The Province of Lapland and Murmansk Region: The Perspectives of Coordinated Development of Transport Systems (Pre-study)

This Pre-study was developed within the partnership of Murmansk Regional Ministry of Economic Development and Regional Council of Lapland.

Rovaniemi — Murmansk
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Pre-study for Lapland-Murmansk transport system plan (21.03.2011)

Explanatory note

This joint work aims at a new application for the ENPI Programme on international partnership project in the sphere of Barents Region transport infrastructure development, which will:

- Meet the priorities of Lapland and the Murmansk Region and contribute to coordinated development of their transport communications as a basis for
- Implementation of economic potential of the Northern periphery territories, increasing its competitiveness on the world market and better quality of life of local population.

WORK PLAN

Preamble

For better chances to be supported within the Kolarctic ENPI Programme, the application should meet the following critical requirements:

- Provide correspondence of the project to the policies and priorities jointly set by the European Commission and the Russian Federation and be mentioned in the above documents;
- Meet the national interests of the project partners. E.g., for the Russian side it should contribute to implementation of development strategy of the Russian regions as the Russian curator within the ENPI programme is the Ministry of the Regional Development (unlike to the Tacis Programme where the Ministry of economic development was the curator and therefore the priorities were different).

Due to this the preparatory analytical work shall be focused on:

- Coordination of objectives and priorities the current project shall be addressed to;
- Compliance with the system of economic, institutional and social requirements (contribution to innovational scenario of economic development, civil society development, higher investment attractiveness of the region, social equality, etc.);
- Identifying common needs in quantitative and qualitative development to smooth levels of services and eliminate border effects, which impede fluent traffic flows;
- Identifying the needs in smoothing safety and eco-levels of transport infrastructure functioning;
- Coordinating actions on expanding of transport and informational space to develop competitive logistics services and attract transit to the Arctic routes.

For this one should:

- Review different level documents, investigation and project results obtained on both sides of the border during the last decade;
- Analyze sufficient amount of statistical data;
- Take into account tendencies of legislation development - both international and national ones (e.g. taking into account Russia’s accessing WTO);
- Review opinions and visions of representatives of different segments based on interview results (both sides of the border).
To meet the above requirements the work on information processing and structuring includes filling the current draft project financed by the Regional Council of Lapland. The work is being executed by the analytical group that consists of Finnish and Russian specialists chosen within the tender.

The starting point of the draft preparation project is the updated Plan of Lapland transport system development, integrated into the trans-European transport system. This document meets the last requirements (e.g. environmental ones) and new international agreements (incl. Russian-Finnish ones). Therefore the system of criteria for comparative analysis of the neighboring territories is developed based on a new strategic document of Lapland. This approach has been applied for the first time and therefore is innovational. It allows accurately and impartially reveal similarities, differences, opportunities and prospect directions for integrated efforts within the international projects. Just that very directions have the best potential to attract support from international sources.

The identified prospect fields of cooperation are to be “weighed” using SWOT analysis with subsequent joint discussion of results (proposals) and their rating (prioritization). The coordinated priority proposal/proposals are the basis for the future Kolarctic ENPI application. The number of priority proposals included into the application depend on resources of both parts, which may be used during the project (time resources, programme budget, available co-financing, available experts).

The Structure of assessment criteria and results of comparative analysis are presented in Table 1. Comparison by each of the criteria included into the Table is accompanied with an Annex. Annexes in a table-format give references to information sources and provisions on which the conclusions are based. The full list of sources is presented separately.
The Structure of Assessment Criteria of Situation Both Sides of the EU/RF Border

## Table 1

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<th>INITIAL DATA</th>
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<td>CHAPTER 1.1</td>
<td>THE NATIONAL POLICY ON REGIONAL PLANNING AND TRANSPORT DEVELOPMENT IN FINLAND</td>
<td>THE NATIONAL POLICY ON REGIONAL PLANNING AND TRANSPORT DEVELOPMENT IN RUSSIA</td>
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### Conclusions

1. The principal difference of the Finnish practice is an integrated land-use and transport infrastructure planning, when the current government prepares an instrument (programme) for the future government in order to provide continuity of policy and progressive motion to achieve goals. In Russia coordination of economy and transport development has been just included to the plans while spatial planning is only an object for discussions among specialists. It is recognized that spatial planning logic is poorly integrated to the current Russia management structure thus impeding effective work within the regional administrations. Specification of the spatial development concept to the Russian conditions has never been successful, too. New type of planning requires new institutional form.

2. Finnish transport infrastructure has been quantitatively formed and current decisions are aimed at optimization of transport activity and qualitative upgrade (increased productivity, higher safety – less accidents and environmental and climate impacts). Directions of qualitative improvement of the regional level transport system are defined by the national level indicators, which in its turn are defined with supranational integration objectives of the EU (TEN). On the Russian side quantitative expansion of transport infrastructure with its future (long-term) quality development of all modes of transport is the priority.

3. There are no any conflicts between policies of land use and transport development in Finland and Russia as the policies are on different stages of development: the Russian policy is quantity-oriented with future changeover to quality level orientation (single transport space harmonized with the world transport system), while the Finnish one is oriented on better quality of services for the user.

4. Coordination of regional and transport planning of Lapland and Murmansk region automatically becomes a step to integration of the Russian transport system with the scaled international ones. Integration process will be a catalyst to accelerated transfer of the Russian transport system from quantity indicators to quality objectives thus contributing to the common strategic task – development and implementation of transit potential of the Arctic transport system.
### 1.1.2 Conclusions

1. Mono-profile enterprise-forming settlements are most susceptible in the market economy. Such settlements is typical for the Murmansk region settlement pattern. The core development direction is economy diversification.
2. The economy (regional, municipal) is the more stable the better small- and middle-scale (SMS) business is developed. Therefore stimulation of these types of business means more working places and provides a cushion from inevitable market fluctuations.
3. Beneficial location of Lapland and Murmansk region (from the standpoint of EU strategy, national strategies of Finland and Russia) is a starting point for consolidation of resources and diversification of economies, creation of new segments for SMS businesses.
4. Transport logistics is a sector that requires numerous services for traffic flows and a wide field for small-scale business.
5. Logistics requires services with high added value as its core resources are informational technologies, innovations and high-qualified specialists. This stimulates second-level demand for the services of closely-related segments (personnel training, investigations, construction, etc.) development of which provides a basis for “growing” a trans-border logistic cluster able to offer its services to the world market.

### 1.1.3 Conclusions

1. Quality of life environment and mobility of people and business provided with minimized local, regional and global level environmental impacts is at the centre of the Finnish transport policy. The single transport space goal in Finland is being achieved through EU membership and integration into TEN.
2. The centre of the Russian quantity-oriented transport policy is the scaled geopolitical tasks, which will have a stimulating and catalyst impact on business and social development.
3. Coordinated development of Lapland and Murmansk transport systems has opportunities of:
   - Quantity expansion of transport space of both sides,
   - Harmonization of common transport space performances,
   - Promotion of a user-oriented ideology via the border, which will complement ideology of quantity growth and speed up transport infrastructure quality improvement on the Russian side.

### 1.1.4 Conclusions

1. The transport system development objectives are coordinated with national socio-economic development programme objectives on both sides of the border.
2. Russian objectives are oriented on scaled coverage and dynamics of coordinated development of transport system elements, while the
3. However, development of both transport systems generally aims at quality services to end users in a form of social guarantee to population and increased competitiveness to business.

4. On the Finnish side the priority for transport is an initial integration of land use and transport planning, while on the Russian side this question is not stressed.

5. Principal difference between objectives in long-term planning documents in Russia and Finland is supporting of free competition in Finland (according to the EU legislation) and supporting of protectionism on the Russian side (temporary as said in the documents) with the same common objectives:
   - Increasing competitiveness of the Russian transport market
   - Increasing competitiveness of national transport operators (with prospect openness of the Russian transport market when accessing WTO),
   - Extending the list of transport services and development of its export.

6. Coordinated development of Lapland and Murmansk regional transport systems is an opportunity to speed up increase of its competitiveness, service development and its export in real conditions of an expanding trans-border business.

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<td><strong>Conclusions</strong></td>
<td>1. Relation of Finnish and Russian transport sectors to global problem of climate change is quite different. Finland is guided with global responsibility in its local actions, sets concrete objectives and applies real mechanisms for its achievement while Russia only declares general provisions. Environmental needs are not yet formed in the Russian community.</td>
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<td>2. Strategic documents of Russian transport sector contain objectives to reduce <strong>negative impacts of transport on environment</strong>, but never set such a priority as <strong>restraining climatic changes through policy that optimize transport needs</strong> in all fields of economic and business activities as well as in daily life of population (through integration of transport and land use, increase of transport system effectiveness, increase of public transport attractiveness, etc.). The Finnish Ministry of Transport has an active and responsible position on environmental and climate issues transcending the transport sector and managing transport needs of the community (land use), regulating transport needs (legislation) and shifting them to more efficient modes of mobility (mass public and light traffic).</td>
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<td>3. Due to understandable reasons currently Russia is not able to focus both on quantitative and qualitative tasks. However, after quantity tasks there appear a need in solving the quality matters. Therefore acquaintance with the methods of solving quality tasks and creating favorable conditions to solve them in the most effective and efficient ways forming environmentally-oriented type of thinking are prerequisites for innovational and socio-oriented development of Russia and its integration to the community of world leaders.</td>
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<td>4. Coordinated development of Lapland and Murmansk transport systems could contribute to the model that optimizes solving of quantitative and qualitative tasks in Russian environment, transferring of not only new technologies but philosophy of environmental responsibility of professionals as a precondition to implement potential benefits from modern transport technologies.</td>
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5. Joining resources for scientific-research work aimed at models forecasting impacts of climate change of sustainability of transport infrastructure functioning on transit routes could be a prospect direction for international cooperation within the Barents region.

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**Conclusions**

1. Finland has developed a strategy on intelligent transport and set up groups for its implementation. In Russia there is no state policy on intelligent transport but some activity in this direction has started.

2. To implement Russia’s mission to become a bridge between Europe and Asia the Russian transport system shall be integrated (be operationally compatible) with the systems of neighboring countries by critical operational performances:
   - Transport infrastructure,
   - Traffic management system
   - GPS and navigation.

3. Russian documents stress the need in development of informational space to support anticipatory development of transport infrastructure in the Arctic zone which creates a wide field for actions within the cross-border cooperation programmes in Barents region.

4. Joint development of Lapland and Murmansk region transport systems may become a pilot platform to “try on” the Finnish concept on intelligent transport in Russian conditions in order to adapt technologies optimally combining requirements to compatibility and correspondence to national conditions. The revealed needs in national adaptation changes will serve a task statement for Russian innovational developments.

5. The course for operational compatibility will allow to eliminate the risk of obstacles for the Russian multi-modal transport system where fluent movement of informational and physical heavy vehicle and passenger flows (components of logistic processes) will help to increase international competitiveness of the Russian transit routes.

|-------|----------------------------------------------------------------------|------------------------------------------------------|-------------|

**Conclusions**

1. Development of transport system on both sides of the border in long-term dimension aims at innovational development and increased national competitiveness in global world that catches up a new technological wave.

2. Directions for the next 20-40 years economic development are:
   - ubiquitous introduction of resource-saving technologies
   - desire of the Asian countries to get access to resources
   - development of intercontinental transport, trade and informational infrastructures,
   - providing safety of all types based on new principles and technologies.

3. These directions were reflected in transport strategies of both countries and this ensures correspondence with requirements of both
4. Joint development of Lapland and Murmansk regional transport systems could be serve as a model for mutually complementary regional interaction, which could result in more active economies, higher competitiveness with all positive effects for social sphere and environment.

### Conclusions

1. National interests of Finland and Russia are identical in the context of developing Arctic territories as zones of sustainable transport communications;
2. Russia’s motive – realization of transit potential of the Russian territory, activization of business and improvement of quality of life of population with simultaneous preservation of Arctic eco-systems;
3. Finland’s motive – providing entrance to world markets through Russian transit routes, activization of business and improvement of quality of life of population with simultaneous preservation of Arctic eco-systems. Finnish transport system integrated with the EU transport system is a transit territory that provides EU traffic flows on Arctic routes, basically on Northern Sea Route;
4. Joint development of Lapland and Murmansk region transport systems may become a pilot project to reveal specific tasks and decisions, which will initiate scaled process of multimodal transport development of the Arctic able to optimize trans-continental logistics Europe-Asia.

### Conclusion

**CHAPTER 1.1**

Long-term objectives of Finland and Russia are identical, which is defined by global tendencies. The objectives are improved quality of life of population through increased economy competitiveness, implementation of transit potential, more rational usage of resources and reduction of anthropogenic impact on environment.

National policies of Finland and Russia in the field of regional planning and transport development contain no contradictions. However, the policies are on different levels and the tasks solved by the neighboring countries are different:

- Finland optimizes and deepens integration of the transport system (TEN, land use) and quality of transport services;
- Russia focuses on expansion of transport infrastructure for the future qualitative development in the same direction as Finland goes today.

No doubt, Finnish experience is valuable for the Russian side to reduce transport externalities, speed up transport system development and deepen integration processes. Therefore joint development of Lapland and Murmansk regional transport systems has a potential to become a mutually beneficial pilot project, which corresponds to national interests of both sides because development of quality transport infrastructure creates a basis for local business activization, solving similar social tasks of two periphery territories, joining resources for know-how and technology transfer, improving competitiveness of products and services on external markets. Opportunities for such an anticipatory development of transport sector come from common objectives, coordinated on levels of national Arctic policies, regional Barents cooperation, Kolarctic ENPI cross-border cooperation programmes. The factors mentioned create favorable prerequisites for Lapland and Murmansk to become locomotives of innovational development in comparison to other regions that have no such opportunities.

Common answers to the challenges of the Lapland province and the Murmansk region may:

- Speed up processes of Arctic transport infrastructure joint development on a good quality level thus contributing to economic and social...
development of Finnish and Russian periphery territories;
- Serve as integrational models and contribute to development of other regions and therefore improved competitiveness of national economies in a global scale where competition increases constantly.

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<th>ADMINISTRATIVE REFORMS EFFECTING REGIONAL TRANSPORT SECTOR IN FINLAND</th>
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<td>Administrative reforms in transport and regional administrations in Finland</td>
<td>Administrative reforms in transport and regional administrations in Russia</td>
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**Conclusion**

1. Administrative reforms in Finland aimed at strengthening of regional units and integration processes on EU level has changed organizational and financial procedures and contributed to integration of state structures, thus expanding their system functionality, optimizing costs and increasing responsibility of public bodies in respect of:
   - Productivity of existing transport systems restraining its expansion;
   - Quality of services of mass transport attracting users to the public transport;
   - Safety and environment-friendly nature of transport systems contributing to achievement of national and supra-national goals (EU).

2. Administrative reforms in Russia have started in 2003 and the result is evident. A package of federal laws has been prepared providing a basis to achieving the goal—deregulation, strengthened independence of regions and municipalities, more user-orientation, further democratization of the society and economy development under innovational scenario. However, practice confirms the rule—enacting legislation doesn’t guarantee success of the reforms if there are no effective mechanisms of implementation. The results of reforms critically depend on the way of implementation. Among the restrictions impeding the reforms in Russia, regions and sectors the following factors are usually mentioned:
   - Human factor (needs in development of new programmes and training of civil servants),
   - Budget process (need in modernization of budget implementation mechanism),
   - Institutional relationships (need in re-engineering of administrative –management processes and optimization of organizational structures of public administrations).

3. The above restrictions result in substitution of real mechanisms of reform implementation with its imitation in the regions and sectors, including transport sector. As an executive authority is a system, success in one separate section loses its value because of stagnation on the others. Development of separate region or sector depends on dynamics of complex reforming in a scale of country, including administrative reform, public service and budget sphere reforms.

4. Typical peculiarity of the Russian reform is transfer of a number of power/authorities (functioning of transport infrastructures, providing population with public transport services) on a level of municipalities without provision of these powers with necessary resources – policies and supportive programmes (improving qualification of personnel, recommendations, guidelines to improve productivity, safety, environment compatibility, introduction of informational systems, etc.).
5. Reforms in Finland and Russia have a series of principal distinctions due to different quality level the reforms have started from. However, the critical difference (from the position of transport) is a relation to the process of regionalization. If in Finland regionalization is one of the core focuses of reforming while in Russia reforming is still measured as a sum of reforms in separate regions. Importance of regionalization (for improvement of national competitiveness on external markets) as a phenomenon of globalization is stressed only in the *Strategy Concept of socio-economic development of Russian regions*, Ministry of regional development (2005). National thinking within the regional borders is risky for the forming of optimal transport system (critically important on a stage of quantitative growth) and therefore risky for optimization of budget expenses and logistic costs of business, realization of transit potential, reduction of negative transport impacts on environment and climate.

6. The process of Lapland and Murmansk transport systems coordination represents an opportunity to expand the vision beyond the administrative limits and assist to the processes of: regionalization, overcoming of barriers and limits, development of reform mechanism, including that of transport. The possible directions are adoption of experience and mechanisms of enhancing transport infrastructure and public transport effectiveness and efficiency, safety and environmental compatibility, implementation of rights of all user categories to be mobile, etc. within the motorized democratic state with market economy.

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<th>CHAPTER 1.3</th>
<th>OBJECTIVES AND MAIN PRIORITIES OF LAPLAND PROVINCE DEVELOPMENT</th>
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<td>Development objectives of Lapland (up to 2030)</td>
<td>Development objectives of the Murmansk region (up to 2025)</td>
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Conclusion

1. Long-term development of Lapland is provided with the instrument – the Development Programme till 2030 oriented on increased investment attractiveness and minimization of investment risks to be able to realize potential of new geopolitical opportunities and existing resources of Lapland.

2. The Murmansk region has an approved Development Strategy which considers development scenarios as responds to the regional challenges. Implementation instruments (programmes) are currently absent. Series of important programmes (focused on small business development, innovational and investment activities) that were in force some time ago has finished and new programmes are of need now.

3. Joint development of Lapland and Murmansk region transport systems could contribute to development of programmes in the sphere of transport – critically important instrument of strategy implementation. Application of modern approaches and orientation on high standards of safety, environment compatibility, quality of services to the users is required when developing these programmes. E.g. – Public transport development programme, transport logistics cluster development programme, road safety improvement programme, development programme for road-side service on tourist routes, etc. Development of any of the above programmes may be a pilot project for technology transfer and cooperation development within the Barents region contributing not only to solving of one single task but to the general improvement of Murmansk region investment climate. Know-how transfer to develop the programme, which would meet the international standards, may become one of the components of the future ENPI project.
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<td>Regional structure and development zones and corridors passing through the territory of Lapland till 2030.</td>
<td>Regional structure and development zones and corridors passing through the territory of the Murmansk region till 2030.</td>
<td>ANNEX 1.4.1</td>
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**Conclusions**

1. Lapland development vision is oriented on leaving the traditional status of Northern periphery and becoming an active actor on national and international level. Development of global tendencies creates opportunities for successful fight for the basic resource of the province – population.

2. The Murmansk region visualizes new horizons for development and realizes vital need to shift to innovational and socio-oriented type of economy development. The economy structure traditionally oriented on extraction and initial processing of raw materials complicates solving of tasks and increases time terms. However, synchronization of regional objectives with the national ones creates opportunities to attract federal financing.

3. Despite difference in scales, the visions and objectives of Lapland and the Murmansk region are similar and are oriented on human, environment and infrastructures. These three components form a foundation for joint efforts to create better conditions for the next generations of both Northern territories.

4. Joint development of Lapland and Murmansk region may contribute not only to improved transportations. The transport infrastructure is known to give powerful multiplicative effect and provide direct and catalyst effects in time, space and community accelerating solving of all economic and social tasks. Moreover, international cooperation is one of the factors to overcome provinciality, strengthen human potential, create an environment, which is more interest, enriched with events and able to refrain creative people from migration to other regions, concentrate them through development of creative space as a powerful potential of economic development.

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<th>1.4.2</th>
<th>Development zones and corridors Picture Aluerakennet sekä kehittämisväyöhykkeet ja -käytävät 2030.</th>
<th>Development zones and corridors</th>
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<tr>
<td>Conclusions</td>
<td>1. In Lapland prospects are concentrated in development zones (belts) and along the strategically important corridors which, as a rule, integrate potentials of several countries or territories within the Barents region for maximum realization of potential through rising of system effect. This tendency corresponds to global process of regionalization.</td>
<td>2. The Murmansk regional Strategy till 2025 considers general questions of socio-economic development. To obtain the vision of prospect heavy traffic flow directions and volumes one should make the following step – develop transport strategy of the Murmansk region, which would take into account:</td>
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• Current traffic flows generated by economy sectors and social sphere,
• Newly generated, potential heavy goods and passenger flows, which will be generated by prospect big projects and clusters to be formed around them;
• Stimulated potential traffic flows generated as a result of reviving of economic and then trade, cultural, scientific, educational and tourist types of activities;
• Attracted transit flows as a result of improved transport infrastructure, harmonization of customs rule, improved transit competitiveness of the Russian transport system (especially when the Northern Sea Route will be opened).

3. Joint development of Lapland and Murmansk regional systems could join data on potential goods flows and calculate them within transport modeling. Modeling is an instrument to identify missing links, segments of transport infrastructure with limited capacity, and to form scaled vision of development needs and scale logistics optimization, identification of international infrastructure projects of common interest, prioritization to provide system effect and progressive increase of competitiveness of the whole Arctic transport system in interests of territories-participants. Cooperation within the Barents region is not only a unique instrument of joint answer to the challenges of future and acceleration of solving strategic tasks but also an insurance necessary for effective dialogue with international investment institutions.

1.4.3 International corridors
Picture International development corridors in the North-Finland.

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<tr>
<td>1. Lapland has developed a transport system strategy oriented on implementation of its geopolitical location potential, which corresponds to strategic tasks to develop the province, Finland and EU in line with global trends. Interests of the province take into account processes that take place far away the province’s administrative borders and define foresight of decisions on local level.</td>
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<td>2. Lapland transport system development specifics is stipulated by:</td>
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<td>• Integration of Finnish transport infrastructure development with that of neighboring Barents Region countries, synchronization of common interest infrastructure projects to achieve maximum system effect for investment payback, rising direct, stimulation and catalyst impact on socio-economic development of the province.</td>
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<td>• Orientation on market diversification, extension of logistics alternatives and minimization of transport externalities. For Lapland reduction of transport costs is extremely important as good logistics is able to compensate such weaknesses of the province like its periphery location and high operational costs due to severe climatic conditions.</td>
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<td>• Avoiding concentration of resources on mega-projects, preferable distribution of investments in development zones in order to support network principle of transport infrastructure development to provide: more homogeneous regional structure and settlement system, conditions for economic development and employment in municipalities and settlements, high living environment quality with minimized anthropogenic stress for susceptible Arctic ecosystems.</td>
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<td>3. The Murmansk region has no yet its transport strategy that would consider the following future tasks:</td>
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<td>• Balanced development of all types transport infrastructure to facilitate solving of strategic socio-economic tasks of the Kola Peninsula;</td>
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<td>• Integration of regional transport infrastructure to the system of international transport zones and corridors to use maximum potential in</td>
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4. Incompleteness of the Russian transport infrastructure, necessity to solve quantitative tasks, limited applications of strategic planning instruments (flow modeling) make it currently impossible to optimize routes of future transport corridors on the Russian side. However, the course towards integration of the Russian transport system to TEN system (while Lapland system is a part of it) allows discussions on optimal transit routes with the Barents Region partners who are interested in competitiveness of Russian transport corridors and development of logistics services not less than Russian partners themselves.

5. The Russian transport strategy reveals all necessary farsighted political backgrounds for joint planning:
   - Urge towards minimized border effects through increased cross-border points capacity, fluent EU/Russia cross-border traffic flows, and safety;
   - Introduction of *engineering and technological parameters for future Russian corridors (development zones) harmonized with parameters of international transport corridors*;
   - Development of bearing components of infrastructures by network principle with system integration of the Baltic sea ports and Arctic ocean that support the Northern Sea Route;

6. Border location of the Murmansk region gives opportunities to develop integration transport strategy that would identify competitive logistics alternatives to use transit potential and meet the needs in balanced development of infrastructures of all types. Joint planning of Lapland and Murmansk regional transport infrastructures may initiate this mutually beneficial process that meet national interests of both sides.

### 1.4.4 Organisation of Transport System Development in Lapland

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<th>Conclusions</th>
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<tr>
<td>1. Coordination of Lapland transport system development is made through functioning of a number of working groups to provide:</td>
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<td>• Balance of transport system development and other objectives and tasks of long-term development of the province,</td>
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<td>• Integration with transport systems of neighboring territories and transport system of a larger scale,</td>
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<td>• Compliance with prospect needs of regional structure development (development zones and corridors), taking into account volumes of potential transit and tourist flows.</td>
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<td>2. Working groups in the Murmansk Region are established to facilitate inter-departmental coordination (on horizontal level), implementation of federal importance objects taking into account regional and municipal conditions. Coordination activity in the context of network type regional structure development has not yet been demonstrated by the working groups.</td>
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<td>3. Lapland and the Murmansk Region participate in the work of a number of international cooperation bodies (Barents Region, Northern Dimension). Activity of the Russian side can be increased. Higher role and contribution of the Russian side into the “team game” to promote common interests (including support of infrastructure projects on the Russian side that have potential of interregional and international impact) are possible only if the game will be held “on a common field”, i.e. based on coordinated vision of prospects and common Barents Region transport system development strategy.</td>
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<td>4. Coordinated development of transport systems of Lapland and Murmansk Region is a step forward to integration of EU and Russia transport systems.</td>
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systems according to objectives of both sides. The results of future partnership coordination transport projects may create a favorable basis for development of integration processes, e.g. those aimed at:

- Evaluation of prospects and needs of Lapland and Murmansk Region transport systems integration into more scaled systems: the Barents Region, Northern Dimension, Trans-continental logistics Europe-Asia and Northern America – Northern Europe – Asia with infrastructures of both inland transport and the Northern Sea Route;
- Development of trans-border logistic cluster components and increasing quantity and quality of its services to increase attractiveness of the Barents Region transport system for good consignors from third countries and attraction of freight flows to the North from competitive Southern routes.

5. World practice shows that the need in logistic services is a basis for new types of businesses, new high-technological working places able to prevent youth from migration to other regions. “Rising” a logistic cluster is a challenge for Lapland and the Murmansk Region to be met together.

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<th>1.4.5</th>
<th>Challenges and key factors in Lapland Transport system development</th>
<th>Challenges and key factors in Murmansk region Transport system development</th>
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<tbody>
<tr>
<td>Conclusions</td>
<td>1. The vision, objectives and tasks of transport system development on both sides of EU/Russia border are of different level of development and are of principally different ideology. The Murmansk Region contrary to Lapland has no its own well formulated ideology of the long-term transport system development.</td>
<td>2. Definition of Lapland’s strategic resources, zones of development and corridors that bind the development zones (belts) in a framework and distribute positive socio-economic effect within the province territory, “tune” the transport system up for prospect – serving of flows generated by basic zones of this future regional framework.</td>
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<td>3. Concentration of development resources in the Murmansk Region is provided for in a limited number of points (mega projects). The transport system task is to serve access to these points. The Concept of multimodal transport infrastructure development as a network with future transition to a higher level – the system – has not yet been proposed.</td>
<td>4. The vision of the role of Lapland transport system in the Barents Region and in TEN allows to add prospect transit flows and national and international tourism flows to the current local ones. This allows to evaluate prospect needs in development of separate links of the network.</td>
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<td>5. The need in linking of the Russian transport infrastructures into formation of common vision of the Barents Region transport system, evaluation of its prospects, current facilities and limitations for:</td>
<td>5. The need in linking of the Russian transport infrastructures into formation of common vision of the Barents Region transport system, evaluation of its prospects, current facilities and limitations for:</td>
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<td>- Defining of common network of traffic flow generators (development zones) on a geographical space of the Barents Region and optimize links between them,</td>
<td>- Avoiding of unnecessary expansion of infrastructures (minimization of environmental stresses and maintenance costs),</td>
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<td>- Optimizing logistics (reduction of transport externalities of business to support their competitiveness and reduce transport emissions),</td>
<td>- Providing access to new markets and local business services (taking into account prospect Russian accessing WTO),</td>
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<td></td>
<td>- Providing access to new markets and local business services (taking into account prospect Russian accessing WTO),</td>
<td>- Revealing projects of common interest and provide their joint promotion on international level (increasing investment attractiveness),</td>
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<td>- Revealing projects of common interest and provide their joint promotion on international level (increasing investment attractiveness),</td>
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</table>
- Better correspondence to the national strategic objectives: integration of Russian transport infrastructure with that of neighboring countries, development of international transport corridors, implementation of territory transit potential and increasing attractiveness of Arctic transport routes (including attraction of freight flows to the Northern Sea Route),
- Distributing development impacts on bigger geographical spaces, involving depressive districts and mono-profile settlements and thus contributing to development of small scale business and diversification of local economies.

6. It is evident that development of the Barents Region transport system requires multi-side coordination, development of a common strategy and promotion of a network principle of development in the Murmansk and further regions.

7. Coordination of Lapland and Murmansk regional transport systems development may become an integration step to evaluate total amount and distribute traffic flows of different types: existing, newly generated and attracted from other routes in order to:
   - Identify the needed facilities of concrete links and nodes of the network that links different modes of transport,
   - Evaluate configuration of the future Barents Region transport system, that will be able to offer competitive logistic alternatives to the third country goods consignors.

8. The tasks of transport system development are known to be solved not only with investments into infrastructure and no only with efforts of administrations. System development is not possible without extended cooperation, consensus when setting priorities and coordinating the order of project and measure implementation.

<table>
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<th>Conclusion</th>
<th>CHAPTER 1.4</th>
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| The strategies of long-term socio-economic development of neighboring territories – Finnish Lapland and Russian Murmansk Region – are focused on a human, environment and infrastructure. Common problems and objectives provide a basis for integration of their efforts. Transport communications are necessary to implement agreements and plans. Therefore, transport infrastructure shall forestall development of other sectors of economy being a basis for communications and being able to give direct, stimulation and catalyst effects for development both in time and space. Comparing the activities of Lapland and the Murmansk Region on transport system development reveals:
- Border effect expressed not only in different quantity/quality performances of transport systems but transport ideologies, too.
- Significant and sometimes principal differences in visions, objectives and tasks of transport infrastructure development.
- The Murmansk Region is focused on mega-project – development of the Murmansk Transport Node and accesses to it.
- Lapland builds a network transport framework based on generators (development zones) and corridors (formed by different modes of transport), deepening integration with transport systems of Barents Region neighbors and with bigger scale TEN. The aim is to optimize logistics of freight and passenger flows to increase competitiveness of business and quality of life of the province population through distribution of transport activities and reduction of its impacts on susceptible Arctic ecosystems. As the approach applied by Lapland best suits the Russian strategic objective – transition to polycentric regional development, there is a need in development of the Murmansk regional transport system that would (in addition to mega-projects):
- Be oriented on more homogeneous distribution of socio-economic development within the Region territory involving depressive districts and |
mono-profile settlements into economic turnover and creating an impulse for new services;

- Be synchronized with the strategies of neighboring territories within the common vision of the Barents Region development framework formed of development zones and corridors-links serving regional and transit flows. Traffic flow fluency in the Region will be improved (thus improving competitiveness of Arctic logistic alternatives) through joint promotion and implementation of infrastructure projects of common interest.

It is evident that coordinated actions of participants responsible for different elements of the system is a key conditions for the success of scaled transport system development strategy even when there is no a single management centre but if there are active partner communications, horizontal contacts, coordination work within the profile groups. For this a network form of relations based on understanding of mutual benefits is more effective.

Current working groups in Lapland and Murmansk Region can be used as an institutional base for implementation of this network relationship format on all levels – from municipal to international one.

Success of the network format depends on progressive process of interaction which consists of forwarding stages:

1. **Information exchange**
2. Supporting continuous **communications**
3. **Coordination** of actions to achieve this based on identification of common interests and statement of common goals
4. **Cooperation** when solving tasks of common interest
5. **Integration** – a stage when system effects are launching

Integration process takes time and requires continuous efforts. However, the territories of the Barents Region have no other alternative. Only common implementation of geopolitical potential may forward the European periphery to the position of an active actor on the world field. Putting competitive logistic alternatives and corresponding services for third country freight consignors on the world transport market is the most perspective ways to implement geopolitical potential. Competitiveness of these alternatives will depend on optimization and quality of transport infrastructure, its ability to compensate weaknesses like remoteness and severe climate causing higher transport costs.

It is known that the tasks of competitive transport system development are solved not only with investments into infrastructure and not only by administrations. Development of systems require extended cooperation, consensus when setting priorities and coordinated order of project and measure implementation contributing to achievement of the common goal.

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<tr>
<th>CHAPTER 1.5 FINDINGS OF THE INITIAL SITUATION ASSESSMENT 1.1-1.4</th>
<th>FINDINGS OF THE INITIAL SITUATION ASSESSMENT 1.1-1.4</th>
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<td><strong>Conclusion</strong></td>
<td>The fact: Countries and territories are being more and more involved in globalization processes. The processes in one territories affect those in the other territories. Planning based on vision, which is restricted with administrative boundaries, is an evident failure and there is a need in:</td>
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<td>- Coordination of development strategy with that of neighbors</td>
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| CHAPTER 1.5 | • Definition of a “profession” in a global labor diversification  
| | • Revision of competitive advantages in a global context  
| | • Joining of efforts in a competition for investments and markets  
| | • Replacing the traditional approach to strategy development – “Territory development = sum of development of the territorial economy branches” – with a new one – “Spatial Development”. The practice proved effectiveness of the spatial development as an instrument for making farsighted decisions that optimize socio-economic development and ecosystem sustainability.  
| | The concept of spatial development implies territory planning without restriction by administrative boundaries, but in the context of:  
| | • «geographical agglomerate», which covers territories of mutual impact;  
| | • Global responsibility for the consequences of planned activities for the environment.  
| | Location of territories adjacent to EU/Russia border defines their spatial development in the logic of transport-logistics function, allowing to assimilate perspective “professions”:  
| | • For some territories transit logistics and distribution can be a profession  
| | • For second ones – logistics of industrial production  
| | • For third ones – tourism logistics  
| | • For fourth ones – specialty of “extended logistics profile”.  
| | The choice of logistics specialty imposes to:  
| | • Identify optimal directions of transport corridors in order to minimize logistic externalities and use comparative advantages of different modes of transport;  
| | • Define the needs of transport infrastructure development (links and inter-modal nodes);  
| | • Develop long-term action plans to improve flow fluency (increasing capacity of bottle-necks, construction of missing links, organization of inter-modal node technologies, harmonization of procedures, smoothing out productivity of adjacent elements (e.g. the ports and accesses to them));  
| | • Define the development perspectives of territories adjacent to transport corridors (reservation of land for construction of port districts, accesses, interchanges, objects of transport-logistics services);  
| | • Evaluate development perspectives of cities near the transit flow corridors (adaptation of strategies, master plans and complex transport schemes taking into account new development opportunities);  
| | • Evaluate perspective needs of labor and education services markets.  
| | Finally, as the practice shows, investments always come to where:  
| | A. the labor market is able to provide qualified manpower resources,  
| | B. the transport infrastructure allows flexible optimization of logistics.  

Such regions have a chance to become perspective development zones, while transport corridors that link them may expand to development corridors because transport communications can:

1. increase mobility of not only people and goods but also information, ideas, know-how, technologies, culture and capital;
2. involve new resources into economic turnover (labor, land, raw material, natural and cultural resources);
3. give a way to new bigger markets for producers of goods and services;
4. create conditions for economic growth, social development and improvement of quality of life of people.

Analysis demonstrates that Lapland and Murmansk region development strategies declare similar objectives — improvement of people quality of life through competitiveness of local economies, realization of transit potential and rational use of natural resources. The principal differences are as follows:

- «The strategic programme of Lapland province development till 2030» provides for a clear algorithm of increasing potential of global competitiveness of the territory through focusing of efforts in development zones and corridors, together with the Barents Region partners. The actions within the programme (the projects) are synchronized with global trends and are directed to full realization of available resource potential.

- «The strategy of socio-economic development of the Murmansk region till 2025» is based on implementation of a series of mega-projects that support raw-material specialization of the economy and are located mainly in Murmansk area. As mega-project implementation strongly depends on policies and conditions formed outside the region (decisions and investments of federal level, natural monopolies and transnational corporations) and it is impossible to affect on them on the local level, implementation of the strategy is risky for being a passive actor anticipating a big game. The planning of the region development limited with administrative boundaries ignores opportunities to become an active actor in a number of smaller games. Opportunities of active economic and social development are hidden in cross-border location and interregional cooperation, natural environment and traditional activities, potential of middle and small-scale local businesses. Using this potential depends on local decisions, while numerous small but system-coordinated projects with less investment risks have more chances to attract investments and provide real productions for most settlements of the region, increasing technological experience and business culture, contributing to the declared objective – improvement of people quality of life.

There are principal differences in the ways of achieving the similar objectives in the context of transport system:

- Way of Lapland: The priorities are intensification, realization of network approach and deepening of local system integration to more scaled systems of the Barents Region and EU. The objective is an activation of economic activities in settlements based on existing settling patterns and available resources (territorial, human, natural), provision of development not only through amount of investments but through system approach and multiplicative effect (direct + stimulating + catalyst) that allow to increase output of investments.

- Way of Murmansk: The priorities are extensification, concentration of resources on implementation of a big project of Murmansk Transport Node, which is dependent on other mega-projects – development of Stockman condensed gas deposit and functioning of the Northern Sea Route.
The risks: The projects on Stockman CGD and NSR have no clear launching dates due to organizational and legislative uncertainties, risks and conjuncture changes on the world market. One of the key trends of recession periods observed during the recent years – high prudence of investors and postponing the launching of a number of new projects especially if they are not fully developed.

The forecast: Risky extensive mega-projects of the Murmansk region will be postponed for an unknown future.

The conclusion: Absence of the Murmansk regional transport system development strategy with integration to a more scaled transport systems in order to stimulate activity and competitiveness of local business on domestic and external markets is critical for the region.

SUMMARY CONCLUSION

Comparative analysis of initial conditions of transport planning in Lapland and Murmansk Region reveals a significant potential to speed up socio-economic development on both sides of EU/Russia border through coordinated development of transport systems. The prerequisites to realize this potential include:

- Need in solving similar problems of periphery territories, among which migration of youth is of critical importance.
- Availability of sufficient legislative basis for transnational cooperation, which allows to join efforts and resources, make operative decisions on local level and apply creative approaches.
- Ability of transport improvements to give immediate positive local result, and, when applying network approach, to launch multiplicative process of development in space, time and community.
- Border location of both territories and their membership in a more scaled regional partnership – the Barents Region allows to improve local level projects represented on a network context up to the level of international projects of common interest thus increasing their investment potential.
- The potential of the Barents Region transport system to become a competitive supplier of transport logistics services to the world transport market involving local economies to the world labor differentiation.

The demand for transport logistics services of the Arctic transport system opens new perspectives:

- Development of new fields of economic activities and rising new clusters that diversify local economies;
- Expansion of employment of active local population.

Coordinated planning of Lapland and Murmansk regional transport infrastructure development will help to identify and plan long-term demands for transport logistics services. It is know that in market economy demand generates investments. Therefore, coordination of development = contribution to improved investment attractiveness of infrastructure projects, which in its turn stimulate investment activity in transport-dependent businesses.

However, recent investment trends require shifting of regional political priorities from transport mega-projects to less scaled projects implementation of which is less risky. While the sum of investments to smaller projects may be compared with that of one mega-project the first ones may give additional benefits and extended positive effect through:
- More know-how and technologies, network improvement of business culture to increase **system effect and development of clusterization**;
- Higher economy sustainability through strengthening of small business and entrepreneurship, that are more flexible and operative when market conjuncture changes;
- More **homogeneous structure of regional development**, that increases development chances and benefits for more people and settlements;
- **Distribution of anthropogenic stress** and reduction of its negative impacts on susceptible Arctic ecosystems, which chances to be more sustainable can be increased.

Additionally to the tasks mentioned in national strategic documents the following tasks, which shall be solved with contribution of regional level transport infrastructure:

1. **Increasing youth employment** not through simple creation of working places but through **opportunities for self-actualization of the youth. This is task #1** to prevent youth emigration. Best conditions for self-actualization in business shall be considered as compensation for extreme living conditions, insufficient comfort of life, low quality of environment in periphery settlements. Creation of liberal conditions for this shall be considered as replacement of Northern privileges (discounts, etc.) applied on the Russian side during Soviet times to keep population from emigration and attract people to remote Northern regions. The transport system shall contribute to higher mobility and development of economic and social advantages able to replace old anti-emigration instruments.

2. **Improving quality of living environment – task #2**, strengthening the result of task #1. The task #2 is an overwhelming task for the Russian specialists. They need best world city planning know-how, practical experience and creative approach. Every settlement needs its own concept (including transport system of a settlement level) to form quality living environment. Opportunity to build individual design houses with best technologies, the programmes that help young families to build their own house, and transport services that would meet new land use system requirements shall be considered as a compensation to improve attractiveness of life in the North and to prevent youth from emigration. The local level project aimed better quality of living environment based on creative approach (defining identity of settlements to be translated to the external world and form a basis for self-positioning in a competition environment) shall be the hit of the next decade.

3. **Task #3 – increasing intensity of important events based on international cooperation**, joint projects to solve common tasks, implementation of cultural technologies, accessibility of sport, etc. as peculiarities of North life comparing to that in other regions and megapolises is the third component, **that increase output of investments into solving of the two first tasks**. The transport system can contribute to solving of this task, e.g. by implementing project aimed at light traffic infrastructure development, road-side service development, promotion of road art on Arctic tourist routes, etc.
Simultaneous solving of above tasks in which transport project play an important role may:

- Be implemented on the basis of local decisions, local authorities, business and civil society, and currently there are no obstacles for this active team game;
- **Attract small investments**, accumulate experience of public private partnership, multi-side international cooperation, work with international technical aid programmes and financial institutes;
- Increase regional competitiveness in the struggle for economic success – **quality human resources**;
- **Improve investment climate** and give way to bigger investments to implement scaled projects of Arctic transport-logistics infrastructure development and others, which are vital for integration of Northern European periphery to the world economy.

### Part 2

#### Functional Environment

### Chapter 2.1

#### Demography of Lapland

**Picture. Demography development municipalities, region, state.**

**Conclusion:**
1. Lapland transport system is an **active actor** implementing the province policy aimed at **improvement of demographic situation**. Transport is looking for opportunities to contribute to mobility, accessibility, safety and environmental-friendly nature of transport services for the population, to adapt them for different user groups, e.g. elderly people. The task is set to improve quality and quantity of transport services and expand opportunities of mobility on the base of economically feasible measures. Transport of Lapland is not only adapting to demographic situation but it **participates in its improvement**, as an attractiveness of territories, dynamics of their economic and social development depends first of all on quality and quantity of transport services.

2. Transport of the Murmansk region is closed up on its own problems. **There is no a word about user-orientation.** The transport companies are interested in users only from the standpoint of paying capacity. User neglect is demonstrated in absence of any needs studies taking into account demography situation and needs of different user groups. However, even in cases when information is available (e.g. road accidents statistics) the problems are only fixed never transforming into algorithm of logic actions. The reason for this is a deep-rooted habit to wait for orders from above, dissociation, absence of coordination and cooperation between single components of the transport cluster. The Russian transport (including that in the Murmansk region) cannot be characterized as an active actor and conductor of demography policies because of its disability to:
   - React on long felt needs of the users
   - Prevent evident events, which will result in changes of user needs (e.g. population ageing, changing requirements of the youth, etc.).

3. Coordinated development of transport system of two neighboring territories – Lapland and the Murmansk region – is an opportunity to provide smoothness of basic principles and professional ethics, which ensure success of transport business – user-orientation, primary
attention to safety issues, environmental and economic efficiency issues. Statistics demonstrates significant «border effect» to be eliminated. See Table 1 to this Annex.

4. Both territories have similar problems and it is rational to harmonize basic approaches to solving these problems because active position of transport to demography issues is a fundamentals of its commercial success as this is services for the user that justifies transport’s activity. Therefore studies of user groups, their current and future requirements and activities to meet them in a best way (taking into account world experience) is a starting point for Murmansk regional transport complex development in accordance with modern and prospect needs.

Conclusion

CHAPTER 2.1

Comparative analysis reveals:

1. The position of Lapland transport system is to be an active actor in a team answering the challenge – struggle for the basic resource of the territory – population. Transport potential in this issue is great – development of transport services that meet the requirements of population – safe, environment-friendly, efficient transport – can improve quality of life and attractiveness for living and investments.

2. Transport situation in the Murmansk region is similar to that in Europe in 1970s when motorization rates increased. Transport externalities grew, but transport companies saw the only way out – increasing tariffs for population, increasing financing of own needs. However, the practice showed that increasing tariffs and budget costs without principal changes in activity concept never solves the task and just stresses the community (taxpayers). Transport becomes a brakes for economic and social development. The situation started to improve only after the following:
   • User-orientation, studying the needs of user groups
   • Cooperation of all modes of transport and their joint activities to improve fluency of traffic. Integration processes has promoted development of transportation and information technologies, optimized development of infrastructures;
   • Introduction of “through” quality management and enhancement of logistic approach, that allowed to reduce operational costs and externalities (road congestion, road accidents, environmental stress).
   The result: The quantity and quality of transport services started to increase, community mobility also increased together with improvement of population quality of life and attractiveness of territories for investors.

3. Relation of the Murmansk region to human resources is a consumer-like. The first step to increase quantity and quality of transport services shall be: revision of professional ethics and spirit of pragmatism, which makes the suppliers of services to:
   • pay interest to user needs
   • compare the needs of users with the current situation
   • see the needs in development and set the tasks.

4. Changing of relation to the user, his safety, environment nature of transport company activities, cooperation of all modes of transport based on logistic approach is a direction for sustainable mobility as a factor for better attractiveness for living in the periphery territory.

5. Coordinated development of transport systems of neighboring Lapland and Murmansk region is not only an opportunity to adopt new technologies but a chance to adopt professional philosophy of successful business.
<table>
<thead>
<tr>
<th>CHAPTER 2.2</th>
<th>ECONOMY AND LOGISTICS DEMANDS OF LAPLAND</th>
<th>ECONOMY AND LOGISTICS DEMANDS OF THE MURMANSK REGION</th>
<th>ANNEX 2.2.1</th>
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<tr>
<td>2.2.1</td>
<td>The current situation and dynamic of economic demand changes&lt;br&gt;Economy and logistic functional environment&lt;br&gt;&lt;br&gt;Picture. Development of economy structure in Lapland municipalities, region, and state.&lt;br&gt;Picture Mine projects and transport infra projects demanded by them.</td>
<td>The current situation, dynamic of economic demand changes&lt;br&gt;Economy and logistic functional environment</td>
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Conclusions

1. Tourism is one of the strategic sectors of Lapland competitiveness of which depends on small business. Mobility and efficiency of small business is defined first of all with **conditions of roads and light traffic infrastructure**. Corresponding measures are included in the Strategic Plan of transport system development in Lapland. Investments into infrastructure will be paid back through more tourist services, earnings to the budget and employment for inhabitants of Lapland thus preventing from emigration to other places.

2. Analysis of policy pursued in Russia/Murmansk region during the last two decades demonstrates its impact on changes in the sphere of small business and allows to conclude that **longterm stable policy aimed at small business development hasn't been formed**. Small-scale business in the Murmansk region is alive not due but despite of. Absence of farsighted and pragmatic policy for small business development impedes implementation of potential of local entrepreneurs and obtaining of outcome to solve economic and social tasks of the region.

3. General condition of business-climate in the Murmansk region **doesn't provide environment favorable for small-scale business**, as basic indicators of small- and middle scale business development in the Murmansk region are lower than average ones for the North-West Russia.

4. The basic obstacles for small/middle scale businesses and entrepreneurship in Russia as a whole (incl. Murmansk region) are (according to small business representatives):
   - Ineffective tax and tariff policy
   - Administrative barriers
   - Complicated access to financial and credit resources
   - Lack of premises/facilities
   - **Growing tariffs on transport services**, electric energy, land and premises lease
   - **Underdevelopment of regional infrastructure (incl. transport)** to facilitate business (education, training, consultations, incubators, techno-parks, venture assistance, credits).

5. Elimination of obstacles for small/middle scale business development depends not only on effectiveness of national policy aimed at business support but on territorial policy and activity of public organizations and local civil and entrepreneurship society.

6. Coordinated development of transport systems of Lapland and Murmansk region offers an opportunity **to adopt the approach** applied by the transport sector (especially by road transport) to create favorable conditions that meet the requirements of tourism mobility. Harmonization
of applied approach will facilitate **harmonization of road conditions** and create opportunity to develop **cross-border tourist routes**, which contribute to increased attractiveness of Arctic tourism on the world tourism market.

**Conclusion**

**CHAPTER 2.2**

Comparative analysis reveals:

1. The basic feature of Lapland’s transport sector – **orientation on logistic requirements of the clients** – sectors among which tourism represents the most interest in this document. **Tourism** is a sector, which a field of activities by **small scale business**. Tourism provides employment and contributes to province economy. Currently, the authorities has long-term plans to develop potential of this sector. From the standpoint of transport increasing of tourism potential means provision of mobility with means of reliable functioning of roads, strengthening of roadside service and developing of light traffic infrastructure. High requirements are presented to the road infrastructure – high operational performances, safety, ecological compatibility, and design aesthetics. For tourism roads are more than just transport communications. This is the **tourism logistic link**, and along his route the tourist shall have only positive emotions, impressions, services which will form the **total impressions from visiting Lapland**, leave pleasant images and rememberings. In line with this concept the transport companies are aware of their **responsibility and contribute, being guided by pragmatism**, to increased flows of tourists, replenishment of budgets from which the sector is financed.

2. For Lapland tourism is a strategic sector that requires **insurance**. The following is considered as insurance:
   - Railway transport, more reliable than air transport taking into account climatic changes and more ecologically compatible than road transport
   - Development of energy resources alternative to hydrocarbons

3. Transport infrastructure of the Murmansk region has been traditionally oriented on raw material sectors. This infrastructure is not adapted to the needs of small-scale business and has no such characteristics which are traditionally considered as an excess or insignificant “little nothings”. However it is just that transport little nothings disrupt tourist potential impeding small business development in other sectors and making the cities unfavorable for life. Transport underdevelopment is one of the components of general depressed condition of small business and entrepreneurship in the Murmansk region as consequence of missing favour policy. Bad climate for small business is an obstacle for diversification of regional economy and, especially of mono-city economies.

4. Coordinated development of transport systems of Lapland and Murmansk region is an opportunity to adopt transport sector approach to creating of a more favorable environment for the small scale businesses, without which the region has no future. The pilot project can be a transferring of **transport-logistic approach in the sphere of tourism** aimed at harmonization of conditions and joint promotion of Arctic routes on internal and external markets.
### CHAPTER 2.3 FACTORS EFFECTING ON TRANSPORT ACTIVITY IN LAPLAND

#### 2.3.1 Community structure and its impacts to mobility

**Pic. Inhabitants per km² changes in the densely populated areas. 1980-2005.**

**Pic. Location of inhabitants 2005.**

**Pic. Changes in community structure 1980-2005.**

**Pic. Tourist construction.**

#### Conclusion

Comparative analysis shows:

1. Both lapland and the Murmansk region face the same problem – emigration of population from small settlements.
2. In Lapand this process is well studied, forecasted and managed with means of adapted decisions to:
   - Plan population provision with needed services (including public transport services);
   - Minimize negative consequences of population emigration from traditional settlings;
   - Take benefits from this unfavorable situation (including increasing of public transport services viability).
3. In the Murmansk region the unfavorable process of population emigration and changes in unfavorable regional structure are spontaneous, because to make adequate decisions no initial information is available. Instability of community structure decreases investment justification of the transport infrastructure development projects.
4. Coordinated development of transport systems of lapland and the Murmansk region is an opportunity to join efforts to study possibilities to stabilize regional structures, minimize investment risks and increase justification of transport projects through implementation of opportunities of trans-border cooperation.

### ANNEX 2.3.1

### CHAPTER 2.4 CLIMATE CHANGING AND LAPLAND

#### 2.4.1 Impact of climate change

#### Conclusion

Comparative analysis reveals:

1. Lapland applies approach to climate change based on the principle: think globally, act locally. In modern strategic documents the concrete objectives are setand the clear tasks are defined to be solved by specialists within their current professional activities, without any extraordinary investments. Actions are aimed at changing of planning and design solutions, integration, promotion of ecological compatibility of everyday operations by population and business. This approach will provide readiness of the community and transport system to changes with minimum costs and protect the fundamentals of the province existence – mobility.
2. On the Russian side the corresponding documents declare intentions for the sake of propriety. However, there is no real concern on this issue. The principle of reacting on critical challenge of the future in Russia can be stated as follows – thinking locally with global inactivity.
The list of measures to reduce climatic changes has no transport professionalism because there is no answer to the critical question: with what resources? At the same time there is a demonstrated readiness to do something. But what? And how? – these questions are left without answer. Increasing of motorization rate in Russia shows that informing of population that can affect environmental behavior of population and business is an actual and real tasks which can be solved here and now and provide positive results.

3. Coordinated development of transport systems of Lapland and Murmansk region is an opportunity to speed up the process of changing of environmental consciousness of transport activity participants on the Russian side, increase responsibility and minimize or even eliminate negative transport impacts on environment on local, regional and global levels.

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<th>CHAPTER 2.5</th>
<th>LAPLAND: FINDINGS OF THE FUNCTIONAL ENVIRONMENT ASSESSMENT</th>
<th>THE MURMANSK REGION: FINDINGS OF THE FUNCTIONAL ENVIRONMENT ASSESSMENT</th>
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<tr>
<td>Conclusion</td>
<td>Comparative analysis reveals:</td>
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<td></td>
<td>• Active position of the apland’s transport sector in the struggle for the main resource - population, which is principally different from the passive position of the Murmansk region transport sector. Therefore the first step to quality development of the Russian side transport sector is changing of attitude to the user and his safety. The next step shall be cooperation of all modes of transport based on logistics approach to provide sustainable mobility as a factor of attractiveness for living in the periphery territory.</td>
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<td>• The basic characteristics of Lapland’s transport system is orientation on user needs logistics and especially tourism industry – field of small business activity. Transport infrastructure of the Murmansk region is oriented on raw material export. Transport underdevelopment is one of the components of general climate unfavorable for the small business, which results in missed opportunities to diversify economy of the region and mono-cities.</td>
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<td>• Lapland and the Murmansk region face the same problem – population emigration. If in Lapland this process is studied, forecasted and managed, the process in Murmansk region is spontaneous as there is a lack of information to make right decisions. This results in reduced justification of investments into transport infrastructure projects.</td>
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</tr>
<tr>
<td></td>
<td>• Lapland is concerned with climate changes and follows a guiding principle: think globally, act locally. The strategic documents provide objectives to be achieved within the daily professional activities requiring no additional financing. Actions are aimed at improved planning and design, deeper cooperation and integration, promotion of environmental compatibility of daily activities of population and business. On the Russian side despite critical situation due to motorization level growth only intentions are declared. The concrete actions are missing.</td>
<td></td>
</tr>
</tbody>
</table>

Coordinated development of Lapland’s and the Murmansk region’s transport systems is an opportunity to:

1. harmonize professional ethics and new technologies;
2. harmonize approach of transport sector to create favorable environment for small business;
3. join efforts for stabilization of regional structures, minimization of investment risks and increase of transport project justification with means of trans-border cooperation;
4. even the level of environmental awareness of transport activity actors in order to reduce negative transport impacts on environment.
### SUMMARY CONCLUSION 2

Comparative analysis of initial condition of operational environment in neighboring territories – Lapland (Finland) and the Murmansk region (Russia) reveals significant potential of its improvement with means of coordinated development of transport systems. The prerequisites of coordinated actions include:

- availability of the common problem – population emigration and ability of transport system to actively affect on this negative situation/tendency;
- availability of sufficient legislative framework for trans-border cooperation and decisions on local level.

Coordinated development of transport systems of neighboring territories is an opportunity to contribute to solving the tasks:

1. Development of professional ethics (user-orientation) and technologies on transport;
2. Improvement of competitiveness of local business and assistance to diversification of mono-city economies with means of small business and entrepreneurship activation;
3. Stabilization of the regional structure, minimization of investment risks, increase of infrastructure project justification;
4. Smoothing the levels of environmental awareness of transportation activity participants to reduce negative transport impacts on environment.

### PART 3. TRANSPORT INFRASTRUCTURE

<table>
<thead>
<tr>
<th>PART 3.1</th>
<th>Main characteristics of different transport modes infrastructures</th>
<th>Main characteristics of different transport modes infrastructures</th>
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<tbody>
<tr>
<td>Pic.</td>
<td>Lapland transport networks.</td>
<td>Sea transport (port infrastructure) in the Murmansk Region Inland waterway transport</td>
</tr>
<tr>
<td>3.1.1</td>
<td>Sea transport (port infrastructure) in Lapland Inland waterway transport</td>
<td>Sea transport (port infrastructure) in the Murmansk Region Inland waterway transport</td>
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</table>

#### ANNEX 3.1.1

<table>
<thead>
<tr>
<th>Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The plan of Lapland transport system development links transport generators (incl. ports) into one network. The network serves as a basis of regional province structure thus stimulating development of zones and corridors not only in Lapland but also in neighboring countries of the Barents Region.</td>
</tr>
<tr>
<td>2. The level of Lapland transport system development is sufficient and the need in construction of new links arises only with the need in engaging new tourist and mining objects into economic turnover, and for optimization of transport system within the Barents Region level. This need exists, e.g., to provide the shortest passenger and freight connection between the Northern part of the Bothnic Gulf and the White Sea.</td>
</tr>
<tr>
<td>3. The transport network of Lapland forms a structure for logistics chains for transportation of people and goods with minimum costs.</td>
</tr>
</tbody>
</table>
| 4. Specific peculiarity of the Lapland transport network is absence of “own needs” in development. All needs in transport system development }
are answers to the question asked by:

- Province population and business,
- Integration tasks solved by the province together with other countries of the Barents Region.

5. Development of transport complex of the Murmansk region implies increasing of transport infrastructure facilities of all types where the key role is given to the Murmansk port mega-project. The demand for its development is concerned with two mega-projects with uncertain risks – Arctic shelf development and Northern Sea Route functioning, therefore the launching date of the project may be postponed for an uncertain time until the investment decision will be made.

6. Coordination of Lapland and Murmansk region transport systems’ development and coordination of ports of the territories within the Barents transport logistics platform will allow to define potential freight flows generated within and outside the Barents region. Freight flow modeling is a procedure that allow to evaluate real potential of ports in a global logistics of Europe-Asia direction, identify bottle necks and missing links that prevent from optimization of logistic chains with participation of ports. Such a work could help in finding the ways to:

7. Reduce dependence of the Murmansk port from risks related to mega-project implementation;
8. Compensate higher costs for the clients of the Barents region ports, which are related to nature and climatic factors;
9. Satisfy potential demand of goods consignors from Barents region and third countries.

The risks: Toughening of international environmental legislation concerning reduction of sea transport impacts on environment due to taking into force (1.07.2010) a package of measures of the International Maritime Organization. The measures are aimed at reduction of SO2 and NOx emissions within the Kyoto protocol. Toughening of environmental requirements will affect on a number of related sectors of world economy (inland water transportations, oil processing, and shipbuilding). Execution of measures within ship operations will bring in significant changes in activities of the navigable and bunkering companies.

The forecast: Increasing of prices for waterway transportations up to 60% (by 2015 in SECA zone – the Baltic and the Northern Sea, by 2015 in the world as a whole).

The consequences of this growth are:

1. Development of a trend when part of freight flows divert to railway and road transport, reduction of freight flows passing through the ports;
2. Actions of ship owners to keep these freight flows for sea transport by reducing the costs, e.g.:
   1 Fuel savings (deceleration from 20-22 nodes to 17-19 nodes) especially on long routes Europe – Asia. As a result, current costs are reduced but transportation time is increased (1-2 days). To compensate increased transit time the shipping companies will introduce additional ships to reduce tonnage excess and pressure on shipping rates. As world tonnage growth is unlikely to slow down until 2020, the shipping rates will be enough flexible for the next 10 years;
   2 Maneuverings and usage of different types of fuel in different regions of the world ocean, which will need costly additional equipping of ships;
   3 Improvement of sea transportation technologies thus increasing efficiency of existing ships by 10%, new ones – by 30% with sequent growth of capital and operational costs;
4. Introduction of scrubbers – equipment for emission purification to achieve the goals set by IMO;
5. Blending of dirty black oil with more pure fuel types by fuelers, strengthening of supervision under the fuel quality by ship owners, increasing of a number of reclassifications addressed to fuelers, increasing of cases of blending on ships.

3. Changes on the market of bunkering services and replacement of independent fuelers with vertically integrated oil companies. As a result, oil companies will take all the chain – from oil extraction to retail sale - under their control and have a margin at every technological stage. The consequence of this monopolism will be high fuel prices. The only way to withstand the monopolization and save the share of market for the independent fuelers is to integrate them and consolidate. However, they are not ready for such steps and compete with one another loosing time. The situation on a bunkering market and the consequence – fuel prices increase – will have a negative impact on comparative advantages of water transport and loading of ports.

### 3.1.2 Railway transport of Lapland

Conclusions

1. Lapland railways are integrated to the railway network TEN despite it has a different width of gauge. Connection with the system of railways standard 1520 is provided on the Finnish-Swedish border (Tornio-Haparanda). The Finnish railways are integrated with the Russian railway network as they have the same standard of gauge. On the Lapland territory railway has some limitations due to wear, insufficient load capacity and absence of electrification on a number of sections. Railway development is justified only with the needs of a developing mining industry. The perspective of additional freight flows could increase investment justification and speed up modernization of Lapland railway.

2. Murmansk regional railways are the part of the national railway system. Justification of railway modernization (strengthening of loading capacity) is related to development of the Murmansk Sea Port. The strategy of railway transport development provides for development of infrastructure as a reaction to additional economy freight flows. Railway is considered as an access to the Murmansk port, while the project of the Murmansk Sea Port development is connected with implementation of risky Arctic development projects. Therefore inclusion of the railway into serving of transit flows increases investment justification and speeds up modernization of the railway.

3. The Russian strategy of railway transport development sets the task – integration of the Russian railway system to the EU system (including countries of 1520 space). The struggle for transit is a sustainable trend of the world transport market. Transit is an export of transport services, therefore any international transport corridor is a space of international trade of services with all the corresponding consequences for economic and social development of territories affected by the corridor. Implementation of transit potential by Lapland and the Murmansk region is a field of mutual interest both for Lapland and Russia. This is also due to increased justification of investments into capital-intensive projects aimed at modernization of railways of both countries. Connecting two stub railway tracks on both sides of the border is a way to integration of railway infrastructure and its modernization in order to use transit potential.

4. According to the Russian Railway Development Strategy, implementation of transit potential shall be developed on the basis of complex development of all modes of transport. However, the status of a railway as a system, which serves as a framework for the territorial structure of Russia on the Euro-Asian space, allows to consider it not only from the position of an access to the ports but also as a leading transcontinental arterial transit resource, which is served by the ports. The Russian railways are connected with the railway systems of the Northern America through the sea ports. Therefore currently the volumes of transit railway transportations can be determined by the
volumes of Euro-Asian trade, in the future – by the volumes of intercontinental trade.

5. Distribution of flows between sea and railway transport will be unstable in future due to a series of global factors, including energy resource market, redistribution of freight flows between different modes of transport, and toughening of international environmental legislation, which will increase sea transportation costs and divert part of flows to the land corridors.

6. Identification of logistic alternatives and **increase of flexibility of chain combination** using advantages of different modes of transport in Lapland and Murmansk region is a way to increase **competitive positions** of the Barents region transport system on the world market. It is possible to form a vision of a future Barents transport logistics system able to meet the demands of world economy for transport services within the coordinated development of Lapland and Murmansk transport infrastructures.

3.1.3 **Road transport of Lapland**

<table>
<thead>
<tr>
<th>Conclusions</th>
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</thead>
<tbody>
<tr>
<td>1. The principles of road network forming in Lapland and in the Murmansk region are similar. Main roads of national importance are North-South oriented, while territorial ones are located in latitudinal direction West-East. The national strategies of Finland and Russia are aimed at implementation of transit potential of both countries, which means <strong>shifting of national priorities to latitudinal roads</strong>. The transport load on latitudinal roads having territorial importance status is increasing, road deterioration is accelerating, thus requesting big maintenance and rehabilitation works. Both territories are trying to <strong>change the status of latitudinal roads</strong> in direction of cross-border points.</td>
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<tr>
<td>2. The road sector of Lapland considers the task – keeping current level of maintenance with reducing financing as a challenge. To answer this challenge the following decisions are proposed:</td>
</tr>
<tr>
<td>• <strong>Differentiation of maintenance levels</strong> depending on participation in logistic chains of local business (tourism, timber and mining industries) and public transport.</td>
</tr>
<tr>
<td>• <strong>Consolidation</strong> of state authorities responsible for operational condition of road network in order to optimize management costs, expand system effect of the decisions made.</td>
</tr>
<tr>
<td>• <strong>Consolidation of lots</strong> when forming the contracts on road maintenance to expand opportunities of contractors to reduce their costs through implementation of scale-effect and risk reduction.</td>
</tr>
<tr>
<td>3. In order to implement the national transport strategy the Murmansk region has the regional <strong>programme</strong> (2011-2013), which provides for development of territorial roads contributing to <strong>implementation of transit potential</strong>, safety and sustainability improvement. Implementation of transit potential automatically implies harmonization of principles, approaches and technologies to provide <strong>homogeneous performances on transit road corridor routes</strong>.</td>
</tr>
<tr>
<td>4. Coordinated development of transport systems of Lapland and the Murmansk region is an opportunity to:</td>
</tr>
<tr>
<td>• Adapt management and technological know-how on Russian roads to <strong>increase output of available financing and thus to optimize costs</strong>;</td>
</tr>
<tr>
<td>• Jointly solve innovative tasks (R&amp;D). An example of such activities in the road sector is the project being implemented within the Kolarctic ENPI CBC Programme - “Barents Low Volume Road Management” (2011-2013), in which Lapland, Murmansk and Arkhangelsk region and the Republic of Karelia take part. The project aims at adaptation for the Russian periphery conditions of the technologies developed during the long-term cooperation of road engineers of the Northern countries within the ROADEX-project.</td>
</tr>
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</table>
Similar project may be accepted, e.g., on road safety issues. In this case the programme’s resource on R&D component can be considered as the project’s co-financing.

3.1.4 Air transport of Lapland

Conclusions

1. The volume of passengers transported in Lapland is 4.4 times higher than in the Murmansk region indicating a significant dependence of Lapland (and especially tourism industry) from air transport. The passenger flow forecasts are missing. However, sensitivity of air transport to economy condition, welfare and weather anomalies makes the province to develop logistics alternatives of tourism based also on railway transport.

2. On the Russian side a modernization of land infrastructure is executed within the federal target programmes with federal resources. However, general crisis condition of the Russian civil aviation (worn out plane fleet, planebuilding industry condition, low safety of flights, lag from international environmental requirements, etc) impedes from balance of air transport components. This reduces output from investments into the land infrastructure modernization and prevents from implementation of air transport competitive potential within the logistics chains. The forecast data of freight and passenger flow dynamics on air transport are missing.

3. Coordinated development of transport systems of Lapland and the Murmansk region can contribute to joint searching of ways to enhance the role of air transport in the Barents Region, e.g. with means of specialization of air transport services with traditionally developed directions (servicing of tourists, inhabitants of remote settlements, monitoring of ice situation, sanitary aviation).

CHAPTER 3.2 LAPLAND: FINDINGS OF THE TRANSPORT INFRASTRUCTURE ASSESSMENT

Conclusion

The principle differences between the transport systems of Lapland and the Murmansk region are as follows:

The transport system in Lapland is built based on network principle by integrating the flow generators and links between them following the idea of integrated EU transport system forming, which has been successfully implemented during the last several decades. The transport system of the province serves as a:

- **Basis for regional structure** by stimulating development of prospect zones and territories adjacent ot the main corridors and “picking up” local mono-economies of sparsely populated territories;

- **Framework for optimization of local business and passenger transport logistics**, thus allowing the remote periphery territory to keep competitive level of transport costs and operatively react on current and forecasted changes of operational environment;

- **Instruments of demography policy**, as mobility is considered as one of the factors of high quality of life, guarantor of social services and source of employment.

User need orientation (population, business, integrational tasks of the Barents region) is the specific characteristic of the Lapland’s transport system.
Conformity with the user requirements is a motivation for development of transport modes and its integration, as the system effect achieved is the source of effectiveness, efficiency and quality of services. When forecasting transport demands the global factors (climate changes, fuel price growth, toughened environmental legislation, peculiarities of new wave of economic development, increased demand on the Arctic’s resources, etc) and local tendencies (population ageing, migration, critical importance of conditions for small business, increased sensitivity of Arctic ecosystems) are considered. The wide range of factors taken into account allows to reveal the threats and forecast the ways of its minimization beforehand as well as to increase output from this opportunities.

The transport complex of the Murmansk region provides for increasing of transport infrastructure facilities within all the programmes and big projects. The regional transport sector condition is characterized with:

- Orientation on pointed huge facility development projects oriented on indefinite demands and third-side investments. With this orientation on active actions aimed at transport infrastructure development with available regional resources and in the interests of its population is not sufficient;
- Imbalance of infrastructure (ports/approaches, land infrastructure/air fleet) as a result of lack of intermodal cooperation and common objectives;
- Ignoring of user needs (goods consignors, passengers, physically-challenged people, small business), passive role of an observer of unfavorable demographic tendencies (population emigration, ageing), which deprives the transport market actors of motivation to development and undermines economy of transport operators;
- Missing data, which impedes from forecasting of local market tendencies and taking into account of global tendencies thus creating threat of incompetitiveness of the transport sector within the changeable operational environment (toughening of international environmental requirements, growing fuel prices, redistribution of freight and passenger flows between the transport modes, prevents from implementation of existing opportunities.

Coordinated development of transport systems of Lapland and the Murmansk region is an opportunity for:

1. step-by-step evening of transport system performances, expansion of transport space, improvement of transport services competitiveness on the world transport market in order to attract transit – the factor of:
   - justification on investments into modernization and development of transport infrastructure on both sides of the border;
   - development of trans-border cluster of transport-logistics services with high value-added price for the third regions, provision of employment and secondary order demands (training of specialists, construction, etc.);
   - provision of employment, filling in the budgets, increasing the quality of living environment and social services to prevent population emigration.
2. Extended application of integration principle, which implies:
   - Joint consideration of transport flow generators in Lapland and the Murmansk region (transport infrastructure objects – ports, airports, railway stations, big settlements, industrial and tourist objects) in the context of the Barents transport-logistics platform to model freight and passenger flows within the Europe-Asia scaled logistics,
• Identification of bottlenecks and missing links that prevent from optimization of logistics chains with participation of all modes of transport.

The railway transport is ready to become a leader in the process of transit competitiveness enhancement in Lapland and the Murmansk region. This is justified with the following:

• Finnish and Russian railways are strongly attracted by integration and expansion of transport space and need modernization and investments. The transit is the field of common interest to increase investment justification into costly projects of modernization on both sides.
• Linking dead-end lines on both sides of the border is the way to integration of railway infrastructure and enhancement of logistics alternatives, improvement of competitiveness of railway corridors.
• Russian railways is a transcontinental transit resource, which importance will be enhanced after part of freight flows migrate from sea transport to land trans-continental corridors due to global factors that will increase the costs of sea transportations.

The road transport has a mission of:

• A linking mode of transport connecting all modes into a multimodal system;
• A framework of daily mobility of population and production logistics of local business.

The principle of forming the networks of neighboring territories is the same – main roads of national importance are North-South oriented, while territorial roads are latitudinal ones. Orientation of transport strategies of neighboring countries on implementation of transit potential is increasing thus shifting national priorities towards latitudinal roads. Transport loading on such roads is increasing and the local budget have more and more difficulties to maintain territorial roads while population is decreasing and the budgets are limited. Therefore for road sectors of neighboring territories it is expedient to join efforts in order to solve the tasks:

• Distribution of management and technological know-how, joint solving optimization and innovational tasks in the road sector. The objective is to prevent deterioration of territorial roads with means of increased output of existing financial resources;
• Harmonization of road conditions, first of all regarding road traffic safety based on modern principles adapted to high motorization levels and oriented on the user. The objective is to provide homogeneous and safe traffic conditions on trans-border road corridors that contribute to development of trans-border business clusters;
• Coordination of activities aimed at increasing the status of territorial latitudinal roads to deep integration and implement transit potential.

**SUMMARY CONCLUSION 3**

Comparative analysis of initial condition of Lapland’s (Finland) and the Murmansk region’s (Russia) transport systems reveals significant potential of transport system development if applying a coordinated approach. The prerequisites for potential implementation includes:

• Similarity of common objectives reflected in the national transport strategies (contributing to population welfare
 increase);

- Common needs (modernization, investments) and interests (transit) for railway transport on both sides of the border;
- Common needs of re-orientation for latitudinal direction of current road network configurations;
- Common limitations for road sectors (reduced financing) and operational requirements (growing loads, provision of sustainable daily mobility of business and citizens);
- Common expectations for road transport (assistance to development of trans-border clusters, settlements with mono-economies, safety, environment compatibility, attractiveness of periphery and remote territories for investments and comfort living of population);
- Common uncertainties and threats for sea and air transport under global factors;
- Common challenges to which the transport system will be adapted in future (climate change, growing fuel prices, budget limitations, safety).

Comparison of transport systems of neighboring territories reveals significant border effect in a form of missing or incompatible performances of infrastructures of different modes and principles of planning, business ethics provided with initial resources (information). However, these incompatibilities are not contradictions and only reflect the difference in levels (orientation on quantity/quality).

Availability of common prerequisites and absence of contradictions serve as a basis for coordinated activity and joining efforts in the field of transport system development thus allowing to accelerate integration of the Northern periphery territories into the world labor differentiation.

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<td>4.1.1</td>
<td>Mobility needs in Lapland</td>
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<tr>
<td></td>
<td>Pic. Car ownership in Municipalities, Lapland and state.</td>
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<td></td>
<td>Pic, Trips per inh (study 2004-2005).</td>
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<td></td>
<td>Table. Commuting (2005)</td>
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<td></td>
<td>Pic Work places location 2005.</td>
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</tbody>
</table>

ANNEX 4.1.1
**Conclusions**

1. The level of motorization in Lapland is high, the population is mobile, including both working and other trips. Despite this high motorization level and significant volume of “entering” transport from other regions of Finland and neighboring countries, urban and rural roads never suffer from congestion and function **effectively and safely**. This fact gives evidence concerning a successful traffic management practice in Lapland.

2. Motorization level in the Murmansk region is two times less than in Lapland but growth dynamics is stable and is in line with Russian national and world tendency: development of market relations requires mobility, make vehicles more accessible. Personal car fleet growth and traffic volume growth allow to **forecast** increase of road congestion, road accidents and environmental impacts, especially in settlements. The forecasts of motorization rate growth in Russia up 450-500 veh./thou.inhab. till 2020 demonstrates a need in experience of countries with high motorization levels on traffic management and development of road infrastructure to reduce costs of community from negative motorization consequences.

3. **Statistics and data of different studies** are a basis of traffic management decisions:
   - Regional population motorization performances and flow exchange between agglomerations,
   - Characteristics of external flows (tourists), amount and seasonal fluctuations.

   Lapland has the necessary data while the Murmansk region has no similar data. Accuracy of available data is doubtful preventing from high quality analysis.

4. Actions on coordination of Lapland and Murmansk region transport system development could provide a platform for:
   - Adoption of international methodologies for collection of data on population mobility, flow characteristics, etc. and provision of comparability of these data;
   - Making comparative analyses of mobility on both sides of the border;
   - Preparing forecasts on trans-border mobility;
   - Making decisions aimed at improved serving of various mobility demands with more effective modes of transport, by optimal routes, contributing to less congestion, road accidents, environmental impacts,
   - Planning of adequate infrastructure development contributing to development of local economies and social services.

**Conclusion**

**CHAPTER 4.1**

Comparative analysis shows:

1. Effectiveness of approaches applied to manage traffic in Lapland (no road congestion, high traffic safety and ecological compatibility of transport);

2. Ability to long-term and system planning taking into account global trends (actions to minimize negative climate impacts, resource saving, focus on population employment through provision of favorable conditions for activity of small- and middle-scale business, integration to world economy and competitiveness based on increased geopolitical importance of the Arctic).

The starting point for quality short- and long-term decisions is a system activity to collect and analyze data on current mobility of population and business and on prospect demand for transport services.
Therefore cross-border coordination of transport system development in neighboring territories – in Lapland and Murmansk region – shall be started from harmonization of methods of initial motorization data collection and analysis. Additional arguments in favor of the above conclusion is the following:

- Harmonized format of initial data collection will give opportunity to apply up-to-fate planning instruments – methods of benefit-cost assessment, transport models, that cover vast planning territory to forecast distribution of traffic flows in case of implementation of this or that infrastructure project on the territory of Barents region.
- Applying harmonized format on transport planning stage is a basis for a dialogue with international financial institutions and private investors, higher chance to attract investments and implement PPP potential.
- Mastering know-how on transport data collection, processing and usage allows the Murmansk region to adopt and transfer innovational approaches to transport decision-making to the neighboring regions thus contributing to implementation of transit potential and forming positive image (not resource-oriented one) of the territory.

<table>
<thead>
<tr>
<th>CHAPTER 4.2</th>
<th>PASSENGER TRANSPORT OF LAPLAND</th>
<th>PASSENGER TRANSPORT OF FINLAND</th>
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<tr>
<td>4.2.1</td>
<td>Public transport</td>
<td>Public transport</td>
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<td>Pic Railway long distance public passenger transport travel time zones</td>
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<td></td>
<td>Table. travel time from Helsinki 2009</td>
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<td></td>
<td>Pic. Lapland tourism transport zones 2007</td>
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<td></td>
<td>Table. Public transport problems by user groups.</td>
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</tbody>
</table>

Conclusions:

1. The Finnish strategic documents of all levels set the clear objective - increasing the share of public transport in servicing transport needs of population through improved quality of services and expansion of the list of user groups, for which public transport shall become more accessible. The list of user groups include tourists, which are considered as a potential user group able to complement the existing low local passenger flow and increase commercial component by reducing dependance of public transport from subsidies. Studied and summarized requirements of user groups, and obstacles for development form a starting point for public transport development in Lapland so that it could achieve the national standard of services.

2. Russian strategic documents set no clear objectives for public transport development just defining check points for development and higher accessibility of infrastructures (which is supposed to include public transport too). Studies of obstacles for public transport development and data on user group needs are not available. Such indicators like price accessibility of public transport for all social groups and comfort of trip are only two elements of the big list of criteria of good quality services and attractiveness of public transport. This argues about “inertion” of Murmansk region public transport functioning supported with subsidies. Adaptation of the Murmansk regional public transport to market conditions and dynamic growth of motorization level with means of actual policies and professional methods has not been yet launched.

3. On the Russian side the responsibility for population servicing by public transport has been given to the municipal level (Federal Law ФЗ-131). Independent solving of tasks by municipalities, when state and regional policies on public transport are absent, complicate application of system approach on agglomeration.
level. While system approach is the key condition for optimization and development of any infrastructure. The modernization mentioned in the above strategy means technological “filling”, but world practice shows that any technological modernization (e.g. introduction of electronic ticket systems) never justifies itself if the system is not organized optimally beforehand. In this case technological innovations will result in more costs to end users.

4. National legislations provide opportunities for coordinated development of Lapland and Murmansk regional public transport development. This is beneficial for both territories because finally this will allow to harmonize standards of public services in both territories. The first step is collection of missing data on levels of services and user group needs in the Murmansk Region. Following the same format of initial data is a basis for application of up-to-date instruments (models) in order to:
   - Shift from right but fuzzy intentions of the Russian strategic documents to concrete and clear objectives of public transport development;
   - Optimize existing and plan new passenger transportation routes (incl. cross-border ones) that would be attractive to users;
   - improve quality of services up to the level required by the modern user;
   - increase incomes and reduce operational costs of transport companies, and thus reduce the needs in subsidies;
   - attract more users to Arctic routes.

5. Increasing the role of Barents region public transport in ensuring of population mobility in settlements, agglomerations, on inter-city and international connections is a way to higher efficiency of passenger transportations, less road accidents and less negative transport impact on susceptible Arctic ecosystems, which meets the interests of both countries.

<table>
<thead>
<tr>
<th>Conclusion</th>
<th>Comparative analysis reveals the following:</th>
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<tbody>
<tr>
<td>CHAPTER 4.2</td>
<td>1. Strong Finnish policy aimed at public transport promotion and shifting mobility of population from personal to public transport. The policy instrument is a national standard of public transport services. Province authorities have an opportunity to independently choose the ways of policy implementation and meet the standards by identifying local opportunities and implementing them with local resources.</td>
</tr>
<tr>
<td></td>
<td>2. Low population density and long distances explain low profitability and high operational costs of transport companies in Lapland. These factors indicate the need in subsidies to support standard of public transport. However, tourist potential of the province is considered as an opportunity to attract additional passenger flow to public transport, increase its profitability and reduce need in subsidies. To solve this task an adaption of public transport services to the requirements of potential user groups is required: information for tourists, including foreign ones, logistic approach when organizing services (linking separate routes in one chain, joining routes, selling tickets via Internet, etc.).</td>
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<td></td>
<td>3. Awareness of factors that impede development of public transport and information about user group needs is a basis for implementation of policy aimed at public transport attractiveness. Detailed initial information is a basis for quality differentiated solutions and successful implementation of policy pulling public transport.</td>
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<tr>
<td></td>
<td>4. The Russian side declaring its intentions to develop public transport and improve its accessibility to all citizens has no readiness for breakthrough in solving this scaled task. The following proves this non-readiness:</td>
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<tr>
<td></td>
<td>- Absence of clear national policy and institutional framework for public transport development (no set common goal, distribution of responsibilities, etc.);</td>
</tr>
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<td></td>
<td>- The consequence – setting a “non-existing world level” and virtual “social layers” as targets for Murmansk regional public transport</td>
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</tbody>
</table>
development. This is natural as absence of initial data on problems and user groups impedes from revealing concrete needs in passenger transport services and setting clear tasks.

5. Absence of starting environment holds the process of current development of public transport in the Murmansk region based on local existing and potential resources. Active actions are substituted with far perspectives of big project implementation, while these project are not that likely to interest investors. At the same time investment risks of the Murmansk region are evident and are expressed in statistics: decreasing population, shifting from public to personal transport, high transport costs, chronic under-financing of existing infrastructure maintenance, etc.

6. However, the situation in the Murmansk region provide opportunities for development, namely:
   - No clear policy from above, which could create a field for initiatives and innovations, which are necessary to overcome Russian inertia in the sphere of public transport. “Bottom-up” initiative and real results are contributions to the region’s image, its investment attractiveness and foundation for future investment projects.
   - No approved programme means no limitations and an opportunity to develop the most advanced programme in Russia, which could join separate actors of the public transport market (transport companies, association of transport companies, authorities, state inspection of road safety (GIBDD), transport administrations, ecologists, etc.), thus promoting system approach and format of development programmes made in accordance with the best international practice.

7. Expedience of the first step – development and implementation of coordination of an “overtaking” Murmansk regional programme aimed at public transport development. The Programme can serve as an instrument to introduce harmonizing methods of data collection and analysis, professional methods of decision-making in the sphere of public transport, implementation of joint measures to reveal potential of increasing economic viability of international routes based on logistic approach that would cover Lapland and Murmansk region. The next step could be dissemination of the logistic model on routes of agglomerations and settlements to overcome inertia and bring Murmansk regional public transport on a new quality level of mobility provision, thus increasing effectiveness of existing infrastructures, reducing road accidents and environmental impacts.

### CHAPTER 4.3

<table>
<thead>
<tr>
<th>ROAD TRANSPORT OF LAPLAND</th>
<th>ROAD TRANSPORT OF THE MURMANSK REGION</th>
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<tbody>
<tr>
<td>4.3.1 Road transport</td>
<td>Road transport</td>
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<tr>
<td>Pic. Volumes in main roads, ADT 2010</td>
<td>Similar graphic interpretation is not available</td>
</tr>
</tbody>
</table>

**Conclusions:**

1. Population of Lapland strongly depends on personal cars. Motorization level and intensity of car use are really high. Therefore after effects of transport activities are significant – road congestion in settlements, road accident risks and negative transport impacts on environment. However, Finnish legislation (EU), professionalism of road designers, contractors and active position of society allow to restrain and minimize externalities with means of organizational and engineering solutions. However, there are directions for scale work aimed at adaptation of transport system to the needs of definite target groups, as well as correction of mistakes made earlier, when providing mobility with means of cars was a priority for transport system development and all other types of mobility were neglected.

2. The Lapland Development Strategy provides for the need in increasing mobility, and shifting of this mobility to public and non-motorized transport becomes
the main challenge for the transport system of the province. The objective is to reduce externalities, costs for its compensation and improve quality of living environment (comfort, safety, environment-friendly practices, purity, primordial nature, silence, calmness, etc.) – as an economic resource of the province, the demand for which always increases on the world market.

3. Finland and other countries with long motorization experience are now conscious of benefits and costs of motorization and gained experience how to manage externalities and apply adequate instruments – organizational, legislative, technological, monitoring, etc. The mistakes made are eliminated and this require some investments.

4. Mobility of the Murmansk region population is not in critical dependence on personal cars. Public transport services are a good alternative. However, motorization rate gradually increases and results in more transport externalities. City inhabitants feel worsening of quality of life, but this process is currently unmanaged. Delay in making right decisions generates snowball – a complex of problems which will cost much to next generations. Unconcern and lack of information of today’s generation reduces quality of life of future generations.

5. One must admit that in the context of motorization issues and its after effects the most significant is a border effect between two neighboring territories. It reflects principal difference in maturity and readiness of society to meet the challenges. It is possible to manage mobility and externalities. Joint coordination work aimed at development of Lapland and Murmansk region transport systems is a real chance and flinging it away would be unwisely and unforgivable. Best world experience shall be used as soon as possible and then transferred to other Russian regions having no such opportunities as the Murmansk Region. This mission of the region is an opportunity to log in the list of Russian innovation territories, increase its investment attractiveness and implement real transport projects for the public good.

4.3.2 Service level lacks:

<table>
<thead>
<tr>
<th>Service level lacks:</th>
<th>Service level lacks: (by user groups)</th>
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<tbody>
<tr>
<td>Table. Road transport problems by user groups</td>
<td>Similar graphic interpretation is not available</td>
</tr>
</tbody>
</table>

Conclusions:

1. The studies of service level lacks in Lapland allow to manage situation: plan, set priorities and focus limited resources on most actual tasks of infrastructure development thus providing gradual increasing of mobility for different user groups and improving quality of life in the province.

2. No studies to reveal user group needs in mobility and transport services were made in the Murmansk region. Therefore system and targeted approach to eliminate obstacles for quality and quantity development of infrastructure is impossible. Undeveloped infrastructure is the main reason for low quality transport services and discrimination of some user groups, e.g.:
   - Physically-challenged people (no guaranteed parking places),
   - Car owners (no places for temporary and stationary parking),
   - Pedestrians (no sidewalks or its bad lighting),
   - Cyclists (no safe road paths, parking places for cyclists), etc.

3. Coordinated development of transport systems of Lapland and the Murmansk region is an opportunity to use Finnish experience in order to launch targeted process of quantitative and qualitative improvements of road transport infrastructures, which will positively affect population mobility, quality of road transport services, development of transport dependent activities (tourism). It is known that mobility is a critical condition for economic activity and social solidarity. Therefore the process of right gradual actions will involve citizens (user groups), which is a positive factor that improves image of executive power and smoothes social tension.
**Conclusion**

**CHAPTER 4.3**

Comparative analysis shows:

1. During period of vehicle fleet growth in Lapland priority attention was paid to the **needs of motor transport users**. The higher was motorization rate, the more evident was **overtaking growth of community costs because of** road congestion, road accidents, worsening of living environment. These externalities became an **excess price for mobility**.

2. Practical experience of motorization revealed failure of hopes when mobility was tied up with a car because:
   - A car leaves a significant part of population out of the mobility boundary (children, youth, elderly, physically-challenged people, those who don’t want to be car owners);
   - Short distance trips are more efficient with means of public transport, bicycle or walking.

3. Differentiated approach to means of travelling and needs of different user groups is a modern way to increase mobility, which becomes safe, comfortable, healthy, and socially-oriented. This kind of approach requires detailed information about the reasons impeding mobility of different user groups and their needs.

4. Despite dependence of Lapland’s population on cars (due to settling specifics and employment characteristics), reduction of transport externalities sets a goal – shift the needs in mobility from personal to public transport by organizing public transport services with increasing commercial component and reducing subsidies. This is a challenge for Lapland.

5. In the Murmansk region motorization level hasn’t yet reached high level, but dynamic growth of vehicle fleet and traffic volumes causes externalities which are than that in Lapland. Road congestion, road accidents and negative environmental impacts, especially in cities, are a threat for plans of economic and social development of the region.

6. Coordination of road infrastructure development in Lapland and Murmansk region is an opportunity for:
   - Joint answer to a challenge – development of public transport on international routes, attraction of tourist flows from Russia to Lapland and from Finland to the Murmansk region by adapting public transport services to tourist target groups;
   - Introducing experience of Lapland having a longer motorization period to calm down externalities on the Russian side and avoid mistakes with means of modern approaches, principles, methodologies and instruments.

7. The first step is developing of an **analogical informational base** of the Murmansk region, which would serve as a starting point for application of modern instrument kit without which adequate quantity and quality development of infrastructure (a foundation for mobility, road transport quality services, and activities dependent from transport (tourism)) is impossible.

8. In transport infrastructure development issues result is not the only important thing. The **process of involving people** (user groups) is a positive factor that improves image of authorities, smoothes social tension and makes infrastructure closer to user needs.

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**CHAPTER 4.4**

**LIGHT TRAFFIC (NON-MOTORIZED MOBILITY – WALKING, BYCIKLING, MOVING CITIZEN WITH RESTRICTED MOBILITY) IN LAPLAND**

**LIGHT TRAFFIC (NON-MOTORIZED MOBILITY – WALKING, BYCIKLING, MOVING CITIZEN WITH RESTRICTED MOBILITY) IN THE MURMANSK REGION**

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<th>4.4.1</th>
<th>Walking and cycling</th>
<th>Walking and cycling</th>
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<tr>
<td><em>Pic. Location of Inhabitants related to light traffic paths along</em></td>
<td><em>Similar graphic interpretation is not available</em></td>
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</tbody>
</table>
**Conclusion**

1. The Policy of Lapland is aimed at shifting the population mobility from motorized to non-motorized transport. Improvement of infrastructure for light traffic used by pedestrians, cyclists and people in wheelchairs is the basis for this. Development of light traffic is a trend common or all countries with high motorization levels, and Finland is a world leader in issues of planning, design, construction and maintenance of light traffic infrastructure.

2. Despite growing number of cyclists on city streets and availability of all necessary legislative documents that require to observe the rights of low-mobility people, the Murmansk region is passive in development of light traffic infrastructure.

3. The forecast: Increase of non-motorized mobility is an objective process, therefore the number of cyclists on Russian streets will increase. Road accident rates will increase, too. This means that ignoring the growing needs in development of light traffic infrastructure is turning a blind eye to higher number of killed and seriously injured (as road accidents with cyclists are always severe) and violating of the rights of lowmobile people. Pressure from the civil society and growing number of civil actions will force the authorities to undertake necessary actions. The Strategy of socio-economic development of the Murmansk region and Russian mass media (See magazine “An expert”) focus the critical importance of improving quality of living environment in accordance with modern principles of city planning. One of the basic principles concerns conditions for non-motorized mobility of all population groups. The objective is to execute this strategic task with maximum quality.

4. Coordinated development of transport systems of Lapland and the Murmansk region is an opportunity to adopt modern principles of planning and design, construction and maintenance of light traffic infrastructure thus forestalling transport crisis and effectively using limited budget resources with means of:
   - Programmes of measures to develop municipal infrastructures for light traffic for the cities of the Murmansk region by attracting civil society (cycling clubs, NGOs protecting low-mobility population groups, schools and parents interested in safe and healthy leisure time of their children);
   - Measures to develop infrastructure components (parkings, places for car storage) within partnership with business, which is interested in increasing tourist potential of the region, comfort and quality of living environment.

### Comparative analysis reveals:

1. A targeted work to implement national policy aimed at shifting mobility from car to other types of transport (public and light transport) has been executed in Lapland. The objective is to reduce costs of the community due to road congestion, accidents and environmental impacts, as well as to provide equal rights for those people whose mobility is limited if the dominating means of mobility becomes a passenger car.

2. In the Murmansk region with increasing motorization rates and costs an interest of population to the non-motorized transport becomes more evident. Decisions made by the authorities lag behind the tendencies. Therefore the more active will the civil society be, the faster the Murmansk region will join developed communities for which safety and rights of population is not a declaration.

3. Coordinated development of transport systems of Lapland and the Murmansk region is an opportunity to adopt modern principles to
improve quality of city environment and promote new tendencies of up-to-date urban planning. The expected result is reduced emigration from the region as a result of more comfortable environment and extended mobility, economic development and social solidarity.

4. Development of light traffic infrastructure facilitate forming of partnership between civil society, business and authorities – a positive factor that improves social climate of the Murmansk region and expands opportunities of restricted budgets.

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<th>CHAPTER 4.5</th>
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<th>ROAD TRAFFIC SAFETY IN THE MURMANSK REGION</th>
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<td>4.5.1</td>
<td>Road traffic safety</td>
<td>Road traffic safety</td>
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<td></td>
<td>Pic. Level of injury and fatal accidents and density of fatal accidents on the main road network 2005-2009</td>
<td>ANNEX 4.5.1</td>
</tr>
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</table>

Conclusions

1. Comparison of number of killed in road accidents in Lapland and Murmansk region demonstrates that Russian side accident rates are many times higher while motorization level is half less. There are numerous reasons for this starting from differences in operational environment and ending by neglect to road safety problems on the national level. This can summarized as a “border effect” expressed in different base values and community maturity on both sides of the border in relation to road safety problems (i.e. saving a human life). Finland and other European countries had the situation similar to that of Russia in 1970-80-s.

2. Experience of neighboring Lapland proves that the problem can be solved and the algorythm of its solving (taking into account all sucess and failures) is a priceless value for the Russian side able to speed up reduction of road accidents and save lives and health of tens and hundreds of Russian citizens.

3. Solving of road accident problem within the partnership of the Leningrad Region and South-Eastern Finland, within partnership of the Arkhangelsk Region and Northern countries has already allowed to adapt a lot of effective approaches and solutions of world road safety leaders to the Russian situation. All of them prove effectiveness of the measures in Russian conditions and reduce the number of road accidents. E.g.- no children killed in road accidents in Arkhangelsk during the last 5 years due to complex approach to children road transport traumatism problem based on experience of Northern countries.

4. Comparison of statistics of neighboring territories reveals priorities for actions in the sphere of road death reduction – increasing safety of vulnerable road user groups – pedestrians and cyclists (non-motorized mobility). Solving this task is the fastest, easiest and cheapest way with means of black spot management (traffic calming at schools, polyclinics, etc.: channeling with traffic islands, elimination of conflict zones on intersections and junctions (roundabouts). The resources spent to this are paid back within weeks.

5. Coordinated development of Lapland and Murmansk regional transport systems is an opportunity to reduce road accidents and is a priority for actions both from the standpoint of life saving and economic development (implementation of tourism development strategy, increasing attractiveness of the region, etc.). The region that is not able to provide the basic value – human life has no moral rights to spend resources on any ambitious projects that increase traffic volumes or risks for the population.

Conclusion

Comparative analysis reveals:

1. Ability of the Finnish side to ensure high road safety despite high motorization level and an evident crisis with solving of this task on the
CHAPTER 4.5

Russian side having lower motorization rate than that considered as high in the world.

2. Russian statistics demonstrates: the main problem on the Russian side is low protection of vulnerable road users – pedestrians and cyclists. Accident involving these groups are most severe and result in death or serious injury.

3. Finish statistics shows that vulnerable road users are more protected and this protection is ensured with local and non-costly road infrastructure means. Applying these measures on Russian roads prove their high effectiveness.

4. Road accident rate reduction is a complex task that covers Human, Road and Vehicle. Joint actions are needed on all directions within professional programmes. The process of development of such complex programmes has been introduced within the Russian-Finnish partnership of the Leningrad region and South-Eastern Finland. Experience of neighboring territories partnership is available for adoption to reduce road accident rates. (www.bdd-lenobl.ru).

5. World practice shows and Russian experience proves that the most reactive measure to reduce road deaths and injuries is road furniture. These low costs are paid back very quickly and give immediate effect “here and now”. Therefore road sector of the Murmansk region shall fully realize this opportunity and potential of cross-border partnership to provide its leadership in road accident reduction technologies on existing black spots (reactive measures) and potentially risky sections (proactive measures). Adaption and dissemination of efficient and effective solutions in the sphere of traffic safety is an essential contribution to better image of the region and to implementation of tourism development strategy, improvement of investment attractiveness, etc.

CHAPTER 4.6 LOGISTICS SERVICES IN LAPLAND

Logistics
Table. Cargo Traffic on roads 2009 between the parts of Lapland.
Pic. Strengths, Weaknesses, Opportunities and Threads of Lapland logistic system
Pic. Lapland logistics system development targets by modes.

LOGISTICS SERVICES IN THE MURMANSK REGION

Logistics
Similar graphic interpretation is not available

ANNEX 4.6.1

Conclusion

1. Effective logistics based on quality and multimodal transport system is the main instrument to compensate transport costs of the periphery Northern territories. Therefore optimization of routes requires scaled approach on the level of the Barents Region transport system at least.

2. On both sides of the border the land main transport infrastructures are developed mostly in South-North direction. Connections of West-East direction, which are significant for implementation of geopolitical benefits started to develop only during the last 10-15 years. Their “not-main” status and limited local resources impede from necessary dynamics of latitudinal transport infrastructure development.

3. Taking into account strategic decisions of international and national levels, latitudinal links are critically important to implement transit potential of Lapland and the Murmansk region. The Russian transport strategy emphasizes the mission of the transport infrastructure – serve as a bridge between the markets of the Northern America, Northern Europe and growing economies of the Asian-Pacific Region countries. This mission can be implemented only based on modern transport-logistics services.

4. Lapland has obtained experience of international cooperation in the sphere of transport logistics and has a vision and concrete plans for...
further development within the strategic plan of province’s transport system development till 2025.

5. On the Russian side the railway transport has more or less formed logistic vision. As the railway transport takes the lead over other modes of transport by scale and system approach, it is the railway transport which has real perspective to become a basis for the main scaled trans-continental logistic system on the Russian territory in case of its integration with the ports and railway systems of other countries.

6. Currently on both sides of the border there are separate components able to become a basis for future transport-logistic cluster of the Barents region. However, existing imbalance of transportations of different directions impedes from minimization of goods consignors’ costs and increase competitiveness of transport operators on the world transport market.

7. «Raising» trans-border transport-logistic cluster is a challenge which can be answered only by joint efforts of Barents region partner-countries. This activity requires elimination of negative impact of border effect, including:
   - harmonizing principles, approaches, performances of transport infrastructures and their integration through inter-modal chains;
   - revealing total needs in development of transport infrastructure and intelligent transport;
   - setting priorities among the revealed needs in development;
   - revealing the projects of common interest, implementation of which can be accelerated with means of Barents Cooperation and international programmes.

8. Coordinated development of transport systems of Lapland and Murmansk region can be a start of long-term targeted actions to eliminate negative impacts of border effects and «raising» trans-border transport-logistic cluster in the Barents Region able to offer competitive transport services to the world transport market thus attracting transit to the Arctic routes.

### CHAPTER 4.7

<table>
<thead>
<tr>
<th>LAPLAND TRANSPORT SYSTEM FACTORS OF CHANGES AND CHALLENGES</th>
<th>MURMANSK REGIONAL TRANSPORT SYSTEM FACTORS OF CHANGES AND CHALLENGES</th>
<th>ANNEX 4.7.1</th>
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<tr>
<td>4.7.1 Functional environment - opportunities to develop and challenges to transport system</td>
<td>Functional environment - opportunities to develop and challenges to transport system</td>
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<tr>
<td>Conclusion</td>
<td>1. Difficulties that define challenges for the transport systems of Lapland and Murmansk region are similar. The main of them is population reduction. At the same time both territories are under the pressure of global processes – toughening of competition in the transport sector, strengthening of user requirements and world environmental legislation. Climate changes require from transport readiness to function in abnormal conditions and react on them to keep competitiveness of local economies. <strong>Growth of transport externalities is unavoidable when there is a lack of budget financing</strong> and investments. The gap between the needs and possibilities in road sector when maintaining roads of territorial importance is extremely tangible.</td>
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<td>2. In both territories reduction of population is accompanied with growing weight and volume of traffic flows, which accelerate road wear. However, there is no any possibility for the budget to compensate this accelerated road destruction with means of additional maintenance measures.</td>
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<td>3. The Transport Strategy of Lapland is active in the struggle for the main development resource – population. The province answers to the</td>
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</table>
challenge by setting the tasks:

- To reverse negative demography dynamics and shift to positive one;
- To reduce the gap by volume and quality of transport services with means of differentiated approaches to agglomerations and districts with sparse settling.

4. The Murmansk region as opposed to Lapland avoids main challenge – demographic challenge. All scenarios in the Murmansk Region Development Strategy consider population emigration as an objective factor, inevitability and proposes to adapt to this situation by using “unmanned” technologies when developing raw materials. However, emigration of population from territories recently developed and economically favorable means higher losses than just deficit of labour resource:
- The less is the number of population, the less is the number of tax-payers and the less are the possibilities of local budgets, the more are the gaps between quantity and quality of social services, opportunities f economic development in the districts of sparse settling and city agglomerations;
- The smaller are the budgets, the worse is the maintenance of secondary and municipal roads, the higher are transport externalities and less mobility of local business;
- The lower is mobility, the less is competitiveness of traditional types of activities, which helped not only to survive but to keep high level of human welfare in the climate of Arctic. With leaving of people from historical places of living a genotype adapted to living in extreme conditions disappears, like disappears the lifestyle and experience of a human, who is organically integrated into eco-systems without violation of their sustainability. Human-free space of Arctic is a very comfortable place for transnational corporations and “unmanned technologies”, not burdened with costs for expensive environmental safety. Russian Arctic collides with the real threat to become a raw materials appendage of energy wasteful countries, the source of cheap resources taken away from future generations.

5. Tourism industry is considered by both territories as a strategic sector, with which hopes for involvement into economic turnover of natural resources and employment for local population are pined. Primordial nature is a tourist product value of which on the world market will increase. However, modern tourism requires safe mobility and, first of all, roads of territorial and municipal importance. Therefore reduction of local population and worsening of infrastructure quality, disappearance of traditional way of life and activity of trans-national resource corporations is an undermining for implementation of tourist potential of Arctic territories.

6. Lapland tends to insure tourism industry with means of environmental responsibility of mining, timber and transport business, development of multimodal logistic alternatives able to adapt the sector to climate change, growth of prices for fuel, demand for active rest. Tourists are started to be considered by passenger transport companies as internal “user group”, the requirements of which is one of the directions of development and improvement of economic viability of public transport.

7. On the Russian side transport is inertially guided mostly by an extensive model (quantity extension and increase of new assets) of infrastructures and vehicle fleet underevaluating opportunities of an intensive model of development (increasing effectiveness, efficiency, quality of existing assets). It is assumed that maintenance and operation of new transport infrastructures will be supported with federal resources and taxes from traditional industries of raw material orientation dependent from unstable demand for resources on the world
8. The reserve for transportation effectiveness laid in extension of multimodal approach has not yet been studied in the Murmansk region as opposed to Lapland. It is known that absence of transport activity data for modeling of situations and forecasting of investment risks is a factor that impedes from effective dialogue with potential investors.

9. In both territories additionally to the main tasks – keeping the population – the need for progress in two directions is evident:
   - A. Attraction of additional transport flows to justify investments and increase budgets
   - B. Increasing output from existing resources of road sector – protector of rights of population to social services and mobility of local economies.

10. Attraction of transit flows and development of associated logistic services based on small scale business - justification for development of all modes of transport and first of all for roads.

11. Comparing characteristics of operational environment on both sides of the border reveals the leading readiness of Lapland’s transport system to react to changes of the environment and to answer the current and future challenges.

### Chapter 4.8

<table>
<thead>
<tr>
<th>DEVELOPMENT VISIONS OF DIFFERENT TRANSPORT MODES WITHIN THE MULTI-MODAL TRANSPORT SYSTEM OF LAPLAND</th>
<th>DEVELOPMENT VISIONS OF DIFFERENT TRANSPORT MODES WITHIN THE MULTI-MODAL TRANSPORT SYSTEM OF THE MURMANSK REGION</th>
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</table>
| 4.8.1 | Air
Rail
Seaborne
Roads
Public transport
Walking and cycling
Out-dating infra and its maintenance is a challenge
Possibilities through co-operation
**Development vision of different transport modes within the multi-modal transport System of Lapland (till 2030)** | Development vision of different transport modes within the multi-modal transport System of Lapland (till 2025) |

| ANNEX 4.8.1 |

### Conclusions

1. Comparative analysis of different transport modes development prospects in Lapland and the Murmansk region reveals principle differences in approaches to development of transport system on both sides of the border. The difference is in the following:
   - Lapland focuses on integration of closely related modes of transport to develop multimodal logistics transport chains (including ports) for smooth transportation of goods and reduction of goods consignor costs (e.g. with means of reverse logistics when empty transportations...
are decreased. Freight flow is attracted not to the port but to the logistics route with port’s participation. Team game of all modes of transport within logistics approach allows to compensate costs of one chains by efficiency of the others thus increasing “balance effect” with organizational improvements and additional services. Additionally to this an integrated approach increases justification of investments into modernization of transport modes – participants of integration process;

- The Murmansk region focuses on extension of port assets to increase export freight flows (mainly raw material and low value-added products). The related modes of transport are not integrated by goods consignor’s interests. These approach doesn’t contribute to flow fluency and reduction of costs and therefore – to competitiveness of the route with the port’s participation. Investments into port modernization without development of logistic multimodality and alternative routes (including port) become risky for investors.

- In Lapland decisions made for development of road, public and non-motorized transport meet national policies and are balanced on the strategy development level, are user oriented, directed to active facilitation of common objectives: better living environment and higher business competitiveness – with the end goal – to integrate living plans of youth with Lapland. The specifics is a proactive model of actions to struggle for the main resource – human, without which it would be impossible to meet the future challenges.

- The Murmansk region has a lack of data for forecasting flows and its composition on roads and a political vacuum regarding public and non-motorized transport. Political vacuum results in passive position of transport sector towards emigration of population from the region.

2. Coordinated development of transport systems of Lapland and the Murmansk region will help to:

- Extend the vision of multimodal transport system in a trans-border context – to the territory of the Murmansk region thus increasing the number of potential logistics alternatives, including that with participation of the Murmansk port, and revealing the needs in development of logistics chains;

- Contribute to elimination of political vacuum regarding public and non-motorized transport and extension of its role to improve quality of living environment in the Murmansk region in accordance with privileges given by the federal legislation.

- Create a starting point for road sector development in unfavorable conditions of reducing financing and traffic volume growth based on experience of countries that came out of crisis during the similar periods. Solving of this task is critical because of unacceptable costs from road congestion, accidents, environmental impacts, especially in the cities; critical importance of roads for business functioning and social services; integrating role of road transport in the multimodal transport system.

### Conclusion

**CHAPTER 4.8**

The choice of goods consignor defines the freight flows in the current world economy. The goods consignor chooses the best, from his point of view, option among all possible logistics chains, where links composed of different modes of transport are combined. The choice criteria is as a rule the total logistics costs for goods delivery from origin to destination point. Competition on the transport market is a comptition of teams but not single actors.

The principle of “team” makes different modes of transport integrate their infrastructures, technologies of loading/unloading, standardize pieces of freights and documents. The basis for attractiveness of the route is the ability of coordinated flexible “game” by all the team members. This approach allows to optimize assets, investments and serves as an argument attracting investors and clients. The possible actions of the actors as a contribution to success of the team are:

- Analysis of goods consignor’s costs on their part of the chain and on intermodal terminals, as well as searching of ways to minimize it;
- Identification of obstacles for goods flows and coordinated actions with other modes of transport to eliminate it;
Participation in optimization of transport networks by promoting the projects aimed at increased effectiveness of bottle-necks, construction of missing links to optimize routes and provide access to new goods consignors never accessible before;

Partnership of ports of one zone (e.g. Barents, White or Baltic seas) to provide balance of flows and reverse loading of ships and gradual deepening of port specialization within the port systems, which will help to optimize the set of techniques and equipment, improve qualification of personnel and improve quality and speed of goods handling.

This approach of team logistics work can be applied not only for freight transportations but for passenger transportations too, and improvement of tourist route competitiveness.

**CHAPTER 4.9**

<table>
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<tr>
<th>LAPLAND: SUMMARY OF TRANSPORT SYSTEM NEEDS IN DEVELOPMENT</th>
<th>THE MURMANSK REGION: SUMMARY OF TRANSPORT SYSTEM NEEDS IN DEVELOPMENT</th>
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<td><strong>SWOT Analysis – «Coordinated development of transport systems of Lapland and the Murmansk Region»</strong></td>
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<tr>
<td><strong>The province of Lapland</strong></td>
<td><strong>The Murmansk region</strong></td>
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<td><strong>S (Strengths)</strong></td>
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<tr>
<td>1. Beneficial geopolitical location as a transit territory between EU, Norway and Russia</td>
<td>1. Beneficial cross-border and transit location between EU, Norway and other Russian territories</td>
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<tr>
<td>3. Availability of railway transport</td>
<td>3. Availability of railway transport</td>
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<td>4. Availability of road network integrated into EU transport system</td>
<td>4. Availability of road network</td>
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<td>5. Availability of air transport</td>
<td>5. Availability of air transport</td>
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<td>6. Availability of organizations providing logistics services</td>
<td>6. Availability of the project aimed at Murmansk transport node and free port economic zone development</td>
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<td>7. Network principle of transport infrastructure development that provides logistics alternatives based on multimodal approach</td>
<td>7. Availability of the Russian strategies on transport system development and railway transport development</td>
</tr>
<tr>
<td>8. High level of motorization</td>
<td></td>
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<tr>
<td>9. High transport safety</td>
<td></td>
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<tr>
<td>10. Availability of quality public transport and light traffic infrastructure</td>
<td></td>
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<tr>
<td>11. Availability of transport system strategic development plan integrated with the Barents region plans</td>
<td></td>
</tr>
<tr>
<td>12. Availability of organizations with up-to-date instruments of decision-making in the sphere of transport (modelling)</td>
<td></td>
</tr>
</tbody>
</table>
| W (Weaknesses) | 1. Remoteness and periphery location, severe climatic conditions  
2. High transport costs  
3. Low population density  
4. Uneven regional structure (sparsely populated territories)  
5. Worn out railway transport infrastructure, the need in modernization and investments  
6. Imbalance of in/out freight flows  
7. High dependence of population from personal cars  
8. The need in subsidies to support public transport functioning | 1. Remoteness and periphery location, severe climatic conditions  
2. High transport costs  
3. Low population density  
4. Low road network density  
5. Uncompetitiveness of transport operators on external market  
6. Imbalance of freight flows going through the ports oriented on export of raw materials  
7. Uneven regional structure (sparsely populated territories and mono-cities)  
8. Worn out infrastructure of railway, air transport, the need in modernization and investments  
9. Low mobility of labor forces and non-balanced labor market  
10. Orientation of transport sector on raw materials flow servicing  
11. Inattractiveness of settlements for life because of externalities (road congestion, road accidents, negative impact on environment and health)  
12. Low quality of public transport services, absence of light traffic infrastructure  
13. Low road traffic safety  
14. Underdevelopment of logistics services  
15. Absence of user-orientation in transport sector  
16. Absence of data for forecasting and decision-making  
17. Transport orientation on extensive way of development |
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>O (Opportunities)</td>
<td>1. Implementation of transit potential through integration with larger scale transport systems of EU and Russia</td>
</tr>
</tbody>
</table>
2. Entry to the Northern Sea Route
3. Extension of tourist industry opportunities
4. Development of trans-border activity clusters
5. Employment increase and population emigration prevention
6. Identification of infrastructure projects of common interest, setting priorities for its implementation to increase system effect
7. Formation of the vision of the Barents transport-logistic system able to meet the demand of the world economy for transport services.

2. Development of the model of mutually-complementing trans-border interaction, know-how transfer
3. «Rising» of trans-border activity clusters, e.g. logistics cluster to provide youth employment and prevention of its emigration
4. Increase of readiness to access WTO
5. Expansion of studies/investigations and application of data collection methods in formats applicable for decision-making with means of instruments (modelling) clear for potential investors
6. Increase of operational compatibility and extension of multimodality
7. Adoption of principles and methodologies to increase infrastructure effectiveness, improve public transport, safety and ecological compatibility, implement the rights of all user groups for mobility, etc.
8. Creation of a multiplicative effect (direct, stimulating and catalyst)
9. Identification of infrastructure projects of common interest, setting priorities for its implementation to increase system effect
10. Identification of competitive logistic alternatives
11. Assistance to harmonization of road conditions
12. Extension of consensus of business, authorities and civil society
13. Improvement of functional environment and investment climate
14. Formation of the vision of the Barents transport-logistic system able to meet the demand of the world economy for transport services.
15. Adaptation of management and technological know-how, which allow to increase output of available financing and optimize costs of the road sector
16. Mastering the best world experience and its dissemination to other Russian regions, entry to the list of innovational Russian territories
17. Adoption of the principles of planning and design, construction and maintenance of light traffic infrastructure
### T (Threats)

1. Growing fuel and energy prices
2. Decreasing population
3. Budget deficit and reduced subsidies from the national budget
4. Worsening of road and railway networks condition
5. Worsening of transport connections
6. Climate change and more frequent nature anomalies.

### 18. Adoption of principles and methods to reduce road traffic accidents
19. Increase of transport system readiness to react on changes of an unsteady environment

### 1. Increasing motorization level together with absence of adequate measures to mitigate negative impacts of externalities
2. Growing fuel and energy prices
3. Decreasing population
4. Budget deficit
5. Further growth of traffic flow loads and volumes
6. Delays in implementation of mega-projects
7. Climate change and more frequent nature anomalies.

### PART 5

**SUMMARISED FINDINGS OF CLAUSES 1-4**

Comparative analysis reveals the border effect that prevents from integrated development of transport systems of Lapland and the Murmansk region. The border effect is summarized from differences in:

- Basic transport indicators (levels of motorization, congestion, safety and transport ecological compatibility);
- Ethical principles (orientation on user groups);
- Management approaches to solving transport tasks (foresight and system planning, policy in the sphere of public transport, safety assurance, provision of rights for mobility);
- Readiness to answer the challenges (demographic, environmental, economic, etc.).

The critical common challenge for both territories is population reduction. The budget, relevance of investments into infrastructure projects, competitiveness of economies depend on successful answer to this challenge. An advanced readiness of the Lapland transport system to meet the modern and future challenges is evident.

Coordinated development of transport systems of both territories allows to reduce border effects and to “rise” the clusters of transport activity in the Barents Region first of all in the sphere of transport logistics services, which has a potential of employment, attractiveness of the Region and development of additional logistics services with high value added based on small business.

Coordination of transport systems creates the model of trans-border interaction of two neighboring territories as a platform for acceleration of innovational development, investment attractiveness and diversification of periphery economies.
The prerequisites for transport system coordination are as follows:

- Ability of the Finnish side to manage with the tasks of transport system, which is integrated into the larger scale transport space EU (TEN).
- Availability of railway transport as a potential basis of a larger scale transcontinental logistics system “Europe-Asia”.
- Availability of transport system components able to form a framework for future transport logistics cluster of the Barents Region.
- Availability of potential to reduce logistics costs and externalities and increase transit attractiveness of the Arctic routes in the Region as a result of “multimodal team game” of different modes of transport.
- Availability of development potential of public and non-motorized transport as alternatives to personal cars.
- Availability of experience of neighboring territory partners as a factor of road safety improvement acceleration.
- Availability of the potential to improve living environment quality within the specific conditions of the Arctic based on modern principles of city planning adapted to high motorization levels and on experience of the Barents region countries.

The basic directions of coordination are:

1. Harmonization of initial data collection and processing methods (mobility, requirements of user groups, forecasts of demands for transport services) as a basis to apply up-to-date instruments for operative and quality decision-making (modelling).
2. Transfer of know-how on road accident risk management with means of effective and efficient solutions to reduce the number of killed and injured in road accidents.
3. Differentiation of approaches to provide different user groups with transport services in order to ensure community’s mobility with minimum costs.
4. Improvement of public transport and light transport infrastructure quality and its operational viability as a framework of ensured mobility and alternative to personal cars.
5. Transfer of know-how of system and foresight transport decision making in order to keep growing transport externalities within high motorization levels and to increase attractiveness of infrastructure projects.
6. Improvement of conditions for small business in transport sector as a condition for “rising” of trans-border transport logistics cluster competitiveness.
7. Development of transport strategies of Lapland and the Murmansk region integrated within the transport strategies of Russia and the Barents Region as a contribution to non-raw material development of economies and increase of transit attractiveness of the Arctic routes within the conditions of global instability.
### PART 6

**INTEGRATED SWOT-ANALYSIS AS AN INITIAL SISTEMATIZED MATERIAL TO PLAN COORDINATED DEVELOPMENT OF TRANSPORT SYSTEMS OF LAPLAND AND MURMANSK REGION**

| S (Strengths) | 1. Strengthening of geopolitical location benefits of both territories with means of increased accessibility of the Baltic Sea, seas of the Arctic, EU countries space, Norway and Euro-Asian space of Russia;  
2. Increase of the number of ports, which, if integrated into the system, form the basis for transport logistic platform on the North of Europe (the Barents Region);  
3. Increase of the scale of the railway framework of trans-continental logistics with means of railway systems integration;  
4. Extension and optimization of the road network development – the basis for mobility of people, goods, investments, production logistics and expansion of market space for small business goods and services;  
5. Increase of demand for air transport services as a result of activation of territories’ economy interaction;  
6. Increase of demand for logistic company services and stimulating of logistics business development through activation of transport activities;  
7. Extended network principle of transport infrastructure development and multimodality to increase logistics alternatives and reduce user costs;  
8. Extended usage of experience to manage the risks resulted from increased level of motorization (road congestion, road accidents, environmental stress), increased attractiveness of settlements for life;  
9. Dissemination of principles and methods to reduce road accidents when high motorization levels;  
10. Strengthening of public transport positions through increasing of passenger flow movement activity  
11. Growth of popularity of light traffic, dissemination of principles of planning, design, construction and maintenance of light traffic infrastructure;  
12. Integration of transport system development strategies of the Barents region territories, extension of the system effect;  
13. Extended application of know-how and decision-making principles in the sphere of transport (modeling) mastering of know-how by the Russian specialists;  
14. Increase of informational base, improvement of quality of forecasting and decision making in transport sector;  
15. Extension of business space based on client-orientation ethics;  
16. Increase of readiness of the Arctic transport system to react on operational environment changes;  
17. Increase of economic justification of the planned costly infrastructure projects: the Murmansk transport node, modernization of railways and air transport. |
| W (Weaknesses) | 1. Mitigation of costs related to periphery location and severe climatic conditions due to increased mobility and scaled optimization;  
2. Reduction of transport costs due to differentiation, network development, extension of logistics alternatives and multimodality;  
3. Reduction of unattractiveness of the Northern periphery for business and living due to extended possibilities for business, improved quality of living environment;  
4. Increased justification of investments into modernization of worn out railway transport infrastructures;  
5. Reduction of imbalance between incoming/out-coming freight flows due to attraction of flows from behind of the Barents region;  
6. Reduction of dependence of population from the personal car due to better economic viability of public transport;  
7. Increase of labor resource mobility; |
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>8.</td>
<td>Reduction of raw material orientation of local economies and transport sector due to diversification of economic activity;</td>
</tr>
<tr>
<td>9.</td>
<td>Shifting of emphasis from extensive (quantity) to intensive (quality) development with means of management/technological know-how that increase output from available local resources.</td>
</tr>
<tr>
<td><strong>O</strong> (Opportunities)</td>
<td><strong>T</strong> (Threats)</td>
</tr>
<tr>
<td>1.</td>
<td>Implementation of transit potential of territories with means of integration with larger scale transport systems of EU and Russia;</td>
</tr>
<tr>
<td>2.</td>
<td>Increasing competitiveness of the Arctic transport operators on the world market due to increased demand for their services adapted to natural and climatic difficulties;</td>
</tr>
<tr>
<td>3.</td>
<td>Provision of entry to the Northern Sea Route for third region freight flows through introduction of new links that optimize the routes and increase the number of logistics alternatives;</td>
</tr>
<tr>
<td>4.</td>
<td>Harmonization of road conditions, road safety improvement;</td>
</tr>
<tr>
<td>5.</td>
<td>Increase of tourism industry possibilities, competitiveness of the Arctic tourist services on the world market;</td>
</tr>
<tr>
<td>6.</td>
<td>Development of trans-border activity clusters, mobility of technologies, know-how, labor resources;</td>
</tr>
<tr>
<td>7.</td>
<td>Increase of demand for labor resources, prevention of local population emigration, promotion of immigrants;</td>
</tr>
<tr>
<td>8.</td>
<td>Identifying infrastructure projects of common interest, setting of priorities, joining of efforts to promote the projects in order to accelerate its implementation and increase system multiplicative effects (direct, stimulating, and catalyst);</td>
</tr>
<tr>
<td>9.</td>
<td>Provision of operational compatibility on a vast space for smooth and fluent movement of freight and passenger flows, extension of multimodality;</td>
</tr>
<tr>
<td>10.</td>
<td>Formation of the common vision of the Barents transport logistics system able to meet the world economy demands for transport services;</td>
</tr>
<tr>
<td>11.</td>
<td>Extension of research and studies, forecasting in order to attract attention of potential investors;</td>
</tr>
<tr>
<td>12.</td>
<td>Improvement of operational environment, PPP, investment climate;</td>
</tr>
<tr>
<td>13.</td>
<td>Mastering of best world experience and transferring it further to the East, to other Russian regions in order to create favorable conditions for transit;</td>
</tr>
<tr>
<td>14.</td>
<td>Development of the trans-border innovational interaction model in order to promote cooperation of other cross-border territories;</td>
</tr>
<tr>
<td>1.</td>
<td>Mitigation of threat of destabilization of transport system functions due to weather and nature anomalies with means of increased operative reaction of the transport activity partners and alternatives of business and population mobility provision;</td>
</tr>
<tr>
<td>2.</td>
<td>Mitigation of threat of fuel price growth on competitiveness of local business through optimization of routes and increase of multimodality;</td>
</tr>
<tr>
<td>3.</td>
<td>Mitigation of threat of population emigration with means of extended opportunities for business, employment increase and improvement of quality of environment;</td>
</tr>
<tr>
<td>4.</td>
<td>Reduction of budget deficit for the needs of transport system with means of economic activity increase and population size stabilization;</td>
</tr>
<tr>
<td>5.</td>
<td>Prevention of worsening of road infrastructure operational condition with means of more operative maintenance, management and technological improvements, stabilization of financing;</td>
</tr>
<tr>
<td>6.</td>
<td>Reduction of threat related to delays in launching of new infrastructure projects with means of more effective usage of existing transport infrastructure;</td>
</tr>
<tr>
<td>7.</td>
<td>Mitigation of threat of growing externalities resulted from increased motorization level with means of attracted experience and implementation of successful measures to mitigate negative impacts of externalities.</td>
</tr>
</tbody>
</table>
CONCLUSIONS OF TRANSPORT SYSTEM ASSESSMENT AND NEEDS FOR HARMONIZED DEVELOPMENT

The visualization result of the work is the Matrix: Development directions for cross-border cooperation projects aimed at elimination of border-effects and integration of cross-border transport systems.

The Matrix is intended for:
1. Orientation when planning and structuring cross-border development projects to provide extended system effect from their implementation
2. Development of project applications within Kolarctic ENPI CBC Programme (setting objectives and tasks).

Matrix configuration and conventions

Horizontal – represents common strategic objectives declared in the national strategic documents on both sides of the border. Achievement of these goals by Lapland and the Murmansk region forms the field of common interests to join efforts within the cross-border partnership projects.

Vertical – represents directions and factors of development that contribute to elimination of border effects. Benchmarking (Lapland/the Murmansk region) reveals differences of these factors thus impeding from achievement of common strategic objectives and requires actions to eliminate these hindrances.

The field of horizontal and vertical crossing defines the fields for cross-border partnership projects aimed at harmonization of development factors, that provide contribution to achievement of common strategic objectives of the territories considered.

The requirements to cross-border cooperation projects are solving the tasks aimed at elimination of the border effects with means of know-how transfer or development of innovational solutions beneficial for both sides and able to serve as models for other bordering territories.

Color designation

The color of different fields of the matrix implies supplementary information, namely:
- **Blue area** – area of operational environment factors
- **Green area** – area of transport infrastructure factors
- **Yellow area** – area of development factors dependent from operational environment and infrastructure

Color intensity shows less or more priority of actions in the defined areas.

- **Orange area** - area of objectives achievement of which is integral result of progress in achievement of other objectives, to which transport development contributes for (through improved mobility of people, goods, technologies, services and investments).
# The Matrix:
Development directions for cross-border cooperation projects aimed at elimination of border-effects and integration of cross-border transport systems

<table>
<thead>
<tr>
<th>Directions and factors for territory development (elimination of border effects)</th>
<th>Common strategic objectives of territories</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Integration, implementation of transit potential</td>
<td>1. Integration, implementation of transit potential</td>
</tr>
<tr>
<td>2. Regionalization</td>
<td>2. Regionalization</td>
</tr>
<tr>
<td>3. Operational compatibility, multimodality</td>
<td>3. Operational compatibility, multimodality</td>
</tr>
<tr>
<td>5. Client-orientation</td>
<td>5. Client-orientation</td>
</tr>
<tr>
<td>6. Safety (operational and environmental)</td>
<td>6. Safety (operational and environmental)</td>
</tr>
<tr>
<td>7. Intelligent transport</td>
<td>7. Intelligent transport</td>
</tr>
<tr>
<td>8. Arctic development</td>
<td>8. Arctic development</td>
</tr>
<tr>
<td>9. Reduction of population emigration (better mobility, improved quality of living environment)</td>
<td>9. Reduction of population emigration (better mobility, improved quality of living environment)</td>
</tr>
</tbody>
</table>

**Operational environment factors**

1. The vision, policies, concepts
   - The policy of integrated planning of transport development and land-use
   - The policy of interregional cooperation; advanced vision of the transport space
   - The policy of operational compatibility, increased homogeneity of performances and improved traffic flow fluency
   - The policy of trans-border transport logistics cluster “rising”, competitiveness on the world market

2. Administrative reform
   - Horizontal cooperation of departments and administrations responsible for transport system components
   - Horizontal cooperation of authorities, business and civil society
   - Network vision, interregional projects

3. Development of transport systems of the territories
   - Methodology of strategy and programme development in a format of international financing institutions

4. Transport corridors
   - Identification of the projects of common interest, setting priorities to increase system effect
   - Modelling, logistics optimization

5. Demography situation, community structure
   - Stabilization of regional structure to reduce investment risks of investment projects

6. The needs in economy development
   - Favor conditions for small business mobility
   - Trans-border tourism

7. Climate change
   - Increasing of environmental awareness and global responsibility

8. Arctic development
   - Development of transport infrastructure, multiplicative effect, development of human potential
   - “Catching up” of mono-economies, flow analysis, investment attractiveness
<table>
<thead>
<tr>
<th>Infrastructure factors</th>
<th>Development factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Sea transport</td>
<td>• Development of a forum of ports – the site for dialogue aimed at ports system development – the basis for the Barents transport-logistics platform</td>
</tr>
<tr>
<td>9. Railway transport</td>
<td>• Integration of railway systems, optimalizational railway links that expand logistics alternatives, attraction of transit to railways with means of better intermodal connections with the ports, increasing validity of investments into railway modernization</td>
</tr>
<tr>
<td>10. Air transport</td>
<td>• Joint searching of ways to enhance the role of air transport in the Barents Region</td>
</tr>
<tr>
<td>11. Road transport</td>
<td>• Transfer/dissemination of management and technological know-how that allow to increase output of available resources • Increasing homogeneity of road conditions on latitudinal directions of territorial cross-border roads • Road traffic safety improvement, comfort for the users</td>
</tr>
<tr>
<td>12. Personal car transport</td>
<td>• Mobility and externality management on the basis of best world experience, its adaptation and transfer to other Russian regions (balanced “push-and-pull” measures)</td>
</tr>
<tr>
<td>13. Public transport</td>
<td>• Harmonization of public transport service standards • Collection of data on user group needs, hindrances for public and light transport development</td>
</tr>
<tr>
<td>14. Light traffic</td>
<td>• System process of quantity and quality improvements in transport infrastructure with participation of user groups</td>
</tr>
<tr>
<td>15. Mobility</td>
<td>• Harmonization of data collection methodologies to make transport decisions with means of up-to-date instruments of transport flow forecasting and modelling</td>
</tr>
<tr>
<td>16. Road traffic safety</td>
<td>• Adaptation of new principles of road traffic safety ensuring within high motorization levels • Development of complex road traffic safety programmes • Black spot management • Improvement of safety of vulnerable road user groups – pedestrians and cyclists</td>
</tr>
<tr>
<td>17. Logistics environment</td>
<td>• The concept of trans-border transport-logistics cluster rising • Institutional development</td>
</tr>
<tr>
<td>18. Transport readiness to answer the challenges</td>
<td>• The Strategy of the Barents region transport system development to enhance readiness to jointly answer the challenges and function systematic within unstable environment in order to increase global competitiveness • Motivation for development</td>
</tr>
</tbody>
</table>