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AIR TRANSPORT GROWTH AND ITS IMPACT ON THE ENVIRONMENT IN EU COUNTRIES AND LITHUANIA

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Tendencies in European Union and candidate counties transport system development, its impact on the environment, volume and kinds of losses caused by transport, tendencies in the Lithuanian air transport development are considered in this article.

Introduction

Recently the Republic of Lithuania has concluded negotiations regarding its accession to the European Union (EU).

It is expected that Lithuania and nine more countries will join the common economic area in 2004.

Europe will be expanded to 451 million residents and to 3 929 600 km^2.

Transport and its infrastructure play an important role in the life of all countries.

The transport system is considered as an economical generator of job creation, inducing business, influencing the growth of tourism industry, motion and progress of scientific innovations.

In 1980 EU established Trans-European Network (TEN), which was a step to the integral European market.

The purpose of TEN was to stimulate the growth of the economy, to create new jobs in the area of the EU.

In 1995, main investments were made into the road transport system in Eastern Europe as well as in the EU (accordingly 47 and 62 %).

However, transport is the one of the largest environment polluters. Cargo and passenger transportation brings economical, cultural and scientific benefits to every country but at the same time it devastates nature, affects the ecological balance of the world and brings huge losses.

Tendencies in the EU and candidate counties transport system development, its impact on the environment, volume and kinds of losses caused by transport, tendencies in the Lithuanian air transport development are considered in this article.

Transport growth

The Growing EU domestic market will influence the economy of the EU, candidate counties, and the transport system, which is considered to be growing heavily. Fig. 1 shows the tendencies in transport and GDP growth in the EU, and it is easy to realise that a similar tendency will show in the economy of the countries – new members of EU after they become part of the common economic system [1].

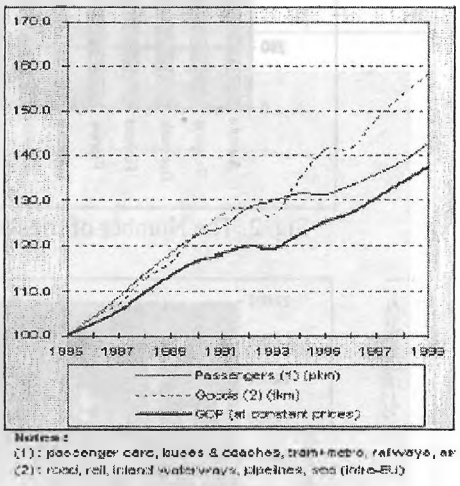

Fig. 1. Growth of the EU transport sectors (cargo and passengers) and GDP in 1985–1999

Conclusions of various EU institutions unanimously assert that the transport sector will continuously grow and the volume of cargo and passenger transportation will increase. Statistics of 1995 shows (fig. 2) that the number of travels for one person in the countries of Eastern Europe is almost the same as in the countries of the EU, but due to the corresponding differences of distance between the points of departure and destination (fig. 3), the number of kilometres travelled is less in Eastern Europe than the average in the EU [2].

Without any doubt, the increasing domestic market will increase the number of kilometres travelled. This is one of the reasons for an intensive growth of the transport system. According to the data of the SCENES [1] project, in 2020 the number of travels performed by one resident of Lithuania will increase by 9,2 % in comparison with 1995.

Bearing in mind the travels of passengers, we can assert that these are mostly tourist and business trips [3].

According to the data of the WTO (World Tourism Organisation), in 2020 the number of tourists in Europe will double, to 720 million visits per year [4]. About half the passenger flow consists of tourists in Europe. 31% of them travel by air, though in Europe almost 70 % of routes are shorter that 1000 km [5].

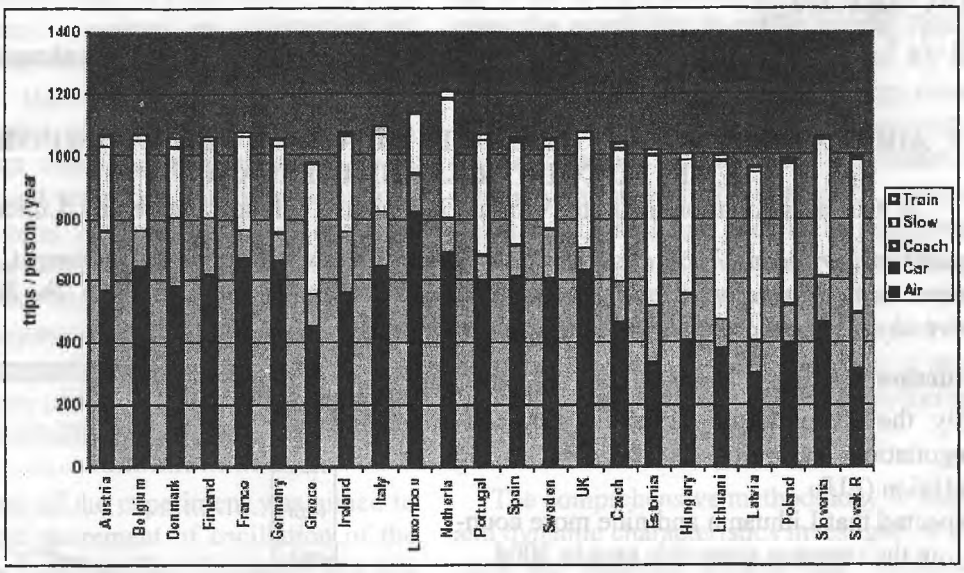

Fig. 2. The Number of trips per EU and candidate counties' passenger in 1995

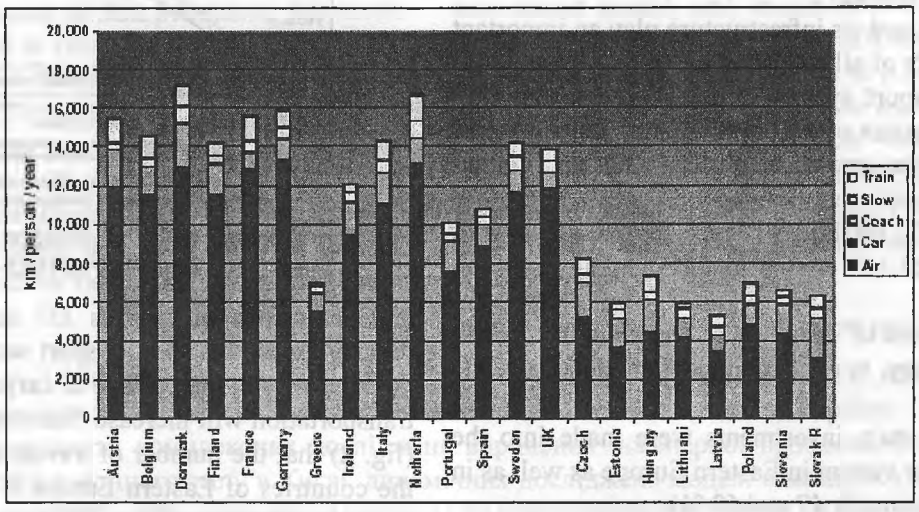

Fig. 3. The Number of kilometres travelled per EU and counties' passenger in 1995

The Impact of transport on the environment

Though giving us a possibility to be mobile, transport heavily damages the environment: exterminates the animate nature, pollutes the atmosphere and causes various illnesses, pollutes with noise.

Fig. 4 shows that out of all economic sectors transport is the greatest CO_2 polluter 70–80 % of all flights in the World are being performed over Europe and the USA [1]. Emissions released by aviation (as well as by automobiles) are mostly accumulated over this area.

Several facts about the impact of emissions from aircraft [6]:

– every year aircraft release about 600 million tones of CO_2 which is the main agent of the greenhouse effect;

– aircraft are responsible for 3,5 % of global warming caused by human activity;

– during the next 50 years the production of CO_2 will grow and can amount to 15 % of global warming caused by human activities;

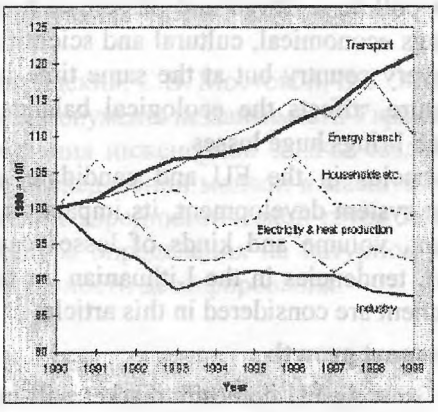

Fig. 4. CO_2 emissions from various economic sectors during 1990–1999

– NO_x and water steam affect the climate much more at high altitudes than on the surface of the Earth; if no measures are introduced to reduce aircraft pollution, these agents will threaten the Earth with global warming no less than CO_2;

– flights of supersonic aircraft will add to the negative impact on the ozone layer by NO_x emissions and make it more fragile.

According to the data of the 4th EU Framework Programme ASTRA project, air transport will grow incredibly rapidlu and, at any rate, will not reduce the negative impact on the environment (fig. 5, 6) [3].

Expensive and rapid kinds of transport become accessible to a wider circle of customers due to the integration of the countries of Eastern Europe into the European Union and emerging economies. Naturally, in countries of Eastern Europe the demand for comfort increases as well as in the Western Europe.

According to the data of the European Environment Agency [7] passenger transportation increased from 2 to 3,1 % during the period 1990–1999.

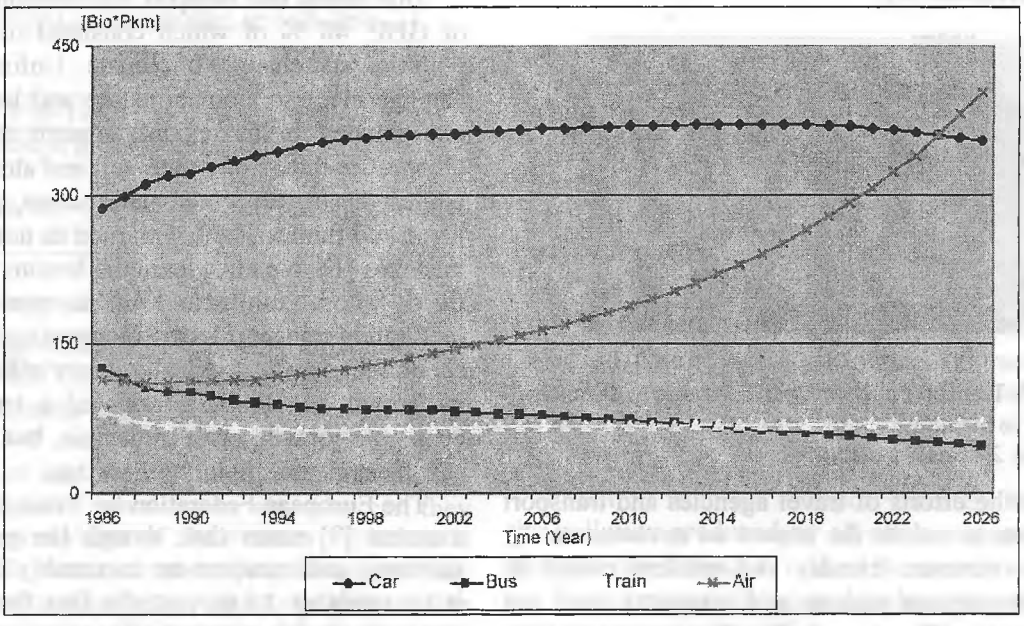

Fig. 5. Forecast of passenger-kilometres growth by kind of transport

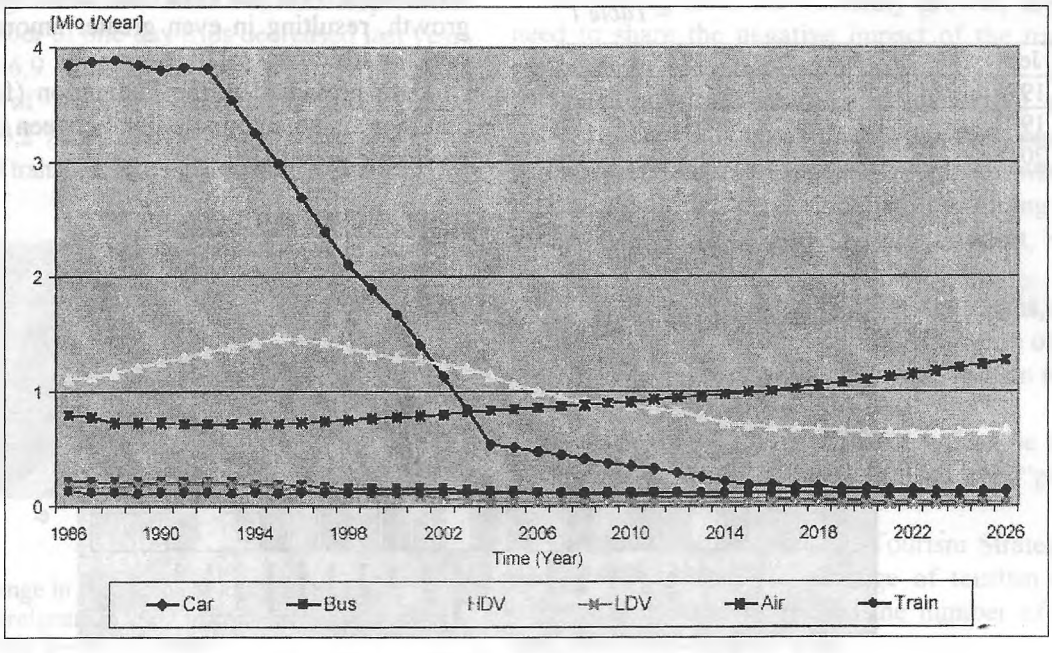

Fig. 6. Predicted emissions of NO_x in the EU

According to the data of Ecology Institute in Berlin [4], in Germany increasing flows of tourists in 2020 will generate 25 % more emissions from air transport and 20% from road transport.

The tendency of a continuing decrease in travel duration causes a decrease in the emission of gases, because 90 % of all energy used during travel falls on travel to the destination and back.

Besides, take-offs and landings are the most polluting phases of travel (fig. 7), therefore pollution is higher when time of travel is short and travelling is more frequent [6].

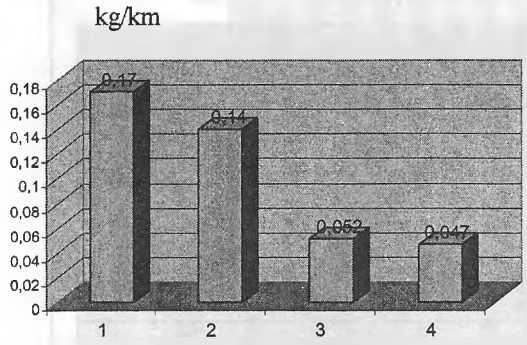

Fig. 7. Transport pollution per kilometre at distances of up to 500 km:
1 – car; *2* – plane; *3* – rail; *4* – boat

Even the efforts of travel agencies and transport companies to reduce the impact on environment by more environment-friendly and modern means of travel, by various actions and programs have not given any significant results [4]. The current rapidity of air transport growth outweighs any technological progress or application of effectiveness, such as fully loaded aircraft (tab. 1) [8].

Table 1

Jear	1975 = 1	1992 = 1
1975	1	–
1992	1,2	1
2015	3,4	2,2

External transport costs

Today aviation provides us with wide possibilities to move, to know cultures, to rest, exchange information and experience. This kind of transport is rapid, comfortable and becomes financially acceptable to everyone. Travel prices by air transport decreased by 45 % in comparison with those ten years ago [8]. However, the question is, did they really decrease? In 2000 in Western Europe it was calculated that transport costs amounted to 530 bill. EUR per year [1].

This means that transport costs amounted to 7,8 % of GDP, 48 % of which consisted of atmosphere pollution and changes of climate. Unfortunately, the damage made to animate nature and landscape was not included in this amount. Airports are mostly the greenest polluters of water, soil and atmosphere, the biggest destroyers of animate nature, producers of noise and fumes. The EU warned us not to repeat its mistakes [1]. We must learn the lessons and we have from whom to learn. As it was mentioned, facilitating transport growth automatically stimulates economic growth. Logically, every effort to control its growth would be considered a termination of economic growth, or even decline, but we can look at it from another point of view, too.

The European Federation for Transport and Environment [9] states that, though the growth of the economy and transport are inexorably linked, "there is no evidence to support the fact that facilitating transport growth automatically stimulates economic growth. It is true that transport has grown over a period of economic growth, but this has not been at the same pace as the economic growth. Recently transport growth has even been faster than economic growth, resulting in even greater amounts of transport for additional GDP ".

Data provided by the Federation (fig. 8) shows that there is no automatic link between transport and economic growth [9].

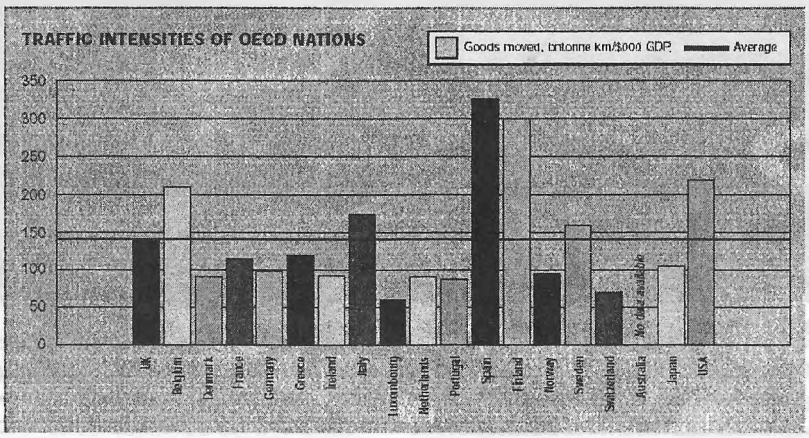

Fig. 8. Level of transport utility in EU countries

Besides, according to the British „Sactra" (Standing Advisory Committee and Trunk Road Assessment) economic and transport report: „breaking the cycle of ever increasing transport growth could benefit rather than harm the economy". Transport is largely an economic sector whose demand is derived from what it can aid to production, rather than a product that has genuine utility by itself.

The data analysis provided by the European Environmental Agency (EEA) in Frankfurt for the period of 18 years and in Switzerland for the period of 5 years [10] dispels the myth of a magic link between transport and economic growth (tab. 2).

Table 2

Frankfurt (1978–1996)	Switzerland (1990–1995)
77,8 % increase in fligths	45,5 % increase in productivity
0,6% increase in employment	53,7 % decrease in employment

Transport growth in Lithuania

Only a year remains till Lithuania joins the European Union and this fact makes us think about the future of Lithuania and other Eastern Europe countries.

Tourists are one of the main polluters of the environment and, while travelling by air or by car, they threaten the ecosystem of the country. Tourism is very profitable; being an intensively developed and, popularised economic sector and it is one of five main existing sources of income and currency.

Lithuanian tourism industry creates on average 4 % of GDP, the forecasted growth amounts to 4,4 % per year until 2020 [11].

According to the data of the Tourism Department [12] the number of one-day trips decreased last years (in 1999 – 66,9 %, in 2002 – 63,9 %). Noticeably, the number of foreigners who chose air transport increased by 3,2 %, and the number of those who chose other kinds of transport heavily decreased (fig. 9) [12].

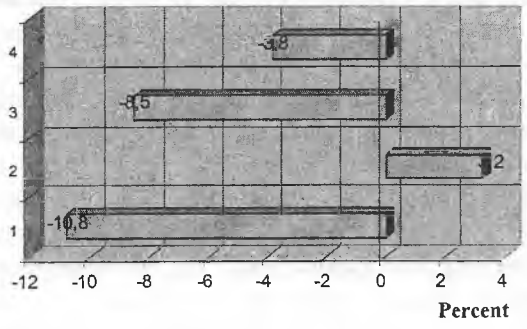

Fig. 9. Change in the choice of kinds of transport made by foreigners in 2002 in comparison with 1999:
1– road; *2*– air; *3* – rail; *4* – water

Residents of Lithuania increasingly (to 7,9 %) used air transport (fig. 10) [12]. According to the estimate of EU specialists, even higher growth to 9,2 % is expected [5].

Conclusions

Tourism is one of the sectors that uses the transport system the most.

Transport growth pollutes the environment and brings not only millions in losses to the country but causes extraordinary damage to health of people and to animate nature.

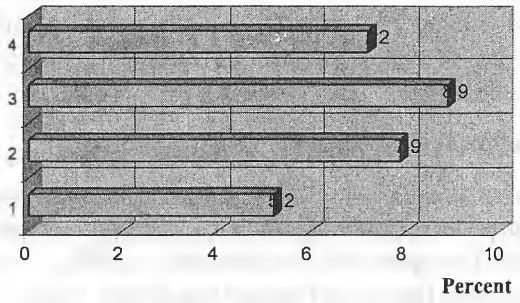

Fig. 10. Change in the choice of kinds of transport made by residents of Lithuania in 2002 in comparison with 1999:
1– road; *2*– air; *3* – rail; *4* – water

Pollution from air transport threatens to exceed the pollution produced by all other means of transport and this menace is real.

Transport control is not a brake to the economy, contrary to earlier belief.

Countries of Eastern Europe will be involved in the domestic market of transportation after they join the EU.

Benefiting from the economy growth, they will need to share the negative impact of the transport sector on the environment.

Three political instruments are named by the EEA [13] enabling us to fight against the threatening pollution of the atmosphere and global warming. First, it would be communication, explaining to the residents the consequences of their comfort, but the effect of this instrument takes time.

The next instrument would be regulations, unfortunately quite time-taking too. ICAO, while organising meetings only once in three years, began to realise the problem [13].

In most successful instrument would be proper taxation (Economic instrument), by the "polluter pays" principle.

The European Sustainable Tourism Strategy [5], taking into account the damage of tourism to the environment seeks to reduce the number of short-term and short-distance trips.

The Federation for Transport and Environment invites candidate countries to gain from mistakes made by other countries.

The main recommendation to all candidate countries would be the same: avoid concentration of development and investments into one kind of transport and to keep a balance between the developed centres and the outlying districts.

Transport management should not be forgotten during one of development phases, well considered investments, taxation, demand management, technical basis and control of impact on the environment should be considered and implemented. Particular attention must be drawn to the environment monitoring using as wide a spectrum of control instruments as possible [7].

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Й. Станкунас, К. Вайтоніте

Зростання авіаперевезень та його вплив на довкілля в країнах ЄС та Литві

Розглянуто тенденції розвитку транспортних систем, їх вплив на довкілля, обсяги і види втрат, викликаних перевезеннями в країнах ЄС і країнах-кандидатах на вступ до ЄС, а також тенденції авіаперевезень у Литві.

Й. Станкунас, К. Вайтоните

Рост авиаперевозок и его влияние на окружающую среду в странах ЕС и Литве

Рассмотрены тенденции развития транспортных систем, их влияние на окружающую среду, объемы и виды потерь, вызванных перевозками в странах ЕС и странах-кандидатах на вступление в ЕС, а также тенденции развития авиаперевозок в Литве.