A BRIEF STATISTICAL ANALYSIS OF THE ROMANIAN FREIGHT TRANSPORT

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ABSTRACT

Transport sector is essential for every country and its society. It connects good and services to markets, it gives access to jobs, education, healthcare; it is the key of economic growth, contributing to the prosperity of a nation. The present article stresses the importance of indicators in measuring all these aspects. As freight transport has the largest share in total transport activity, I have realised a short statistical analysis of freight transport in our country through specific indicators, which have to be considered both generally and in terms of sustainable development, as one of the main priorities of Romania in the field of transport.

Keywords: *statistical analysis, freight transport, Romania, sustainable development indicators, road transport, railway transport, maritime transport, transport infrastructure investment, energy consumption.*

1. INTRODUCTION

Transport is the essence of every country socio-economic development. Transport infrastructure connects people to jobs, education, health services; allow proper development of global trade; permits people to come in the same place, to interact and to exchange knowledge and experience in various fields of activity, boosting the long-term economic growth.

To accomplish these goals, transport has to face many challenges, such as rapid motorization, air pollution, road safety, climate change. That's why it is very important to monitor these issues and to lead to the conception of national strategies and to the creation of an indicators' system, which has to follow the main objectives and the modalities of action for their accomplishment.

Romania has developed a set of indicators structured on the sustainable development national strategy's objectives and this set is a solid base for periodic monitoring of progresses.

2. STATISTICAL CHARACTERIZATION OF FREIGHT TRANSPORT IN ROMANIA DURING 2006-2011

One of the most important statistical indicators for measuring transport activity is the volume of goods transported - an useful indicator in international comparisons, especially when we consider its correlation with Gross Domestic Product (GDP) of a country .

In total transported freight in Romania in the period under study 2006-2011, the volume of goods transported by road has the highest share in each year, even if there is a decrease to half its value in 2011 compared to the reference year 2006 (absolute decrease of 151698 thou tons) (see table 1).

Road transport is followed at great distance by rail, which many years ago holded supremacy in the transport of goods. On the 3rd and 4th ranks shipping and inland waterways, and the last place is for the air freight transport.

Table 1. Transported goods by mode of transport in Romania in the period 2006-2011

-thou tonnes-

Type of transport	2006	2007	2008	2009	2010	2011
Railway transport	68313	68772	66711	50596	52932	60723
Road transport	335327	356669	364605	293409	174551	183629
Inland waterways transport (1)	29304	29425	30295	24743	32088	29396
Maritime transport (2)	46709	48928	50449	36021	38118	38883
Air transport	23	22	27	24	26	27
Transport via petroleum pipelines	12702	12310	12390	8520	6551	6020

(1) Since 2009, transit transport data reported by Regional Harbour Masters and Bulgarian inland waterways transport equivalent to transit transport for Romania included;
(2) According to the Eurostat methodology on approach related to the treatment of "double counting" in national transport.
Source: [2]

Therefore, the highest share in total transported freight holds road transport, the following places in the ranking being allocated to railway transport and maritime transport.

Regarding railway transport structure on the types of goods in 2011, according to NST 2007 code (Standard Goods Classification for Transport Statistics), the top five categories of goods that occupy most of the volume of goods transported by rail are shown in the table below. The smallest share in the volume of goods transported by railway belong to grouped goods (code 18 - Grouped goods: a mixture of types of goods which are transported together – 2 thou tonnes).

Table 2. Railway transport by type of goods in Romania in 2011

NST 2007 Code	Type of goods	Thou tonnes
02	Coal and lignite; crude petroleum and natural gas	28145
07	Coke and refined petroleum products	13754
08	Chemicals, chemical products and man-made fibres, rubber and plastic products, nuclear fuel	4167
10	Basic metals, fabricated metal products, except machinery and equipment	3506
03	Metal ores and other mining and quarrying products; peat, uranium and thorium	2388

Source:[2]

In maritime transport, top five types of goods that have the highest values are shown in Table 3. Romania is a country with agricultural potential and rich reserves of coal, lignite; generally, the goods transported by sea are mainly included in these categories. The last place belongs to the goods in Group 13 - Furniture and other manufactured goods -1 thou tonnes.

Table 3. Maritime transport at ports by type of goods in Romania in 2011

NST 2007 Code	Type of goods	Thou tonnes
01	Products of agriculture, hunting and forestry; fish and other fishing products	9218
02	Coal and lignite; crude petroleum and natural gas	7734
19	Unidentifiable goods	5178
03	Metal ores and other mining and quarrying products; peat, uranium and thorium	4648
07	Coke and refined petroleum products	3457

Source:[2]

The structure of goods transported by road in 2011 is shown in Table 4, the first among top five categories of goods being occupied by "Metal ores and other mining and quarrying products; peat, uranium and thorium". Last place in the ranking of goods transported by road is owned by group 15 - Mail, parcels - 240 thou tonnes.

Table 4. Road transport by type of goods in Romania in 2011

NST 2007 Code	Type of goods	Thou tonnes
03	Metal ores and other mining and quarrying products; peat, uranium and thorium	70679
09	Other non-metallic mineral products	44240
04	Food products, beverages and tobacco	14001
01	Products of agriculture, hunting and forestry; fish and other fishing products	8410
06	Wood and products of wood and cork (except furniture); articles of straw and plaiting materials pulp, paper and paper products; printed matter and recorded media	7849

Source:[2]

3. STATISTICAL ANALYSIS OF SUSTAINABLE DEVELOPMENT INDICATORS FOR ROMANIAN FREIGHT TRANSPORT IN THE PERIOD 2000-2010

The indicators in the database of the National Institute of Statistics of Romania are pursuing the objectives and modalities of action at the horizon years: 2013, 2020, 2030, established by the National Strategy for Sustainable Development. The main function of indicators is to meet the monitoring requirements that the National Strategy for Sustainable Development expresses associated with the time of the targets, which in turn represent political commitments related to the strategic objectives of sustainable development. The set of sustainable development indicators for Romania is structured considering the objectives of the National Strategy for Sustainable Development, the hierarchy being structured on three levels: level 1 -core indicators, level 2 -complementary indicators and level 3 -progress indicators of the National Strategy for Sustainable Development.[4]

Table 5. Volume of freight transport relative to GDP in Romania in the period 2000-2010

Year	Indicator value (%)
2000	100,0
2001	106,3
2002	119,6
2003	127,1
2004	145,1
2005	174,2
2006	171,4
2007	165,6
2008	148,5
2009	113,0
2010	105,8

Source:[2]

The complementary indicator “volume of freight transport relative to GDP” is defined as the volume of domestic freight transport, on road, rail and inland

waterways, relative to GDP. This highlights the trend of goods transport compared to GDP's evolution.

The evolution of this indicator knows a progressive increase in the period 2000-2005, following the continuous decrease since 2006 and reaching a value lower than that recorded in 2001. If in 2005 the volume of freight transport growth from the GDP is 74,2%, in 2010, it is only 5,8%, according to statistics presented in table 5.

Following the structure of the domestic transport of goods in the period 2000-2010, we observe the large share that road transport of goods holds. In almost all the period under study specific weight of this mode of transport in total is over 50%, in 2007 recording the highest value of 71.3% compared with 18.9% at rail transport and 9.8% at inland waterway transport. Figure 1 shows clearly the trends in rail freight transport, road transport and inland waterway transport.

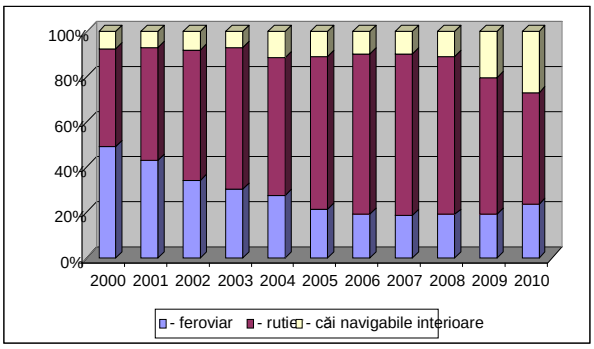


Figure 1 Modal split of freight transport in Romania in the period 2000-2010

One of the critical objectives in achieving sustainable development national strategy is to decouple economic growth from transport growth in order to reduce the negative impact on the environment. This indicator can be used to establish economic and environmental policies that lead to accomplish this goal.

For analysis it is used the core indicator "energy consumption by transport mode". In Figure 2 of the article notes that road transport is the largest consumer of oil, reaching a value almost double in 2011 (4734 thou tonnes of oil equivalent) from the level of 2000 (2697 thou tonnes of oil equivalent). Air transport manifests also a growing trend of energy consumption, but at a much smaller scale than road transport. Transport modes whose consumption fell significantly during 2000-2011 are rail and inland waterways.

Generally, the cost of energy are around 25% of total costs for car users, 5% for bus companies, 5-10% for rail transport and 15-30% in aviation. [1]

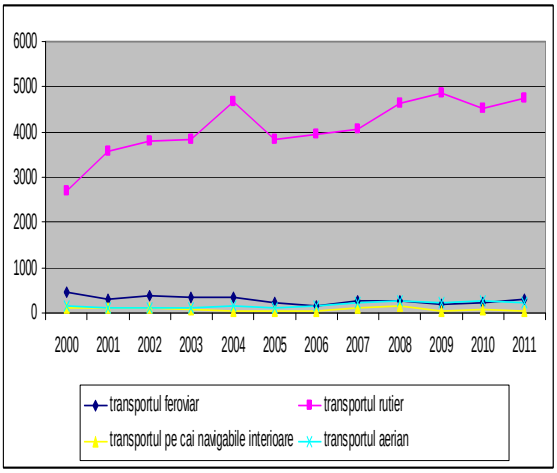


Figure 2 Energy consumption by transport mode in Romania in the period 2000-2011

A brief analysis of investments in transport infrastructure show that road transport ranks first in the absorption of funds for building works necessary to infrastructure development (see table below). Purpose of calculating this progress indicator is the establishment and monitoring of transport infrastructure development policy - another objective of the national strategy for sustainable development.

Table 6. Transport infrastructure investment in Romania in the period 2006-2009

- million RON-

	2006	**2007**	**2008**	**2009**
Total	8229,8	12088,2	20418,5	19541,9
Highways, streets and roads	6875,3	9358,6	14330,1	13165,1
Railways	358,8	1037,2	1165,3	752,1
Runways for airports	53,3	139,6	33,6	26
Bridges, elevated highways, tunnels and underground	191,9	356,2	3084,9	3325,3
Waterway, port construction and other hydraulic structures	750,5	1196,6	1804,6	2273,4

Source:[2]

4. CONCLUSIONS

As the developing world rapidly urbanizes, there is an opportunity to build safer, cleaner and more affordable transport systems that reduce congestion, facilitate access to jobs and lower transport energy consumption. „Energy consumption by transport mode" is an indicator that Romania can use to establish economic and environmental policies that lead to decouple economic growth from transport growth in order to reduce the negative impact on the environment.

Another important indicator analised in the paper is the volume of goods transported and the analysis conclusion is that the highest share in total transported freight holds road transport, the following places in the ranking being allocated to railway transport and maritime transport.

The volume of freight transport relative to GDP highlights the trend of goods transport compared to GDP evolution. In Romania, the evolution of this indicator knows a progressive increase in the period 2000-2005, following a continuous decrease since 2006.

Regarding the structure of the domestic transport of goods in the period 2000-2010, we observe the large share that road transport of goods holds (over 50%).

The supremacy of road transport in total freight transported in Romania is reflected by the investments in transport infrastructure, which are 70-80% absorbed by road.

Overall, freight transport in Romania is constantly developing and it is important that the set of indicators by which we characterize this activity to be monitored and continuously improved in order to achieve the objectives of the national strategy for sustainable development.

5. REFERENCES

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