

The land fund characteristics of small and medium cities from Republic of Moldova

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ABSTRACT: Structure of urban land from Republic of Moldova was determined by peculiarities of the environment, historical conditions of city developing and economic functions. One of the main factor, with obvious influence is the way of land use is landscape or city site. Its morphological characteristics contribute directly to the formation of land structure, especially, agricultural land concentration in relation to the built-up area, respectively, other land categories.

KEY WORDS: land fund, built-up area, town

1. Introduction

Land Fund represents totality lands, regardless of destination and property within the territorial-administrative unit. Depending on its main destination the land from cities composition consists the following categories of land [2, Article 2]:

- Area with agricultural destination.
- Build-up area within settlements;
- Areas for industry, transport, telecommunications and other special purpose;
- Areas for natural protection, health care, recreational activities, historical and cultural land value, land suburban areas and green areas;
- Forest;
- Water Fund;
- Reserve Fund.

2. Methods

In this study, the main source of information was Land Cadastre of the Republic of Moldova, from 01.01.2011. The main study reference in this area from Republic of Moldova is considered to be

the monograph of Bejan Iurie for PhD. in the field of geography "Spatially study on land use in the Republic of Moldova". Were also used various works, in which are treated some aspects of lands use in urban settlements some of which are geographical, but mostly in the field of ecology, forestry and land use- planning. Applications of GIS technology have allowed the development of cartographic material about cities' land structure necessary to make a motivated analysis based on spatial-geographical criterion..

3. Results

Structure of urban Land Found has developed according to the specific of the environment, population number and economic functions, and total area being 2618281 ha. Depending on the level of urbanization and industrialization, Republic of Moldova cities are classified in two groups: small and medium-sized cities with a population of 50 thousand inhabitants and the second group which includes cities with over 100,000 inhabitants.

Generally the structure the land fund from administrative territorial limits of cities is as follow (Fig.1.): farmland 47% built land-19%, perennial plantations - 8%, meadows - 9%, forest plantations-13%.This distribution indicates a high level of land exploitation of areas surrounding the settlements. At the same time, the land fund the structure of small and medium towns (Fig.1b.) reflects a more pronounced agrarian character and where arable lands occupy 51% of the total area. In these conditions is observed only a decrease of lands occupied by buildings and farmyards household from 13% to 9%, therefore big cities (Chisinau, Balti, Tiraspol and Bender) have 4% of the total area of these lands. The ratio between these two categories of land (arable and built-up) thus reflects the industrialization and urbanization of settlements.

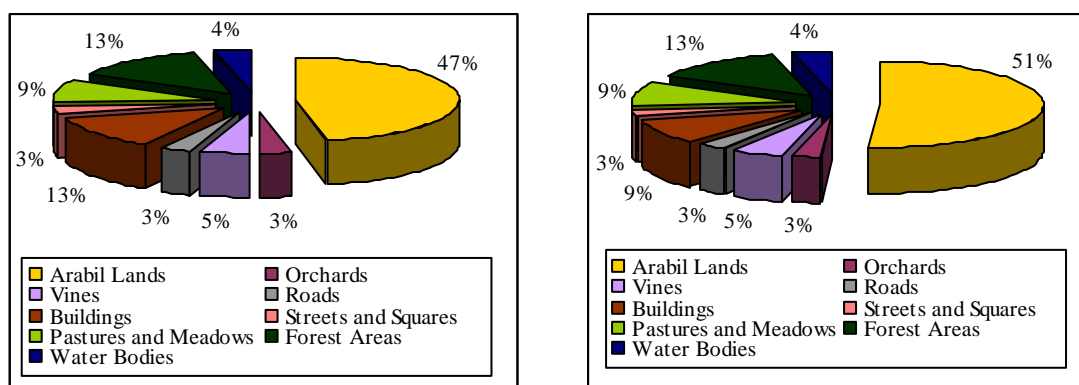


Figure 1. a. The Land Fund structure of the cities from Republic of Moldova, 01.01.2011; **b.** The Land Fund structure of the small and medium towns from Republic of Moldova, 01.01.2011.

The current structure of urban land fund highlights some of the main categories of land distribution analysed: agricultural land, forest land, water and built-up land (Fig. 2).

Lands for agricultural purposes are arable land, perennial plantations, pastures, etc. Agricultural land is now the main form of use in most urban settlements in the country. Land use for agriculture is closely dependent on the variety of natural conditions and regional differentiation of economic specialization branches. Thus, a high degree of agricultural land use is characteristic

of urban settlements in the economic regions of North and South. Here is highlighted in particular the cities of the Hilly Plain Cubolta (Rascani 81.7%) Ciulucuri Hills (Sangerei 72.3%), Moldovan North Plateau - Cupcini (70.2%), Edinet (66, 9%) and Plain of Middle Prut (Falesti 66.5%; Glodeni 69.8%).

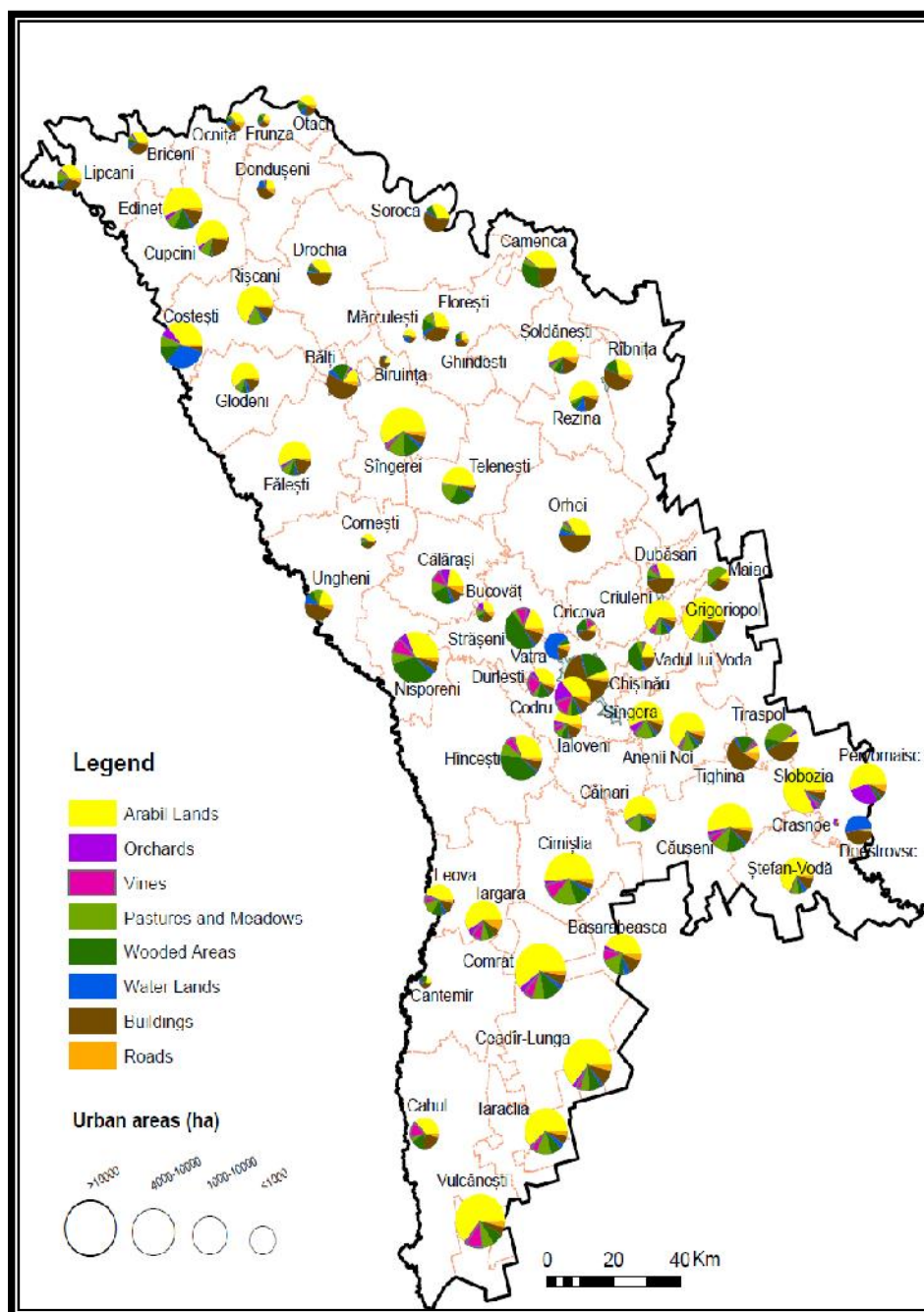


Figure 2. The structure of the Land Fund per cities.

In the South Economic Region, percentage of agricultural land of total surface area is higher in urban settlements located in Cahul Plain (Vulcanesti 83%), Middle Cogilnic Plain (Cimislia 79.2%)

(72.8% Cainari) Ialpuș (Plain Comrat - 75.68%), Taraclia (75.1%), Ceadir-Lunga (73.5%) and Hadjiderului Plain (Stefan Voda 74.4%).

In Central Region percentage of agricultural land in the city varies depending on their position in natural units, recorded values lower limits of a plateau (27.6% Cricova, Straseni 30.9%, 46.7% and Nisporeni Hincești - 51, 3%), and higher values in plain regions Criuleni - 74.1%, of Anenii Noi - 74%. The minimum value of ratio of agricultural land is registered in Vatra 3.4% due to the very high ratio of aquatic lands (65.7%), and maximum is registered in Singera - 78.3%. In the Territorial Unit of Transnistria the highest ratio of agricultural land values are highlighted cities with agro-industrial functions from the Lower Dniester Plain, Slobozia (88%) and Crasnoe (84%).

Wooded land - In terms of location, urban green spaces are divided in [3]:

- a) Green spaces within city limits, including the formation of green spaces covered area built the city, and their adjacent green areas;
- b) Green spaces outside the city cover forests - Parks, recreational green space areas and other suburban green spaces that mainly function to provide recreation in a natural setting.

Expanding green areas in urban evolved particularly in the postwar period, when they were created a large number of parks and gardens. Also, it was emphasized greening of industrial enterprises and public institutions. Greening system was determined by the size and character of the village, to systematize its natural conditions and development prospects. The degree of development of green networks was provided to match the size of the village. In principle, system development with green spaces of a large city was different from that of a small city or town through systematic complexity and proportions adorned with green spaces [6. p.85].

Another feature was that the green spaces of urban extravillan were created as sanitation zone and this action has determined, however, the export of environmental issues in suburbs and rural areas. [4. p.21]

After the 90, together with emphasizing economic crisis substantially were reduced funding allocations for planning and greening works for settlements. Currently improvement works is carried out only some of green spaces within city limits. Activities related to planning spaces for greening are insignificant [5. p.177].

In current conditions, when there has been a continuing environmental degradation, policy in improvement of urban ecological situation should be directed to maintaining natural landscapes, protect the forest and create massive network,, green corridors" outside the urban perimeter. The total area of forest plantations of the the land fund urban settlements is 33,474.2 ha or 12.8%. Afforestation levels differ greatly in aspect spatially, being a function of both natural factors as well as those anthropogenic.

In the Northern Region, the highest values of forest plantations are recorded for urban located at the northern limit of the republic - Frunza (18.9%), Otaci (15.2%), Edinet (14.5%), or other localities situated in the plateau (Plateau bank) - Ghindești (14.2 %). Forest plantations hold small areas in the case the cities located in agricultural regions (Rascani (1.6 ha), Marculești (2.2 ha), Cupcini (2.3 ha), Biruinta (2.7 ha).

In Central Region the surface of forest plantations of the land fund of city constitutes 15,883.3 ha or 47.5% of the total per country. The observed largest areas of forested lands are recorded in the cities from Codri Plateau - Vadul lui Voda (44.8%), Straseni (41.5%), Hancești (39%), Nisporeni (32%), Cricova (23.8 %). The high proportion of forest plantations can be explained by specific

natural conditions but also by the importance of these types of land for some economic activities, particularly recreational (Vadul lui Voda).

In the Southern Part cities' forest plantations hold 9245.9 ha or 27.6% of total surface area of these land categories. The largest areas of forest plantations are recorded Comrat Towns 1891 ha, 1070.4 ha Vulcanesti, Taraclia 881 ha, 809 ha Ceadâr-Lunga, But as a percentage these lands do not exceed 10% of the land of cities. Forest plantations are highly low quality due to the influence of bad weather that conditioned the emergence and expansion of pest and disease outbreaks forest complex, causing worsening of forest protection. Through a higher level of afforestation is highlighted on the periphery the cities Hills Tigheci (Cantemir 19.4% and Cahul - 14.8%) and South Codri Plateau (Cainari - 13%). Territorial Unit of Transnistria is characterized by the lowest level of afforestation of urban landscape (8.8%), caused by specific natural (climate, lower altitudes) and the highest percentage of agricultural land. The highest values the share of forest plantations for cities located in the north of the region, within Podolian Plateau Camenca are recorded 29.9% and 14.4% Ribnita.

Aquatic lands are lands under water - riverbeds of watercourses, lake basins, ponds, water reservoirs, marshes, lands on which are located hydraulic structures and other facilities of water service, and land strips assigned for deviation (from the banks) of rivers, water bodies, canals and collectors. These lands are used for the construction and operation providing drinking water needs, technical, curative, and other needs of the population, of water services, agriculture, industry, household fishery, energy, transport and other needs of the state and society (Article 63).

Share of aquatic lands in total land area of town is determined by placement settlements near river basins and the construction of several water reservoirs both within and outside of built-up. The largest reservoirs in the country (Costesti-Stanca, Cuciurgan and Ghidighici) occupy high the land fund aquatic Vatra cities (64.8%), Dnestrovsc (50.64%) and Costesti (31.5%).

In Central Region urban area of water resources constitutes 2620.6 ha or 26.2% of the total per country. Disparities urban water surfaces in this region are more pronounced than in the North. Thus the share of aquatic lands in urban land fund ranges from 0.35% in the city Cornești and up to 65.7% in Vatra.

Cities from Southern Region are less covered with aquatic lands. These categories of land surface in urban land fund constitutes 2095.4 ha or 21% of the total. Share of surface water range from 0.8% in city Cahul to 6.5% in Cantemir.

Territorial Unit of Transnistria is characterized by the lowest values of aquatic lands 1213 ha or 12.1% of urban land fund. Share of aquatic areas within the urban settlements is under 4%, except Dnestrovsc city that concentrates 62.3% from area of aquatic lands of cities in the region.

Built-up area. Under Article 43 of the Land Code of the Republic of Moldova perimeter of the settlement is built-border (its territory), which separates the city limits. As opposed to rural areas, cities' area is established and modified by the Government. Cities lands constituting part (Article 44):

- Lands on which are buildings and other facilities;
- Lands for public use - communication routes (markets, streets, passages, roads, etc.), the socio-cultural needs of the population (public gardens, parks, lakes, beaches, boulevards, squares), for graveyards and other household needs utilities (47).
- Lands for roads, railways, water, pipeline, telecommunication lines, and power transmission, for mining and other industries;

- Wooded lands;
- Agricultural lands and other land.

Currently, urban built-up area of constitutes 51713.8 ha or 19.8% of the republic's cities. The average size of a built-up urban areas is 795.6 ha, ranging from 30 ha (town Crasnoe, UTA left Dniester bank) up to 8141.4 ha for Chisinau.

Within built-up areas (Fig. 3.a.) main categories of land are construction (36%) and agricultural lands (35%), followed by streets and squares (15%). Forest plantations have only 7%, due to lower levels of afforestation of the built cities in northern and southern of Moldova. For small and medium towns built-in the structure (Fig. 3.b.) percentage of agricultural land constitutes 43%, being above the other categories of land, but less than the proportion, if we consider all built areas - 47%.

Noteworthy is that green areas decreased essential from 7% to 2%. Woodland area within built-small and medium towns constitutes 654 ha, compared to the built-in Chisinau city - 2472.4 ha or 69.2% of the total country.

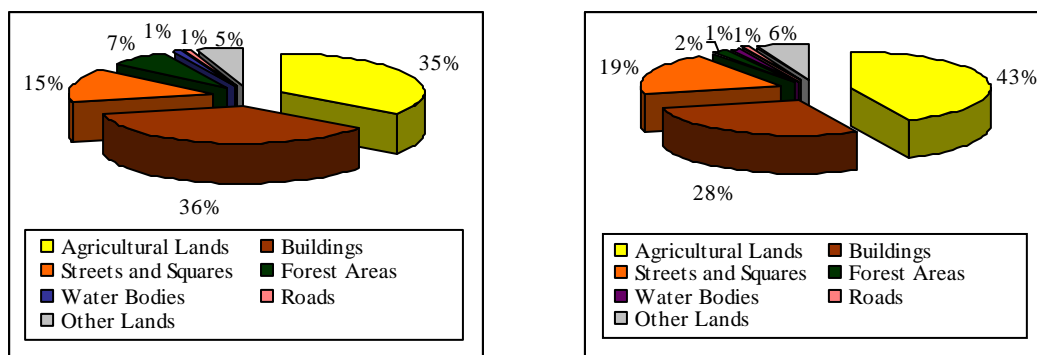


Figure 3. a. The functional structure of cities' built-up area at 01/01/2011; **b.** Urban built-up structure in small and medium towns at 01/01/2011.

The Republic urban built-up area of has a non-uniform spreading. In cities in the North focuses 25% of total surface area of the city. Share of that ranges from 3.4% of total in Costesti and up to 67% in Soroca. Intravillan has a high percentage in cities with industrial functions (Briceni, 40.8%, 42.5% Donduseni, Drochia, 48.1%) or in areas with a large area of the city (town Soroca - 1311.9 or 56%, Balti - 4143 ha or 53%). Small urban areas which have a pronounced agrarian character, built-percentage is much lower (Sangerei, 5.2%, 9.8 Rascani Soldanesti - 17.3%).

The Central Region concentrates 37.4% of the total built-up areas in the country. Averaged over the region, built-percentage constitutes 21.2% of total surface area of cities, ranging from 11.2% for Hancesti and up to 84.7% Cornești city. As a built-area of occupy small areas in cities in the area of Codri forest-Criuleni (11.4%), Nisporeni (12.7%), Straseni (16.9%). High values of built-ratio are recorded for cities Ungheni - 61.4% and Orhei - 47.7%, which have greatly expanded residential areas throughout the twentieth century.

South region is highlighted the lowest values both the size of built-up urban area (18.2%) and its share (9.9%). Built-Share ranges from 5.4% in Cimislia up to 57.4% in the Cantemir, as a result of pronounced agricultural economy. Even in the case cities of regional importance built-percentage is relatively low in spite its large areas, such as (890.72 ha - Cahul, or 26.1%; Căușeni 1246.2 ha, or 15%; Comrat - 993.2 ha, or 6.6%).

Territorial Unit of Transnistria concentrates 19.4% of the total built-up areas in the country, and its share in extent of any area constitutes 21.3%. The largest share of the built are recorded in Tighina 93.6% and the lowest in Dnestrovsc 8%. High values of ratio are recorded in small town's built-in functions are non-agricultural Camenca 50.8%, Ribnita 45.8% and Maiac 30.4%. The lowest values of the built are characteristic of cities with agricultural functions such as 6.4% - Slobozia and Grigoriopol - 10.9%.

4. Conclusions

Features of urban land use reveals a high degree of human activities impact on environment, following the enlargement of built-up areas in large cities and excessive land use near small urban settlements for agricultural purposes. Again confirms the predominance of agricultural lands, which still persist in many urban settlements, is closely related to local natural conditions, which requires a certain note of economic functions. Outside the built-up areas expanding on large cities through various spaces categories, of welfare and economic purpose and (construction and courts, roads, streets and squares) who had early formation urban agglomerations, and therefore withdrawal from agricultural of large areas of land was again present, especially for congestion Chisinau and nearby urban areas. Forest plantations and green spaces hold a modest share in importance in the structure of urban land. These types of landscapes have undergone changes in size surfaces as a result of extensive exploitation of the territory, when land under forest are considered essential in ecological stability of the environment and to create optimal living conditions. With this issue are facing cities in the Southern region of the country and nearest areas with high ecological risk (floods, landslides etc.).

As a result of these approaches would be necessary stricter monitoring and management in land usage near urban areas and to take measures to improve the current state by reducing anthropogenic pressure areas ecologically stable.

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