

## Introduction

In the overview concentrated information is provided on the content and substance of programme.

To secure an effective road transport work, that shall ensure a base for other economic sectors it is necessary to maintain and to develop a road network.

Realizing the intentions that were planned for the period from 1995 until 2000 a special budget for the necessities of road was established- State Road Fund (further it text SRF), that made the financing of roads legally regulated and predictable.

With the finances of SRF was possible to keep only the state main roads in preceding level and with the collaboration from other investment funds to finish building works and to open traffic on bridges of Lielupe on the bypass of Jurmalas and Jelgavas roads, to renew the Brocēnu traffic interchange, to finish the construction between Kuldīga and Saldus.

Due to the limited finances the condition of state 1<sup>st</sup> and 2<sup>nd</sup> class roads has deteriorated sharply

In the period of 1995- 2000 important changes in the supervision, maintenance and construction of state roads have occurred. Accordant departments have been developed and functions are divided between them.

The State Road Maintenance and Development programme of 2000- 2015 is developed according to the technical task adopted by the Ministry of Transport on 8.December, 1998. To support road maintenance, development and incorporation of Latvian roads in the European road network, the road sector further development aim has been defined, as well as, the strategy and tactic of achieving it, the main tasks for the period 2000- 2006 and for the further period (2007- 2015).

The plans of programme refer mainly to the road network under the authority of state and slightly touch the problems of roads under the authority of municipalities.

In the complete programme are:

1. volume "Main part";
2. volume "Summary of actions";
3. volume "Annex".

The implementation of plans depends from the funding, because inclinations from planned financing will lead to changes of the intended actions of programme.

# **Aim and intermediate aims**

## **THE AIM**

Effective maintenance and development of road network to provide the state economic progress, increase of living standard and to promote the development of Latvian international road conformity to the requirements of European road network.

### **1. intermediate aim**

from the period of 2000- 2006 to preserve and to maintain the road network in able-bodied level within the insufficient financing.

### **2. intermediate aim**

from 2007- 2015 to increase the maintenance level of road network. To suspend the further deterioration of road network, develop road network according the economical and social interests.

## Existing road network

At the end of the year 1999 the Latvian road network conformed according to importance, length, pavement and ownership to the figures showed in table and charts:

Division of roads	Length of roads, km		
	With asphalt pavement	With crushed stone and gravel pavement or without pavement	Total
<u>State roads</u>	<u>7 846</u>	<u>12 472</u>	<u>20 318</u>
Included main roads	1 618	-	1 618
1 <sup>st</sup> class roads	3 797	1 588	5 385
2 <sup>nd</sup> class roads	2 431	10 884	13 315
bridges			929 /
			31 137 m
<u>Municipality roads and streets</u>	<u>4 973</u>	<u>34 619</u>	<u>39 592</u>
Included roads	815	31 666	32 481
streets	4 185	2 926	7 111
Forest roads	-	6 320	6 320
Privet roads	500	3 000	3 500
Total	13 319	56 411	69 730

The average density of united road network is 1.08 km/km<sup>2</sup>, state roads included- 0.31 km/ km<sup>2</sup> is sufficient to ensure the necessary transport transfers. Qualitative improvements and maintenance is necessary.

The locations of main and 1<sup>st</sup> class roads are figured in the scheme (p.8).

## **The qualitative description of state roads**

The quality of state roads in the period of 1994- 1999 has deteriorated. The amount of unfulfilled works reaches 311 million Lats.

Asphalt pavements in bad condition gained 736 km and reaches 1570km or 20% from the total length of asphalt pavement.

The condition of gravel pavement as poorly satisfactory is evaluated in 60% from the total length and reaches 7500km.

From 929 bridges 30% are close to failure or in poorly satisfactory condition.

## The quality of international routs

The international transfers in the territory of Latvia take place manly along the state main roads, that are included in the international transport corridor road network.

The conformity of these roads to the European criteria's are as following:

- geometrical indicators (plan,

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## Losses

The losses of road users and economy in the year 1999 because of unsatisfactory quality of road are estimated approximately 89 million Lats (driving costs rise and time lose comparing with optimal conditions).

Looses that in year 1999 appeared because of traffic accidents are evaluated approximately 106 million Lats.

If the traffic safety of Latvian road would reach at least world average level the losses would decrease per  $\frac{1}{4}$ .

## The intensity of traffic and prognosis

The intensity of traffic on the Latvian roads in the period 1990- 1993 reduced 1.4 times. After that a constant rise occurred, it was faster near the bigger cities, were the traffic intensity in the year 1999 exceeded the level of 1990.

The rise is minimal on less important roads, especially farther for the biggest cities and the intensity of traffic has no reached the level of 1990.

Disparate has changed the structure of traffic proportions: the proportion of motorcars and auto truck has sharply increased, the number of auto trucks of average carriage capacity has decreased.

The traffic load on main state roads in 1999 is shown in schemes (p.12 and p.13)

Tabulas teksts:

The planned growth of traffic intensity form 2000 until 2015:

- on the state main roads  
4% per year or 1,8 times in period;
- on the rest of state roads  
2-3% per year or 1,5 times in period.

Sharp growth of intensity is expected near the bigger cities and less in regions farther from cities.

# Financing strategy

## Problem

At the present insufficient financing level for road maintenance and development and the rise of traffic intensity and amount of heavy weight vehicles the process of road network deterioration continually happen and irrational expenses of road users and traffic accidents grow.

For every kilometre driven by motorcar alone in connection with excise tax from 1 to 2 sant. are paid. However only 40% reach the investment for road and street renovation and development.

## Aim

To achieve for road users full charge for road use and to use that payment only for the necessities of road network maintenance and development.

To reach a finance level, that would ensure the maximally possible traffic safety, balance with economical efficiency of invested recourse.

## Task

Determine the necessary financing level to accomplish purpose.

## Inter-aim

Achieve gradual finance improvement according to the financial level of society.

## Task

Improve road maintenance and financial legislation of development contributing the growth SRF.

## Solution

The costs of previous year backlog are ascertained- 311 million Ls (repair deficit).  
The necessity of optimal financing is ascertained in the prices of the year 1998:

from the year 2000 until 2006 in average 190 million Ls per year;

from the year 2007 until 2015 in average 223\* million Ls per year.

\*- in average 157 million Ls per year if from 2000- 2006 the optimal financing for year would be ensured.

In the programme 4 variants of SRF income formation are analysed were different income sources and distribution principals are considered:

- 1.variant- the minimal, were the excise tax of fuel increases slowly;
- 2.variant- the maximal, were both the fuel excise tax increases and the includible part in the SRF, as well as, other income sources are planned;

3.variant- plans to establish bigger incomes as in the 1 variant, but smaller as in the 2.variant.

4.variant- the minimal, were the fuel excise tax is not changed during the foreseeable period.

The variants 1, 2 and 4 are extreme variants. The variant 4 could cause crises in the road network because it does not foresee increase of excise tax or the growth of includible part into the SRF. For the implementation of each variant changes in the legislation are necessary.

In the period 2000- 2006:

the existing financing scheme ensures 29% from the necessary according to the programme planned 3 variant only 31%.

In the period 2007- 2015:

the existing financing scheme ensures only 26% from the necessary, according to the programme planned 2 variant 54% from the necessary.

In the programme suggestions are prepared for the implementation of improved financing variants (2 and 3).

Amendments are to be developed in the regulations “On oil products excise tax” increasing the amount of allocations of fuel excise tax to the SRF gradually from 50% in 2000 until 80% in 2006 (3.variant).

The adoption and implementation of amendments has to be obtained from 2001.

Regulations have to be developed, remade and adopted that ensure that the taxes and tolls of each road user that the road users pay with the purchase, maintenance of vehicle, and road use are allocated to the SRF (2.variant).

Regulations have to be prepared, adopted and implemented till 2006 to ensure that the financing according to this variant could start with 2007.

Partial use of these financing resources for the formation of SRF are suitable already till 2007, for example the regulations “On vehicle annual tax’, were additional payments are to be worked in for vehicles that use alternative energy sources (electricity, gas) and the annual rate of duty has to be increased.

The use of payments of all road users for the necessities of road network (2.variant) will radical improve situation.

Considering that the state roads execute together with the economic functions (truck and passenger transport along roads with important traffic intensity of >200 cars per day) also social and cultural functions (especially roads with a small traffic intensity) the missing financing is expected from state and municipality budget at good economical situation.

## **Maintenance of state roads**

In the programme the state road maintenance possibilities are stressed that follow from:

Prognoses of financing

### **Routine maintenance**

The program plans state road routine maintenance for the period 2000- 2006:

On average 17.86 million Ls per year or 38.8% for optimally necessary, that is the level of 1999 and ensures:

- 41% level from the optimal for state main roads
- 35% level from the optimal for the 1<sup>st</sup> class roads
- 34% level from the optimal for 2<sup>nd</sup> class roads.

The priority is set for road winter maintenance, traffic organization, pavement maintenance.

For the winter service in the state road network 5 maintenance classes (levels) are established, that characterize the intensification and quality in a setting order: A, A1, B, C, C1 and are divided according to the possible financing till 2006.

The levels of winter maintenance of state main and 1<sup>st</sup> class roads are figured in the scheme.

The priority depends from the economical importance of road and traffic intensity. In this period the increase of maintenance level is not planned in comparison to 1999.

In the period 2007- 2015

The programme plans for the routine maintenance on average 30 million Ls per year that would form 62% from optimally necessary.

That will ensure the maintenance in winter of main and 1<sup>st</sup> class road in necessary amount, but 2<sup>nd</sup> class roads in 30% amount from the necessary.

Other routine maintenance works:

- state main roads are planned in the necessary amount;
- 1<sup>st</sup> and 2<sup>nd</sup> class state roads in 70% amount from the necessary.

### **Bridge routine maintenance**

From 2002 is expected to be implement the regulations of quality ingredient measurements and control and to separate financing from common, to exceed control over the use of it, because routine backlog is closely connected with the lifetime of structures and traffic safety. It is planned to allocate 1.8 million Ls until 2006 that are 45% from the optimal financing.

In the period 2007- 2015 for the bridge routine maintenance is planned to allocate 3 million Ls per year that are 75% from the optimal financing.

### **Periodic maintenance and reconstruction**

The periodic maintenance works include:

- maintenance and renewing of existent roads;
- change or renewing of road signs, road markings and planned change of technical devices of traffic organization;
- renewing of water drainage system;

The reconstruction includes strengthening of pavement, rebuilding of linking element, that simultaneously includes also periodic maintenance works.

Until the year 2000 the financing for periodic maintenance works was insufficient: Asphalt pavement- 89 million Ls, gravel pavement 113 million Ls; bridges 76,6 million Ls.

Consequently :

- from 7846 km roads of asphalt pavement on 3825 km the necessary pavement renewing was not executed;
- from 12472 km roads of gravel pavement on 7514 km the necessary renewing of pavement was not executed;
- approximately 75% of bridges are damaged;

For the time period 2000- 2006 for periodical maintenance on average 18.34 million Ls per year are planned that are 22% from the necessary.

For the money will be possible to renew only 3075 km of asphalt pavement, 1200 km gravel pavement and to repair 12% from the necessary bridge amount.

Until the year 2006 the amount of not in term repaired roads and bridges will increase more and the expenditures of backlogs can reach 594 million Ls.

In the period from 2007 until 2015 the financing for periodic maintenance on average are planned in the amount of 55,2 million Ls per year and reconstruction- 21.0 million Ls per year in total that are 76 million Ls.

To perform the backlogs, current works and improvements for periodic maintenance and reconstruction would be necessary 142 million Ls per year from the year 2007 until 2015.

If there would not be backlogs with the planned financing would be possible in the inter repair period to renew 90% of asphalt pavement, 83% of gravel pavement and 100% of bridges.

## **The supervision of road network**

### **Present situation**

In the result of Latvian road sector reforms started in the year 1992 a independently functioning, foreseeable sector financing system was established- the State Road Fund (SRF), that is based on the principal: that for the maintenance, renewal and development of roads has to pay the road user.

With the establishment of road fund a financial basic for municipality road service development has been formed.

Responsibility complex has been divided clearly for the road management. The supervision is separated from works that are executed direct in the road network

The privatisation of sector state enterprises was performed at the same time the capacities necessary for sector was preserved to ensure the daily maintenance and work of winter service.

## The present management of Latvian road network

	State roads 20 318km	Municipality Roads 39 593km	Privet roads 3 500km	State forest roads 6 320
Level of legislation and government decision provision	Saeima Government			
	Ministry of Transport	Municipalities	Ministry of Agriculture	
	Traffic Department			
Contractual relations				
Level of management	Latvian Road Administration	Municipality Road Service	Road owner	SSC Latvian Forests
	District Unions			
Contractual relations				
Work and delivery executors	Contractors of road maintenance and construction	Consultants  Designers	The producers and deliverers of construction materials	Renter and deliverer of construction vehicles

### Main problems

The economy of state roads are not recorded in landbook .

Several regulations, including the regulations “On roads” have to be reworked, harmonizing them.

Regulations have to be improved that the principle “that for the maintenance, renewal and development of roads has to pay the road user is better implemented.

Considerable proportion of 2<sup>nd</sup> class state roads with low traffic intensity is used only for local traffic. Those are to be maintained and developed by municipalities.

With some exceptions (in cities) no municipality road management system is established. The formation of it hinders uncertainty about the administrative reform, the small financing for municipality roads, and the large range of questions that have to be solved by municipality.

## The development of road network management

A new road division is offered according to the present dominating approaches with stress the international roads are highlighted and the municipality role of road management is enlarged.

The changes have to be introduced in emerging changes of regulations.

### Offered road division

Division of private roads										
Type of use	Common use						Restricted use			
Possession	State			Municipality			Special state		Different owners	
	International roads	Primer state roads	Secondary state roads	District municipality roads	Local municipality roads	Streets	Forest roads	Board guard roads	Home roads	Undertaker roads
Total length	1558km	3230km	5000÷7000 km	41000÷43000km			7111km (in cities and settlements)	>6000 km		~ 3500 km
Present division	State main roads	~60% from 1 <sup>st</sup> class roads	~40% from 1 <sup>st</sup> class roads + ~1/3 from 2 <sup>nd</sup> class roads	~2/3 from 2 <sup>nd</sup> class roads + municipality roads			Roads in cities and settlements	>6000 km		~ 3500 km

### Work division in road network of common use

The decreasing state administrating role keeping the control over the economically and strategically important part of road network. The other part together with financing is submitted to the municipality supervision.

Conditions for road network division are the following:

- obvious plan and implementation of administrative territorial reform;
- larger financing for municipality roads from SRF, state and municipality budgets;
- developed and stable municipality road services.

The planned management of Latvian common use road network foresees the improvement of present scheme quality, particularization of mutual relations both in

the frameworks of structure, as with the users of service (road users and municipalities).

## **Activities**

### **strengthening of property,**

### **the development of regulations and norms important for the sector**

- State road economy registration into the land-book or in cadastre register, accordingly particularizing legislation;
- juridical drawing up of transit possession and management;
- overworking of regulation “On roads”;
- amendments of regulation “On road regulations”
- amendments of regulation “On fuel product excise tax”
- amendments of regulations “On excise tax”
- amendments of regulations “On vehicle annual duty”
- promote to preclude contradictions for sector important legislation, rights and norms;
- other regulations of the Cabinet of the Ministers;
- sector normative technical document further development.

## **State road service cooperation with municipalities**

The cooperation is expected:

- managing the road funds of municipalities;
- giving juridical, engineering technical and consultative help;
- implementing “Latvian Rural Road Development Programme”;
- accomplishing a part of present state roads submitting in municipality ownership and supervision.
- establishing road winter maintenance coordinating groups;
- planning and designing sphere;
- planning development of territory;
- mutual harmonization of construction and reconstruction technical economical justification (draft design) with construction design (technical design) of roads, streets and other structures, that are to be placed on road ....

## **Road network of international transport corridor**

In the Latvian state road network division as the most important is distributed the international road group. The international roads are used for cross border traffic and are a part of international transport corridor network. At the same time along these roads the most part of transfer of state significance is performed along these roads.

Almost all present state main roads are to be classified as international roads. EU requirements are set for these roads.

Important strategic task is to ensure a quality improvement of these roads that depend from EU support (ISPA funds). This process happens within the programme TINA, that govern EU candidate state access obligations.

The Latvian international roads together are included in the TEN and TINA transport corridor network, as well as, E-road network.

In the programme the actions for the improvement of these roads are included evaluating the costs.

The programme presents to ensure traffic with city centres and ports in the international road network are to be included 131.4 km streets inter alia Riga– 107.0km, Liepaja –12,8 km and Ventspils – 11.6 km, as well as, access roads from Riga bypass until the border of city– 20.3 km.

### **Problems**

- routes in length of 123.5 km or 7.6% cross settlement;
- approximately 70% of pavement carrying capacity in the period unfavourable whether conditions is not sufficient to the loads set by EU;
- bridges built according to norms of post CCCP the allowable loads does not conform to the norms of EU. However the maximal EU allowed weight transport in a special regime is permit for the crossing of these bridges.
- to the necessary safety level does not conform several crossings with the bigger roads and railways;
- there are relatively much coasts to the less important roads;
- in many places the bicycle and pedestrian traffic is not separated;
- crossing settlements not in all places there is satisfactory lightning;
- there is a necessity to improve road facilities and information system.

### **Solution**

Realizations of actions at a load level of 70%, when it is useful widen carriageway and roadbed.

### **Results**

Until the year 2005 from the total international road length 105 km or 7% have to be reconstructed, till 2015 accordingly 375 km or 24%.

### **Activity costs**

Development of North- South transport corridor roads :

Period from 2000 to 2006

46 480 000 Ls

period from 2007 to 2015

38 050 000 Ls

Development of West- East transport corridor roads:

Period from 2000 to 2006

46 260 000Ls

period from 2007 to 2015

72 300 000Ls

For the streets and artificial structures in Riga, Liepaja and Ventspils to be included in the international transport corridor.:

Period from 2000 to 2006

30 400 000Ls  
period from 2007 to 2015  
157 000 000 Ls

The necessary expenditures are planned according to the prices of 1999. These are balanced within the planned financing and serve as justification of financing strategy.

## **Primer state road network**

In the Latvian state road network the primer state road group is separated and according to importance is the second after international road group.

In the primer road group are included roads that in state inland traffic collect the bigger settlements, as well as, serves special zone development at the state borderland (for example "Northern string" and other) along see (for example Sloka- Kolka), inland (for example Riga- Ergļi- Berzaune and other) and in limited financing conditions claim to maintenance and reconstruction priority.

Together with international transport corridor roads the primer state roads compose the Latvian road network framework, that collects the relevant traffic part.

According to the present existing state road classification the primer state road network consists of 1<sup>st</sup> class roads ("P") including 2/3 from total length, one main ("A") and form different 2<sup>nd</sup> class ("V") roads.

Suggestions on the location of primer state road network is figured in the scheme (p.31).

In the primer state road group included road span total length is 3387.2 km inter alia 3190.9 km outside cities are to be includible in state government and 196.3 km within the border of cities are to be includible in municipality government.

In the full programme annex 6.3. together with road register are aggregated data on the necessary improvements, due data and approximate costs of activities according to prices of 1998, information is given on planned activity conformity with Latvian rural road adjustment and development programme (further "Rural Road Programme").

## **Description of in the primer state road network included roads**

### According to traffic intensity:

On average exceed 600 cars per day (in special routs, that are considered as necessary for the development of territory, the traffic intensity can be lower);

### According to technical parameters:

In period 1995- 1990 reconstructed according to the technical requirements of regulations (3. and 4. category) of that time- 85%;

### According to pavement type:

Asphalt concrete road or other asphalt pavement types- 69%

Gravel or šķembu pavement-31%.

## **Problems**

During the previous 10 years there was a chronic financing lack. Priority was given to main state road maintenance.

In the rest of state roads because of that reason a situation occurred that of a part of the pavement preservation is not possible with periodical maintenance methods and reconstruction is necessary.

In particular routes the traffic intensity and loads increase, that determines the necessity to strengthen pavement structure and to improve road parameters.

Very serious this problem is in the group of primary road included roads, were because of long lasting interruption of periodical maintenance works pavement has deteriorated, but the traffic intensity is relatively big.

### **Solution**

In the programme planned activities derive from the following criteria's:

1. Pavement reconstruction places where pavement prevention with periodical maintenance is not possible.
2. Necessity to change the type of pavement from gravel- šķemba to asphalt pavement in places where the traffic intensity has increased or it could grow and the existing pavement is subjected to fast abrasion.
3. Entire road reconstruction in places where it has not yet happened.
4. Between the Ministry of Transport and municipalities mutually harmonized improvement activities within "Rural Programme". Improvement activities are summed in the programme.

### **Results**

1. For the primary road network improvement in conditions of sufficient financing the programme plans from 2000 to 2015 to reconstruct 818,1 km or 24% from the total primary network length at the same time inter alia 550.3 km are including "Rural Road programme".
2. The total costs of programme in the prices of 1998 are 99 580 thousand Ls inter alia 42 190 thousands Ls according to "Rural Road Programme".
3. 2000- 2006. are planned activities in the amount of 25 305 thousands Ls inter alia all planned in the "Rural Road Programme".
4. 2007-2015 planned activity amount are 74 275 thousand Ls including 16 885 thousand Ls in conformity with "Rural Road Programme".
5. The planned financing for 2000.- 2006. (3 variant) and 2007.- 2015 (2 variant) the improvement activities of primary state road network are possible if the financing for rural road will be secured allocating 25% to the primary state road development.

## **Secondary state road network**

As the third in the Latvian state road network division is divided –secondary state road group.

These roads serve an important part of local traffic, route length exceeds 20- 25 km with perspective traffic intensity within 120 till 600 vehicles per day. Exception is

zone near Riga, where the traffic intensity is larger. The secondary state roads link smaller settlements with the bigger, connect municipality roads and in within districts perform collective functions from relatively large influence zones.

The secondary state road network according to the present road classification consists of 1<sup>st</sup> class ("P") roads (2191,4km) that are not included in the primer state road group and approximately 1/3 of 2<sup>nd</sup> class ("V") roads (3800- 4300 km), in total the network is 6000- 6500 km.

In the routs of secondary state roads streets of settlements are included (approximately 200km) that are in the ownership of municipality, but in LRA ownership.

The 1<sup>st</sup> class state roads that are to be included in the secondary state road network are figured in 7.1 chart of the Programme. There are stresses the road spans which improvement is included in the "Rural Road Programme".

The 2<sup>nd</sup> class state roads that are to be included in the secondary state road network are not decrypt. The total length of them is 3800- 4300 km is assumed relatively. The choice of particular roads or they spans, implementing the suggestions, has to be made by the State Road Service in cooperation with municipalities, considering the criteria's mentioned above.

The aim of secondary state road group establishment is to preserve the roads of state road network with the highest local traffic intensity, ensuring gradual transfer to decentralized road network management. When the municipality road management system has strengthened than it is possible that the roads will be submitted to the supervision of municipalities.

This road group is characterized by the influence of rural life stagnation where a relevant growth of traffic intensity cannot be observed. This tendency in the overlooked period can remain, except the roads near the big centres.

According to the type of pavement in this road group asphalt concrete or other asphalt pavement form 34- 40%, but gravel and .... 60-65%.

Pursuant to the technical parameters in the period 1959 until 1990 in compliance with the technical regulations 60- 65% of roads were reconstructed but on 35- 40% roads no reconstructions was performed.

## **Problems**

In the previous 10 years there was a chronic insufficiency of financing. Priority was given to the maintenance of main state roads.

In the potential state road network a situation occurred when it is not possible to maintain pavement to a part of these pavements and with a continuing insufficiency of financing a situation is inevitable when a part of asphalt pavement has to be liquidated.

## **Solution**

The activities planned in the programme derive from the following criteria's:

1. The increase of traffic intensity in the secondary road network will be low except some spans near the bigger centres wherewith it attention is drawn on the maintenance of these roads.
2. The absolute majority of these road group geometrical parameters can be considered as satisfactory for the performance of tasks during the operation of programme. Therefore in conditions of insufficient financing radical rebuilding works are not planned.

3. Renewing is planned only in case of sufficient financing in compliance the motions of “Rural Road Programme”.

## **Results**

1. For the improvement of secondary state road network in sufficient financing case the programme plans from 2000 until 2015 to reconstruct 121 km or approximately 2% from the total secondary network length, that simultaneous are included in the “Rural Road Programme”.
2. The total costs of activities in the prices of 1998 are 9039 thousand Ls.
3. The costs of activities planned in 2000- 2006 are 5545 thousand Ls.
4. The costs of activities planned in 2007 - 2015 are 3485 thousand Ls.
5. With the planned financing in 2000- 2006 (3. variant) and 2007- 2015 (2. variant) the improvement activities for secondary state road network are possible, if the financing planned for rural roads will be assured.
6. According to the periodical maintenance that is considered in the 3. chapter of programme for the secondary road the main attention has to be paid to the providing of ..... (ūdens novades sistēma) and renewing of pavement.

## **Municipality road network**

The municipality road network from two groups:

- roads that enable local traffic outside the settlements;
- streets that enable local traffic in the cities and settlements, as well as, transit traffic, if the streets are a part of state road routes.

Detailed the technical division is set in the regulations of the Cabinet of the Ministers determined Latvian standards and norms.

In the programme a suggestion is put forward to plan a higher road network decentralization with an aim to submit these functions to municipality in larger amount as only possible.

## **Roads**

In the ownership and management of municipalities are 32 481 km of road. According to the plan to decrease the state administrating role in the supervision of municipalities is planned to submit together with financing 2/3 of the 2<sup>nd</sup> class roads (8500÷10000km). The total united length of municipality road network could be approximately 42 000km.

The road pavement mainly is gravel or crushed stone- 60%, soil- 37% and only 3% are bituminised.

The present condition of roads, bridges and other artificial structures is poor satisfactory and in some places it has become critical. In bad weather conditions are traffic restrictions and interruptions. To this situation has led the long lasting insufficiency of financing that has not made the possibility to maintain and to renew this network in due time.

The carrying capacity of bridges and other artificial structures has not been controlled, but there is reason to think that in many places it does not ensure the passing of vehicles with the weight allowed in traffic regulations and traffic restrictions are necessary.

The present road condition restricts the establishing of new bus routes and endangers the transport of timber, which mainly is in the territories linked to municipality roads. On the municipality roads the task is ordering of maintenance implementation and ensuring the technical conditions according to traffic requirement. An important precondition is the establishment of municipality road services within the oncoming territorial reforms.

## **Streets**

The streets of cities and other settlements form the street network in the country. In conformity with legislation they are under the management of municipalities and the maintenance and the municipality determines using.

The total length of registered street network is 7111 km, including in the cities 4815km and in other settlements 2296km.

The municipalities manage the city streets in the state road routes, but analogue streets in other settlements are managed by state road services.

Municipality road and street financing part forming municipality road fund from SRF is included in the chapter "Financing strategy".

The align of roads and streets in substance has not only economic meaning but yet more a social meaning. Investments there are not always economically justifiable especially at low traffic intensity. Additional financing from municipality budget or state base budget is necessary.

## **Support of municipality transit streets**

Transit streets are a part of state road routes where the amount of transit truck and buses is more than 100 vehicles per day and the access roads to bigger ports. The total length of these streets is 408.8km. In conformity to legislations the streets have to be in the ownership of municipalities.

## **Problems**

The gap between financing of state and municipality.

The maintenance, renewing and reconstruction of roads and transit roads in one route are not ensured in equal level.

The mechanism for the requirements implementation of regulations "On roads" is not solved. Several municipalities refuse to take under its management the transit streets motivating it with lack of financing for the maintenance of them, or they accept it but require that before its renewing or reconstruction these streets is performed.

## **Aim**

The aim is in cooperation of state and municipalities to ensure an equal level of daily maintenance of transit streets in cities with roads in common routes and to reach help to municipalities for the reconstruction and renewing of these streets.

## **Solutions**

A co financing form SRF is planned for the transit streets:

- daily maintenance 355 thousand Ls per year on average in the period from 2000 to 2006 that is 16% from the necessary financing and 38% from balanced with the rest of routes;
- periodical maintenance 210 thousand Ls per year, that is 10% from the necessary and 51% from balanced.
- reconstruction or construction 130 thousand Ls per year on average that is 40% from the necessary.

In this period to balance the maintenance level with roads outside the cities 1 million Ls per year have to be invested from municipality road fund, municipality budget and port resources.

In period 2007- 2015 the co financing from SRF is planned about 60% more as in the previous period- on average per year approximately 1,2 million Ls that the execution of works ensures in 14% amount but balances with road outside cities per 29%.

## **Roads of restricted use**

On the use of restricted roads in the programme general information is given.

### **Roads of special meaning**

The roads of special meaning serve for the performance of particular functions. These can include forest roads and roads of State Border Guards.

### **State Forest Roads**

State forest roads serve for the management of state forests. The registered total length of them at as 1 January, 2000 were 6320km. These roads are the property of the Republic of Latvia and submitted to the management of the Ministry of Agriculture. The maintenance of them performs the SSC "Latvian Forests". In the future state forest roads will stay in the jurisdiction of the Ministry of Agriculture. The maintenance of these roads and the further development of finance sources have not been solved. These have to be from the State Forest Service base work. In the year 1999 from the State Forest Service base activity 15 Ls on 1km were spent for the maintenance of these roads that is too little to ensure the preservation and maintenance of them.

### **Roads of state border guard**

At the present moment roads built exclusively for the use of State Border Guard do not exist, except some access roads to objects.

For the use of State Board Guard serve state, municipality and forest roads at the border with the total length of 240km. However these roads do not satisfy the necessities of board guard in many cases because of the quality, as well as, location. According to the calculations approximately 300km of roads have to be built from new with basic function for the board guard. Inasmuch as other structural subdivisions do not claim to the necessity of such roads these are to be considered as State Board Guard roads, that are in the ownership of the Republic of Latvia and under the management of Ministry of Internal Affairs.

From the proposals that are developed for the necessities of board guard follows that for the construction of these roads in a determined period 25million Ls are necessary. The financing source is not determined, but conclusion can be made that it has to be

the base budget of state. For the daily maintenance of these roads are necessary approximately 0.3 million Ls per year.

It has been calculated that for the fixing (periodical maintenance or reconstruction) of the rest 240km (including 100km that are in going order) of roads that are the property of state, municipalities and the Ministry of Agriculture approximately 10 million Ls are necessary. Considering that this part of roads has a small economic meaning but state interests determines the necessity of maintenance then in this case the financing has to be from state base budget, as well.

### **Enterprise and private roads**

Enterprise and private roads serve for the performing of local functions. These are the property of legal or natural persons. These road groups may have servitude encumbrance and use restrictions.

Enterprise roads serve for agriculture, forestry, and energy handling facilities etc. link of enterprises in rural locality to road network of common use, as well as, technological provision of work.

Private roads link one or more (till 5) peasant or individual farms, institutions or houses to road network of common use.

The registered total length of enterprise and private roads as at 1 January, 2000 is 3500km. Including the following:

with bitumen pavement 500km (14%)

with šķ. and gravel pavement 3000km (86%)

All enterprise and private roads are not registered, the registration of them has to be continued in the order determined by the Cabinet of the Minister.

The present condition of these roads is very different and mostly depends from the resources and attitude of owners. Development depends from the common economic activity in country.

The construction, reconstruction and maintenance of enterprise and private roads in conformity to the regulations of the Cabinet of the Ministers is monitored by the state road service. The financing of road maintenance or construction at present moment is from the resources of owners.

In compliance to regulations "On roads" the construction or reconstruction of enterprise and private roads is possible from special planned state fund in cases that are connected with technical problems or bridges and descent from state roads are constructed or reconstructed.

### **Increase of road pavement carrying capacity on international (main roads) roads**

In Latvia the pavement of international (main state) roads are calculated and constructed according to the maximal axial load of 10T (100 kN) with relatively small density of this load. These roads are not suited for a regular and intensive influence of increased load (axle load of 11,5t), especially in period of inimical conditions (approximately 70% from total length).

In result of increased load influence the road pavement has been deformed and in the roadway occur rails from wheels. Destructive influence on roads has the increasing amount of heavy weight trucks during the last years in international transfers and transportation of timber to the Latvian ports.

The programme plans the increase of carrying capacity of pavement on the international (state main) in conformity to the requirements of EU directive 96/53/EU:

1. The pavement of state main roads during the last 15 years is suited to the axle load carrying capacity of 11,5t (115kN). Until 2006 the pavements have to be strengthened on most loaded international roads, but till 2015 on the rest of state main roads.
2. During the near 3-4 years the carrying capacity of pavement will be determined according to the measurements of elastic bending of pavement in spring during snow break or on the morrow of the snow break to discover the spans which strength is satisfactory for the 11,5t axle load in the further work time or in case of insufficient carrying capacity the type of pavement strengthening has to be determined.
3. On the state main roads till the pavement strengthening were it is necessary the axle load limit has to be determined according to the results of measurement possible only during inimical condition period.
4. Theoretically necessary pavement elastic module has to be increased per 28Mpa.
5. Additional investments for the implementation of the programme of pavement strengthening 63,2 million Ls are necessary, including the following:  
2000- 2006    15,0 million Ls  
2007- 2015    48,2 million Ls
6. The pavement strengthening has to be performed simultaneously with the planed pavement periodical maintenance, unifying the work execution.

## **Bridge carrying capacity increase**

Only the reconstructed and newly built bridges conform to the traffic load standards for the bridge design prepared in Latvia in 1999.

The conformity of international road structures at least to the gross determined by the directive Nr.93/53/EU has to be implemented without restrictions till 2006 but till 2015 other road bridge carrying capacities has to be ensured according to the present CSN allowed loads in force.

### **Activities for the appointing of bridge carrying capacity**

- The analyse and summary of acquired data in the previously performed bridge controls and calculations.
- Bridge control.
- inspection and recalculations of carrying capacity of bridges considering the decrease of carrying capacity in result of carrying structure damage.

### **Activities for the ensuring or increasing of carrying capacity**

- The placement of traffic signs or installation of barrier that narrow size.
- The determination of a special bridge-crossing regime for heavy weight vehicles according to calculations.
- The development of technical- economical justification and documentation of particular design.
- The repair of bridge carrying structure within periodical maintenance.
- The strengthening of bridge carrying structure or the construction of a new bridge according to the norms of LVS ENV 1991-3: 1995 on the main state roads taking the load coefficient  $k=1$  and to other  $k=0.8$ .

- The regulations of the Cabinet of the Ministers on large and heavy weight load transport in Latvia implementation control also about divisible loads and height dimensions.

### Criteria's for solution choice

- Traffic intensity that reaches the maximum near the destination of international routs- Riga, main ports and settlements. Constructing on the ENV loads has to be followed the increase of traffic intensity to ensure that the economical efficiency of invested resources would be maximal high.
- Road category.
- The statistical scheme and structure of bridge.
- The possible lifetime of bridge structures with or without repair and the efficiency of invested recourses considering the fast grow of construction costs proceeding the requirements of EU standards for the technological, material and it quality system.

<b>Necessary expenditures for the increase of bridge carrying capacity (million Ls)</b>			
Nr.	Activities	Expenditures	
		2000 2006	2007 2015
1.	Recalculation of bridge carrying capacity	0.20	0.27
2.	Technical- economic justification and designing	1.10	1.90
3.	Activities of traffic regulations	0.60	0.90
4.	Bridge reconstruction and rebuilding, including:		
	<u>On international roads</u>	9.18	14.40
	<u>On primary roads</u>	0.92	2.38
	<u>Other road bridges</u>	0.20	0.55
	Total	<b>12.2</b>	<b>20.4</b>

### Results

According to the 3 financing variant additionally to the 9,5million Ls planned till 2006 there are included 0,7 million Ls from designing resources and 2 million Ls from the funds planned for reconstruction works from the financing of rural road programme.

Accepting the most optimistic 2.financing variant for the period 2007 -2015 with the planned 14,4 million Ls it is not possible even to execute the international road programme, that is formed from the date of 1999. Also in the financing of this period 1,4million Ls from deigning resources are included and 4,56 million Ls from the financing of rural road programme.

If the planned financing will not be implemented then for the ensuring of bridge carrying capacity a temporary solution has to be found – traffic regulation with road signs or structures. Temporary solutions are appropriate for roads with small traffic intensity.

### Market of road network maintenance and construction

The information on possible order for the maintenance and development of state road network is provided. The openness is ensured in the programmes work period that

provides the undertakers the possibility to orientate and plan own development directions.

The programme is directed towards maintenance, reconstruction and the tender procedure of new constructions- free market. The exception in the period 2000- 2006 was daily state road maintenance which maintenance requirement implementation is equal to the work of emergency service. The financing of daily maintenance is limited and ensures only 35% form optimally necessary. Priority is given to maintenance with the help of state companies that provides flexible approach to the rational use of allocated financing.

The development strategy of road network maintenance and construction market provides the following main prerequisite and activity complexes:

1. To improve the periodical maintenance of asphalt pavement, as well as, especially gravel pavement in all seasons, maximally linking all undertakers (in tender procedure) to these works providing safe and comfortable vehicle flow. The works include: maintenance of road pavement, maintenance and collection of artificial structures (bridges and deranges), the inspection and collection of elements of road devices.

2. To fulfil the tender (agreement) location considering the specialization of undertakes simultaneously stimulating the development of it maximal yield reach.

The orientating list of work division:

- service and installation of road signs;
- painting works;
- rest of road devises;
- asphalt concrete works;
- earth works;
- service and construction of artificial structures (drainage, bridge);
- subcontractor works (sewerage, electro and telecommunication etc.)

3. To develop instruction for state road daily maintenance work assignment according to tender procedure.

4. Fulfilment of the organization of tender, develop the tender procedures, strong determine of pretender qualification, higher evaluation of quality indicators of construction organization, decrease the of amount of unplanned works till the minimums.

5. To develop and fulfil the quality ensuring system according to construction norms of Latvia and international requirements.

6. The cooperation between the customer- the Latvian Road Administration and the contractor – four state stock companies and privet organizations have to be formulated in the accordant instructions and orders were the responsibility for the quality of performed work, guarantee and financial security, as well as, the performing works and the minimal and maximal due data of them are listed, of the of both sides is determined.

The programme plans a gradual daily maintenance transfer to open tender if the results of analyses of domestic and foreign experience will prove to be appropriate.

## **Environment protection**

Roads and vehicles that drive along the roads influence the environment.

The road influence is connected with the violation of environment functions:

Surface water discharge, forest animal migration, influence of road construction materials, quality of construction and maintenance, location according settlements and other objects, technical solution conformity to traffic intensity.

The vehicle influence is connected with pollution of air and surrounding, noise, human and animal safety.

At the same time roads and vehicles are vital necessary in the humans life.

The aim of the environment subprograms is to develop an environment friendly transport system, balancing the transport access to economical and social development with environment possibilities.

Extremely dangerous to roads which technical level and traffic conditions do not correspond to traffic intensity. The increasing traffic intensity and ever-worthier road condition exceed the negative influence on environment. In Latvia vehicles are the main type of transport that uses approximately 77% from the transport total energy expenditure. In the pollution of air vehicle transport part is 90% between the other transports.

As the all programme the environment protection depends form the financing.

The planned activities provide the following four main work directions:

1. The improvement of road network and infrastructure.

1.1 The implementation of recommendation of assessment of influence on environment.

1.2. Construction of bypass, traffic bend and low speed lane.

1.3. Protection of groundwater, the drainage plant and purification of sewage.

1.4. Noise barriers.

1.5. Maintenance of protection zone, new plantation;

1.6 Qualitative road maintenance;

1.7 Activities of increase of traffic safety;

The mentioned activities with according justification are planned in particular designs, but the implementation depends from the financing.

2. The improvement of vehicle technical level.

2.1. Modernization of engine, body, anchors.

2.2. Electrical drive.

2.3. Smaller dimensions.

2.4. Lead free petrol

2.5. Decrease of emission.

2.6 Proper price politic of fuel.

These activities depend from the results of producer work, state legislation and the work of control institution.

3. Traffic engineering management.

3.1 Control of speed.

3.2. Improvement of vehicle flow, observation of bunching, traffic lights.

3.3. Organization of pedestrians and bicycles.

3.4 Location of parking places and filling stations.

3.5. Organization of one-way traffic and development of electric transport in cities.

3.6. Use of railway for distance transfers.

3.7. Tax politic and retribution system.

These activities depend from planning and the work of judicially responsible and monitoring institutions.

#### 4. Government, norms

4.1. Standards and improvement of legislation.

4.2. Exchange of information, public (local, users and specialists) participation in designs deliberation.

These activities depend from the work of accountable for legislation and executive power. All problems of environment are not an end in it self, but are to be considered together with basic problems.

The activities are closely connected with people- drivers, passengers, local inhabitants, pedestrian, cyclists, and pupils, invalids- with the aim to satisfy the interests of these groups.

### **The preparation of road sector specialists and improvement of professional skills.**

Special education in road and bridge speciality can be obtained in the Technical University in transport construction institute of Riga (bachelor, construction engineers, master), Construction college of Riga (the training of road construction technicians is to be renewed) and Vocational secondary school of Smiltene (construction and construction vehicle mechanics and motor engineer). The further training happens through the Training centre of the Latvian Road Administration. In the road sector, as well as, with it connected spheres work approximately 5000 employees including with special educations - 1730. Till the year 2006 will be necessary additional 500 specialists. The most critical situation is in municipalities because in these comparatively often the road services for the maintenance of road under the jurisdictions of municipality are not established.

According to the planned in programme financing level of 2006 it is necessary to prepare 140 engineers, 200 mechanics and 100 for the management of mechanics, as well as, annually have to organized trainings for the preservation and improvement of professional skills to 300 specialist.

In the period from 2007 to 2015 in proportion to the planed growth of financing annually 75 specialists have to be prepared including 30 with 1<sup>st</sup> and 2<sup>nd</sup> level highest education and 45 with secondary education.

The necessary financing for training is planed from SRF, state budget, sponsors and the studying approximately 500 000 Ls per year.

With the free market and uneven development of economy the planned number of necessary of specialists in transport sector, economic sector is a problem and the set numbers is not possible to generalize.

### **Scientifically work, information, standardization, quality control and designing**

The development of Latvian road and bridge sector is to be ensured on the bases of the results of scientifically researches and use of cognitions.

Simultaneously it has to be considered that Latvia is not able to develop substantive large scientific researches of road and bridge sector.

Main direction in which the work is to be done is the use of world's scientific potential summarizing information and giving recommendation for the implementation of these achievements in Latvia, as well as, experimental control of recommendations in Latvian conditions in cooperation with practical workers.

Second direction – the estimation of existing norms of EU and other countries that are necessary for the work of sector, suggestions on their implementation in Latvia, in exceptions the development of new norms.

Third direction- estimation and implementation of quality control system.

Fourth direction- the cooperation with scientists of neighbourhood countries for the development of particular territorially common interests.

Fifth direction- the use of local construction materials, the improvement of its quality indicators using activity fixings.

Sixth direction- improvement of designing. Acquiring and implementation of progressive solutions and technologies.

Scientific work, information, standardization, quality control and financing of projects is planned from the state budget, SRF the cooperated finances of transport companies.

In the period from 2000 to 2006 for this aim on average 2,1 million Ls are planned in gradually growing chain and from 2007 to 2015 on average 3,45 million Ls per year.

## **Description of Latvian Rural Road Programme**

The Latvian Rural Road Programme was approved by the Cabinet of Ministers on July 6, 1999 and is a detailed of Latvian Rural Development programme approved by the Cabinet of Ministers on March 10, 1998 and is accepted by Saeima on June 15.

The Road Programme describes the work and responsibility sphere of Latvian Municipality Association, Traffic Department of the Ministry of Transport and Latvian Road Administration. It is periodically to revision and improve because is developed for 10 years long period with the possibility to be continued.

The Rural Road Programme partly double the programme of state road network preservation and development including activities in state road routes.

Improving the work possibilities in rural areas the number of inhabitants there will grow. The determinant factors for the forming of such environment are good communication and traffic.

That why the Rural Road programme includes all roads in Latvia countryside, as well as, regional and local traffic which despite small traffic intensity has a important social meaning for the increase of life standard of inhabitants and preservation of Latvian countryside.

In the Latvian Road Programme all present municipality and state 2<sup>nd</sup> class roads, as well as, 1<sup>st</sup> class roads or they spans which two or more district have included in the Rural Road Programme and important traffic artery of particular district are included.

The Rural Road Programme consist from two special purpose programmes:

- the of regionally important roads development programme for the financing of which 25% of the Rural Road Programme financing is allocated.
- the local importance roads arrangement programme to which the SRF allocate 75% form the annual financing of Rural Road Programme.

The main source for the financing of Rural Road Programme are planned additionally 10% of SRF incomes, that would occur with the amendments of the regulations "On excise tax on oil products" accepted by Saeima on June 2, 1998 were the division between state base budget and SRF would change and in the SRF 60% would be allocated with 1999 in the place of 50%.

However in the declaration of government on July 15, 1999 is determined to reduce the part of excise tax allocated to SRF from 60% to 50% in this way interrupting the implementation of Rural Road Programme.

The possibility further to implement the Rural Road Programme is tightly connected with the change of regulations "On excise tax on oil products", providing the division of state base budget and SRF, that at the present is in equal parts, gradually transferring it in the favour of SRF in proportion 80% and 20%.

Remark: From the year 2002 it is planned to renew the work of Latvian Road Programme.