

## Projected Motorway Construction in the Central and North-Western Regions of Romania between 2013-2021

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**Abstract:** Romania's highways and expressways are standing ahead of considerably high investments. The 21<sup>st</sup> Century has brought important breakthroughs in the building of highways and expressways. Our study focuses on the construction works that have been carried out in the Central and North-Western regions of Romania. The aim of this paper is presenting the two regions' motorways as compared to the national average, determination of an approximate end date for the highways that are currently under construction, as well as a comparative study of the works planned to be carried out between 2013-2021 as compared to the ones planned between the years 2004-2012. It was proven that highways in these two regions have been built using mainly state funds, thus these works are progressing slowly due to lack of consistent funding. The results of this study also relate to how fast the construction works will be finished on parts where construction has already begun, as well as whether construction works will be conducted in a higher pace than the ones between 2004 and 2012.

**Keywords:** A1 and A3 motorways; transport infrastructure; completion date; motorway segments; future plans

**JEL Classification:** O18; R42

### 1. Introduction

Our work depicts the situation of the transport infrastructure of the Central and North-Western regions, more precisely presenting the motorways of the two above mentioned regions, as well as presenting the situation of the expressways on a national scale. Based on the statistics of the NCMNR<sup>2</sup> there are four highways under construction and three proposed highway plans. The first part of the table presents the highways that are completed/ under construction/ planned and the second part includes highways proposed. Our study will only include an analysis on the first part. We must also take expressways<sup>3</sup> in consideration. These do not

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<sup>2</sup> Romanian National Company of Motorways and National Roads, March 2013.

<sup>3</sup> A wide road designed for high-speed travel between settlements, which may be entered and left only at certain places. On expressways the cars can travel quickly without stopping, having few or no intersections.

have such a status as highways; however, they ease the flow of the traffic, making it faster, safer and more efficient. The speed limit on highways in Romania is of 130 km/h, while on expressways it may not exceed 110km/h. One could say that there is not a big difference between these and European roads, where the speed limit is 100 km/h, however expressways are usually 2x2 lane roads, making it not only more efficient, but also a lot faster to reach one’s destination. It is worth mentioning, that these roads do not cross any settlements. Although the EU does currently not fund building expressways, there is a possibility that in the future there will be funds raised for such. Based on the data provided by the NCMNR there are 11 expressways in Romania. The total estimated cost for the construction of a total of 761 km expressways is of 7553 mil. Euro.

**Table 1. Romania’s Motorways (Expressed in Kilometers)**

Length of motorways	Completed	Under construction	Planned
A1: 576,1	195,7	144,1	236,3
A2: 203	203	-	-
A3: 581,6	107,5	79,2	394,9
A4: 74,8	21,8	-	53
<b>Total: 1435,5</b>	<b>528</b>	<b>223,3</b>	<b>684,2</b>
<b>Proposed</b>			
Jucu – Bistrita: 75	-	-	75
Ploiesti – Albita: 288	-	-	288
Targu Mures – Iasi – Ungheni: 310	-	-	310
<b>Total: 673</b>	<b>-</b>	<b>-</b>	<b>673</b>
<b>TOTAL: 2108,5</b>	<b>528</b>	<b>223,3</b>	<b>1357,2</b>

*Source: Romanian National Company of Motorways and National Roads*

## 2. Theoretical and Methodological Aspects

The Treaty of Rome in Chapter IV, Articles 74-78, establishing the European Economic Community, set up the fundamental principles of the Common Transport Policy in 1957. “Article 3 of the Rome Treaty has declared not only the aim of concluding common objectives on transport policy in regards to road, rail and inland waterway transport, but also considered it as an obligation.” (Vincze, 2008, p. 152) In June 1985, the European Commission published a White Paper on completing the internal market, making transport policy a key piece of the overall community strategy. In the late 80s, a discussion on infrastructure development Trans-European Networks has been initiated, also including the field of transport. Tamas Fleischer in his study „The Trans-European Corridors” tells us that in 1991

a three-level negotiation process, also named the Pan-European Transport Conference, has started, during which the plans regarding Pan-European Corridors, also called “Helsinki” corridors, has been accepted. The first conference took place in 1991 in Prague, the second in 1994 in Crete and the third in Helsinki in 1997. (Fleischer, 2007, p. 371) In the White paper on “Development of the Common Transport Policy” from 1992 the following common objectives were established: removal of the remaining dysfunctions in terms of internal transport network of the European Community, creating an efficient transport system that contributes to the free movement of goods, persons and services, encouraging competition in the intra-Community transport industry. (European Institute of Romania, 2005, p. 15)

In 1995 the European Commission published a second White Paper on “Fair charging for infrastructure use: a phased approach to a common framework for infrastructure use in the EU”, in which the Commission debated the issue of a harmonized Community approach to taxation in the transport sector.

Before the 1990s there had only been two highways opened: Bucharest – Pitești: 96 km and Fetesti – Cernavoda: 17, 2 km. During the period of 1990-2000, these works were on stand-by. After the year, 2000 highway constructions have started again. Already in the period 2004-2012, there had been many innovations in the field of transport infrastructure, which lead to new highway openings, but the period 2013-2021 looks even better.<sup>1</sup> The objective of the study is to present the state of the Romanian motorway infrastructure especially in the Central and North-Western Regions in 2013. Furthermore, the aim is to present a projected course of the constructions up to 2021, comparing the periods between 2004-2012 and 2013-2021. Another important aspect of the study is presenting the projected end dates of the construction works. A legitimate hypothesis could be, according to the statistics of the previous years, that currently in Romania and in the regions included in our study most of the highways are only in the planning phase, followed by areas in construction and completed highways and ones that have been put into use occupy last place. When comparing the periods between 2004-2012 and 2013-2021 in regards to highway construction, we believe that work scheduled for the period 2013-2021 will be performed in a higher pace than in the previous period. There are already several suggestions that have been made, more sectors are under construction<sup>2</sup>, and consequently Romania’s highway infrastructure should develop by leaps and bounds compared to the past years. It is also worth thinking about the

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<sup>1</sup> We did choose the periods 2007-2013 and 2014-2020 because in the regions chosen for the study the highway works have started in 2004 and we are analysing sectors completed up to the year 2012, a period of 8 years. 2013-2021 is the next 8 year long period, therefore we have chosen to work with these periods.

<sup>2</sup> A1: Sibiu – Orastie, Orastie – Deva (partially in traffic), Deva – Lugoj (partially under construction), Arad – Nădlac (partially under construction).  
A3: Bucharest – Ploiesti (partially in traffic), Gilau – Mihailesti (partially under construction), Suplacu de Barcau – Bors.

completion date of these highways. An important question would be, if the works on sectors funded by the EU were advancing faster as the ones funded by the government. Another supposition would be that if there would be sufficient Romanian funds for the construction of these highways, these works could advance in the same pace as the ones supported by the EU. Our hypothesis is that sectors funded by the EU are progressing faster due to financial reasons. We can presume that the works do not need to progress evenly on the national level, since there are regions, where building these roads is a priority, for example highway A2, named also Highway of the Sun, which connects the capital city with one of the biggest port-towns, Constanta.

Nowadays we can already speak of several completed highway sectors. The number of these progress sectors is permanently increasing, as highway works are currently in progress. In the first part of our study, we presented the infrastructural situation of the year 2013 in Romania. Moreover, we gave details on Romania's open highways, as well as the ones under construction and proposed. We also spoke of expressways, as they have their own importance, especially when finished. Furthermore, we wish to draw a comparison between the highway infrastructure of the Central and the North-Western regions, wherein highways A1's and A3's completed sectors, sectors in the building phase and planned sectors. Based on this information we will present some statistics to support and serve as an answer to our hypothesis. Using the results of this study, we will present a future plan/completion date of Romania's highways, which are in the planning phase for the moment. We will compare the values of Centre and North-Western regions with national ones in regards to finished highways, ones in progress and ones proposed, consequently we will analyse if works between 2004-2013 or the ones between 2013-2021 were progressing/ will progress better. Our analysis will be based on data taken from the NCMNR in March 2013.

### **3. The A1 and A3 Motorways in Romania**

The A1 highway is situated alongside the 4<sup>th</sup> Pan-European transport corridor<sup>1</sup>, which has its starting point at Dresden/ Nürnberg and ends at Istanbul, on Romanian grounds from Arad to Constanta. This route is also a part of the Trans-European Transport Network<sup>2</sup>, linking Greece with the Hungarian capital. This

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<sup>1</sup> The EU's Pan-European Corridors policy (road, rail, air and water transport networks) extends to the EU neighbours: Accession countries, the European Economic Area (Norway, Iceland and Liechtenstein), the Balkans, the Mediterranean Partner Countries and the Eastern Neighbourhood. (<http://www.eib.org/projects/priorities/ens/index.htm>).

<sup>2</sup> The EU's Trans-European Networks (ENs) policy links regional and national infrastructure to create coherent European systems. This includes both interconnection and interoperability, mainly for transport (road, rail, air and water transport networks) and energy. (<http://www.eib.org/projects/priorities/ens/index.htm>).

highway crosses the following cities: Nadlac – Arad – Deva – Sibiu – Pitesti – Bucuresti and has a length of 576, 1 km. A large portion of this road section is still under construction. In the Central region for the moment, there is only a 17, 2 km sector, the bypass of Sibiu, completed in 2010. By the year 2013, several smaller sectors have been completed in the Western development region. The 82 km long section between Sibiu and Orăștie has also been planned to be opened for traffic during the 2013-2014 period. The total length of the highway in this region is of 99, 2 km, including Sibiu`s bypass.

The A3 highway connects Bucharest with the Borș, a settlement situated in the North-Western region, on the following route: Bucuresti – Ploiesti – Brasov – Fagaras – Sighisoara – Targu Mures – Campia Turzii – Gilau – Suplacu de Barcau – Borș. The total length of the highway is 581, 6 km. In the Central development region we can speak of 4 segments between the following cities: Brașov – Făgăraș: 53 km, Făgăraș – Sighișoara: 52 km, Sighișoara – Targu Mures: 56 km, Targu Mures – Câmpia Turzii: 36 km. The total length of the highway in the Central region is of 197 km, but in year 2013 no construction for these sectors has been started. In the North-Western region there are a further 4 segments located. These segments connect the following cities: Câmpia Turzii – Gilău: 52 km, Gilău – Mihăilești: 24 km, Mihăilești – Suplacu de Barcău: 76 km and Suplacu de Barcău – Borș: 64 km. In 2009-2010 the segment Câmpia Turzii – Gilău has been opened for traffic; in addition, there is work in progress on the segments Borș – Suplacu de Barcau and one part of the Gilau – Mihăilești segment. Total length of the highway in the North-Western region is of 216 km.

#### 4. Empirical Results

In the Central and North-Western regions the motorways are totalling 512,2 km, out of which 69,2 km has been opened to traffic, while 170 km is under construction and 273 km are still being planned. If we take the 512, 2 km as 100% we get the following results: 69.2 km - 13.51%, 170 km - 33.19%, 273 km - 53.30%. Highways on Romanian ground reach a total length of 1435, 5 km: 528 km has been opened for traffic, 223, 3 km is under construction and a further 684, 2 km is planned. If 1435, 5 km makes out 100%, then: 528 km – 36, 78%, 223.3 km – 15, 56%, 684,2km – 47, 66%. It is important to note that these calculations also include two highway segments built before 1989, which also add 113, 2 km to the total length of highways in the country. The slow progress in the highway construction is caused by the lack of financial resources, as the A3 is greater in length than the A1. As we know, there are currently no EU funds for the A3. When comparing statistics on highways in the two regions<sup>1</sup> with statistics on a national level one can see that on national level the ratio is higher than the two regions

<sup>1</sup> Central and North-Western regions.

chosen for our study. According to our hypothesis highway constructions across the country do not need to progress evenly in all regions. This premise is backed up by the fact that the proportion of highways already in use in some regions are much higher than in the ones we are analysing. This is because there are segments completed before 1989<sup>1</sup> and segments that had been prioritized, such as the Highway of the Sun, connecting Bucharest to one of the largest port-towns, Constanta. The latter is also part of the TEN-T, another reason why it could have higher priority. Highway A1 crosses only a small portion of the two regions, its total length in these regions is of 99, 2 km, out of which 17, 2 km has been opened to traffic and 82 km is under construction. In the same time, a portion of 52 km of the A3 highway has been opened to traffic in the two regions. Another 88 km is still under construction, meaning that 69, 2 km has been released and 170 km is under construction, leading to the result that in these regions the ratio of highways under construction is higher than highway segments opened to traffic. The ratio of planned highways on a national scale is lower than the ones in the Central and North-Western region. This is due to the fact that no highway construction has yet started along the A3, meaning that 197 km awaits for construction and in both regions a total of 273 km has been planned for construction.

***When will these highways, currently under construction, be completed?***

As we might know, the main goal of the EU is to finish the construction of the A1 highway, due to its international importance, as part of the 7<sup>th</sup> TEN-T and the 4<sup>th</sup> Pan-European transport corridor. As the A3 is being wholly funded by the Romanian Government, the works progress slower due to financial hardship. This is because the EU invests mainly in developing Trans-European Transport Networks and Pan-European transport corridors.

The table below indicates highway segments completed up to 2013 March.<sup>2</sup>

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<sup>1</sup> Bucharest – Pitesti: 96 km, Fetesti – Cernavoda: 17,2 km.

<sup>2</sup> Highways Bucharest - Pitesti and Feteși – Cernavodă, built before 1989, have not been taken into consideration.

**Table 2. Highway Segments Completed up to 2013 March**

Sections	Timetable	Calculations
<b>European Union &amp; Romanian Government</b>		
Bypass Pitesti: 13,6 km	2004 – 2007 (3 years)	$13,6 / 3 = 4,53$ km (1 year)
Bypass Sibiu: 17,2 km	2004 – 2010 (6 years)	$17,2 / 6 = 2,86$ km (1 year)
Simeria – Deva: 14,8 km	2011 – 2012 (1 year)	$14,8 / 1 = 14,80$ km (1 year)
Bypass Timisoara: 9,5 km	2011 – 2012 (1 year)	$9,5 / 1 = 9,5$ km (1 year)
Timisoara – Arad: 32,3 km	2009 – 2011 (2 years)	$32,3 / 2 = 16,15$ km (1 year)
Bypass Arad: 12,3 km	2009 – 2012 (3 years)	$12,3 / 3 = 4,1$ km (1 year)
Bucuresti – Constanta: 185,8 km*	2001–2012 (11 years)	$185,8 / 11 = 16,89$ km (1 year)
Bypass Constanta: 19,8 km**	2009 – 2012 (3 year)	$19,8 / 3 = 6,6$ km (1 year)
		$75,43 / 8 = 9,42$ km
<b>Romanian Government</b>		
Bucuresti – Ploiesti: 55,5 km	2007 – 2012 (5 year)	$55,5 / 5 = 11,1$ (1 year)
Gilau – Campia Turzii: 52 km	2004 – 2010 (6 years)	$52 / 6 = 8,66$ (1 year)
		$19,76 / 2 = 9,88$ km

- Fetesti – Cernavoda 17, 2 km built before 1989

- An additional segment between Lazu and Constanta Port is under construction. The total length is 2 km and the completion date is 2013.

*Source: Romanian National Company of Motorways and National Roads*

Based on the above we made some calculations on the length of highways built using or without using EU funds in the period 2004-2012. In the first case, there are 9, 42 km built in one year, in the second case 9, 88 km. Studies have shown, and this also being our assumption, that construction progress is slow due to lack of funds. Our study also supports this idea. Our results show that in each case we can expect an approximate 9 - 10km/ year of highway to be built, meaning that if the country would be in possession of enough funds, there could be just as many highways built relying on own funds than out of EU support. This last affirmation again supports our assumption, that slow progress is due to lack of financial resources. Note: These results are only valid if the construction work is considered linear.

At the moment there are two perspectives in regards to transport policy, as follows:

- 1) Perspective – establishment of the transport infrastructure and advancement in the economic development.
- 2) Perspective – in terms of economic development the establishment of the transport infrastructure is seen as risky, more precisely: what happens if the highways are built and there won't be economic growth?

In our opinion a well developed infrastructure is vital for good economic collaboration (see perspective nr. 1). Taking into consideration the economic points of view one ought not think in big highways, because transport is not profitable as the costs are high in case the starting- and endpoint are far away from another, and the time spent on travelling is high. Furthermore, if there would be a well-developed, established infrastructure (roadway/ railway), then the inhabitants in the vicinity of border crossing points would be able to go to work in the nearby countries. Given the adequate infrastructure, production capacity can be moved from one country to another. Good examples for the aforementioned are Debrecen – Oradea: North-Western region (73 km), Szeged – Arad: Western region (108 km) and Szeged – Timisoara: Western region (116 km). The travel time between these cities is less than one hour due to the properly developed roadway/railway infrastructure. Considering the above it would be important that the A3 highway to be built in the North-Western region, between Oradea and Bors cities.

To talk about the second perspective we would like to take Spain as an example. A part of the highways aren't situated alongside any important trade centers – we could also say, that they are crossing through a “deserted” territory. We have, for instance, the highway between Barcelona and Valencia, which was meant to aid the transfer of funds from north to south. The only issue was that the opposite of the proposed effect has actually taken place: thanks to the highways, work force from Barcelona moved to Valencia. Integrated transport policy is worth mentioning in Spain's case. The highways were built in the country, but the access roads remained undeveloped. However access roads need to be developed while building the highways, in order for larger railway stations to become accessible by highway without any difficulties.

## **5. Conclusions**

Based on the data published by the NCMNR we have come to the conclusion that in the year 2013 in the Central and North-Western regions the percentage of the highways proposed reach 53,30%, followed by highways under construction – 33,19% and highways already completed – 13,51%. These numbers coincide with our hypothesis. The ratio of highways under construction is higher in the Central and North-Western regions than in the rest of the country, which leads to the conclusion that construction works are conducted in higher pace than in other regions



In the year 2013, more than half of the highways are only being planned. If we take in consideration the highways that have been proposed, adding additional 3 segments, then one can conclude that highways under planning occupy the first place in the rank with more than 50%. Comparing highways on a national scale with the ones in these two regions<sup>1</sup> we came to the conclusion that there is a higher ratio of highways released for traffic to be found on a national scale than in these two regions chosen for this study. On the other hand, work in progress prevails in the Central and North-Western regions, as well as highways currently in the planning phase.

We can say that highways currently planned will be finished around the year 2017 at earliest, latest in 2021, in case construction will start in 2013. In this calculation, we have not included highways under construction, as they are in progress for the moment. We have included the numbers out of the completed highway segments and we are analysing the planned highway segments. The estimated time of completion for the highways under construction would be around years 2013-2015.

**Table 3. Completion Date of Planned Highways**

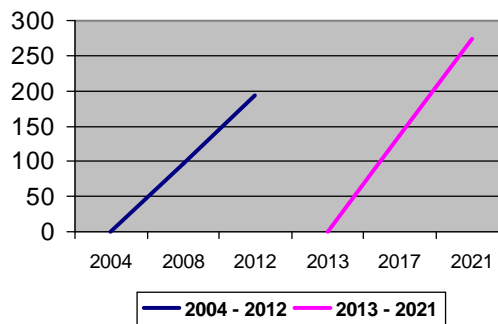
A1 and A3 highway Central and North-Western regions	Calculations (completion date - estimate)
<b>A3: Central region, funding: Romanian Government</b>	
Braşov – Făgăraş: 53 km, planned	$53 / 9,88 = 5,36 \Rightarrow 5$ years $\Rightarrow 2018$
Făgăraş – Sighișoara: 52 km, planned	$52 / 9,88 = 5,26 \Rightarrow 5$ years $\Rightarrow 2018$
Sighișoara – Targu Mures: 56 km, planned	$56 / 9,88 = 5,66 \Rightarrow 6$ years $\Rightarrow 2019$
Targu Mures – Câmpia Turzii: 36 km, planned	$36 / 9,88 = 3,64 \Rightarrow 4$ years $\Rightarrow 2017$
<b>A3: North-Western region, funding: Romanian Government</b>	
Mihăilești – Suplacu de Barcău: 76 km, planned	$76 / 9,42 = 8,06 \Rightarrow 8$ years $\Rightarrow 2021$

*Source: Our Calculations*

In the past couple of years, construction of highways in Romania has started developing much faster. This study has shown that construction was slow between the years 2004-2012, in 8 years there were only 193, 6 km of highway opened for traffic. Compared to this, the period 2013-2021 seems to bring more improvement in this matter. Our assumption was that between the years 2013-2021 there will be more highway segments built than during the period of 2004-2012, so we have

<sup>1</sup> Completed, planned and under construction.

concluded that according to our calculations, as well as based on NCMNRs statistics, there would be a total length of 273 km finished by the year 2021. If we consider the 273 km as 100%, then 193, 6 km would make out 70.91% of this, the remaining 79, 4 km would be 29.09%, almost 30%. According to our calculations, there would be a growth of 30% in the construction of highways in the two regions, meaning that there will be an additional 79, 4 km of highways built in comparison with the previous period. The growth for the moment is very slow for Romania to reach the EU average. There is a need for much more highways and expressways in the near future in order to have a considerable improvement of the national traffic infrastructure. The graph below shows that if the construction work starts in 2004 and 2013 from 0 km, then it will be faster paced in the period during the period of 2013-2021 than previously that's the reason why the red line is "steeper" than the blue.



**Figure 1. Highway Constructions during the Period of 2012-2021 against 2004-2012**

*Source: Our Calculations*

Note: These results are only valid if the construction work is considered linear.

Highways need to be built in such a way that they can connect leading commercial centers (which are of high economical importance) with another. If one of such cities is left out of the highway network, it can lead to serious economic consequences. An example for this is the A1 highway and Cluj-Napoca. Information received from NCMNR, approved on a national level by the European Commission, presents the construction of motorways in Romania in the coming years. The TENT-T network will be realized on a highway profile until 2030, while the horizon of implementation of the global TEN-T on a highway profile was planned for the year 2050 (according to the information provided by NCMNR). The highway segment pointed out by NCMNR doesn't cross Cluj-Napoca, however it connects to highway A3, located in Turda in the North-Western region, leading towards Iasi and conclusively offering Cluj-Napoca a connection to the A1 highway.

## 6. Observations

In our study, we are working with data taken from the NCMNR from March 2013. At this time there were 27, 6 km under construction on the A1 highway, segment Deva – Lugoj and 71, 9 km in plan. In June 2013 the whole segment turned its status to under construction highway segment. A 19, 8 km segment of motorway was finalised and another 2 km were under construction in March 2013 on the A4 motorway, between Ovidiu - Portul Constanța. In July 2013, the entire 21, 8 km segment of Constanta bypass had been completed. On the 23rd of May the contract with America's Bechtel for the construction of the A3 Highway, Suplacu de Barcău – Borș section, was terminated. In May 2013 the construction work between overall Deva – Orăștie section was finished.

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