



- decrease in a level of uncertainty (risk) of economic activities with respect to the part depending on transport factors. And reduction of specific spending of time for trips is important, especially for those passenger and partially cargo where time of delivery is limited;
- safety enhancement, including all types of it depending on the road network (decrease of traffic accident rate and vulnerability to terrorism on the road network, improvement of environment).

### **New principles and approaches to planning of road network development in the region**

In conditions of developing economics, approaches to planning development of the road network in the region should undergo essential changes. First of all, it refers to setting of ultimate goals of such development.

#### ***Digression №1. How it was before: traditional approach***

Efficient, meeting requirements of transport users functioning of transport system to much extend depends on reliable prognosis of demand in its development, range and rational sequence of arrangements allowing meeting these requirements. Until recently these tasks were included as components into respective development schemes which, in fact, were predictive pre-plan documents worked out for 20-25 years. Materials of such schemes became a basis for subsequent development of 10- and 5-year plans of transport facilities construction and reconstruction. Under traditional approach to development of transport system schemes there are two key questions: first – defining of prospective traffic volume; second – selection of network development alternatives providing development of defined volume and the choice of the best among them. Under such approach main attention is paid to revelation of prospective freight flows and defining based on them (or by some other way) prospective traffic volume. Existing methods of traffic volume prognosis, to-date rather numerous, were developed in the conditions of certain economic stability typical for the country in late 80-s. And even in those conditions they often produced considerable errors. In conditions of transition to market relationships the degree of uncertainty in development of the situation with economics considerably increases. And we should take into account ambiguity of consequences of market relationships introduction into transport. The experience of countries entering the market shows that development of transport system results in displacement of economic activity. Therefore, the effect of investments could show up not where capital was invested. There are no common methodological approaches to evaluation of such discrepancies. For a long time, due to poorly studied consequences of social and economic character in non-transport sphere related to variation of transport conditions, main attention, when defining efficiency of road development, was paid to inputs directly in the sphere of transport. Methods and ways applied to-date, existing standard and regulating documentation make it possible to define them reliably and precisely enough. At the same time, cost estimate of consequences of variation in the transport system condition in other spheres (mainly in social and agricultural) is either possible only partially or not possible yet. Evaluation of even part of these effects on some specific territory requires individual, pretty laborious study. Fragmental, selective, far not complete investigations showed that non-transport effect considerably exceeds that of transport (in most cases it is several times more). Inevitable consequence of non-transport effect under consideration of transport system improvement under conditions of centralized funding was chronically insufficient level of allocating funds, long period of rather low rate of network development.

**Together with the task of reducing transport expenses, more and more importance gains solution of the task to create in regions such transport communication conditions in the form of reliable (both technically and topologically (by pattern) united transport system which will provide for to transport users a certain standard (minimum secured) level of comfort and profitability when accomplishing any possible connections.**

And it is of paramount importance to realize who will benefit from functioning of a standard network (standard not only with respect to technical standards (norms), but even more with respect to the standards of sustainable development). Only in this case the market of potential benefits created by a standard road network shall turn into real effects of specific consumers.



Thus, a standard transport system is the most important factor stimulating domestic demand, as, even if population has sufficient earnings, the demand for goods and services can not be realized in the conditions of the lack of good roads.

One of basic deficiencies of existing system of transport development planning is the lack of acceptable and well-working evaluation method of regional adequate provision of transport.

The method of evaluation of regional adequate provision of transport (roads) should consider the following moments:

1. Interests of transport communication users, and not transport companies must be regarded as the basis.
2. Existing in this area other transport communications, in addition to roads, make it possible to redistribute the resources in the region with low level of road network development.
3. Investments into roads will result in redistribution of economic activity. And we should be ready that the effect of development of specific section may be obtained in the area other than the place where it was applied.
4. The account of the network pattern quality as an additional and relatively independent resource for social and economic development of the region (reliability of the network picture is not taken into account yet directly at evaluation of capital investment effectiveness).
5. It is desirable to divide and distinguish purely economic effectiveness and social efficiency, especially in cases when actions differ little by their financial effectiveness. Increase in the fund of population's spare time measured by man-hour and growth of average lifetime can be used as a criterion of social efficiency.
6. Joining of interests of various level territories, as one and the same road plays different roles in the life of, for example, region and its administrative district.

Availability of the method evaluating provision with roads and meeting all these requirements is a necessary condition of efficient road sector administration in the region, first of all, by the body which has the functions of a client. Such methodological recommendations were developed upon the order of FHA by a group of authors from GP RosdorNII, GiprodorNII, NTs KTP and "Geogracom" according to FHA's instructions to work out a draft of the Federal Program "Roads of Russia in XXI century" and Russian FHA Order №81 as of 02.04.1999 "Regarding development and making decisions about investments into roads and the Federal Road Fund of the Russian Federation" ("Manual on development of federal and regional programs for establishment and development of road networks in the Russian Federation for the period up to 2010"). In addition, in order to solve this task, OOO «Geogracom» developed in 2004 "Methodological recommendations on evaluation of net input of roads into Domestic Gross Product". "The White Book of roads in Astrakhan Region" is based on the above documents. Application of such approach requires, together with customary quantitative characteristics of branch programs, incorporation of new ones describing quality (reliability) of transport environment.

The following was proposed as such characteristics:

- average weighted time spending for passenger and cargo transportation;
- percent of regional provision with united transport system (UTS) in passenger and cargo communication (analogue of the characteristic of UTS functioning reliability in the region) with picked out the portion of roads in formation of transport environment;
- average regional traffic speed (technical) at transportation;
- coefficient of networks pattern reliability characterizing networks' ability to perform its functions in case of breakdown of its individual sections;
- portion of population living outside standard zones of accessibility by transport (level of population's transport discrimination);
- lost fund of spare time;



- average weighted unaccessibility – losses of time for each resident who has to suffer them due to the lack of roads or poor transport conditions when receiving the services of social secured minimum;
- portion of motor transport in summarized environmental pollution;
- rate of traffic accidents due to concomitant road conditions;
- “federal” (budget) effectiveness of road sector funding.

Integral transport accessibility (ITA) constituting average weighted time spending for passenger and cargo transportation is a characteristic of transport environment quality in the region being of system character. This parameter is measured by values significant for users of transport services and it takes into account aggregate interference of all communication means on this or that territory, considering both their technical reliability and reliability of configuration. The network of all types of communication means in the region is considered to be reliable if it facilitates reaching any of its points from any other for a certain (“floating”) standard of time. This method was tested on a number of regions in the Far East, Kazakhstan, Northern Caucasus, Volga Region, Northern and Central Russia.

***Digression №2. Sources used for development of «The White Book» ideology***

- Transportation strategy of the Russian Federation for the period up to 2020 - M.: 2005.
- Program of transport system modernization in Russia (up to 2010). Government Decree №338 as of 31.05.2006.
- Territorial scheme of development of engineering, transport and social infrastructure facilities. - Rostov-on-Don, NP NPO «Southern Russia town-planning centre, 2006.
- Concept of the National Program of road modernization and development in the Russian Federation up to 2025. -M.: 2003.
- Manual on development of federal and regional programs for establishment and development of road networks in the Russian Federation for the period up to 2010. - Rosdoragentstvo, 1999.
- Strategy of the Russian Federation development up to 2010. -M: Fund “Centre of strategic developments”, 2000.
- Russia of 2015. Optimistic scenario. –M.: IERAN, MMVB, 1999.
- Federal Special Program “Reduction of difference in social and economic development of regions in the Russian Federation (2002 to 2010 and up to 2015). -M: Mineconomrazvitiya, 2001.
- Fundamentals of the concept of reforming road sector in the Russian Federation. – Rosavtodor, 2006.
- Russia in 2015: goals and priorities of development. Report on development of human potential in the Russian Federation. –M.: 2005.
- Program of social and economic development of Astrakhan Region considering doubling of Gross Regional Product for the years of 2005-2007. - Astrakhan, 2004.
- Strategy of Astrakhan Region development for a medium- and long-term outlook.// <http://economy.astrobl.ru/>
- Prognosis of social and economic development of Astrakhan Region in 2007 and for the period up to 2009. - Astrakhan, 2006
- Which Changes for transport in the Next Century?//14<sup>th</sup> International Symposium ECMT.- Innsbruck, 1997.
- Human Development Report. 2001 -UNDP: Oxford, 2004.
- World Development Indicators 2001 -Washington, DC: World Bank. 2004.
- Report on world development in 2000/2001 -M.: Ves' mir, 2003.

As a result of programs comparison it turned out that there are actions executing multiplying functions, i.e. included both in regional and district programs. As experience shows, there are 20-50% of such actions – multipliers by nomenclature. And it means that same goals could be reached twice cheaper. The only thing is to reveal these multipliers.

Just this is the aim of a new methodological approach used as a basis of expert computer system “Geogracom-5W+”. Its essence is “linear acupuncture”. The conditions of vital activity on the territory could be improved by special financial injections into weak points of a road network. As a result, the effect of investments into specific facility (local variation) can be calculated in the different ways: locally, within the limits of the district and by regional response.

At such approach roads are regarded as a tool for enhancement of population’s quality of life and market opportunities of business activities, as well as a factor of consumer’s market stabilization. The interests of a territory thus are tied directly with development of a road network. It is right what is called enhancement of territory capitalization due to road infrastructure.

Innovational character of “The White Book” is in consideration of the following conceptual notions:

**1. Capitalization of territory**

Topicality of a principle of advancing development (financing) of transport infrastructure is supplemented today with new ideas about capitalization of territories. Capitalization of territories which assumes cost estimation of not only its actual (to-date) resources of all kinds, but also potential, to the outmost affects investment, geopolitical, social and cultural attractiveness of regions and provides their economic growth. Natural and man-made resources do not provide automatically high standard of living (wealth does not always become capital). Prosperous territories are determined by economic institutions, first of all protection of property right and well-developed financial system, as well as infrastructure, especially that of transport, which transform riches into capital. The level of transport infrastructure development of the territory is the most powerful factor of their capitalization. Owing to territorial capitalization, influence of transport on economic growth through multiplicative effect of investments and internal consumption essentially raises.

**2. Effectiveness of budgeting**

The necessity of transition from an estimating principle of budget formation to budget planning according to ultimate goals, when effectiveness of budget spending will be defined by augmentation of significant for taxpayers indicators of life support, finally shaped in the form of the Russian Government Decree №249 as of 22.05.2004 “Measures for increased efficiency of budget spending”. Transport as a sector of infrastructure ideally fits implementation of a new scheme of budgeting, as there is a special tool (expert system “Geogracom 5W+”). This tool allows monitoring growth of these indicators depending on the level of budget spending for transport. It allows proceeding to a new level of competition between transport types for financial resources and puts forward transport sector to the front line in intersectoral competition.

**3. Reverse affect in the pair «transport – environment»**

Traditionally people evaluate negative affect of transport to the environment, though the latter can negatively affect the work of transport (first of all, due to combination of unfavorable climatic characteristics).

**4. Threat of terrorism**

New challenge to civilization in the form of threat of terrorism requires count of possible extreme situations in transport system in case of failure of transport system individual sections. This approach complies with the Russian President Edict № 24 as of 10.01.2000 «On the concept of national security of Russia».

**5. Synergy of transport**

The essence of synergetic character of roads consists in the following: useful effects from their functioning show up not synchronously with improvement of consumer properties (as in overwhelming majority of material and non-material manufactures), but collect, and, according to a nonlinear paradigm of economics, “shoot” (sometimes even “to the wrong side”), i.e. bifurcation occurs. Typical example: collected insufficient rehabilita-



tion of roads may not produce a positive response in GDP for a long time (within 2 to 4 years), even if funding of the road sector within this period was increased dramatically. Empirical construction reflecting synergetic character of transport systems is a so called road curve (see Chapter 9).

#### 6. And, finally, most important

The state should assume the responsibility for a certain minimum level of transport (road) infrastructure development which provides for equal **starting conditions** for population and providers of services. This minimum level was called Minimum Transport Standard (MTS). MTS provides the opportunity not to hamper development of economics and so-cium. The things that are better are welcomed, but it is already everybody who bear responsibility for this better future, and not only a regional body of transport administration.

This approach in principle solves the problem of State's overwhelming participation in the work of this sector. At the same time, adoption of MTS as an official document would confirm preparedness of the executive power to cooperate with civil society.

## Defining of Minimum Transport Standard

Minimum Transport Standard (MTS) is a totality of characteristics of transport services ultimate consuming. The conditions of life and work in the region significantly depend on them.

Unlike intermediate and purely sectoral characteristics (such as profitability, commissioning of roads, coefficient of sent en route vehicles), describing the work of transport itself and serving for it manufactures, MTS uses characteristics describing habitat and depending on ultimate results of transport and road facilities work.

For the users of road services (passengers, vehicle owners) is not so important to know how many roads were reconstructed or rehabilitated, what profitability of road rehabilitation and road construction companies is, etc., but what advantages it gives to him/her personally. I.e. consumers' qualities of the road are important to him/her: traffic speed (time spending), safety, comfort, which were reflected in a new (not approved yet) road standard. And also **consumers' qualities of the network**, and we mean United Transport System of all types of transport types (such qualities as accessibility, connectedness, etc.), in which roads, as a rule, play dominant role.

Issues of development strategy for any level region include issues of development of transport as a whole and, in particular, roads. Together with external tasks of road development in the region (such as providing of external economic connections, international transit, defensive capacity, etc.), probably, even more important task is how to develop a road network in order to provide normal conditions of living and working within the region.

The conditions are characterized by a set of parameters, and their compliance with standards – by quantitative parameters. The range of parameters themselves and their values are defined depending on strategic parameters of region development.

#### **Strategic parameters of region development:**

1. GDP per capita (US Dollars);
2. expected life time in the region for men (years);
3. level of spending from regional budget for social needs (%);
4. level of environmental safety (g/t-km);
5. total potential of development of the region (e.g., total explored stocks of minerals, potential of scientific and technical progress, a share of goods export, purchase of licenses, etc.).

Considering that MTS should reflect value orientations of a society in long-term prospects, the horizon of planning is to be set.

Values of basic strategic parameters are defined by experts based on analysis of tendencies in development of countries of the world, development of macroeconomic situation in the



Russian Federation, existing level and potential of Astrakhan Region and its districts development, specifics of proposed Program of development of roads:

- GDP shall be set at the level over 15000 US Dollars per capita (in 2005 the level of GDP per capita was about 2,904 US Dollars and over 4,870 US Dollars by parity of purchasing capacity (GDPppc, 51% of the average in Russia);
- life time in the region shall be preset at over 75 years (average life time to-date is 58.1 years (for men, 2005);
- share of social spending in the regional budget should be at the level over 50%;
- level of environmental safety shall be set at the level of developing countries (more than 50 g/ t-km, due to existing a number of environmentally unfriendly manufactures;
- horizon of planning shall be set at over 15 years.

Existing level of region development was defined as average considering, first of all, the degree of its investment attractiveness found as per Methodology proposed by the Ministry of Economic Development of the Russian Federation.

The degree of investment attractiveness is evaluated as a ratio between investment activity (without accounting capital investments from the state budget) and investment attractiveness. The latter is defined as a volume of capital investments which could be used as a stock of the region based on its investment potential and the level of regional investment risks.

Potential of Astrakhan Region development is described as **average**.

The size of economically developed (inhabited) territory is described as **average**. The least developed (by the total area of territory) are Enotaevsky, Chernoyarsky, Akhtubinsky, Khababalinsky and Krasnoyarsky districts.

Thus, Minimum Transport Standard for Astrakhan Region at elaboration of a strategy of transport system development for the period over 15 years has parameters listed in Table 1.1 (for comparison there are values of MTS for Orenburg Region comparable with Astrakhan Region by the level of social and economic development, configuration of the territory, structure of settling, big share of gas-processing capacities).

From the table we can see that values of many parameters of MTS are worse than standard. Such parameters as the level of transport discrimination, mobility of population with social and cultural aims, i.e. parameters affecting habitat in the region, are essentially worse than those of standard, which can be explained by insufficient technical conditions of roads, by presence of dangerous sections and insufficient provision of regular passenger communication. Fulfillment of the Program of road network development will make it possible to improve these parameters and solve the tasks of strategic planning of Astrakhan Region.

Elimination of difference between actual and designed (set) values of MTS is an ultimate goal of road complex development in the region (same as other transport sectors). It does not cancel importance of some, purely road characteristics (e.g., traffic volume), but the results of road network development from the point of view of road services consumers should be evaluated just by MTS. Each year the bodies of road administration must show to what degree the volume of funds spent for rehabilitation, maintenance, reconstruction and construction of roads improved the above listed parameters. This monitoring is possible thanks to experts' system of strategic planning of roads « Geogracom 5W+».

Obviously, standard values of MTS parameters will be different for districts of the Region, considering their existing and strategic potential, and, therefore, a set of actions in the Program of road network development will be different.

Table 1.1

**Minimum Transport Standard of Astrakhan Region**

Nos.	Parameter-reference point	Recommended value	Actual value	Degree of conformity	Orenburg Region MTS
1	Share of transport in environmental pollution, %	<= 21.00	<b>62.32</b>	precarious situation	<b>63.9</b>
2	Including "input" of motor transport in total pollution by transport, %	<= 82.00	<b>96.40</b>	clearly insufficient	<b>94.6</b>
3	Reliability of provision with roads (level of accessibility by transport), %	> 99.00	<b>78.77</b>	precarious situation	<b>137.3</b>
4	Level of transport discrimination of population by episodic links, %	<= 1.70	<b>8.71</b>	precarious situation	<b>57.7</b>
5	Specific fund of lost spare time (per 1 person a week), h	<= 0.3	<b>0.02</b>	exceeding	<b>0.21</b>
6	Level of traffic accidents due to roads, units/100,000 trips	<= 12.0	<b>1.63</b>	exceeding	<b>0.46</b>
7	Cargo capacity of economics, t-km/1 USD GDP*	1.6	<b>6.54</b>	precarious situation	<b>0.41</b>
8	Annual mobility of population with social and cultural aims, %	101.0	<b>56.40</b>	precarious situation	<b>64.8</b>
9	Portion of expenses for vehicles for regional transport, %	30.0	<b>34.00</b>	clearly insufficient	<b>30.0</b>
10	Portion of expenses for infrastructure for regional transport, %	70.0	<b>66.00</b>	insufficient	<b>70.0</b>
11	Portion of municipal transport in passenger transportation, %	45.0	<b>37.54</b>	clearly insufficient	<b>no data available</b>
12	Level of development of muscle types of transport (bicycle type) in urban and suburb communication, %	13.0	<b>0.1</b>	precarious situation	<b>no data available</b>
13	Efficiency of road sector financing	=> 1.0	<b>0.65</b>	precarious situation	<b>1.22</b>

\* - without accounting pipeline transport

Ability to reach control points of MTS faster and cheaper (which road sector is quite capable to do compared to other transport sectors) must serve as an additional reason for wider use of budget funds for development of specifically road infrastructure.

**Digression №3. On the system of budget efficiency factors**

For evaluation of effectiveness of road program implementation, various systems of particular and composite parameters are used. However, not all attempts were successful, as they often do not take into account the quality of network pattern, potential opportunities of transport accessibility and they are limited with average network technical and economical parameters. Thereby, as specific and cost characteristics dominate, it is not possible to evaluate the growth of transport system quality due to budget spending from the point of view of ultimate road users. One of such attempts was made by the Institute NIPI TRTI, where three groups of parameters were distinguished: productive activity, financial and economical activity and parameters of public opinion. In particular, the parameter of the level of budget funds utilization corresponds to estimating principle of budget formation, which in fact was repudiated as a result of transition to evaluation of budget efficiency. It is not also possible to measure the role of roads in the growth of Gross Regional Product. Many parameters repeat those obsolete, for example, length of newly built roads (same input of facilities). The system of budget efficiency parameters needs not input, but it provides to ultimate users, and the notion of ultimate user of road services long ago exceeded the bounds of a subject of motor transport activity. Proposed concepts of MTS to greater extend correspond with non-transport principle of evaluation of sector spending efficiency. Just such approach corresponds to the above named Decree of the Russian Federation Government №249 as of 22.05.2004.

## Specifics of application of standard road environment concepts in Astrakhan Region

Strategy of public road networks development unites traditional and new views at evaluation and prospects of unified regional transport system.

The materials of the following companies served as basic data: Astrakhan division of Privolzhskaya railway – branch of Op.JSC «RZhD», territorial body of the Russian Federal Agency on Statistics, NP NPO «Southern Russia Town-Planning Centre», Op.JSC «Airport Astrakhan», GU Astrakhanavtotrans, Ministry of Construction and Road Sector of Astrakhan Region, Ministry of Economic Development of Astrakhan Region, Rosavtodor, GIBDD UVD of Astrakhan Region, GU «Federal Administration of Roads «Northern Caucasus» (Sevkavupravtodor)», Ministry of Industry, Transport and Communications of Astrakhan Region, Astrakhan Zone of Hydraulic Engineering Structures and Navigation (branch of Volga State Administration of Water Ways and Navigation, Administration of Technological and Environmental Monitoring in Astrakhan Region, Territorial Agency on the Earth's Interior Utilization of Astrakhan Region, as well as the results of the firm «Geogracom»'s own researches.

In accordance with “Concepts of transition of the Russian Federation to sustainable development” (see Russian President's Edict № 440 as of 01.04.96), such transition is possible only in case if a new system of parameters will be developed reflecting ultimate consumption of transport services. This work is written in the context of these concepts and implements individual elements of special programs of sustainable development of Astrakhan Region.

Astrakhan Region is a boundary subject of the Russian Federation situated in the Southern Federal District, it has borders with: Kazakhstan, as well as with Volgograd Region, Kalmykia and Dagestan. The Region includes 11 districts, 6 towns, 9 industrial communities. Area of the Region is 44.1 thousand km<sup>2</sup>. (0.25% of the territory of the country, 58<sup>th</sup> place), population – about 990 thousand people (2006, 0.7% of all population of Russia). Russians comprise 70% of population of the Region, Kazakhs - about 14% (the biggest community among the regions of Russia).

The share of urban population is 68%. Largest towns: Astrakhan (495 thousand people), Akhtubinsk (48 thousand people), Znamensk (36 thousand people). Typical feature of population's settling is large size of rural habitation areas (their average size is over 400 people). We can also point out unfavorable shape of the Region. The length at the biggest diameter (from north-west to south-east) is over 400 km, whereas the average width of the region is about 90 km which complicates internal connections in the region.

Astrakhan Region is characterized with relatively good demographic situation. Having negative natality growth (-3 promiles), the Region occupies the 20<sup>th</sup> place by natality characteristic per capita.

The Earth's interior in Astrakhan Region is rich with mineral resources: gas and oil, building materials (clay, plaster, haydite, silicate sand), chlorinated and brominated salts. Fish resources of the region are unique.

The Region is most known for its reserves of hydrocarbonaceous raw material, exploration of which should be performed within the scope of international cooperation. Astrakhan gaseous condensate deposit is one of the largest in Russia. The functioning deposit is unique by reserves of gas and hydrocarbon condensate (from 3.6 to forecast 6.0 bln. m<sup>3</sup>) which is 2-2.5 times more than that of Orenburg (1.6-1.8 bln. m<sup>3</sup>), as well as by complexity of composition. In addition to hydrogen sulphide, average content of which is 24%, they contain carbonic acid (gas) (12-16%), carbon bisulphide and mercaptan sulphur.

Terrain of Astrakhan Region is mainly flat, partially it lays below a sea level.

Among vegetation herbs, wormwood, saltwort prevail. In Volga-Akhtuba flood-plain and the delta of Volga – meadow flora, considerable area is occupied by flood-land forests and reed-bed. Astrakhan reserve and hunting holdings in the delta of Volga are most favorite vacation

spots of hunters and fishermen-amateurs from all over the world. There are unique reserved areas in the Region where tourist routes were organized. Opportunities of medical rest are called forth by the presence of curative mud and mineral waters. There are opportunities to create conditions for the rest of 150 thousand people annually. In the area of Astrakhan three types of medicinal waters of balneal group were opened.

Climate: deeply continental, dry. Average temperature in January is from  $-10^{\circ}\text{C}$  in the North to  $-6^{\circ}\text{C}$  in the South, in July - about  $+25^{\circ}\text{C}$ . Precipitations - about 200 mm per year.

Vegetation period - 201-216 days.

Favorable natural and climatic conditions, presence of rich water resources determined Astrakhan Region as the zone for planting of heat-loving vegetable, melons and gourds and rice.

Livestock farming is represented by meat and meat-and-milk trends. Horse and camel breeding are well developed in the Region.

In the structure of GRP industry makes nearly 48%, agriculture and forestry – 6%, nonmaterial - 47% including transport – 13.6%. The last figure exceeds similar parameters in most regions of Russia.

In the structure of industrial production about 60% falls on fuel industry (first of all, gas), about 12% falls on food industry, 10% each falls on machine-building industry and power industry. The rest branches are not developed much.

In industrial production fish industry also stands out, a share of it is more than 40% of all food industry produce. Another unique sub-sector is production of salt, related to exploration of Baskunchak deposit (produces over 50% of all salt produced in Russia).

Over 50 enterprises specialize in production as per state-of-the-art technology construction products - brick, gypsum plaster, gypsum stone, panels and structures for pre-cast large-panel construction. The largest are "Mineral-Knauf", "Elko" PLC, Astrakhan Plant of Ceramic Wall Materials, Yaksatovsky Brick Plant and others.

The largest representative of chemical industry in the Region is Op.JSC "Astrakhan fiber glass" - a major manufacturer of unique electric insulating glass fabric, staple fiber glass yarn for electrotechnical purposes.

Being a strategically important transport junction, Astrakhan Region corresponds an important constituent of the "Great Volga Way" and holds a key point on the southern section of International Transportation Corridor "North-South". Transport system of the Region includes 567 km of railways, 4,329 km of roads, 1,120 km of internal navigable waterways.

Owing to Volga and Caspian Sea, Astrakhan transport junction is the shortest, economically sound and convenient way connecting Europe with the countries of Middle Asia, India and Pakistan, countries in basin of the Indian Ocean.

Among social and living problems, high dilapidation of residential-type buildings in the districts equal to 12% (all over Russia – 3%).

People from Astrakhan Region contributed a lot to the culture of Russia. The first Russian academician V. K. Trediakovsky, poet and writer of fables I. I Hemnitsler, poet V. V. Khlebnikov, poet M. K. Lukonin, artist B.M. Kustodiev were born in Astrakhan.

The major component of economic development is investment attractiveness (investment climate) of a territory, consisting, in turn, of investment potential and investment risk. Astrakhan Region ranked only as 58<sup>th</sup> place by investment potential in 2005-2006 (56<sup>th</sup> place in 2004-2005), which is 0,52% of all-Russia potential. Among constituents of investment potential we should especially point out to 28<sup>th</sup> place in all-Russia rating of natural-resource potential and 41<sup>st</sup> place by institutional and only 47<sup>th</sup> place by infrastructure potential. By the parameter of investment risk the Region ranked in 2005-2006 as 59<sup>th</sup> place (in 2004-2005 – also 59<sup>th</sup> place) which allows to refer Astrakhan Region to a group of regions with big enough risks (and the Region is disadvantageously stands out for rating of economical risk – 82<sup>nd</sup> place and criminal - 78<sup>th</sup> among all regions of Russia).

It is planned to establish 5 tourist zones (clusters) in Astrakhan Region - two in the delta of Volga, the town of Astrakhan, Akhtuba flood-plain and the lake Baskunchak [1].



Prognosis of social and economic development of Astrakhan Region envisages that stabilization and further enhancement of economics will be followed by development of all types of transport and, first of all, by increased role of motor and marine transport. Therefore, special attention should be paid to development of road network in Astrakhan Region, and, in accordance with the existing regional Road Program, it is supposed that major volume of investments shall be directed to improvement and reconstruction of basic road network.

Existing road network does not meet the requirements of economics of the Region, and it is characterized by the following moments:

- poor ties between remote northern districts, as well as between them and southern districts;
- average traffic speed is only 33 km/h for carriers of freight and 24 km/h for passenger vehicles which increases transport operating costs of road users;
- majority of roads do not meet the tendency of increase in axle load, and it results in deterioration of road pavement;
- road network includes lots of bridges which worsens that fact of gaps in road network in case of emergency.

From the point of view of regional interests it is necessary to consider as the primary goals:

- Achievement of financing of territorial road network, % from GRP, at the level providing steady economic growth of the Region;
- Transition of part of departmental roads functioning for general use into territorial and municipal road network;
- Elimination of transport discrimination of population;
- First and foremost implementation of actions on development of basic road network in Kharabalinsky, Enotaevsky, Chernoyarsky districts where road problems are most acute based on a combination of parameters;
- Elimination of potentially dangerous sections and “bottlenecks” of traffic safety (grade crossing of railways, formation of cycles in the road network in order to improve anti-terrorist part of network pattern);
- Provision of access by roads to railway stations, ports. Transition of part of roads to toll system in order to create in future an independent source of adding to road budget;
- Achievement by 2015 of 10%-level of financing from private and domestic investments. The funds of profitable companies cost price of production of which to much extent consists of road constituent (food industry, individual sub-sectors of agriculture) could serve as a source of these investments. In addition, financing of part of these companies could be made in future from non-traditional sources of financing.

In addition to regional interests, we can distinguish also general state interests in development of the road network.

Federal interests are represented in solution of the following tasks:

- Maintenance, rehabilitation, reconstruction and construction of federal roads where the portion of transit is pretty high;
- Of strategic and defensive character (including provision of interregional and external economics transport connections);
- Enhancement of transport system related to development and construction of industrial facilities of federal importance;
- Elimination of "bottlenecks" in United transport system (e.g., access to marine port infrastructure, including in port Olya, construction of non-category bridge in the area of Enotaevka for unloading of international transport corridor “North-South”, etc.).

Separation of interests is necessary for defining additional sources of financing for actions on development of transport system. Federal interests should be provided for from federal sources in the form of special subsidies, local interests – from the budget and private investments the necessity of which increases. And it is desirable that national interests represented at the regional level by administration of Astrakhan Region coincide with the interests of transport services producers. In case of this coincidence, inflow of private investments into development of transport system potentially will be provided for. Otherwise, expensive projects of road construction and reconstruction do not result in decrease of costs at transport operations and do not affect their profitability.

***State priorities, represented by the Ministry of Construction and Road sector in Astrakhan Region, consist in creation of road infrastructure providing minimum required conditions for consuming of socially secured set of services to all residents of the Region wherever they live, and in progressive advance of economics, with respect to the part depending on roads. In other words, in achievement of Minimum Transport Standard.***

In general, compared to other similar by the level of development and natural specifics subjects of the Russian Federation, Astrakhan Region looks pretty good, except for three points: relatively low level of road provision, relatively high level of transport discrimination of population in one third of districts in the Region, big portion of motor transport in summed environment pollution by transport. Such situation has its historical and economical roots. However, it makes one of strategies - «by car to the district centre all year round» - a priority. Another, federal priority, due to transit potential and boundary location in the region, is a strategy «Astrakhan Region is part of Russia» (see Chapter 7).

## SUMMARY:

1. Strategic planning is fundamentally different from current (even long-term) planning. The goal of current planning is to enhance efficiency of transport sector, whereas the mission of strategic planning of transport is to achieve sustainable development of the territory by means of transport.
2. It follows that there is a necessity of new approach to development of transport (road) system of the region, investment constituent of which relies on not only possible profits of transport companies, but also economic effects in adjacent sectors, as well as in social, environment protecting and even political spheres. In other words, strategy should result in significant increase in capitalization of the region.
3. The goal of this strategy is not so much to decrease transport expenses (it is an affair of carriers), as to create opportunities for growth of general domestic demand being a main source of growth of GRP and increase in living standards of population.
4. The image of future, with respect to the part that depends on functioning of the road system, is the Minimum Transport (road) Standard achievement which provides the best efficiency of budget spending.
5. The main strategic task of the road sector is to eliminate "bottlenecks" related to spatial dissociation in the region: non-central position of the regional center, lack of connection between right-and left banks.