FEASIBILITY STUDY OF NATIONAL INTEGRATED TRANSPORT PROGRAM

SUMMARY

Vilnius, 2008
Introduction

This feasibility study was prepared by the Transport Engineering Faculty of Gediminas Technical University.

The feasibility study was prepared by using the University’s statistical information and recommended regulations, and the documents adopted by the Transport Engineering Faculty of VGTU, KTU, KU and the concept for the development of activities and the recommendations for the preparation of investment projects, approved by the Central Project Management Agency. The Feasibility study was structurised according to the nature of the investment project, and the composition of the analysed issues.

The main concept of the project is the national research program in the field of transport, which will be created on the basis of accumulated scientific knowledge in the field of transport, identification of business needs, and integration. The program would become the main tool for:
- formation of steady and constantly developing relations of cooperation between business, scientific and educational institutions (on the basis of scientific research in the field of transport);
- training highly-qualified specialists in the field of transports according the relevant business needs;
- creation of infrastructure that is necessary for increasing the country’s scientific potential in the field of transport;
- improving the transport system according modern global tendencies of transport development;
- developing the country’s and EU economic competitiveness in international markets.

Review of the Current State of Transport Studies, Science and Business

The key factors determining the economical growth of our country, and the increasingly high level of peoples living standouts after the accession to the European Union, rely on the development of the transportation system. The country's transportation system is extensively deeply integrated with other sectors of the economy, such as power industry, construction, agriculture, tourism etc.

One of the most important factors in determining the success of our country, and the pace in establishing itself in the European Economic Area, is the transportation system, the improvement and development which requires the consolidated efforts of academic scientists, businessmen, and specialists of many fields. Therefore the society of our country is concerned about the efficiency of transportation system.

In recent decades, the transport system development has attracted significant private equity investments, meanwhile the funds for the development of scientific infrastructure, technological advancement, innovation were not been granted. Such investments in the transport system are not effective because the prepared specialists of transport system are vaguely familiar with high technologies, and have now developed skills of theoretical understanding of new technologies, assessment of available information and data, and interpreting them. Such a state of transport system reduces the competitiveness of the country, and the possibilities of attracting foreign investments.

The Existing training programs are sufficiently coherent, they provide basic (university) knowledge, developing the students' erudition, intellect, ability to understand, summarize, insight, and address problems. They (training programs) are, to the extent currently available, equipped with the methodological tools and experienced teachers. However, society needs are changing, and study programs and their provision and become outdated. Teachers update specific knowledge when preparing for lectures to the possible extent. However, teachers have no opportunity to upgrade laboratory equipment, and do not always have access to
training due to high charges. For this reason, the update of the programs of studies modules is very slow. Due to the limited availability of the Western literature, when including literature into modules, teachers endeavor as far as possible to be confined to the Lithuanian bibliography, and complementing the missing topics with the old Soviet literature. It results in weak development of the knowledge globalism in the students' minds. Students are insufficiently encouraged to seek for knowledge in foreign libraries or the Internet, the mobility of students, knowledge exchange is also promoted insufficiently.

The laboratories of the current division of the transport engineering studies are outdated both morally and physically.

Sufficiently high staff expertise is very important for any process. From a formal viewpoint, the current competence of the staff is sufficient. However, in view of the dynamically changing needs of society, formal staff competences are insufficient. It is essential that every teacher would be familiar with their counterparts of other disciplines taught at universities abroad, and is aware of the qualification of teachers in the area of modules and development plans.

The teachers' competence analysis demonstrated one of the major drawbacks – a sufficiently high medium age of teachers. As a result, teachers are not able to quickly and efficiently absorb the latest technological achievements in transport.

The table below contains there are structure right strengths and weaknesses of the existing situation in transport studies, science and business, and the insight about the possibilities and threats.

**Table 1. SWOT analysis**

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<th>Strengths</th>
<th>Weaknesses</th>
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<td>• By 2008, the continuously growing freight and logistics business increasingly demands new professionals.</td>
<td>• Insufficient development, due to insufficient funding, of fundamental research, so the transport system experiences backwardness in policy development, realisation, its integrity, related project preparation and implementation.</td>
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<td>• The system of study trends and programs has been formed according to the market needs.</td>
<td>• Scientific achievements are insufficiently integrated into the studies.</td>
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<td>• Improvement of the studies programs and modules.</td>
<td>• No advance training base for qualification upgrade of transport tutors and researchers has been formed.</td>
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<td>• A part of tutors come from the circle of practitioners, for more thorough delivery of the studied topics to students.</td>
<td>• Insufficient practical base for the various areas of transport studies.</td>
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<td>• A sufficient potential of scientists for work in modern projects has been formed.</td>
<td>• Transport scientific research (especially the fundamental) lack an appropriate material and technical basis.</td>
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<td>• Some scientists and their groups maintain close relations with business partners.</td>
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<td>• There is an incentive of concentrating and joining the facilities of scientists in transport field and, by invoking businessmen, to implement the results of scientific research.</td>
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<th>Threats</th>
<th>Possibilities</th>
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<td>• Lack of understanding from governmental and non-governmental organizations of the role of integrated</td>
<td>• Development of the united transport system with the joint efforts of science, business and governmental structures.</td>
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transport system to the economy and society
- Careless attitude of individual businesses and inability of the science and studies to link their efforts for the creation of a unified transport system;
- Failure to develop attractive conditions for domestic and foreign investment in the country;
- Failure to develop the mutual interaction between the scientific research, studies and business open to knowledge
- Insufficient exchange in domestic and foreign scientific information and innovation
- Low academic salaries do not ensure the appropriate environment for the quality realisation of aspirations.

- Directing of investments to the infrastructure of scientific research, and more efficient use of scientific laboratories.
- Specialisation of scientific laboratories, development of infrastructure, acquisition and update of research equipment.
- Encouragement of business innovations, organisation of professional development system of business representatives.
- Research links with the studies, researchers and other specialists of training.
- Development of the concepts of transport logistics, multimodal and intellectual transport;
- Continuous update and improvement of studies programs according to the market needs.
- Preparation of new and lacking textbooks, methodological and practical training tools for studies. Reduction of maintenance costs for the scientific research infrastructure.
- Preparation of applied studies, projects of the transport sector, and their application for business needs.

Concept, Goals, and Tasks of the Program

The key point of the proposed national integrated program “TRANSPORTAS” involves an integrated business, science and study development for the creation of high-level, competitive community of science, studies and business, necessary for the development of the Lithuanian transport system. This can be achieved only when all stakeholders in the transport system are concerned about the overall progress, and are able of solving the relevant problems, and see their development prospects.

The main goal of the program is the improvement and development of the efficient policy of integrated transport system based on scientific achievements, that would ensure favourable conditions for the development of scientific knowledge and integration of technologies into business, facilitate the relation of scientific research in transport system with studies, training of researchers and other specialists, and upgrade of their qualification.

Other goals:
1. to integrate, renew and optimize the Lithuanian transport system, that enable the development of modern technologies and other promising scientific and business projects in the transport sector;
2. To strengthen scientific research relations of the transport system with studies and training of researchers or other specialists;
3. to create favourable conditions for the business to acquire knowledge and technologies;
4. to create cross-interaction of scientific research, science, and business that enable to compete in the area of international transport;
5. to develop high-level scientific cooperation and prepare general international projects;

When trying to achieve the set goals, it is necessary to solve the following problems, which may be considered to be the rationale for the project:
-insufficiently developed infrastructure that is used for scientific research and study process.

Due to insufficient financing, institutions do not have modern equipment (hardware and software) that is necessary for scientific research and for training highly qualified specialists.

-insufficient cooperation among scientific institutions and between scientific and business institutions.

Often scientists do not know about each others’ research or businesses are not aware of scientific achievements. Besides scientists do not often know about real business needs. Solution of the problem lies in stimulating cooperation between interested parties, which involves creation of databases, wherein ideas and possibilities of implementation can be accumulated. Yet another way is organising of conferences and round table discussions.

-scientists and educators do not possess sufficient competence

Often a lecturer cannot satisfy knowledge-needs of a present-day student (especially when practical knowledge is concerned). It should be noted, that often a student has a better practical knowledge of a subject, than a lecturer-theoretician. When trying to solve the problem, it would be expedient to improve qualifications of lecturers in business organisations, to organize traineeships abroad, and to plan possibilities of inviting foreign scientists and professional practitioners.

-study process lacks up-to-date educational material

It needs to be admitted, that up till now good quality reading material is too expensive for our institutions of education. As a result, lecturers use outdated and unreliable reading material for their lectures. This problem can be solved by planning adequate proportion of assets for acquiring world-class reading material and ensuring access to global databases of information.

Main tasks to solve mentioned problems are:
1. To improve and create an effective and unified transport system policy that is based on scientific achievements.
2. To renew scientific equipment for fundamental and applied scientific research
3. To renew laboratory equipment for studies, and to renew and prepare new study curricula for highly qualified specialists
4. To create interaction between science and business that stimulates favourable conditions for development of the Lithuanian transport system

One of the key objectives of the proposed program is to create a unified transport system, employing the highly skilled professionals, and generating the transport science, study and business that are competitive on the global scale. This can be achieved if once we ensure a very close relation and mutual cooperation between business and science, and studies. One of the key factors that encourages the cooperation between business, education and training is a mechanism based on mutual benefit basis. A principle of mutual benefit is the principle, when the cooperating parties voluntarily support each other, encourage mutual activities based on mutual benefit (economic, financial, social, technological, moral, etc.). The chart of activity and cooperation of the Transport Research Center (TRMTC), based on the principle of mutual benefit, is shown in Figure 1.
Fig. 1. Chart of activities and cooperation of the Transport Research Centre

Main measures and groups of activities which should be made implementing the program:
1. Creation of a unified transport system policy
2. Integration of business and science
3. Popularization of science and studies’ quality improvement

Order of priority of projects within the program:
1. Improvement of qualifications of scientists and researchers in the transport sector
2. Renewal and modernisation of curricula for transport engineering studies
3. Renewal and modernisation of curricula for transport management studies
4. Foundation of new laboratories
5. Improvement of qualifications of lecturers in the transport studies programs
6. Renewal of existing laboratories of transport studies and improving of the infrastructure
7. Fostering mobility of scientists

Implementation of the program would enable:
- to create and maintain steady relations of cooperation between scientific and business communities. As a result, the interested parties would constantly be aware of each other needs and possibilities.
- to create necessary (quantitative and qualitative) research basis (incl. highly qualified researchers, research infrastructure, and informational supply). Besides conditions will be created for improvement and renewal of the whole basis:
- creation of necessary basis for the process of studies (qualified lecturers, necessary laboratory equipment, software, libraries) that would enable to prepare relevant and good quality study programs for training qualified specialists in the field of transport.
- involvement in cooperation with foreign industrial and scientific partners that enable the improvement of qualifications of human resources (e.g. traineeships in global science and research centres), as well as integration of scientific transport potential into international networks of scientific institutions.
- constant introduction of relevant technological solutions/projects and highly qualified specialists to the market, which would contribute to increasing of competitiveness of the transport sector and to development of the whole Lithuanian economy.

Table 2 lists the basic advantages to be generated by this National integrated transportation program.

**Table 2. Program benefits**

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<th>For students</th>
<th>Better quality of the studies process</th>
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<td>Better quality of knowledge</td>
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<td>Access to new technologies</td>
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<td>Improved capacity</td>
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<td>Ensured future prospects</td>
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<td>Opportunities for improvement, lifelong learning</td>
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<td>For business</td>
<td>High-skilled employees</td>
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<td>Knowledge via employees</td>
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<td>Continuous and integral link between science-studies-business</td>
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<td>Possibility of research taking place in Lithuania, and immediate participation in the course of the research</td>
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<td>Research becoming easier accessible</td>
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<tr>
<td>For science</td>
<td>Improvement of scientific base</td>
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<td></td>
<td>Creation and development of new ideas and technology, research</td>
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<td></td>
<td>Close cooperation between the science and business</td>
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<td></td>
<td>Expanded opportunities for scientists to grow</td>
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<td></td>
<td>Dissemination of scientific ideas</td>
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<td>For the country</td>
<td>Quality education (the primary task is not only to prepare a good specialist, but also to educate a conscious personality)</td>
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<td>Solution of public challenges (traffic safety, pollution, traffic control, technical circles of international cooperation in scientific organizations)</td>
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<td>Solution of employment issues</td>
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<td>Senior citizen employment (technical creativity, technical sections)</td>
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Conclusions

1. **Creation of the Core**

Creation of National Integrated program TRANSPORTAS is comprised of three main stages that are closely inter-related, i.e. renewal of existing studies, creation of new studies, and creation of technical basis. These stages are necessary for development of high quality science. Implementation of these stages are the most important task of the program.

2. **Unified integrated system that operates independently**

Our program will deal with the most painful tasks of today and tomorrow, as a result an operating cycle of science-business-studies will emerge, which will ensure self-sufficient improvement and further development.
3. Unified transport system
The created cycle would operate in a new intangible product - a unified transport system, when creating and developing new products, technologies, methods, as well as implementing, supporting and improving intelligent transport systems. Good quality study process, participation of businesses, preschool education, informal education that will stimulate technical creativity are seen as an inseparable part of this system.

4. New work places
During the implementation of the program around 100 new work places will be created for scientists and researchers, for those who will be interested in deepening their knowledge, improving qualifications, making scientific research, being involved in technical creativity activities, constantly learning and improving, seeking for better scientific results, positively representing their country in scientific research.

5. Quality Occupation
Quality occupation of scientists and students is one of priorities of the program. The program will make it possible to assess the real demand by the business sector for student and scientists’ knowledge, technologies, and innovations. The knowledge of demand and priorities would enable institutions of science and education to prepare appropriately qualified specialists, who would insure the inflow of new and good quality knowledge into the business sector, which after mastering them would demand for new knowledge. Quality occupation would ensure constant improvement, renewal and dissemination of knowledge, which would have indirect influence on the Lithuanian transport sector and would increase its competitiveness.

6. Quality Science
Quality Science is closely related to quality occupation, however, it need to be emphasised that the process of education comprises preschool education and informal education. A well accessible good quality science is one of the characteristics of educated society, while the transport sector of each country is one the most important economy branches. While creating this program, we want to improve dissemination of technical knowledge, to make scientific knowledge more accessible to each member of the community, and in doing so we would stimulate the development of technical creativity.

7. Unique Research in the Transport System
This is the first program of its kind in Lithuania. Presently, several related projects of valleys are being prepared, however not one is specifically oriented towards the transport sector. Having in mind that a transport sector is a very important branch of the country, we think, that implementation of such a program will promote the science of transport both in national and in international markets.

8. Solutions of Relevant Transport Problems
The program will be closely integrated with other important branches of science, such as environment protection, mechatronics, computer science, physics, chemistry, pedagogy and construction. Close interdisciplinary cooperation is very important factor for the development of science and economy, which would make it possible to present integrated methods for solving problems in different areas. After implementation of cooperation tasks, we will able to present relevant solutions to the community, such as traffic safety, traffic flow regulation, reduction of waste emission, creation of new sorts of transport.

9. Funding of the Program
84 millions Lithuanian Litas are needed to fund the program, the funding is based on the prices of 3rd qr. of 2008. We think, that it would be reasonable to increase the amount by 10 per cent, due to inflation and changing of prices.

10. Cross-financing
When implementing the program, the cross-financing may be used, which would enable to finance some activities by assets from other funds. Possibilities of cross-financing need to be used more actively, in order to ensure faster development of the core.
11. Funding after the Completion of the Program

In order to ensure the life of the project after its completion, organisations will need to secure extra funding for the project. The funding will be necessary to compensate negative costs of activities – 2.1 millions Lithuanian Litas per year. Since 2017 due to extra demand for reconstructive investment, the total demand for the maintenance of the Core will increase up to 4.1 millions LTL. Institutions are recommended to secure the funding of the core before the start of the program.