

The evolution of the road network on the current territory of the Republic of Moldova in the period 1918-1940

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Abstract. In the history of the Republic of Moldova, the roads were one of the main premises which determined, to a large extent, the socio-economic development of the territory and of the population, who lived here. At the beginning, the roads represented natural itineraries of plains or valleys, in the riverbeds which missed any kind of arrangement. These itineraries were formed and shaped over a long historical period. Changes in the itinerary directions and contents occurred only in case of the geographical landscape modifications or in case of some changes of attraction poles in the network of human settlements under the influence of different natural, economic, social and military factors. The purpose of the article is to restore and analyse the evolution of the road network on the current territory of the Republic of Moldova in the interwar period (1918-1940), when the current territory of the Republic of Moldova was found within Greater Romania.

Key Words: road network, roads, road transport, counties.

Introduction. The evolution of the transport network is closely dependent on the influence of external and internal factors (Тархов 2005). The first category is attributed to the political and geographical factors (change of state borders, military actions etc.); economic and geographic (the network of human settlements, the direction and configuration of the main transport flows, the degree and character of the economic valorisation of the territory etc.); economic growth or economic crisis; the diffusion of technological innovations in the field of transport; physical and geographical factors. The formation of the road network is closely related to the emergence and development of stable localities.

The functioning of the road network depends largely on the impact of many and different natural factors, of which the most significant influence has the relief, soil, geological and hydrogeological structure of the area, climate, hydrological and hydro-meteorological conditions.

In the overall assessment of the natural conditions of the road network design areas, the natural factors are considered in regard to the corresponding landscape areas / types, characterized by a certain combination of these natural factors, taking into account the prospects of their change in time. At the same time, a particular attention is paid to the anthropic impact on the environmental conditions of the designed area (deforestation, slope grading, artificial irrigation or drainage, hydro-technical constructions, construction of other engineering installations, etc.). It is also taken into account the possible negative impact of the road network construction on the environment.

The transport system can be considered as a complex adaptive social and cultural system (Buckley 1967), in other words, a system in which the exchanges between its elements can cause significant changes in the nature of the elements themselves, with important consequences for the system as a whole. In addition to this "internal" complexity, the transport system is also influenced by contextual elements (Banister & Berechman 2000), also called development variables, which are part of other interrelated systems, such as the environment or the economy. At the same time, Russian geographers consider the transport system as a "geotechnical system", a definition given back in 1978: "the geotechnical system represents a geographical formation, in which the natural and technical components are so closely related that they function as a whole, and the subsystems within the system receive "management signals" not only from the social / human environment, but also from the natural one" (Петейом et al 1978).

Geotechnical systems are made up of natural and technical structures; at the same time, these systems also include anthropic management mechanisms. A separate group of geotechnical systems are also considered as transport systems, which include rail, road, pipeline and electric transmission lines. The transport geosystems are divided into two groups - nodular (airports, river and sea ports, etc.) and linear (road and rail roads; highways; electric transmission lines). Transport geosystems having a consistent material and energy potential determine a crucial impact on geographical weighing. Along the transport arteries, landscape and ecological bands (zones, areas) of influence / impact are formed. Road transport networks have a strong influence on the geographical landscape and the environment. This fact is determined by the width of the motorways, which are several times wider than other types of transport systems.

The purpose of the article is to restore and analyse the evolution of the road network on the current territory of the Republic of Moldova during the interwar period (1918-1940), when the current territory of the Republic of Moldova was found within Greater Romania.

Historically, several stages in the evolution of the road network within the present territory of the Republic of Moldova can be defined. This article analyses the evolution of the road network in the space between Prut and Dniester in 1918-1940. The state of the communication channels was one of the basic problems of the national economy. Romania had received from Czarist Russia a burdensome legacy. It was found that during this period the Bessarabian roads were in a deplorable state. Road services were almost non-functioning, so country roads and highways were destroyed.

Material and Method. To establish and analyse the evolution of the road network on the current territory between the rivers Prut and Dniester the following sources were consulted: the statistical bulletins published at that time, historical bibliographic sources, the historiography provided by the National Archive of the Republic of Moldova, the Bulletins of the Chamber of Commerce and Industry of that period, anthologies of documents, editions of the "Basarabia Economică" journal, as well as the cartographic materials of those years.

Results and Discussions. Between the process of economic development and the road network, a continuous cyclicity is noticed, in which the roads and the development promote each other (Figure 1).

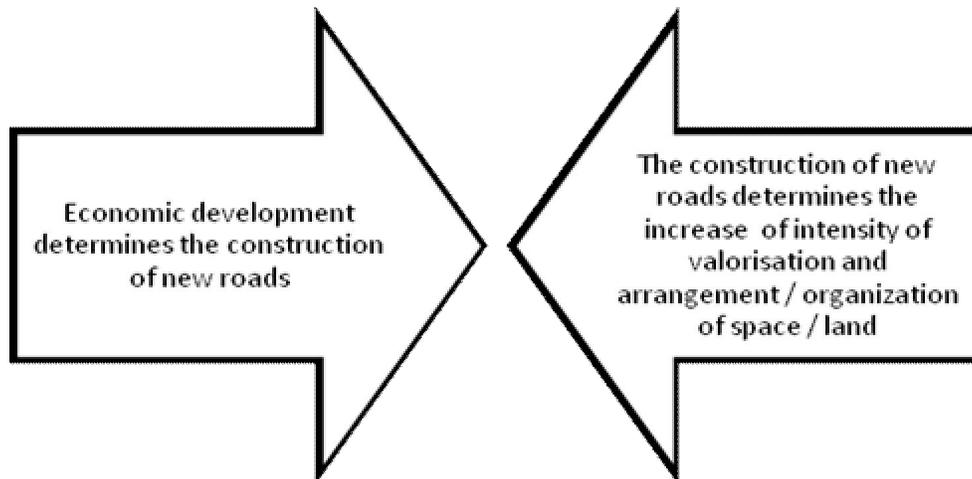


Figure 1. The relationship between economic development and road construction.

The economy of Bessarabia and many aspects of the social life of the population depended largely on the transport condition. In order to produce agricultural and industrial goods, there was a need for an as wide as possible network of communication channels of all types. In this respect, Bessarabia in 1918 was far behind other Romanian provinces. In the first years after the Great Union, in the "Basarabia Economică" journal, Bessarabia was described as one of the new Romanian provinces, the most deprived of communication channels, but also about how important the transit channels are for this territory (Giurgea 1919). In this purpose, statistical data are provided: in 1911 the length of the ordinary roads and highways in Bessarabia was 4999.2 versts (one verst equals 1080 meters), of which only 350.2 versts were highways, and 4649 versts were ordinary roads. As for the length of the roads, Bessarabia ranks 29th among the governorates of the Russian Empire, and 33rd in terms of roads (Giurgea 1919).

Ordinary roads, in the autumn and spring seasons, became unusable, especially for heavy transport, and especially that carried agricultural or industrial raw materials. Due to these circumstances, the transportation of raw materials was much more expensive than elsewhere.

The road network was extremely small, and what's more as a result of World War I, it reached a deplorable state. In the first years after the Great Union, intensive actions of road restoration and construction were required. In Bessarabia in 1918, a total length of road network was of about 254 km. The most important roads were: Noua Suliță - Lipcani (46 km), Chișinău - Criuleni (40.6 km), Chișinău - Orhei (33.7 km). After calculations, at each 100 km² of surface, there were about 575 meters of road, which was a hundred times less than required (Agrigoroaiei & Palade 1993).

The communication routes existing in 1919: *Hotin county* (Hotin road to Camenetz-Podolska; ordinary roads Noua Suliță - Balti - southeastern Bessarabia - Dniester - Odessa. From this ordinary road two branches diverge: one that runs from Mamaliga towards Hotin; another from Lipcani through Briceni to Otaci); *Soroca county* – many ordinary roads Soroca - Bălți; Soroca - Moghilev (Ukraine); Soroca - Iampol (Ukraine); *Orhei County* - many ordinary roads, but the main one is from Hotin to Odessa; Orhei - Chișinău; Orhei - Soroca; *Chișinău County* - the main ordinary road running from Hotin - Chișinău - Tighina; secondary roads: Chișinău - Dubăsari; Chișinău - Bolgrad; Chișinău - Cetatea Albă.

In conclusion, the main operating road of Bessarabia was the one from Hotin, running through Tighina county, and then to Odessa. Moreover, this was also the main road for *Balti county*.

In the *Cetatea Albă, Cahul, Ismail counties* there were almost exclusively ordinary roads, which represent only communication arteries of secondary level: Cetatea Albă to Tighina, to Sărata, to Comrat and Tatar-Bunar; from Ismail to Bolgrad; from Cetatea Albă through Tatar-Bunar to Chilia Nouă and Valcov; from Leova to Reni; from Leova to Comrat; from Cahul and Reni to Bolgrad and to Galați, Bârlad (Giurgea 1919).

Immediately after the instituting of the Romanian administration in Bessarabia, the communication system was reorganized, on the basis of the Romanian legislation. In June 1918, the inspector general of the Ministry of Public Works, Nicolae Cerchez, studied the road conditions in the region and rolled out a highway and road construction program (Atanasov 2000).

The minister of Bessarabia Daniil Ciugureanu on December 30, 1918 issued the decision no. 2, which regulated the transport activities. All "transports from one village to another or from one county to another cannot be prohibited by anyone" (Official Bessarabia Bulletin. Year I, 1999, no. 1). Gradually the Law of roads in Romania was introduced in Bessarabia, which determines and regulates the basic functioning conditions of the communication system (Vălcovici 1932).

The technical communication services were removed from the supervision of the county Zemstva, passing under the administration of the Ministry of Public Works. It was expected that 25% of the population of the region will fulfil state benefits for the road and highway construction. 60% of the work could be done with human resources, 40% with cattle, horses and bulls. Annually, 339 thousand labour workers were employed and 228 thousand of human resources were working with cattle (Atanasov 2000).

After 1918 highroads were divided as in the whole country into two categories: 1) national highroads, under state maintenance and 2) county highroads, whose maintenance was the responsibility of the county administration.

In 1920 the following directions of the highroads that had to be built were determined:

- 1) the crossroads Tighina - Chişinău - Călăraşi - Ungheni - Iaşi (165 km);
- 2) a middle road Hotin - Briceni - Bălţi - Valea Coghălnicului - Bolgrad - Ismail (500 km);
- 3) Chişinău - Hânceşti - Leuşeni - Huşi (85 km);
- 4) Cetatea-Albă - Tatar-Bunar - Bolgrad - Reni - Galaţi (225 km).

Several projects were supplementary proposed, which included the new road and highroad construction. A road network was to complete the national highways and link the county chief towns, as well as the most populated and economically important localities. In total, the construction of 2200 km of roads and highroads was expected in Bessarabia. In the opinion of the specialists of that time the existing resources allowed this program to be achieved in 12 years. (Agrigoroaiei & Palade 1993).

Until the Union, Bessarabia had a total of 150 km of paved road and 263 km of paved highroad. In 1935 Bessarabia had 750 km of unpaved national road and about 200 km county road (Basarabia Economică, 1937, no. 7).

In 1921, there were 300 km of the paved roads in Bessarabia (Antonescu 1922).

The establishment of an acceptable road network was a vital necessity for the economic, cultural integration of Bessarabia with the Romanian Country. At the same time, the establishment of a road network was also important for the development of trade and the preservation of trade links with other countries, especially the western ones. Under the re-integration conditions with Romania, the eastern borders became closed for trade. In such conditions, the whole trade of Bessarabia was directed to two main points: as regards the export - in the south - to Galaţi; and on the north - towards Noua Suliţă - Cernăuţi - Napolocăuţi. As for the internal connections: Iaşi - Ungheni - Chişinău - Tighina.

The relevant institutions were well aware of the need for radical changes in the field of road construction, namely the urgency of some measures to change the existing situation. Their achievement would contribute to increasing the economic potential and improving the situation of the broad population strata in Bessarabia. But the analysis of the construction works in this area that were carried out in the first ten years after the Great Union shows us the state incapacity and even more of the county administration to carry out the foreseen measures, the passivity and unwillingness to spend resources in this important area of social and economic life. Of course, there were other factors, including the situation in relationships with the Soviet Union.

In 1919-1922 only one road was built that connected the Hânceşti city with the localities along Prut, and the construction of the other roads was always delayed. In 1920, at the insistence of the Military Command of Bessarabia, the construction of the road Chişinău - Băcioi - Gara Zloţi began, but after the first 14 km of the built road the works ceased.

Only in 1925 the issue of road construction in Bessarabia was again discussed, the program drawn up in 1919 was supplemented with roads of military interest, so 150 million lei loans were granted for their construction. As a result, 150 km of earthworks were executed by the military and the local population, but only 25 km of roads were put into service. In the following years in many counties the road construction was suspended, and in others the progress made was insignificant. The county administration did not want to spend resources for the road construction.

A significant contribution to the construction of roads and highways had the Romanian army, which in 1925 participated in the repair works of the highroad Zăgăicani - Varatic - Şapte Bani, repairing 6 km of road, but also in repairing the highroads Chişinău - Criuleni (40 km), Chişinău - Orhei (45 km), Orhei - Sărăteni - Bălţi, Ismail - Bolgrad, Pocimbeni highroad, roads around Cişmea.

Also in 1925, construction of the bridges between Bairamcea and Sărata villages took place, of the bridge on the Ivanovca - Bolgrad highroad, the mixed bridge Bolgrad -

Tatarbunar and the bridge in the Furmanca village on the Enichioi - Furmanca route were built.

In 1921-1931 period the Chişinău - Hânceşti - Prut (1921), Bălţi - Cubolta (1922), Bucovăţ - Dolna, Orhei - Sărăteni - Bălţi (1925), Bujor - Şişcani (1926), Chişinău - Străşeni, Lăpuşna - Cărpineni (1930) roads were put into service. Chişinău - Orhei (1931), Soroca - Soloneţ - Rogojeni - Orhei (1931) highroads were reconstructed. On November 20, 1921, the first strategic connection road with Bessarabia was put into service, on the Huşi - Prut - Leuşeni - Lăpuşna - Hânceşti - Galbenei - Chişinău line.

The law of roads of 1929 previewed the construction of national highroads in Bessarabia on a distance of 2208 km, of which until 1935 only 750 km were built (Basarabia Economică, 1937, no. 7).

In 1932, the country's road hierarchy was drawn up, therefore three types of roads were determined: national roads, county roads and municipal roads.

In the years 1933-1938 construction work was carried out on the Bardar - Văsieni - Ciuciuleni - Chişinău - Huşi and Lăpuşna - Carpineni, Gara Bucovăţ - Dolna - Nisporeni highroads.

In 1933 in the Cetatea Albă county, bridge construction works were carried out in 13 villages, including the bridges on the Tatar-Bunar - Acmahghit highroad, in villages Sagani, Păuleni, Tudora, Răileanca, Palanca, Tuzla, Culevcea, Tarutino - Crasna, Dumitreşti, Volintiri et al.

Also in the 1930s, the highroads connecting the cities Hotin and Cernăuţi through the Otaci - Grozinţi - Colincăuţi highroad, Soroca with Floreşti, Cahul with Folteşti railway station and Bolgrad with Traian Val railway station were built. Highroad network, more precisely highroad sections and cobbled roads, connected the ports Reni, Chilia and the surrounding localities. In this region the construction of roads was also determined to establish a good connection with the maritime resorts on the Black Sea coast.

According to statistical data in 1918-1940 period, there were 46 county roads with a length of 1928 km in Bessarabia. By 1938 over 175 km of county roads were built. These were Peribicăuţi - Ciscăuţi (24 km), Năbădăuţi - Noua Suliţă (27 km), Briceni - Văşcăuţi (15 km), Bădărău - Glodeni - Pârliţa - Bălţi (22 km), Rezina - Cişcăuţi - Orhei (27 km), Tarutino - Crasna - Sărata (12 km), Bairamcea - Budachi - Cetatea Albă (10 km) and so on. In 1931-1932 period, the construction works were carried out on the following highroads: Vâlcov - Jibrieni, Cahul - Bolgrad, Cahul - Leova, Cahul - Falesti, Leova - Cazangic, Baimaclia - Congaz, Taraclia - Aluatu, Cahul - Vadul-lui-Isac roads, Alexandru cel Bun - Musait, Leova - Iargara, Leova - Baimaclia - Moscow.

By the end of the 1930s, in Bessarabia there were still many roads under construction and many administrative and economic centers with no roads, therefore without any link with the rest of the country (The needs of Bessarabia. In Basarabia economică, 1937, no. 1). For example, the Cahul county residence continued to have natural roads, which became unusable every 6 - 7 months per year, even though some years the Cahul - Bolgrad road with a length of 40 km was under construction.

In 1934 the construction of the Cahul - Oancea - Folteşti highroad started, but for two years just 4 km stone road was built. In this regard, the construction of the Tighina - Chitcani highroad can be used as an example.

In 1937, the Ministry of Communications emphasized the need to finish the construction of highroads between Chişinău - Tighina; Chişinău - Călăraşi - Iaşi; Soroca - Balti - Orhei; Hotin - Briceni - Răşcani - Bălţi; Bolgrad - Cahul; Reni - Galaţi et al. Road construction in Bessarabia was prohibited not only due to lack of funds, but also due to lack of building materials and labor force. There had been unregistered cases when the roads built from the local stone became unusable a year (Roads in Bessarabia. The works of the Federation of Bessarabian Chambers of Commerce. In Basarabia economică, 1937, no. 7).

In the new highroad program designed in 1936, for which a loan was contracted, the construction of a series of roads with the general area of 209 km was previewed according to the road law from 1929 (Table 1).

Table 1

Minimum building program prepared by the Federation of Bessarabian Chambers

	Distance, km	Built, km	Left, km
Cetatea Albă – Volontiri – Căușani	97	35	62
Chișinău – Tighina	56	23	33
Cetatea Albă – Bairamcea – Sărata – Tătărești	72	14	58
Călărași – Bănești	38	-	38
Bucovăț – Nisporeni	26	-	26
Brănești – Zahaicani – Râșcani – Bălți	70	15	55
Bălți – Cubolta	14	-	14
Soroca – Chetroasa to C.F.R. (Romania's state railway)	43	8	35
Hotin – Dăncăuți – Mămăliga	29	-	29
Total	445	95	350

Source: Transport in Bessarabia in the discussion of the Union of the Commerce Chambers, Basarabia Economică, 1937, no. 7, pp. 13-29; page 14.

As for the construction of the county roads whose normal length should be 6000 km, we find that by 1935 only 200 km were built. The Federation of Bessarabian chambers insisted on the building of the county roads on a stretch of only 580 km, and as the counties did not have funds, it was necessary that the county roads of greater importance be placed in the category of national roads and built on behalf of the state. Among these roads we can mention: Tighina - Copanca - Chițcani - Talmaza (necessary for the fruits exploitation); Cetatea Albă - Șabo - Budachi - Tuzla (necessary for the spa resorts) and Cetatea Albă – Bugaz (necessary for the Bugaz port mills).

Conclusions. The road network is an important scenic element that affects / manifests impact on both biotic and abiotic components.

One of the basic branches of the economy of Bessarabia during the interwar period was transport and communication channels. In the period 1918-1940, over 500 big and small bridges were built and rebuilt in the counties of Bessarabia. According to the Road Law of 1929, the construction of 2208 km of highroads had been planned in Bessarabia. But by 1939, 734 km were built, and 1474 km would be built in the following years. The state needed 1 billion 474 million lei to complete this reasonable plan. During the interwar period, highways of great importance for the national economy were built, especially connecting the administrative centres with the railway stations, from where agricultural production was also exported, and the roads of strategic importance - for example, the Tighina - Copanca - Chitcani - Talmaza; Cetatea Albă - Sabolat - Budachi - Tuzla and Cetatea Albă - Șabo - Bugaz county roads.

For Bessarabia, the road network had not only an economic and social significance, but also a strategical one, that of defence. It was necessary to restore and put into service everything that had been destroyed by the Russian revolution and the retreating Czarist army. That is why the Romanian government has studied and coordinated the development of transport in Bessarabia very carefully. Even from the first years the Romanian administration adopted a series of decisions regarding the Transport action. However, the entire road construction program in Bessarabia was not executed, and the road conditions, with all the work undertaken during the period 1920-1940, was at an insufficient level, which did not allow a regular traffic.

References

- Agrigoroaiei I., Palade G., 1993 Basarabia în cadrul României întregite (1918-1940). Chișinău, Universitas, 256 pp. [in Romanian]
- Antonescu C., 1922 Rolul băncilor în dezvoltarea economiei naționale basarabene. Basarabia Economică. Revistă socială, economică, statistică și financiară 3(1):2-20. [in Romanian]

- Atanasov N., 2000 Industria, comerțul, băncile și sistemele de comunicație ale Basarabiei în anii 1918-1940. Chișinău, Civitas, 156 pp. [in Romanian]
- Banister D., Berechman J., 2000 Transport investment and economic development. Routledge, London.
- Basarabia economică, Drumuri basarabene, 1939, no. 5, p. 3. [in Romanian]
- Basarabia și basarabenii. Chișinău, 1991. [in Romanian]
- Buckley, 1967 Sociology and modern systems theory. Prentice-Hall, Inc., Englewood Cliffs.
- Bulletin of the Chamber of Commerce and Industry from Cahul in 1926. Cahul, 1927.
- Bulletin of the Chamber of Commerce and Industry from Chișinău, 1919. Chișinău, 1939.
- Bulletin of the Chamber of Commerce and Industry from Ismail in 1926 Ismail, 1927.
- Documents from Bessarabia, Chișinău, 1938.
- Drumurile in Basarabia. In lucrările Federației Camerelor de Comerț din Basarabia. In Basarabia economică, 1937, no. 7, pages 5-12, p. 6. [in Romanian]
- Giurgea E., 1919 Chestiunea exportului și a transporturilor in Basarabia. In: Basarabia Economică. Revistă socială, economică, statistică și financiară 1(7-8):27-39. [in Romanian]
- National Archive of the Republic of Moldova, (A.N.R.M.). Stocks: 2 - Chancellery of the Bessarabian governor; 110 - Our Home; 104 - The Financial Administration of Bessarabia; 919 - Board of Directors General of Bessarabia, 920 - Railway, post office and telegraph Directorate in Bessarabia; 1579 - Directorate of industry and trade in Bessarabia; 1416 - Statistical Directorate of Bessarabia; 1778 - Chamber of Commerce and Industry of Lăpușna County; 1799 - Regional Directorate of Bessarabia Road: 1892 - Board for the unification of Bessarabia's management.
- Of Basarabia necessities. In Basarabia economică, 1937, no. 1, pp. 2-9; p. 6
- Statistical bulletin of Romania. Bucharest, 1923.
- Statistical dictionary of Bessarabia. Chișinău, 1923.
- Statistical yearbook of Romania 1927. Bucharest, 1928.
- Statistical yearbook of Romania 1936. Bucharest, 1937.
- Statistical yearbook of Romania 1937 and 1938. Bucharest, 1939.
- Statistical yearbook of Romania 1938 and 1939. Bucharest, 1940.
- The economic bulletin of Bessarabia. Chișinău, 1919.
- The official bulletin of Bessarabia. Chișinău, 1919.
- The official bulletin of Bessarabia. Year I, 1999, no. 1. p. 12.
- Transportul în Basarabia în discuția Uniunii Camerelor de Comerț, Basarabia Economică, 1937, no. 7, pag. 13-29. [in Romanian]
- Vălcovici V., Legea drumurilor. Bucharest, 1932, pp. 3-38; S. Hamangiu. Codul general al României. Vol. IX-X. [in Romanian]
- Ретеюм А. Ю., Дьяконов К. Н., Куницын Л. Ф., 1978 Преображенский В. С. Природа, техника, геотехнические системы. – М. [in Russian]
- Тархов С. А., 2005 Эволюционная морфология транспортных сетей. Смоленск, Универсум, 384 pp.

Received: 29 January 2020. Accepted: 28 February 2020. Published online: 30 March 2020.

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How to cite this article:

Mamot V., 2020 The evolution of the road network on the current territory of the Republic of Moldova in the period 1918-1940. Ecoterra 17(1):24-30