

TRANSPORT





MK - NI 035

PASSENGER TRANSPORT DEMAND

Period of indicator assessment

- September 2007 – April 2008

Explanation

- Justification for indicator selection

Transport is one of the main sources of greenhouse gases and pollutants that give rise to significant air pollution, which can seriously damage human health and ecosystems. The indicator helps to understand the impact of pollution from the transport on the environment.

The environmental impact of passenger transport arises from resources transfer, fuels consumption, greenhouse gas emissions, pollutant and noise emissions, land consumption (conversion), accidents etc. Due to the different types of origin of pollution from the transport and modal shifting (types of means of transportation), determination of the overall environmental effects becomes difficult. The total environmental effect of modal shifting can in fact only be determined on a case-by-case basis, where local circumstances and specific local environmental effects must be taken into account (e.g. transport in urban areas or over long distances, etc.).

Definition

The indicator "**passenger transport demand**" will be presented in two different ways:

1) To measure decoupling of passenger transport demand from economic growth, the volume of passenger transport relative to GDP will be used, including separate trends for its two components. Both passenger transport demand and real GDP growth will be indexed on 1995 as baseline determined by EEA. The decoupling indicator is defined as the ratio between passenger-km (inland modes) and GDP (Gross Domestic Product in constant 1995 EUR). It will be indexed on year t-1 in order to be able to observe changes in the intensity of passenger transport demand relative to economic growth. In the presentation of this indicator in the Republic of Macedonia, the index 2001=100 is taken as baseline year for comparison.

2) Modal split share of passenger transport: This indicator is defined as the percentage share of transport by passenger car in total inland transport. The unit used is the passenger-kilometre (pkm), which represents one passenger traveling a distance of one kilometre. It is based on transport by passenger cars, buses and coaches, trains and air.

All data should be based on movements on national territory, regardless of the nationality of the vehicle. However, data collection methodology should be harmonised at the EU level.

Units

The unit used is the passenger-kilometre (pkm), which represents one passenger travelling a





distance of one kilometre. It is based on transport by passenger cars, buses and coaches, and trains. Passenger transport demand and GDP are shown as an index (2001=100). The ratio of the former to the latter is indexed on year t-1 (i.e. annual decoupling/intensity changes).

Policy relevance of the indicator

List of relevant policy documents

The **National Strategy for Transport** has been prepared and adopted by the Government of the Republic of Macedonia. It determines the main directions of the transport policy development in the Republic of Macedonia through identification of goals and development strategy for road, rail and air transport sectors.

Legal grounds

The road transport is regulated by the Law on Road Transport (Official Gazette of the Republic of Macedonia No. 68/04 and 127/06). It regulates the conditions and the manner of performing transport of passengers and goods in internal and international road transport.

The Law has implemented the requirements of several relevant EU Directives and Regulations, namely: Directive 96/26EC, Directive 84/647EEC, Regulation 56/83EEC, Regulation 684/92EEC, Regulation 881/92 EEC, Regulation 3118/93EEC, Regulation 792/94EC, Regulation 3315/94EC, Regulation 12/98EC and Regulation 2121/98EC.

Transportation of dangerous goods is regulated by the Law on Dangerous Goods Transportation in Road and Railroad Transport (Official Gazette of the Republic of Macedonia No. 92/07), regulating the conditions under which transport of dangerous goods shall be performed (preparation of matter, loading, transport, on road procedures, unloading, safety in transportation, vehicles equipment and staff training). The following EU legal measures have been implemented in the Law: Directive 94/55/EC, Directive 2000/61/EC, Directive 2001/7/EC, Directive 95/50/EC, Directive 2001/26/EC, Directive 2004/112/EC, Directive 1996/35/EC, Directive 2000/18/EC, Directive 98/91/EC, Directive 96/49/EC and Directive 2006/90/EC.

Railroad transportation is regulated by the Law on Railroads (Official Gazette of the Republic of Macedonia No. 64/05 and 24/07), Law on Agreements on Transportation in Railroad Traffic (Official Gazette of the Republic of Macedonia No. 55/07), Law on Agency Regulating Railroad Transport Services Market (Official Gazette of the Republic of Macedonia No. 07/08) and Law on Railroad Transport Safety (Official Gazette of the Republic of Macedonia No. 40/07).

Air transportation is regulated by the Law on Rail Transport (Official Gazette of the Republic of Macedonia No. 14/06 and 24/07)

Waterway transportation is regulated by the Law on Inland Waterway Transport (Official Gazette of the Republic of Macedonia No. 55/07).

Targets

The indicator is targeted at presenting information to be used in the preparation of documents and actions aimed at reducing the negative effects on the environment and people.





One of the actions is to substitute the road by railroad, waterway and public passenger transport, to reach share of road transport in 2010 not to be higher than the one in 1998.

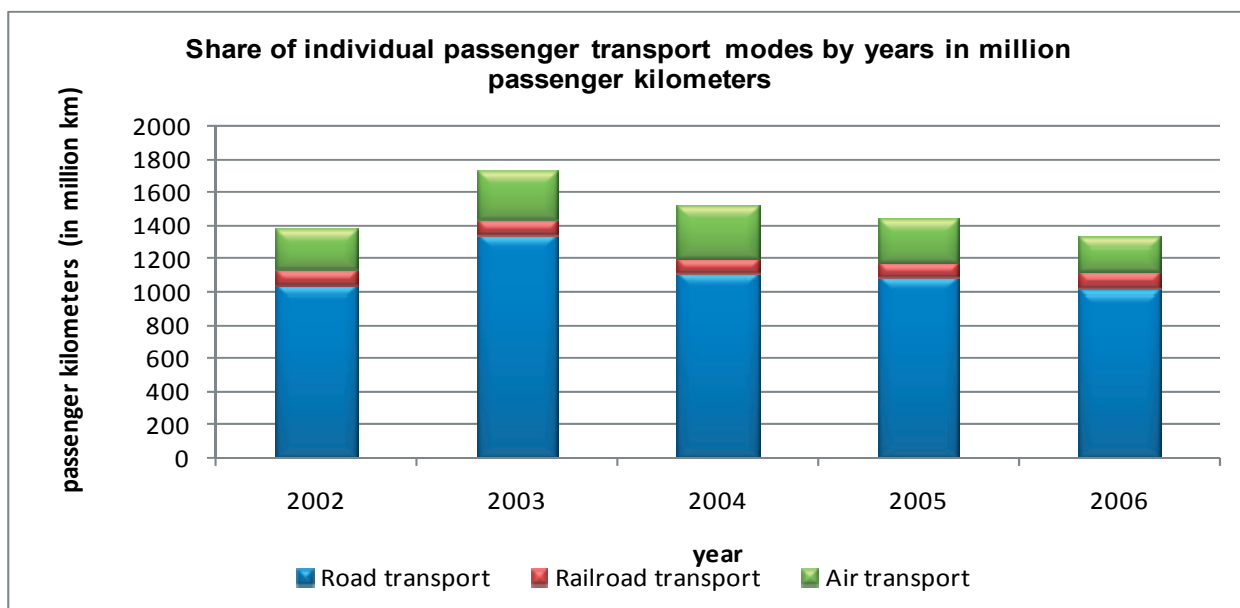
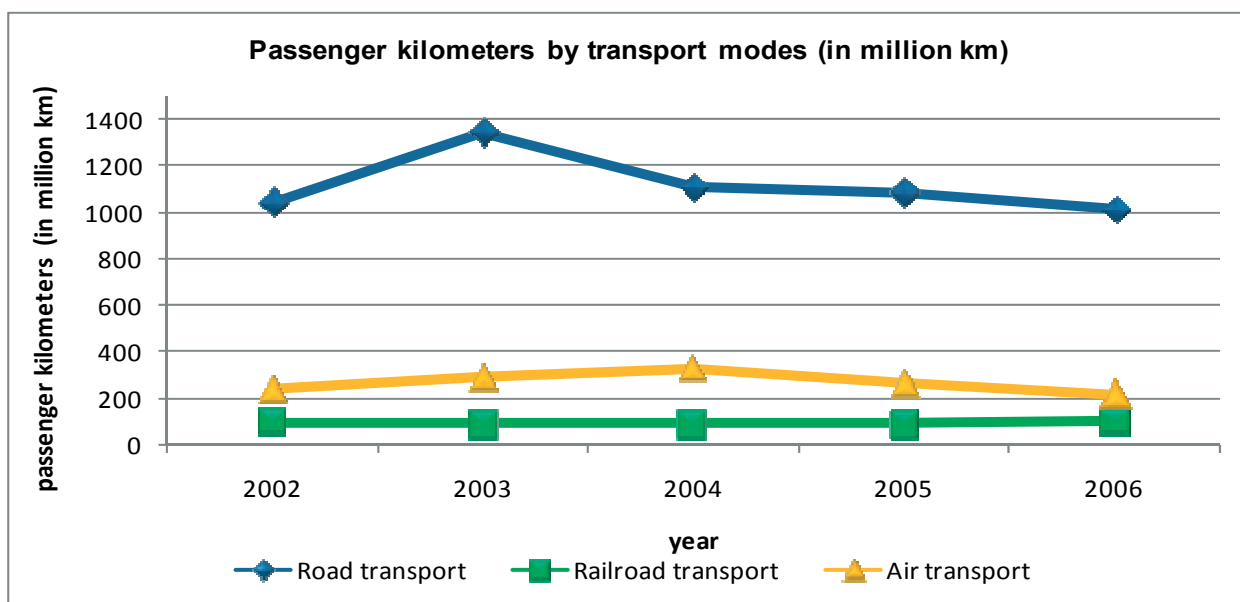
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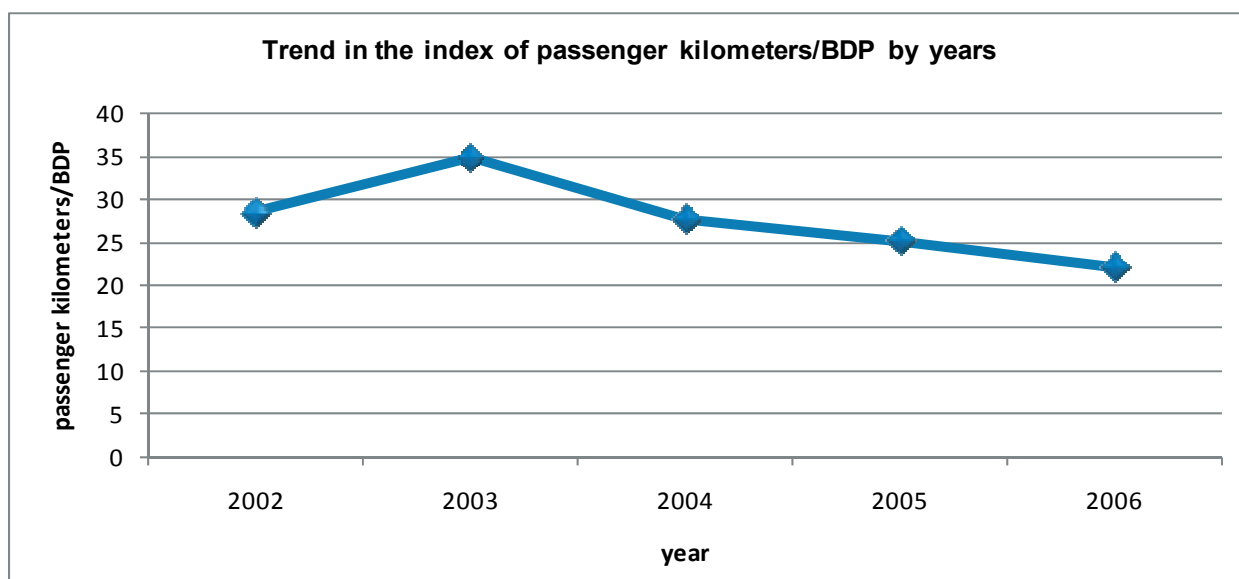
Is the passenger transport demand decoupled from economic growth?

Decoupling of passenger transport demand from economic growth is difficult given the fact that in doing this we use the volume of passenger transport relative to BDP. This depends on the conditions of transport performance, availability of the relevant legislation, appropriate presentation of BDP.

Specific policy issue

Is the passenger transport in road transport reduced compared to other transport modes?





Assessment

The trend in the course of the last three years, in comparative terms, in road and air passenger transport has noted slight decrease. This actually means that there was a slight drop in the index of passenger per kilometres from 2003 to 2006. This is not the case with railroad passenger transport which remained constant during the same years.

Diagram 1 shows the trend in road, railroad and air transport between 2002 and 2006 expressed in passenger-km (passenger kilometres).

Diagram 2 shows that the road transport takes up the highest percentage of the passenger transport ranging between 72.64 % and 77.9 %, while the share of railroad transport ranges from 5.3 % to 7.9 % and air transport from 16 to 21.2%. This indicates that the reduction of environmental pollution requires reduction in the share of road transport in the share of passenger transport in favour of other transport mode. This would also result in avoided costs for the expensive liquid fuel which while combusting pollutes the environment.

Diagram 3 shows the falling trend in passenger kilometres/BDP ratio by given years.

This ratio is indexed for the year 2001=100 in order to monitor the changes in the intensity of passenger transport demand relative to economic growth presented through BDP.

Methodology

■ Methodology for the indicator calculation

In order to measure the decoupling of passenger transport demand from economic growth, the volume (i.e. intensity) of passenger transport relative to BDP is calculated. Relative decoupling occurs when the passenger transport demand rises at rate lower than the one of the BDP. Absolute decoupling occurs when the passenger transport demand falls while BDP rises or remains constant.

The unit used is the passenger-kilometre (pkm), which represents one passenger travelling a





distance of one kilometre. It is based on passenger transport by buses and coaches and trains.

With regard to EU Member States, according to Regulation on road transport and Regulation (EC) No 91/2003 on railroad transport statistics, data is based on all movements of passenger transport on national territory.

Source of used methodology

Structural indicators of Eurostat on transport

State Statistical Office.

■ **Methodological uncertainty and data uncertainty**

All data is based on the movements on the national territory, regardless of the nationality of the vehicle. The methodology of data collection has been harmonised at EU level, but there is still not data provided on the transport by passenger car. Sources include EUROSTAT, National statistical offices, ECMT, UNECE, UIC, DG TREN.

In order to answer the question whether the passenger transport demand is decoupling from economic growth, the intensity of passenger transport relative to changes in real BDP is considered.

■ **Uncertainty of data sets**

The unit used to measure the volume or intensity of passenger transport, as defined in the indicator, is the passenger-kilometre (pkm). It represents one passenger travelling a distance of one kilometre. Data on the transport by passenger car (i.e. average number of passengers per car) is not compulsory variable as there is no legal ground in place. All data on the passenger transport is collected through the Common Survey on transport statistics of EUROSTAT/ECMT/UNECE.

The loading of the vehicle is the key factor which plays a vital role in the assessment of whether there is decoupling of passenger transport demand from BDP growth. In order to obtain full picture of passenger transport demand and corresponding problems in the environment, it would be very useful to supplement data with data on the number of passenger -kilometres by vehicle-kilometres.

Uncertainty of grounds

In the context of environment protection, it is important not to overlook the trends in the total passenger transport volume. Real absolute values are of key importance for the understanding of the pressures on the environment originating from increased passenger transport demand.



Data specification

Title of the indicator	Source	Reporting obligation
Passenger transport demand	– State Statistical Office	

Data coverage (by years):

Table 1. Passenger kilometres by years (in million km)

	2002	2003	2004	2005	2006
Road transport	1042	1344	1110	1087	1016
Railroad transport	98	92	94	94	105
Air transport	236	289	324	263	214

Table 2 Share of passenger kilometres (in million kilometres) of individual passenger transport modes

%	2002	2003	2004	2005	2006
Road transport	75,7	77,9	72,64	75,3	76,1
Railroad transport	7	5,3	6,1	6,5	7,9
Air transport	17,1	16,7	21,2	18,21	16

Table 3 Ratio between passenger kilometre and BDP

year	pkm	BDP	pkm/BDP
2002	1140	4005	28,46
2003	1436	4129	34,78
2004	1204	4355	27,65
2005	1181	4705	25,10
2006	1121	5069	22,11

General metadata

Code	Title of the indicator	Compliance with CSI/EEA or other indicators		Classification by DPSIR	Type	Linkage with area	Frequency of publication
MK NI 035	Passenger transport demand	CSI 035	Passenger transport demand	P	B	-Passenger transport per kilometre -BDP	Monthly, periodically, annually

Geographical coverage: Republic of Macedonia

Temporal coverage: 2002 to 2006

Frequency of data collection: Data is collected at monthly basis from regional departments, and processed and presented on annual basis, periodically and annually.





Data is prepared and processed in accordance with the methodology set in the Guide on transport statistics of EUROSTAT and regulations applicable for each transport mode.

Future activities

■ Short-term activities

- Identification and definition of indicators in the area of transport that may show the state of the passenger transport demand in passenger- kilometre and ton- kilometre in the indicator of the freight transport demand.

a. Description of the activity

- The indicator of passenger transport demand is calculated and presented based on data collected and processed by the State Statistical Office in the adequate format by specified methodology.

b. Required resources

- Engagement of national experts from governmental institutions with knowledge of the passenger transport demand to take part in the indicator development.

c. Status

- Continuous

Deadline: 1 year

■ Long-term activities

a. Description of the activity

- Activities concerning transposition of Directives of relevance for the transport, strategy for transport, plan for improvement of the transport performance.

b. Required resources

- No required resources have been identified.

c. Status

- In progress

Deadline: 1 January 2099





MK - NI 036

FREIGHT TRANSPORT DEMAND

Period of indicator assessment

- September 2007 – April 2008

Explanation

- Justification for indicator selection

Transport is one of the main sources of air pollution through emissions of greenhouse gases and other pollutants. This is the reason why transport can affect and harm human seriously health and ecosystems.

Reduction in the freight transport demand will result in reduced environmental damages and lower impact on human health from freight transport. Therefore, the need for decoupling the freight transport related to BDP is also related to environmental impacts.

The environmental impact of freight transport arises from resources transfer, fuels consumption, greenhouse gas emissions, pollutant and noise emissions, land consumption (conversion), accidents etc. Due to the different types of origin of pollution from the transport and modal shifting, determination of the overall environmental effects becomes difficult. The total environmental effect of modal shifting can in fact only be determined on a case-by-case basis, where local circumstances and specific local environmental effects must be taken into account (e.g. transport in urban areas or over long distances, etc.).

Definition

The indicator "**freight transport demand**" will be presented in two different ways:

1) To measure decoupling of freight transport demand from economic growth, the volume of freight transport relative to GDP will be used, including separate trends for its components. Both real GDP growth and freight transport demand will be indexed on 1995 as baseline at the level of EUROSTAT. The decoupling indicator is defined as the ratio between tonne-km (inland transport) and GDP (Gross Domestic Product in constant 1995 EUR). It will be indexed on year t-1 in order to be able to observe changes in the annual intensity of freight transport demand relative to economic growth.

2) Modal split share of freight transport: This indicator is defined as the percentage share of freight transport in total inland transport. The unit used is tonne-kilometre (tkm), which represents movement of one tonne over a distance of one kilometre. It includes road and railroad inland transport. Railroad transport is based on movements on national territory, regardless of the nationality of the vehicle. Road freight transport is based on all movements of vehicles registered in the reporting country.





Units

The unit used is the tonne-kilometre (tkm), which represents the movement of one tonne over a distance of one kilometre. It includes transport by road and rail. Rail transport is based on movements on national territory, regardless of the nationality of the vehicle. Road transport is based on all movements of vehicles registered in the reporting country. Freight transport demand and GDP are shown in EUROSTAT as an index (1995=100). The ratio of the former to the latter is indexed on year t-1 (i.e. annual decoupling/intensity changes).

Policy relevance of the indicator

List of relevant policy documents

The **National Strategy for Transport** has been prepared and adopted by the Government of the Republic of Macedonia. It determines the main directions of the transport policy development in the Republic of Macedonia through identification of goals and development strategy for road, rail and air transport sectors.

Legal grounds

The road transport is regulated by the Law on Road Transport (Official Gazette of the Republic of Macedonia No. 68/04 and 127/06). It regulates the conditions and the manner of performing transport of passengers and goods in internal and international road transport.

The Law has implemented the requirements of several relevant EU Directives and Regulations, namely: Directive 96/26EC, Directive 84/647EEC, Regulation 56/83EEC, Regulation 684/92EEC, Regulation 881/92 EEC, Regulation 3118/93EEC, Regulation 792/94EC, Regulation 3315/94EC, Regulation 12/98EC and Regulation 2121/98EC.

Transportation of dangerous goods is regulated by the Law on Dangerous Goods Transportation in Road and Railroad Transport (Official Gazette of the Republic of Macedonia No. 92/07), regulating the conditions under which transport of dangerous goods shall be performed (preparation of matter, loading, transport, on road procedures, unloading, safety in transportation, vehicles equipment and staff training). The following EU legal measures have been implemented in the Law: Directive 94/55/EC, Directive 2000/61/EC, Directive 2001/7/EC, Directive 95/50/EC, Directive 2001/26/EC, Directive 2004/112/EC, Directive 1996/35/EC, Directive 2000/18/EC, Directive 98/91/EC, Directive 96/49/EC and Directive 2006/90/EC.

Railroad transportation is regulated by the Law on Railroads (Official Gazette of the Republic of Macedonia No. 64/05 and 24/07), Law on Agreements on Transportation in Railroad Traffic (Official Gazette of the Republic of Macedonia No. 55/07), Law on Agency Regulating Railroad Transport Services Market (Official Gazette of the Republic of Macedonia No. 07/08) and Law on Railroad Transport Safety (Official Gazette of the Republic of Macedonia No. 40/07).

Air transportation is regulated by the Law on Rail Transport (Official Gazette of the Republic of Macedonia No. 14/06 and 24/07)

Waterway transportation is regulated by the Law on Inland Waterway Transport (Official Gazette of the Republic of Macedonia No. 55/07).



Targets

The indicator is targeted at presenting information to be used in the preparation of documents and actions aimed at reducing the negative effects on the environment and people.

One of the actions is to substitute the use of road freight transport by railroad and waterway transport, to reach share of road freight transport in 2010 not to be higher than the one in 1998.

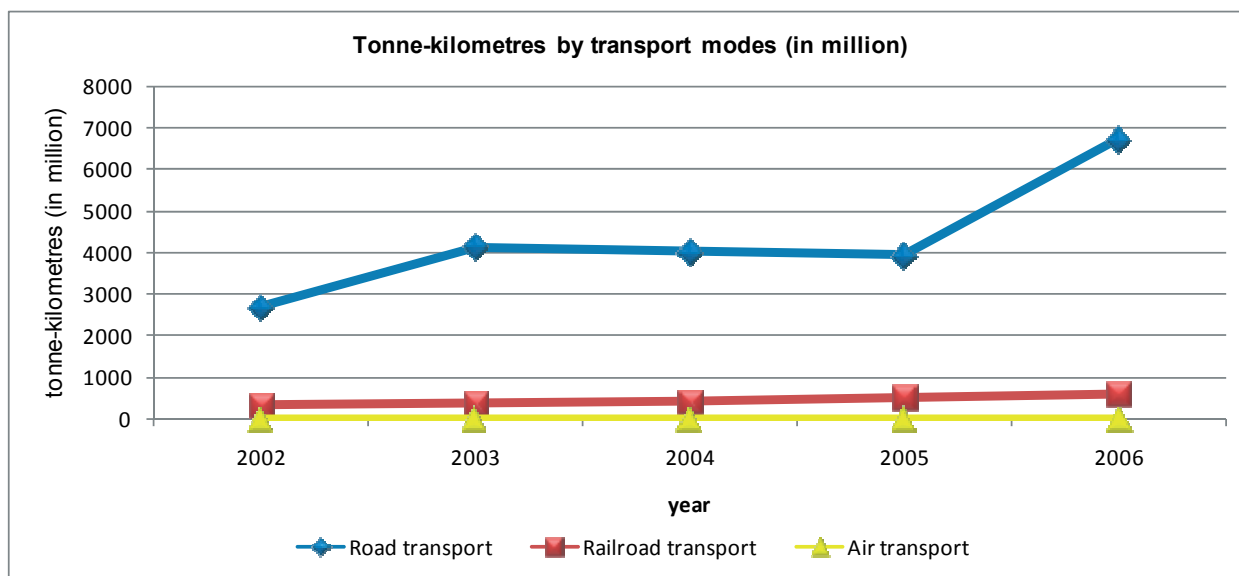
Key message

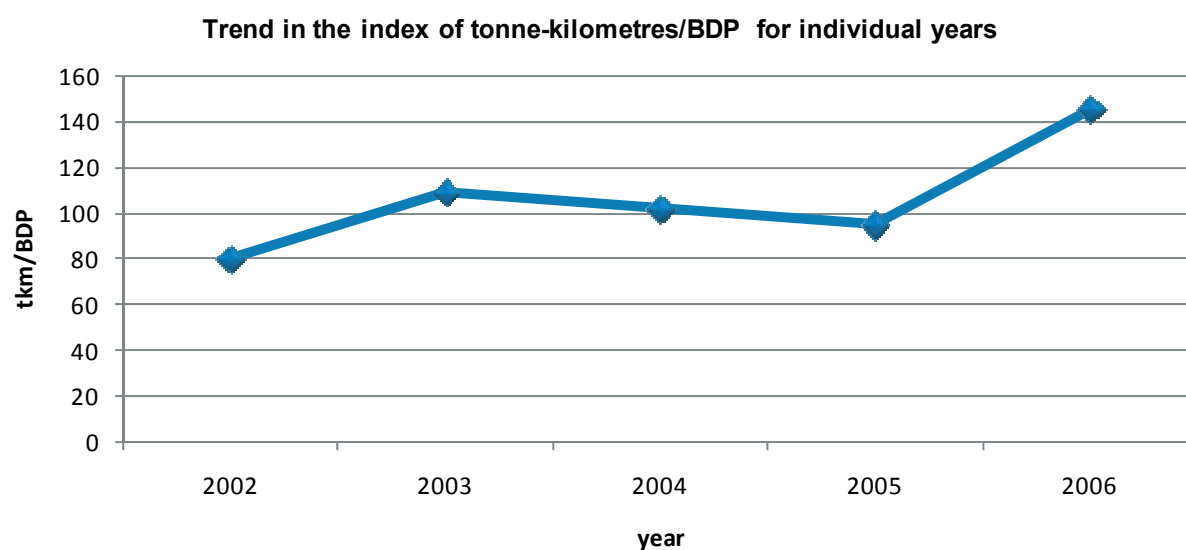
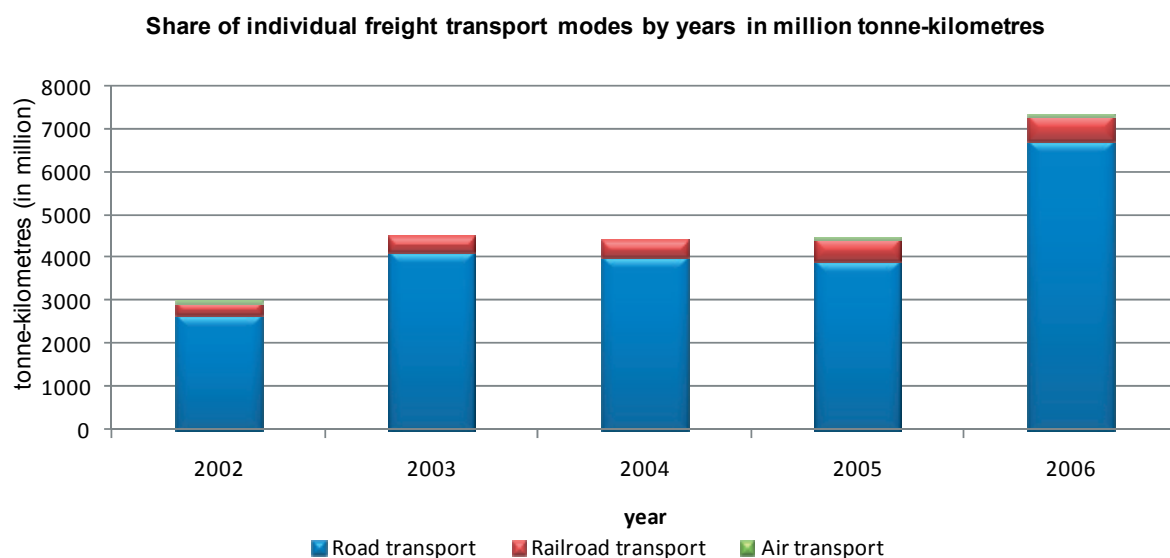
Is the freight transport demand decoupled from economic growth?

To measure decoupling of freight transport demand from economic growth, the volume of freight transport relative to GDP is used, including separate trends for its components. The decoupling indicator is defined as the ratio between tonne-km (inland transport) and GDP (in relation to EUROSTAT Gross Domestic Product in constant 1995 EUR). It will be indexed on year t-1 in order to be able to observe changes in the annual intensity of freight transport demand relative to economic growth.

Specific policy issue

Is the percentage of freight transport in road transport reduced compared to other transport modes?





Assessment

The trend in freight transport demand in tonne-kilometres by transport modes presented in Diagram 1, in the period from 2002 to 2006, noted continuous increase for the road freight transport almost identical at annual basis up to 2005, followed by rapid increase between 2005 and 2006. In the domain of railroad and air freight transport, there was almost no change in data at annual level and the trend remained constant without major notable variations.

Diagram 2 shows clearly that the freight transport was dominated by road transport ranging between 88.11 and 91.7 % presented by all analyzed years. Freight transport by railroad was in the range between 8.4 and 11.3 % of the total freight transport. This is sufficient indication that the indicator should attend to reduce the road transport in favour of other freight transport modes. The reason for this lies in the fact that the road freight transport consumes costly liquid





fuels which during combustion on road cause significant pollution of environment, air, soil, biodiversity, etc.

Diagram 3 shows that the trend in the index of tonne-kilometres relative to BDP was rising from 2002 to 2003, followed by a period of falling up to 2005, and then noted rapid rise between 2005 and 2006.

The ratio is indexed for the year 2001=100 in order to monitor the changes in the intensity of freight transport demand relative to economic growth presented through BDP.

Methodology

■ Methodology for the indicator calculation

In order to measure the decoupling of freight transport demand from economic growth, the volume (i.e. intensity) of freight transport relative to BDP is calculated. Relative decoupling occurs when the freight transport demand rises at rate lower than the one of the BDP. Absolute decoupling occurs when the freight transport demand falls while BDP rises or remains constant.

The unit used is the tonne-kilometre (tkm), which represents movement of one tonne over a distance of one kilometre. It is based on passenger transport by buses and coaches and trains. It includes road and railroad inland transport. Railroad inland transport is based on movements on national territory, regardless of the nationality of the vehicle. Road freight transport is based on all movements of vehicles registered in the country.

According to Regulation (EC) No 1172/98, data on road transport is based on all movements of vehicles registered in the reporting country. All other data on transport refer mainly to movements on national territory, regardless of the nationality of the vehicle.

■ Sources of used methodology

Structural indicators of EUROSTAT on transport
State Statistical Office.

■ Methodological uncertainty and data uncertainty

All data is based on movements on national territory, regardless of the nationality of the vehicle. Methodology of data collection has been harmonized at EU level, but there is still not data provided on the freight transport by road. Sources include EUROSTAT, National statistical offices, ECMT, UNECE, UIC, DG TREN.

In order to answer the question whether the freight transport demand is decoupling from economic growth, the intensity of freight transport relative to changes in real BDP is considered.

Uncertainty of data sets

The unit used to measure the volume or intensity of freight transport, as defined in the indicator, is the tonne-kilometre (tkm). It represents movement of one tonne over a distance of one kilometre. Data on the freight transport is collected through the Common Survey on transport statistics of EUROSTAT/ECMT/UNECE.





The loading of the vehicle is the key factor which plays a vital role in the assessment of whether there is decoupling of freight transport demand from BDP growth. In order to obtain full picture of transport demand and corresponding problems in the environment, it would be very useful to supplement data with data on the number of tonne-kilometers by vehicle-kilometre.

■ Uncertainty of grounds

In the context of environment protection, it is important not to overlook the trends in the total freight transport volume. Real absolute values are of key importance for the understanding of the pressures on the environment originating from increased freight transport demand.

Data specification

Title of the indicator	Source	Reporting obligation
Freight transport demand	– State Statistical Office	

Data coverage (by years):

Table 1 Freight transport by modes in tonne-kilometers (in million km)

	2002	2003	2004	2005	2006
Road transport	2693	4130	4004	3930	6732
Railroad transport	334	373	426	530	614
Air transport	0,331	0	0	0,45	0,44

Table 2 Share in percentage of tonne-kilometres (in million km) of individual freight transport modes

%	2002	2003	2004	2005	2006
Road transport	88,95	91,7	90,4	88,11	91,6
Railroad transport	11,3	8,3	9,6	8,4	8,4
Air transport	1,05	0	0	0	0

Table 3 Ratio between tonne-kilometres and BDP

year	tkm	BDP	tkm/BDP
2002	3207	4005	80,07
2003	4503	4129	109,07
2004	4430	4355	101,73
2005	4460	4705	94,79
2006	7346	5069	144,92



General metadata

Code	Title of the indicator	Compliance with CSI/EEA or other indicators		Classification by DPSIR	Type	Linkage with area	Frequency of publication
MK NI 036	Freight transport demand	CSI 036	Freight transport demand	P	B	Freight transport per kilometre BDP	Monthly Periodically Annually

Geographical coverage: Republic of Macedonia

Temporal coverage: 2002 to 2006

Frequency of data collection:

Data is collected at monthly basis from regional departments, and processed and presented on annual basis, periodically and annually.

Data is prepared and processed in accordance with the methodology set in the Guide on transport statistics of EUROSTAT and regulations applicable for each transport mode.

Future activities

■ Short-term activities

- Identification and definition of indicators in the area of transport that may show the state of transport demand in tonne-kilometre in the indicator of the freight transport demand.

a. Description of the activity

- The indicator of freight transport demand is calculated and presented based on data collected and processed by the State Statistical Office in the adequate format by specified methodology.

b. Required resources

- Engagement of national experts from governmental institutions with knowledge of the freight transport demand to take part in the indicator development.

c. Status

- Continuous activity -Deadline: 1 year

■ Long-term activities

a. Description of the activity

- Activities concerning transposition of Directives of relevance for the transport, strategy for transport, plan for improvement of the transport performance.

b. Required resources

- No required resources have been identified.

c. Status

- In progress.

Deadline: 1 January 2009



