

The Role of Logistics in the Implementation of the Intermodal Transport Strategy in Romania. Strategies for the Road Infrastructure in Dobrogea Region

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Abstract

Constanta County road transport infrastructure development has lagged far behind the previous planning. In Tulcea County the situation is the same, there was nothing done previously established strategies. The two counties have great potential for economic development, have mineral resources, material, human and unique natural areas in Romania. Lack of road transport infrastructure, adequate current situation and especially European requirements, makes the two counties is not at the level of economic opportunities. Elements of integrated logistics and multimodal transport are developed in Constanta County and in its infancy in Tulcea. This paper analyzed a number of issues related to infrastructure development in Dobrogea and influence on the development of multimodal transport and logistics.

Key words: logistics, transport, highway, strategies.

JEL classification: E61, R11.

1. Introduction

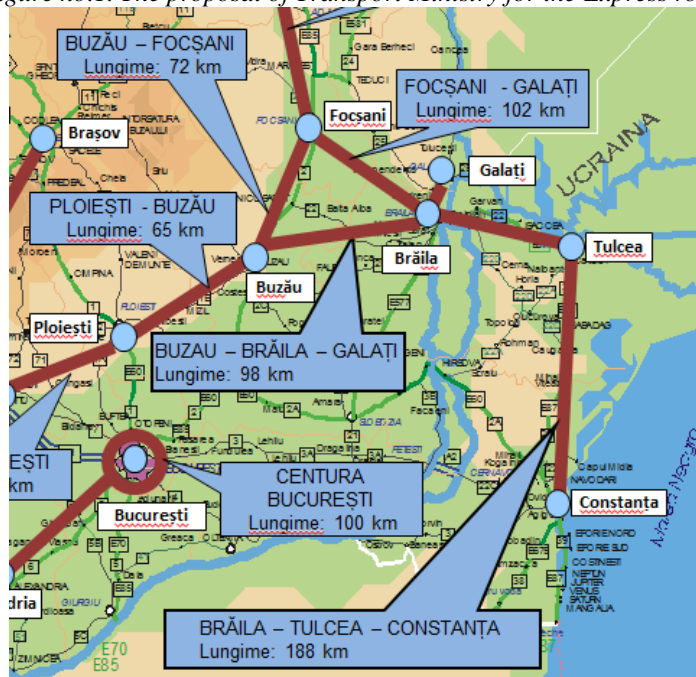
The current working document to which the Ministry of Transport, which are changed too quickly to become true programming documents, do not contain the correct infrastructure development in Dobrogea region. Not based on analysis and evidence about why they have developed infrastructure in these counties. In the last document prepared by the Ministry of Transport, called "General Transport Master Plan of Romania. Final Draft Revised Master Plan Report on short, medium and long term ", in Chapter IV, is presented the main aspects related to road transport (MT, 2015). In another document called "Road infrastructure projects", in the Chapter V "Road Infrastructure Priorities 2015" in paragraph a) it is passed that "tendering procedures have been launched feasibility studies" and the sub-section 6 is passed "express road Constanta-Tulcea-Braila (including bridge at Braila)", appearing with details on page 31, (MT, 2016). In the same document "Annex 10.5 - Table summarizing values for road projects Trans Region", in paragraph 27 is the last project "Constanta-Mangalia-Vama Veche" and on page 55 are listed the details of this project. In "Appendix 10.9 - Table summarizing values bypasses projects", point 14 is passed bypass the city of Mangalia. In conclusion, there are no other provisions, only "procedures". This in practical terms does not mean very much for the Dobrogea region, for its normal development. These procedures, even if this year will start, there is no guarantee that it will be completed in a reasonable time in order to start auctions for awarding works.

2. Working variants of the Transport Ministry

A). The express road Constanta-Tulcea-Smârdan. I believe that the decision to perform an express road between Constanta-Tulcea and Smârdan, length of approx. 188 km, is wrong. Danube Bridge must be built between Smârdan and Braila, in the place where the river has the smallest

width, Figure no 1. In the program document "General Transport Master Plan of Romania, Final Draft Report revised Master Plan on short, medium and long", elaborated in July 2015, in Annex I, in the table titled "Appendix 10.3. Summary table values express roads projects", which we present in table no. 1, core values are entered express road in Constanta-Tulcea-Smârdan. From the same Annex it pulled estimated prices for construction of highways, express roads, which are presented in Table no. 2, (MT Appendix 1, 2015).

Figure no.1. The proposal of Transport Ministry for the Express road.



Source: Transport Ministry, 2016.

Table no. 1. Table summarizing the express road in Dobrogea.

No	Name of Project	Road section	Project Code	The length of the road (km)	Unit cost (mil. Euro/km)	Estimated value (mil. Euro/km)
28	Constanța-Babadag-Tulcea-	Ovidiu-Tulcea	RDX028	112.5	5.04	566.88
29		Cataloi-Dunăre Smârdan left bank.	RDX029	73.2	5.76	421.28
30	Isaccea-Măcin-Brăila	Dunăre- Brăila Bridge.	RDX030	2.0	76.86	153.72
Subtotal project cost: Constanța-Tulcea-Brăila				187.7	6.08	1.141.88

Source: Transport Ministry, 2015.

Table no. 2. Estimated prices for the construction of highways and express roads.

No	TYPE OF ROAD	GEOGRAPHICAL AREA	PRICE/km
1.	Highway with 4 lanes.	Lowlands	5.98 mil. Euro
		Hilly	8.70 mil. Euro
		Hill	13.06 mil. Euro
		Mountain	13.06 / 21.76 mil. Euro
2.	The express road with 4 lanes.	Lowlands easy	3.92 mil. Euro
		Lowlands	4.79 mil. Euro
		Hilly	6.96 mil. Euro
		Hill	10.44 mil. Euro
		Mountain	10.44 / 17.41 mil. Euro

Source: (Transport Ministry, 2015).

Following the costs for other areas of the country and comparing the values listed in the Table no. 1 I noticed the following:

-Price for the 4 lane express road, between localities Ovidiu and Tulcea is 5.04 mil. Euro/km and a highway in the lowlands is 5.98 mil. Euro/km. The difference is 0.94 mil. Euro/km.

-Price for the express road for the same lowland area (estimated in the documents of Ministry Transport is 4.79 mil. Euro/km), compared to the townships Ovidiu and Tulcea with 5.98 mil. Euro/km. It follows a difference of 1.19 mil. Euro/km.

-Price for the 4 lane express road, between localities Cataloi (which is 11 km from the city of Tulcea) and Smârdan is 5.76 mil. Euro/km. It follows a difference of 0.28 mil. Euro/km, compared to a highway in the lowlands and a difference of 0.97 mil. Euro/km. In Table no. 3 furthermore, the differences in mean values less than the estimated documents of Transport Ministry.

Table no. 3. Differences in costs between Dobrogea project and similar estimates.

No	The road and distance	Unit cost of road sector (mil.Euro/km)	Unit cost (mil.Euro/km)			Differences in + or - (mil.Euro/km) ¹	
			Terrain	Highway	Express road	Highway	Express road
1.	Ovidiu-Tulcea (Cataloi) = 112,5 km.	5.04	Lowlands easy	-	3.92	-	+ 1.12
			Lowlands	5.98	4.79	+ 0.94	- 0.25
			Hilly	8.70	6.96	+ 3.66	- 1.92
2.	Cataloi-Smârdan = 73,2 km.	5.76	Lowlands easy	-	3.92	-	+ 1.84
			Lowlands	5.98	4.79	+ 0.22	+ 0.97
			Hilly	8.70	6.96	+ 2.94	+ 1.20

Source: (author study), (MT Appendix 1, 2015).

¹ The sign (+) means that it is more expensive, and the sign (-) means it is less expensive than estimated in the documents.

As shown in the Table no. 3, below are a series of price differences between "standard" values expected throughout the country and considered for Dobrogea region. Following the physical map, Figure no 2, but taking into account that new buildings are provided, notice the following issues:

-By the end of A-4 motorway, near Ovidiu until the locality Piatra, the land is flat type, with a crossing point over the channel "Poarta Alba-Midia Năvodari". This means that it is planned to construct a new bridge over the canal, the current bridge will be used. So express road will have a portion that will enter in the European road E-87.

-From the locality Piatra until the next localities Cogea and Tariverde, the land is hilly type. In addition, the area of these settlements on lands adjacent is a large area that is wind power. This may require a series of restrictions on the distance between the express road and wind power in operation.

-Next, until near the town Babadag, land type is hilly with some flat portions. Near Babadag is "Babadag Forest Nature Reserve". This natural reserve is to be avoided and the only way is in the east of it, besides Visterna village.

-From the Visterna village up to Cataloi, the land is flat type. But the area is wet, flooded, are nearby Babadag lake.

-Near the village Cataloi is the "Delta Danube" Tulcea international airport, which will be linked to this express road.

-From Cataloi until the locality Jijia, the terrain is hilly and the Jijia until Smârdan land is marshy lowlands.

Given the estimated costs, I think that is projected as done wrong because the land that is under construction express road, from Ovidiu to Smârdan is mostly hilly, which will raise more initial costs. In the final analysis, I consider that a project is done superficial that does not correspond to reality on the ground. A line drawn in Figure no. 1 and the real possibility to achieve such an infrastructure project, it is easy to see the differences.

B). The express road between Constanta, Mangalia and Vama Veche. In the Appendix 10.5, is the summary table with the values for the road project Trans Regio, between Constanta and Mangalia. The main values are distance of 49 km, the unit cost of 0.75 mil. Euro/km, road type bands/2x2 drives direction, the total cost of 36.75 mil. Euro, (MT Appendix 1, 2015). Sectoring road is Constanta-Mangalia-Limanu and Limanu-Vama Veche, and Limanu-Vama Veche cost segment is 8 km x 0.75 mil. Euro/km, the cost of all is 6 mil. Euro.

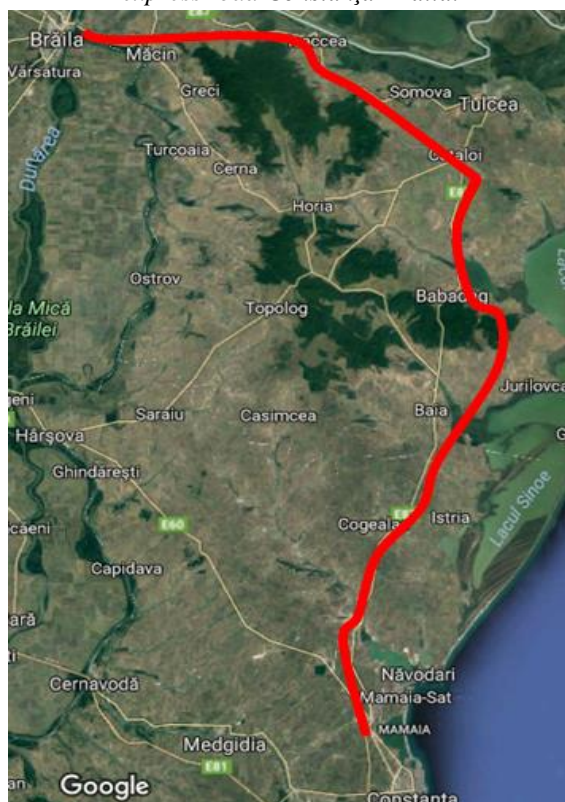
Table no. 4. Differences in costs between express road project “Constanta-Mangalia”, Mangalia variant and highway.

No	The road and distance	Unit cost of road sector (mil.Euro/km)	Unit cost (mil.Euro/km)			Differences in + or - (mil.Euro/km) ¹	
			Terrain	Highway	Express road	Highway	Express road
1.	Constanța-Mangalia = 49 km.	0.75	Lowlands easy	-	3.92	-	+ 1.12
			Lowlands	5.98	4.79	+ 0.94	- 0.25
2.	Bypass town of Mangalia = 8 km.	2.40	Lowlands easy	-	3.92	-	+ 1.84
			Lowlands	5.98	4.79	+ 0.22	+ 0.97
3.	Limanu-Vama Veche = 8 km.	0.75	Lowlands easy	-	3.92	-	+ 1.12
			Lowlands	5.98	4.79	+ 0.94	- 0.25

Source: (author study), (MT Appendix 1, 2015).

c). **Bypass the city of Mangalia.** In the Appendix 10.9, is the summary table value of Bypass project for the city of Mangalia. The main values are: a distance of 8 km, the average cost/km is 2.4 mil. Euro/km, road type band/2x2 drives direction, the total cost of 19.2 mil. Euro, Figure no 4, (MT Appendix 1, 2015).

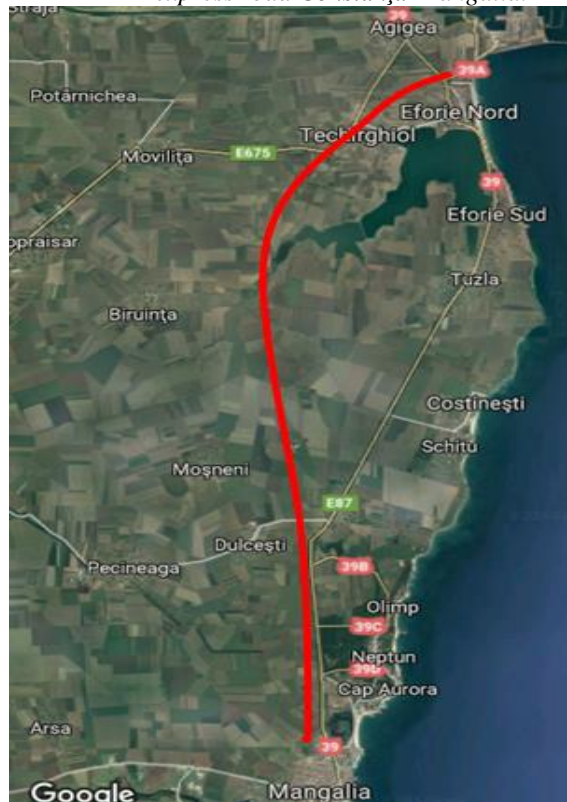
Figure no.2. Physical map of the area planned for express road Constanța-Brăila.



Source: (google.map, 2016).

Inscription: The road traced by the author. —

Figure no.3. Physical map of the area planned for express road Constanța-Mangalia.



From the study of documents and information contained in the Annex 10.11, which containing the list of prioritized projects for highways, are listed 11 projects, totaling 1219.80 km with a total value estimated at 13253.65 mil. Euro, there is no reference to the Dobrogea region, (MT Appendix 1, 2015). In the same document in the Annex 10.12, arrives prioritized list of projects to express roads. In the Chapter 17 is passed Constanta-Tulcea-Braila express road and the bridge over the Danube river, (MT Appendix 1, 2015). In the Appendix 10.13 is the last list of prioritized projects

for roads Trans Regio. In the item 5 is passed Constanta-Vama Veche road, with a length of 49 km and a total cost of 36.70 mil. Euro, (MT Appendix 1, 2015). In the Appendix 10.15 is the list of projects prioritized by-bypasses, at the position 7 is the last version of Mangalia Bypass, with a length of 8 km and the total estimated cost of 19.20 mil. Euro, (MT Appendix 1, 2015). Another aspect is the situation at the Fetesti toll station, which is considered a "critical project". This station belongs to Ialomita county, but it is very important for the Dobrogea region.

3. Proposals for investment in road infrastructure in the Dobrogea region

In terms of strategic, economic and social, industry, trade and tourism, Dobrogea region depends on the highways. Large or small businesses today depend by the speed. This should be considered in the first place. Then transport safety on public roads. Of all the statistics presented in Romania, the safest are motorways.

Figure no. 4. Bypass town of Mangalia.

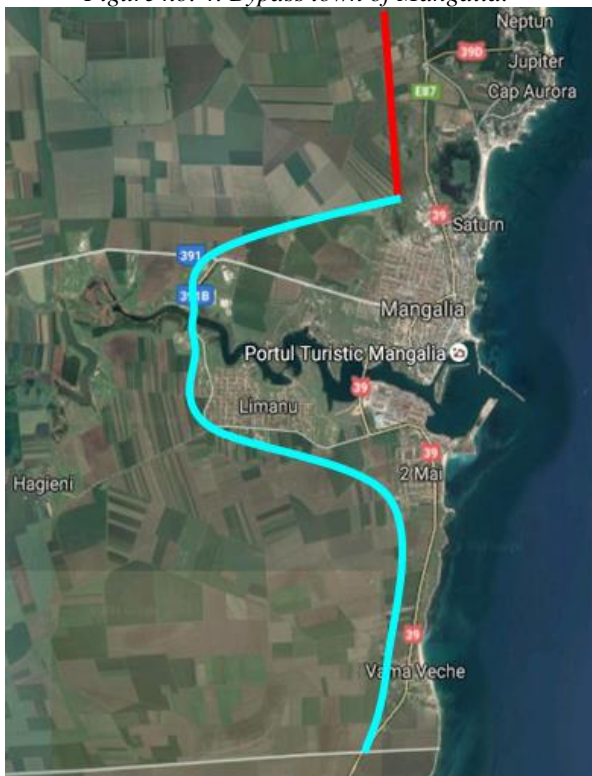
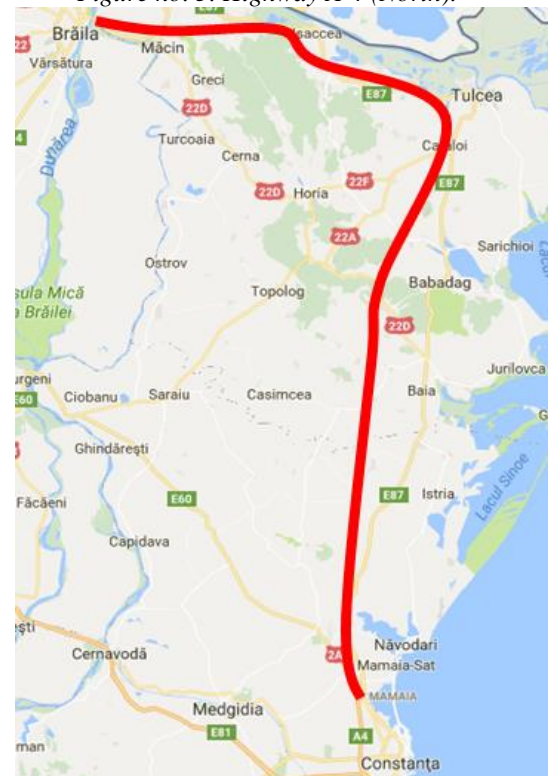


Figure no. 5. Highway A-4 (North).



Source: (author study), (google.map, 2016).

In terms of tourism, the seaside area and the Danube Delta are very attractive for the tourists from our country and from abroad. This leads to high congestion and traffic problems during the summer season, several key points: Constanta, Mamaia, Năvodari, Agigea, Eforie Nord, Mangalia 2 Mai, Vama Veche, in Constanta County. Tulcea, Babadag, Macin, Smârdan and I.C. Brătianu in Tulcea County. Also toll station from Fetesti. In terms of commercial shipments, the large number of containers transported from the port of Constanta to the hinterland and into the Central European countries, but also in the opposite direction of Constanta, leading to congestion of main roads: Highway A-2 (E-81, Bucharest-Constanta), National road 2A (E-80, Hirsova-Constanta), National road 22 C (Cernavoda-Constanta), National road 22 (E-87, Constanta-Tulcea-Smârdan), National road 39 (E-87, Constanta-Mangalia-Vama Veche).

The best solution in terms of speed, safety, for eliminate congestion, boost tourism to the Danube Delta and the southern coastline, I think that is the construction of highways in the region as follows:

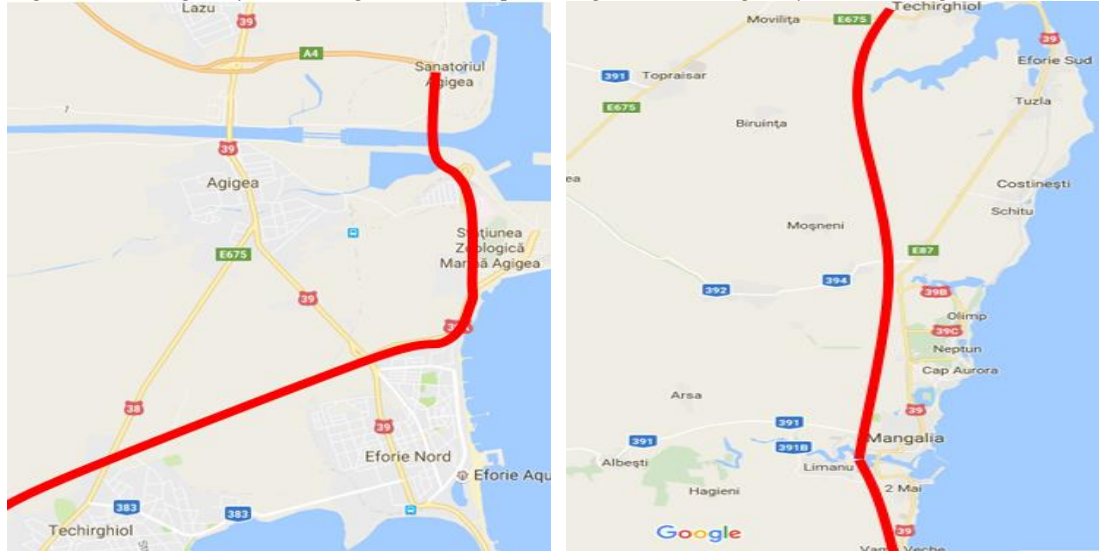
- Instead of expressway "Constanta-Tulcea-Smârdan", a highway to the north, which build on highway A-4, which is constructed as a variant of Constanta bypass, Figure no 5.

- Instead expressway "Constanta-Mangalia", variant detour Mangalia and expressway to Vama Veche, continuing the highway A-4, to be built further from the terminal point in the Constanta

harbor, across the new bridge again on besides Eforie Nord town, Figure no 6, continue to Mangalia and Vama Veche, up to the border point, Figure no 7. The main problems that must be solved to complete highway to A-4 in Dobrogea, in addition to variants of the express roads and by-passes are as follows:

- Construction of a new bridge over the Poarta Alba-Midia Canal.
 - Construction of a new bridge in Limanu, in the western area of the village, instead of the current old bridge.
 - Connections with the other national roads, which will involve new bridge construction.
- Issues relating to jurisdiction and land prices are same for both types of the roads.

Figure no. 6. Highway A-4, trough Constanta port. Figure no. 7. Highway A-4, Techirghiol-Vama Veche.



Source: (author study), (google.map, 2016).

4. Conclusions

Cost analysis, in particular price differentials for the two types of road, motorway and express road were presented in the previous tables. The price differences are minor, if the estimated values calculated at the Transport Ministry, based on a scientific foundation. In addition, if there are no additional costs after tendering for the award of the construction, the builders if the selection was right and they meet the real requirements for this type of work required. In terms of economic and social construction of A-4 motorway between Vama Veche, Mangalia, Constanta, Tulcea and Braila with the bridge, will give a great impetus to economic development, tourism, eliminate downtime delays owe. Streamlining traffic to Constanta, Mangalia and Tulcea will make tourism to develop, become attractive for tourists from the central and northern Europe.

5. Bibliography

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