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INLAND TRANSPORT COMMITTEE

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agenda item 12(1)(i))

**ISSUES THAT NEED CONSIDERATION AND REQUIRE DECISIONS BY THE
COMMITTEE**

Supply chain and logistics implications for transport

Supply chain challenges for national competitiveness through transport

Note by secretariat

1. At its twenty-first session in September 2008, the Working Party 5 (WP.5) took note of the presentation by the secretariat on supply chain challenges for transport. The Working Party noted the increasingly important link between economic globalization and swift changes and developments in transport logistics and supply chain management. It further concluded that this relationship has an increasing impact on the overall competitiveness of countries. Noting that a commonly accepted methodology which provides an evaluation tool for the assessment of supply chain challenges in the transport sector is currently unavailable, the Working Party endorsed the proposal of the secretariat to launch an externally-financed project aimed at developing such a methodology. It further recommended to the Inland Transport Committee to adopt this proposal at its seventy-first session in February 2009.

2. This note is submitted to the Committee in order to provide further details on the proposal to develop a unique methodological tool which could be commonly used by member Governments wishing to evaluate the contribution of the transport sector to the overall competitiveness of their particular economies.

Introduction

3. Although the current economic crisis may raise some doubts about the benefits of globalization in some countries, it is still seen as a prerequisite for further economic development. Globalization can be interpreted as the growing economic interdependence of countries world-wide through an increasing volume and variety of cross-border transactions in goods and services and of international capital flows, as well as through more rapid and widespread diffusion of technology. It affects trade patterns, capital flows and location choices of firms at a regional and global level. It can substantially raise economic growth of developing regions, and lead to a considerable shift of production activities to these countries.

4. Transport is commonly considered as one of the important driving forces for economic growth and social development. Each new transport infrastructure link creates new opportunities for growth and prosperity. For many years, transport modes operated and offered unique solutions which served particular geographic connections. Nowadays, transport modes operate as intermodal solutions and in integrated networks. Freight transport has become an integral part and determining factor of production, i.e. part of the supply chains and an important driver of national competitiveness.

5. Rapid growth of transport has been a catalyst for development of logistics and supply chains. Modern and flexible transportation services integrated into supply chains with other related services offer manufacturers production opportunities far away from the main consumption centres, ensuring direct and secure transfer of products, at low costs and on time. In addition, the globalization of manufacturing has led to more cross border trade and consequently to more transport. Supply chains are becoming longer, extending the length of routes and increasing the intensity of transport operations. Technological developments, modern transport systems, intermodality¹, the development of infrastructure and the growing size of vehicles further contribute to the creation of “transport networks” which can readily respond to the most demanding supply chain needs.

6. Efficient and well-developed logistics are identified as the key to cost-effective and competitive transportation. Trade logistics, or the capacity to connect to international markets to ship goods, is critical for developing countries if they are to improve their competitiveness, reap the benefits of globalization, and fight poverty more effectively in an increasingly integrated world. A World Bank study, based on a world survey of international freight forwarders and express carriers, indicates that facilitating the capacity to connect firms, suppliers, and consumers is crucial in a world where predictability and reliability are becoming even more important than costs. A country's ability to connect to global markets is fast becoming a key aspect of its capacity to compete, grow, attract investment, create jobs, and reduce poverty. For

¹ Intermodality addresses the sequential use of different transport modes in the logistic chain(s). Actors like the territorial authorities/decision makers may consider the nodal design and tariff system as the integrative elements of the networks. In the same context, public, semi-public and private operators and organisations can act either as the ‘logistic suppliers’, the operators of complete value added networks, and/or as regulators of the network operations. Industrialists and the technical research community may consider the transshipment technology and just-in-time (JIT) design as the main intermodal elements of the networks.

Interconnectivity is particularly concerned with the horizontal co-ordination of the networks which have different geographical coverage and access. Actors like the territorial authorities and policy decision makers may consider the connectivity of the networks at a local (regional), national and international (European) level as a potential way to obtain infrastructure added value. Operators and organisations may consider the application of ‘Electronic Data Interchange (EDI) and the integrated terminal and/or transfer services as the way to establish the interconnectivity of the network(s). Industrialists and the technical research community can consider the development and implementation of information technology and electronic customs as the way to establish the interconnectivity of these networks.

Interoperability mainly refers to the technical and operational (procedural) uniformity which may be convenient for the actors (the modal carriers and the integrators of the network services) to link the various layers or components of the transport networks. Different actors may consider this attribute in different ways. For example, the territorial authorities/policy makers are mostly interested in the safety and the environmental norms and standards. The operators may consider the interoperability as a matter of pre-competitive research. The industrialists and technical research community may consider the (pre-) standardization, compatibility of the infrastructure technology, facilities and equipment, and the specific characteristics of the vehicles (dimensions) as the most suitable way for interoperable integration of the networks.

those countries unable to connect, the costs of exclusion are large and growing. Unfortunately, performance of some countries in the UNECE region, in all indicators of logistics management, is at the bottom end. Their ranking clearly indicates serious issues in logistics development; this situation is hurting countries' competitiveness and has serious repercussions for their economic performance.

7. The importance of supply chain management, and therefore of transport for national competitiveness, has increased dramatically, due mostly to the increasingly complex demands by the international economy. This increasing complexity stems from: (a) integrated global manufacturing and production networks, (b) a rising need for just-in-time logistics, (c) growing use of intermodal transport involving several transport modes and (d) security considerations. With demand becoming more complex, the processes required to complete trade transactions, involving multiple steps, a myriad of players and a range of legal and regulatory frameworks have also become more complex. With costs added at each step of the process, the quality, cost and efficiency of transport and logistics services have considerable effect on the value of goods at their final destination, and consequently, on overall national competitiveness on a global scale. In many developing and transition countries weaknesses in their trade support services sectors contribute to high transaction costs. A limited ability to meet the transport and logistics demands of an increasingly complex global economy weakens these countries' competitiveness and thus the ability of their manufacturers to take advantage of emerging global market opportunities.

8. In recent years there has been a significant volume of research and many indicators for the transport and logistics market have been developed. These indicators have focused on the transport supply side (generally infrastructure and services) mainly taking into account objective and subjective parameters provided by a segment of the market (forwarding companies and shippers). They have been able to capture supply chain issues only partially. Neither the new role of transport, nor the quality requirements have been assessed. In other words, what is missing is the consideration of the demand side. Thus, it seems obvious that there is a need to develop a new evaluation tool which can capture the new challenges for the transport sector and take into account its role as the most important link of the international supply chains.

9. This note outlines the main features of a new evaluation tool for supply chain challenges from the transport perspective. The proposed methodology will take into account direct and indirect aspects which affect transport networks and systems operating in international supply chains. Socio-economic factors, regional and sub regional characteristics, measurement of the quality of services provided, as well as a balanced approach towards both the demand and the supply side should also be taken into consideration. This new evaluation methodology aspires to fill the gap which exists today of an integrated approach to evaluating transport networks and services in the context of international supply chains.

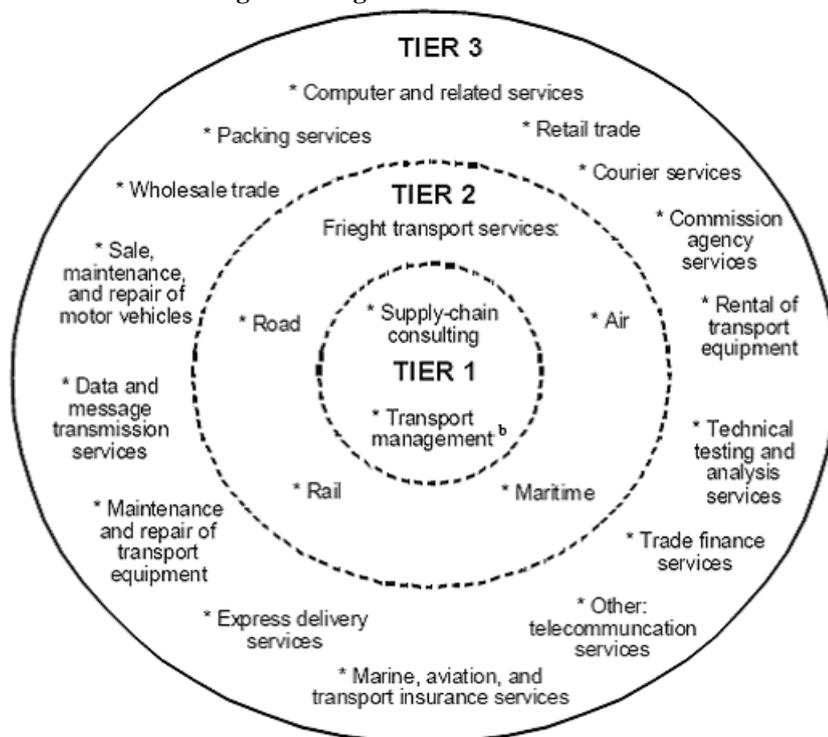
III. Logistics - organizing and managing transport in a global economy

“...Transport and Logistics are individual economic areas with growth opportunities and they have their own character of value creation. [...] As central elements of up to date production and service processes, transport and logistics are important factors for the economy and they give the essential contribution to its productivity and competitiveness. As an engine for innovation and progress they guarantee the sustainability of the economic site.....” State-Secretary Jorg Hennerkes, German Ministry of Transport, Brussels on 07 March 2007.

10. Globalization is putting increased pressure on the organization of logistics and supply chain management. Specialization, the use of superior resources, and economies of scale in production and distribution are gaining even more importance for national competitiveness and putting additional demands on the transport sector. Freight movements are fundamental to the functioning and competitiveness of a modern economy.

11. The complex web of global production, transportation and consumption requires greater efforts to manage. Logistics is the series of activities required for goods to be made available on markets. This mainly includes purchase, orders processing, inventory management and transportation. As the range of production has expanded, transport systems have adapted to new demands in freight distribution where reliability and timely delivery can be as important as the cost. Logistics has consequently taken on an increasingly important role in the global economy, supporting a wide array of commodity chains. First, improvement in transport efficiency expanded the geographical range of commodity chains. Second, a reduction in telecommunication costs enabled corporations to establish a better level of control over their commodity chains. Third, technological improvements, notably for intermodal transportation, enabled an increased continuity between different transport modes and thus within commodity chains. The results have been a decrease in the frictions caused by distance and a spatial segregation of production. Consequently, commodity chains are integrated with transport systems with logistics as a strategy used to reduce time. Commodity chains are also becoming increasingly managed by demand, implying that what is being produced is matched as closely as possible to what is being consumed. Logistics services are becoming complex and time-sensitive to the point that many firms are sub-contracting parts of their distribution activities to specialized logistics providers.

Figure 1. Logistics services activities^a

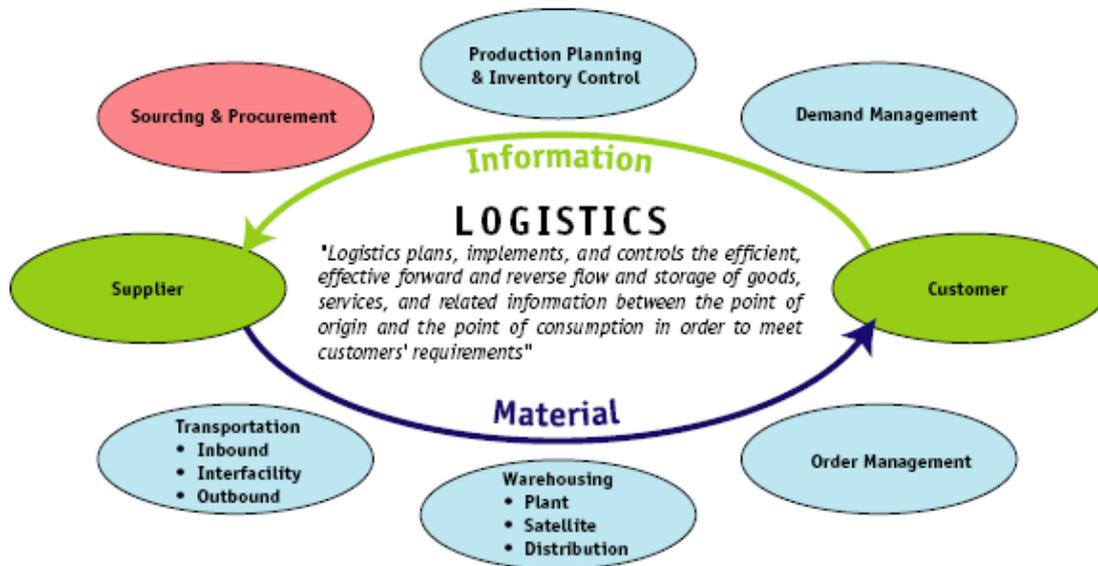


^a These activities are based on USTR's definition of logistic services. Where possible, the figure lists activities using the WTO's Services Sectoral Classification List as a guide.

^b Transport management services include storage and warehousing, cargo handling, transport agency services, and customs brokerage.

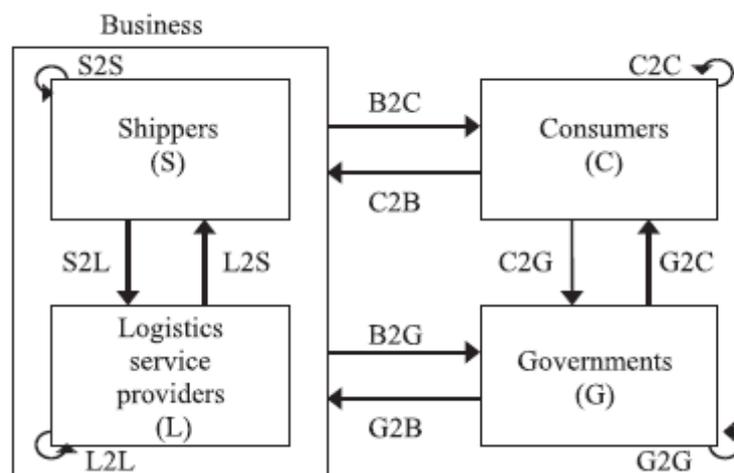
12. There are several ways to view logistics: input/output view, supply chain view, geographic view, or regional economy view. To some, logistics is limited to transport management; to others it might be as broad as supply chain management. The most commonly used definition of logistics is one given by the Council of Supply Chain Management Professionals (CSCMP):

Figure 2. What is logistics?



13. Four types of stakeholders can be identified in logistics operations: shippers, consumers, governments and logistic service providers (including carriers). The transactions between these stakeholders have multiple dimensions: commercial, financial/administrative and a logistical or operational dimension.

Figure 3. Stakeholders in logistics systems



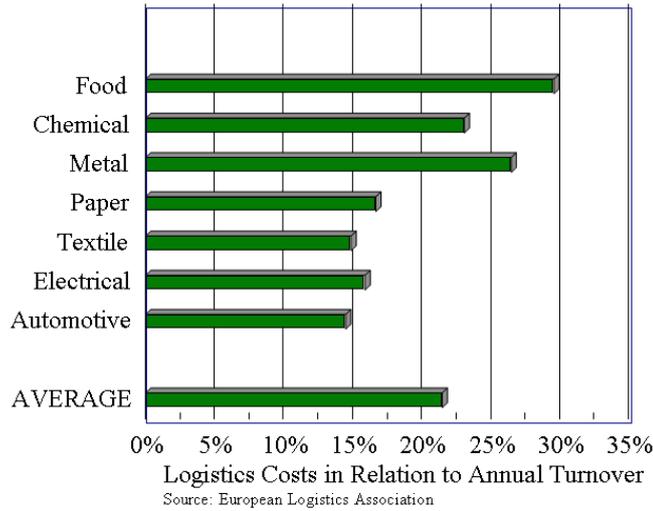
14. The lack of definition implies that there are no official statistics on the logistics industry and therefore widely differing estimates of the industry's size exist. The gathering of official statistics based on representative samples is hampered by both technical and conceptual problems. The wide range of activities and services encompassed by logistics presents a measurement challenge. Although many logistics service firms reside in the transportation and warehousing industries, other activities such as customs clearance, freight bill payment, order entry, and inventory control system development have emerged as growing service areas for providers in business service industries. For example, several companies in the courier industry not only offer delivery services, but also such services as storing, merging, assembling, packaging and labelling, usually on a contract basis for manufacturers and retailers. Also, many warehousing firms have evolved from providing a narrow range of storage services into becoming full-service logistics companies. Just as transportation companies now do more than move goods, wholesalers now do more than simply buy and sell goods.

15. In spite of the lack of reliable statistical measurement, it is widely accepted that the logistics market has grown steadily in the last 10 years. Driving factors of logistics development are trade liberalization, technological changes, increased possibilities for communication and IT solutions, increased efficiency of transport operations and increased standardization of processes. These developments have further contributed to the integration of supply chains on a global scale. The logistics sector is estimated at 14% of the world GDP. European logistics expenditures are estimated at about 1000 billion € per year, while logistics costs are typically 10-15% of final product costs. The direct transport cost share is around 25% of all logistics costs. Table 1 shows the absolute size of the logistics market and its relative share in GDP in selected countries. Of product prices, logistics costs also take an important share (Figure 4).

Table 1. Logistics markets and share in GDP

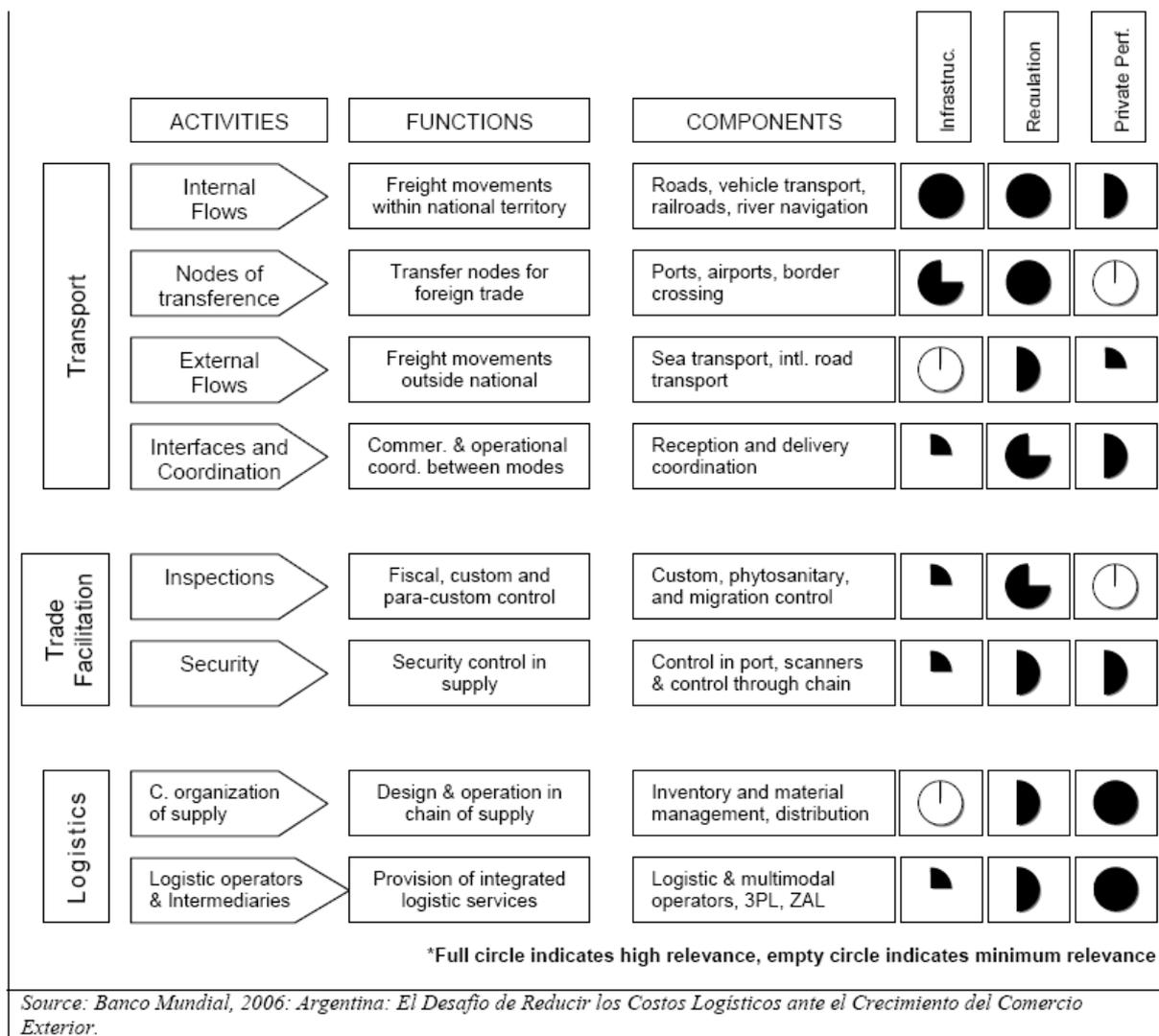
Country	GDP in US\$m	Logistics in US\$m	% of GDP
Mexico	334,726	49,753	14.9
Ireland	67,392	9,611	14.2
Singapore	94,063	13,074	13.9
Hong Kong	153,068	20,992	13.7
Germany	2,352,472	306,264	13.0
Taiwan	273,440	35,686	13.0
Denmark	174,237	22,440	12.8
Portugal	101,182	12,871	12.7
Canada	585,105	70,191	12.0
Japan	4,599,706	522,982	11.3
Netherlands	392,550	44,495	11.3
Italy	1,214,272	137,027	11.2
UK	1,151,348	122,344	10.6
US	7,576,100	795,265	10.5

Figure 4.



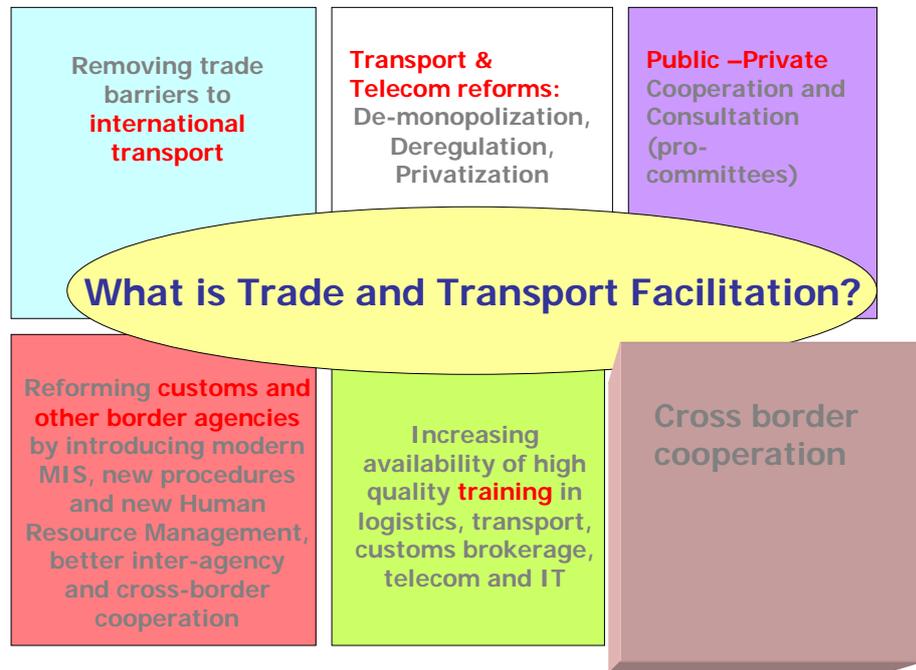
16. A complex logistics system, composed of transport infrastructure and services, business logistics practices and trade facilitation procedures, is responsible for the physical flows. Several studies analyzed the link between competitiveness and the physical flow of goods, concluding that three major areas have to be dealt with in order to optimize the flow of goods throughout the logistics chain: (a) transportation, (b) business logistics, and (c) trade facilitation. This conceptualization of the factors involved in the flow of goods makes clear that the analysis and policy options should not be limited exclusively to infrastructure bottlenecks (infrastructure being considered the hard component of logistics) but should also consider the rules and procedures regulating the services (soft component). Thus, the performance of a country's logistics system depends on the activities of both the public and the private sectors. Figure 5 shows the impact that the supply of infrastructure, rules and regulations, and the performance of the private sector have on each of the activities defined. It also makes it possible to appreciate the diversity of instruments, both public and private, that converge to define the efficiency of the logistics system.

Figure 5. Logistics costs drivers



17. The above approach however disregards other findings that argue for a holistic treatment of trade and transport facilitation issues (TTF). TTF assumes that within the broad understanding of trade facilitation there is a special segment where transport, communications, customs and other border agencies closely interact, and that the way they perform their tasks, individually and together, has a major impact on trade costs. The importance of their interaction is recognised by considering inter-agency and cross-country cooperation as determining factors in the final TTF outcome. In addition, this approach calls for change management in the role of the public sector. This can be achieved only through complex reforms. Consequently, continuous training is required on all levels. Experience in South-East Europe has shown that reforms can be sustainable if they are the result of the agreement of all stakeholders and if the private sector, shippers, freight forwarders and transport operators are recognised and act as partners. (See figure 6).

Figure 6. A holistic definition of trade and transport facilitation



Source: Eva Molnar, 2004

II. Trends affecting transport

18. Globalization has been supported and expanded by the development of modern transport systems, starting with the emergence of steamships that greatly reduced transport costs across the continents. From large container ships to small delivery trucks, the whole distribution system has become closely integrated, linking manufacturing activities with global markets. However, the beginning of the 21st century brings many challenges to the role of transportation in the global economy. The capacity of many segments of the transport system has been stretched by additional demands tying up long distance transportation modes. Congestion in many international transport terminals such as ports often causes delays and unreliable deliveries, and there is an acute need for improving inland transportation systems, notably those linked to the major gateways of the global economy. Last, but not least, the long trend of growing energy costs is likely to impose significant adjustments to international transport systems.

19. Because of the geographical scale of the global economy, most international freight flows circulate over several modes. Transport chains must be established to service these requirements, which reinforce the importance of transportation modes and terminals at strategic locations. International trade requires distribution infrastructures that can support its volume and extent. Two transportation modes specifically support globalization and international trade: maritime and air transportation. Road and railways account for a growing share of international transportation although they are, above all, modes for national or regional transport services and

for hinterland connections to trans-continental air and maritime transport. For example, a substantial share of the trade between Canada, United States and Mexico is supported by trucking; similarly this is the case for a large share of the Western European trade.

20. Transport, and especially freight, services have become more critical in order for firms to compete. Accommodating new technologies, new markets and new organizational structures requires change - both from providers and consumers, whether individuals or firms. The need for greater efficiencies has made the need for a more “seamless” transport market urgent. A “seamless” transport market is where neither national nor modal boundaries, nor delay movements, hinder the choice of efficient route/mode combination. Driving factors in search of a “seamless” transport market are: competitive pressures which require goods and services companies to manage multiple inter-organizational information and material flows almost simultaneously; the externalization of production trends which is seeking efficiency in managing flow from source to consumer; logistics and supply chain management which depends on how separate modal systems are joined: containerization, load centres, or hub/feeder networks; the role of real time in global operations which have been heightened: JIT, time based competition; the rise of e-commerce with huge consequences for transport systems and logistics.

21. *Globalization and Global Supply Chain Management:* Transport is often referred to as an enabling factor that is not necessarily the cause of international trade, but a means without which globalization could not have occurred. The process of globalization has taken on a course of its own today, creating a new paradigm for transport where global mega-trends both accentuate and at the same time limit its growth potential. In the sphere of economics, the extensive trend of liberalization could be considered the flagship achievement. Although political democratization and economic liberalization processes still have a way to go, the emphasis in forthcoming years will increasingly be on security and facilitation. In addition to challenges for political security, energy, water, food as well as transit security are rapidly becoming priorities on the political agenda. On the other hand, the facilitating role of governments and international organizations continues to be fundamentally important in international cooperation and trade facilitation.

22. The globalization of manufacturing has led to more cross-border trade and consequently to more transport. Globalization has also brought productivity increase into focus. Growing traffic volumes offer economies of scale and lead to lower costs of transport services. The challenge to improve efficiency has led to more reliable services, larger vehicles and higher speeds. Competition is shifting from company level to supply chain level, where the overall reliability and competitiveness of the entire chain depend on the strength of its individual links. Global supply chain management (GSCM) is thus becoming a crucial mechanism to improve the manufacturers’ competitiveness.

23. *Trade liberalization – Facilitation – Security:* Liberalization of international transport services is advancing at a slower pace than in other service sectors. Bilateral intergovernmental agreements, together with their quota systems on market access and regionally negotiated market openings, continue to be the main feature both in land transport and in aviation. Even on the most liberal markets however, border crossing may remain an issue. Hence, trade and transport facilitation has been gaining importance all over the world. Since 9/11 however, security considerations and requirements have changed business conditions both for the public and for the private sectors.

24. *Technical and technological changes and sector convergence:* In order to function in an environment where production processes are often fragmented (temporally and spatially), a host of new technologies have allowed improved predictability and reliability in meeting transport demands: on-board computers, cellular phones, and navigation systems, and a host of hardware and software developments for electronic data interchange (EDI). This development has led to an improvement in the coordination of various economic activities between suppliers, clients and partners, making procedures more cost-effective at the same time. Sophisticated and costly equipment needed for keeping track of shipments and for improving service quality also promotes economies of scope for the transport sector. The same technical resources permit it to spread its costs, allowing it to serve a variety of different consumer needs and to adapt quickly to volatility in the production and marketing of goods and services. In short, new IT applications reduce costs of information exchange and certain fixed transaction costs, thus boosting the international network economy, enhancing the spatial scale of operations of firms, increasing logistic complexity and propping up the role of logistic service providers.

25. *Changing role and scope of the public sector:* Governments see themselves less and less as providers and managers of transport services and increasingly as facilitators, regulators and regulatory enforcers, responsible for public goods in the areas of safety, environmental protection or security. In some cases, regional or lower level authorities, as well as city authorities, have started taking over some of the central governments' functions in local transport management. As a result of transport reforms and particularly the unbundling of large, state owned enterprises like railways, nationally organized bus operators etc., major institutional changes are taking place as independent regulators are established.

26. *Growing responsibility for sustainable development and environmental awareness:* The distance between production and (intermediary and final) demand determines the size of trade and correspondingly the demand for transport. Because globalization affects the volume of consumption, production and the place of production, it has a large impact on the volume of transport. Transport movements can have substantial effects on the environmental quality. The intensity of transport, the distances and the used modes of transport can have big environmental impacts. The share of transport in global CO₂ emissions from fuel combustion is 24 per cent according to the International Energy Agency data. Within this, road transport is the main contributor. Since the first motor vehicle was put in circulation, around 30 million lives have been lost in accidents. Every year 1.2 million people are killed on roads and 50 million more are injured. The annual number of road injuries exceeds the number of people who become HIV positive. Today, the road traffic safety challenge is the world's 9th biggest cause of death and disability. The World Health Organization estimates that by 2020 it will be the 3rd main cause (WHO estimates) if new and improved interventions fail to materialize.

III. Institutional and national initiatives to rate the level of competitiveness

27. Trying to cope with the need to provide more adequate tools for assessing transport's role in supply chains and its contribution to economic development, competitiveness or other macro or micro economic categories, some international organizations, governments, institutions and industry associations have produced a considerable amount of research and developed many indicators regarding the transportation and logistics market. These indicators have mainly focused on national transport indicators or on indicators of a third party logistics market.

(a) The World Bank

(i) Logistics Performance Index

28. The World Bank developed an effective measure of trade facilitation to allow policy makers and researchers to: (i) benchmark countries' overall performance on several dimensions in trade logistics and (ii) assess the quality of a country's connections to the global market. The methodology applied by the World Bank was based on the following:

- Collection of perceptions from logistics services providers (third party logistics 3pl),
- Logistics professionals (in international forwarding companies) and buyers of logistics services.

An internet based questionnaire was used to collect information. It requested evaluation of several logistical elements for each country as well as for eight other countries which were indicated as the most important clients. The logistical elements taken into account by the survey were; international transport costs; domestic transport costs; timeliness of shipments; traceability of shipments; transport and IT infrastructure; customs and border procedures; and, logistics competence. The survey combined subjective and objective measures. As trade patterns vary greatly among countries, the Bank used a tailor made format for each group of countries and for each country. The eight most important partner trading countries were evaluated on: effectiveness and efficiency of clearance process; infrastructure in use for logistics operations; ease and affordability associated with arranging shipments; competence of the logistics industry; ability to track and trace; domestic logistics costs; and scheduled delivery time.

29. The World Bank's Logistics Performance Index (LPI) uses a broader and comprehensive approach to supply chain performance to measure some of the critical factors of trade logistics performance, including the quality of infrastructure and logistics services, security of property from theft and looting, transparency of government procedures, macroeconomic conditions and the underlying strength of institutions. The added value of the LPI is that it provides a global benchmark of logistics efficiency and service quality. It is simple and can have a shocking impact. On the other hand, its handicap is that it builds primarily on subjective feedback and only to a lesser degree on statistics.

(ii) Doing Business

30. The international Finance Corporation and the World Bank jointly maintain the Doing Business database. This initiative provides objective measures of business regulations and enforcement. Doing Business 2008 presents quantitative indicators on business regulations and the protection of property rights which can be compared between 175 economies and over time. For trade activities, Doing Business focuses on red tape obstacles to the movement of goods across borders and the ease of export and import for small and medium sized enterprises. It looks, for example, at the number of documents and signatures for imports and exports. It obviously contributes to a far better understanding of hands on obstacles to businesses. From the transport perspective, it focuses on constraints for already established companies. Foreign direct investment, however, usually does not even happen in places that cannot offer fairly good transport conditions. Hence, transport is usually not rated as a priority area for intervention and improvement.

(iii) Other World Bank research

31. A number of World Bank studies which focus on measuring the level of competitiveness, use four trade facilitation indicators: port efficiency, customs environment, regulatory environment, and e-commerce used by businesses (as a proxy for service sector infrastructure). One approach uses the gravity model to consider how trade among countries might be increased under various scenarios of improved trade facilitation. The goal is to provide directions for specific trade facilitation initiatives with the highest potential to increase trade. Different scenarios are examined with regard to improvements in port efficiency, customs environment, service sector infrastructure, and the regulatory environment. In yet another research, a modelling approach has been used to demonstrate the link between road infrastructure and trade, in which the authors analyzed the quality of road networks in 28 countries in Europe and Central Asia. They came to the conclusion that an ambitious but feasible road upgrade program has great potential to boost intra-regional trade by as much as 50%.

(b) The World Economic Forum

(i) Global Competitiveness Index (GCI)

32. Competitiveness is defined as the set of institutions, policies, and factors that determine the level of productivity of a country. The GCI provides a weighted average of many different components, each of which reflects one aspect of the complex reality that is called competitiveness. All these components are grouped into 12 pillars of economic competitiveness: public and private institutions; infrastructure (well-developed transport and communications infrastructure networks such as, good quality roads, railroads, ports, and air transport, reliable and unimpeded electricity supply, solid and extensive telecommunications network); macroeconomic stability; health and primary education; higher education and training; goods market efficiency; labour market efficiency, financial market sophistication; technological readiness; market size; business sophistication; and, innovation. The 12 pillars of competitiveness are not independent; not only are they related, but they tend to reinforce each other.

33. The GCI is a composite index based on macro and micro data as well as interviews with key business and social stakeholders featuring the 12 pillars of competitiveness. It contains detailed profiles of 125 economies and data tables with global rankings covering more than 100 indicators in nine areas: institutions, infrastructure, macro economy, health and primary education, higher education and training, market efficiency, technological readiness, business sophistication, and innovation. Several indicators are directly or indirectly relevant to trade facilitation and logistics:

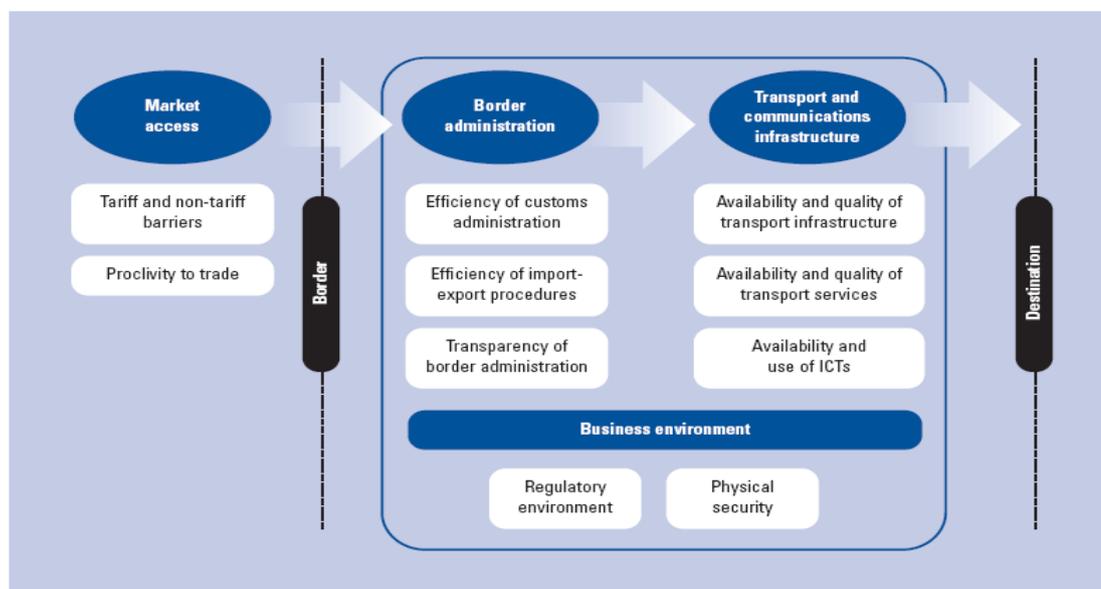
Quality of port infrastructure	Strength of investor protection
Quality of railroad infrastructure	Soundness of banks
Quality of overall infrastructure	Availability of latest technologies
Quality of roads	Domestic market size index
Quality of air transport infrastructure	Foreign market size index
Property rights	Local supplier quality
Effectiveness of anti monopoly policy	Value chain breadth
Prevalence of foreign ownership	Production process sophistication
Prevalence of trade barriers	Control of international distribution
Trade weighted tariff rate	Capacity for innovation
Rigidity of employment	Government procurement of advanced technology
Reliance on professional management	products
	Utility patents

(ii) The enabling trade index (ETI)

34. The ETI was developed within the context of the World Economic Forum's Industry Partnership Programme for the Logistics & Transport sector, in close collaboration with many partners. The Index breaks the enablers into four overall topical areas, or sub-indexes: (i) market access, (ii) border administration, (iii) transport and communications infrastructure, and, (iv) the business environment. The first sub-index measures the extent to which the policy and cultural framework of the country welcomes foreign goods into the country. Once goods have been allowed in to the country, the second sub-index assesses the extent to which the administration at the border facilitates their entry. Once goods have made it over the border, the third sub-index takes into account whether the country has the transport and communications infrastructure necessary to facilitate the movement of goods from the border to destination. Finally, the fourth sub-index looks at the overarching regulatory and security environment impacting the transport business in the country.

35. Each of these four sub-indexes is composed of a number of pillars of enabling trade. Each of these pillars is, in turn, made up of a number of individual variables. The dataset includes both hard data and survey data from the World Economic Forum's Executive Opinion Survey. The hard data were obtained from publicly available sources, international organizations, and trade experts. The survey was carried out among top business leaders in all economies covered by the research. The 10 pillars are regrouped into the four sub-indexes described above, as shown in Figure 7, and the overall score for each country is derived as an un-weighted average of the four sub-indexes.

Figure 7. Composition of the four sub-indexes of the ETI



36. The availability and quality of the transport infrastructure pillar, for example, measures the availability of transport infrastructure in each country, as demonstrated by the density of airports, the percentage of paved roads, and the extent to which they are congested, as well as the

extent of transshipment connections available to shippers from each country. Also captured is the quality of all types of transport infrastructure, including air, rail, roads, and ports. In addition to the underlying infrastructure, the availability and quality of the transport services pillar takes into account the services available for shipment, including the quantity of services provided by liner companies, the ability to track and trace international shipments, the timeliness of shipments in reaching their destinations, general postal efficiency, and the overall competence of the local logistics industry (e.g., transport operators, customs brokers, etc.). Given the increasing importance of information and communication technologies for the tracing and management of shipments, the availability and use of the ICT pillar captures the penetration rates of these new tools—such as mobile phones, Internet, and broadband—in each country.

(c) European Commission.

37. The European Commission (EC) has not yet generated any kind of integrated indicators concerning the logistics market. However, isolated indicators have been produced and the EC has taken a number of actions and initiatives, in its role as facilitator, that actually formulate a clear perception of the logistics market and a strategy concerning its development. Within this activity, the Commission has already indicated the course of action.

38. The Commission has already examined comparative benchmarking across modes at the 12th International Symposium for Logistics (Bremen, January 2006). Indicators have been developed for combined transport on rail, for air transport and for short-sea shipping (Freight Transport Logistics Action Plan, 2007). To improve performance, the Commission states that it will “establish, in consultation with the stakeholders, a core set of generic indicators that would best serve the purpose of measuring and recording performance in freight transport logistics chains to encourage a switch to more efficient and cleaner forms of transport and generally improve logistics performance”. The Commission will then consider incorporating them into a code of best practice or recommendations (Freight Transport Logistics Action plan, paragraph 2.2.3).

39. Together with other stakeholders, the Commission will review the availability of and determine the requirements for data on freight transport logistics across modes and assess improvements in the collection of statistical information. Furthermore, the Commission intends to elaborate, together with the industry, a set of generic (dynamic and static) benchmarks for terminals, starting from multimodal inland terminals, and incorporate them into a code of best practice or recommendations. It also intends to propose ways to simplify administrative compliance by establishing a single window and one stop administrative shop for administrative procedures in all modes, and, in consultation with interested parties, the Commission will examine the details and added value of establishing a single transport document for all carriage of goods, irrespective of mode. The Commission plans to assess the need for a legal instrument to allow full coverage of the existing international mode based liability regimes over the entire multimodal logistics chains, to review vehicle dimensions and loading standards, development of green transport corridors for freight and issues related to urban freight transport logistics.

(d) National initiatives

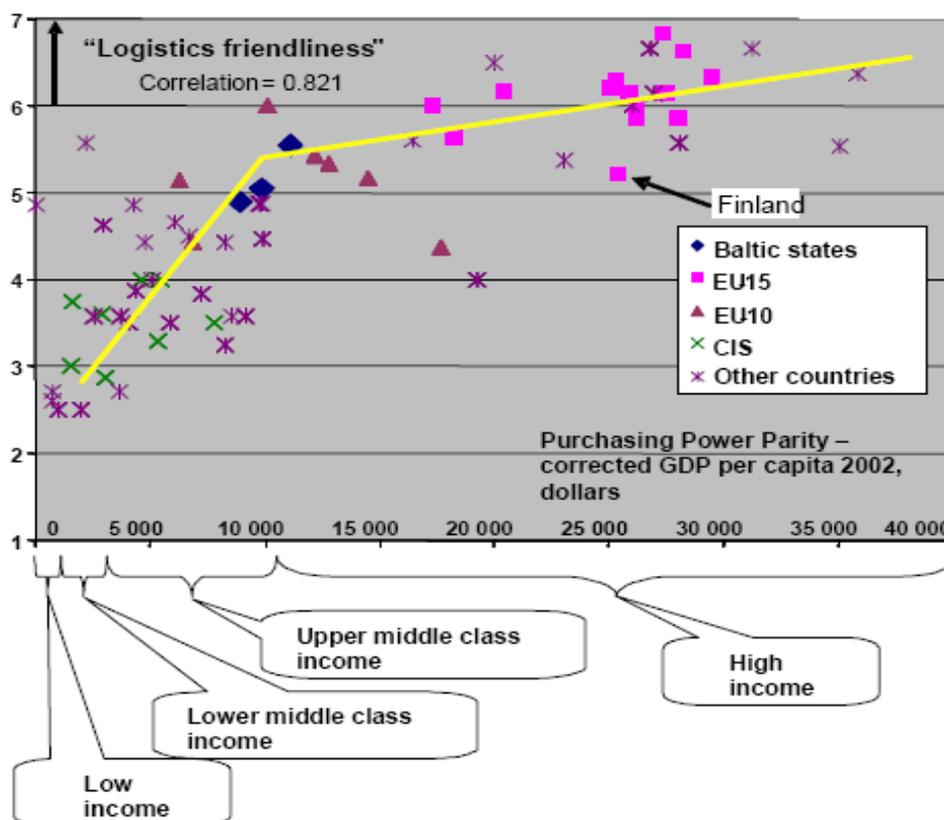
40. National initiatives are generally undertaken in order to deal with the development of National Logistics Master Plans – for the transportation sector or the promotion of countries as logistics hubs for multinational companies. National initiatives have not been focused on ranking

or comparing countries concerning some logistics indicators or their logistics companies' efficiencies, but are mainly dealing with the formulation of a long-term strategy for the transportation and logistics sector as they recognize its importance to their national economies and competitiveness. The following are some short descriptions of various national initiatives in the field of logistics and transportation.

(i) Logistics Friendliness index – Finland

41. How 'friendly' the logistics infrastructure is in different countries viewed as trading partners can be examined in many different ways. Many players from both the public and private sector are involved in trade and transport operations. Included in the process could be banks and insurance companies as well as various companies providing logistic services. In addition, the parties involved in trade often assess practical measures on a case by case basis. A survey conducted with some 100 international forwarding agents in over 20 countries found that there was a significant correlation between national income and a country's 'logistics friendliness' (Ojala et al. 2004). The higher the per capita income is, the 'friendlier' the country is from the point of view of logistics. The study showed that a highly developed logistic environment might be seen as problematic if transport costs are high owing to such factors as long distances and high overheads.

Figure 8. Logistics "friendliness" index



(ii) Logistics and Transport Master Plan - Germany

42. In order to preserve the functionality and the efficiency of the overall transport system, the German Government had developed a plan with the objective to ensure that the different functions for freight transport, logistics hubs and gateways, transit, supply, distribution and servicing are all carried out in an integrated manner for economic, social and ecological sustainability. For this purpose investment policy, regulatory and innovation policy instruments are incorporated. Integrated transport policies, in turn, should bring about an overall enhanced efficiency through the optimization of transport infrastructure and better linking of all transport modes, well trained staff, the use of innovative logistics strategies and new technologies, more efficient and resource-conserving process organization of the transport chain and, unlocking capacity reserves in the shipping and rail sectors.

43. The core objectives of the German Master Plan are: the “Road map” to enhance the competitiveness of the logistics industry and logistics locations in Germany; the plan of action for the optimum design, funding and use of the freight transport system; the contribution to economic and structural change and sustainable development; as well as greater public perception of the economic significance of freight transport and logistics. Main target groups are shippers, carriers, logistic companies, associations, authorities as well as final consumers. The methodology selected for the Master Plan was developed around the central responsibility of the Federal Ministry of Transport which undertook the task of coordinating a “structured dialogue” between network management and interaction with an “advisory consortium” providing expert advice. This “structured dialogue”, carried over a series of workshops with participation of more than 700 experts, resulted in 27 proposals which range from infrastructure measures (widening of federal highways; nationwide, multi-scale coordinated strategy and planning for the development of infrastructure; and optimal linking of ports and their hinterland) to proposals regarding enforcement of social regulations relating to driving and rest times, efficient use of road infrastructure through better traffic management and traffic information data, etc. One of the outcomes of the Master Plan will be a Federal Logistics Indicator.

(iii) Supply Chain and Logistics Canada - Logistics and Supply Chain Management (SCM) Key Performance Indicators (KPI) Analysis, Canada/United States Automotive Sector Supply Chain Perspective

44. Industry Canada has partnered with the Supply Chain and Logistics Association of Canada (SCL) Research Committee to launch a national logistics and SCM performance indicators initiative. The objective of this study is to propose a Logistics and SCM key performance indicators (KPI) analysis that can be used as a benchmarking tool for firms and policy makers. This analysis will help firms understand where they are located with respect to the leading enterprises, as well as firms within their own sector and the USA, and what steps they must undertake to become more competitive.

45. Logistics and SCM functions can either be performed from internal activities or outsourced to a third party logistics (3PL) service provider, via wholesale distribution, or in a combination. Analysis is initiated by a general section on industry productivity and competitiveness indicators via logistics and SCM. This is followed by specific sections on inventory management and just-in-time KPI, and a logistics and SCM costs KPI analysis that includes three components: internal logistics cost, outsourced logistics cost and inventory carrying cost. Finally, sector specific KPI, complete with methodology, calculations and

definitions are tabled in order to provide details to help individual firms' policy makers develop applicable benchmarking tools.

(iv) SCOR Model (Supply Chain Operations Reference Model)

46. The Supply Chain Operations Reference model (SCOR) isolates key supply-chain management processes and matches their process elements against industry-specific best practices, benchmarking performance data, and appropriate software applications, providing users with a framework for understanding where they need to make improvements. SCOR builds on the concepts of business process reengineering, benchmarking, and process measurement by integrating their techniques into a cross-functional framework that addresses management issues at the enterprise rather than at the functional level. SCOR is recognized by the 800 member companies of the Supply-Chain Council as an effective "toolkit" for companies wanting to upgrade their supply chains for strategic advantage. The SCOR model focuses on the whole supply chain and gives indications about competitiveness of a whole region or country. For companies and supply chains, it is estimated that 37% of North American companies that have set up logistics and SCM Key Performance Indicators and corporate-wide measurement applications have achieved a 15% decrease or more in shipment delays.

47. While using the Supply Chain Operations Reference-model is not a substitute for developing a comprehensive operations strategy, it is a tool for ensuring that the operations strategy has the desired outcome. Cross-industry studies show that integrated supply-chain management typically yields the following results: 25–50% reduction in total supply chain costs, 25–60% reduction in inventory-holding, 25–80% increase in forecast accuracy and, 30–50% improvement in order-fulfilment cycle time.

(v) Logistics Quotient - "Expansion Management and Logistics Today"

48. The annual logistics quotient compares 362 metropolitan statistical areas (MSA) in the USA according to the following 10 major categories: the transport and warehousing industry: the number of employees as well as the average salary; road infrastructure and road transport performance; road congestion; transport taxes and fees; railroad service; waterborne cargo service, and air cargo service. A number of "stars" is then awarded according to the rating based on the above categories. A "5-Star" designation is awarded to the top 20% of the MSAs. Metros that earn this distinction can consider themselves among the elite logistics cities. Metros that rank in the 21 to 40 percentile are designated as "4-Star Logistics Metros," while those that rank in the middle (41 to 60 percentile) are designated as "3-Star," and so on.

(e) Other international initiatives and projects

(i) International Institute for Management Development, (IMD), Lausanne,
The World Competitiveness Yearbook

49. The World Competitiveness Yearbook (WCY) analyzes and ranks the ability of nations to create and maintain an environment which sustains the competitiveness of enterprises. It assumes that wealth creation takes place primarily at enterprise level (whether private or state-owned) - this field of research is called: "competitiveness of enterprises". However, enterprises operate in a national environment which enhances or hinders their ability to compete domestically or internationally - this field of research is called: "competitiveness of nations" and

is covered by the WCY. Based on analysis made by the leading scholars and by its own research and experience, the methodology of the WCY divides the national environment into four main factors: economic performance; government efficiency; business efficiency; and, infrastructure. In turn, each of these factors is divided into 5 sub-factors which highlight every facet of the areas analyzed. Altogether, the WCY features 20 such sub-factors. These 20 sub-factors comprise more than 300 criteria. Each sub-factor, independently of the number of criteria it contains, has the same weight in the overall consolidation of results. Criteria can be hard data, which analyze competitiveness as it can be measured (e.g. GDP) or soft data, which analyze competitiveness as it can be perceived (e.g. availability of competent managers). Hard criteria represent a weight of 2/3 in the overall ranking whereas the survey data represent a weight of 1/3. Finally, aggregating the results of the 20 sub-factors makes the total consolidation, which leads to the overall ranking of the WCY.

(ii) Holland International Distribution Council (HIDC)

50. In 2004, Buck Consultants International conducted a benchmark research study of total supply chain costs across several European locations, with qualitative factors given special consideration. Many foreign companies base their location choice for European supply chain activities largely on real estate costs. However the 2004 benchmark study found that total operating costs should be central to any decision on where to set up a new business - being a far better indicator of relative advantage. Since such costs (which include labour and transportation among others) are not static but subject to change – as are qualitative aspects like physical accessibility - Holland International Distribution Council decided to update the 2004 benchmark study.

(iii) LOG4SMEs.

51. The LOG4SMEs project aims at improving the logistics performance of small and medium-sized enterprises (SMEs) in the automotive sector. Small and medium-sized automotive businesses are threatened by a number of pressing issues, including saturation of the market, fierce competition and reduction of entry-barriers. Among these problems are the identification of weaknesses in logistics and production processes and the finding of appropriate action lines or IT tools to overcome them. These issues do not depend exclusively on companies themselves, but are also heavily affected by the economic, logistical and social character of the regions in which the SMEs are located. The goal of the project is to enable SMEs to compare their individual current logistics performances with industry and regional averages as well as with the best performer and to enable each company to identify its current performance gaps and to determine whether, disregarding the specific company's actions, there are regional factors that affect its logistical performance.

IV. Comparison of different initiatives and gap analysis

52. Institutional and national initiatives which have been developed concerning the evaluation of transport and logistics market are focused on traditional indicators and they do not provide an integrated approach allowing a comprehensive coverage of the total role of transport in global supply chains and its contribution to countries' competitiveness. On the other hand, it is hard to make a true comparison of national logistics performances based on the several national initiatives as the assessment models are different and there is lack of a common methodology.

53. The S.W.O.T. analysis of the different institutional and national initiatives and projects potentially applicable for the evaluation of transport's supply chain challenges and its contribution to countries' competitiveness has been carried out to evaluate their potential strengths and relevance. Results are shown in Table 2.

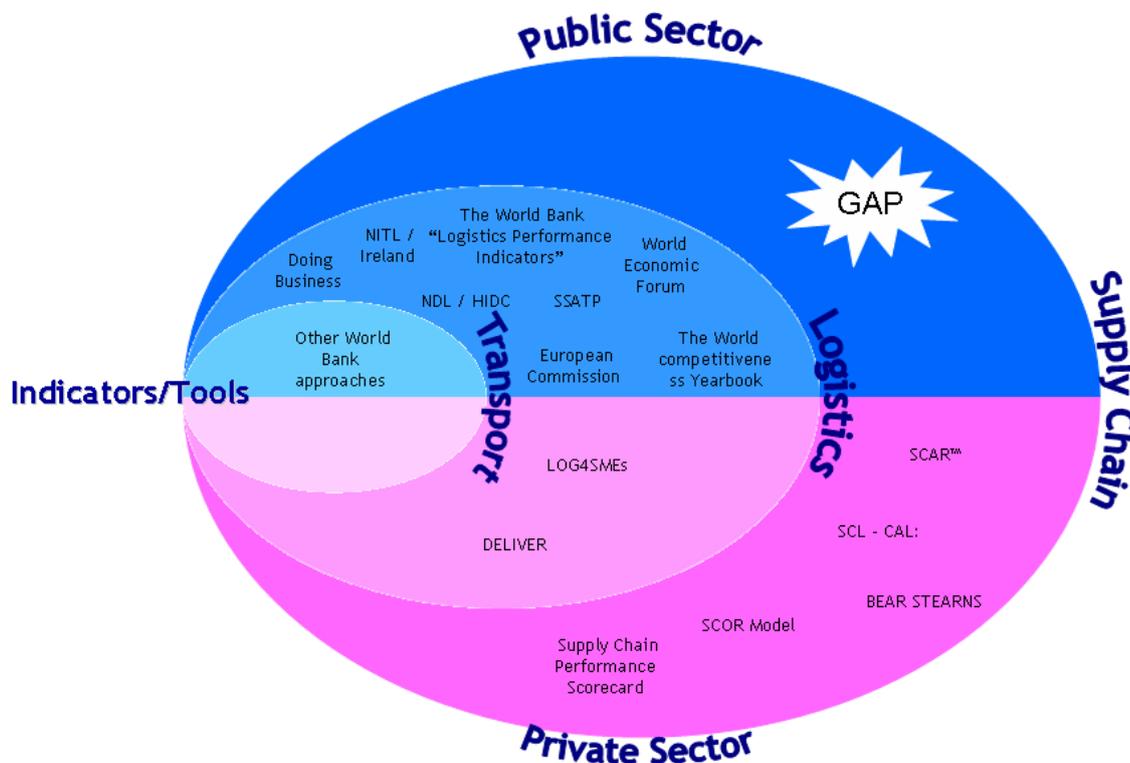
Table 2

Strengths	Weaknesses
<ul style="list-style-type: none"> - Built a preliminary database of definitions and data that can be used for the further development of an integrated evaluation tool of transports roles and contribution, - Dispersion of indicators and markets' focus that help transportation market and governments to better understand the issues and the new – complex - role of the transportation market, - Numerous indicators show the need for development of tools that will evaluate transports integrated impact on national competitiveness and economies, - Transport is being considered by several approaches as an integral part of logistics services which shows the development of the transport market and strengthen its role as part of the global supply chain, 	<ul style="list-style-type: none"> - They do not follow common methodology nor even definitions and terminology, - They do not take into consideration the special needs of land locked countries, - They do not provide combined results by using data from different modes of transport, - In the public sector, transport is being evaluated either as an isolated function of the economy or with logistics services providers who are being considered as the spin-offs from transport companies, - In the public sector, there is no evaluation of transport's new role as part of the global supply chain, - In the public sector there is no evaluation of transport's contribution to countries' competitiveness - The existing evaluation tools are do not take into account the particular characteristics of the regions, the socio- economic factors of each country, etc. in evaluation models in combination with the hard data and cannot therefore present or provide reliable results for further analysis and benchmarking,
Opportunities	Threats
<ul style="list-style-type: none"> - Development of a new, flexible, dynamic and efficient evaluation tool of transport's role in supply chain and contribution to countries competitiveness, - Realization by governments of the new role of transport networks as an important part of global supply chains and not (or not only) as the predecessor of logistics services providers (3PLs/4PLs), 	<ul style="list-style-type: none"> - Transport's role in the global economy and supply chain could be underestimated as it cannot be adequately measured and factored in, - Transport's contribution to countries' competitiveness might not be reliably measured, or could be underestimated as a result of misleading evaluation tools, - The transport sector might not be considered in future investment plans as an important development factor of national economies as a consequence of a lack of flexible and efficient evaluation tools of its contribution to the overall economic development.

54. Based on the above analysis, there appears to be a gap concerning the existence of evaluation tools that assess transport's contribution to national competitiveness based on transport's new role as an important part of global supply chains. The majority of indicators or tools under research concerning the public sector have been focusing on analysis of the logistics market and mainly on logistics services providers. In addition, there have been many indicators developed concerning the assessment of transport as part the supply chain management in the

private sector. There is an obvious need for the development of an integrated assessment tool which will adequately evaluate transport's role in supply chains and its contribution to countries' competitiveness. This gap is illustrated in Figure 9.

Figure 9. Gap Analysis



V. Are traditional tools adequate to evaluate the transport sector's contribution to countries' competitiveness?

55. The lack of an adequate tool for assessing the transport sector's contribution to the competitiveness in the context of transport's role in supply chains has not been mitigated in spite of the fact that analytical skills required for understanding and estimating the logistics costs and benefits are evolving and the volume of information about the link between logistics and competitiveness is growing. Benchmarking is also evolving as different methodologies produce databases of high value for follow-up studies and research. Thus, an important question remains: do we have adequate tools to evaluate and internationally compare the contribution of transport, as an essential link in supply chains, to national competitiveness, or, in a broader sense, the costs of transport facilitation?

56. Governments, businesses, and individuals make many decisions about transport investment and the use of transport services every day. Location and development decisions are heavily influenced by transportation. The distance between production and (intermediary and final) demand determines the size of trade and correspondingly the demand for transport. People often use transportation data to make these decisions. Traditional transport indicators and tools used for evaluation are commonly based on information and the data which are derived from

objective and measurable statistical indicators covering the existing transport infrastructure and services.

Some examples of traditional transport indicators

Road transport Indicators	Rail transport Indicators
<input checked="" type="checkbox"/> Length of roads	<input checked="" type="checkbox"/> Length of railroads
<input checked="" type="checkbox"/> Design speed	<input checked="" type="checkbox"/> Railroads classification
<input checked="" type="checkbox"/> Width of lanes	<input checked="" type="checkbox"/> Types of trains served
<input checked="" type="checkbox"/> Pavement slope	<input checked="" type="checkbox"/> Per cent use of railroads
<input checked="" type="checkbox"/> Passenger and tonne kilometres by road	<input checked="" type="checkbox"/> Capacity of trains
<input checked="" type="checkbox"/> Number of vehicles	<input checked="" type="checkbox"/> Tones/rail kilometres
Infrastructure Indicators	Environment Indicators
<input checked="" type="checkbox"/> Land take by transport infrastructure	<input checked="" type="checkbox"/> Emission of greenhouse gases
<input checked="" type="checkbox"/> Existence of concrete barriers	<input checked="" type="checkbox"/> Potential concentration of particles
<input checked="" type="checkbox"/> Per cent of asphalt coverage	<input checked="" type="checkbox"/> Potential concentration of ozone
	<input checked="" type="checkbox"/> Exposition to traffic noise
	<input checked="" type="checkbox"/> Final energy consumption

57. In order to assess the potential to provide an adequate tool to evaluate the transport sector's contribution to competitiveness of a country, the following table summarizes the result of the SWOT (strengths-weaknesses-opportunities-threats) of traditional transport indicators. S.W.O.T Analysis of traditional transport indicators used for the evaluation of transport's contribution to countries' competitiveness.

Strengths	Weaknesses
<input checked="" type="checkbox"/> Statistical analysis and reliability	<input checked="" type="checkbox"/> Not demand driven
<input checked="" type="checkbox"/> Existence of historical data	<input checked="" type="checkbox"/> No measurement of quality of transport services
<input checked="" type="checkbox"/> Harmonized and agreed among countries	<input checked="" type="checkbox"/> Only partially capture the role of transport in global supply chains
<input checked="" type="checkbox"/> Used in transportation sector evaluation reports or research	<input checked="" type="checkbox"/> Do not provide aggregated results based on external parameters like socio economic factors etc.
<input checked="" type="checkbox"/> Based on objective data	<input checked="" type="checkbox"/> They do not reveal the real and full contribution of transport to countries competitiveness
<input checked="" type="checkbox"/> Infrastructure or service side focus	
Opportunities	Threats
<input checked="" type="checkbox"/> Dynamic development of evaluation tool according to transport market developments	<input checked="" type="checkbox"/> Partial coverage of current features of transport sector and its new role
<input checked="" type="checkbox"/> Understanding of the new and more complex role of transport networks as part of the global supply chains	<input checked="" type="checkbox"/> Historical analysis will be their only value
<input checked="" type="checkbox"/> Reliable and efficient tool which would effectively analyze and present transport's contribution to countries competitiveness	<input checked="" type="checkbox"/> No dynamic change and development that would follow markets development
<input checked="" type="checkbox"/> Evaluation tool based on flexible and dynamic scenarios	<input checked="" type="checkbox"/> Static and not flexible or scenarios driven

58. In formulating public policy, it would be very useful to know the value of an extra dollar invested in transportation. It would be useful to know where, geographically and modally to

invest that dollar. It would also be useful to be able to track the transport sector's contribution to the gross domestic product or to countries' competitiveness. There appears to be a common agreement that traditional tools for evaluating the transport sector's new role in national supply chains and contribution to competitiveness of a country are not adequate. Therefore, there seems to be a need to develop a new integrated assessment tool which would cover the entire supply chain and the challenges it poses to transport. This new assessment methodology would provide governments and other stakeholders with the opportunity to better understand and evaluate the transport sector's role and its importance for economic growth.

VI. The need for new evaluation tools

59. The objective of developing new assessment tools is to evaluate the efficiency and sustainability of the transport system as an essential link in supply chains, monitor its performance from the point of view of national competitiveness and explore possibilities for improvements.

60. Different players in the supply chain have different objectives, and achievement of each of these objectives needs to be evaluated. The private sector aims to achieve optimization of the supply chain, and hence, be competitive in international markets. The public sector aims to fulfil its responsibility by applying effective policies to address the trend towards increased globalization of economies and liberalization of trade, while achieving sustainability and social objectives. The public sector has to be able to monitor freight transportation and the performance of logistics systems to measure the effectiveness of its policies. Therefore, it seems necessary to assess the advancement of the transport system not only from the viewpoint of industrial or national competitiveness, but also from the viewpoint of global, social "optimization".

61. This new assessment tool could be used to assess the impacts of transport by considering the major players in the system, *i.e.* consumers, shippers, logistic service providers and governments. Although a complete evaluation may be difficult, a relative evaluation is possible and useful by comparing the performances of transport services providers in different countries using performance indicators. They could be evaluated by considering best practices as the standard evaluation criteria.

62. Traditional performance indicators for transport systems, as mentioned earlier have relied largely on simple quantitative measurements. While such simple measurements have helped to conduct partial comparative analyses, by helping managers, customers, suppliers etc. to evaluate how well their own subsystems perform in specific dimensions, they are inadequate for comparing the efficiency of different supply chains as a whole. The present micro and macro indicators are both inadequate for assessing the performance of supply chains. The micro indicators, however relevant for single companies, are difficult to aggregate to the supply chain level. The macro indicators reflecting the efficiency of supply chains tend to be disjointed and focused on particular concerns in isolation, rather than on a comprehensive review of all supply chain aspects, which are of interest to policy makers. Therefore, there is a need to develop a multi-criteria assessment system at a meso-level for conducting a comparative evaluation of transport services in different countries which will cover total transport costs, quality of transport services, and impacts on socio-economic factors.

63. However, recent work by the OECD highlighted major problems with data availability for such analysis. Key data problems include access to data that are commercially sensitive; cost of collecting, storing and releasing data; timely access to data collected by government statistical agencies; and resource constraints facing such agencies and their adoption of a “user pays” approach to collecting/managing/releasing industry specific data. In regard to the latter, many statistical collections have been dropped by such agencies as a result of lack of funding.

a) Need to develop multi-criteria based tools

64. Performance indicators can be classified into two types, cost indicators and quality indicators. In the private sector, there is a need to assess the performance of transport systems in the consumer goods market not only from the cost aspect but also from more comprehensive aspects, including consumer service, quality and safety of goods. Furthermore, when assessing overall performance, non-monetary costs such as socio-economic costs (including environmental costs), should be considered. These are often neglected by the private sector. Society as a whole, however, shoulders these costs, thereby reducing the total efficiency of the system. By combining these cost and quality indicators or by aggregating them into regional or national average values, a more comprehensive evaluation covering total transport costs, quality of services and impact on socio-economic factors can be performed.

b) Need to develop meso-level indicators

65. Indicators should be developed to assist policy making, thereby enabling policy actions to be implemented in a way that supports efforts by industry to develop competitive supply chains. The interaction between industries’ responsibility to create competitive supply chains and public policy goals of improving industry efficiency through policy actions requires governments to understand the mechanisms affecting the performance of shippers, carriers and other service providers in the supply chain, not only domestically but also internationally. A comprehensive analysis of the economic and financial impact of the wide range of policy instruments in place could assist in determining the cost effectiveness and appropriateness of various policy options and this requires macro indicators. However, the macro indicators focusing on welfare maximization are mostly decomposed into meso-level indicators focusing on welfare optimization, under the condition of subsidiarity, for sectors or regions, and not on supply chains. Policy makers should seek the linkage between, on the one hand, the macro and meso level indicators and, on the other, the supply-chain indicators.

c) Need to specify and communicate the strategic policy objectives

66. For governments, it is important to establish a clear relationship between performance indicators and the transport policy objectives they are designed to support, in order to transform indicator values into relevant action and link them to past and future development. Hence, it is necessary for governments to specify their strategic policy objectives for developing performance indicators and to communicate them to all participants involved with supply chains.

d) Need to collect data and compare costs appropriately

67. In order to improve the basis of transport policy, data collection, obtained from logistics service providers, is essential. It is also necessary to focus on data useful for international comparisons and on indicators useful for analysis associated with transport policy objectives.

Shippers, as well as transport operators, can be direct suppliers of relevant data. To collect relevant information in a cost-effective way, it may be necessary to conduct sample surveys, complemented by information from modal statistics and traffic counts, particularly in relation to the performance of different supply chains. A special area of interest is the growing importance of the so-called 'last mile': the delivery of goods to consumers in urban areas. Due to developments and opportunities in Business-to-Consumer e-commerce and the tendency among consumers to spend less time on shopping, there is a growing need for home deliveries. This will have huge implications for supply chains and transport. An area that is often missing in research is how to replace passenger transport to and from shops by alternative environmentally-friendly means.

68. In making international comparisons of costs, technical issues need to be addressed such as: selection of appropriate units, international normalization of cost/price elements, the need to consider that cost differences mainly depend on differences in labour cost, which is higher in developed countries, and that transport costs vary depending on several factors such as regulation, distance and type of goods.

69. In brief, indicators for the evaluation tool need to be selected which are relevant, plausible and for which data can be obtained. They should be applied in a way that provides both industry and government with the insights necessary to determine factors contributing to inefficiencies in transport systems, supply chains, and strategies/policies to lift performance and ultimately increase the overall national competitiveness.

VII. Outline of an evaluation methodology

70. The Sofia Ministerial meeting of the International Transport Forum in 2007 was concluded with a statement: "Better indicators definition, data collection and monitoring is indispensable for tracking progress towards improving the reliability of transport system performance". This statement indicates a need to re-position the image of transport to both a key part of the global trade and supply chains, and an important indicator of the level of development and competitiveness. This re-positioning of the transport sector should be based on considerations which must take into account and accurately reflect technological, commercial and regulatory changes governing transport in the context of supply chains.

71. Development of the new methodology and relevant analytical tools starts from a general assumption that logistics and supply chains are fast emerging markets with the transport sector having a central role in ensuring their most optimal performance. There is, therefore, a real need to properly evaluate the transport sector's value added and the role in ensuring optimal and efficient delivery of logistical and supply chain services, as well as its contribution to the overall national competitiveness through supply of such services.

72. Several countries have already embarked upon establishing long-term master plans and started to formulate strategic action plans concerning the development of their national logistics markets. A growing number of national administrations have already realized the importance of logistics and supply chain markets for enhanced competitiveness of their national economies and their potential contribution to economic development. Thus, the objective to develop common methodologies and tools for evaluating the transport sector's role in supply chains and the challenges they pose is very relevant and timely.

73. The objective of such a project is to develop a multi criteria assessment methodology which will help countries assess transport's contribution to their competitiveness through its role in global supply chains. The benefits to member Governments could be manifold. Above all, policy makers need to have at their disposal an effective and consistent methodology for the optimal assessment of the transportation market. Governments, other stakeholders and users will benefit from the application of such a methodology in several ways. Common concepts and consistent use of standardized indicators and parameters would produce information and critical elements for analytical work as well as necessary tools to facilitate the evaluation and international comparisons of the transport sector's role in supply chains, and the challenges which their development impose on transport markets.

74. The use of tools based on a logically based structure will help the assessment of supply chain challenges for transport and provide the opportunity to better understand transport's role in global supply chains; more accurately assess its contribution to countries' competitiveness; contribute to development of an integrated strategy for a country supply chain market; provide tools for obtaining information and measuring the level of integration of different transport modes; create additional value-added by using results for further analysis and assessment of a country's capacity as logistics or transit hub; and benchmark performance of a particular country against other countries based on objective and identical parameters. It will further be possible to use such a methodology to assess the degree of technology penetration in transport networks and supply chain markets, and, for example, assess the capacity of different supply chains sub-markets concerning tones of cargoes that can be transited (cargoes transit limits).

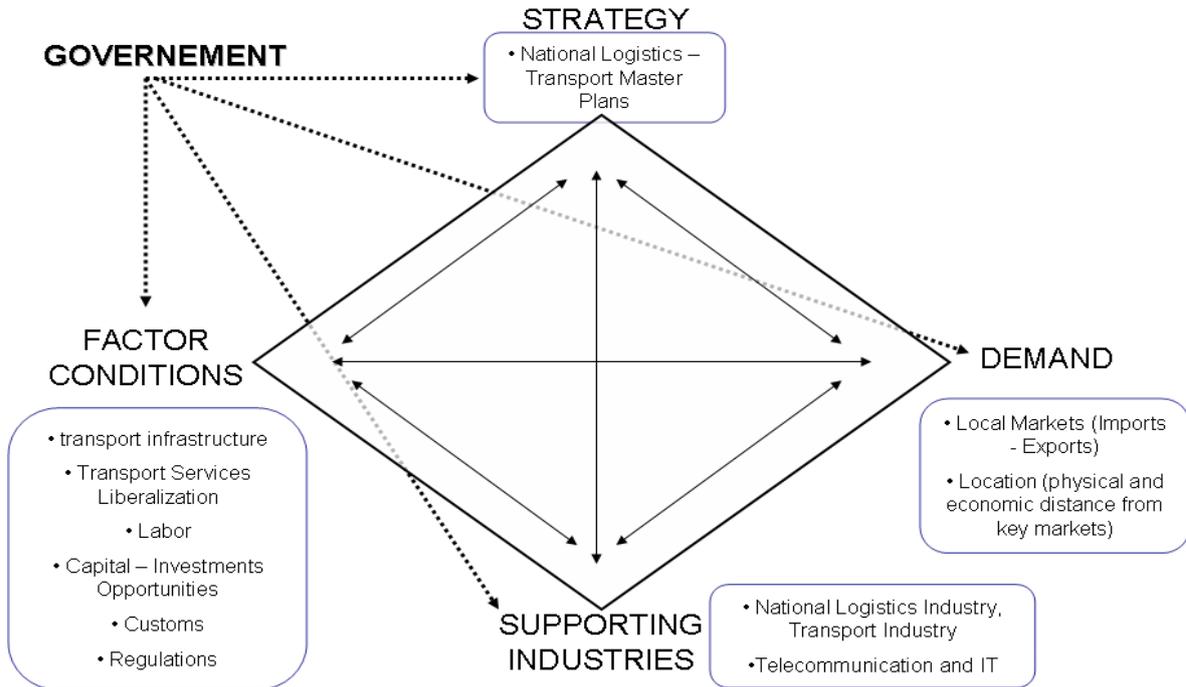
75. The Transport Division of the UNECE is the natural place and the most appropriate organization to take the lead in development and elaboration of this project. Its varied membership, which includes some of the most logistically advanced and competitive economies in the world as well as other countries in which improvements in logistics and supply chains management could have considerable impact on the competitiveness of their economies, represents a unique pool of experiences which could be used for capacity building, best practices and transfer. In addition, based on ample experience in other projects, by engaging other regional commissions, the project could have an important global impact. In addition, the Transport Division of UNECE has developed international transport agreements and conventions which have been widely recognized as an essential element for the effective functioning of international transport and facilitation.

76. The project would require the engagement of a highly competent and experienced consultant, who would develop the project proposal and the detailed cost plan and prepare the necessary analytical background and review of the proposal for the methodology. The project will look for natural partners both at national and international level. In addition to UN entities, the project would need to involve national focal points in involved countries, local logistics associations, national Chambers of Commerce, etc. At the international level, partners could be the European logistics Association, Euro Chamber, the European Commission, the World Bank, the International Transport Forum, the World Economic Forum, etc.

77. Bearing in mind what was said about the need to develop a multi-criteria assessment methodology which will help countries assess transport's contribution to their competitiveness through its role in global supply chains, the chart below (figure 10) illustrates the logical framework for development of the new methodology.

Figure 10.

Countries' Competitive Advantages on Transport and Logistics



VIII. Next steps

78. The findings of the secretariat will be presented to the joint Trade and Transport Conference and they will further be elaborated during the ITC session. ITC delegates will be invited to consider the following next steps:

- a) Further strengthen cooperation with the key “indicator producers” so that certain transport features important for UNECE countries – e.g. the role of country participation in customs transit systems, like TIR – are incorporated into their indicator;
- b) Organise a roundtable to seek inputs and views from academia and partner organizations in order to expand and deepen the analysis;
- c) Organise a series of capacity building workshops in UNECE member countries to help the use of already existing indicators in their transport policy decision making;
- d) Launch the development of a new evaluation tools as described above;
- e) All the above – save item a) – will require extra-budgetary funding, therefore the secretariat will explore the interest of possible donors, both public and private.
