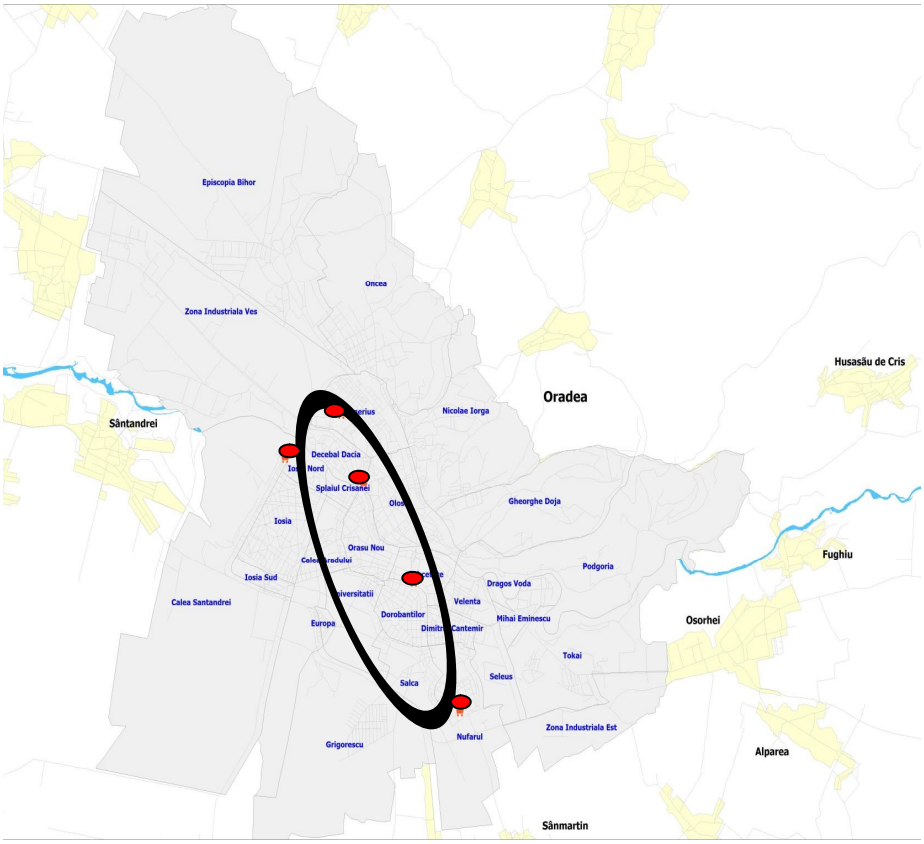


Fig. II.76 „Unidirectional" location of markets

VI-6 = SYSTEMS OF INCENTIVES FOR PLACING THE NEW SCHOOLS, HEALTHCARE CENTERS, COMMERCIAL CENTERS ETC. WITHIN RESIDENTIAL NEIGHBORHOODS OR CLOSE TO THEM = it is necessary to make detailed maps of each neighborhood, aiming earnestly that density of the utilities (which lead – if their localization is irregular – to unnecessary additional trips) to be uniform on entire city's area.

I-4 = INFORMATION CAMPAIGNS ON INNOVATIONS IN ADMINISTRATION SYSTEM THAT REDUCE THE NUMBER OF TRAVELS FOR CITIZENS TO ADMINISTRATIVE INSTITUTIONS = electronic signature as a form of symbolic representation of the citizen without requiring physical presence
X-3 = LOCAL AUTHORITY HAS THE OBLIGATION TO RECALCULATE PERIODICALLY THE COMPENSATION OF SC OTL SA = no additional parameters of identification

(measure that can create funds for the mobility)
III-1 = REDUCING THE USE OF PRIVATE CARS (THROUGH PRICING POLICIES AND AWARENESS) = it can be included measures that not directly forbid the private car use but leads to a „more expensive" private trip; for example, parkings pass purchased by cars owners -

with more than a week validity – become operational only 4 days of the 5 workdays of a certain week of the month, week called „mobility week".

VII-2 = RESTRUCTURING OF PARKING SYSTEM (BY INTRODUCING A PROGRESSIVE PAYMENT TYPE, DISTINCTIV ON PEAK HOURS AND OFF PEAK HOURS AND EVEN ON TARGET GROUPS – FOR EXAMPLE FOR THE SMALL CAPACITY VEHICLES THE TAX COULD BE MORE REDUCED) = no additional parameters of identification[48]

I-18 = PARKING SPACES ON PUBLIC DOMAIN AND THOSE OF ECONOMIC AGENTS (USED BY THEIR EMPLOYEES): ECONOMIC AGENT PAY TO LOCAL AUTHORITY = it is a matter of local taxation; the companies dave to declare annually the number of parking spaces they administer, according to which a tax is calculated by the local authority (the company can eventually recover the money from the employees who benefit of parking spaces in front of the unit).
V-8 = PURCHASE NON-EURO VEHICLES – EXTRA CHARGED = no additional parameters of identification
X-18 = IT HAS TO BE INTRODUCED AND THEN GENERALIZED EXPRESS TRANSPORT SYSTEM (OR MAXI-TAXI), IN THE SAME TIME WITH NORMAL ROUTES = 14, 12 and maybe 17 routes are suitable – due to large enough traffic – for double line organization (a speed route with vehicles which stop in 2-3 intermediary stations besides ends of the route and a normal route with vehicles stop in all stations)
X-19 = IT IS NECESSARY TO REDESIGN THE BUS ROUTES SO AS TO BE EXCLUDED THE PARALLELISM OF THE TWO MODES OF TRANSPORT = it has to be bone a detailed study that starts from the assumption that electric transport system **must** be powered by the transport system which consumes fossil fuel; in fact, new bus routes do not have to double the tram routes.
XI-2 = IN COLLABORATION WITH OMA (Oradea Metropolitan Area) IT IS RECOMMENDED TO PREPARE A PROGRAM OF TRANSPORT SERVICE FOR PERI-URBAN AREA (PARTICULARLY TO BĂILE FELIX AND BĂILE 1 MAI RESORTS BUT ALSO TO BORŞ – LINK WITH EUROPEAN WESTERN) = it is necessary to corroborate the findings and conclusions of this project with findings and conclusions of the project made also in 2013 for OMA in order to find feasible formula of collaboration for mobility improvement for the entire established area as being determinant for Oradea population.

(measures that can be considered neutral in terms of financial effort)
VII-1 = LOCAL AUTHORITY SHOULD PROVIDE NEW REGULATIONS ON PARKINGS WHICH TO REDUCE THE POSSIBILITIES TO PARK ON THE STREETS = it is necessary to identify which street are at their capacity limit and subsequently to forbid parking (the measure must be

[48] To review the target regarding the cost of one hour parking related to the cost of a trip by public transport.

accompanied by police controls and **controls of companies which lift illegally parked vehicles**)

I-13 = MAPS FOR SPREADING OF MAIN UTILITIES IN THE CITY (THE NEXT IMPLANTS WILL BE DONE ONLY BASED ON THE EQUAL SPREAD IN TERRITORY PRINCIPLE) = it is necessary that PUG to be completed with provisions of this kind.
III-8 = CREATING THE FRAMEWORK FOR TELE-ACTIVITIES AND TELEWORK DEVELOPMENT, INCLUDING FINDING WAYS TO REDUCE TAXATION FOR COMPANIES WHO PRACTICE TELE-ACTIVITIES AND TELEWORK = In recent years new informational and communicational technologies have been rapidly developed so that, in the center of recent scientifical, political and political debates was Informational Society development who generates new opportunities for work and essential changes in nature of labour and ways of working, comparable to those occured in industrial revolution. **Telework** refers to an activity in which employees can choose the location where to work and the working hours. **Telework** is by definition, **the activity in which computers and telecommunication are used to change the accepted geography of work:** telework is the activity in which information and communication technology is used to work at the distance from the place where work result is needed, or the place where normally activity would be performed. **The fields** in which – for the moment – it has already been created niches for TELECOMMUTATORS = companies that could delegate activities outside of their official centre/headquarters are companies in domains like commerce, marketing, education, software.

I-10 = SC OTL SA HAS TO INITIATE COOPERATION ACTIONS WITH PUBLIC TRANSPORT PASSENGERS AND REGULAR MEETINGS = SC OTL SA has to initiate a program of meetings with public transport passengers and with amateur drivers and to present them the current problems of a public transport operator (for exampe, an amateur driver should be let to drive in SC OTL SA polygon to see what means driving a 15 m lenght and 3 m width vehicle; a person without driving license should be put on the driver's seat while the vehicle is stopped, in order to see how much can be seen from the driver's seat in the minute in which the vehicle is in station with open doors, etc.)
I-8 = CREATING THE COMMERCIAL AND TECHNICAL FRAMEWORK FOR BICYCLE CARRYING IN VEHICLES OWNED BY PUBLIC TRANSPORT OPERATOR = no additional parameters of identification

C) reinforcement measures
(measures can not be applies unless the financial source is identified)
X-11 = SC OTL SA HAS TO TAKE INTO ACCOUNT THE PURCHASE OF MOBILE MEANS WITH HIGH ACCESS POSSIBILITIES (BY DIFFERENT CAPACITIES, WITH LOW FLOORS ETC.) = without additional parameters of identification (percentage of such vehicles has to be in accordance with the percentage of disabled people in the city)
V-2 = REHABILITATION OF TRAM RAILWAYS (IN THE SAME TIME WITH GRASSING OF THE EMBANKMENT) = no additional parameters of identification (only examples: Independenței Street, 1st December Square, Coposu Area, Emanuel intersection);

I-15 = INSTALLING ON GROUND PASSAGES OR BUILDING UNDERGROUND PASSAGES FOR PEDESTRIANS ON THE STREETS WITH HIGH FLOWS OF TRAFFIC – INSTEAD OF CROSSWALKS – WHERE SIGNALING / TRAFFIC LIGHTS PROGRAMS IS INSUFFICIENT FOR COMBINED FLOWS VEHICLE-PEDESTRIANS = this measure was already envisaged; specifically insist on possibility to to remove one of the 4 crosswalks is usually marked at the entry in a common intersection – see the figure below:

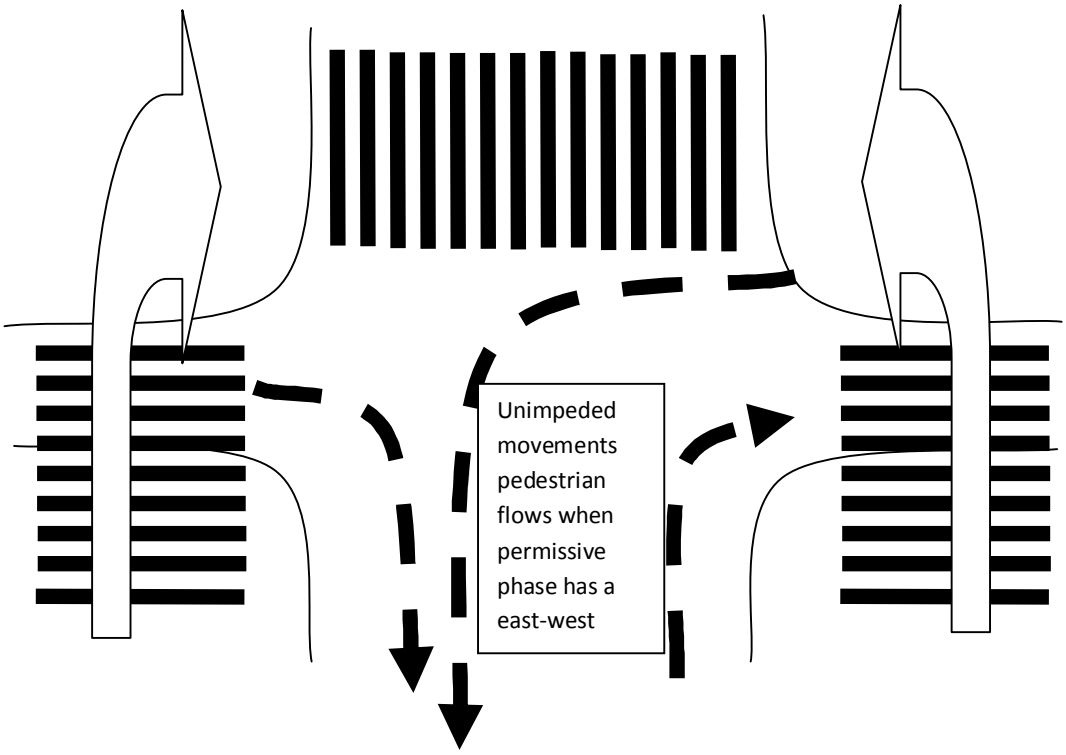


Fig. II.77 The way to obtain – besides the movements represented in the figure – and additional space for the flows of vehicles on South-North axis (also decrease the waiting time for the vehicles of some flows of traffic)

XII-1 = CENTRAL RAILWAY STATION MODERNIZATION SO AS THE TRANSITION FROM RAILWAYS SYSTEM TO ROADS SYSTEM TO REPRESENT AN ACTION OF ESTABLISHING A INTERMODAL HUB OF MAXIMUM IMPORTANCE; SAME FOR NUFĂRUL NODE = no additional parameters of identification

VIII-3 = PERIODICAL ANALYSIS OF „BECOMING BLACK SPOTS" FROM THE SC OTL SA PERSPECTIVE = no additional parameters of identification

I-1 = ELECTRONICALLY PAYMENT SYSTEMS = the reference does not regard the procedure itself, which, according to Law 291/2002 should have been implemented in all cities, but to widespread promotion a this type of payment (which leads to a decrease of trips on public roads).

(measures that can create funds for mobility)
I-12 = PUBLIC PARKINGS ADMINISTRATION TO BE TAKEN BY PUBLIC TRANSPORT OPERATOR (even consider the task of lifting illegally parked vehicles on public domain) = no additional parameters of identification;
XI-9 = REMOVE THE TAXI STATIONS NEAR TO BOARDING-UNBOARDING STATIONS OF SC OTL SA = no additional parameters of identification (for example, even at 50 m close to City Hall, it can be observed a such overlap of interests: between the two stops of trams there is a taxi station).
X-1 = ELABORATE A PROFITABILITY PLAN FOR THE TRAMS RAILWAYS SECTION FROM IOŞIA SUD NEIGHBORHOOD – WHICH DUE TO NEIGHBORHOOD'S SPECIFIC NOT JUSTIFY THE TRAMS TRANSPORT OPERATION – POSSIBLY, THROUGH THE END OF ROUTE REALLOCATION BEYOND THE FENCE WHICH DELIMIT NORTH-SOUTH ARTERY, IN PARALLEL WITH RAIL = no additional parameters of identification;

X-23 = IN ORDER TO MAKE PROFITABLE THE SC OTL SA ACTIVITY, IT SHOULD BE DEFINED THE THRESHOLD BETWEEN SOCIAL TRANSPORT AND SOLITARY TRANSPORT = no additional parameters of identification[49]
V-7 = CARRYING OUT PUNITIVE ACTIONS AGAINST POLLUTERS = the measure is especially important as the respective target is specified only by the values provided by law – regarding level of pollution on public roads.
I-21 = INTRODUCE A „NO CAR DAY" (MONTHLY) = no additional parameters of identification.

(measures that can be considered neutral in terms of financial effort)
IV-3 = LOCAL AUTHORITY STRAIGHT ACTIONS TO REMOVE ANY OBSTACLES ON THE SIDEWALKS OR ON THE REST OF PATHS NEEDED FOR PEDESTRIANS MOBILITY = the measure aim in particular the people with disabilities / the disabled (an example for this is the construction of boarding-unboarding station on D. Cantemir – Piaţa Mare, the way to Nufărul).
XI-6 = IT SHOULD BE NECESSARY TO BE RETHOUGHT THE GRANTING SYSTEMS OF TRANSPORT LICENCES FOR PERI-URBAN AREA AND EVEN COUNTY AREA – IN ORDER TO HAVE THE OBLIGATION TO USE AS ARRIVAL AND DEPARTURE IN/FROM ORADEA ONLY THE BUS - STATIONS – TO STRICTLY FORBID THE PUBLIC TRANSPORT OF PASSENGERS WITHIN THE CITY = at the present date, SC OTL SA has accepted – perhaps forced by circumstances – to allow stops for boardings and unboardings in other locations than **official depot** on Războieni Street, the only place that should be the terminus point for extra/urban routes.
I-5 = PERIODICAL ANALYSIS OF THE SECTION OF STREETS ON WHICH HAVE TO BE INCREASED THE SPEED, OR ON WHICH HAVE TO BE REDUCED (EFFECTIV REDUCED BY TRAFFIC CALMING MEANS) = it is required a technical **study** which to identify – through highly complex simulations – on which streets the decrease or the increase of vehicles flows reduce significantly waiting times of the vehicles passing through congested intersections.

[49] To review the chapter regarding OBJECTIVES, which refers to profitability limits of transport urban routes.

VII-3 = ALLOCATION – IN CASE OF INSTITUTIONS SUBORDINATE TO LOCAL AUTHORITY – OF THE PARKING SPACES FOR THEIR EMPLOYEES ON THE PRINCIPLE OF THE DISTANCE FROM EMPLOYEE'S RESIDENCE = no additional parameters of identification.

I-17 = MODIFICATION IN STARTING HOURS OF THE ECONOMIC AGENTS ACTIVITY SITUATED ON THE SAME STREET OR IN THE SAME POINT – MARGINAL – OF DESTINATION = is a measure linked with economic progress recorded by industrial areas form North-Est and South-East.

III-7 = IT IS RECOMMENDED AN ECHELONED SCHEDULE FOR STARTING WORKING HOURS IN CASE OF THE COMPANIES = it is a measure to be taken for economical or industrial companies situated near to city's center (**City Hall, Prefecture, County Council but also some other municipal or county authorities start their working day at the same hour – although they are situated about 7 minutes distance one from onther, or about 2 up to 7 minutes of Partium University**).

I-2 = SYSTEMATICALLY EDUCATIONAL MEASURES IN SCHOOLS – IN THE IDEA OF A SUSTAINABLE DEVELOPMENT CULTURE = no additional parameters of identification

I-19 = TICKETS TO CONCERT AND SPORTS EVENTS WHICH HAVE TO INCLUDE THE PRICE OF 2 TICKETS FOR TRAVEL BY PUBLIC TRANSPORT – TO OFFER THE RIGHT TO TRAVEL = no additional parameters of identification[50]

X-9 = SC OTL SA HAS TO REDO THE SCHEDULE FOR PUBLIC VEHICLES SO AS THE INTERVALS AT PEAK HOUR TO REACH 7-8 MINUTES BETWEEN THE VEHICLES OF THE SAME LINE/ROUTE = no additional parameters of identification

X-5 = IT HAS TO ENHANCE THE EFFORTS FOR INCREASE TRANSPORTS REGULARITY AND EVEN THE PUBLIC TRANSPORT VEHICLES PUNCTUALITY – ACCORDING TO SCHEDULES = no additional parameters of identification (theoretically there are many actions that ca be take into account when the punctuality is analyzed; but most of them refers to compliance with the schedule, fact that depends by human factor = driver and random phenomena in traffic).

Without reducing their importance, practically the public transport operator can only establish the time of the trips by public transport so as time RESERVES introduced in travel time to cover the most of objective deviations – „due" to driver and general traffic – and that could take the vehicles displacement out of the schedule. In order to rationally establish the time for the trip by public transport, there are mathemaical methods based on probability theory.

X-20 = RECONSIDER THE SET OF PUBLIC TRANSPORT STATIONS FOR BOARDING AND UNBOARDING = no additional parameters of identification

XI-5 = ANALYZE THE POSSIBILITIES TO STANDARDIZE THE PAYMENT INTO A SINGLE PASS FOR URBAN TRIPS IN COMBINATION WITH PERI-URBAN TRIPS = no additional parameters of identification

XII-3 = ORGANIZE THE PUBLIC TRANSPORT PROGRAM PERFORMED BY PUBLIC TRANSPORT OPERATOR IN ACCORDANCE WITH THE RAIL AND AIR TRANSPORT PROGRAM = no additional parameters of identification.

[50] The management of „Regina Maria" Theatre has already shown the interest for this type of ticket-pass.

21. Develop the packages of measure based on the principle – value for the invested money (best value for money)

THE ENTIRE PRESENT ACTIVITY AND THE NEXT ONE[51] ARE MADE IN TERMS OF THE AGREEMENT ESTABLISHED BETWEEN SC OTL SA AND INCERTRANS ON 09/19/2013, ACCORDING TO THE REPORT NO. 10921/09/19/2013 – ANNEX 24; THE NEW MATRIX OF MEASURES IS PRESENTED IN ANNEX 25 AND REPLACES THE ANNEX 23 USED BY NOW.

The idea on which is based the center of developing the packages of measures is the efficiency: in most part, only the measures selected based on the principle of a"good ratio cost/benefit[52]" will ensure the achievement of the objectives and targest with **minimal adverse effects (or relictances)**. The selection of the measures was based on key discussions with stakeholders, taking in consideration the experience of other cities with similar policies, in order to ensure the value of money (and not least, to exploit as much as possible the possibles synergies between measures). In addition: the selection of the measures will be focused not only efficiency but also on the value of money. Especially in times of small budgets for urban transport and mobility, it is essential to get the greatest possible impact for the expended resources. This requires a basic assessment of options, both in terms of costs and of the benefits. This will also help in choosing only realistic measures that can be implemented and to avoid "windy projects," in other words to choose only measures that seem financially feasible.

The choice of methodology for the selection of measures depends on the available experience and resources and may include both qualitative and quantitative approaches.
In some cases, a full cost-benefit analysis may be too costly (eg. the involvement models for major measures). In such situations, simpler approaches have been applied and / or estimates on the most important measures. The principle of value for invested money (best value for money - BVM) consider the optimal combination between the "total cost" (eg. costs of purchase, maintenance and operation, shutdown, etc..) of a purchase and correspondence with the goal (eg. quality and ability to meet all the requirements of the beneficiary). This definition gives contracting authorities the possibility to envisage requirements to include social, economic and environmental objectives in the procurement procedures. „The total cost" includes both quantifiable costs and benefits, as well as others that can not be quantified. A part of the above costs arise from the beginning, but most appear on the way (costs for energy, maintenance of equipment, staff training, environmental impact, etc.). **To determine the full cost of implementing a measure** it has to be understood the impact that the measure will have after implementation. The cost of a certain measures must be "analyzed" in order to make

[51] Develop the packages of measures based on SYNERGIES between the components of the packages
[52] The benefit is any actually beneficial for mobility (ie not only money but also reducing of CO_2 emissions or dust, lower travel time spent awaiting public transport vehicles or in public transport vehicles, improvement of transit the urban areas with high traffic, changes in neighborhoods' density – which have as an effect the efficiency of public tranport activity etc.).

comparisons between different measures. Below is an example for the purchase and maintenance of five buses. A bus with automatic transmission, which has a total cost of 270,000 euros and lifetime of 15 years, has an annual cost of 18,000 euros. A bus with manual transmission, which has a total cost of 200,000 euros, but with a lifetime of only 10 years, has an annual cost of 20,000 euros. In other words, if life expectancy is 10 years and the total cost of using the bus with automatic transmission will be 180,000 euros for the first 10 years, then this is the best value for money.

In the extensive work – based on which was selected this summary – there are presented all 75 measures proposed above, measured in terms of costs and benefits.[53]
The used hypothesis was based on other cities' strategy that are at the second or third edition of SUMP and that included a mix of measures, different from case to case, but in all the cases the concrete actions were initiated with the most "profitable" - which can at least create a revolving fund for operations that consume money. In order to group in the most efficient way the proposed measures we appeal the European experience in the field. The Institute for Transport Studies in Leeds, United Kingdom developed a specialized software that helps those who want to propose and implement measures to increase mobility. KONSULT software, that can be used at the web address http://www.konsult.leeds.ac.uk (the software is recommended also in the Guidelines for SUMP implementing) provides a hierarchy of measures based on the costs that every measure involves.

In Annex 26 there is, besides the framing of the measures proposed by INCERTRANS in the list of KONSULT instruments, the estimation of costs for each of these measures (high, medium, low, neutral). In Annex 27 there are identified combinations of measures that ensure the efficiency and which support each other to overcome the financial barriers, the barriers of acceptability etc., grouped by three and disaggregated on measures of support, strenghtening and reinforcement. Guidelines used were:

- a high importance was given: to reduce congestion, CO_2 emissions and pollution, to increase accessibility to key services and confidence in public transport, to increase safety, to promote walking and cycling;
- a very high importance was given to the strategies of reducing the need for travel, the use of private car, the improvement of spatial using and public transport and a medium importance to freight transport.

As it was mentioned above: they were developed several packages of measures = **the most effective and also take into account the best use of financial resources**.
For the support measures it can be seen that the best score is recorded for measures which refers to implementation of the dedicated lanes for public transport and "park & ride"parkings,

[53] The insertion of the respective information is actually unnecessary because the continuous analysis (following) made in collaboration between the external project team - the INCERTRANS - and internal team - made up of decision makers of Oradea Municipality and SC OTL SA - reduced (in most part justified) the list of measures, up to half of the initial number of measures.

supported by taxation of streets infrastructure**.** Besides, the most successful combination of measures, with the highest efficiency and which ensure the best value for money, there are those containing at least one measure that brings money**.** The following ranks are combinations containing measures to improve public transport services, to develop express bus lines and bike tracks. **On the opposite side** is a combination that includes the development of dedicated lanes, the improving of public transport and traffic management system implementation, all these three groups of measures involving average costs**.**

For strenghtening measures the best score is obtained by the combination: light rails implementation, black spots elimination, supported by taxation of private parking, respectively the progressive taxation of public parkings**. On the opposite side** there is a combination that includes the introduction of bicycle parking, improving of public transport services and flexible transport for peri-urban areas, all three groups of measures involving average costs**.**

For reinforcement measures the best score is obtained by the combination: interchange nodes, traffic calming means and drecrease of the price of ticket. **On the opposite side** there is a combination that includes regulations which limit the range of operators' activities, facilities pedestrian crossings, management of public transport vehicles fleet, all three groups of measures involving high or average costs**.**

CONCRETELY, THE PACKAGES WILL BE PRESENTED AT THE NEXT POINT OF THE WORK – IN ORDER TO OBSERVE THE NON-ANTAGONIST ANTITHESIS BETWEEN THE TWO POINTS OF VIEW THAT SOULD BE MADE – TO SEE THE GUIDELINES OFTHE PRESENT PROJECT.

22. Develop the packages of measures from the perspective of attainable SYNERGY between the components of packages

The word "synergy" has Greek origin, being formed from the word "syn" meaning "together" and the word "ergon" which translates to "work". In free translation "synergy" has the meaning of "result after joining and labor" and defines the **enhanced effect that can be achieved by simultaneous action of several elements**.

The concept of synergy helps to establish a **new type of approach in the field of management** able to develop overall approaches of complex decision-making processes. Complex decision-making processes oriented to synergy envisage the "optimal combination" of functions and individual effects of each component of an assembly in order to achieve greater effects than the sum of the effects of the components. More specifically, not the combinations of effects of some elements which complete themselves, should be the objective of a complex decision but the pursuit of optimal integration of components and relationships into a system so as to obtain the maximum favorable effects (results). Synergy oriented decisions must follow the obtaining of amplified positive effect subsequently to simultaneous action of several factors, so that the obtained effect to be greater than the sum of the effects of each factor.

For example, in Annex 25 containing matrix of 25 indicators / 95 possible measures there are to analyze the following variables:

E = **length of dedicated lanes for public transport network to all the main streets**. It can be seen that for this indicator are incident 18 of the 95 measures:

I-9 establish the legal conditions, and also the development of dissemination events regarding systems of using private car: car-sharing and car-pooling (including tax breaks for companies that rents and declares object of activity this activity).

I-10 SC OTL SA must initiate action in cooperation with the passengers of public urban transport, respectively regular meetings with amateur drivers;

I-18 parking spaces on public domain and which are „given" to some economic agents (in order to be used by their employees): with payment made by the economic agent to municipality;

I-19 tickets to concerts, sport events etc. should include the price of two trips by public transport - to be given the right to travel;

III-1 the reducing of private car use (through pricing policy and awareness);

III-2 the budgeting of public transport development;

VI-2 the development of green networks (the upper level of green spaces);

VII-1 the municipality should develop a new parking regulation to reduce the possibility of parking on the street/carriageway;

VIII-1 SC OTL SA has to elaborate a plan for design, redesign and implement the rehabilitation works for city's trams infrastructure;

IX-2 promote a program of reconstruction of some elements of streets infrastructure (widening of streets, changes of radius curves, modification of intersection geometry in order to increase the level of service etc.);

X-4 organize the regular bicycle competitions (especially in areas where public transport gets more difficult);

X-11 SC OTL SA has to aim the purchase of vehicles with enhanced access possibilities (of different capacities, with low floor etc.);

X-14 SC OTL SA needs to develop a proposal to allow emergence of the first public transport lanes;

X-18 it has to be implemented and then generalized the transport system by express lines (or maxi-taxi) along normal lines;

X-19 it is necessary to redesign the bus lines in order to exclude the redundancy/parallelism between the two modes of transport;

X-21 take into consideration the possibility to implement the transport system by trolley;

X-22 it is necessary that some of the trams routes to become light rail routes;

XI-1 high qualitative demands for public transport operators that participate to auctions for peri-urban routes.

OBVIOUS BY THE ITS CONTENT X-14 IS ESSENTIAL DEDICATED LANES EMERGENCE.

Prognosis of direct impact leads to situation no. 1: commercial speed means of public transport vehicles should increase substantially and easily. But without VII-1 the streets will become more "narrow" from the perspective of many people who do not use public transport; due to these facts congestion will increase and at the intersections of streets

the waiting time of public transport vehicles could negativ compensate the time gained on the section with dedicated lanes.

FINDING: IT IS NOT SURE THAT THE ONLY X-14 WILL BRING THE IMPROVEMENT OF MOBILITY

Prognosis of direct impact leads to situation no. 2:

- without (new) modern vehicles the dedicated lanes could be useless (difficult mobility of SC OTL SA's vehicles or stationary which actually abolish the dedicated lanes).
- the absence of transport lines which to allow superior speeds, the gains of commercial speed will be insignificant.

FINDING: THE MEASURES III-2 and X-18 INTRODUCE THE SYNERGY WHEN THEY ARE ASSOCIATED WITH MEASURES X-14 AND VII-1

Nevertheless, in the situation in which education lacks nor the 3 mentioned measures will not achieve their full potential, as amateur drivers may not follow the rules concerning dedicated lanes so that, the effort involved by the implementation of the 3 measures can be counterproductive.

FINDING: MEASURES I-10 AND III-1 BRING THE SYNERGY BACK ON A POSITIVE PATH

Resuming: streets narrowing is still an undesirable effect, the right premise is that the way for public transport can not be "cleaned" to the detriment of other road users. Therefore, it should be considered the measures:

- active: VIII-1, IX-2, X-19
- passive: I-18, I-19, VI-2

Prognosis of circumstantial impact leads to situation no. 3: the municipality can not assign the issue of dedicated lanes to be solved only by the public transport operator and amateur drivers; therefore creating the conditions for measures I-9, X-4 and XI-1 is an obligation before a full acceptance of dedicated lanes.

FINDING: SYNERGY HAS TO BE SUPPORTED BY THE MEASURES AT THE SECOND LEVEL ON INTERVENTION = I-9, X-4 AND XI-1

The goal being reached – that means the emergence of dedicated lanes on bus routes – the common sense measure would be to create conditions for disabled (on the routes with dedicated lanes the buses with low floor can operate without impediments in general traffic – taking into account that the stationary for boarding and unboarding for this type of bus is greater).

IN A EXHAUSTIVE WAY THE SYNERGY IS PLENARY ALSO BY IMPLEMENTING OF X-11 MEASURE.

At the end of exemplification: matrix 25/95 revealed a heterogeneous synergistic potential:

- from dozens of measures that are potentially in situation of "one to support the other" – as in the case of the above „E" indicator
- up to a few measures in synergy

and therefore, further analysis should include a synthesis of the possibilities to achieve the synergy ESPECIALLY THE ORADEA MUNICIPALITY OBVIOUSLY WILL BE ALBE TO SUPPORT ONLY FEW MEASURES PROPOSED BY INCERTRANS.

In addition, also time factor (exactly the „moment" factor) is a very important benchmark (IN MEASURES IMPLEMENTING) because it should be considered the start of implementing - sometimes simultaneously, sometimes successive – of the actions, so achieving the optimal level of integration of possible favorable effects, namely the period after that the maximum synergy potential occurs has to correspond to the objectives (taking into account the dynamic of the influence of the components and socio-economic conjuncture and even political).

The estimation of the synergetic effects due to the adoption of measures depends on the time factor, but also by many other factors that can not be controlled, fully measured or predicted, leading to situations of uncertainty and risk.

In principle, to obtain positive results, it is essential that any "enterprise" to start by establishing a work program according to its potential of performance (material resources, human, financial and technical) so that the effect of integration by their simultaneous actions to be as high as possible, so the synergistic effect to be high as possible. **In action, even fulfilling the program condition** THE SYNERGISTIC EFFECTS WILL CAN NOT BE MEASURABLE NOR PREDICTED due to the fuzzy way in which a plan of measures is developed and implemented (such as SUMP size), only the results are analyzed in a three-dimensional space consisting of:

• functional areas involved (administration, finance, marketing, performance);
• the types of synergies involved (management, investment, the benefit, the social);
• the extent and intensity of which are potential synergistic feedback as marks, symbols or sometimes numerical value estimates.

- functional areas involved (administration, finance, marketing, performance);
- the types of synergies involved (management, investment, the operation, the social);
- the extent and intensity potential synergistic for which are made appreciation as marks, symbols or sometimes numerical value estimates.

Back to issues related to synergy, conveniently grouping the 25 indicators it has obtained a range of possible synergistic effects – the below table

The following table refers to the „bitter" measures – which involves financial effort – already grouped so as to be outlined the packages proposed by INCERTRANS:

Tab. II.22 Full package of measures

	Measures to the level of local authority			Measures to the level of SC OTL SA		
	Support measures	Strenghtening measures	Reinforcement measures	Support measures	Strenghtening measures	Reinforcement measures
	alfa measures	beta measures	gama measures	alfa measures	beta measures	gama measures
Measures that bring money	I-16, II-2, X-12, XI-7, XI-8	I-18, III-1, V-8, VII-2	I-12, V-7, XI-9	-	X-18, X-19, XI-2	I-21, X-23
Measures without money	I-3, I-9, I-11, II-3, III-5, VI-1, VI-4, X-10	I-4, I-8, I-13, III-8, VII-1	I-2, I-17, I-19, III-7, IV-3, VII-3, XI-5, XI-6	X-14, X-17	I-10	I-5, X-5, X-9, X-20, XII-3
Measures that require money - financial effort being moderated	-	I-7, III-2, V-1, VI-3, VI-6	I-1, I-15, VIII-3, XII-1	IV-1	-	V-2, X-11
Measures that require money - financial effort is considerable	I-14, I-20, VII-4, IX-1, IX-3, X-8, X-15	V-3, IX-2, X-3, X-21, X-22	X-1	X-6, X-7	V-5, VIII-1	-

- red: "heuristic[54]" measures = measures for which there was no need to examine whether if they manage to enter in synergistic relationship with other measure, because their impact is so important so as their elimination questions the success of the SUMP
- blue: measures that ensure a level of synergy just for some of the grouped indicators under the title = simple synergy
- green: measures that ensure a level of synergy for all the indicators grouped under the title = complex synergy
- black: in this case could not be identified the context in which it can be possible to ensure the synergy = "no synergy" measures

[54] Measures of experience, common sense measures.

Tab. II.23 The whole of packages of measures requiring financial effort[55]

	Measures to the level of local authority			Measures to the level of SC OTL SA		
	Support measures	Strenghtening measures	Reinforcement measures	Support measures	Strenghtening measures	Reinforcement measures
	alfa measures	beta measures	gama measures	alfa measures	beta measures	gama measures
package of measures to reduce congestion (and for the traffic, generally)	I-14, I-20, IX-3,	IX-2,				
package of measures to achieve better conditions for operating the public transport system	X-8, X-15	III-2, X-3, X-21, X-22	X-1	IV-1, X-6, X-7	V-5, VIII-1	V-2, X-11
package of measures to ensure sustainable development of mobility	VII-4,					
package of measures for alternative transport	IX-1,	I-7,				
package of measures to increase pedestrian safety (and fluidization traffic, generally)			I-15, VIII-3,			
package of measures to reduce the citizens' need of travel		VI-3, VI-6	I-1,			
package of measures to reduce pollution		V-1, V-3,				
package of measures to achieve intermodality			XII-1			

Regarding the support of the incisiveness of these measures, INCERTRANS used the KONSULT program developed by Institute for Transport Studies, University of Leeds that can be reached at http://www.konsult.leeds.ac.uk (the program is recommended in SUMP Guidelines). In Annex 29 there is the file which enabled the determination of measures efficciency.
In sheet 1 are the results for the 46 measures of Konsult[56] in the conditions in which the choosing the structure for data input[57] has characterized one by one the directions set by the 12

[55] Although some measures are singular in the line that defines a package of measures after completing table that requires no effort finanaciar measures, the package will be upgraded: in tab. II.22 there are still 46 measures of all categories.

objectives established as feasible for Oradea SUMP (I ... XII); columns B ... M of Sheet 1 indicate- by percentage - for each of the 46 measures of Konsult which is the rank on a scale from + 100 to - 100, where +100 represents the highest positive impact of the concerned measure on the mobility and - 100 is the lowest negative impact of the measure on mobility (eg:

- for the objective I = “reduce congestion, including reducing general traffic – roads traffic”,
- the measure “PT Focused Development = the development of public transport for passengers”
- will have an impact in changing some parameters of the mobility which are estimated to be +19,94%).

Further explanations will be focused on the „rows” contained by the above mentioned file (and at the end of this chapter will be presented the explanations on the „columns” contained by the file). First of all it can be found that 6 measures:

- Traffic Control Systems
- Parking control
- Management of freight fleet
- Information about the availability of parking
- Conventional signaling
- Panels with variable message for information

are not found in the list proposed by INCERTRANS – in part because of the unusual – for Oradea city (eg. information about parking availability), in part because these measures exceed the previously established framework for Oradea SUMP (eg: the management of freight fleet).
Secondly, it was made a ranking of measures. This ranking resulted for the concrete conditions that characterize the 12 objectives. Konsult results were inserted in the 12 columns already mentioned B ... M and resulted in a list - column R - which highlights:

- the fact that the 6 measures "neglected" by INCERTRANS are at the bottom of the ranking: 11, 17, 34, 36, 38, 42
- the first 10 measures (taxation of road infrastructure, intelligent transport systems, the discipline of planning the spaces for buildings, the development of public transport for passengers, free or reduced tax in TP (pensioners, students, disabled), planning of the trips, park and ride, light rail, lower cost of the ticket, improvement of TP services, **benefit of 31 of the 75 total of measures poposed by Incertrans, respectively 16 of those requiring financial resources**.

In Sheet 2 is the calculation that quantifies the incisiveness of measures: AH column indicates that although not provided - single or multiple - all 46 measures, the result raises the efficiency of the measures to above 24% over the unjustified choice of all measures[58]. In Sheet 3 is repeated

[56] It is a coincidence that the number of measures that do not require financial effort is identical to the number of measures considered by Konsult..
[57] These structures are in Annex 28.
[58] **IN FACT: ALL THE STUDY MADE BY INCERTRANS UNTIL THIS MOMENT IS JUSTIFIED BY THESE 23-24 PERCENTAGE OTHERWISE, IT WOULD NOT BE LONGER NECESSARY FOR SUMP DEVELOPING TO BE PROVIDED ONLY 46 MEASURES WHICH TO COVER THE KONSULT RANGE AND SO, EVERYTHING WILL BE SOLVED ALMOST INSTANTLY.**

the above calculation that quantifies the incisiveness just only for the measures which require financial effort: AH column indicates the result of measures efficacy to be more than 38% over the unjustified choice of all measures.

All other measures - not involving financial resources - ARE TAKEN INTO ACCOUNT ONLY AS HELPFUL ELEMENTS OF THE CAUSE - MOBILITY – AND THE MEASURES THAT INVOLVE FINANCIAL EFFORT. Following the above assumptions the packages of measures consists in:

Tab. II.25 The full ensemble of measures packages[59]
(with black are marked the measures that not involve financial effort)

	Measures to the level of local authority			Measures to the level of SC OTL SA		
	Support measures	Strenghtening measures	Reinforcement measures	Support measures	Strenghtening measures	Reinforcement measures
	alfa measures	beta measures	gama measures	alfa measures	beta measures	gama measures
package of measures to reduce congestion (and for the traffic, generally)	I-14, I-20, IX-3, II-2, III-5	IX-2, VII-1, VII-2	I-12, III-7, VII-3	X-14		
package of measures to achieve better conditions for operating the public transport system	X-8, X-15, X-10, XI-7	III-2, X-3, X-21, X-22, III-1	X-1, XI-9	IV-1, X-6, X-7, X-17	V-5, VIII-1, X-18, X-19	V-2, X-11, X-5, X-9, X-20, X-23
package of measures to ensure sustainable development of mobility	VII-4, I-9, I-11, I-16, VI-4		I-19		I-10	I-21
package of measures for alternative transport	IX-1,	I-7, I-8	I-2		I-18	
package of measures to increase pedestrian safety (and fluidization traffic, generally)	VI-1, II-3		I-15, VIII-3, I-17			I-5
package of measures to reduce the citizens' need of travel	X-12, I-3	VI-3, VI-6, I-4, I-13, III-8	I-1, IV-3			
package of measures to reduce pollution		V-1, V-3, V-8	V-7			
package of measures to achieve intermodality	XI-8		XII-1, XI-5, XI-6		XI-2	XII-3

[59] It is important to observe that all measures that involves money are supported (or could be replaced with) the measures which not involve money.

23. AGREE ON CLEAR RESPONSABILITIES AND ALLOCATE FUNDING

Based on discussions between decision makers of Oradea Municipality Administration, deputy - Ovidiu Mureşan, economic manager – Eduard Florea, manager of Oradea Metropolitan Area – Ciprian Barna and general manager of SC OTL SA Ph. D. Istvan Csuzy (through direct negotiation – to see Annex 25) it was concluded that of the 95 targeted measures, but only 75 measures proposed to be analyzed:

- Only 12 measures can be considered as a responsibility of Oradea Municipality Administration respectively
- Only 24 measures can be considered as a responsibility of SC OTL SA.

The main explanation for this drastic reduction of measures lies in unwanted side effects that some measures could have on financial, human and logistic resources of the city regarding SUMP implementation.

The list of measures selected by local authority is shown below (measures marked with blue are the measures for SC OTL SA, with red the measures for Oradea Municipality Administration, with small letters – specifications):

I-7 = set up bicycle parkings in boarding-unboarding stations of public transport vehicles (for the start, at least racks for 5-7 bicycles in the least half of the tram stations)

(to see also Chapter 5 = Objectives: the development of sustainable transport modes)

a) Causality

Alongside with the next measure, it is a high-impact initiative for sustainable development and also to increase the revenues of SC OTL SA.

b) Requirements

The proposal is to continue equipping stations with this type of facilities. It is recommended to elaborate a feasibility study and a technical project.

c) Results

- Ensure the accessibility offered by the transport system is available to all;
- Improve safety and security;
- Reduce air and noise pollution, greenhouse gas emissions and energy consumption;
- Contribute to enhancing the attractiveness and quality of the urban environment and urban design;
- Reduce traffic congestion;
- Development of sustainable transport modes: walking and biking;
- Reduce CO emissions;
- Development of local public transport system.

For other benefits see also tables II.20 and III.9.

I-8 = creating the commercial and technical framework for bicycle carrying in vehicles owned by public transport operator;

(to see also Chapter 5 = SMART targets: number of public transport trips)

- It is technically feasible.
- From the commercial point of view it requires a promotional campaign (which to refer exactly to the part of the vehicles in which the bicycle can be put and also between what hours/days bikes are allowed in the public transport vehicles).

- SC OTL SA has to make proposal to Oradea Municipality Administration in order to amend the regulation concerning public transport vehicles.

a) Causality

Taking into account the larger number of cyclists and irregular distribution of cycling tracks in the city, transport operator must provide bike transportation facilities on buses.

b) Requirements

It is technically feasible. From the commercial point of view it requires a promotional campaign (which to refer exactly to the part of the vehicles in which the bicycle can be put and also between what hours/days bikes are allowed in the public transport vehicles).

SC OTL SA has to make proposal to Oradea Municipality Administration in order to amend the regulation concerning public transport vehicles.

c) Results

- Ensure the accessibility offered by the transport system is available to all;
- Improve safety and security;
- Reduce air and noise pollution, greenhouse gas emissions and energy consumption;
- Contribute to enhancing the attractiveness and quality of the urban environment and urban design;
- Reduce traffic congestion;
- Development of sustainable transport modes: walking and biking;
- Reduce CO emissions;
- Development of local public transport system.

For other benefits see also tables II.20 and III.9.

I-10 = SC OTL SA has to initiate cooperation actions with public transport passengers and regular meetings with amateur drivers;

a) Causality

SC OTL SA has to start periodic meetings with the public and the amateur drivers in order to provide information about its current activity and problems faced.

b) Requirements

A type of cooperation should be exercised regarding the set up “signaling” of the stations right on the carriageway; TO DISCIPLINE drivers is an objective for SC OTL SA.

Another type of cooperation can be unrolled by a public debate on the matters of “collision” between the two types of transport or between public transport and pedestrians.

c) Results

- Ensure the accessibility offered by the transport system is available to all;
- Improve safety and security;
- Reduce air and noise pollution, greenhouse gas emissions and energy consumption;
- Contribute to enhancing the attractiveness and quality of the urban environment and urban design.

For other benefits see also tables II.20 and III.10.

I-16 = taxation of cars passing through a „protected ring” in the city’s center;

(to see also Chapter 5= Objectives: to reduce congestion)

a) Causality

The image of protected ring – as a measure of PUG (General Urban Plan) – is shown in below figure: network of streets consists of a central ring on the route Sucevei Street – Gh. Magheru Bvd. - Petőfi Sándor Street – Menumorut Street – Decebal Bvd….. (figure II.23).

In the “protected” area the passing/entering of private cars is done by high taxation, but at its outer limit the parking taxes are low.

Following the idea, it would allow the development of a “park and take a byke” system; also, the people who are interested could benefit of a free bike rental service for travel within the central perimeter.

b) Requirements

From the procedural point of view the implementation of such measure requires an impact study followed by a feasibility study which to underpin the execution of a project. The solutions that can be taken are: installing barriers on access roads in the area or installing cameras.

c) Results

- Reduce air and noise pollution, greenhouse gas emissions and energy consumption;
- Contribute to enhancing the attractiveness and quality of the urban environment and urban design;
- Reduce traffic congestion;
- Reduce the need for travel;
- Reduce CO emissions;
- Improve traffic safety.

At an estimated traffic of 50000 veh/14 hours inside the "protected ring", the incomes can be as it follows: for 2,5 lei access fee = 9 mil. euro/year; for 10 lei access fee = 30,75 mil. euro/year.
For other benefits see also tables II.20 and III.8.

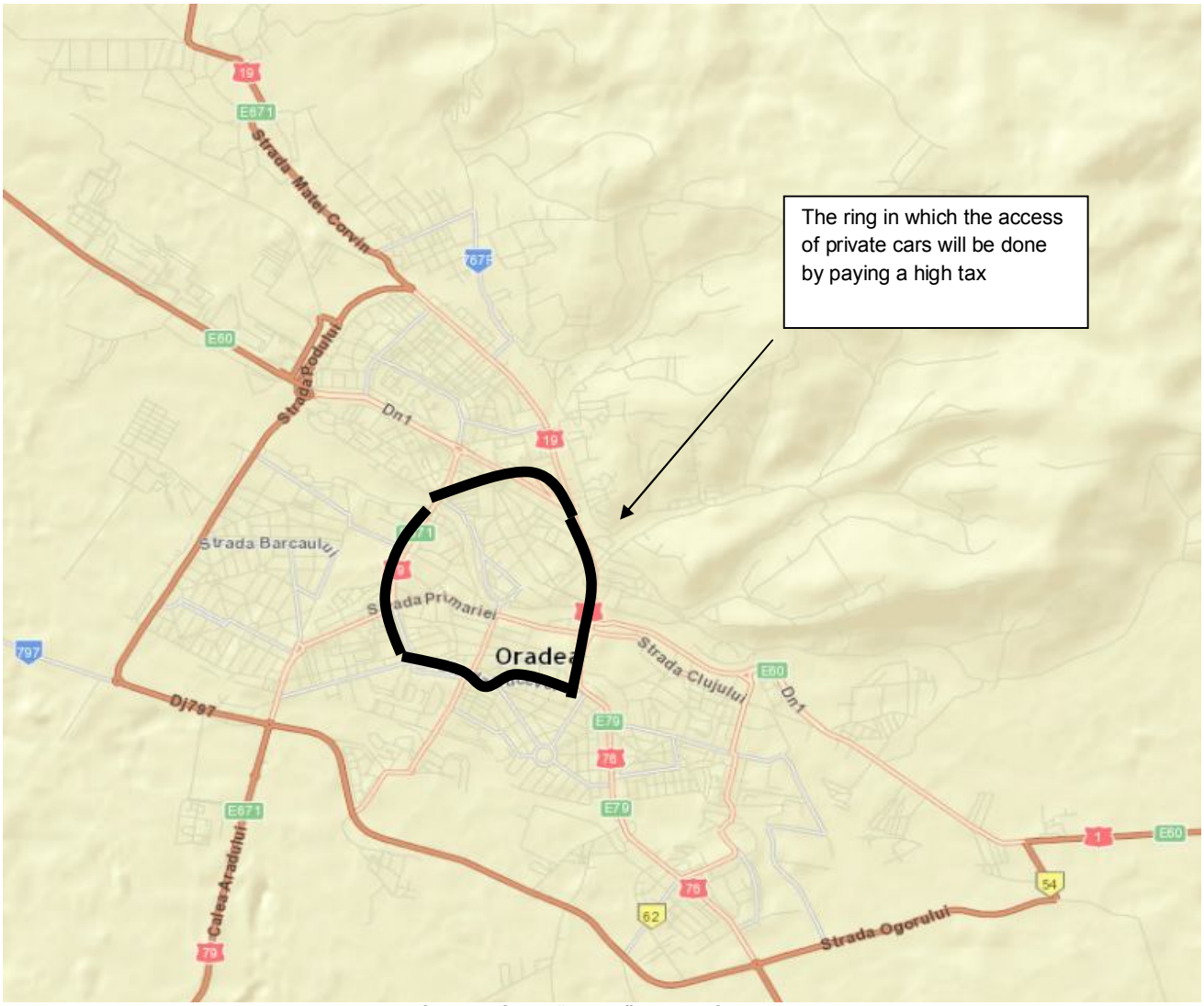


Fig. II.23 – The fixing of the "clean" area of the city's center

I-19 = tickets to concert and sports events which have to include the price of 2 tickets for travel by public transport – to offer the right to travel;

a) Causality

The measure is generic, versions of its increase the robustness of the results: it can be issued on the market a monthly pass which to include, besides the ticket travel on public transport also the permission to enter one or more performances, museum, swimming pools etc.

b) Requirements

The implementations of these actions depend on the agree of the instituions' management and on achieving commercial and financial context regarding the discounts between these firms involved in the actions (it is to note that the manager of the Regina Maria Theatre expressed his interest on this possibility to combine the ticket to the show with a two trips ticket).

In many cities of Europe there is implemented the concept of city-card which is based on financial arrangements concerning the discounts between the companies that participate to different recreational activities which also involve travel by public transport.

c) Results

- Reduce air and noise pollution, greenhouse gas emissions and energy consumption;
- Contribute to enhancing the attractiveness and quality of the urban environment and urban design;
- Reduce traffic congestion;
- Reduce CO emissions;
- Development of local public transport system.

For other benefits see also tables II.20 and III.10.

I-21 = introduce a „no car day" (monthly);

(to see also Chapter 4 = The vision: guidance of public policy to awareness, …)

a) Causality

Worldwide brand cities have implemented this measures for years (it is well-known the image of volleyball players on the great boulevards of Rio de Janeiro in the *no car day*).

In addition it has to be added that will be chosen a Saturday or Sunday (possibly can apply progressively: in the first year twice a year, thereafter, every next year one more day up to 12 days per year)

And last but not least it is to revised the reluctance regarding the summer time, a measure that ultimately proven beneficial.

b) Requirements

For SC OTL SA: an active colaboration with citizens.

For municipality: passing through the local council of an appropriate resolution.

c) Results

- Improve safety and security;
- Reduce air and noise pollution, greenhouse gas emissions and energy consumption;
- Contribute to enhancing the attractiveness and quality of the urban environment and urban design;
- Reduce traffic congestion;
- Development of sustanable transport modes: walking and biking;
- Reduce CO emissions.

For other benefits see also tables II.20 and III.10.

II-2 = to analyze the possibility of implementing of a system type „city-vignette" in a central area of the city;

(to see also Chapter 5 = Objectives: to eliminate the freight transport)

a) Causality

The measure restricts all freight vehicles which still are allowed to pass through the city (this measure modifies the limit of 7.5 tonnes currently restricted to 3.5 tonnes).

It is to emphasize that the central area is not identified with the protected ring mentioned in General Urban Plan; it is up to Oradea Municipality Administration to establish the area and time in which will be forbidden the circulation of freight vehicles with maximum weight more than 3.5 t. Below, like an example it is shown a possible structure of the central area within every vehicles used to supply can enter but only between certain hours and based on vignette.

b) Requirements

For municipality: passing through the local council of an appropriate resolution.

c) Results

- Improve safety and security;
- Reduce air and noise pollution, greenhouse gas emissions and energy consumption;
- Contribute to enhancing the attractiveness and quality of the urban environment and urban design;
- Reduce traffic congestion;
- Reduce CO emissions;
- Improve traffic safety.

For other benefits see also tables II.20 and III.8.

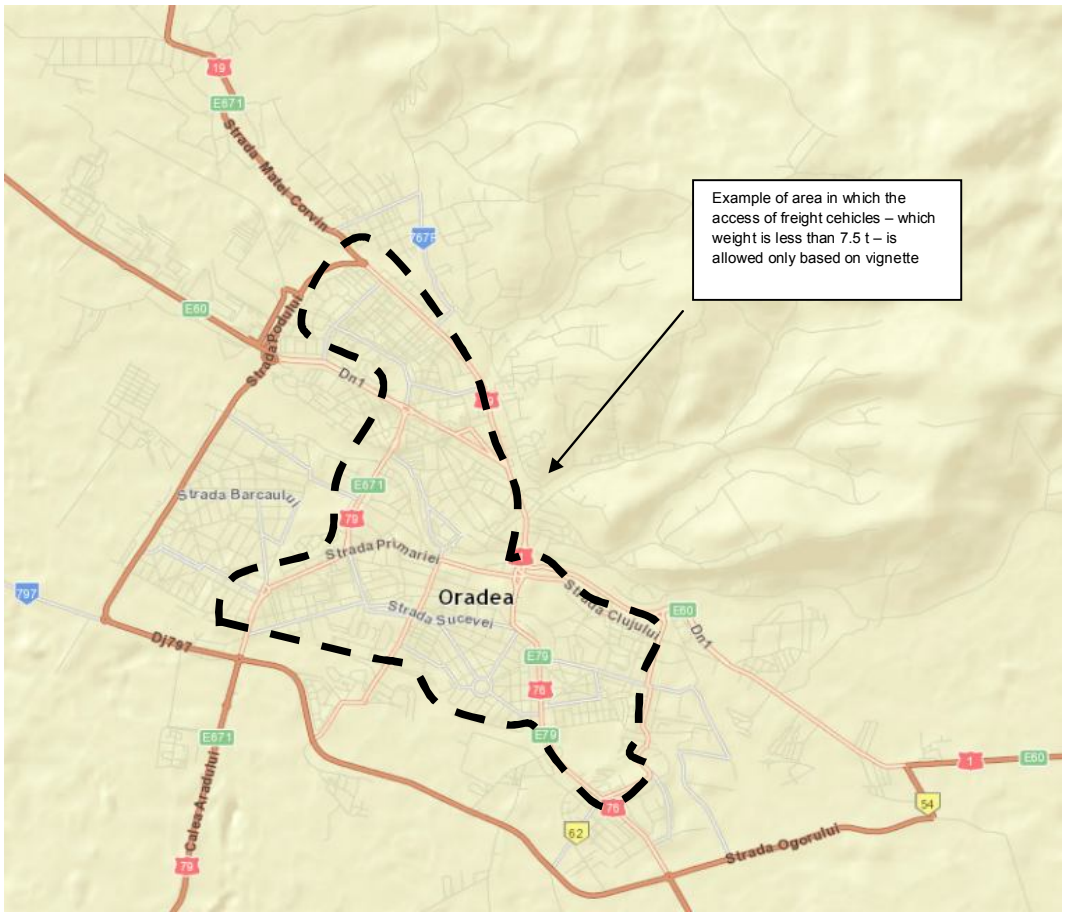


Fig. III.1 – The area in which is forbidden the circulation of freight vehicles with weight > 3.5 t

IV-1 = purchase a medium capacity vehicle – an electrical vehicle – initiating an ecumenical route inside the city;

(to see also Chapter 5 = Objective: carbon emissions reduction)

a) Causality

The idea contained in the measure regards quality more than quantity: obviously, it can be forwarded a proposal to purchase a fleet of such vehicles, but the main problem is the one of the sale market.

b) Requirements

It is necessary a survey among residents and especially among tourists, in order to identify the minimum financial return which justify the purchese of one or more of such vehicles.

c) Results

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- Ensure the accessibility offered by the transport system is available to all;
- Contribute to enhancing the attractiveness and quality of the urban environment and urban design;
- Reduce CO emissions;
- Development of local public transport system.

For other benefits see also tables II.20 and III.9.

The ecumenical circuit is shown in the below figure and encompasses:

(By walk)

- The Moon Church + Synagogue + Municipal Theatre + City Hall + The Greek Cayholic Palace

(By bus)

- Partium University
- Childrens' town
- Central Station
- Roman Catholic Diocese
- Crişul Store
- The Orthodox Monastery

(By walk)

- The Citadel + 1st December Park

(By bus)

- Lotus center
- SC OTL SA Depot
- Oradea University
- Military museum
- Zoo
- Commercial areas (at the end of Calea Aradului)
- Airport
- The Moon Church

therefore the touristic circuit would have the structure shown below:

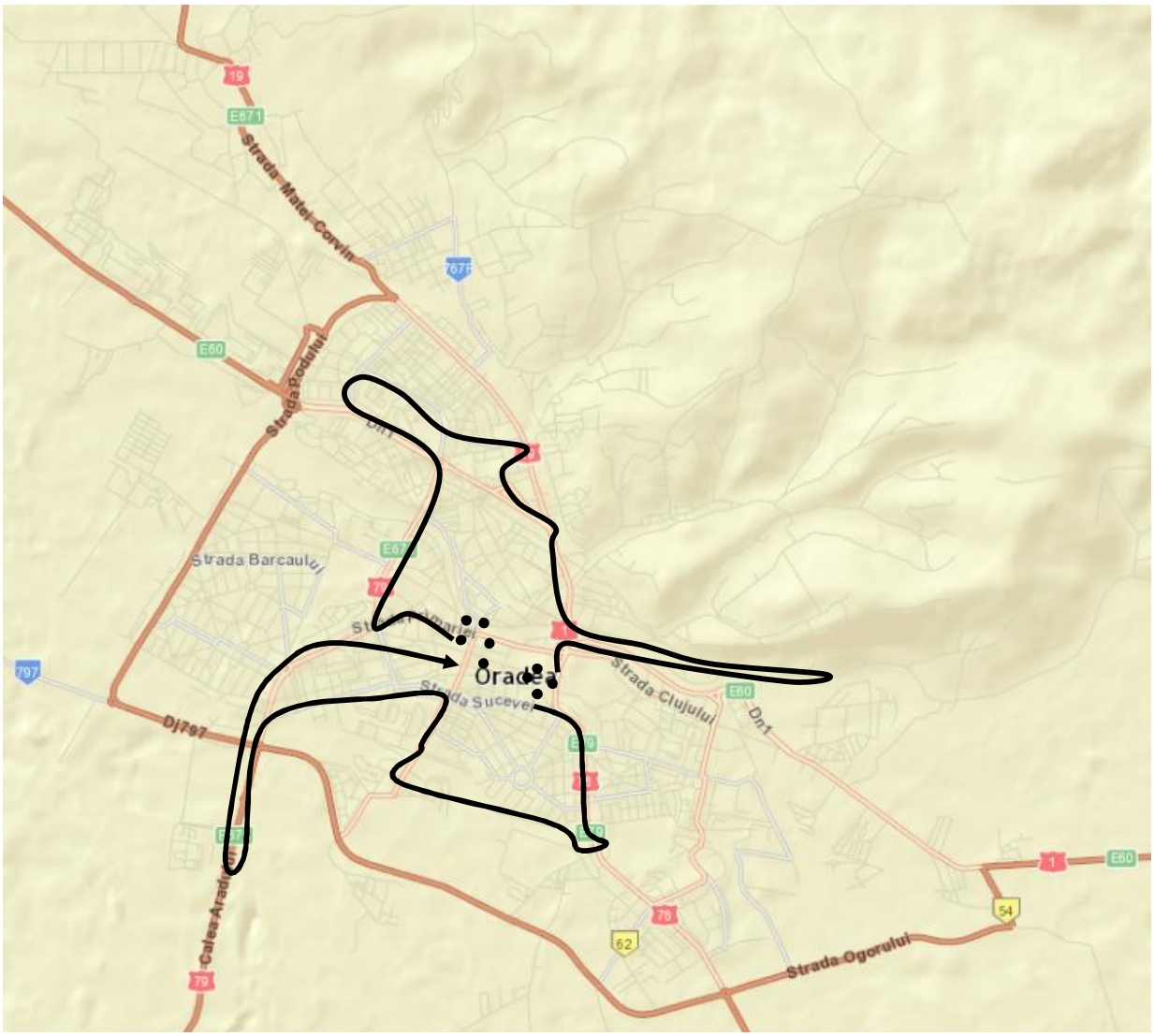

Fig. II.73 – The proposed touristic circuit

V-2 = rehabilitation of tram railways (in the same time with grassing of the embankment);

(to see also Chapter 5 = SMART targets: the development of areas for buildings versus green areas)

a) Causality

Local authorities face difficulties in meeting the requirements of air quality limits for particulate and nitrogen oxides in ambient air. They have a negative impact on public health.

b) Requirements

For rehabilitation and simultaneous introducing of grass surfaces it is necessary an action plan developed on areas. As prime areas in which to start the implementing of the measure can be considered: Independenței Street, 1st December Square, Coposu Street, Emmanuel intersection.

c) Results

- Contribute to enhancing the attractiveness and quality of the urban environment and urban design;

- Reduce CO emissions;
- Improve road infrastructure;
- Development of local public transport system.

Benefits due to this measure are multiple: for trams – higher commercial speed, for passengers – confortableness along the trip, for city – more oxygen etc.
For other benefits see also tables II.20 and III.10.

V-5 = it is necessary a strategy to renew the public transport fleet;
(to see also chapter 4 = Vision: public policy guidelines to……public passenger transport)

a) Causality

SC OTL SA needs to speed up the alignment of the fleet to the sustainable development requirements - 65 % of buses are older than 10 years and over 85 % of trams are older than 30 years.

b) Requirements

There are papers developed internally by SC OTL SA which represent a strategy to renew the fleet.
The approach depends on the availability of local political factor: it can be developed an action to gradually improve the fleet or it can be accepted a major change that requires simultaneous change of the entire fleet.
The first option is recommended for buses: to procure medium capacity vehicles – medium buses as was indicated by mathematical model already shown in 1st Phase – which consume less than 20 l / 100 km, purchased by leasing at a price no more than 5000 EUR/month.
The second option is recommended for trams: for whole fleet older than 5 years it is necesarry to obtain the acquisition in extensive series (for example, leasing for many years).
The renewal problem requires a technical and financial study; a similar proposal can be found in chapter 6.3 which treats the issues of resources.

c) Results

- Ensure the accessibility offered by the transport system is available to all;
- Improve safety and security;
- Reduce air and noise pollution, greenhouse gas emissions and energy consumption;
- Improve the efficiency and cost-effectiveness of the transportation of persons and goods;
- Reduce CO emissions;
- Development of local public transport system.

For other benefits see also tables II.20 and III.10.

VIII-1 = SC OTL SA has to make a plan for design, redesign and improve the infrastructure of trams;
(to see also Chapter 5 = SMART targets: commercial speed in public transport)

a) Causality

In the present project INCERTRANS proposes two directions of development: from Emanuel intersection to Salca Depot – simultaneously opening the second access, respectively Calea Aradului in 3 stages of extension (up to city's ring, up to big hypermarkets, up to airport).

b) Requirements

SC OTL SA has in plan a project to develop the tram network.

c) Results

- Ensure the accessibility offered by the transport system is available to all;
- Improve safety and security;
- Reduce air and noise pollution, greenhouse gas emissions and energy consumption;
- Contribute to enhancing the attractiveness and quality of the urban environment and urban design;
- Reduce CO emissions;
- Improve traffic safety;
- Improve road infrastructure;
- Development of local public transport system.

For other benefits see also tables II.20 and III.8.

VIII-3 = periodical analysis of „becoming black spots" from the SC OTL SA perspective;

(to see also Chapter 5 = Objectives: the improve of safety)

a) Causality

Although risk assessments are made anually, the survey conducted among drivers and motormen of SC OTL SA mentions a number of safety issues which drags for many years (in the study is attached an analysis of the responses to a survey conducted by INCERTRANS).

b) Requirements

For SC OTL SA: identification of the "becoming black spots".

For municipality: working plan and budget for improving road infrastructure.

c) Results

- Improve safety and security;
- Improve traffic safety;
- Improve road infrastructure.

For other benefits see also tables II.20 and III.9.

X-1 = elaborate a profitability plan for the trams railways section from Ioşia Sud Neighborhood – which due to neighborhood's specific not justify the trams transport operation – possibly, through the end of route reallocation beyond the fence which delimit north-south artery, in parallel with rail;

a) Causality

INCERTRANS considers – based on the survey on passengers traffic – that the lucrativeness of Line 2 is brought to the lowest level due to lack of transport need in that neighborhood – neighborhood with a very low population density.

b) Requirements

There are 2 alternatives: one is that the section shall be eliminated or, the other, to elaborate an impact study in order to extend that section toward East Railway Station.

c) Results

- Ensure the accessibility offered by the transport system is available to all;
- Improve the efficiency and cost-effectiveness of the transportation of persons and goods;
- Improve road infrastructure;
- Development of local public transport system.

For other benefits see also tables II.20 and III.9.

X-3 = SC OTL SA has the obligation to provide the necessary documentation to Oradea Municipality Administration to recalculate periodically the compensation of public urban transport operator;

a) Causality

The data on which the tariff is offset by OTL PMO should be as close to reality. In this respect, e-ticketing system implemented by SC OTL provides information on the types of users of public transport. Thus, it is known at any time how many students, retirees and other categories of users benefiting from exemptions or reductions to pay travel are using public transport, and SC OTL may claim appropriate compensation based on these statistics.

b) Requirements

It has to comply with provisions of the Law 92/2007 on local public transport services.

Following the implementation of e-ticketing it will be detailed reports and also reports/records with a high degree of accuracy on categories of public transport users which will provide the basis for periodic recalculation of compensation. These reports will be submitted periodically to Oradea Municipality Administration.

c) Results

- Improve the efficiency and cost-effectiveness of the transportation of persons and goods;
- Development of local public transport system.

For other benefits see also tables II.20 and III.10.

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X-5 = it has to enhance the efforts for increase transports regularity and even the public transport vehicles punctuality – according to schedules;

a) Causality

The measure must not be slighted: although there is a dispatching center owned by SC OTL SA, if it will be done an analysis of the delays, this will be followed at least by periodic changes of public transport schedules (or these seem to remain valid over long periods of time).

b) Requirements

From the technical point of view the increase of the regularity can be done by introducing the time reserves in public transport schedules.

c) Results

- Ensure the accessibility offered by the transport system is available to all;
- Improve the efficiency and cost-effectiveness of the transportation of persons and goods;
- Development of local public transport system.

For other benefits see also tables II.20 and III.9.

X-6 = it is necessary to ensure the second access to trams depot; in the same vein: it is to consider a “shed” for trams in order to reduce the travel distances for the withdrawn trams at the end of the peak hours;

(to see also Chapter 5 = Objectives: local transport system development)

a) Causality

The issue of the trams depot reliability is insufficient present in the concerns of city’s administration and the project and its financing are extensive and problematic.

It is necesarry a second exit from the depot in the context in which is analyzed the below graph in terms of reability – the probability that the critical points 1 or 2 (which in mathematics means sum of probabilities) to become insurmontable does exists, therefore transport operating to become impossible.

Corroborating this finding with topographic situation of the south area of the city, respectively with the tram tracks of the depot, results that an additional exit of the depot has one single location: to west in diametrical position from the current exist = the green arrow in the below figure.

b) Requirements

It is recommended elaboration of a feasibility study, a route plan and a technical project.

c) Results

- Ensure the accessibility offered by the transport system is available to all;
- Improve the efficiency and cost-effectiveness of the transportation of persons and goods;
- Improve road infrastructure;
- Development of local public transport system.

For other benefits see also tables II.20 and III.8.

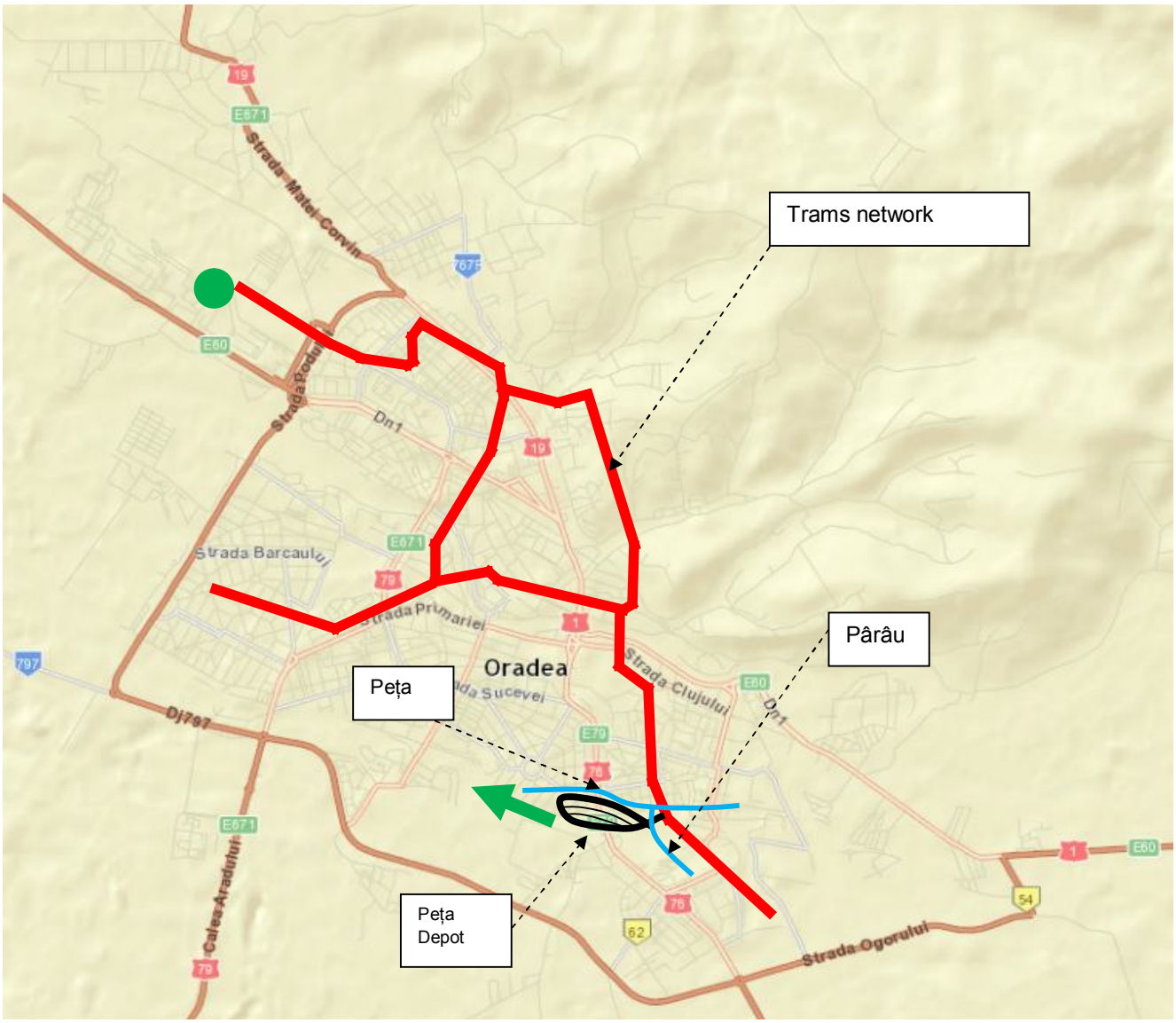

Fig. II.27

X-7 = it can be obtained a higher elasticity in public transport operation if it will be done the third "triangle" which to serve Line 2;

(to see also Chapter 4 = The vision: the neighborhoods' accessibility)

a) Causality

The public transport system must provide equal opportunities to individuals in terms of spatial accessibility points that can satisfy their needs. The spatial accessibility can be treated as drivers of spatial reorganization process and is defined as the process whereby individual locations adopt its functions (social, economic and political) in a spatially closely related to relative changes in connectivity and accessibility of the system as a whole.

b) Requirements

Given the "triangle history" in question it is required an intervention at the highest local level – Oradea Mayor, respectively Police Commander – to unblock the situation.

The figure below shows a possibility of extension of transport service along the materialization of the proposal: how to ensure a fast transport on tram network (reaching of any end of tram network will be done in the shortest times).

c) Results

- Ensure the accessibility offered by the transport system is available to all;
- Improve the efficiency and cost-effectiveness of the transportation of persons and goods;
- Improve road infrastructure;
- Development of local public transport system.

For other benefits see also tables II.20 and III.8.

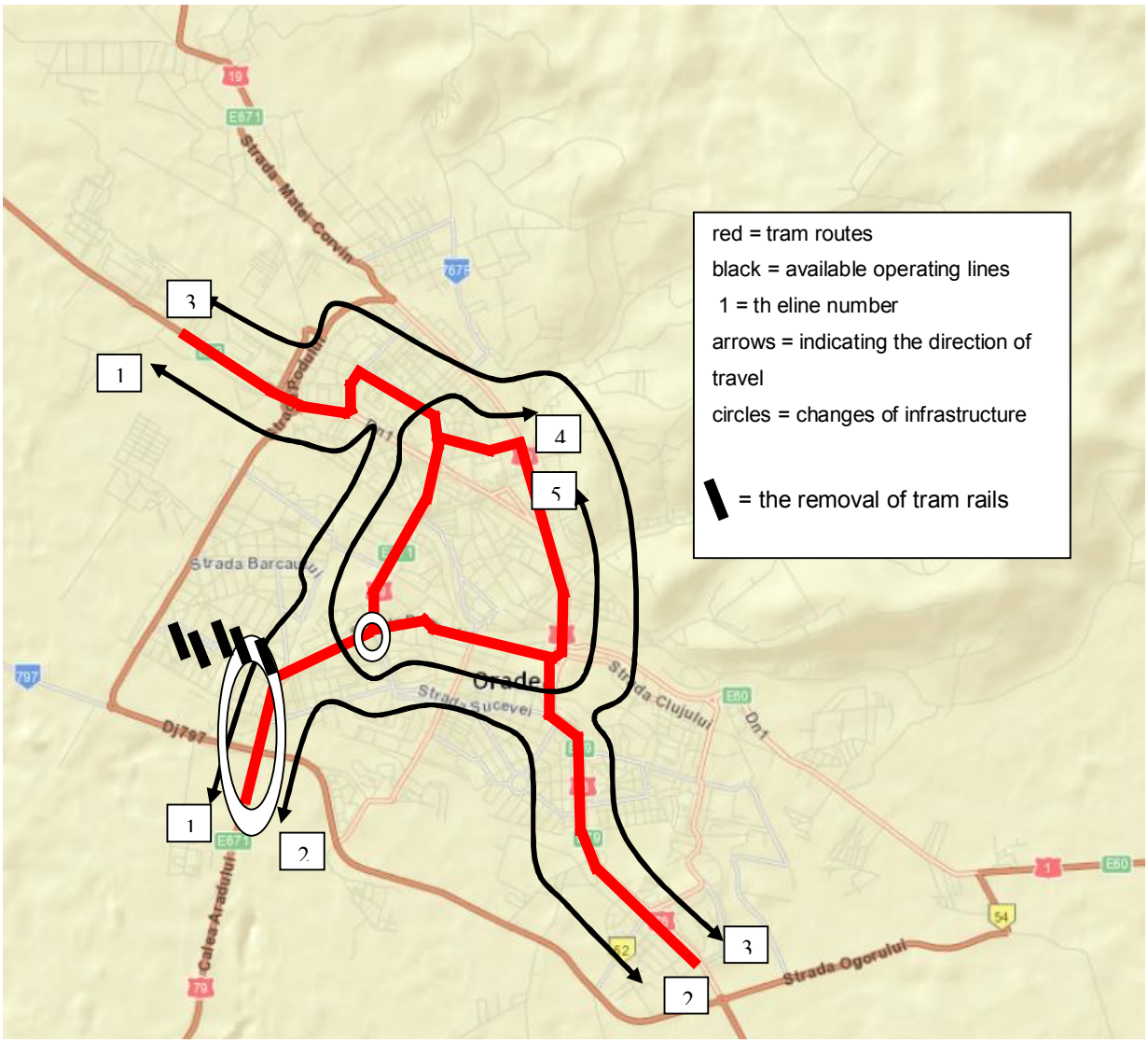

Fig. II.41 – How to ensure a fast transport on tram network
(reaching of any end of tram network will be done in the shortest times)

X-8 = from the point of view of efficiency, the main route which can be served by a tram line is between the point of intersection of tram line 2 with central ring and the second access of depot;

a) Causality

This measure is linked to measures X-6 and X-7, along completing the rail transport network in the city. In addition, the university area with high potential for attracting and generating travel it could be served by vehicles of higher capacity.

b) Requirements

It is recommended a feasibility study, a plan route and finally an execution project.

Note that the official map of the city does not seem to allow such a route, the reality checked by INCERTRANS indicates the possibility, respectively: Emanuel, Decebal, Stadium, University, Cemetery, Ceyrat Street, Atelierelor Street, Depot.

c) Results

- Ensure the accessibility offered by the transport system is available to all;
- Reduce air and noise pollution, greenhouse gas emissions and energy consumption;
- Improve the efficiency and cost-effectiveness of the transportation of persons and goods;
- Improve road infrastructure;
- Development of local public transport system.

For other benefits see also tables II.20 and III.8.

X-9 = SC OTL SA has to redo the schedule for public vehicles so as the intervals at peak hour to reach 7-8 minutes between the vehicles of the same line/route;

a) Causality

The measure is organically linked to the issues of regularity regarding public transport services performed by SC OTL SA: the reserves in travel times can be achieved by introducing in the transport schedule of each route more vehicles and these vehicles are determined by stabilizing the time between the vehicles of the same line to 7-8 minutes – value which is determined based on a mathematically model which demonstrates that this value of waiting time in stations is normal.

b) Requirements

The measure should be anticipated by traffic analysis and by graphs of new structure, but SC OTL SA should be warned that can not claim that whole city to mobilize towards mobility, and SC OTL SA to remain within the "consacrated" parameters without to agree on making additional efforts.

c) Results

- Ensure the accessibility offered by the transport system is available to all;
- Improve the efficiency and cost-effectiveness of the transportation of persons and goods;
- Development of local public transport system.

For other benefits see also tables II.20 and III.9.

X-11= SC OTL SA has to aim the purchase of vehicles with enhanced access possibilities (of different capacities, with low floor etc.);

(to see also Chapter 4 = The vision: the mobility of all citizens)

a) Causality

Law 448/2006, republished provides that public authorities shall take the following specific measures to ensure public transport for people with disabilities:

a) to acquire the transport vehicles adapted;

b) to adapt the fleet in circulation in the possible technical limitations, according to the regulations in force;

c) to realize transportation programs for people with disabilities, in collaboration or partnership with legal persons, public or private.

Applying this law was postponed because of lack of funding.

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b) Requirements

For SC OTL SA: purchasing of vehicles with different transport capacities.

c) Results

- Ensure the accessibility offered by the transport system is available to all;
- Improve safety and security;
- Development of local public transport system.

For other benefits see also tables II.20 and III.9.

X-12 = general interests of the citizens – not those specific to a part of the citizens – request to reassess the gratuity award system for retirees (the gratuity may be a right but using this for the time during students are traveling by public transport can not be tolerated);

a) Causality

In a city where 65% of the passengers are retirees who were granted the absolute right to travel freely, to achieve profitability is impossible (the profitability is not an aim by itself: it means money for sustainable development of public transport, in parameters which to ensure the perpetuation of life to an acceptable level – noise, poluttion, space used rationally etc.)

INCERTRANS does not propose to eliminate the gratuity, but only to limit this right in time: **only out of peak hours.**

For example, in Budapest the retirees have the right to purchase monthly pass with a discount of 65% and in Wien the retirees pay the entire cost of the monthly pass, afterwards the municipality discount a part of the cost; this can be a start also for Oradea.

b) Requirements

For SC OTL SA: developing a proposal.

For municipality: passing through the local council of an appropriate resolution.

c) Results

- Improve the efficiency and cost-effectiveness of the transportation of persons and goods;
- Development of local public transport system.

For other benefits see also tables II.20 and III.9.

X-14 = SC OTL SA has to make a project proposal for the first lanes dedicated to public transport;

(to see also Chapter 5 = SMART targets: dedicated lanes)

a) Causality

Perhaps the above formulation created troubles in understanding the contained idea: it is about city's streets where the movement of SC OTL SA vehicles is difficult.

It is the case of:

- Republic Boulevard on which trams are moving in the rhythm of general traffic - namely with 6-7 km/h and which can not lead to use mainly the public transport (the separation of tram rails of general traffic will double the speed of public transport vehicles and will create premises to renounce to travel by car)

- as well in the area of Independenței Street and its surroundings (on Cantemir Boulevard and Independenței Street) it can be implemented an action to delimitate the lane dedicated to public transport, with benefits for most citizens (but also disadvantages for private cars owners).

b) Requirements

For SC OTL SA: developing a proposal.

For municipality: passing through the local council of an appropriate resolution.

c) Results

- Improve safety and security;
- Reduce air and noise pollution, greenhouse gas emissions and energy consumption;
- Improve the efficiency and cost-effectiveness of the transportation of persons and goods;
- Development of local public transport system.

For other benefits see also tables II.20 and III.8.

X-15 = it is recommended to initiate a project for modern boarding-unboarding stations (to standardize – to customize these contact points between the public transport operator and the public);

a) Causality

The measure concerns the station not from the perspective of boarding-unboarding but in terms of waiting time in station area.

b) Requirements

It is proposed to continue equipping stations with equipment of this type (it is to mentioned that it has already been equipped 85 stations).

It is auspicious to initiate a multi-year campaign which finally to bring an uniformity of the stations – which can be as"brand" of the firm.

c) Results

- Ensure the accessibility offered by the transport system is available to all;
- Improve safety and security;
- Contribute to enhancing the attractiveness and quality of the urban environment and urban design;
- Improve traffic safety;
- Development of local public transport system.

For other benefits see also tables II.20 and III.9.

X-17 = it is necessary a new pricing policy (which to envisage also rewarding the loyal passengers);

a) Causality

Value followed by the carrier must be the clients satisfaction. The studies have shown that is more difficult to recruite new clients instead of keeping the existing clients.

b) Requirements

For SC OTL SA: proposal for changing the transport regulation.

The pricing policy must fall within the parameters fixed by the target "THE COST OF ONE PARKING HOUR RELATED TO THE COST OF A 5 KM TRIP BY PUBLIC TRANSPORT". For the 2013 the cost of one parking hours is 2 lei. Subsequently to a survey conducted in February 2013, the average length of a trip was estimated to be 3.5 km; in 5 km should be included the price for two trips – if the tickets are paid separately, respectively one single trip if is paid the price for monthly pass. So: the price of a trip on 5 km distance can be considered as being maximum 6 lei or minimum 1 leu, with an average of 2,67 lei[60]. It can be seen that the ration between the two prices (approx. 0.75) is unfavorable to sustainable development because in a superficial approach of the situation, the travel by private car in the city's center seems to be equal – in financial terms – with round trip by public transport vehicles. In the same vein: even 1 (one), the ration is still unfavorable to sustainable devlopment, because, from the psychological point of view "the driver" will count the convenience of his trip as superior compared with the advantage of reducing the costs for fuel:

- the conclusion: the inversion of the ratio – from 2/2.27 = 0.75 – to 1.34 could be a target for SUMP.
- consequence: since for the 6 (six) years of SUMP monitoring it was proposed (the above indicator) a target for the price of a trip of 2 lei, that means in 6 (six) years the STANDARD hour for parking should vary between

  3 lei * 1.34 = 4 lei and

  2 lei * 1.34 = 2,70 lei

simultaneously with implementation of progressive taxation.

From other cities' experience regarding the reward for loyal passengers:

- The purchase of 11 consecutive monthly passes allows to get the 12th pass at half price.
- The owner of a private car benefits by a discount of 10% if he purchases a monthly pass on public transport vehicles.

[60] The average was calculated taking into account also the proportions regarding the ticket sales and the subscription transport sales.

c) Results

- Ensure the accessibility offered by the transport system is available to all;
- Improve the efficiency and cost-effectiveness of the transportation of persons and goods;
- Development of local public transport system.

For other benefits see also tables II.20 and III.9.

X-18 = it has to be introduced and then generalized express transport system (or maxi-taxi), in the same time with normal routes;

(to see also Chapter 5 = SMART targets: buses/trams routes)

a) Causality

The operation of the most loaded lines 14 and 12 can be organized so that – at least at the peak hours – to benefit of two different category of vehicles: the category "normal service" – the most largest and the category "express service" – for example with two vehicles that at the moment are used for transport on these two lines, which have two intermediary stops in the points of great interest for passengers.

b) Requirements

For SC OTL SA: restructuring of the transport network.

For municipality: budgetary effort for surplus vehicles.

The parameters of these express lines can be determined through some inexpensive tests (the ticket for these lines is determined due to increased commercial speed recorded in comparison with the speed of normal lines).

The (estimated by INCERTRANS assessment) success can lead to expansion of the service also for the points and streets which currently are not served by SC OTL SA.

c) Results

- Ensure the accessibility offered by the transport system is available to all;
- Development of local public transport system.

For other benefits see also tables II.20 and III.10.

X-19 = it is necessary to redesign the bus routes so as to be excluded the parallelism of the two modes of transport;

(to see also Chapter 5 = SMART targets: accessibility to public transport vehicles)

a) Causality

In the second phase of Chapter 5.1 was presented a mathematical model which ONLY FROM TECHNICAL PERSPECTIVE indicates the number of trips to be made by a public transport line so that to justify the effort due to operation (ie: for 16 hours of operating, every direction of a line relatively weak in terms of traffic, should bring for 10 stations for example, a revenue of at least 96*3*10*3 = 8640 lei so that the transport service to be acceptable – given the subsidy).

b) Requirements

For SC OTL SA: transport network redesign.

For municipality: development of studies that correlate neighborhoods for servicing with transport routes.

The implementing of bus routes redesign should be preceded by a detailed analysis of the existing circumstances, respectively the entire context of transport public network.

In another study INCERTRANS submitted a proposal for a network which would be based on the tramways, on a few bus lines and on acceptance of the parallelism only where the topology does not allow another option – as Republicii Boulevard: the only link with the north of the city. In the next figure it is presented the proposal of the network.

It can be seen that some sections on which operate **competing buses and trams** have disappeared**.**

c) Results

- Ensure the accessibility offered by the transport system is available to all;
- Improve safety and security;
- Improve the efficiency and cost-effectiveness of the transportation of persons and goods;
- Development of local public transport system.

For other benefits see also tables II.20 and III.8.

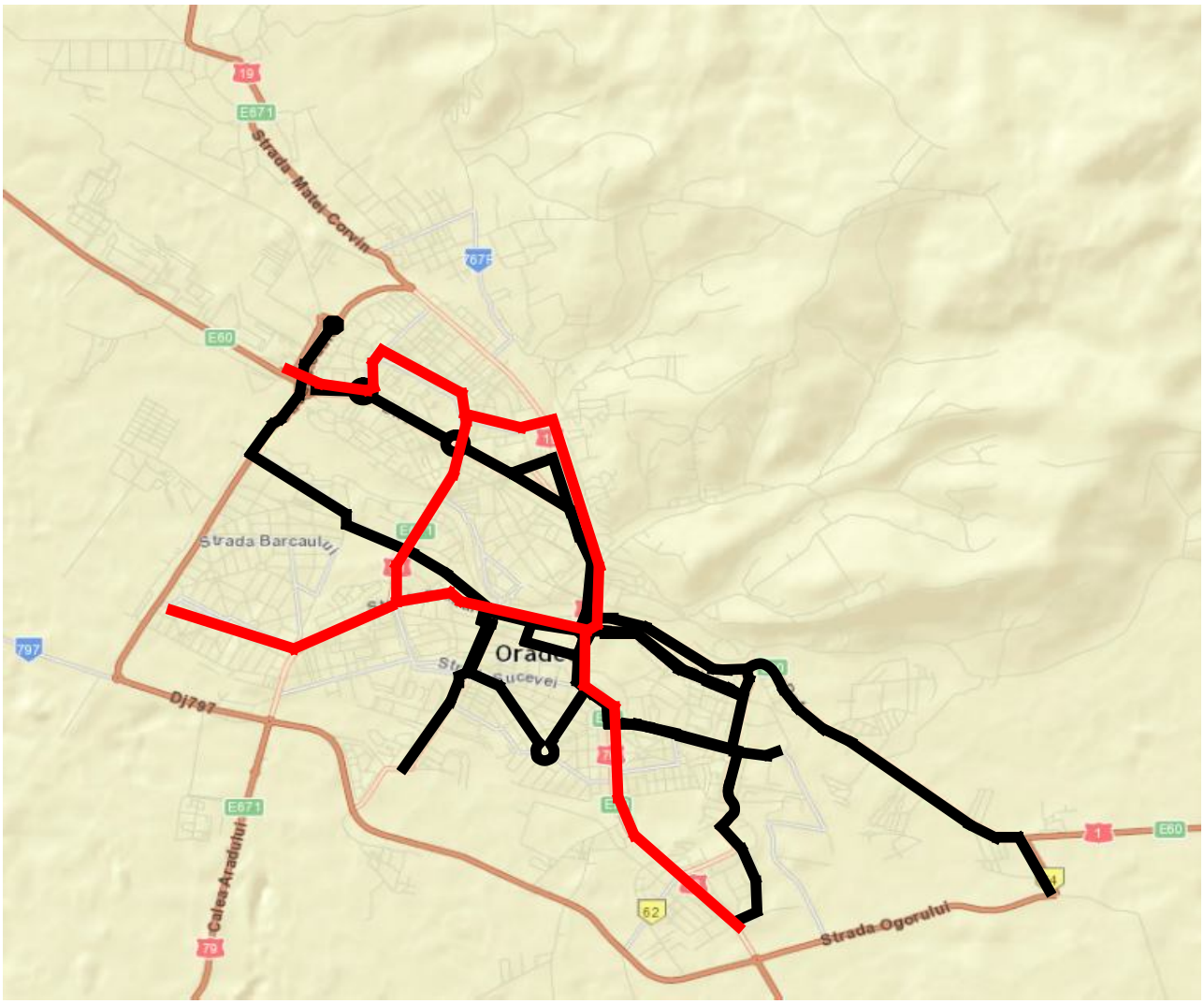

Fig. II.39 – The characteristic frame of major transport need in Oradea

X-20 = in line with the above objective: it is necessary to reconsider the set of public transport stations for boarding and unboarding;

a) Causality

The measure should be correctly understood: it does not claim the removal of the stations but only the analysis of the situation; the unwritten history shows that some of the current stations are due to sentimentalism or to pleas more or less amicable.

In the second phase of Chapter 5.1 was presented a mathematical model that indicates on objective basis that "if a point targeted as a possible unboarding station does not bring in the system at least 3 passengers at every 10 minutes, then it is not recommended a new boarding-unboarding station".

b) Requirements

Before removal it is necesarry the capitalization of the information provided by ticketing system – or through surveys among bus and tram drivers – and where the station determines only brakings and starts there to be implemented the measure of removal.

It is to note that the measure regarding the removal of three bus lines – in June 2013 – has improved the overall profitability of SC OTL SA: based on similarity in some cases not the removal of the line but only the removal of some boarding-unboarding points is sufficient to achieve profitability.

Also, it has be done actions to equip the vehicles so that some stations to be listed under "optional" stop.

c) Results

- Ensure the accessibility offered by the transport system is available to all;
- Improve the efficiency and cost-effectiveness of the transportation of persons and goods;
- Development of local public transport system.

For other benefits see also tables II.20 and III.9.

X-21= take into consideration the possibility to implement the transport system by trolley;

(to see also Chapter 5= SMART targets: electricity consumption versus fossil fuel consumption)

a) Causality

The measure is in the spirit of sustainable development. There is even a feasibility study.

b) Requirements

For SC OTL SA: preparing for activity diversification.

For municipality: appropiate budget.

Oradea Muncipality Administration should to access the financing sources as soon as possible.

c) Results

- Reduce air and noise pollution, greenhouse gas emissions and energy consumption;
- Improve the efficiency and cost-effectiveness of the transportation of persons and goods;
- Reduce CO emissions;
- Development of local public transport system;
- Extending operational local transport market.

For other benefits see also tables II.20 and III.9.

X-22 = it is necessary that some of the trams lines to be transform in light rail lines;

a) Causality

While the measure X-14 refers to dedicated lanes, namely to simple delimitation of tram routes or bus route in general traffic, the measure X-22 involves only for tram routes the implementation of some infrastructure systems = separate route but also superstructure type = at least a soft that controls traffic light in favor of public transport.

b) Requirements

For SC OTL SA: preparing for activity diversification.

For municipality: appropiate budget.

c) Results

- Improve safety and security;
- Reduce air and noise pollution, greenhouse gas emissions and energy consumption;
- Contribute to enhancing the attractiveness and quality of the urban environment and urban design;
- Improve traffic safety;
- Improve road infrastructure;
- Development of local public transport system.

For other benefits see also tables II.20 and III.8.

X-23 = in order to make profitable the SC OTL SA activity, it should be defined the threshold between social transport and solitary transport;

a) Causality

In the chapter related to MONITORING there is detailed a mathematical model which inputs are the results of SC OTL SA activity after the removal of the three lines considered unprofitable in June 2013. These results indicate the relevant improving of the ration revenues / costs.

b) Requirements

For SC OTL SA: restoring of circulation schedules..

In the same spirit, there is introduced in the municipality practice a rule regarding the maintenance or non-maintenance of a line: the periodically analysis of each line profitability should be a mandatory practice, the profitability being compulsory excepting the case in which the institution that requires not to consider the profitability ensures the difference of revenues, especially the e-ticketing system can provide effective solutions.

c) Results

- Improve the efficiency and cost-effectiveness of the transportation of persons and goods.

For other benefits see also tables II.20 and III.9.

XI-2 = in collaboration with OMA (Oradea Metropolitan Area) it is recommended to prepare a program of transport service for peri-urban area (particularly to Băile Felix and Băile 1 Mai resorts but also to Borş – link with European Western);

(to see also Chapter 4 = The vision: geographic expansion)

a) Causality

One of the objectives of the local transport operator is to establish the expansion policy of Oradea Transport Local in Oradea Metropolitan Area as a regional operator, with all the attachments of the decision (purchasing vehicles, hiring staff, equipments etc.).

SC OTL SA has done the first steps in this direction by setting up the transborder line Oradea – Borş – Biharkeresztes with two round trips routes on this link.

b) Requirements

Once established TRANSREGIO as an authority for transport activity in the Oradea Metropolitan Area there were created conditions for new routes at periurban level which will be operated by local transport operator.

For SC OTL SA: preparing of circulation schedules for metropolitan area.

For municipality: legal arrangements for extending transport activity beyond its boundaries.

c) Results

- Ensure the accessibility offered by the transport system is available to all;
- Development of local public transport system;
- Extending operational local transport market.

For other benefits see also tables II.20 and III.9.

XI-5 = analyze the possibilities to standardize the payment into a single pass for urban trips in combination with peri-urban trips.

a) Causality

Integrated ticketing systems can contribute to the quality of the process of intermodal transport. Considering the OTL objective to extend to the metropolitan area, this measure should attract new users for the public transport.

b) Requirements

The electronic ticketing system developed under ATTAC Project has possibilities for passes combined in a wide range form which the measure is just an option.

There are although necessary the information campaigns which to be the “cause” of transport need emergence.

c) Results

- Ensure the accessibility offered by the transport system is available to all;
- Improve the efficiency and cost-effectiveness of the transportation of persons and goods;
- Development of local public transport system;
- Extending operational local transport market;
- Ensure superior service for intermodal transport.

For other benefits see also tables II.20 and III.9.

XI-6 = it should be necessary to be rethought the granting systems of transport licences for peri-urban area and even county area – in order to have the obligation to use as arrival and departure in/from oradea only the bus - stations – to strictly forbid the public transport of passengers within the city;

a) Causality

The number of commuters traveling daily to Oradea is about 25.000 plus 7.000 students. Until the intermodal points appear, it is necessary to regulate the number and the location of the stops used by the other transport operators.

b) Requirements

By a common action Oradea Municipality Administration and SC OTL SA should to empower at least the TRANSREGION administration in order to be in a legal framework – regarding the obligation to use for extra-urban transport only the official stations in the city.

Also it is necessary the County Council to become part of the action of transition to sustainable mobility by disciplining the intercity transport operators[61].

c) Results

- Reduce air and noise pollution, greenhouse gas emissions and energy consumption;
- Improve safety and security;
- Improve the efficiency and cost-effectiveness of the transportation of persons and goods;
- Development of local public transport system;
- Extending operational local transport market;
- Ensure superior service for intermodal transport.

For other benefits see also tables II.20 and III.9.

XI-8 = should be introduce a tax / fee – contribution of the non-local transport operators in order to cover the costs of maintenance the boarding-unboarding stations used by them;

a) Causality

As long as the others transport operators are using the OTL stops, it is natural to contribute financialy to the maintenance of these stops.

b) Requirements

The measure is complementary to the previous one and should be implemented by Oradea Estate Administration within Oradea Municipality Administration.

At the moment there is a schedule which assume that taxation measure will be applied starting with 01/01/2014.

The list of stations used by transport operators is shown in tab. II.34 within Chapter 3.1 – Prepare an analysis of problems and opportunities, and the list of stations used by county transport operators is shown in Annex 14.

c) Results

- Contribute to enhancing the attractiveness and quality of the urban environment and urban design;
- Improve traffic safety;
- Improve road infrastructure;
- Development of local public transport system.

For other benefits see also tables II.20 and III.9.

XII-1 = central railway station modernization so as the transition from railways system to roads system to represent an action of establishing a intermodal hub of maximum importance; same for Nufărul node;

(to see also Chapter 5 = Objectives: intermodality)

[61] Trying an expression as gentle as possible: as most o county transport operators are disturb by the "unauthorized pirates" phenomenon, so they have to understand that taking the urban trips by interurban transport means/vehicles is an act of piracy.

a) Causality

The most important goal of the intermodality is to offer to passengers the possibility to travel "door-to-door". Intermodality can contribute to the development of an integrated and efficient transport system, which is enable to offer more options to the travelers.

b) Requirements

For SC OTL SA: organization of transport schedules according to the other transport modes.

For municipality: project planning intermodal points.

The project does exist. It's just necessary to follow the deadlines.

c) Results

- Ensure the accessibility offered by the transport system is available to all;
- Improve safety and security;
- Contribute to enhancing the attractiveness and quality of the urban environment and urban design;
- Improve road infrastructure;
- Development of local public transport system;
- Extending operational local transport market;
- Ensure superior service for intermodal transport.

For other benefits see also tables II.20 and III.9.

XII-3 = organize the public transport program performed by public transport operator in accordance with the rail and air transport program;

a) Causality

With the appearance of the intermodal node from Gara Centrala, urban transport operator has to adapt his schedules to those of trains. In the similar way, for the Nufarul intermodal node or Oradea Airport.

b) Requirements

There are to do two actions:

- One regarding the transports chedules modification according to timetable for arrivals-departures from Rail Stations, respectively from the Airport;

- The second of written information – through posters with penetrating message - thet SC OTL SA is ready to take the passengers arriving by rail an air to local destinations and even periurban destinations within Oradea Metropolitan Area: quickly and with minimal costs.

c) Results

- Ensure the accessibility offered by the transport system is available to all;
- Development of local public transport system;
- Extending operational local transport market;
- Ensure superior service for intermodal transport.

For other benefits see also tables II.20 and III.9.

The above list contains informations regarding the responsabilities undertaken by local institutions of the city:

- Oradea Municipality Adminsitration as main "conductor" on city's scene – and as administrative and politic factor – **but also as main shareholder of TRANSREGION**;
- **SC OTL SA as main "performer" on urban mobility market.**

Obviously the public and city's population dat also a part of the residents of metropolitan area are "first-class actors" but:

- On the one hand, it can't be given tasks to such actors
- On the other hand it can not be neglected the citizens' reactions (regarding changes, not always pleasant); this ultimate aspect will be remedied in the activity which includes the MONITORING within it will be testing actions – by which it will be possible to enhance, diminish or correct some of the effects of implemented measures.

SWOT analysis of SUMP packages of measures endorsed by local factors Oradea reveals:

strenghts

- Covers 19 of 46 measures envisaged by Konsult (Annex 31)
- Percentage of effectiveness of measures - over 138% - almost identical to the percentage recorded of all 75 measures proposed by INCERTRANS (Annex 25)

weaknesses

- Oradea Muncipality Administration is disinterested by 2 of 8 packages of measures developed by INCERTRANS from the perspective of synergy
- SC OTL SA is disinterested by 3 of 8 packages of measures developed by INCERTRANS fom the perspective of synergy
- Oradea Muncipality Administration is involved in less activities than public transport operator

opportunities

- SUMP can pe improved “on the fly” – especially with measures which not involve financial resources

threats

- The isolated existence of some measure that are not supported each other in depth[62] (measures were classified as supporting, strengthening and reinforcement).

The above points of view were brought to a common point, based on the comments received from working groups[63] ONCE THE DISCUSSIONS IN THREE WERE COMPLETED: ORADEA MUNICIPALITY ADMINISTRATION, SC OTL SA AND INCERTRANS. I was concluded that the final packages of measures will look like this (specified rank will be helpful in developing the action plan):

[62] The measures packages consistes of measures which have to be simultaneously applied to reach the threshold of effectiveness.

[63] Including the points of views of the press regarding the development of Oradea SUMP.

Tab. III.3 – The package of measures **Public transport system development**

Measures requiring financial effort	Financially neutral measures	Measures contributing to financial resources
Rank 2 = X-21 take into consideration the possibility to implement the transport system by trolley Rank 3 = X-1 elaborate a profitability plan for the trams railways section from Ioşia Sud Neighborhood – which due to neighborhood's specific not justify the trams transport operation – possibly, through the end of route reallocation beyond the fence which delimit north-south artery, in parallel with rail Rank 3 = IV-1 purchase a medium capacity vehicle – an electrical vehicle – initiating an ecumenical route inside the city Rank 4 = X-5 it is recommended to initiate a project for modern boarding-unboarding stations (to standardize – to customize these contact points between the public transport operator and the public) Rank 4 = I-7 set up bicycle parkings in boarding-unboarding stations of public transport vehicles (for the start, at least racks for 5-7 bicycles in the least half of the tram stations)	Rank 1 = X-17 it is necessary a new pricing policy (which to envisage also rewarding the loyal passengers) Rank 2 = I-8 creating the commercial and technical framework for bicycle carrying in vehicles owned by public transport operator Rank 3 = X-5 it has to enhance the efforts for increase transports regularity and even the public transport vehicles punctuality – according to schedules Rank 3 = X-9 SC OTL SA has to redo the schedule for public vehicles so as the intervals at peak hour to reach 7-8 minutes between the vehicles of the same line/route Rank 4 = X-20 it is necessary to reconsider the set of public transport stations for boarding and unboarding	Rank 1 = X-12 general interests of the citizens – not those specific to a part of the citizens – request to reassess the gratuity award system for retirees (the gratuity may be a right but using this for the time during students are traveling by public transport can not be tolerated) Rank 1 = X-23 in order to make profitable the SC OTL SA activity, it should be defined the threshold between social transport and solitary transport Rank 2 = XI-8 should be introduce a tax / fee – contribution of the non-local transport operators in order to cover the costs of maintenance the boarding-unboarding stations used by them Rank 3 = XI-2 in collaboration with OMA (Oradea Metropolitan Area) it is recommended to prepare a program of transport service for peri-urban area (particularly to Băile Felix and Băile 1 Mai resorts but also to Borş – link with European Western)

Tab. III.4 - The package of measures **Transport infrastructure improvement**

Measures requiring financial effort	Financially neutral measures	Measures contributing to financial resources
Rank 1 = X-6 it is necessary to ensure the second access to trams depot; in the same vein: it is to consider a "shed" for trams in order to reduce the travel distances for the withdrawn trams at the end of the peak hours Rank 1 = X-7 it can be obtained a higher elasticity in public transport operation if it will be done the third "triangle" which to serve Line 2 Rank 1 = X-8 from the point of view of efficiency, the main route which can be served by a tram line is between the point of intersection of tram line 2 with central ring and the second access of depot Rank 3 = VIII-1 SC OTL SA has to make a plan for design, redesign and improve the infrastructure of trams Rank 4 = X-22 it is necessary that some of the trams lines to be transform in light rail lines	Rank 4 = X-14 SC OTL SA has to make a project proposal for the first lanes dedicated to public transport	Rank 2 = I-16 taxation of cars passing through a „protected ring" in the city's center Rank 2 = II-2 to analyze the possibility of implementing of a system type „city-vignette" in a central area of the city Rank 4 = X-19 it is necessary to redesign the bus routes so as to be excluded the parallelism of the two modes of transport

Tab. III.5 - The package of measures for **Public transport service modernization**

Measures requiring financial effort	Financially neutral measures	Measures contributing to financial resources
Rank 3 = V-5 it is necessary a strategy to renew the public transport fleet Rank 4 = V-2 rehabilitation of tram railways (in the same time with grassing of the embankment)	Rank 1 = X-3 SC OTL SA has the obligation to provide the necessary documentation to Oradea Municipality Administration to recalculate periodically the compensation of public urban transport operator Rank 4 = I-10 SC OTL SA has to initiate cooperation actions with public transport passengers and regular meetings with amateur drivers Rank 4 = I-19 tickets to concert and sports events which have to include the price of 2 tickets for travel by public transport – to offer the right to travel	Rank 2 = X-18 it has to be introduced and then generalized express transport system (or maxi-taxi), in the same time with normal routes Rank 4 = I-21 introduce a „no car day" (monthly);

Tab. III.6 - The package of measures **Promote Intermodality**

Measures requiring financial effort	Financially neutral measures	Measures contributing to financial resources
Rank 3 = XII-1 central railway station modernization so as the transition from railways system to roads system to represent an action of establishing a intermodal hub of maximum importance; same for Nufărul node;	Rank 1 = XI-5 analyze the possibilities to standardize the payment into a single pass for urban trips in combination with peri-urban trips	Rank 3 = XII-3 organize the public transport program performed by public transport operator in accordance with the rail and air transport program

Tab. III.7 - The package of measures for **Increase traffic safety**

Measures requiring financial effort	Financially neutral measures	Measures contributing to financial resources
Rank 2 = X-11 SC OTL SA has to aim the purchase of vehicles with enhanced access possibilities (of different capacities, with low floor etc.);	Rank 4 = VIII-3 periodical analysis of „becoming black spots" from the SC OTL SA perspective;	Rank 1 = XI-6 it should be necessary to be rethought the granting systems of transport licences for peri-urban area and even county area – in order to have the obligation to use as arrival and departure in/from oradea only the bus - stations – to strictly forbid the public transport of passengers within the city

24. Prepare an action and budget plan

ACTION PLAN IS **A COMPONENT OF THE SCHEDULE** which prepare the executive phase through that every approved planning is completed: action plan is developed according with the final document of the policy agreed by the decision group which supervised the above specified issue. In the contents of action plan there are established clear "missions" on long term[64] in a certain field.

The series consists of the triad "action plan – monitoring – plan of measures" reserved by experience and permanent exercise the following structure of an action plan:

- Specify the fields within actions will be developed;
- Establish the trajectory which leads to measures[65] and actions[66];
- Establish the responsibles for implementation;
- Estimate the action effects.

The internal organization of the action plan will be based on the guidelines of a program considered suitable for Oradea SUMP by INCERTRANS: Mobility Action plan – developed for Western Region of Romania". This plan covers three fields of intervention:

- Develop and modernize the infrastructure
- Improve the transport systems
- Improve the transport in relation with the environment

In the following tables subdivision on ranks was used to point on hierarchical categories the importance that SC OTL SA should given to the actions undertaken in relation with local administration – especially – so that the impact of measures to be done especially in the fields in which currently are the worst conditions regarding MOBILITY. For example:

- Introducing the triangle from Emanuel Square will have an immediate perceptible contribution of public on measures efficacy
- While combining tickets to performances with tickets, although noticeable, will bring only a limited contribution on general mobility in the city.

[64] In the conditions of increasing the planning period, the ability to control the events and to predict the changes of substance decreases dramatically: the plans on long terms can not be accomplished accurately, their purpose is only to indicate the general direction of intervention.
[65] The measures which it was agreed on.
[66] Action: the act undertaken to achieve the objective on which measure follows.

Tab. III.8 – Action Plan for Oradea SUMP. Intervention field: DEVELOP AND MODERNIZE THE INFRASTRUCTURE

Rank	**Concrete measures and..... RELATED ACTIONS**		Estimated effects
Rank 1	- it can be obtained a higher elasticity in public transport operation if it will be done the third “triangle” which to serve Line 2 - it is necessary to ensure the second access to trams depot; in the same vein: it is to consider a “shed” for trams in order to reduce the travel distances for the withdrawn trams at the end of the peak hours - from the point of view of efficiency, the main route which can be served by a tram line is between the point of intersection of tram line 2 with central ring and the second access of depot	Rethink the proposal regarding the completion of the third side of the triangle of Emanuel Square. Prepare two pre-feasibility studies which to detail at the level of working draft the topometry context within the number of accesses in/out Salca Depot could be doubled, respectively the spatial and technological possibility de construct and utilize the expected shed in Sinteza area.	The decrease of trips time between origins and destinations favorably placed toward of improved trams network. The increase of reability in transport operation of the main transport system of Oradea – the tram. More than 80% of trips made by vehicles using fossil fuel change to trips made by electric vehicles. The appearance of tram shed will significantly reduce (estimation: 25%) the travel distances for the withdrawn trams at the end of peak hours.

Rank	**Concrete measures and..... RELATED ACTIONS**		Estimated effects
Rank 2	- taxation of cars passing through a „protected ring" in the city's center - to analyze the possibility of implementing of a system type „city-vignette" in a central area of the city	Prepare an extensive paper in which – taking in consideration the proposal of Urban General Plan – it will be marked the points of junction between access ways and the inside of the protected ring. Develop an analysis of opportunity of "closing" the city's ring with barriers or installing cameras to monitor the cars entering in the ring and to watch the bad payers. Propose to Oradea Municipality Administration and the police management to reduce the tonnage of freight vehicles restricted from 7.5 tonnes to 3.5 tonnes possible by restriction of free access at a period of time out of light day (18.00-6.00)	A quasi-pedestrian areas in which the level of pollution will significantly decrease in comparison with exterior periphery of protected ring. It is to report that the barriers could create local delays in general traffic but could lead to traffic calmimng with positive effects on congestion and traffic safety. It will get additional revenues for mobility improvement and possibly to implement another measures in current list accepted by Oradea decision makers. At an estimated (by specialized studies) traffic of 50,000 vehicules/14 h inside the protected ring it might say that a tax of 2 up to 10 lei will reduce the traffic by 10-25% (according to other cities' practice that applied this measure). The traffic increase will be slowed by the exclusion of a number of freight vehicles from the tonnage limitation area.

Rank	Concrete measures and..... RELATED ACTIONS		Estimated effects
Rank 3	- SC OTL SA has to make a plan for design, redesign and improve the infrastructure of trams	Prepare the proposal according to what the Sinteza tram line to cross the national road so as to be possible transport services to be done within growing industrial platform in west of the city.	The efficient use of a part of trams fleet. Improving of travel conditions in electric public transport vehicles.
Rank 4	- SC OTL SA has to make a project proposal for the first lanes dedicated to public transport - it is necessary that some of the trams lines to be transform in light rail lines - it is necessary to redesign the bus routes so as to be excluded the parallelism of the two modes of transport	It is necessary to delineate in more areas the tramway in general traffic by fences or curb-stone; it will be submitted proposal for bus and tram routes which to be advantaged in general traffic. Develop a documentation which to highlight the first tram routes which is suitable to a such approach (most likely from Central Station to Nufărul). Develop variants of routes on which not to be present both tram routes and bus routes (the equivalent being the extension of bus network to the neighborhoods which currently are low served).	It is expected that commercial speed to exceed the speed of private vehicles and so public transport be on the first plan for all city's residents. The trips by light rail can get to dependence (as Line 41 in Bucharest is highly indispensable for two sectors of the capital). Accessibility to the transport system will be improved, significantly.

Tab. III.9 – Action Plan for Oradea SUMP. Field of intervention:
IMPROVING TRANSPORT SYSTEMS

Rank	**Concrete measures and..... RELATED ACTIONS**		Estimated effects
Rank 1	- it is necessary a new pricing policy (which to envisage also rewarding the loyal passengers) - general interests of the citizens – not those specific to a part of the citizens – request to reassess the gratuity award system for retirees (the gratuity may be a right but using this for the time during students are traveling by public transport can not be tolerated) - in order to make profitable the SC OTL SA activity, it should be defined the threshold between social transport and solitary transport - analyze the possibilities to standardize the payment into a single pass for urban trips in combination with peri-urban trips; - it should be necessary to be rethought the granting systems of transport licences for peri-urban area and even county area – in order to have the obligation to use as arrival and departure in/from oradea only the bus - stations – to strictly forbid the public transport of passengers within the city	Restructure the entire pricing system of public passengers transport – but also the one that covers parking of private vehicles (with special reference to cars). Penetrating campaign to achieve the population's agreement regarding the reducing the range and volume of gratuity (of type existing in Vienna or Budapest). Prepare profitability studies for each line separately. Institute a regulation which to allow to cumulate an urban pass with a periurban pass (obviously at a lower price than the sum of the two prices). Note that e-ticketing system that is currently implemented by SC OTL SA allows a multitude of pricing options for urban, periurban and combined trips. Initiate and then permanently perpetuate working groups between SC OTL SA and transport operators in the county in order to eliminate the unfair competition within the county.	There are created new possibilities for modernization of public passengers transport operator in many sectors which can lead to the change of forces' ratio on transport market. The increase of passengers' number in public transport to the detriment of the transport by private car. The improvement of revenues-costs relation with favorable repercurssions on quality of the service. The development of public transport market by new passengers from Oradea Metropolitan Area and tourists.

Rank	Concrete measures and..... RELATED ACTIONS		Estimated effects
Rank 2	- take into consideration the possibility to implement the transport system by trolley; - creating the commercial and technical framework for bicycle carrying in vehicles owned by public transport operator; - should be introduce a tax / fee – contribution of the non-local transport operators in order to cover the costs of maintenance the boarding-unboarding stations used by them; - SC OTL SA has to aim the purchase of vehicles with enhanced access possibilities (of different capacities, with low floor etc.);	Reconsider the proposal regarding the implementing of public transport by trolley (proposal which can be also found in Urban General Plan). Modification of public transport regulations in order to facilitate the access of bikes in the public transport vehicles. **(if there are still accepted the nonlocal transport operators in the city):** Negotiations with transport operators in order to establish the amount of the fee for stations maintanance. To include in short-term program of SC OTL SA the necessity to purchase vehicles from differentiated categories in order to increase the flexibility of operation on routes on which the demand for transport is irregular in relation with day time and length (also it is proper an analysis concerning the optimum between one single type of vehicle with easy maintenance and flexibility in operation but complex maintenance for more type of vehicles).	The decrease of polluters' number in urban area. Consider the cyclists among the users of public transport services. The increase of revenues followed by the improving of public transport services. Passing from efficacy to efficiency in operation of low demanded transport lines or with an irregular demand for transport.

Rank	**Concrete measures and..... RELATED ACTIONS**		Estimated effects
Rank 3	- elaborate a profitability plan for the trams railways section from Ioşia Sud Neighborhood – which due to neighborhood's specific not justify the trams transport operation – possibly, through the end of route reallocation beyond the fence which delimit north-south artery, in parallel with rail; - it has to enhance the efforts for increase transports regularity and even the public transport vehicles punctuality – according to schedules; - SC OTL SA has to redo the schedule for public vehicles so as the intervals at peak hour to reach 7-8 minutes between the vehicles of the same line/route; - in collaboration with OMA (Oradea Metropolitan Area) it is recommended to prepare a program of transport service for peri-urban area (particularly to Băile Felix and Băile 1 Mai resorts but also to Borş – link with European Western); - purchase a medium capacity vehicle – an electrical vehicle – initiating an ecumenical route inside the city; - central railway station modernization so as the transition from railways system to roads system to represent an action of establishing a intermodal hub of maximum importance; same for Nufărul node; - organize the public transport program performed by public transport operator in accordance with the rail and air transport program	Develop for Oradea Municipality Administration a SWOT analysis regarding the section of tramway of Ioşia Sud Neighborhood considering the need to maintain the transport by tram in this neighborhood. Reallocate the fleet on routes in order to improve the rational "equipping" of the routes depending on their transport demands. Reestablish all the transport schedules following two objectives: (1) regularity (2) rational succession between the vehicles of the same line. Prepare a detailed information which will bring arguments to Oradea Municipality Administration and Oradea Metropolitan Area regarding the implementing at least of a touristic route in the city's area. Determined action to diversify the range of services of SC OTL SA towards close resorts and border. The modification of current transport schedules assuring that arrival and departure times of the public transport vehicles to be relatively simultaneous with transport schedules for trains and plains.	The removal of Ioşia Sud section or penetration toward the west of the city will bring benefits – different – but obvious: the reduction of the operation costs, respectively a new served area. Increased confidence in public transport system. Taking the flow of tourists for the city or even to resorts from intermodal points – rail station and airport – will increase the consistency of the mobility. Increased integration between distinct transport systems.

Rank	**Concrete measures and..... RELATED ACTIONS**		Estimated effects
Rank 4	- it is recommended to initiate a project for modern boarding-unboarding stations (to standardize – to customize these contact points between the public transport operator and the public); - it is necessary to reconsider the set of public transport stations for boarding and unboarding; - set up bicycle parkings in boarding-unboarding stations of public transport vehicles (for the start, at least racks for 5-7 bicycles in the least half of the tram stations); - periodical analysis of „becoming black spots" from the SC OTL SA perspective.	Identify the sources to continue financing of the actions to standardize the boarding-unboarding stations. Achieve accurate surveys which to identify stations that exist only due the reason of complacency. Finance and execution of a simple "bike rack" – which can be only a metal frame with spaced for bikes wheels. Make known to Oradea Municipality Administration the conclusions and findings resulted from analysis of incidents in which bus drivers and motormen are involved – due to limitations of transport infrastructure or the conditions caused by buildings and urban facilities.	Create a "brand" of public urban passengers transport operator. Reduce energy consumption (less startings and brakings of the vehicle). The increase of commercial speed of public transport vehicles. Ensure a limited type of intermodality: public transport vehicles and bicycles. Improve the traffic safety and passengers' safety.

Tab. III.10 - Action Plan for Oradea SUMP. Field of intervention:
IMPROVE THE PUBLIC TRANSPORT IN RELATION WITH THE ENVIRONMENT

Rank	**Concrete measures and..... RELATED ACTIONS**		Estimated effects
Rank 1	- SC OTL SA has the obligation to provide the necessary documentation to Oradea Municipality Administration to recalculate periodically the compensation of public urban transport operator;	Following the implementation of e-ticketing it will be detailed reports and also reports/records with a high degree of accuracy on categories of public transport users which will provide the basis for periodic recalculation of compensation. These reports will be submitted periodically to Oradea Municipality Administration.	The systematic compensation of tickets prices differences, compensation made on correct bases and in accordance with category of public transport users will increase the SC OTL SA revenues.
Rank 2	- it has to be introduced and then generalized express transport system (or maxi-taxi), in the same time with normal routes;	Is is necessary to submit to Oradea Muncipality Administration a project regarding conjugate lines for the same route (for example line 14): develop a high speed route using a part of currents vehicles of this line.	Higher revenues – according with increase of commercial speed on express lines. Lower CO_2 emissions due to lower number of stops in intermediary stations.
Rank 3	- it is necessary a strategy to renew the public transport fleet	Develop a strategy for several years which to provide to local administration the opportunity to choose between the two options already presented in the chapter regarding probable measures to renew the fleet.	A new fleet helps to “friendship” with the environment in several ways: easier maintenance leads to less waste, less breakdowns, less interventions etc.

Rank	Concrete measures and..... RELATED ACTIONS		Estimated effects
Rank 4	- introduce a „no car day" (monthly); - rehabilitation of tram railways (in the same time with grassing of the embankment); - SC OTL SA has to initiate cooperation actions with public transport passengers and regular meetings with amateur drivers; - tickets to concert and sports events which have to include the price of 2 tickets for travel by public transport – to offer the right to travel;	To facilitate the making decision in order to set the "no car day", SC OTL SA should submit to Oradea Municipality Administration a paper which to indicate the less congested 2-3 days of Saturday or Sunday – as a result of the statistics held by public transport operator. Public campaign in order to get the consent of the population regarding this day. To provide in SC OTL SA budget the costs of maintenance and seeding actions. To set an "open gates day" by SC OTL SA – at least once a month – in which to take place meetings between public/passengers and employees from all hierarchical levels of SC OTL SA.. Negotiations with management of some institutions (like Theater, Zoo, Swimming Pool) in order to establish a common pass that to allow the access to a cultural performance or recreational activity and also the access in public transport vehicles (obviously including mutual discounts between the members of this consortia).	The educational effect is essential for the future of the children. "It's easy to keep clean what is already clean" effect becomes important for people and environment. The mutual exchanges of experience between SC OTL SA employees will have positive effects on the general "feel" of public transport market. The social feeling will become stronger.

Tab. III.11 – The budgeting of proposed measures

Code	Measure name	2014		2015		2016		2017		2018		2019		Cost	Financing source
		Per.1	Per.2	Per.3	Per.4	Per.5	Per.6	Per.7	Per.8	Per.9	Per.10	Per.11	Per.12		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
I-7	set up bicycle parkings in boarding-unboarding stations of public transport vehicles (for the start, at least racks for 5-7 bicycles in the least half of the tram stations)													25,000 EUR	European Funds Own Sources PPP
				12,000 EUR	13,000 EUR										
I.8	creating the commercial and technical framework for bicycle carrying in vehicles owned by public transport operator														
I.10	SC OTL SA has to initiate cooperation actions with public transport passengers and regular meetings with amateur drivers														
I.16	taxation of cars passing through a „protected ring" in the city's center														

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
I.19	tickets to concert and sports events which have to include the price of 2 tickets for travel by public transport – to offer the right to travel														
I.21	introduce a „no car day” (monthly)														
II.2	to analyze the possibility of implementing of a system type „city-vignette” in a central area of the city														
IV.1	purchase a medium capacity vehicle – an electrical vehicle – initiating an ecumenical route inside the city													250,000 EUR	Own sources Loan/leasing
						125,000 EUR	125,000 EUR								
V.2	rehabilitation of tram railways (in the same time with grassing of the embankment)													1,500,000 EUR	Own sources
				750,000 EUR	750,000 EUR										

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
V.5	it is necessary a strategy to renew the public transport fleet													30,450,000 EUR	European Funds Own sources
			2,910,000 EUR	4,590,000 EUR	4,590,000 EUR	4,590,000 EUR	4,590,000 EUR	4,590,000 EUR,	4,590,000 EUR						
VIII.1	SC OTL SA has to make a plan for design, redesign and improve the infrastructure of trams													3,200,000 EUR	European Funds Own sources
				356,000 EUR	356,000 EUR	356,000 EUR	356,000 EUR	356,000 EUR	356,000 EUR	356,000 EUR	356,000 EUR	352,000 EUR			
VIII.3	periodical analysis of „becoming black spots" from the SC OTL SA perspective													1,000,000 EUR	Own sources
			100,000 EUR	100,000 EUR	100,000 EUR	100,000 EUR	100,000 EUR	100,000 EUR	100,000 EUR	100,000 EUR	100,000 EUR	100,000 EUR			
X.I	elaborate a profitability plan for the trams railways section from Ioşia Sud Neighborhood – which due to neighborhood's specific not justify the trams transport operation – possibly, through the end of route reallocation beyond the fence which delimit north-south artery, in parallel with rail.														

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
X.3	SC OTL SA has the obligation to provide the necessary documentation to Oradea Municipality Administration to recalculate periodically the compensation of public urban transport operator														
X.5	it has to enhance the efforts for increase transports regularity and even the public transport vehicles punctuality – according to schedules														
X.6	it is necessary to ensure the second access to trams depot; in the same vein: it is to consider a “shed” for trams in order to reduce the travel distances for the withdrawn trams at the end of the peak hours					690,000 EUR	690,000 EUR	690,000 EUR	690,000 EUR					2,760,000 EUR	European Funds Own sources
X.7	it can be obtained a higher elasticity in public transport operation if it will be done the third “triangle” which to serve Line 2			30,000 EUR	30,000 EUR									60,000 EUR	European Funds Own sources

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
X.8	from the point of view of efficiency, the main route which can be served by a tram line is between the point of intersection of tram line 2 with central ring and the second access of depot													2,000,000 EUR	European Funds
						400,000 EUR	400,000 EUR	300,000 EUR	300,000 EUR	150,000 EUR	150,000 EUR	150,000 EUR	150,000 EUR		
X.9	SC OTL SA has to redo the schedule for public vehicles so as the intervals at peak hour to reach 7-8 minutes between the vehicles of the same line/route														
X.11	SC OTL SA has to aim the purchase of vehicles with enhanced access possibilities (of different capacities, with low floor etc.)													3,450.000 EUR	European Funds Own sources
					862,500 EUR	862,500 EUR	862,500 EUR	862,500 EUR							
X.12	general interests of the citizens – not those specific to a part of the citizens – request to reassess the gratuity award system for retirees (the gratuity may be a right but using this for the time during students are traveling by public transport can not be tolerated)														

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
X.14	SC OTL SA has to make a project proposal for the first lanes dedicated to public transport														
X.15	it is recommended to initiate a project for modern boarding-unboarding stations (to standardize – to customize these contact points between the public transport operator and the public)		855,000 EUR	855,000 EUR	855,000 EUR	855,000 EUR								3,420,000 EUR	European Funds Own sources
X.17	it is necessary a new pricing policy (which to envisage also rewarding the loyal passengers)														
X.18	it has to be introduced and then generalized express transport system (or maxi-taxi), in the same time with normal routes														
X.19	it is necessary to redesign the bus routes so as to be excluded the parallelism of the two modes of transport														

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
XI.5	analyze the possibilities to standardize the payment into a single pass for urban trips in combination with peri-urban trips														
XI.6	it should be necessary to be rethought the granting systems of transport licences for peri-urban area and even county area – in order to have the obligation to use as arrival and departure in/from Oradea only the bus - stations – to strictly forbid the public transport of passengers within the city														
XI.8	should be introduce a tax / fee – contribution of the non-local transport operators in order to cover the costs of maintenance the boarding-unboarding stations used by them														
XII.1	central railway station modernization so as the transition from railways system to roads system to represent an action of establishing a intermodal hub of maximum importance; same for Nufărul node													3,000,000 EUR	European Funds Own sources
								500,000 EUR	500,000 EUR	650,000 EUR	650,000 EUR	700,000 EUR			

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
XII.3	organize the public transport program performed by public transport operator in accordance with the rail and air transport program														
TOTAL														72 months	
from which:		3,865,000 EUR		16,249,500 EUR		18,493,500 EUR		17,516,500 EUR		3,494,000 EUR		2,434,000 EUR		62,052,500 EUR	
Oradea Municipality		1,455,000 EUR		6,650,000 EUR		8,370,000 EUR		9,570,000 EUR		1,300,000 EUR		700,000 EUR		28,045,000 EUR	
SC OTL SA		2,410,000 EUR		9,599,500 EUR		10,123,500 EUR		7,946,500 EUR		2,194,000 EUR		1,734,000 EUR		34,007,500 EUR	

25. The selection of proper indicators[67]

Monitoring and evaluation of sustainable urban mobility plan has to ensure the collection of statistical data which to provide the level of relevant indicators and obvious measurable for the policy of analized municipality and by which to be possible to monitor the SUMP measures implementation. By monitoring process it can be obtain information regarding:

- how the change of provided services has achieved its goal;
- any technical, social, economic or other changes resulted following the implementation of a public policy,
- The consistency of actions made to implement the policies, standards and existing regulations.

Monitoring and evaluation processes are in close relation with the planning process. Thus, if there are not established achievable goals, applicable measures and actions whose effects to be measurable, the monitoring can not be accomplished, and the correction of SUMP implementation will not be possible; as a result:

- the objectives have to be in the responsibility of the departments that guarantee their opportunity in financial term and/or social term at least;
- the measures have to be certified on mathematical ways or based on practice on sustainability of another urban institutions;
- actions have to be attached indices enabled to notify the background changes that occur after the implementation of measures.

In addition, the monitoring and evaluation activities depend on the frequency by which are modified the objectives and targets envisaged in the package of measures to implement. In most cases, changing them will change the indicators used in monitoring (monitoring indicators repeated changes may cause difficulties in developing the monitoring reports, the misinterpretation of data and erroneous analysis of the results of a policy: reference data are changed, it can not be performed comparisons between different values for certain periods of time etc.).

Monitoring of SUMP implementation results (considered public policy at the moment of implementation) consists in measuring and reporting of relevant indicators. In the process of establishing indicators which are used in monitoring and evaluation processes, the municipality has to be sure that are selected those being in accordance with the objectives and results. Other cities experience shows that **the monitoring of too many indicators is not always the solution for a coherent process in order to adjust the implementation** of public policy (the data collecting for the selected indicators could be quite costly, thus wasting resources in order to collect data that are not necessarily relevant)**.**

[67] After the selection of some indicators as being highest relevant, they will be named “indices”.

INCERTRANS drastically reduced the number of indicators to monitor[68] from 25 to 7 (9), without loosing the consistency of the original ensemble. It was concluded as follows:

- **indicators regarding the public or touristic passengers transport**

A. the total number of trips by public transport;
B. accessibility to public transport;
C. bus/tram routes (number, length, density, coverage);
D. electricity consumption in relation with fossil fuels consumption – in public transport;
E. length of lanes dedicated to public transport in relation with the entire network of streets;
F. the ration between total population and active fleet of public transport vehicles;
G. commercial speed of public transport vehicles at the time of peak hours;
H. the daily ending time for public transport;
I. cost on km in public transport;
J. the number of employees in the public transport company;

they can be substituted by one: GENERICALLY, THE MONITORING OF EVOLUTION OF THIS INDICATORS ASSEMBLY IT IS ANTICIPATED TO BE DONE BY THE ANALYSIS OF SC OTL SA REVENUES EVOLUTION – indice 1.

- **indicators regarding sustainable development**

K. the rate of motorization in the city;
L. the number of parking places (inclusive the residential spaces);

they can be substituted by one: GENERICALLY, THE MONITORING OF EVOLUTION OF THIS INDICATORS ASSEMBLY IT IS ANTICIPATED TO BE DONE BY THE ANALYSIS OF RATE OF MOTORIZATION OF CITY'S POPULATION – indice 2.

- **Indicators regarding alternative transport**

M. Routes for bicycle (length, density, percentage in the total network of streets) –– separately for isolated (independent, which are not connected with other) bikes tracks, respectively for the entire network of bikes tracks;
N. The number of bikes rental points;

they can be substituted by one: GENERICALLY, THE MONITORING OF EVOLUTION OF THIS INDICATORS ASSEMBLY IT IS ANTICIPATED TO BE DONE BY THE ANALYSIS OF BIKES TRACKS KILOMETERS EVOLUTION – indice 3.

- **indicators regarding sustainability for urban area**

O. kilometers of new built or rehabilitated streets;
P. square kilometers of city's borders extension (time horizon: 20-30 years);
Q. development of built areas versus green areas (square metters/square meters);

[68] 7 indices results from the proper grouping of the indicators taken in consideration in targets establishing, the last two being orgacally linked by monitoring process (the necessary money for implementation and the benefits for the public/passengers after the implementation).

they can be substituted by one: GENERICALLY, THE MONITORING OF EVOLUTION OF THIS INDICATORS ASSEMBLY IT IS ANTICIPATED TO BE DONE BY THE ANALYSIS OF NEW BUILT OR REHABILITED STREETS KILOMETERS EVOLUTION – indice 4.

- **Indicators regarding to congestion – general traffic and pollution**

R. the hourly traffic on the street with the highest level of traffic flows;
S. the level of noise at the time of peak hours for the street with the highest level of traffic flows;
T. the level of emissions and dust at the peak hours on he street with the highest level of traffic flows;

they can be substituted by one: GENERICALLY, THE MONITORING OF EVOLUTION OF THIS INDICATORS ASSEMBLY IT IS ANTICIPATED TO BE DONE BY THE ANALYSIS OF HOURLY TRAFFIC EVOLUTION ON THE STREET WITH THE HIGHEST LEVEL OF TRAFFIC FLOWS– indice 5.

- **indicators related to direct progress**

U. the ration between the medium salary and the price of trip (separately for the trip made based on ticket, respectively based on pass);
VW. the price of a parking hour in relation with the price of a 5 km trip made by public transport;
WX. The necessary time for a trip by public transport vehicles in relation with average time to travel the same distance by private car;

they can be substituted by one: GENERICALLY, THE MONITORING OF EVOLUTION OF THIS INDICATORS ASSEMBLY IT IS ANTICIPATED TO BE DONE BY THE ANALYSIS OF EVOLUTION OF ONE PARKING HOUR PRICE IN RELATION WITH THE PRICE OF A 5 KM TRIP BY PUBLIC TRANSPORT - indice 6.

- **Indicators related to indirect progress**

Y. the delinquency level of the city;
Z. the freight traffic in the city's area (from the perspective of: number of transport authorizations and estimation regarding tonnes*km/day);

they can be substituted by one: GENERICALLY, THE MONITORING OF EVOLUTION OF THIS INDICATORS ASSEMBLY IT IS ANTICIPATED TO BE DONE BY THE ANALYSIS OF EVOLUTION OF TONNES*KM TRANSPORTED GOODS PER DAY IN CITY'S AREA – indice 7.

AND ALSO TWO INDICATORS:

- **ONE IS INTRINSIC TO ANY PROJECT: FINANCIAL RESOURCES INTRODUCED IN ACTIVITY OF IMPROVING THE SUSTAINABLE MOBILITY IN ORADEA CITY** – indice 8**.**
- **ANOTHER EXTRINSICAL TO A PROJECT WHICH HAS AS TARGET THE PUBLIC: THE LEVEL OF CITIZENS' SATISFACTION REGARDING THE IMPROVEMENT OF MOBILITY IN THE CITY** – indice 9.

The below table details the 7 (9) chosen indicators.

Tab. III.12 – Organization of performance indicators

Category	Contain	Example for SUMP	Number
Indicators regarding the resources and the activities (in order to express more simple, it can be said that they are "what is hold: the public money and staff skills")	Financial resources, human resources, material resources, organizational resources or regulation resources are mobilized in the process of policy implementation.	Financial resources introduced in the action of improving the Oradea sustainable mobility	Indice 8
Indicators regarding accumulation (in order to express more simple, it can be said that they are "what was bought with money and by staff skills"	Goods and services supplied under the responsibility of public policy managers.	the revenues evolution kilometers of bikes tracks // kilometers of new built or rehabilitated streets //	Indice 1 Indice 3 Indice 4
Result indicators	The immediate effects of the policy for target public (an effect which is immediate if the operator observes it easily when is in contact with parget public; because they are easily identifiable by the operators, that's why the result indicators are easy to monitor)	The price of one hour parking in relation with the price a 5 km trip by public transport//	Indice 6
Impact indicators	Indirect and long-term consequences of public policy (an effect is indirect the operator could determine it only after a professional monitoring based on mathematical models; because they are difficult to identify by operators, the result indicators should be systematically monitored)	the rate of motorization of the city // the hourly traffic on the street with the highest level of traffic flows // volume of tonnes*km of goods transported per day in the city's area // the level of citizens' satisfaction //	Indice 2 Indice 5 Indice 7 Indice 9

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26. Action plan

"The philosophy" of action plan proposed by INCERTRANS is based on those issues to be solved and on those resources which are potential available, in order to be converted to solve the problems which are to overcome.

Tab. III.17 Action Plan for Oradea SUMP. Field of intervention:

DEVELOP AND MODERNIZE THE INFRASTRUCTURE

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
evolution of revenues	2016-2017	Prepare two pre-feasibility studies which to detail at the level of working draft the topometry context within the number of accesses in/out Salca Depot could be doubled, respectively the spatial and technological possibility de construct and utilize the expected shed in Sinteza area. **I** **(general type action that contributes to achieve also other targets)**	Oradea Municipality Administration = To include in the first bugets for the 6 years of SUMP the necessary amounts in order to ensure the second access of depot.	It has to be allocated the amount of 900,000 EUR for construction of 1.5 kilometers of single track tram and the amount of 1,000,000 EUR the construction of the shed.	„Year by year" modification of the system taking into account a planning for future. Take into account the services dealing with emergency services and the possibility according to which the transport system could collapse due to fragmentation of tram network.
			OTL = Submit to Oradea Municipality the emergengy scenarios – in which public transport will be done if the only entry-exit of depot would be impractical. = prepare a paper regarding the „vision" on what means the second access of the depot for transport network and transport service. = develop further options for transport service so that the need for board staff, vehicles and maintenance staff not to take by surprise a possible execution of the second access.	–	

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
	2015	Prepare a large paper in which – considering the proposal of Urban General Plan – will be established the point of junctions between ways of access inside the protected ring. **II** **(general type action that contributes to achieve also other targets)**	Oradea Municipality Administration = prepare studies and projects which to put in practice the idea of protected ring = determine and identify the resources and the level of year in which will be included in the budget the necessary amounts/costs = form a public intervention group to inform the public regarding the new ways of mobility in the city = estimate the level of additional cash-flow occured due to taxation of passing through the protected ring	The transformation of the city center in an area free from pollution and favorable repercussions on overall health.	The city's center is now free from pollution and this has favorable repercurssion on overall health. Public perception about current priorities for children is changed.
			OTL = develop a paper which to reconsider the requested fleet in order to take the new passengers who have changed their mode of transport (private cars replaced by bus or tram)	–	

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
	2015	Develop an analysis of opportunity of "closing" the ring with barriers or just installing cameras to monitor the entrances and watch the bad payers. **III** **(general type action that contributes to achieve also other targets)**	ORADEA MUNICIPALITY ADMINISTRATION = prepare an analysis of adequacy of one of two options (not only in terms of investments, but also in term of citizens acceptability regarding the new framework).	–	
			OTL = the main collaborator of Oradea Municipality Administration	–	
	2016-2017	Prepare the proposal according to what the Sinteza tram line to cross the national road so as to be possible transport services to be done within growing industrial platform in west of the city. **IV** **(general type action that contributes to achieve also other targets)**	ORADEA MUNICIPALITY ADMINISTRATION =organize an architectural competition for a bridge or underground passage which to make the link between tramway and national road = identify the financing source for the passage = public procurement procedure for the construction	**Own funds should be enough to cover the prize.** **It should be allocated the amount of 1,560,000 EUR for construction of the passage and tramway for Western Industrial Area.**	The beginning of a transformation of the county capital city into a modern node (taking into account the development of express road, the project regarding city's bypass and the road which has to link the villages of Oradea Metropolitan Area without Oradea city to be affected). Long-distance urban trips by modern transport services and high speeds.
			OTL = submit to Oradea Municipality Administration at least two different tram routes which to extend the public transport service up to West Industrial Area.	–	

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
	2014-2015	It is necessary to delimit in several areas the tramway in general traffic by fences or curb-stone; it will be submitted proposal for bus and tram routes which to be advantaged in general traffic. **V** **(general type action that contributes to achieve also other targets)**	Oradea Municipality Administration = openness and availability for public transport operator proposals	–	The measure will change the relation between the costs with public transport and the costs of using private cars (due to occurence of higher travel times when private car is used in the traffic in the same time with the increase of public trasport vehicles)
			OTL = develop a traffic study which to demonstrate that there are options to set up the fences for separate the tramway without confuse the city's traffic. = submit to the Local Council the options to progressively implement the separation of general traffic of bus and tram routes		
	2016-2019	Develop a documentation which to highlight the first tram routes which is suitable to a such approach (most likely from Central Station to Nufărul). **VI** **(general type action that contributes to achieve also other targets)**	Oradea Municipality Administration = establish the level of investment required to develop a light rail	The investment for 5.25 km on the route Central Station – Nufărul is of 3,937,500 EUR.	A well chosen route which to link the main neighborhoods of the city could reduce the traffic congestion with acceptable efforts.
			OTL = prepare a paper which to indicate which tram route is the most suitable to be light rail	–	

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
	2014	It will be developed variants of routes on which not to be present both tram routes and bus routes (the equivalent being the extension of bus network to the neighborhoods which currently are low served). **VII** **(general type action that contributes to achieve also other targets)**	Oradea Municipality Administration = openness and availability for public transport operator proposals	_	The current isochronous of transport network doesn't cover more than 60% of city's area in the 30 minutes specified in Urban General Plan. The routes to suburbs could bring the above percentage to 70-75%. The separation of the activity between tram and bus will be the foundation of services „industrialization", with positive consequences for the city.
			OTL = develop alternatives in which – taking into account also the ongoing execution works as „express road" from the left side of railways – to eliminate self-competition between two or even three (if we consider also the trolley) public transport services = explain to the citizens the new routes variants and the general benefits for the city if the transport system by buses is transformed in a mean to supply the basic system (the tram) = submit new variants of routes which could be covered by now available buses	_	

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
rate of motorization for city's population		Develop an analysis of opportunity of "closing" the ring with barriers or just installing cameras to monitor the entrances and watch the bad payers.	III	III	III
		It is necessary to delimit in several areas the tramway in general traffic by fences or curb-stone; it will be submitted proposal for bus and tram routes which to be advantaged in general traffic.	V	**V**	V
		It will be developed variants of routes on which not to be present both tram routes and bus routes (the equivalent being the extension of bus network to the neighborhoods which currently are low served).	VII	**VII**	VII
kilometers of bikes tracks		Prepare a large paper in which – considering the proposal of Urban General Plan – will be established the point of junctions between ways of access inside the protected ring.	II	**II**	II

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
kilometers of new built or rehabilitated streets	2015	Rethink the proposal regarding the completion of the third side of the triangle of Emanuel Square.	ORADEA MUNICIPALITY ADMINISTRATION = Determined intervention at all decisional levels on which depends the completion of Emanuel Square triangle	**In order to construct 100 meters of tramway it is required an amount of 60,000 EUR.**	A great flexibility of public transport system. Higher commercial speeds directly perceived by passengers (who will arrive at the destination with 10-15 minutes earlier). Energy savings for the same trips as in the past before to be developed the third side of the triangle.
			OTL = The improvement of the paper based on which was done the proposal to extend the tramway with the respective tens of meters of rail (a proposal is also in SUMP).	-	
		Prepare a pre-feasibility study which to detail at the level of working draft the topometry context within the number of accesses in/out Salca Depot could be doubled.	I	I	I

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
hourly traffic on the streets with the highest level of traffic flows		Prepare the proposal according to what the Sinteza tram line to cross the national road so as to be possible transport services to be done within growing industrial platform in west of the city.	IV	IV	IV
		It is necessary to delimit in several areas the tramway in general traffic by fences or curb-stone; it will be submitted proposal for bus and tram routes which to be advantaged in general traffic.	V	V	V
		It will be developed variants of routes on which not to be present both tram routes and bus routes (the equivalent being the extension of bus network to the neighborhoods which currently are low served).	VII	VII	VII
the price of one parking hour related to the price of 5 km trip by public transport		It is necessary to delimit in several areas the tramway in general traffic by fences or curb-stone; it will be submitted proposal for bus and tram routes which to be advantaged in general traffic.	V	V	V
		Develop a documentation which to highlight the first tram routes which is suitable to a such approach (most likely from Central Station to Nufărul).	VI	VI	VI

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
the tonnes*km volume of goods daily transported within the city's area	2014	Propose to Oradea Municipality Administration and the police management to reduce the tonnage of freight vehicles restricted from 7.5 tonnes to 3.5 tonnes possible by restriction of free access at a period of time out of light day (18.00-6.00)	Oradea Municipality Administration = prepare a traffic survey by which to be determined the number of freights vehicles that have between 3.5 and 7.5 tonnes and which affect the „extended" center of the city = prepare a topographical plan of current position of signs that forbid the passing of the vehicles of 7.5 tonnes, respectively a proposal to delimit the new perimeter which to protect the extended center of the city = submit to local council the proposal regarding to reduce the accepted tonnage of the vehicles in the city = include in the budget the costs of re-emplacement the traffic signs that forbid the access	**Funds – of relatively insignificant level – for develop surveys can be obtained based on project submission to one of national calls by one of Oradea universities.**	Low levels of pollution. Reduced congestion in the extended center of the city. Higher revenues in order to improve the city's infrastructure.
			OTL = the main collaborator of Oradea Muncipality Administration	_	

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
financial resources included in the action of improving the Oradea sustainable mobility		Prepare a large paper in which – considering the proposal of Urban General Plan – will be established the point of junctions between ways of access inside the protected ring.	II	**II**	II
the level of citizens' satisfaction		Develop a documentation which to highlight the first tram routes which is suitable to a such approach (most likely from Central Station to Nufărul).	VI	**VI**	VI
		It will be developed variants of routes on which not to be present both tram routes and bus routes (the equivalent being the extension of bus network to the neighborhoods which currently are low served).	VII	**VII**	VII

Tab. III.18 Action Plan for Oradea SUMP. Field of intervention:

TRANSPORT SYSTEMS IMPROVEMENT

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
evolution of revenues	2014	Rethink the entire pricing system of public passengers transport and private vehicles parking (especially the cars). **I (general type action that contributes to achieve also other targets)**	ORADEA MUNICIPALITY ADMINISTRATION = openness and availability for public transport operator proposals	–	A new variant for public passengers transport regulation which to take in consideration the requirements of sustainable mobility is developed. The calculations for 1 km of bus driving respectively 1 km of tram driving are remade. Prepare scenarios which have to simulate different pricing policies (up to obtain parameters which provide the alternative that improve the performance). It can be done up to price differentiation between lines depending on profitability.
			OTL = Proposal based on SUMP content of making transport price which make attractive the public transport (lower levels, rewards for loyal passengers, rethinking of gratuities system, allow the bikes in public transport vehicles etc)	–	
		From the point of view of efficiency, the main route which can be served by a tram line is between the point of intersection of tram line 2 with central ring and the second access of depot	PMO = to include in the multiannual budget the necessary amounts/costs for the route construction OTL = the main collaborator of Oradea Muncipality Administration	**Allocation of 2,000,000 EUR for construction of 2 km double track.**	Urban transport service operation in the Southern area of the city, between Calea Aradului and Universității.

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
	2014	Penetrating campaign to achieve the population's agreement regarding the reducing the range and volume of gratuity.	ORADEA MUNICIPALITY ADMINISTRATION = Prepare an analysis of the legal framework which establish the volume and level of gratuities. = Actions to convince people that „there is no high quality in public transport unless any contribution in money" (as co-payments in the health care system)	**The citizens' resistance to change can be a cause of SUMP failure: the costs – relatively minor – for transparency campaigns regarding money ensuring for transport are motivated by the necessity that public have to comply to local administration policies. The source can be an internal one.**	Prepare a Local Council decision which to establish the level of gratuities for urban passengers transport to be supported by the general budget of Oradea Municipality Administration. Meetings schedule with traveling public having as purpose the explanation of measure which strengthen sustainable mobility in equal conditions for all citizens not only for retirees.
			OTL = the main collaborator of Oradea Municipality Administration	–	–

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
	2014	Prepare profitability studies for each line separately. **II** **(general type action that contributes to achieve also other targets)**	Oradea Municipality Administration = openness and availability for public transport operator proposals	–	The possibility to organize the public transport system on flexible programs in terms of profitability. Getting a right picture of revenues sources of different areas of the city (this could be the reason to transport diversification in certain neighborhoods).
			OTL = Form a working group to be able – using e-ticketing system – to synthetize all the information regarding level of profitability for every lines, inclusive for the relevant times of a day. = E-ticketing system should be used also to prioritize public transport lines: in this sense each line must have its own revenues/costs indicator in order to use the taxing flaxibility to differentiate the prices.	–	

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
	2016-2017	Institute a regulation which to allow to cumulate an urban pass with a periurban pass (obviously at a lower price than the sum of the two prices). Note that e-ticketing sustem that is currently implemented by SC OTL SA allows a multitude of pricing options for urban, periurban and combined trips.	Oradea Municipality Administration = openness and availability for public transport operator proposals	–	The extension of city's public transport operator on the market of extra-urban transport market.
			OTL = propose a legal framework which to allow the application of commercial regulations between urban and periurban transport operators. This will enable in procedural terms and also in discount terms the sales of different types of passes – desired by public.	–	
	2015	Initiate and then permanently perpetuate working groups between SC OTL SA and transport operators in the county in order to eliminate the unfair competition within the county.	Oradea Municipality Administration = intervention at the level of county institutions (and local institutions) in order to separate the areas of influence of county operators of the Municipality and Oradea Metropolitan Area operators.	–	Getting a pre-integration between public passengers transport systems used in distinct areas on one hand and on the other hand for complementary areas.
			OTL = proposal of regulation and granting competences to common control entities in the field of exceeding the activity area for transport operators.	–	

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
	2014	Modification of public transport regulations in order to facilitate the access of bikes in the public transport vehicles. **III** **(general type action that contributes to achieve also other targets)**	Oradea Municipality Administration = openness and availability for public transport operator proposals	–	The increase of passengers number. Indirect support for develop bicycle tracks.
			OTL = Develop solution for technical issues which are involved by all actions involved by bicycle transport in the public transport vehicles. = Establish the price for a bike transport as a luggage = Publicity campaign for „passenger with byke in the bus”	**The costs are relatively low and could be supported by SC OTL SA from the resources stipulated for marketing activities.**	
	2015-2016	Negotiations with operators to establish the amount of the fee to cover the costs of stations maintenance. **IV** **(general type action that contributes to achieve also other targets)**	Oradea Municipality Administration = Intervention on County Council to establish the contact with interurban transport operators.	–	Cooperation Protocol between Oradea Municipality – Oradea Metropolitan Area – Bihor County. Public transport service quality improved.
			OTL = Prepare a documentation in order to establish the amount of tax in conditions of financial and economic equity.	–	

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
	2015-2017	To include in short-term program of SC OTL SA the necessity to purchase vehicles from differentiated categories in order to increase the flexibility of operation on routes on which the demand for transport is irregular in relation with day time and length (also it is proper an analysis concerning the optimum between one single type of vehicle with easy maintenance and flexibility in operation but complex maintenance for more type of vehicles).	ORADEA MUNICIPALITY ADMINISTRATION = openness and availability for public transport operator proposals	–	A higher internal organization of urban passengers transport operator. The conditions for extensive qualitative offer is achieved.
			OTL = Submit the development strategy of SC OTL SA – regarding the fleet modernization – in a meeting of Local Council	**?**	
	2014	Reestablish all the transport schedules following two objectives: (1) regularity (2) rational succession between the vehicles of the same line. **V** **(general type action that contributes to achieve also other targets)**	ORADEA MUNICIPALITY ADMINISTRATION = openness and availability for public transport operator proposals	–	High regularity and punctuality in transport service (ultimately savings in energy consumption and personnel payment).
			OTL = Determine points and areas which generate systematic delays. = Establish on sections the commercial speed and operating spedd (for transport vehicles for the same line) due to general traffic. = Remake transport schedules on the base of recalculation of travel times which to cover the systematic delays. = Prepare new transport schedules.	–	

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
	2016	Prepare a detailed information which will bring arguments to Oradea Municipality Administration and Oradea Metropolitan Area regarding the implementing at least of a touristic route in the city's area. **VI** **(general type action that contributes to achieve also other targets)**	ORADEA MUNICIPALITY ADMINISTRATION = Assign the licenses for 1-2 routes which to include representatives historical buildings of Oradea.	**The acquisition of a electric vehicle of medium capacity which costs 250,000 EUR**	Open the Oradea local area for intermodality.
			OTL = Collaboration with Oradea Metropolitan Area in order to develop a proposal (or more) regarding a route with resonance in locals consciousness and attractiveness from the tourists point of view.	–	
	2016	Determined action to diversify the range of services of SC OTL SA towards close resorts and border. **VII** **(general type action that contributes to achieve also other targets)**	ORADEA MUNICIPALITY ADMINISTRATION = allow the changes of statut or other changes which to lead to conditions achievement so as the urban-periurban transport operator to be able to participate to interurban transport routes distribution and allocation.	–	Documentation which confer to urban-periurban operator the statut of county transport operator. Interurban transport license for the transport operator.
			OTL =(together with TRANSREGIO): technical project which to envisage the features of routes and vehicles for the lines to resorts.	–	

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
	2015-2017	The modification of current transport schedules assuring that arrival and departure times of the public transport vehicles to be relatively simultaneous with transport schedules for trains and plains.	ORADEA MUNICIPALITY ADMINISTRATION = openness and availability for public transport operator proposals	–	The Oradea's prestige rises for the non-residents and that could have positive effects for tourism and even for financial-economic field. .
			OTL = Provide a prompt presence of public transport vehicles in the period of time corresponding to the time of departure of trains and airplanes and also to the time of arrival of the trains and airplanes at the rail stations and airport.	–	
	2014	Achieve accurate surveys which to identify stations that exist only due the reason of complacency.	ORADEA MUNICIPALITY ADMINISTRATION = openness and availability for public transport operator proposals	–	Scientific documentation regarding the consistency of the boarding-unboarding points organization.
			OTL = Systematically organize the surveys by manual counting of the passengers who are generated or attracted by the stations that according to empirical estimation do not make sufficient trips.	**Funds – of relatively insignificant level – for develop surveys can be obtained based on project submission to one of national calls by one of Oradea universities.**	

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
rate of motorization of city's population		Reestablish all the transport schedules following two objectives: (1) regularity (2) rational succession between the vehicles of the same line.	V	**V**	V
	2015 - 2017	Reconsider the proposal regarding the implementing of public transport by trolley (proposal which can be also found in Urban General Plan). **VIII** **(general type action that contributes to achieve also other targets)**	ORADEA MUNICIPALITY ADMINISTRATION = Include in the general budget the investment for a new ecological transport system	**Provision in the budget the amount of 3,000,000 EUR for the purchase of 10 trolleys**	Investment accompanied by related projects: impact project, feasibility study, execution project. Authorization of SC OTL SA as a center of training for trolley drivers.
			OTL = Prepare the conditions for trolleys depot. = Staff training for the management and maintenance the transport system inclusive for the electric power supply. Introduce in the estimated budget for the period 2015-2017 the costs for transport system by trolleys (line and electric substations) and for trolleys aquisition.	**Allocation of 4,000,000 EUR for the development of transport system by trolleys on a lenght of 8 km (inclusive electric substations)**	

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
kilometers of bikes tracks		Modification of public transport regulations in order to facilitate the access of bikes in the public transport vehicles.	III	**III**	III

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
	2017	Finance and execution of a simple "bike rack" – which can be only a metal frame with spaced for bikes wheels.	ORADEA MUNICIPALITY ADMINISTRATION = openness and availability for public transport operator proposals	–	Multimodality between systems considered for the future from the sustainable mobility perspective. The number of public transport passengers increases.
			OTL = Organize a local competition – in Oradea universities – in order to award a project for „bike rack" = Identify the stations that are suitable for implement a „bike rack" = Provision in the buget the costs necessary for materials aquisition and staff payment for installing in stations the bike rack.	**It should be allocated an amount of 25,000 EUR for implementing bikes racks in 25 tram stations.**	

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
kilometers of new built or rehabilitated streets	2014	Submit to ORADEA MUNICIPALITY ADMINISTRATION a SWOT analysis of the tramway section from Iosia Sud Neighborhood from the necessity perspective to maintain the tramway in this neighborhood. **IX** **(general type action that contributes to achieve also other targets)**	ORADEA MUNICIPALITY ADMINISTRATION = Finding of external sources to finance infrastructure investments.	**Allocation of 1,000,000 EUR for tramway extension.**	Project for the Development Ministry or for European Funds. Detailed monography of a low populated area (with implications for other neighborhoods as less dense and proper for public passengers transport).
			OTL = Analysis of neighborhood's profitability database, census population, jobs and passengers in order to identify the degree of contribution of Iosia Sud Neighborhood in supporting the costs for operation and maintenance of that tramway section.	–	
	2014-2019	Submit to ORADEA MUNICIPALITY ADMINISTRATION the findings resulted from the analysis of incidents in which drivers and motormen are involved – due to limitation of transport infrastructure or the rest of the conditions caused by buildings and equipments from the urban area.	ORADEA MUNICIPALITY ADMINISTRATION = Urgent acceptance of necessary costs for rearranging those infrastructure elements that create problems for public transport vehicles.	**For the blackspots elimination from the public transport point of view, it is necessary the amount of 1,000,000 EUR for the entire SUMP period.**	Improvement of city's infrastructure. Increase of citizens mobility safety. Decrease the level of stress for SC OTL SA drivers.
			OTL = Concrete and technical justified proposals for those areas or transversal sections which prove to be unproper for buses and trams traffic.	–	

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
hourly traffic on the street with the highest level of traffic flows	2017-2019	Rethink the entire pricing system of public passengers transport and private vehicles parking (especially the cars).	I	**I**	I
		Modification of public transport regulations in order to facilitate the access of bikes in the public transport vehicles.	III	**III**	III
		Reestablish all the transport schedules following two objectives: (1) regularity (2) rational succession between the vehicles of the same line.	V	**V**	V
		Central railway station modernization so as the transition from railways system to roads system to represent an action of establishing a intermodal hub of maximum importance; same for Nufărul node.	PMO = implement the project regarding the construction of a modern bus station in the adjacency of Central Station and Nufărul Station.	**Allocation of 3,000,000 EUR for the construction of 2 (two) intermodal points.**	Increase the number of movements of passengers changing the public transport vehicle (from the rail vehicle to periurban or local vehicle). Decrease the number of taxi vehicles which affect Ştefan cel Mare Bvd.
			OTL = the main collaborator of Oradea Municipality Administration		Increase the transport service quality provided by transport operators to public passengers waiting the urban transport vehicles.
		Determined action to diversify the range of services of SC OTL SA towards close resorts and border.	VIII	**VIII**	VIII

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
the price of one parking hour related to the price of 5 km trip by public transport		Prepare feasibility studies for every lines.	III	**III**	III

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
the tonnes*km volume of goods daily transported within the city's area		–	–	–	–
financial resources included in the action of improving the Oradea sustainable mobility		Rethink the entire pricing system of public passengers transport and private vehicles parking (especially the cars).	I	**I**	I
		Reconsider the proposal regarding the implementing of public transport by trolley (proposal which can be also found in Urban General Plan).	VIII	**VIII**	VIII
		Negotiations with operators to establish the amount of the fee to cover the costs of stations maintenance.	IV	**IV**	IV
		Submit to ORADEA MUNICIPALITY ADMINISTRATION a SWOT analysis of the tramway section from Ioșia Sud Neighborhood from the necessity perspective to maintain the tramway in this neighborhood.	IX	**IX**	IX

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
	2014 - 2016	Identify the sources to continue financing of the actions to standardize the boarding-unboarding stations. **X** **(general type action that contributes to achieve also other targets)**	ORADEA MUNICIPALITY ADMINISTRATION = Provision in general budget the investments necessary for the customized design for all boarding-unborading stations.	**It should be allocated an amount of 3,420,000 EUR for standardizing of 285 stations.**	Investment accompanied by related projects: (at least) architectural project for urban integration, execution project. The construction has to become a space where is made known the SC OTL SA offer and to obtain revenues from advertising; in addition, the actual construction could represent a brand.
			OTL = Prepare a phased program to set up the new constructions.	**–**	
the citizens' level of satisfaction		Rethink the entire pricing system of public passengers transport and private vehicles parking (especially the cars).	I	**I**	I
		Modification of public transport regulations in order to facilitate the access of bikes in the public transport vehicles.	III	**III**	III

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
	2014	Reallocate the fleet on routes in order to improve the rational "equipping" of the routes depending on their transport demands.	ORADEA MUNICIPALITY ADMINISTRATION = openness and availability for public transport operator proposals	–	Obtain a surplus of fleet from own resources to be used for new routes or already existing routes for express lines – these latter bring additional revenues and decrease the level of congestion on some streets.
			OTL = Analysis of mathematical model which leads to a „normal" succession interval – 7-8 minutes. = Prepare a feasibility study which has to answer to the question regarding the rationality of decrease the number of vehicles for current lines.	–	
		Reestablish all the transport schedules following two objectives: (1) regularity (2) rational succession between the vehicles of the same line.	V	**V**	V
		Prepare a detailed information which will bring arguments to Oradea Municipality Administration and Oradea Metropolitan Area regarding the implementing at least of a touristic route in the city's area.	VI	**VI**	VI
		Determined action to diversify the range of services of SC OTL SA towards close resorts and border.	VII	**VII**	VII
		Identify the sources to continue financing of the actions to standardize the boarding-unboarding stations.	X	**X**	X

Tab. III.19 Action Plan for Oradea SUMP. Field of intervention:

IMPROVE THE PUBLIC TRANSPORT IN RELATION WITH THE ENVIRONMENT

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
evolution of revenues	2014	Following the implementation of e-ticketing it will be detailed reports and also reports/records with a high degree of accuracy on categories of public transport users which will provide the basis for periodic recalculation of compensation. These reports will be submitted periodically to Oradea Municipality Administration.	ORADEA MUNICIPALITY ADMINISTRATION = Reconsider the procedure based on which is currently calculate the compensation.		Increase the percentage in the budget of Oradea Municipality Administration in order to support public transport operator actions concerning urban mobility
			OTL = Studies and/or historical analysis regarding the possibilities and opportunities of SC OTL SA in comparison with possibilities and opportunities of other urban transport operators from European cities of comparable size with Oradea city.		

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
	2014	Is is necessary to submit to Oradea Municipality Administration a project regarding conjugate lines for the same route (for example line 14): develop a high speed route using a part of currents vehicles of this line. **I** **(general type action that contributes to achieve also other targets)**	ORADEA MUNICIPALITY ADMINISTRATION = openness and availability for public transport operator proposals	–	Increase the level of revenues only based on service quality increasing. Subsequent possibility to generalize the system with express lines or even to implement new routes which to operate as express lines.
			OTL = „live" tests which are aimed to increase public openess for fast transport lines. = submit to Oradea Muncipality Administration a report which to include the test findings and the proposal to diversify the transport service on one and the same route (a higher price than it would be justified – the price in the case in which express line will be authorized being subsequently decrease to the level resulted from calculation) = Develop solutions for technical issues related to vehicles circulation in two different ways (normal and express) in the same stations.	–	

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
	2014-2019	To facilitate the making decision in order to set the "no car day", SC OTL SA should submit to Oradea Municipality Administration a paper which to indicate the less congested 2-3 days of Saturday or Sunday – as a result of the statistics held by public transport operator.	ORADEA MUNICIPALITY ADMINISTRATION = establish the day – days without using cars in Oradea city.	–	Certain indicator that Oradea Municipality is on sustainable mobility direction. Reduced pollution.
			OTL = the analysis of trips number in Saturdays and Sundays throughout the year.	–	
	2014-2019	Campaign to obtain the population consent for this day.	ORADEA MUNICIPALITY ADMINISTRATION = prepare citizens for a such measures (insisting on the categorical difference between this kind of day and the odd and even days to use car in the communist regime) = media campaign so as those who pass Oradea not to face this fact without to be prepared.	–	Accepting of this day is a „lesson" for the children showing them how to coexist with the nature in urban environment.
			OTL = the main collaborator of Oradea Municipality Administration.	–	

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
	2014	Negotiations with management of some institutions (like Theater, Zoo, Swimming Pool) in order to establish a common pass that to allow the access to a cultural performance or recreational activity and also the access in public transport vehicles (obviously including mutual discounts between the members of this consortia).	ORADEA MUNICIPALITY ADMINISTRATION = organize meeting with the managers of cultural or recreational institution in order to analyze the proposal.	–	Decrease the number of trips by private cars in favor of the trips made by public transport vehicles. Decrease the general pressure on parking places in certain areas of the city.
			OTL = develop new work regulations which to represent the base for further discussions regarding the the sales and discount procedure of these trips.	–	
rate of motorization for city's population		Is is necessary to submit to Oradea Muncipality Administration a project regarding conjugate lines for the same route (for example line 14): develop a high speed route using a part of currents vehicles of this line.	I	**I**	I
kilometers of bikes tracks		–	–	–	–
kilometers of new built or rehabilitated streets		–	–	–	–

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
hourly traffic on the street with the highest level of traffic flows	2014-2017	Is is necessary to submit to Oradea Muncipality Administration a project regarding conjugate lines for the same route (for example line 14): develop a high speed route using a part of currents vehicles of this line.	I	**I**	I
		Develop a strategy for several years which to provide to local administration the opportunity to choose between the two options already presented in the chapter regarding probable measures to renew the fleet.	ORADEA MUNICIPALITY ADMINISTRATION = openness and availability for public transport operator proposals	**In the period 2014-2017 it should be allocated an amount of 30,450,000 EUR in order to purchase 10 trams and 18 buses of different capacities.**	Modernize the fleet. Decrease CO_2 emissions, dust and noise. Reduce the costs of fleet maintenance for SC OTL SA.
			OTL = Reopen discussion reffering to the SC OTL SA general manager strategy in the Local Council meetings (with the proposal to adopt the variant which best represents the transport operator way to get an upper level of development).	-	
the price of one parking hour related to the price of 5 km trip by public transport		–	–	–	–

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
the tonnes*km volume of goods daily transported within the city's area		–	–	–	–
financial resources included in the action of improving the Oradea sustainable mobility		–	–	–	–

Indices	Year	Required actions	Tasks	**The reason of funds releasing**	Delivered results
citizens' level of satisfaction		Is is necessary to submit to Oradea Muncipality Administration a project regarding conjugate lines for the same route (for example line 14): develop a high speed route using a part of currents vehicles of this line.	I	**I**	I
	2014-2018	To set an "open gates day" by SC OTL SA – at least once a month – in which to take place meetings between public/passengers and employees from all hierarchical levels of SC OTL SA.	ORADEA MUNICIPALITY ADMINISTRATION = openness and availability for public transport operator proposals		A more civilized atmosphere between public transport providers and customers. Decrease the level of stress for drivers and motormen.
			OTL = campaign in order to prepare the public = Organize thematic meetings which to familiarize the citizens with SC OTL SA problems		
		Include in the SC OTL SA budget the necessary costs for maintenance, respectively for the grassing of embarkment.	ORADEA MUNICIPALITY ADMINISTRATION = openness and availability for public transport operator proposals	-	Increase passengers comfort New possibilities of extension of greean areas Increase air quality
			OTL = to include in its own budget the suplimentary costs for maintenance improvement and grass seeding.	**Allocate 1,500,000 EUR for rehabilitation and grassig of 2.5 km doubled tracks.**	

The executive summary of the action plan is as follows[69]:

- Indice 1 = evolution of revenues
  - ✓ infrastructure development and modernization
    PMO (Oradea Municipality Administration) = 12 tasks
    OTL = 12 tasks
  - ✓ transport systems improvement
    PMO = 7 tasks
    OTL = 19 tasks
  - ✓ transport improvement in relation with the environment
    PMO = 5 tasks
    OTL = 6 tasks
- Indice 2 = the rate of motorization of city's population
  - ✓ infrastructure development and modernization
    PMO = 1 task
    OTL = 4 tasks
  - ✓ transport systems improvement
    PMO = 3 tasks
    OTL = 9 tasks
  - ✓ transport improvement in relation with the environment
    PMO = 1 task
    OTL = 4 tasks
- Indice 3 = kilometers of bikes tracks
  - ✓ infrastructure development and modernization
    PMO = 4 tasks
    OTL = 1 task
  - ✓ transport systems improvement
    PMO = 0 tasks
    OTL = 6 tasks
  - ✓ transport improvement in relation with the environment
    PMO = 0 task
    OTL = 0 task
- Indice 4 = kilometers of new built or rehabilitated streets
  - ✓ infrastructure development and modernization
    PMO = 3 tasks
    OTL = 6 tasks
  - ✓ transport systems improvement
    PMO = 2 tasks
    OTL = 2 tasks
  - ✓ transport improvement in relation with the environment

[69] Attention!: The summing of tasks brings no information because some tasks have impact on several actions.

PMO = 0 tasks
OTL = 0 tasks

- Indice 5 = hourly traffic on the street with the highest level of traffic flows in the city
  - ✓ infrastructure development and modernization
    PMO = 3 tasks
    OTL = 5 tasks
  - ✓ transport systems improvement
    PMO = 2 tasks
    OTL = 10 tasks
  - ✓ transport improvement in relation with the environment
    PMO = 1 tasks
    OTL = 4 tasks
- Indice 6 = price of a parking hour in relation with the price of a 5 km trip made by public transport
  - ✓ infrastructure development and modernization
    PMO = 1 tasks
    OTL = 3 tasks
  - ✓ transport systems improvement
    PMO = 0 tasks
    OTL = 2 tasks
  - ✓ transport improvement in relation with the environment
    PMO = 0 tasks
    OTL = 0 tasks
- Indice 7 = the volume of tonnes*km transported goods per day in city's area
  - ✓ infrastructure development and modernization
    PMO = 4 tasks
    OTL = 0 tasks
  - ✓ transport systems improvement
    PMO = 0 tasks
    OTL = 0 tasks
  - ✓ transport improvement in relation with the environment
    PMO = 0 tasks
    OTL = 0 tasks
- Indice 8 = financial resources introduced in activity of improving the sustainable mobility in Oradea city
  - ✓ infrastructure development and modernization
    PMO = 4 task
    OTL = 1 task
  - ✓ transport systems improvement
    PMO = 2 tasks
    OTL = 6 tasks
  - ✓ transport improvement in relation with the environment

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PMO = 0 tasks
OTL = 0 tasks

- Indice 9 = the level of citizens' satisfaction
  - ✓ infrastructure development and modernization
    PMO = 1 task
    OTL = 3 tasks
  - ✓ transport systems improvement
    PMO = 3 tasks
    OTL = 15 tasks
  - ✓ transport improvement in relation with the environment
    PMO = 0 task
    OTL = 6 tasks

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