

IMPORTANCE OF ROAD INFRASTRUCTURE IN RURAL DEVELOPEMENT BOTOSANI

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Abstract

Transport infrastructure is an important sector for development of any society, since it determines improve existente disparities between regions. At European level attaches great importance to being included in development policies, considering the category vital in reducing gaps between developed and underdeveloped countries, ensuring cohesion and socio-economic competitiveness. In Romania the major deficiencies in technical, engineering sciences reference area as well as the spatial structures that generated it, the territorial insertion, field of study par excellence of geosștiințelor. Underdeveloped infrastructure of rural areas leads to a differentiation, especially in areas where the socio-economic modernization and development is in a period of stagnation. Significant transport infrastructure is that it is a priority in rural development policies and operational programs or regional or national development policies since the sector has a crucial role in reducing regional gaps, seen in the interdependence of transportation and space areas. One aspect of this study is quite important in constituting the hierarchy of roads linking demographic, technical and urban convenience, economic factors, but given the quality and accessibility infrastructure. This study will aim evidența poor areas in terms of road infrastructure, its development proposals, the impact of road quality in line with socio-economic and population by prioritizing the availability and quality roads.

Key words: road infrastructure, rural development, accessibility, bridging policy, rural areas

The importance of studies and research about road infrastructure, quality major axis of circulation has increased since 1990, although researchers have always been concerned with transport provided accesibilitata. At European level an important role in emphasizing the importance of such studies, was the European Union that was interested in prioritizing road network, identifying outlying areas and development to reduce regional disparities. Thus the influence of European Union funding obsevă both studies and especially in programs designed for infrastructure development.

In the literature were studied for accessibility, highlighting the correlation between transport infrastructure and accessible. Road situation in a country or region reveals peripheral, isolated and are serviced by a high level of road infrastructure.

European Union by the Treaty of 1992, to promote the development, the primary factor of achieving economic and social cohesion and territorial provides of member state from accessing financial instruments for rural development and infrastructure transport. There was need for financial support by the Member States of European Union because it is large differences between member states, and the main objective of this community is territorial cohesion and socio-

economic competitiveness. Thus there were major investments in the transport axes, especially the road.

Accessibility has many models of computation, pointing out the models of Spiekermann and Schurmann, road accessibility is concerned to identify outlying rural villages or traditional periphery. Indirect distribution road shows areas that are less developed or are isolated studies at EU level through case studies explaining that there is an interdependence between poor areas and underdeveloped road infrastructure.

Major axes in a county / district are designed to connect people with modernity, thereby entering innovation. Study of J.Weber, „Relections on the future of accesibility” stressed the importance of road infrastructure and the accessibility in rural development. Increased accessibility to modernity determine population connectivity, as a means of developing opportunities for socio-economic development of a territory. A poorly developed infrastructure shows potențialul region to develop, Being outlined peripheral character of the area, the quality of infrastructure by the predominance of paved roads highlights the possibility to use modern vehicles by going through great distances in a short time .

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A study by Ribeiro, A. Pais Antunes and A. Paez, „Road accessibility and cohesion in lagging regions: Empirical evidence from Portugal based on spatial econometric models” focused on the analysis of development projects and modernization of transport infrastructure is one of EU territorial cohesion objectives. Thus the level of Portugal were required numerous studies to develop coherent policies transport infrastructure development, especially since in 1990 was the European Union peripheral state in terms of transport infrastructure and accesbilitatea. With this example, it can be applied to the area of study to deepen research on transport infrastructure and

MATERIALS AND METHODS

The study used quantitative statistical data from the Soros Foundation, 2009 Census of population and housing data from the Regional Directorate of Roads and Bridges Iasi, achieving statistical analysis method were carografiate Philcarto program, then processed in Adobe CS 6 Illustrator, road situation is identified, the average distance of settlements, diffusion of innovation based on technical and urban comfort and road distribution, the number of projects submitted rural modernization and rehabilitation projects for infrastructure.

Peripheral rural areas or who have a low accesbilitate are identified by synthesizing quantitative data from Reensământul Population and Lcuișelor in 2002 and Soros database 2009 (information in this database may cause errors or subjective analysis because some municipalities did not answer the questionnaire the Foundation).

Road infrastructure is highlighted in a map made in Arc Gis 10 by digitizing all roads in Botosani county-level hierarchical roads, county, national and European digitization RESULTS mapping is then performed. What you will notice is that major căaxele organized widespread circulation and may said to have been used chritallerian model type because these axes crossing points teritoriului studied population access various county areas, but what differentiates and cause areas / peripheral municipalities is the quality of road infrastructure is paved highway segment, Manoleasa-Radauti Prut, other strands of national highways are paved.

Road casting was used in making maps distnaței average urban technical comfort, the distribution of projects for EU funding or dispersion of road infrastructure projects, observing the influence of road infrastructure in rural development, rural-urban relations and peripheral villages at the local level.

The methodology used for the study can be deepened In a future study the use of accessibility indicators and demographic / economic to achieve

accesbilitatea to identify peripheral and rural-urban relationship.

Of economic growth in a region is influenced by the distribution and quality of road infrastructure, Portugal is a good example through policies developed. Research and studies both at European, national or Botosani county, are designed to develop strategies to reduce disparities and to create a competitive and cohesive complex, according to European Union objectives. Development of road infrastructure attract rural development by increasing investment and employment in rural areas.

identification of peripheral areas in terms of analysis of several indicators. Thus in this study was identified by the methodology used in Botosani county road classification, quality mjore axes of movement (national and European roads), diffusion of innovation, the role of road infrastructure in rural-urban relations and initiate development projects.

RESULTS AND DISCUSSION

a) Presentation of the relationship between transport infrastructure and rural development

Transport infrastructure is an important sector for the development of any society as it determines improving existing disparities between regions. At European level attaches great importance to being included in development policies, considering the vital category in reducing gaps between developed and underdeveloped countries, ensuring social cohesion and economic competitiveness.

In Romania the weaknesses both in terms of technical, engineering sciences reference field as well as in that of spatial structures generated by this insertion territorial area of study par excellence of geoscience. Insufficient infrastructure development leads to a differentiation of rural areas, especially in areas where the process of modernisation and socio-economic development in a period of stagnation.

At the international level, especially in the EU, transport is of interest to territorial cohesion, achieving numerous planning studies, planning and territorial development, which aimed at identifying accessibility spaces and identifying solutions. Such transport infrastructure is included in the development plans macroscale being at the center to reduce regional disparities or gaps typical countryside. Quality road transport is a role for integration into European policies, this criterion is correlated with socioeconomic disparities creation and development of infrastructure and improvement of its quality is a different high.

Development policies are a priority transport infrastructure such National Strategic Reference Framework is implemented through Operational Programmes under Objectives „Convergence” and „European Territorial Cooperation”. Operational Programs are management tools for the implementation of the CNSR priority axes, with Sectoral Operational Programme Transport, which shows the importance of representing this sector. significant transport infrastructure is that it is a priority in rural development policies and operational programs or regional or national development policies for the sector has a crucial role in reducing regional gaps were seen in the interdependence between transport and rural space.

By doing this in 2007 was conducted socio-economic development strategy of Botosani County and identified key objectives aimed at integrating this area at EU level. Creating a development strategy is managing funding opportunities promoted by post-accession financing instruments within the Sectoral Operational Programmes and the Regional Operational Programme. Such strategies are correlated with county and national and European policies.

Botosani the socio-economic development strategy, the following priority actions for 2008-2013, which are intended to integrate this county cooperation and European competitiveness landscape. Economic and social development strategy of Botosani County 2008 - 2013 was developed under the Regional Development Strategy North - East 2007 - 2013 and with Romania's commitments contained in the Treaty of Accession to the European Union.

County development objectives have been established from studies that took into account the financial resources of local government and European cooperativitatea but also the local community. Potential material, financial and spiritual, the complementarity with the involvement of local authorities aim to achieve the strategy objectives achieved.

Areas requiring attention are investment and transport infrastructure and rural development.

Spatial Plan Botosani County transportation infrastructure is one of the priorities to identify weaknesses. Thus it is proposed to obtain funds to improve regional and local transport infrastructure, and rehabilitation and modernization of county roads.

A baseline study for this area, „Quality upgrade the transmission as a prerequisite for differentiation rural areas of Moldova” (2010), conducted by geographical school Iasi. For example, this study shows correlation between the

quality of transport and differentiation infrastrucutura classified rural areas of socio-economic and socio-demographic, underdeveloped areas is also strong accesibilitatea corealează them.

Road infrastructure is influenced by natural and anthropogenic factors, concordându is the absence of policy development and quality improvement of the infrastructure.

b) The current state of transport infrastructure in Botosani

Landscaping plan in Botosani analyze transport infrastructure because it is an important aspect for ensuring the development of a county. Such troubles encountered in Botosani county are moving rail to road, reducing passenger and cargo volume, delays in the implementation of priority projects. Inadequate development of infrastructure leads to the following consequences: rising prices of transport services and deterioration of existing infrastructure.

Botosani county public road network is extensive, relatively well covering territory with a high density regional average. In terms of modernization and road conditions, the situation is different, county indicators showing below the regional average. A particularly poor the county and communal roads and road bridges. Rail transport is less developed, yielding more and more instead of road, with a number of projects abandoned or still open. Specific infrastructure areas and crossing control is also weak. In terms of accessibility problems are found mainly in the north and east of the county, in rural areas. In general communications system means the county has a number of historical and natural determinant (main rivers) and is strongly oriented towards the two municipalities in the county, especially the county seat. Cross-links are less developed, especially in the south county, and extra links are better developed county just west direction. Opportunity of EU funds for infrastructure development of communication and transportation routes has been used in recent years, but not with maximum efficiency.

Accessibility issues and focuses mainly transport in the north and east of the county. In terms of communication channels, Botosani county ranks 2 in the region where the density of public roads and 5th place by the railways. Road network is relatively well developed at local level planning, including in terms of share of national roads, but the unsatisfactory situation in terms of the level of modernization, which ranks 5, with values below regional and national averages. A weaker position dealing with county and in terms of rail transport network having a value lower than the regional and

county and also totally non-electric. Measures are needed to modernize the road network and the

expansion and modernization of the railway.

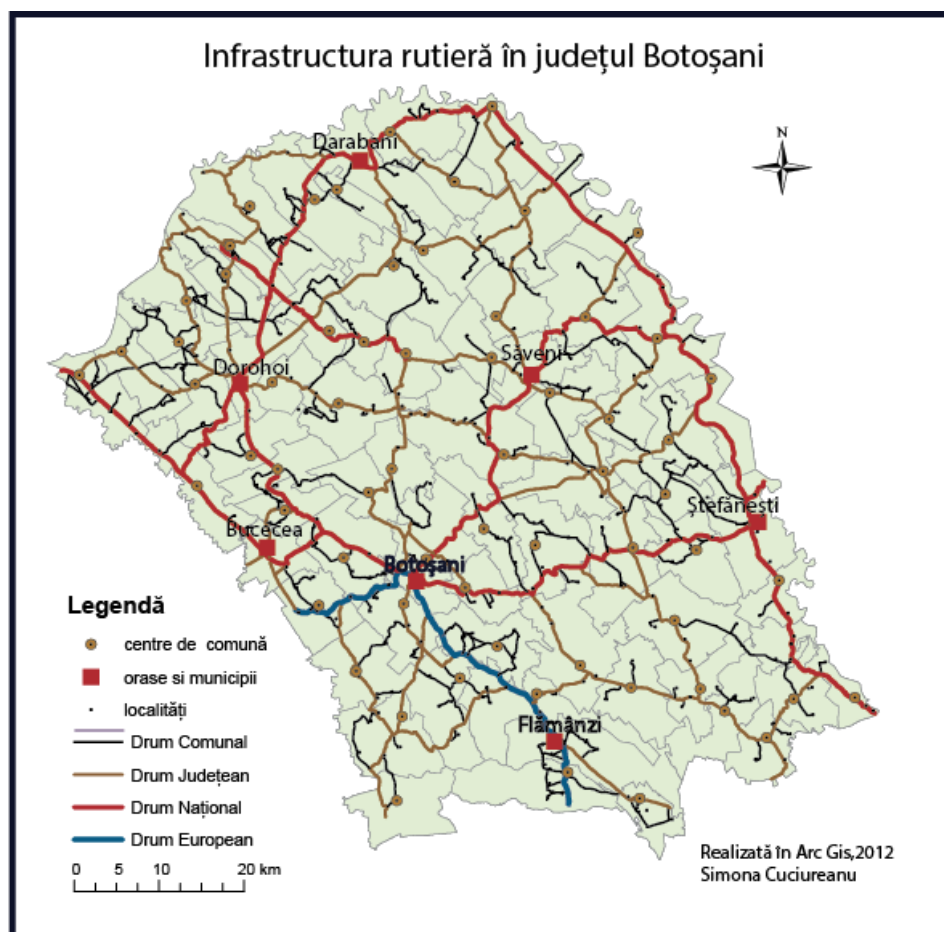


Figure 1 Distribution of road infrastructure in Botosani

It can be seen by analyzing Figure 1, the distribution of national roads is in a echilibrat, the accessibility to a high, ensuring residents can have access to important services can be found in the county seat, Botosani. Road infrastructure highlights particularly important for rural areas because it facilitates access to innovation and modernity in rural areas, European road presence ensures the development of its proximity localities both in terms of comfort and economic level.

SAPARD was upgraded a number of 7 and village roads with a length of 64.25 km and the total Euro 5,860,295 and in 2007 ended the 11th execution and village roads having length of 86 km and the amount of 8,679,822 Euro. The Rural Development Project in 20 municipalities in Botosani county were rehabilitated through gritted 202.419 km of earth roads worth \$ 7,109,240.

For rural areas, Botosani county border infrastructure is an important aspect of rural development. Because the borders with Ukraine and Moldova are 3 checkpoints, which require massive investments to reanilitării, expansion and modernization under EU rules.

The customs office of Racovăț is located approx. 570 m from the town Racovăț and layout

area of 138 square meters, was built Botosani County Council and leased intercounty Iasi Regional Customs Directorate. In 2007, there was more traffic than cars and tourists from Botosani to Ukraine, which imposes the need for border infrastructure rehabilitation. Given that the county Botosani consists of more than 248.54 km as border area of the European Union in this checkpoint major investments required to modernize and equipment at European level as a prerequisite for the security of EU border traffic.

Customs office Stâncă is located about 3 km from the village of Stâncă and about. 58 km from the city of Botosani. It is located on the dam Stâncă- Costesti an area of 750 square meters at a distance of 1.5 km from the state border. Major investments are needed to modernize, security requirements at EU borders.

Customs office Radauti-Prut (Romania) - Lipcani (Moldova) have PHARE and TACIS in 2003, then being initiated reconstruction of the bridge over the Prut, Radauti-Prut - Lipcani. Crossing point and the border Customs Office Radauti-Prut (Romania) - Lipcani (Moldova) was put into operation after they realized its functioning infrastructure and utilities were

provided for the smooth conduct border traffic conditions.

In the Botosani county road infrastructure plays an important role for development and diffusion in the disparities. Thus it can be analyzed by mapping the topological disparities were identified after analyzing the network density rural settlements, complex coefficient and average distance between settlements. This index provides a synthetic perspective on the differences topological and road distribution, highlighting periphery in Botosani.

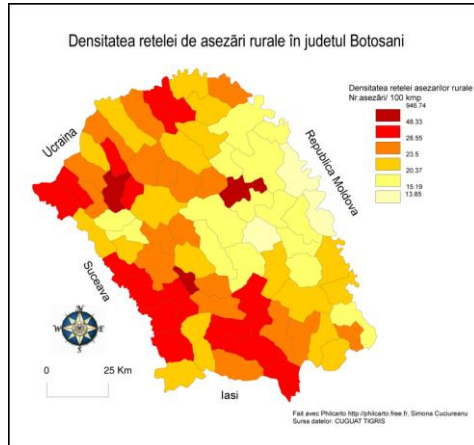
Network density texture determines the organization of rural villages, it represents the homogeneity of the analyzed territory. This indicator formula:

$$\text{Network density settlements} = \frac{Nar}{S} * 100$$

Nar is the number of settlements / towns and S is the surface.

In the map of Figure 2 we can see that the texture is uniform rural Botosani County because there is a judicious employment of available space, favoring higher administrative creating balanced units.

Application christalleriene organizational models can exploit spatial harmonics polycentric territorial structures, the local polarization centers of influence zones share similar in size and



population size.

Figure 2 Density rural settlement in the county

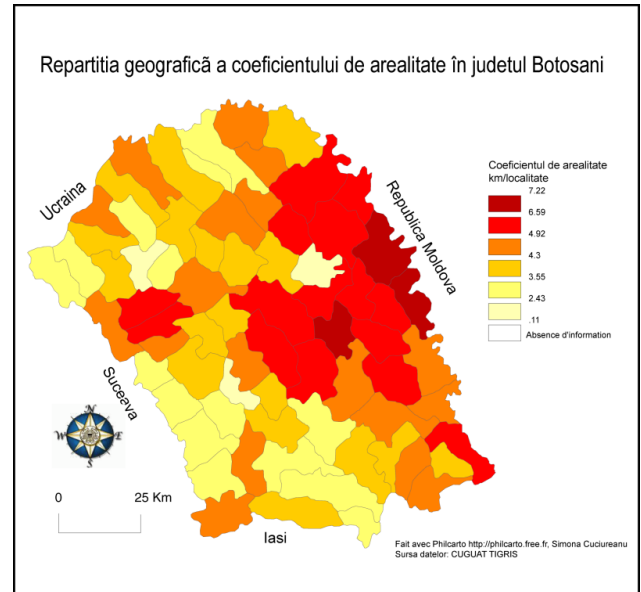
Analyzing mapping results can be observed that the largest surfaces of localities, the highest density is in cities that county components, Botosani, Dorohoi Săveni. Also most rural areas have a density from 14.79 to 31.42 sq. km, with a balance in this regard. Few villages have 10.56 to 14.59 square kilometers, among which are: Dângeni, Ripiceni etc. It can be considered that cities with a higher density of occupied surface are composed of administratively not common. Infrastructure development in a organized riders

can be enhanced by analyzing density of settlement network is highlighted the need to modernize or develop this type of infrastructure.

Coefficient complex aims to show how many kilometers incumbent locality, so you can see which cities occupy large areas such as located within the county can fit in into remote models based organization christalleriene etc. The formula is:

$$a = S/Ns$$

S is the surface, and Ns is the number of villages or communes, a role having him use database and the analysis is performed at niveld's



village or commune.

Figure 3 Geographical distribution complex coefficient in Botosani County

The map in Figure 3, can see that half of the cities have an area of between 4.19 - 9.47 square kilometers, of which demonstrates their homogeneity. Among the places that fall into this category are: Mitoc, Ripiceni, Ungureni, etc. Then the second half in class with concrete 0.6-4.19 1.06-4.19 square kilometers or square kilometers (Prăjeni, Flămânzi).

It can be seen in the north-eastern area of the county high coefficient. Also important cities county (Botosani, Dorohoi Săveni, Darabani) have low coefficient complex because they have no other place in the administrative structure, which influences the size of the coefficient.

The link between the two indices analyzed so far show that municipalities have a higher density of surface occupied but a small factor complex because they do not have the administrative-territorial composition of other settlements, where villages, rural areas the situation is lower density areas and large complex coefficient.

The average distance between settlements is designed to highlight the centrality of municipalities within a county. To highlight the average distance is used two ways, which will highlight the place it occupies in Botosani county communities. Thus the first method takes into account the average distance between two cities in Romania is at least 5.1 km, creating classes in study area from 2.94 km to 36.92 km. It can be seen interdependența of complex coefficient and calculate the distance between settlements reveals small distances between cities that do not have other places to organize territorial administratively. The second method is the distance that calculates the distance matrix between all locations, then make the sum of distances, will be standardized and mapped results emphasizing the centrality of villages in the territory.

The formula for calculating this index is: $St = 1.2 \sqrt{a}$, where a is the coefficient of the

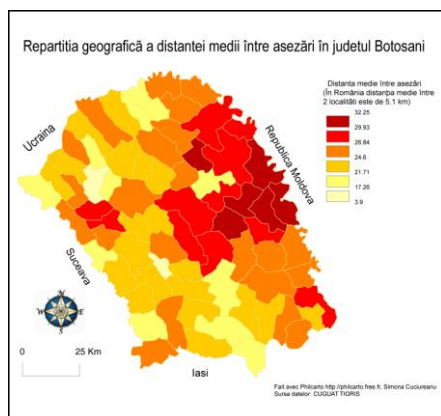


Figure 4 Geographical distribution of average distance in Botosani

Regarding the technical equipment of utilities deficient, it can be seen that most municipalities are facing this problem. This is due to the lack of necessary equipment services, such as sanitation, hot water, gas. Only electrical equipment can be an advantage technical comfort municipal housing. Looking at the map of Figure areas observed high values of techno-urban comfort, influenced by spatial diffusion of innovation (a role it plays in determining road network). Draws are considered distinct classes: 0.7-5.4, 5.4-18.7 and 18.7-32785.6. Most municipalities in the county have values in the first 2 classes.

Overall we see that the highest values of this index are found in cities and county municipalities (Botosani, Darabani, Bucecea), which means that they only completely urban

complex.

Figure 4 is observed in the map as the average distance between settlements are concentrated in the north and southeast, the same geographical areas as localities where the complex coefficient.

In fact stands homogeneity between the distances between towns, as most are between 24.56-39.92 km.

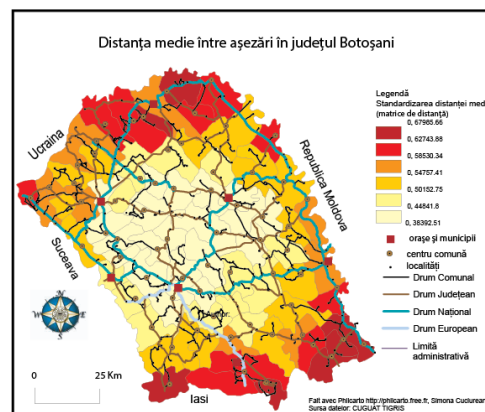


Figure 5 Geographical distribution of average distance in Botosani

A second method for mapping the average distance, Figure 5 shows the centrality of Botosani County municipalities in this area, being arranged in circles concentrated communities, the boundaries of the county are the most distant. The average distance between settlements highlights the need to develop rural infrastructure. technical convenience, making them decent minimum conditions for residents living according to the European level.

Urban areas where technical comfort is high are: the western and southern part of the county, in its major cities. Thus analyzing technical comfort map can see that urban areas where a high technical comfort zones coincides with major road network crossed by European road or roads are municipalities or cities or there is a border crossing point aproiere. This means that areas that are crossed in proximity to major road networks are more developed in terms of urban technical comfort, innovation being broughtexpanded via them. To illustrate the examples given above, I will mention the main roads in areas with high technical comfort. Thus municipalities in proximity European road E85, have a high comfort technical urban, and national road 24 passes through the city of Botosani and coumele of proximity and its line is observed communes with a high index.

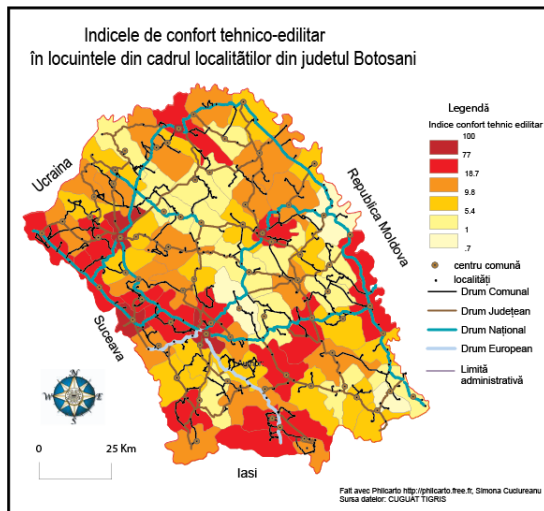


Figure 6 Geographical distribution of technical comfort index - urban in Botosani

Regional disparities are determined by density housing, technical equipment of utilities and municipal technical comfort, and road networks.

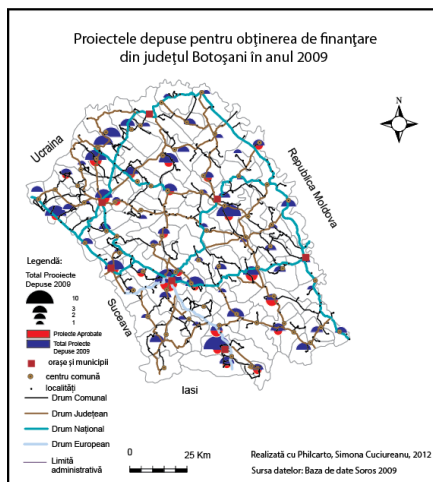


Figure 7 The geographical distribution of projects submitted for EU funding in Botosani County in 2009

Thus towns and cities in the county are more developed in terms of these indicators, and developing and reducing disparities are villages located close to road network border points or those that are crossed by roads.

rural development and road infrastructure so that major investments are made in cities and municipalities in proximity 1-2. Road accessibility in terms of the major axes of movement, are located near cities or their crosses, being made aeasta organized to serve a larger number of people. According cristalleriene patterns can be observed placement regional strategy and modernization of road infrastructure. Rural-urban relationship is beneficial for the development of road infrastructure, achieving an organized and integrated development for both rural as well as urban areas.

Interest municipalities to submit proposals to obtain funds is low, observing that most projects were made in towns and villages in their vicinity. What is more important is that were approved only in cities, their neighboring communities, for example in the eastern part of the county, the Prut valley village only Mitoc were approved projects for EU funds, other communities, including the city Ștefănești not obtained approval for projects submitted.

It could be several factors influencing this include poor training people who have posted projects to obtain financing, which is a less developed area.

Infrastructure investments are concentrated in the northern, eastern and south-central, but this is modest. Infrastructure requires large investments and those who efectuatur in 2006-2007 were made by SAPARD funded projects, such as improved transport rutier. Investițiile largest were conducted in urban areas, Botosani, Dorohoi, hungry, Săveni common to their surroundings or are crossed by roads or county agencies national importance.

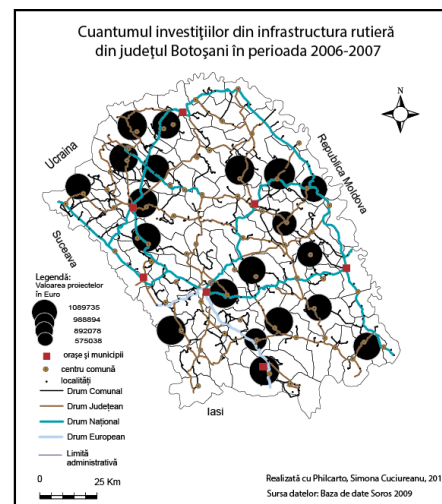


Figure 8 shows the geographical distribution of infrastructure investments in Botosani County in 2006-2007

Analysis shows some important aspects: urban-rural relationship has an important role in

CONCLUSIONS

The analysis of rural infrastructure projects and those proposed for funding for modernization and rehabilitation of road infrastructure and diffusion of innovation can be seen in the county of Botosani some aspects conclusive. Thus road infrastructure by the major axes of movement is central to the development of this space, so that rural-urban relationship and outlines road underdeveloped rural areas / peripheral and developed. For example proximity spaces automotive roads have a comfortable urban technical high a high innovation diffusion,

numerous projects for European and proicete obtaining of funding for modernization and rehabilitation of road infrastructure, among those municipalities Frumusica Critești, Varfu Field, Văculești, Loerda, Hudesti, Santa Mare, Ripiceni etc., and communities that are at a distance of 20-30 km from the major axes of movement which enjoys a rural development, urban technical comfort is summarizes the presence of electricity, also county roads are rehabilitated within these territories are Coțușca, Drăgușeni, Mileanca etc. Also cover quite important role it acts as upgrade the road, so there segemntul national road Manoleasa-Radauti Prut not paved, and this re found in the criteria stated above ierahizarea rural areas. Modernization and development of national highways road from and to the communal will attract a drinkable development of rural areas, turning them into cohesive and competitive areas at both territorial and socio-economic level, the small differences in the county. Territorial disparities existing road infrastructure outlined in Botosani jdudețului, showing peripheral villages, but they will be grown through development of accessibility.

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*** Program Rural Developement for Romania 2007-2013

*** Socioeconomic development strategy for 2007-2013

Botosani county

*** Spatial Plan Botosani County

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