

# Regional Disparities, Critical Items And Detrminants Of Road Transportation Development

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The article is aimed on regional disparities and risk management in road transportation. On details of road infrastructure of Slovak Republic shows functions, operating efficiency, strong and weak aspects of road transportation. The basic part of the article are critical items and increase of efficiency of road transportation in conditions of Slovak Republic. In the last part it contains real steps to increase impact of road transportation in economic environment.

**Keywords:** risk management, road infrastructure, road transportation, critical points, operating efficiency, transport mobility, sustainable development, motorways, speedways

## 1. INTRODUCTION

The Slovak Republic with its area of 49,035 km<sup>2</sup> and population of 5, 379 million belongs to the countries with lower concentration of area and population. But with density of population of 110 inhabitants per km<sup>2</sup> belongs to the countries with higher concentration of population. Slovakia with its area location is a continental Central European country with strategic position in the heart of Europe and a part of V4 countries. The country is surrounded by The Carpathian mountain bend with a quotient of 62% of agricultural land, many water flows, large mountain and water areas and is rightly marked as the center of Europe. Due to this the mid-point of Europe is symbolically marked in the Kremnice Mountains.

Besides its strategic location Slovakia has historical roots connected with Central Europe and mainly with neighbouring countries. Slovak areas used to be an administrative and economic part of many states and they influenced many attributes of economic and social life in the country. A longlasting connection of population living in the

area of modern Slovakia with other nationalities is seen in cultural and language relation, in adoption of social traditions, technological pcesses, way of life and many other attributes of economic, cultural and social work.

Slovakia is organizationally a part of many European Regions, border cooperation and small border contact of local population. There is systematically developed tourism, trading and cultural cooperation. That is why macroeconomic V4 markers are on a comparable levels. On entering the European Union international and border cooperation developed much more intensively.

The Slovak Republic was an important trade crossing. Golden and Amber Roads led via this area in ancient times. Later a Salt Road was built. In the Middle Ages that was one of the most important ways in Central Europe - „Via Magnum“ - a part of this area. The way led via 5 countries and rushed delivery of materials and after building of supply roads the communication covered the area of Austria, Slovakia, Poland,

Hungary and Romania. Slovakia is an important crossing in these times as well. With its density of road and rail communications it belongs to the countries with high developed infrastructure and transit transportation.

Increase of road transportation caused damping of rail transportation and fourfold increase number of personal cars and trucks. Accident frequency and number of road risks increased, too. That is why the aim of this article is to evaluate transportation efficiency of road infrastructure, its strong and weak aspects, to analyze its risks and critical items and determinants of road transportation development.

### **Material and Methodology of the Article**

Realization of demanded aim requires to do a research of road infrastructure of the Slovak Republic. On detail of choosen parts of road communications there were analyzed functions and efficiency of choosen critical items, strong and weak aspects of road transportation.

We gained backround documentation from a database of the Ministry of Transport, Construction and Regional Development of the Slovak Republic, the Statistical Office of the Slovak Republic and Information Portal of Road Transportation of the Slovak Republic. Credibility of these pieces of information was verified by researching of choosen parts of road communications. We used methods of questioning and controlled dialogue. We collected findings of the research into analytical charts, compared and synthesized in suggested concepts.

Following problems were dealt with:

- transport policy of the Slovak Republic up to 2015
- road infrastructure of the Slovak Republic
- transport efficiency of road communications
- strong and weak aspects of road transportation
- critical items and risks of road transportation
- factors of economic efficiency of road transportation
- determinants of road transportation development in the Slovak Republic

Analyzing outputs of the research we respected regional and local aspects. In synthetical part we specified determinants of road transportation development.

## **2. TRANSPORT POLICY OF SLOVAK REPUBLIC**

Transportation is one of the key factors of development of each society, a very important tool of economic development and a premise of regional and social adhesion.

The aim of transport policy is to create transparent conditions and to minimize risks at entering to transport market and transport infrastructure and to supply neverending transport needs of society in required time and quality at the same time with reducing of negative influence of transportation on environment. To reach mentioned aims has to be a sustainable development of the country.(5)

Transport policy is planned as a longlasting strategic document concretized in an action plan and makes a base for working out implementation of specific conceptions of several kinds of transportation up to 2015. Approving of this document is followed by a process of implementation in the field of strategic planning. Allocation of sources and efficient expenses into transport infrastructure and services according to development of social needs, trade and sustainable development of transportation is one of the key roles in this phase.

As it has been mentioned we can understand transport policy can be understood as a set of principles, aims and priorities in a sector of transportation and the state, competent authorities and institutions, self-governing units, municipalities and transportation services providers will follow it.

Base for transport policy formulation of the Slovak Republic is:

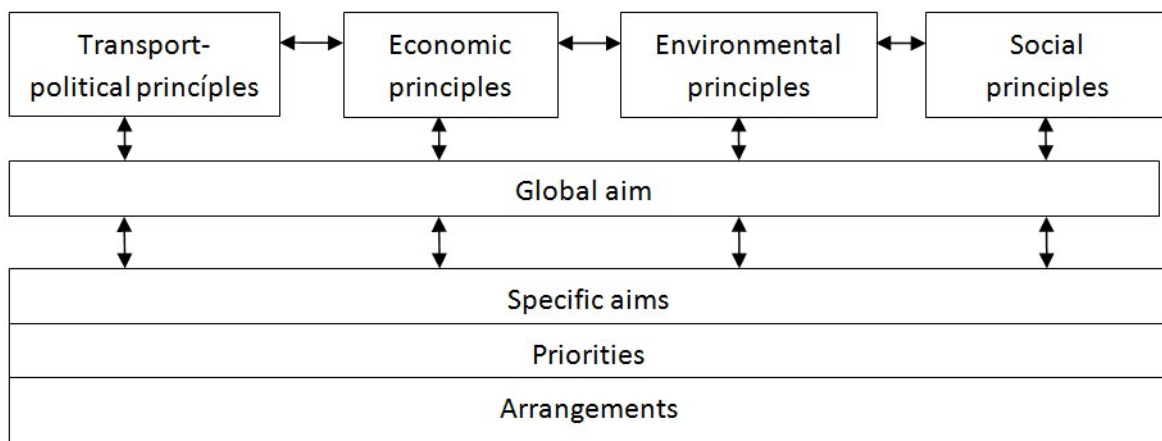
- Conceptual and developing documents passed on national and European level.
- Analysis of strong and weak aspects, opportunities and exposures.
- Transport policy of the Slovak Republic up to 2015 (passed by Government Decree No. 445 from 8 June 2005).

Basic principle of transport policy is a sustainable development coming out from a support of sector balance, from orientation on transportation users from equality of opportunities, efficient use of area and sources, explicitness of approach and access transmission of expenses refund on creator.

A global aim of transport policy is to ensure sustainable development of mobility understood as a longlasting ensurance of constantly cumulative transportation needs of society in a required time together with reducing of negative influence of transportation on environment. A global aim of

transport policy will be reached via realization and fulfilling by specific aims. Transport policy and its implementation must be based on horizontally working transport-polical, economic, environmental and social principles operating on a vertical from a global aim up to specific aims and local principles and steps. A synergic efect and fulfilling of a global aim of transport policy is ensured by diffusion and interplanting of mentioned principles.(5) Diagram 1

Principles and Aims of Transportation Diagram 1



Source: (5)

### 3. IMPORTANCE OF ROAD TRANSPORTATION

Road transportation belongs to the most developing kinds of transportation. Thanks to intensive technical development of road, manipulation and store techniques and developing of processing systems road transportation answered fastest to the need of speed of transportation and other logistic structures. The length of road communications is more than 43,000 kms and road network covers almost all the area of Slovak Republic.

Road transportation in Slovak Republic is quite liberalized and introduces nearly 70 % of total transport service. We suppose the transport service will increase as a result of flexibility of road transportation to the conditions in changing economy. Entering the European Union the access

of Slovak cargo transport providers is liberalized. They can do their business in terms of valid EU licence issued on demands of professional competence, financial competence and integrity.

Because of necessity to provide equality in competition on transport market EU states passed a target principle; according to this the user of transportation will pay all the expenses connected with transportation. One of the aims of harmonization in a transport market is sequential equalizing of rail and road transport conditions. The Slovak Republic charged road infrastructure for lorries under 12t by charges controlling time period, distance and annual road tax. The system trends to use electronic system for charging national transportation. Road tax in Slovakia is several times higher than a minimal level given by a mentioned decree.

### 3.1. MODERNIZATION AND ROAD INFRASTRUCTURE DEVELOPMENT

Road infrastructure has a great importance for economic development, mobility of population and competitiveness within international division of transport activities. It is one of the key factors influencing economic development and layout of the state. Current state of road infrastructure is characteristic by relatively dense road network but with a low share of higher class roads. It is necessary to say that the capacity is exceeded mainly on international road connections.

The priority of Slovak transport policy in the field of road infrastructure is to finish construction of road infrastructure added to TEN – T. A proportional development of motorways and speedways in conjunctions with considerable international road lines and existing border connections with neighbouring states will lead to inclusion of Slovak road network to united European transport system. As main lines with their bad influence on environment are exceeded it is very important for Slovakia to finish not only main European lines but also a transport infrastructure to improve access of peripheral regions and to eliminate regional disparities. It is necessary to ensure a development of other road networks, not only highways and speedways. It is necessary to finish transformation of road economy. First step in process of transformation was transfer of ownership of roads of 2nd and 3rd class from state to self-governing units.

### 3.2. FUNDING OF TRANSPORT INFRASTRUCTURE

Because of high financial costs of modernization and transport development it is necessary to set optimal financial sources creation

and their efficient use. The level of expenses on road transportation in developed EU countries is approximately 2% of GDP, in Slovak Republic it is only 1,5% of GDP. That is why it is necessary to gain financial means from several sources as are public sources, EU funds, private sources and sources from charging of public transport network. Their use and share depends on the ability to cumulate sources, the return of investment, expenses on maintenance and repair.

It is possible to gain financial sources from a Cohesion Fund, European fund for Regional Development and from the budget for TEN- T network. Another form of financing of transport infrastructure are PPP projects (public private project), mainly at road infrastructure. Financing from private sources is able only in the case when the return of sources is enough high. Return of private investment can caused higher operating costs. On the other hand it enables development of transport infrastructure in much more shorter time.

Charging of road infrastructure according the distance is another source for financing transport infrastructure. Financial sources for realization of regional transport policy can be financed from state budget and from a fund for regional transport infrastructure development. Fiscal income is a main source of this fund. Subventional state system together with credit system together are one of the keys in development of regional transport system.

### 4. SWOT ANALYSIS OF ROAD INFRASTRUCTURE

Road infrastructure analysis of Slovakia represent evaluation of strong and weak aspects, opportunities, exposures and is a base for defining of aims up to 2015. We show the analysis in Chart 1.

Swot Analysis with Regional Impact on NUTS 3 Level

Chart 1

| Strong Aspects  | Region – Self-governing Unit |    |    |    |    |    |    |    |
|---|------------------------------|----|----|----|----|----|----|----|
|   | TN                           | TT | NR | ZA | BB | KE | PO | BA |
| Level of reached superior transport infrastructure as a part of European transport infrastructure |                              |    |    |    |    |    |    | X  |
| Density of road infrastructure  |                              |    |    |    |    |    |    | X  |

|   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|
| Completely constructed multimodal corridor (motorway D1)  | X | X |   |   |   |   |   |   |
| Highest density of road network in Slovak Republic  |   | X |   |   |   |   |   |   |
| Completely constructed speedway R1 in section TT -NR- BB  |   | X | X |   | X |   |   |   |
| Lining of speedway R2 in a line of international road lines E, TEM  | X |   |   |   |   |   |   |   |
| Lining of speedway R1 in a line of international road lines E, TEM  |   | X | X |   | X |   |   |   |
| Crossing of multimodal European corridors west – east, north – south connecting basic economic centres in Slovak Republic and their connection to the European transport system |   |   |   | X |   |   |   | X |
| Lining of multimodal corridor Va (motorway D1), corridor VI. (motorway D3) and corridor of TENT – T network in section R3   |   |   |   | X |   |   |   |   |
| Lining of corridor of TEN-T network in section R3 and lining of international road lines E,TEM in sections R1, R2   |   |   |   |   | X |   |   |   |
| Lining of multimodal corridor Va (motorway D1) and corridor of TENT – T network in section R4   |   |   |   |   |   | X | X |   |

Source: Operating Programme Transportation 2007 – 2013 adapted according the research of the author

Chart 1

| Weak Aspects   | Region – Self-governing Unit |    |    |    |    |    |    |    |
|--|------------------------------|----|----|----|----|----|----|----|
|  | TN                           | TT | NR | ZA | BB | KE | PO | BA |
| Exceeded transport efficiency on motorway D1                 |                              | X  |    |    |    |    |    | X  |
| Not constructed corridor of TEN-T network (motorway D1)      |                              |    |    | X  |    | X  | X  |    |
| Low share of higher class roads in total length              |                              |    |    | X  | X  | X  | X  | X  |
| Not constructed a speedway network                           | X                            |    |    | X  | X  | X  | X  |    |
| Lowest density of road network inSlovak Republic             |                              |    |    | X  |    |    |    |    |
| Exceeded allowed intensity on roads of 1 <sup>st</sup> class |                              |    |    | X  | X  |    | X  |    |
| Low level of impact of intelligent transport systems         | X                            | X  | X  | X  | X  | X  | X  |    |

Source: Operating Programme Transportation 2007 – 2013 adapted according the research of the author

Chart 1

| Strong Aspects  | Region – Self-governing Unit |    |    |    |    |    |    |    |
|---|------------------------------|----|----|----|----|----|----|----|
|   | TN                           | TT | NR | ZA | BB | KE | PO | BA |
| Modernization of road network – 1 <sup>st</sup> class roads | X                            | X  | X  | X  | X  | X  | X  |    |

|   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|
| Perspective of construction of motorway transport system  | X |   |   | X |   |   | X |   |
| Improvement of transport access of region by constructing of motorways and speedways in lines of TEN-T and international road lines E (west – east, north - south)                    | X | X | X | X | X | X | X | X |
| Reduction of time loss and energy consumption by constructing of motorways and speedways  | X | X | X | X | X | X | X | X |
| Reduction of bad influence of transportation on environment and health by constructing of motorways, speedways and bypasses of municipalities and excluding of transit transportation | X | X | X | X | X | X | X | X |
| Increase of fluency and safety of road transportation, removal of critical accident sections, collision points and narrow points in road network                                      | X | X | X | X | X | X | X | X |
| Increase of employment in connection with region development caused by better transport access  | X |   | X | X | X | X | X |   |
| Reduction of accidents, energy consumption, better use of existing capacity of roads by application of IDS in a road network  | X | X | X | X | X | X | X | X |

**Source:** Operating Programme Transportation 2007 – 2013 adapted according the research of the author

Chart 1

| Weak Aspects   | Region – Self-governing Unit |    |    |    |    |    |    |    |
|--|------------------------------|----|----|----|----|----|----|----|
|  | TN                           | TT | NR | ZA | BB | KE | PO | BA |
| Increase of accidents on motorway D1 in section BA – TT as a result of exceeded allowed density      |                              | X  |    |    |    |    |    | X  |
| Increase of expenses on maintenance and repair of road infrastructure                                | X                            | X  | X  | X  | X  | X  | X  | X  |
| Delayed construction and modernization of road network   | X                            | X  | X  | X  | X  | X  | X  |    |
| Reduction of transport access and as a result of it reduction of area attractiveness for investors   |                              |    | X  | X  | X  | X  | X  |    |
| Increase of accidents on the 1 <sup>st</sup> class road 1/18 as a result of exceeded allowed density |                              |    |    | X  |    |    | X  |    |

**Source:** Operating Programme Transportation 2007 – 2013 adapted according the research of the author

Key Disparities of Road Infrastructure with Regional Impact on NUTS 3 Chart 2

| Key Disparities  | Region – Self-governing Units |    |    |    |    |    |    |    |
|--|-------------------------------|----|----|----|----|----|----|----|
|  | TN                            | TT | NR | ZA | BB | KE | PO | BA |
| Unsatisfactory qualitative state of road infrastructure                    |                               | X  |    | X  | X  | X  | X  | X  |
| Not constructed motorway corridor as a part of international TEN-T network | X                             |    |    | X  |    | X  | X  |    |
| Low share of higher class roads (motorways and speedways)                  |                               |    | X  | X  | X  | X  | X  |    |

**Source:** Operating Programme Transportation 2007 – 2013 adapted according the research of the author

Factors of Road Infrastructure Development with Regional Impact on NUTS 3 Chart 3

| Factors of Development  | Region – Self-governing Units |    |    |    |    |    |    |    |
|---|-------------------------------|----|----|----|----|----|----|----|
|   | TN                            | TT | NR | ZA | BB | KE | PO | BA |
| Development of superior road corridors as a part of European transport infrastructure | X                             | X  | X  | X  | X  | X  | X  | X  |
| Road infrastructure as a part of European transport infrastructure                    | X                             | X  | X  | X  | X  | X  | X  | X  |
| Increase of technical and quality parametres of road infrastructure                   | X                             | X  | X  | X  | X  | X  | X  | X  |

**Source:** Operating Programme Transportation 2007 – 2013 adapted according the research of the author

**Clue:** TN- Trenčín self-governing Unit, TT- Trnava self-governing Unit, NR- Nitra self-governing Unit, ZA- Žilina Self-governing Unit, BB- Banská Bystrica self-governing Unit, KE- Košice self-governing Unit, PO- Prešov self-governing Unit, BA- Bratislava self-governing Unit

## 5. RISKS AND CRITICAL POINTS IN ROAD TRANSPORTATION

Road transportation has increased massively in Slovak Republic. The reason is nearly fourfold number of personal cars and development of cargo transportation. Transit transportation increased as well. Government of Slovak Republic has reacted to this situation very promptly by passing of many steps but it is not able to solve a problem of exceeded density and stress of road network by itself. Not only old known reasons and exposures are sharing on reduction of transport efficiency. The reasons are critical points in road transportation, too. Their increase is a reason of low density and quality of roads, high density of municipalities that are a part of corridors and climate conditions.

Critical points according to Land'ak, M., Monoši, M. and Polorecký, D., (3) could be understood as a part of transport line made by technical means to deliver required products and this can lead to failure of some deliveries under a level of economic efficiency. In connection with road communication it is possible to define critical points as sections that eliminate due to technical state or operating efficiency continuous material stream on critical or zero level of transport mobility.

Findings of longlasting research show that these critical points are periodic in these sections of road communications:

- a.) Driveways to Bratislava from D1, D2 and from destination Dunajské Lužná.
- b.) Road communication Nitra- Hlohovec- Leopoldov with connection to D1 Bratislava- Žilina.
- c.) Nitra- Levice- Šahy- Lučenec
- d.) Nitra- Zlaté Moravce, 1<sup>st</sup> class road
- e.) Levice – Bohunice – Banská Štiavnica
- f.) Zvolen – Krupina – Šahy
- g.) Žiar nad Hronom – Kremnica – Martin
- h.) Banská Bystrica – Staré hory – Donovaly – Ružomberok
- i.) Banská Bystrica – Brezno – Hybe
- j.) Žiar nad Hronom - Prievidza
- k.) Poprad – Kežmarok – Vyšné Ružbachy – Bardejov
- l.) Prešov – Bardejov – Svidník – Barvinek – Rzeszow

Operating efficiency of mentioned road communications depends on season of the year, technical state of the road and climate conditions. In last ten years it is determined by a massive increase of means of transportation. Toll system caused a lot of cargo transportation has left motorways and speedways and uses 1<sup>st</sup> and 2<sup>nd</sup> class roads. This badly influences municipalities, safety and operating efficiency. Diagram 2

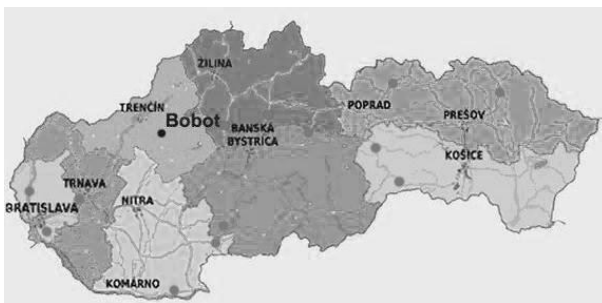
The existence of critical points together with strong and weak aspects and exposures of road infrastructure are reasons of risky road transportation in Slovak Republic. According Gozora, V. (1) a Hudáková, M. (2) it is possible to talk about risks that eliminate road transportation and influence badly safety and economic part of

transportation. They redcut the image of the country in the eyes of national and international transporters.

- **Safety risks:** They are based on very high probability of safety failure and failure of operating efficiency in specific road sections. Safety risks in connection with car accidents, collisions, negative natural and anthropological impacts on means of transportation.

MAP OF SLOVAK REPUBLIC with marked critical points on choosen road communication

Critical spots of view in road infrastructure Source: author



- **Technical risks.** They are based on high probability of technical failures of means of transportation on one hand and failure of road communications on the other one. The influence of subjective and objective factors can restrict operating efficiency of road communications.
- **Transport risks.** They are based on probable restriction of operating efficiency caused by natural conditions, means of transportation and human factor on road transportation.
- **Time risks.** They are based on probability of origin and retardation of material flows. Probability of time loss increases proportionally to natural, technical and transport influences on road communication.
- **Economic risks.** They are based on probability of origin of economic loss as a reason of reduction of operating efficiency or diverssion from critical points of road communication.

It is possible to reach higher efficiency in transportation, to eliminate focuses of critical situations and unbalance of material flows by realization of real steps in risk management.

## 6. ACTIVATING OF ROAD INFRASTRUCTURE IN CONTEXT OF EUROPEAN TRANSPORT SYSTEM

Road infrastructure is one of limiting factors of area development. Conception of development of road infrastructure of Slovak Republic must come out from demands on transport management of own area which is determined by demography, urbanization, economic potential, tourist attractiveness but also environmental restrictions. Approach like this leads to the priorities of building road lines from point of view of national and bordering needs in relation to international road networks.(6)

Range and lining of motorway network and a speedway network of Slovak Republic was for the first time mentioned in a document „New project of construction motorways and speedways“ passed by Government Office of the Slovak Republic No. 162 from the year 2001. Motorway network is formed by motorway lines D1,D2,D3 a D4 and speedway network by speedway lines R1,R2, R3, R4, R5, R6, in perspective R7. Three European transport corridors passes through Slovak Republic – corridors IV, V, VI – that are in the area of Slovak Republic motorways D2,D1 and D3. So it is justified to consider as a priority to construct motorway network in lines of superior TEN-T network. Except construction of motorways it is necessary to consider a proportional development of speedways in context of planned international road lines. This reality is fixed in priorities of speedway network construction.

In the area of motorway development investment will lead to preferd network towards east and north. In the area of speedway development sections R1, R2 and R4 are prefered. The priority is operation of the whole R1 line - Trnava- Banská Bystrica and removal of deficiencies a R2 line. There are made assumptions to construct section of speedway R4 Košice – state border Sovak Republic/Hungary. By constructing of this section the connection with Hungary will be much better and it is one of stimulus for regional



areas in both countries. Benefits from construction of motorways and speedways is undoubted from the view of reduction of time loss and energy consumption and it is positively projected in to the area of economy and environment. It seems to be very important to construct the speedway line Rzeszow – Košice – Miskolc – Oradea.

Except of proportional development of motorways and speedways in a future it will be very important modernization of 1<sup>st</sup> class roads. According dialogues in road network of Slovak Republic it is necessary to solve this problem because of exceeding of operating capacity. Next it is necessary to eliminate transit transportation from municipalities by constructing of bypasses and improve technical state and routing of lines with the aim to remove collision points and critical sections.

#### 7. AIMING OF PRIORITY AXIS 2 – ROAD INFRASTRUCTURE (TEN-T) AND PRIORITY AXIS 5 – ROAD INFRASTRUCTURE (SPEEDWAY AND 1<sup>ST</sup> CLASS ROADS)

Geographical position of Slovak Republic in Europe proves current importance of road network of Slovak Republic in European transport

infrastructure. To make better the access of Slovakia to European road network and to manage transit transportatio it is necessary to construct the most important parts of motorway network as soon as possible. Priority of Slovak Republic in development of road infrastructure in operating program 2007 – 2012 is construction of transport infrastructure integrated into the TEN-T network that passes Slovakia via construction of new motorway sections.

By realization of new transeuropean road projects – construction of new motorway sections – there will increase quality of road connection to neighbouring states road networks. It wil support income of foreign investment, tourism and competetivness of Slovak Republic. Thanks to gradual implementation of wider packet of road projects funded from EU sources as well as from other sources ( public financing, credits, toll system, considered PPP system) in operating programme 2007-2013 in the year 2015 it is assumed significant improvement of access of population to mentioned transport infrastructure. Chart 4 a 5

Number of Inhabitants in Relation to Access towards Motorways and Speedway. Expected State in 2015 .

Chart 4

| Access in Minutes | Number of Inhabitants |        |
|-------------------|-----------------------|--------|
|                   | Number                | %      |
| <b>to 15</b>      | 3 667 713             | 68,18  |
| <b>15-30</b>      | 1 045 976             | 19,44  |
| <b>30-45</b>      | 454 826               | 8,45   |
| <b>over 45</b>    | 210 941               | 3,92   |
| <b>Totally</b>    | 5 379 455             | 100,00 |

Source: Slovak Road Administration (7)

## Indicators of Priority Axis 2

Chart 5

| Code                         | Name of Indicator                               | Description and measurement unit of indicator               | Starting state | Target state | Source  |
|------------------------------|---|---|----------------|--------------|---------|
| <b>Indicators of output</b>  |   |   |                |              |         |
| Core 14                      | Length of new roads                             | Length of new motorways in kms                              | 7,9            | 67,9         | MDPT SR |
| Core 15                      | From that TEN-T roads                           | Length of constructed motorways in TEN-T road network in km | 7,9            | 67,9         | MDPT SR |
| <b>Indicators of results</b> |   |   |                |              |         |
| Core 20                      | Time savings                                    | Time savings in personal and cargo transportation in mil. € | 0              | 30,2         | MDPT SR |
| <b>Indicators of context</b> |   |   |                |              |         |
| Core 13                      | Number of projects                              | Number of projects  | 2,0            | 9,0          | MDPT SR |
|                              | Density of motorway network                     | Kms/thousand km <sup>2</sup>                                | 6,8            | 8,0          | MDPT SR |
|                              | Number of killed persons in road transportation | Number of killed persons                                    | 10,7           | 9,4          | MDPT SR |

Source: Operating programme Transportation 2007 – 2013

Road transportation has a quite big importance for economy development, manpower mobility and competitiveness in a frame of international division of transport activities. It is one of the most important key factors influencing economic development and layout of the state. Completing of motorway network by a speedway network will ensure high quality connection among regions and district municipalities at equal covering of Slovak Republic. Considering lines and transportation comfort that speedways offer it is suitable to consider with their construction in corridors of international roads (E,TEN – T). Realization of wider packet of road projects financed from European Union funds (Priority axis 2 and 5) as well as from other sources (public financing, credits, electronic toll system, considering PPP system) in the year 2015 it assumed significant improvement of access of population to mentioned transport infrastructure. Charts 6 and 7.

Number of Inhabitants in Relation to Access towards Motorways and Speedway. Expected State in 2015 Year.

Chart 6

| Access in Minutes | Number of Inhabitants |       |
|-------------------|-----------------------|-------|
|                   | Number                | %     |
| to 15             | 3 667 713             | 68,18 |

|                |           |        |
|----------------|-----------|--------|
| <b>15-30</b>   | 1 045 976 | 19,44  |
| <b>30-45</b>   | 454 826   | 8,45   |
| <b>over 45</b> | 210 941   | 3,92   |
| <b>Totally</b> | 5 379 455 | 100,00 |

Source: Slovak Road Administration (7)

Indicators Priority Axis 5

Chart 7

| Code                         | Name of Indicator  | Description and measurement unit of indicator   | Starting state | Target state | Source  |
|------------------------------|--|---|----------------|--------------|---------|
| <b>Indicators of output</b>  |  |   |                |              |         |
| Core 14                      | Length of new roads  | Length of constructed 1 <sup>st</sup> class roads in kms  | 16,3           | 126,1        | MDPT SR |
| Core 15                      | From that TEN-T roads  | Constructed speedways in TEN-T network in kms   | 0,0            | 15,8         | MDPT SR |
| Core 16                      | Length of modernized 1 <sup>st</sup> class roads                             | Length of modernized 1 <sup>st</sup> class roads in kms   | 0,0            | 45,3         | MDPT SR |
|                              | Number of removed critical points on 1 <sup>st</sup> class roads             | Number of removed collision points on 1 <sup>st</sup> class roads (critical accident localities, modernized crossings etc.) | 0,0            | 50,0         | MDPT SR |
| <b>Indicators of results</b> |  |   |                |              |         |
| Core 20                      | Time savings (road transportation - speedways)                               | Time savings in personal and cargo transportation in mil. €   | 0              | 30,2         | MDPT SR |
| <b>Indicators of context</b> |  |   |                |              |         |
| Core 13                      | Number of projects   | Number of projects of road infrastructure (speedways and 1 <sup>st</sup> class roads)                                       | 2              | 35           | MDPT SR |
|                              | Density of speedway network  | kms/thousand km <sup>2</sup>  | 22,2           | 3,5          | MD      |
|                              | Number of killed persons as a result of car accidents in road transportation | Number of killed persons as a result of car accidents in road transportation  | 10,7           | 9,4          | MDPT SR |

Source: Operating programme Transportation 2007 – 2013

## 8. SUSTAINABLE DEVELOPMENT OF TRANSPORT MOBILITY

Sustainable development according the authors of Operating programme, Transportation, 2007 – 2013 (6) is possible to understand as a development that enables to protect contemporary and future generation to meet their basic life needs, does not reduct diversity of nature and preserves all natural functions of ecosystems. The aim of horizontal strategy is to preserve that each activity supported from EU funds determines growth of environmental, economic and social sustainability. Preservation of this strategy is based on application of sustainability in operating programmes Transportation.

Sustainable mobility is defined as a longlasting preservation of continual increasing of transportation needs in demanded time and quality with maximal efficiency and at reduction of bad influences on health and environment. The importance of sustainable development increases together with current problems in transportation like unbalanced development of particular kinds of transportation, narrow sections in transport infrastructure, bad impact on health and environment, severe cosequences of car accidents etc.

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