

THE IMPACT OF ROAD INFRASTRUCTURE ON THE NATURAL SOMEȘ PLAIN

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Résumé: *La maîtrise de l'impact de l'infrastructure routière sur le cadre naturel de la Plaine de Someș.* Dans la dernière période de temps, sur le fond de l'augmentation numérique de la population de la Plaine de Someș, s'impose de plus en plus, la nécessité de l'étude de l'impact et modifications anthropiques du milieu environnant. Une forme d'intervention anthropique sur le cadre naturel est représentée par l'infrastructure routière. Elle est formée par 4 catégories de chemins (nationales, départementales, communales et chemins de terre) et a une longueur de 1828,3 km. Par l'emplacement de celle-ci une surface de 110,9 ha a été mise hors de circuit naturel.

Mots-clés: impact anthropique, changements anthropiques, infrastructure routière, cadre naturel, environnement.

1. Introduction

Study of road infrastructure Plain Someș was achieved through the impact on the natural and aims, to establish the current state of development there of, in relation to the general level of economic and social development of the territory.

Sustainable development conditions of territory and settlements from Plain Someș should be optimum use of natural resources of soil and subsoil, human resources, and a way of distributing them in order to ensure a permanent balance between the exploitation and protection of environment, through the infrastructure.

Ways of road communication covered in the study and were analyzed in the context of the changes they induce in the environment. Anthropogenic changes were induced by the emergence and expansion of road infrastructure Someș Plain, manifest in all the environment (relief, soil, hydrography, vegetation, flora and fauna) components.

Necessary analysis data of road infrastructure to Plain Someș were obtained after processing the information from the Statistical Institute Satu Mare, Regional Development Plan - North West Region and the Satu Mare County Council.

2. History

Since ancient times, with sedentarization and setting people in fixed shelters, were first communication paths (paths of beaten earth), which facilitated access to human sources of water and food. At this stage the anthropogenic impact was insignificant.

With the upgrading of roads Plain Someș, their impact on the natural began to be increasingly pregnant. The most visible form of impact, which can thus be quantified, is the space that has a natural change and surface of 1010.9 ha area.

The transport infrastructure in Plain Someș modernization has been imposed by the appearance and development of modern locomotion resource less from the nineteenth century. They represent for the economy of this area the main factor that encouraged the development of all activity sectors, by promoting the mobility of goods and people.

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National roads in Someș Plain are represented by NR 19, NR 1C, NR 1F, NR 19A. They are spread relatively evenly over Someș Plain, on a length of 200,8 kilometres and occupies an area of 210,8 ha, representing 20,9% of the area occupied by roads road, and 16,7% of the area occupied by transport infrastructure.



Fig. 2 NR 19 National road



Fig. 3 NR 1C National road

From the four national roads in Someș Plain, one is space willing to the North-South (NR19) and the other three (1C NR, 19A NR and 1F NR) from East-West

NR 19 is the main artery road of Someș Plain, which crosses from south to north over a distance of 69 km, the alignment Carei settlements - Moftin - Păulian - Doba (Ecedei Plain), Decebal - Satu Mare (Crasna Homorod Plain), Satu Mare - Botiz - Ciuperceni (Micula Plain) and Livada (Tour Plain). On this route, NR19 crossing rivers: Someș, Crasna, Homorod, Balcaia, Ratca, Egheer except only Tur River, located north of the trunk road. From "Surdulău" by Livada city, NR 19 is common on the route a portion of about 4 km by road NR 1C.

It should be noted that, while NR 19 is an important European road axis, the route of part of the European road E 671, and a short portion from the Livada Surdulău overlaps with European road E 58.

NR 1C crosses the north of Someș Plain on the south-east direction, north-west alignment of the following locations: Săbișa, Seini, Apar, Iojib, Livada, Drăgușeni, Turulung, Halmeu. Length of 217 km these roads of Someș European Plain ensure interconnection and, the northwest of Romania to the European roads in Ukraine. On the Someș Plain NR 1C has a length of 43 km and occupies an area of 45,4 ha. Route overlaps with the national road NR 19 from the Livada Surdulău and the European road E58.

NR 19A crosses southern Someș Plain, on a length of about 54 km, the alignment of settlements: Acâș, Beltiug, Rătești, Ardud, Mădăras (Ardud Plain) Mădăras, Satu Mare (Crasna Homorod Plain), Satu Mare, Dorolț, Pete, (Micula Plain). The area removed from the natural flow of Someș Plain through location of this road embankment is 56,7 ha.

NR 1F with the length of 34 km, available on the east-west direction, the limit of Someș Plain and Crișurilor Plain, the alignment takes place on settlements: Tășnad, Căuaș, Ghencea Carei and Urziceni.

In conclusion, the length of national roads Someș Plain is 200 km, representing 25,9 % of the length of the road infrastructure.

The area occupied by the location of national roads in Someș Plain is 210,8 ha. Share of land occupied by the location of national roads Someș Plain is depicted in fig.4, in descending order: NR 19 (34,4%), NR 19A (26,9%), NR 1C (21,6%) and NR 1F (17,1%). (Fig. 4)

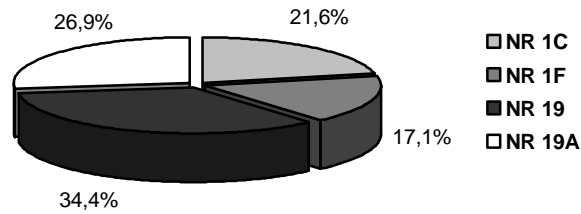


Fig. 4 Structure percentage of land removed from the natural flow through the placement of Someș Plain national roads



Fig. 5 County Road DJ 19



Fig. 6 County Road DJ 197

Although they have a relatively low density below 9,8 km/100 km² national roads are relatively evenly distributed on the whole plains, with the main points of convergence Satu Mare, Carei and Livada cities.

County roads in the Someș plains features between major routes and terminal points local level, county and local level. Network of Someș Plain county roads consists of 21 segments of roads with different lengths. The smallest segment of county road is the DR 193B with a length of 3 km. It enters the Someș plains, from Silvano - Someșeni Hills and ends by DR intersection 193, the administrative territory of the village trees. The long road from the county is Someș Plain DR 195B with a length of 59,8 kilometres and occupied an area of 53,8 ha.

The length of Someș Plain district roads is 401,3 kilometres and occupies an area of 361,2 ha. Reported in the entire plains resulting an average density of 21,2 km/100 km² county road.

Communal roads are an extension of the county with a vital settlements role and community centres in the settlements system.

With a total length of 241,8 kilometres and a density of 11,8 km/km², communal roads occupy an area of 145,1 hectares or 14,4% of used space for placement of Someș Plain road infrastructure.

Dirt roads are represented in Someș Plain by roads and agricultural forest. First role as interconnection and marginal areas difficult to reach, used in agriculture and forestry operation on the road system of Someș Plain.

Length of 979 km of earth roads occupy an area of 293,9 ha, representing 29,1% of the area occupied by the road infrastructure of Someș Plain. Their density average is 48,2 km/km².

3. The density of Someș Plain roads

The density of roads is a good indicator of anthropogenic pressures exerted on the natural Someș Plain.

Roads density average from Someș Plain is $89,7 \text{ km/km}^2$ and is assigned non uniform spatially, its values oscillating between 0 and $2,5 \text{ km/km}^2$. The highest values of density were found around the settlements, it is such and important road junctions and points of the anthropogenic pressure on the environment. The lowest values are outside the human settlements in forested areas were filled with grasslands and swamps, where the anthropogenic pressure on the natural is relatively low. (Fig. 7)

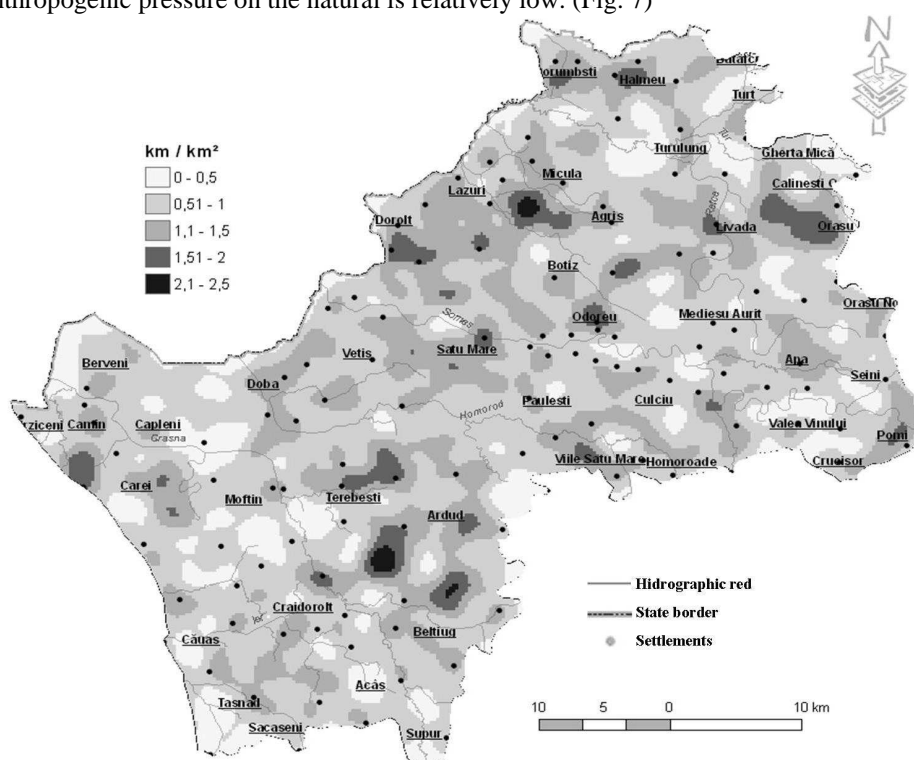


Fig. 7 Map of Someș Plain road densities

In conclusion, the road Someș Plain has a length of 1823,8 kilometres and occupies an area of 1010,9 hectares, representing 80,2% of the total area occupied by the infrastructure. The area has been removed from the natural flow of Someș Plain location by the following categories of roads: national (35,7%), county (29,1%), land (20,9%) and the communal (14,4%). (Fig.8)

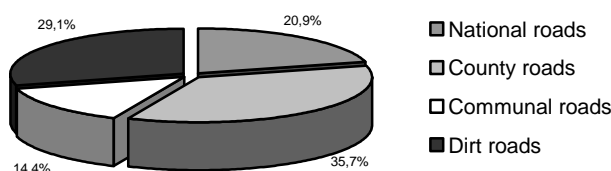


Fig. 8 Structure percentage of land areas occupied by the Someș Plain infrastructure

Removal of 1010,9 ha assumed a number of changes in environmental components, with negative repercussions on the environment and environmental rights itself.

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BIBLIOGRAPHY

- Bogdan A., Călinescu M. (1976), *Județele Patriei. Județul Satu Mare*, Edit. Academiei, București;
- Câdea M., Cîmpeanu Irina, Bran Florina (2006), *Organizare, amenajare și dezvoltarea durabilă a spațiului geografic*, Edit. Universitară, București;
- Cucu V. (2002), *Geografie umană și economică*, Edit. Transversal;
- Ianos I. (2000), *Sisteme teritoriale*, Edit. Tehnică, București;
- Iacob Gh., Savu, Al. (1992), *Câmpia Someșului, Geografia României, Vol. IV, Regiunile Pericarpatice*, Edit. Academiei, București;
- Ianos I. (2004), *Dinamica urbană*, Edit. Tehnică, București;
- Kovacs Csaba Mikloș (2005), *Geografia agriculturii din Câmpia Someșului*, Edit. Napoca Star, Cluj-Napoca;
- Mihăilescu V. (1966), *Dealurile și Câmpiile României*, Edit. Științifică București;
- Pop Gr. P. (2005), *Dealurile de Vest și Câmpia de Vest*, Edit. Universității din Oradea, Oradea;
- Posea Gr. (1997), *Câmpia de Vest a României*, Edit. Fundației „România de Măine”, București;
- Posea Gr. (1982), *Enciclopedia Geografică a României*, Edit. Științifică și Enciclopedică, București.