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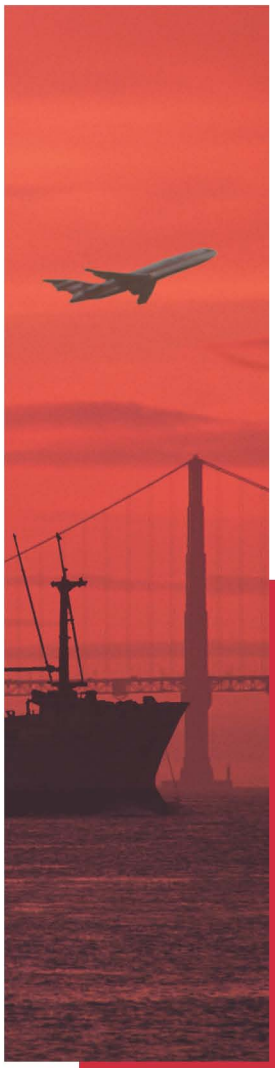

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TRANSPORT AND GLOBALISATION

NOTE

EN

2010

DIRECTORATE-GENERAL FOR INTERNAL POLICIES

POLICY DEPARTMENT B: STRUCTURAL AND COHESION POLICIES

TRANSPORT AND TOURISM

WORKSHOP
'THE FUTURE OF TRANSPORT'

TRANSPORT AND GLOBALISATION

NOTE

This document was requested by the European Parliament's Committee on Transport and Tourism.

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LINGUISTIC VERSIONS

Original: EN.

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To contact the Policy Department or to subscribe to its monthly newsletter please write to: poldep-cohesion@europarl.europa.eu

Manuscript completed in January 2010.

This document is available on the Internet at:
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Abstract

In this note we give information about the globalisation processes that have taken place in the world economy and world trade, and examine their effects on goods transport. We propose the wider-scope application of ex-transport solutions, in order to moderate the level of environmental load. In the field of passenger transport, the long-term expected decrease and ageing of the population may play a role. It is worth examining in what ways the above factors modify the volumes and habits of passenger transport and the traditional structure of towns, and to what extent the tools of mobility management can be applied.
The issues covered by this note were presented and discussed in the framework of a workshop on 'The Future of Transport' held in the European Parliament on 2 December 2009.

IP/B/TRAN/IC/2009_077 2010

PE 431.589 EN

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EXECUTIVE SUMMARY

Background

This note covers issues that were presented and discussed at a workshop on 'The Future of Transport' held in the European Parliament on 2 December 2009.

The effects of the globalisation processes taking place in the world economy, world trade and tourism are present in both freight and passenger transport. Globalisation has both positive and negative aspects, the latter manifesting in the form of congestion, crowding, timetable-related unpunctuality and an increase in environmental harms.

The openness of the world economy is increasing and despite slowing world trade growth, world trade continues to be the driver of economic growth. The unfavourable side of globalisation and integration processes is that in most countries the growth of freight transport services exceeds GDP growth, while most transport surpluses - contrary to the objectives of Marco Polo I - have not been diverted to rail or inland waterways but chiefly to the road. Perhaps a better result can be expected from Marco Polo II.

Economic possibilities and improving living standards have resulted in the increased usage of faster and more comfortable means of passenger transport, which are also less energy-efficient. In terms of global effects, the upward trajectory of road transport-related carbon dioxide emissions should be emphasised. In addition to local noise and air pollution, air transport has considerable global effects, such as emissions harming the ozone layer and causing greenhouse effects.

What should be done?

Regarding freight transport, first we have to answer the question of the role and place of rail transport in Europe's passenger and freight transport at the start of the 21st century. Which new technologies and management solutions are necessary to better serve the needs of rail transport customers?

Decoupling can reduce the intensity of freight transport in two fundamental ways:

1. the solution is sought within transport itself;
2. in order to reduce harmful effects, the transport volume or the freight transport demand (intensity) of the economy should be decreased by utilising options other than transport.

According to previous estimates, solutions other than transport are more efficient. It will be a multi-decade task to explore solutions other than transport, to work out programmes and harmonise them with transport development (infrastructure, vehicles, modal split, technology). As a result of globalisation, this is only feasible through close cooperation among the members of the European Union.

In the next 20-40 years, the absolute number and percentage of retired persons having much free time than members of the active population will increase. Increased free time goes with more mobility, but in terms of meeting travel demands, public transport will – supposedly – have a more important role than private transport as average age increases (the reason being that only a small percentage of the elderly population drives, the majority preferring to use public transport). For the time being, this is merely a hypothesis;

a sufficient answer can only be provided by a comprehensive representative survey covering all the EU member states (in Europe – unlike the situation in the past – some of the 50+ generation born in the age of motorisation continue to drive once they have passed 70 years of age, although this depends on their state of health). The ageing of the population and the increasing percentage of the older age groups in the population also mean that in the area of public transport, a greater financing burden will be imposed on the active population (a decreasing percentage of the population will be responsible for funding an increasing number of passengers entitled to concessionary travel).

A crucial aspect to bear in mind is that the various modes of transport cannot be treated in isolation or as separate from each other. What's more, it is practical to adapt the synergies within transport to regional development and urban policy measures, albeit by adopting a reverse-order approach: the most practical method is to adapt transport itself to regional development and then establish optimal cooperation among the different means of transport.

Transport – as one of the branches of the tertiary sector - in a narrow sense comprises the mass, regular and organised changing of the location of persons and things, which is realised by means of human resources and technical devices. If economic and social demand exerts a strong effect (interaction) on transport, then its reaction to them can be graded as weak. As a starting point, it is worth considering that transport is not an end in itself but provides services and opportunities, serves the economy and is subject to social expectations.

Globalisation is a highly complex process that has many interpretations. It can cover politics, society, culture, mass communication and economy. Globalisation has both positive and negative effects, such as increasing the range of choice and decreasing prices versus increasing environmental harms. This short note reduces globalisation to economic globalisation. Because of their different technical and technological features, it is worth looking at relations between transport and globalisation separately in terms of freight and passenger transport.

1. FREIGHT TRANSPORT

1.1. Global trends in the world economy

Due to the integration of the world economy, a complex economic system has emerged in which an increasing number of countries are connected through economic relations. The trade in goods, the trade in services, the flow of capital and labour and the internationalisation of technology and communication have resulted in the deepening of mutual dependencies. So what are the most important trends in the world economy at the start of the second millennium?

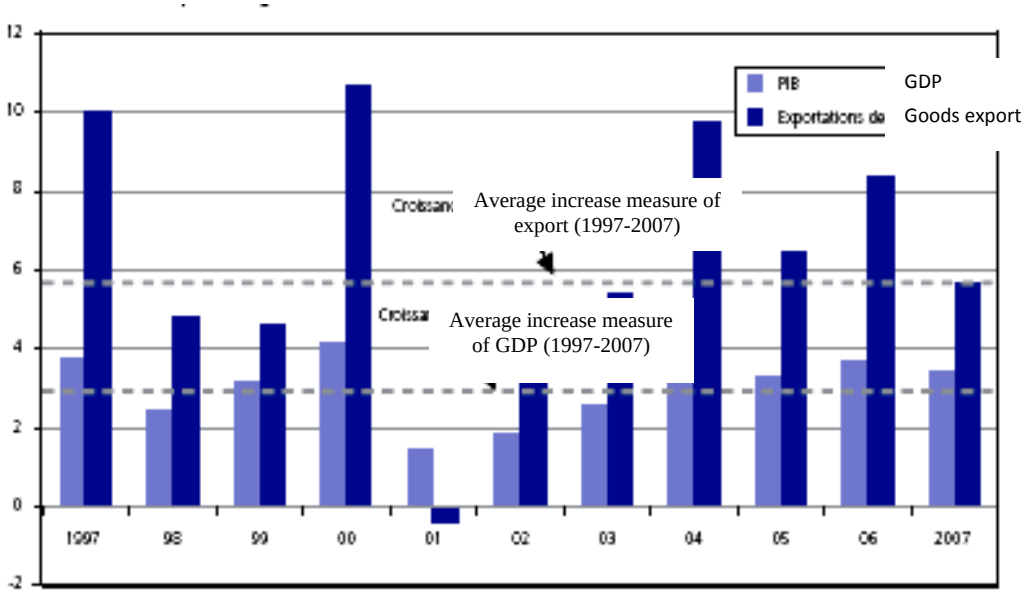
A/ In addition to human capital, the level of investments and population growth, a state's openness to ***the world economy*** has become one of the most important conditions of economic success and dynamic growth. (Neuhaus, 2005)[1]

B/ It can be noted, too, that the growth rate of openness ***is not the same in all countries.*** Whereas in the first decade of the 21st century Germany, Belgium and the Netherlands were the world's most open economies , twenty years later this role is likely to fall to Turkey – besides China and Korea. In Turkey's case, this liberalisation is related to its preparations to join the EU. The most open country in the European Economic Area will be Spain, due to its intermediary role between Europe and Latin America. (Kiss, 2007)

C/ ***The world economy*** continues to be ***the most important driver of growth*** *(Figure 1).* Trade has grown faster than emissions in practically all production sectors of the world economy. The role of foreign trade will grow and its share will increase, and this trend – after the temporary world economic recession – is likely to continue. Since the mid 1990s, the expansion has been driven by the reintegration of the countries of the former socialist bloc and the integration of developing countries into world trade. The key sector has been trade in services, which is likely to continue.

D/ The next decade will be characterised by the rapidly growing influence of developing countries, and will be dominated by the world economic breakthrough of China and India. Growth will not be evenly distributed among the different economic centres.

Figure 1: Measures of world-goods-trade volume increase and of GDP changes between 1997 and 2007 (chain indexes in %)



Source : Rapport sur commerce mondiale 2008, p. 3.

According to the World Bank's analysis (World Bank, 2007), ***long-term global forecasts can be tenable*** even in the event of short-term or regional crises; in other words, the ultimate progress of the world economy is 'uncontainable'. The most serious global problems that we will have to face in future are the following: population growth, challenges of the labour market brought about by the active integration of developing countries into trade, and environmental problems that can only be solved on a global level.

1.2. Global trends in world trade

Trends in the world economy are reflected directly or indirectly in world trade processes as well. The world economic trend of the past 20 years shows that world trade – i.e. the world's total exports and imports of goods and services – is expanding faster than world production.[2]

In addition, it can be noted that ***world trade volume*** developed more ***evenly*** than world production and global GDP (Gross Domestic Product), i.e. it has performed larger deflections than the fluctuations of world trade. This stems from the fact that according to whether they pursue pro-active export programmes or enforce import restrictions, the economic performance of, or crisis affecting, the various national economies and transnational companies influences world trade directly. (Kiss, 2008)

Another striking phenomenon is ***the decreasing growth trajectory of world trade***. (Kiss, 2008)[3] So far, it has been an open question whether slowing of the expansion of world trade is a temporary phenomenon or a long-term trend, and how it would be affected by the financial and economic crisis that started in 2008.

In the European Union, forecasts for economic growth have been modified several times. Compared to the data of autumn 2008, forecasts at the beginning of 2009 envisaged a larger downturn in the economy, although national estimates have been more optimistic

than the European Union's estimates (less decrease in national economies has been predicted).

The following factors play a key role in the changes of world trade over the long term (Sass):

1. segmentation of the production processes for different products, outsourcing of labour-intensive sectors, strengthening of the relocation process;
2. the share of whole world trade among the subsidiaries of multinational companies is constantly growing (in 2008 it was 40%);
3. the emergence of new participants (former countries in transition, China, India), some of them (e.g. the Russian Federation, China) having significant influence on whole world trade (e.g. China) or the trade of a single product (e.g. the Russian Federation);
4. the correlation of the three processes, all of them affecting freight transport to a greater or lesser extent.

The outsourcing of raw materials, labour or energy-intensive and polluting industries from developed countries, in parallel to the significant realignment of the global distribution of production, has brought about the growth of long-distance freight transport. As a starting point, in the 21st century the centre of production will shift towards Asia, where the growth of both China and South-East Asia will exceed the growth rates being achieved in Europe, America and Japan.[4] The expansion of world trade increases the demand for transport services; however, transport reacts in its own way, in that the increasingly modern and more economical vehicles and extensive networks make expansion viable.

The rules in world trade will be simplified; there will be fewer barriers to trade and foreign capital investments, although this process may be interrupted as a result of financial and economic crisis. Competition will strengthen not only in the world economy but also within the European Union, Europe and internal markets. Regional integration will have an increasingly important role, with trade influencing the growth of freight transport performance (see: decoupling).

1.3. Global trends in transport and logistics

In 1992, the member states of the European Community adopted a harmonised and uniform transport policy for the first time. The second common transport policy issued in 2001 (White Paper, European Commission, 2001), learned lessons from the failures of the previous years and incorporated more new elements and objectives into the common transport policy, with a view to promoting the renewal of transport at EU level. One of the substantial findings of the White Paper was that the fast improvement of road transport can be considered a negative phenomenon in terms of social and economic development (and for the European Union as a whole), as it does not allow sustainable economic development or permanent mobility. The main reason for this is that the growth rate of freight transport outputs exceeds GDP, while that of passenger transport services approaches the growth rate of GDP. What could be the reason for the other transport modes, i.e. rail and inland waterways, being at a competitive disadvantage in comparison with the road transport mode, despite their estimated social usefulness and relatively low levels of tariffs and charges?

The faster growth rate of the road transport mode compared to other transport modes – beside the well-known advantages of door-to-door transport – is generated by an aggregate effect of several factors:

1. *changes in the structure of goods to be forwarded* (the so-called goods structure effect): from the second half of the 20th century, beside a decreasing proportion of low-value mass freight, the proportion of valuable semi-finished and finished products has been increasing;
2. *globalisation effect*: the increasing proportion of international freight within freight as a whole; in parallel, the average forwarding distance is also increasing;
3. *integration effect:* trade has become more intensive as a result of economic and political integration and the removal of customs borders and other political obstacles;
4. *increase in logistical demands* (logistics effect): as a consequence of worldwide globalisation processes, competition has changed. The logistical approach has two main aspects: maximal utilisation of cost-saving opportunities, and improvement of customer-oriented quality level of production processes.

As a consequence of the growing promotion of the logistical approach, on the one hand – as something of a change of paradigm – logistics has come to dominate the process within the forwarding chain, and the forwarding-transportation activity has become part of logistics instead of discrete evaluation and comparison of tariffs. In the framework of the aggregate-cost-approach, the transport cost appears only as an expenditure element that can be balanced by other positive effects (e.g. by speed).

The background of the deindustrialisation phenomenon that can be observed in the European economies is that the higher increase in the productivity of the processing sectors has provided additional resources for the dynamic improvement of new services, with contracting of new activities with higher added value and a qualified workforce. This process is basically kept running by outsourcing; this means that enterprises concentrate on their core activities and become increasingly streamlined and 'flat', sharing their previously in-house activities with other market players. The real multipliers of the outsourcing process, which are driving the fast diversification of logistical activities, are the transnational companies themselves.

It is most likely that the processes which started in the last quarter of the 20th century will continue in the 2nd millennium as well. As far as our subject is concerned, the most important of these processes are as follows:

1. As a consequence of globalised production, purchase and distribution will also be globalised, creating huge supply chains realised in international networks of logistical service centres and transfer stations.
2. Instead of locally concentrated production, production and servicing networks will be created; here, in order to decrease the transfer times, to minimise stocks, improve performance capacities and reduce expenditures, internal and external logistics will be integrated, and the automated products and goods detection will come in play.
3. Logistic informatics is taking on an ever-increasing role in the operation and development of logistical systems (e. g. wide-range application of codes, sensors, telecom techniques, expert systems, databases, data research and optimising methods).
4. The European transport routes are being modified and the volume of transported goods is increasing considerably. The proportion of intermodal and combined

transport modes will increase, transport solutions with the lowest environmental load will take on a prominent role, and regional airports will become more important.

5. When developing the transport routes, the west-east flow of goods must be taken into special consideration. Consequently, the development of west-east and west-south-east logistical routes and network elements should take priority.

Unfortunately, at present, the facts tell a very different story. After the enlargement of the European Union, the economic growth predicted for the newly acceded countries and the improving relations between the regions further strengthened the position of road transport and road freight. The planned economy previously in place in the recently acceded member states gave preference to the rail transport mode, but the transformation of economic structures has resulted in strong growth in the road freight sector.[4]

The logistical approach is undergoing a major change. The existing logistical instruments can be utilised equally well to support the traditional transport objectives and their more effective implementation, as well as to support the processes of a different, sustainability-based objective system. In this respect, the system of logistical tools operates in a similar way as *technology* in general: while the modernisation efforts required unambiguous adherence to the principle of *'faster, further, more'* in transport development, technological development in turn produced the appropriate vehicles, tracks and devices (Fleischer, 2007). This was not due to the self-development of technology. Rather, external factors are now coming into play: the constraints on social and environmental capacities are creating a situation in which, instead of an overwhelmingly dominant transport, another type of transport that is harmonised with its environment is gradually becoming the ultimate goal.

2. TRANSPORT AND ECONOMY – COMPETITION AND DECOUPLING

2.1. Some thoughts about competition

Nowadays, 1% GDP growth is commonly associated with world trade growth of 2.5-3.0%, and the level of transport services parallels this. The proportion of road transport within this growing transport sector is increasing as well. One reason for this is that land transport has more favourable commercial speed (the total distance taken between the place of despatch and the destination). In Europe, this is approximately 300 km/day for rail transport and 1000 km/day for road transport. While transport policies of developed countries, including the European Union, aim to achieve a transport performance level for themselves that is decreasing, or increases less compared to the level of their economic growth, world trade trends result in the opposite: a unit of GDP growth is coupled with a much higher level of transport performance.

Few efforts are being made to limit or curb this trend. Transport modes – under considerable influence from transport policy factors – endeavour to cut the largest possible stake for themselves from the expected increments of the transport market. It is worth thinking about: Is shifting the problems of savings and modernisation that have not been solved at the place of production to other areas of the Earth and to the transport sector a real and complete solution? And will the growing transport volumes establish a production structure that is sustainable from a global perspective in the long term? (While the capital 'is moving' geographically to more favourable places offering cheaper materials, energy prices and lower wages, this makes far less sense in environmental terms. Relocation temporarily solves the problem of the development of more economical and less environmentally polluting technologies in the partly 'emptied' regions, although the structure of production is modified, the system of consumption is changing more slowly, so the delivery of products manufactured elsewhere stimulates faster the demands on goods transportation than would be expected on the basis of economic growth.)

In order to establish a balance between the transport modes, harmonised international development of different transport modes and cooperation between them are very important. The largest competitive advantage of road transport is that it is able to forward goods in extremely flexible ways and at relatively low tariffs straight away. Usage of lorry transport is inevitable over short distances, where there is no alternative transport mode that could fulfil the economic requirements. Ideally, the road transport mode should primarily fulfil the tasks of short- and medium-distance local forwarding and supply- and distribution-related transport tasks as connections to rail or even waterway or aviation services. Long-distance road transport cannot be eliminated, of course, but an ambitious objective should be to ensure that road transport fulfils local forwarding tasks. In cases of medium- and long-distance transport, alternative solutions are both preferable and practical.

The improvement of the road transport sector was constrained by both sectoral and non-sectoral factors. One of the most important *non-sectoral factors* is the transport policy atmosphere that tends boost usage of alternative non-road transport modes by applying specific instruments in place of the principle of unlimited free choice of transport modes, due to the problems and discomfort (congestion, environmental harm, accidents) caused by

the road transport mode. To put it more simply, the necessity of *transport mode choice* and of *demand influence ('demand management')* arises more often.

Other obstacles facing road transport stem partly from within the transport sector itself. The most fundamental prerequisite for creating a well-functioning transport market is the provision of *competition-equality* between and within the different sub-sectors. In the broadest interpretation of competition, a holistic approach to transport is adopted; this is the so-called *'intermodal competition'*, which arises between the individual sub-sectors. The possibility for this is created by the fact that to some extent various sub-sectors can be substituted by one another. This substitution is determined by the type and category of goods, the forwarding distance, the importance of the time factor, and cost trends. Within the scope of the activity where this scope for substitution exists, the sub-sectors can compete with each other.[6]

An open question which should be answered in the foreseeable future is this: How was rail transport in Europe positioned at the beginning of the 19th century, both in the field of passenger and freight transport, and what role did it have to play? Which new technologies and organising solutions are necessary to meet the demands of customers to the best possible extent in rail transport?[7] In the intermodal competition, the time factor is the greatest issue for goods transport by rail: the rail's trading rate is barely one third of the road's. Reduction of the time factor is mainly impeded by the following factors: the rate of the so-called operation times is very high in relation to useful running, the EU's railway network – for historical reasons – is fragmented (there are so many countries and at least as many rail infrastructure companies), different standards exist (e.g. in electric traction), and technical standards vary between member countries. With combined (mainly containerised) transport, the operation of the shuttle service freight trains can be classed as a necessary but inadequate solution. Inside the European Union, goods transport by rail could be made genuinely competitive in the longer term provided that a technically uniform, border-free railway network with equal capacities existed.

2.2. Some thoughts about decoupling

In the field of economic science, decoupling means the moderation of correlation or dependence between variables. It is often used to express the coherence between production and the quality of environment. In the present context it relates to an economic capability that is able to grow without causing any environmental load (destruction of environmental conditions). Precisely how it works is still a matter of debate.

The simplest definition is that provided by the Organisation for Economic Co-operation and Development (OECD): The term *decoupling* refers to breaking the link between 'environmental bads' and 'economic goods'. (OECD, 2002)

In most cases, this detachment (according to authors dealing with decoupling) aims to solve matters within the transport sector (see the strong influence of society/economy upon transport and the weak influence of transport upon society/economy). Transport – as a branch of the tertiary sector – is meant to serve society and the economy. Its development is decisively influenced by them, e.g. changes in the structure of production and greater integration increase transport needs, resulting in further requirements for automotive and building industries; consequently, society and the economy are the final driving mechanisms (driving force) and by comparison, the inner development of transport

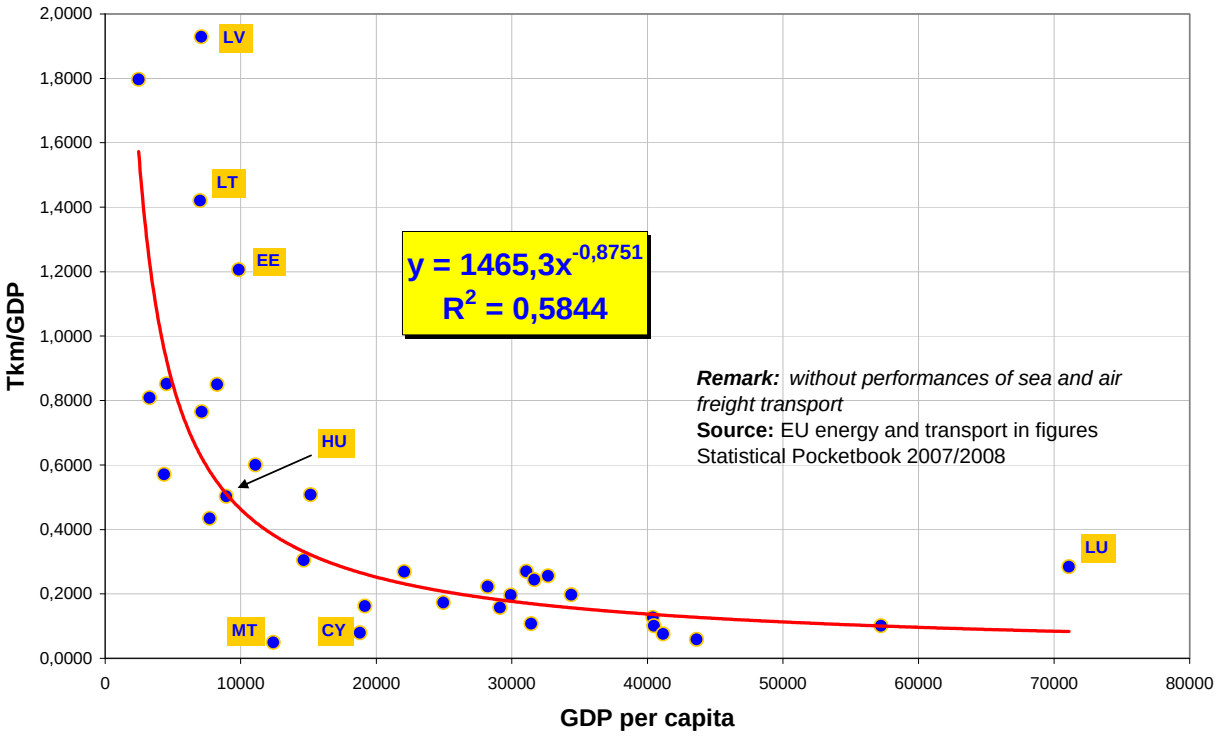
(e.g. the railway's revitalisation) is of less importance. Consequently, we have basically two solutions for detachment:

1. we look for the solution within the transport sector;
2. we moderate the transport performance, or the goods-transport demand (intensity) of the economy, utilising the non-transport possibilities in order to decrease the harmful effects.

In the long term (20-40 years), in order to reduce the negative effects, the transport intensity of the economy should be influenced, not only detached (with solutions within the transport sector), but reduced (with non-transport solutions). The demand for transport arises outside the transport sector itself - as with most of the basic issues to be solved with decoupling. The demand for transport services, transport infrastructure, vehicle stock and logistics systems depends largely on the structure of industry, agriculture and settlements, on school and health care systems, on tax and tariff policies, on trade, and on integration and globalisation effects.

Consequently, it is worth examining how much specific transport performance is necessary for the production of one unit of GDP. This coherence (intensity of freight transport or transport demand) is demonstrated in *Figure 2*.

Figure 2: Correlation between GDP/capita and tkm/GDP by member states + HR, MK, TR, IS, NO, CH (2006)

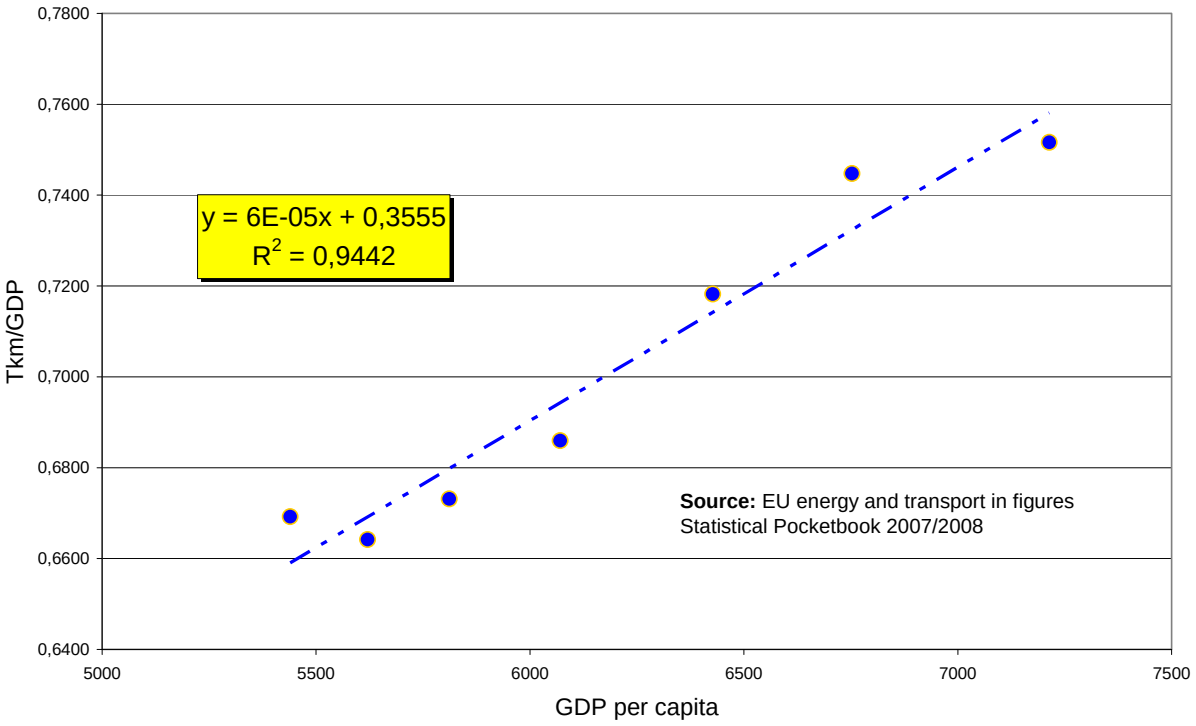


Source of data: European Commission, 2008

Based on the coherences, we can assume that the higher the GDP/capita, the more developed the economy of a given country is. The development is also accompanied by the phenomenon that production of one unit of GDP requires less specific freight transport performance (tonne/km); consequently, more developed and effective production is less transport-intensive. This would suggest that economic development improves, i.e.

moderates, the transport-intensity of an economy. However, the globalisation and integration effect overwrites all this (see Figure 3). However, the effects of globalisation and integration modify the 'basic trend', and the hyperbolic curve from year to year is ascending, practically speaking drawing away from the abscissa axis.

Figure 3: Trend of freight transport intensity - EU12 (2000-2006)



Source of data: European Commission, 2008

The more the globalisation process deepens, and the more intensive the effects of globalisation, the more transport-intensive the given economy will become. The growth of freight transport intensity certainly increases the 'environmental bad', i.e. the load on the environment; consequently, we have to detach the negative effects resulting from increase of transport performances. As mentioned above, one possibility for this is to optimise the supply chains by means of cooperation between the transport modes (co-modality). However, the more effective results would be yielded by non-transport solutions (such as regional development, location of industry, etc.; even the advantages of inland waterway transport can only be utilised if the plants producing dispersible or liquid mass goods – e.g. biofuel – are located near a river or on the bank of the river).

It is a task of decades to explore the non-transport solutions, to elaborate programmes, and to harmonise them with transport development (development of infrastructure, vehicle stock, division of labour and technology). Expediently, location of industry and the regional division and management of agriculture should also be based on the one hand on comparative advantages, on the other hand to execute under the circumstances of the 'regulated market' from global aspect. During the location process, the European Union (comparing several variants) would support the most favourable one, of course on the basis of subsidiarity. However, the 'regulated' policy of industrial location and agriculture, which also influences transport, belongs to a 'sphere' beyond transport and this can be realised only by close cooperation among the EU member states.

3. GLOBAL TRENDS IN PASSENGER TRANSPORT

Economic opportunities and improvements in living standards have generated the more intensive usage of faster and more convenient transport modes which are also less energy-efficient. In the developed countries, car mobility stands at around 75%, but even in the developing countries it has reached 40%. Locally, one of the major environmental factors is the large number of traffic accidents; at regional level, perhaps the most important risk factor is road infrastructure development, which affects forests, sensitive environmental areas and regions of cultural value. In terms of the global effects, the increasing rate of road transport-related carbon dioxide emissions is a major factor. Air transport also has considerable global effects; beside the harmful effects of noise and air pollution at local level, it produces emissions that deplete the ozone layer and contribute to the greenhouse effect.

It is characteristic for our globalising world that the time needed in order to overcome distances is decreasing, from an economic perspective, national borders are falling, the cycles of production are shortening, stocks are shrinking and time is becoming the neediest source of power. All this means that fast transport of people and valuable goods is becoming more and more important; as a consequence, air transport has become the driving force not only of the transport sectors but also of globalisation. The significance of the air transport market and the extent of air transportation are steadily increasing the negative effects of flying as well.

The effects of the economic crisis will leave their mark for many years to come. Although many new airline companies entered the market after the liberalisation of the markets, it is likely that many will become bankrupt and collapse as a result of the economic crisis. Notwithstanding the crisis, there are some important international trends in aviation which still prevail:

1. the structure of supply is changing, groupings are developing, and the optimal company and fleet size can evolve;
2. the network structure is also changing: flying point-to-point is replaced by the hub-and-spoke system, performing the function of collection-redistribution;
3. slot allocation is being established on a new footing: the distribution of the airport ‘windows’ can be implemented on a market basis;
4. development of price competition, increase of the load factor: as a result of price competition, air transport is becoming accessible to more and more people, and this improves the exploitation indicators of the planes;
5. growth of labour productivity, decrease of costs as a result of rationalisation, decrease in the number of personnel engaged in ground handling activities and air traffic control as a consequence of technical progress, simplification of the reservation process and ticket booking all tend to drive down prices.

More passengers transported by planes of higher capacity – with passenger traffic unchanged – leads to a relative decrease in the number of the planes. The technical development trend on busier routes is the appearance of higher-capacity and therefore heavier airplanes. Inside the European Union, the construction of high-speed rail networks also has the potential to decrease the growth rate of air transport. In the other countries of the world, over a 20-year perspective, although the growth rate cannot be constrained, the

extent of environmental pollution can be moderated by the increased use of alternative fuels.
One of the most important conflicts globalisation has to face is that the economy dominates everywhere, and the requirement of economic growth conflicts with fundamental physical laws. After all, in a closed system like the Earth, infinite growth is impossible, partly because of the scarcity of resources and partly due to pollution, as the Earth's absorption capacities are limited. (Mészáros, 2005)

In passenger transport, over a 20-40 year perspective, demographic changes – with both ageing and decreasing of the population being expected in the EU – will probably strongly influence travelling habits and services. An ageing and decreasing population will impact on the utilisation and financing of community transport, because the two factors (population ageing versus utilisation of community transport) are not independent of each other, and changes here will affect tourism and consumer behaviour.

At present, advertisements' target groups are persons in the 18-49 age-group; this group is motivated to consume more and to replace their possessions (e.g. mobile phones, cars) more often. The elderly group – due to their age – is more conservative and less active and mobile (partly due to health reasons), so we can count on a slowing rate of consumption in their case. Although this may not be a major factor, it is still possible that such changes will decrease the demands for freight transport.

Disregarding the immigration effects, the European population will decrease by 10% by 2050 and the proportion of people under 65 years will approach 30% of the population. By contrast, both the absolute number and the proportion of pensioners – who have more leisure time – will be higher than that of active persons. More leisure time generates more mobility, and presumably, with the average age of the population increasing, community transport will become more popular and meet their transport demands more than individual transport does (a lower proportion of the elderly population drives cars; they prefer community transport). At present, however, this is merely a hypothesis, because in Europe, depending on their state of health, many of the over-50s born in the age of motorisation are still driving after the age of 70, unlike previous generations, and the proportion of older persons using private cars is likely to increase further. A more accurate answer could be given by a representative survey carried out in all EU member states.

Ageing of the population and the growing proportion of elderly persons mean that a far greater share of the burden of funding community transport will fall on the active population, because there are fewer persons to finance the growing number of reduced-rate passengers (free trips, tariff discounts). This means that we have to estimate the changes in the long term and find timely solutions for the volume and quality of changing needs, bearing local aspects in mind, and for the financing of community transport systems that require more resources. This process could entail changes in network and service density and technical vehicle parameters, and could also affect services for disabled persons. Another unresolved question is what can and what may (should) be influenced?

Ageing of the population will probably also modify the traditional structure of towns with the creation of new urban, commercial, economic and lifestyle structures. Good practice and its impact on new mobility challenges and the environment have not been explored yet.

From an economic, social and economic perspective, the modern transport and forwarding system must be continuous (without any gaps so that it can support sustainable social-

economic development. (EB, 2001) However, this train of thought is worth refining further. It is not enough to optimise the transport and forwarding system; rather, mobility itself should be influenced in some way. Firstly, it would be practical to explore the possibility that – as there is cross-transportation in the field of freight transport (transporting the same goods from A to B and then from B to A, due to inadequate organisation) – there are 'redundant' trips that could be eliminated, partly through rationalisation of the network, partly by more favourable geographical localisation of production-servicing-distribution systems, and partly by moderation of mobility.

Congestion generates extra costs, with delays occurring disproportionately as more and more passengers enter the network, and finally the traffic simply grinds to a halt. That is why even a minor decrease in traffic levels of a busy network can result in considerable increases in flow speed. The congestion reacts to the inadequacy of the infrastructure; with queuing (i.e. dosage of volumes), congestion affects everyone, resulting in lost time and further delays to others as well.

The instruments of mobility management – as a sort of solution – are based on information, communication and promotion. Its task is to provide diverse information about mobility options and guidance, changing and influencing transport habits. All these are attempts to implement a new approach in practice, known as the 'traffic-conscious approach'. Until the end of the 20th century, transport development basically meant transport infrastructure network development, vehicle technology innovation, introduction of new telematic systems, and common application of intelligent transport systems. Essentially, these were the 'hard' instruments of transport development.

Based on environment-conscious behaviour, we can refer to transport-conscious behaviour and to its related content. The 'soft' mode of transport development is a completely new development approach which takes account of the aspects of environmental protection and sustainability. This approach to transport development does not conflict with the position of environmentalists: although it denies that the future of transport development would only be a negative 'development', it seeks to serve transport demands on a decreasing (or rather decreased) level. Precisely because it does not focus on the quantity parameters of transport but on better utilisation of existing parameters, it supports the sustainability of transport development, and approves the quantity improvement of transport infrastructure only to an extent that is necessary.

A key aspect is that transport modes cannot be dealt with individually, split apart from each other. Moreover, even the harmonised transport should be practically adapted to regional development and urban policy measures, and the order is converse: First, transport should be adapted to regional development, and then the optimal cooperation of transport modes should be developed. As a first step, the leaps forward in the development of private transport should be moderated by offering a competitive community transport alternative instead. This primarily means a modern and highly developed community transport service. Provided that this is done, then measures for decreasing mobility can be implemented (e.g. congestion road tolls[8], other measures for moderating transport needs, restrictions on car entry to protected areas, increasing overhead costs of private vehicles, changes in approaches in favour of pedestrians).

And finally the key challenge for the next 20-40 years is whether the European Union is able to become a federal state from a 'loose' federation of states. The question is whether the present order: 'I am a resident of X town or Y region, a citizen of Z state and I am a European' can be turned around to read: 'I am a European, I live in Z state, Y region and X

town' (in other words: would one place greater emphasis on nationality or one's status as an EU citizen). This also means some kind of a priority order: independently of nationality, the EU's interests are emphasised against local ones, chiefly in social and economical areas. However, this does not mean the negation of cultural diversity.

4. CONCLUSIONS AND RECOMMENDATIONS

Globalisation increases mobility demand and goods transport intensity. In the globalising world, sustainable mobility and goods transport can mostly be implemented through cooperation with other branches of the economy and only partly within transport:

- One option for goods transport is the optimisation of the transport chain through cooperation between the transport modes (co-modality); however, more efficiency could be achieved by solutions beyond transport (such as regional development with a social and not only an economic optimum, location of industry, etc.). On the one hand, it would be expedient to base the location of industry, regional division and organisation of agriculture on comparative advantages; on the other hand, it would be expedient to realise them under the conditions of the 'regulated market' from a global perspective.
- Consequently, it is a task for several decades to explore the methods beyond transport, to elaborate and harmonise different programmes through transport improvements (infrastructure, vehicle fleet, modal split, technology) that can only be realised through close cooperation between the EU member states.
- This necessitates the redefining of the role of rail transport, the application of proven solutions on a larger scale (e.g. freight trains engaged in shuttle service), the search for new technological procedures and construction of a technically uniform EU railway network. Of course, long-distance road transport cannot be eliminated, but the effort should be to make road transport involved in the implementation of local tasks. It would be expedient to give preference to alternative solutions in the case of average and long distances.
- Since the Union's citizens over 50 were born in the age of motorisation, a detailed analysis is required in order to explore changes in travelling habits (whether the usage rate of public transport or private cars is higher).
- Environment-conscious behaviour is to be encouraged in the application of mobility management tools; first, transport itself should be adjusted to regional development, with optimal cooperation between different transport modes being developed later.
- In the aviation sector, in order to moderate air traffic and its environmental load, besides further development of the high-speed railway network, the deployment of fewer, high-capacity aeroplanes and wider use of alternative fuels could offer a solution.

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NOTES

1. Openness, which is measured by the proportion of external trade to GDP, was only 13% in 1970; it then increased to 28% by 2005 and exceeded 30% by 2015. (World Bank, 2007).

2. While the world trade volume increased by a yearly 6.2% between 1986 and 1995, and by a yearly 6.5% between 1996 and 2005 (and by a yearly average of 8% between 2000 and 2007), world GDP increased by 3.3 and 3.8 % respectively.

3. World trade increased by a yearly 7.6% between 1950 and 1973 and by a yearly 7% between 1973 and 1999, but in the 1990s, in six years out of 10, the world trade volume increased only by about 4%. Although the world trade volume increased by 12.5% in 2000, world trade slowed down strongly throughout the first years of the millennium and the increase of world trade volume was only 0.2% in 2001, 33% in 2002, and 5.1% in 2003. (It was 9.5% in 2004, 6.0% in 2005, 8.8% in 2006, and 5.5% 2007).

4. Expected increases until 2010: China: 7.5%, Russia: 6%, EU10 (+2): 4.2%, U15: 2.2%. By 2030 the increase measures will moderate everywhere, but the proportions are similar. (Ivanova *et al*., 2006).

5. Between 1990 and 1998, road transport increased by 9.5%, while rail transport decreased by 43.5% in the same time period. As a result, the performance of road goods transport measured in tonnes will reach a proportion of 47% by 2010. A large proportion of the increase is realised in international goods transport.

6. Within rail goods transport the largest part of the time-balance was the operation time (loading, train-shunting, changing of locomotives at border stations etc.) and the time of real freight wagon-running is only a small fragment of operation time. This is the main reason why the commercial speed of rail freight is one third of that of road freight; If we project the daily average transport distance (see Chapter 3) to 24 hours, this gives a (commercial) speed of 41.7 km/h for road and 12.5 km/h for rail goods transport. If our intention is to at least preserve the modal shift proportion of the more environmentally friendly rail transport mode, then one possible method for improving its competitiveness is to increase its goods-forwarding speed.

7. Considering that road transport vehicles of 60 tonnes aggregate weight are already in use in Sweden and their use is planned in other countries, the improvement of rail competitiveness would be even more necessary than it was earlier. In the case of road transport vehicles of 60 tonnes aggregate weight, a transport distance of 465 km (if compared with rail freight wagons of axle-weight of 25 tonnes) or of 325 km (if compared with rail freight wagons of axle-weight of 30 tonnes) would be realised to the rail-road intersection - according to a calculation in 1999 (Nelldal, B.-L; Torche, G., Wajsman, J., 1999).

8. A considerable proportion of congestion in Budapest city traffic is caused by transit traffic.

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PHOTO CREDIT: iStock International Inc., Photodisk, Phovoir

ISBN 978-92-823-3147-7

Publications Office

BA-80-10-240-EN-C