

INFORMATION SYSTEM OF THE REAL ESTATE CADASTRE IN THE REPUBLIC OF MOLDOVA

*Ion BOTNARENCO, PhD, Associate Professor, State Agrarian University of Moldova
i.botnarenco@uas.md*

Abstract: The Information System of the Real Estate Cadastre, which exists in the Republic of Moldova at present, was developed in early 1990s together with the process of launching for a reform of land relations. This is the period which is thought to be the peak of the economic crisis. The policy based on the state's land monopoly failed.

This study includes a detailed analysis of the cadastral process and the role of the information system of land cadastre as a key component of this process. Therefore, it is important to determine the objective of the cadastral process. There is no use to study the content of cadastre if you have no idea about the reasons the process occurs as well as fundamental social and economic problems that should be resolved in cadastre. It is also important to evaluate the multifunctional aspect of cadastre and its interaction with other processes in the society.

Having analyzed the cadastral process development in the Republic of Moldova and cadastral information systems of other countries, we suggest that our cadastre should be modified. The question "Which way should we choose?" becomes more and more relevant for the Republic of Moldova. Which direction would be closer to social and economic policies implemented in the Republic of Moldova? The fiscal policy has an important role in determining the cadastral model as it affects the economy as a whole.

Keywords: integrity, multifunctionality, cadastral model, information system, registration, protection of rights, evaluation, economic reform.

1. Social and economic importance of cadastre

1.1 Conception, the study period

The first activities of cadastre implementation go back to the eighteenth century. The lack of agricultural land for a majority of peasants caused social unrest and generated a reform of land relations and land cadastre as its important part. The first stage of cadastre implementation was completed in Bessarabia in 1940.

The second stage, known as the stage of agricultural land collectivization, began in 1940 and lasted until 1990. The second stage differs conceptually from the first one. It is characterized by nationalization of agricultural land and the state's land monopoly. At the beginning of the second stage there was blatant disregard of cadastre as an objective social process and at the end of this stage cadastre was recognized as an objective necessity.

The third stage can be characterized as a contemporary (current) stage. The historical analysis of the cadastral development, based on the events that occurred on the territory of the Republic of Moldova, demonstrates its social economic content. Cadastre becomes a basic component part among the most important social and economic events. [1] The integration of

cadastre in the process of solving social and economic problems creates pre-conditions for success.

1.2 Topic and subject of our study

This study is dedicated to the peculiarities of the relevant cadastre implementation in the Republic of Moldova, the content, essence and consecutiveness of the actions that are taken, object diversity, etc.

Both the topic and the subject of our study at the initial stage of cadastre implementation are neither more or less than a derivative of the land relations reform carried out in the Republic of Moldova. The essence of land relations reform results from the right to possess land. There was no private ownership of land before the land relations reform, which was initiated in the Republic of Moldova in 1992. Since 1992 the Land Code (Law No. 828 of December 25, 1991) declared the right of private ownership of land.

The topic of our study will answer the question: "What is the role of land property right in the development of the cadastral process?" Therefore, we consider it is necessary to protect property rights as an objective necessity and a mechanism to protect rights. We can obviously protect rights if we know the subject-matter of rights in detail, in our case it is the subject-matter of our study - the land fund along with structures, installations and facilities situated on the land.

The Republic of Moldova is an agricultural country and the implemented cadastre will be focused on agricultural land. The analysis of cadastre implementation in the period described in the study proves that cadastre cannot be implemented without a strong link with the concept of the country's economic development or, to be more precise, with the fiscal policy applied along with other policies. The interaction of cadastre and economy as a whole seem to be successful for the country's social and economic development. [2]

1.3 The purpose of the study, materials and methods applied

We studied the period from 1992 until present (25 years). During this time period the development of cadastre was constantly motivated by the need for fundamental changes in social and economic objectives. Cadastre used to immediately react to social and economic changes.

The aim of this study is to analyze in detail the development of cadastre in the Republic of Moldova since 1992 until present. The period of cadastral development in the Republic of Moldova is relatively short, but at the same time it is long enough to determine and argue different steps and sub-steps of the society development, as well as the sub-steps of cadastral development in order to be aware of their impact on the society, to argue the direction of development and cadastre models that are applied.

Therefore, it is necessary to argue the objectivity (need) of cadastral models and their peculiarities. One of the most important challenges the cadastre of the Republic of Moldova faces today is the development of a model that is to be applied. It is obvious that the model selection cannot be subjective; it is the continuation of the country's economic vector.

The implementation of cadastre in the Republic of Moldova cannot be done in isolation from the world practice. Therefore, the aim of this study is to contrast the cadastral process that takes place in the Republic of Moldova with practices of more experienced EU countries, which have different cadastral vectors. [1] So, the following information materials were used:

- scientific studies on the cadastral process in the Republic of Moldova;

- annual and regular information about cadastre in EU countries;
- yearbooks of the Agency for Land Relations and Cadastre, as well as the Registry of Real Property of the State Enterprise "Cadastru";
- annual and regular information of the National Bureau of Statistics of the Republic of Moldova and other EU countries;
- other information and scientific studies on the implementation of the real estate cadastre in the Republic of Moldova and other countries.

The author applied many scientific methods in his study. The most important are the following: the analysis of statistics; the graphical analysis of trends; the systemic analysis of processes (phenomena) in progress; the method of analysis and synthesis; the analysis of the historical development of processes and phenomena, etc.

2. Cadastral process in the Republic of Moldova

The need to initiate cadastre on the territory of the Republic of Moldova has been demonstrated several times. Cadastral activities were motivated by the land relations reform in all these cases. The main purpose of cadastral activities was land property relations and rights of ownership.

The current stage of the cadastral process, which began in 1990-1992 was motivated by the state's monopoly of land ownership. This period as compared to the current period is an opposite extreme. Interest as an economic category reappeared in this period; there were established new forms of work organization, based on the personal interest and final results (the yield that was received) in the production process.

There appeared a conviction that the social and economic crisis which had covered the whole socialist system could be overcome only by means of an economic relations reform. In the agriculture sector it is the land relations reform and implementation of private ownership of land.

2.1 Privatization of agricultural lands. Land relations reform

The privatization of agricultural lands was a further development of other important forms at the corresponding stage of land activities in the Republic of Moldova. The first stage - internal economic management - was based on the workers' full responsibility to care for their field crops. It could be either a family, or a team, or a brigade. Salary payments depended entirely on the final result and harvested crop.

This form of work organization revealed interest and positive results. In a short period of time it was transferred into lease relations. The lessee was fully responsible for land activities, plant care, harvesting crops, etc. Any agricultural enterprise fulfilled the role of an owner.

Lease payments were made in nature. Previous stages increasingly showed that in the nearest future there will be taken the next step in the development of land relations - allotment of land.

The Land Code, adopted in December 1991, declared private ownership of land. Since then a new stage of land relations began in the Republic of Moldova. It is obvious that land privatization was just an element of the economic (land) reform as a whole. However, regarding cadastre, land privatization, including privatization of agricultural lands, can be viewed as the first stage of cadastre implementation in the country.

Acquisition of rights. Land privatization was carried out, applying *the share of equivalent land*. Rights were acquired "according to the law by means of an administrative act". The Law (the Land Code) described in detail the categories of citizens who had a right to share land plots. The administrative act (the decision of the local council) included lists of people and the size of land share which they were entitled to.

Two important things were implemented in the process of acquiring the right:

- there were established land privatization funds for each community in the country;
- each community developed lists of people, who, according to the Land Code, had the right for an equivalent land share.

Each community calculated the size of land plots in accordance with the following:

$$k = F: N$$

Where:

k – an equivalent land share

F – a land fund subject to privatization in each community

N – the number of local citizens who have the right to share land plots.

The equivalent aspect of the land share depends on the average fertility of agricultural land in the community as a whole. The right to land was considered to be acquired based on the provisional certificate awarded by the Land Committee established within the community.

Measurement of land ownership. Protection of the right size and location. The process of land measurement is mandatory within land cadastre and our life proved this fact. The stage of acquisition of rights finished with a provisional certificate on a share of equivalent land. The certificate holder will not be able to realize any right to land if there are no land measurements.

The identification of the right to land as well as the establishment of property boundaries may guarantee the rights concerning the size of the plot. In other words, measurements guarantee the size. Therefore, rights require protection by means of both size and content. The protection of the size and its position in nature are achieved by measurements.

The sequence of measuring activities and the location of the right were the following:

- determining the real extent of the right of ownership, depending on the fertility degree of a land plot;
- developing a project of plot location (land organisation) in nature;
- approving the project of land organisation by a local authority;
- determining the location of each land sector in nature (a plan, a project, nature);
- establishing land boundaries outdoors.

The identification of a land plot is done depending on the degree of actual fertility. The equivalence principle implies that if the fertility of a land plot is less than the average fertility in the community, the total area should be larger. The balance between the surface and fertility should equal the average value in the community. [4]

The size of most shares of equivalent land was and it still remains to be small. The shares range from 0.8 ha up to 5-6 hectares (depending on the community) for an owner in the Republic of Moldova. Therefore, the project of land organization played an important role in the process of plot location. Erosion control, as well as many other things was observed within the project.

Each owner has chosen a land site by drawing lots. It should be noted that there were made significant errors in the process of developing and implementing projects of land

organization, which have not been rectified yet. The committed errors are of different content. This fact decreases the credibility of protective measures based on land measurements.

Protection. We found out that the main protection of the site and the right size are based on measurements. The content of the right (private, public, possession, usefulness, servitude, lease, etc.) can be protected only through the process of land registration. Land registration as a mechanism of rights protection is applied since the most ancient times, since the appearance of law as a social category.

Land registration. It is obvious that the registration process was not applied at initial stages of civilization development only because of the intention to protect the right of ownership. Two social interests are included in the content of the registration process:

- protection of property rights;
- birth of the fiscal policy.

There appeared two types of boundaries, as soon as the property borders were established:

- established by means of fixed borders in nature;
- legalized on the basis of the land organisation plan without establishing borders in nature.

Land registration is a complicated process that mandatory includes the following:

- Land Registry;
- Cadastral plan of land.

The Information System of real estate cadastre is established along with the registration of land and it includes:

- acquiring the right to land;
- measuring the limits (borders) of the spatial arrangement of the right to land;
- registering the right to the land with determined borders.

Once we reached the registration process and stated the implementation of cadastre through acquisition, measurement and registration of rights, we state the emergence of other important elements - components of cadastre: primary and current registration; mandatory and voluntary registration; massive and selective registration, evaluation and fiscal, investment and subsidized policies, crediting, etc.

All these will establish peculiarities of cadastre, specific models, which determine the economic development of the country in the future. Registration, fiscal policy and land evaluation have a common beginning. The fiscal policy in most cases is based on the value of real estate or the property's capacity to generate income. Whatever fiscal policy is chosen, there is a mandatory condition for both directions - massive land registration which is then accompanied by massive assessment. [3]

Fiscal policy and real estate valuation. Currently the Government of the Republic of Moldova establishes its fiscal policy so that real property is taxed according to its market value. It should be noted that until now there have been carried out important activities required to implement such a fiscal policy. Every immovable property must be registered in the Republic of Moldova. Except agricultural land, all real estate properties have been evaluated on a large scale for tax purposes. The fiscal policy based on the market value of immovable property has been approved for different categories of goods for many years. They have developed some methodological and practical activities, oriented to the massive evaluation of agricultural lands.

3. The information system of cadastre in the Republic of Moldova

The purpose. Based on a relatively short period of time, we realized that the purpose of cadastre depends on the stage. The initial stage is dedicated to the right, the next one – to some measurements, and then it is important to register the rights identified in nature. The main purpose remains the same - to protect rights and computerization of the society. This link – acquisition of rights, determination of the limits of the right in nature, textual and spatial registration of the title - demonstrates the limits of the first stage of cadastre.

Currently the Ministry of Finance of the Republic of Moldova moves to the fiscal policy, based on the market value of real property. It is obvious that this fiscal policy implies special requirements to two important aspects of cadastre: compulsory registration of real estate and massive evaluation of real estate for tax purposes.

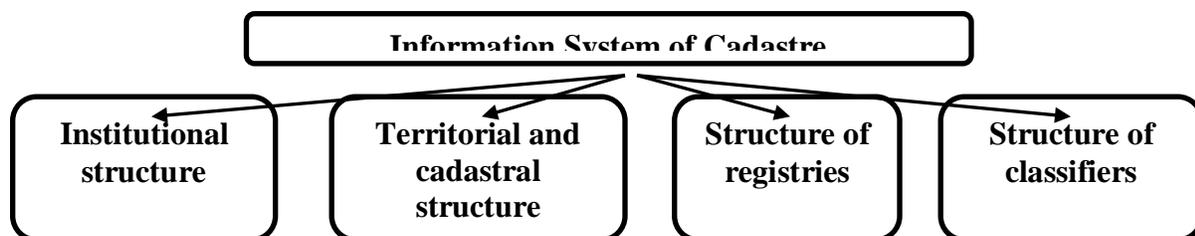


Figure 1. The information system of cadastre

The source: developed by the author

These two pre-conditions demonstrate that there is a strong link between the first and the second stages of cadastre. In other words, at the initial (first) stage it is necessary to know the peculiarities of economic policies that will follow, especially the peculiarities of fiscal policies. It is impossible to implement the fiscal policy, based on the market value of real estate without mandatory registration of immovable property.

3.1 Structure of the Information System of cadastre in the Republic of Moldova

The institutional structure. The state's role in the process of cadastre implementation is paramount. The state's interest is major. Therefore, successful implementation of cadastre in the country greatly depends on the policies developed and implemented by the central public authority in the field of cadastre – the Agency for Land Relations and Cadastre.

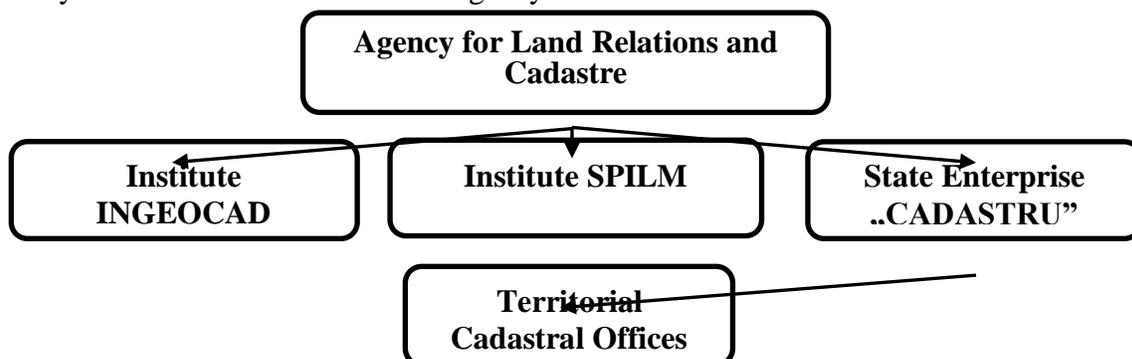


Figure 2. The institutional structure of the information system of cadastre in the Republic of Moldova, The source: developed by the author

The following institutions report to the Agency for Land Relations and Cadastre: Institute INGEOCAD in the field of geodesy, cartography, topography and photogrammetry; the State Planning Institute for Land Management (SPILM); the State Enterprise "Cadastru"; Territorial Cadastral Offices.

Territorial cadastral offices are subordinated to the State Enterprise "CADASTRU" from the methodological point of view. The Department that regulates land relations is under the double ferule of the Agency for Land Relations and Cadastre and district councils, which are responsible for the regulation of land relations.

Private companies licensed by the Agency for Land Relations and Cadastre play an important role in implementation of cadastral activities.

The cadastral territorial structure. The cadastral number (code) is the data carrier in the Information System of cadastre. This cadastral number assigns a unique address (cadastral code) to each land plot in the Republic of Moldova. Quantitative, qualitative, legal, economic, etc. diversity about each item is accumulated by means of this cadastral code. Therefore, the territory of the Republic of Moldova is divided into the following cadastral units: cadastral districts; cadastral zones; land masses; cadastral sectors; land plots.

The land plot is the smallest unit within the cadastral territorial structure. The land plot is the smallest unit in the cadastral registry of immovable property. Each land plot is assigned its unique number (code). [3]

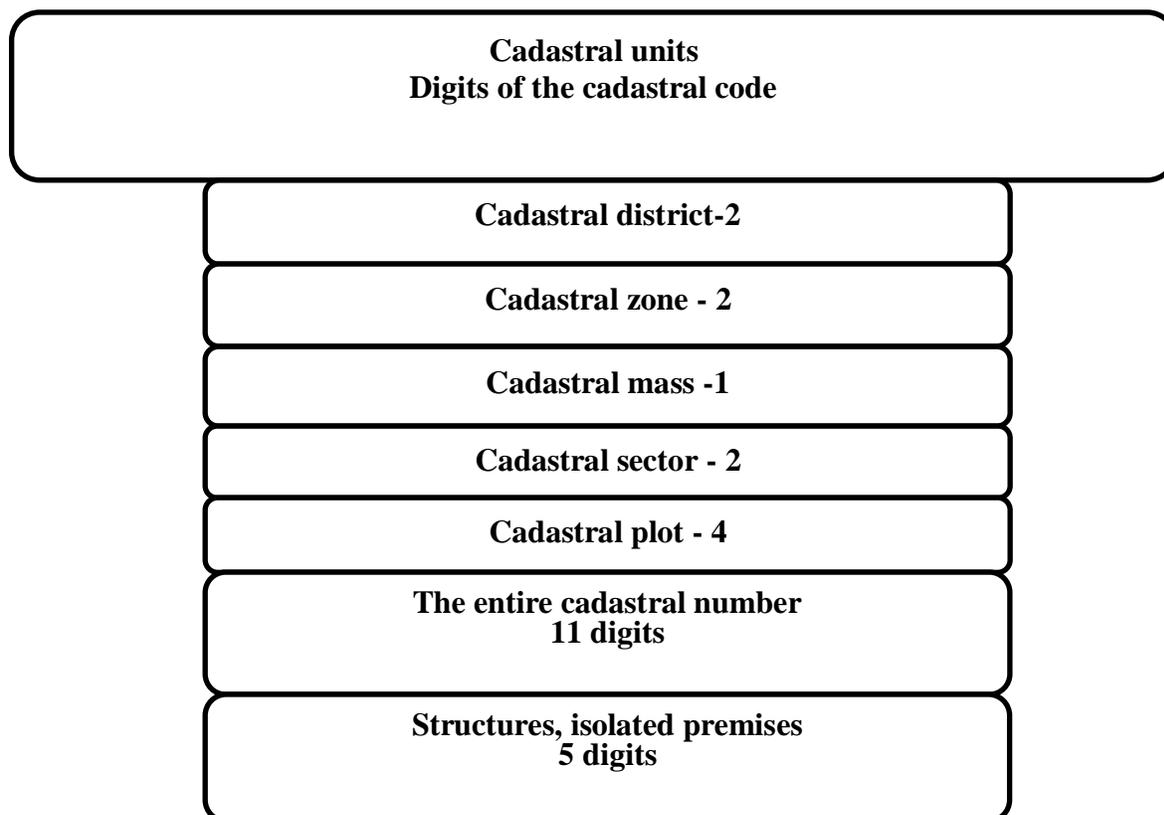


Figure 3. The territorial cadastral structure
The source: developed by the author

The social necessity makes us to include other elements of real property within one registration number, one land plot, and namely: structures for various purposes, apartments and other isolated premises. Therefore, there are reserved some other cadastral numbers for structures, isolated premises, etc. within one land plot. The cadastral number is structured in accordance with Figure 2 in order to assign a unique content.

The structure of registries. The registry is the core element of any information system. The Information System of cadastre of the Republic of Moldova includes the following registries: the Registry of real estate and the Registry of administrative and territorial units – these are the registries of the streets from towns on the territory of the Republic of Moldova.

The Registry of real estate serves specialized cadastres, providing information for agricultural, water and forest cadastres. It should be noted that the agricultural registry is the most advanced among all these registries. The Registry of vineyards has been already established, being approved by Government Decision No. 282 of March 11, 2016. The Horticultural Registry is being developed at the moment. The Registry of field crops is being established now. The Agency for Payments and Interventions successfully uses the Registry of parcels and the Registry of farmers. This registry is called the Registry of holders in the Republic of Moldova.

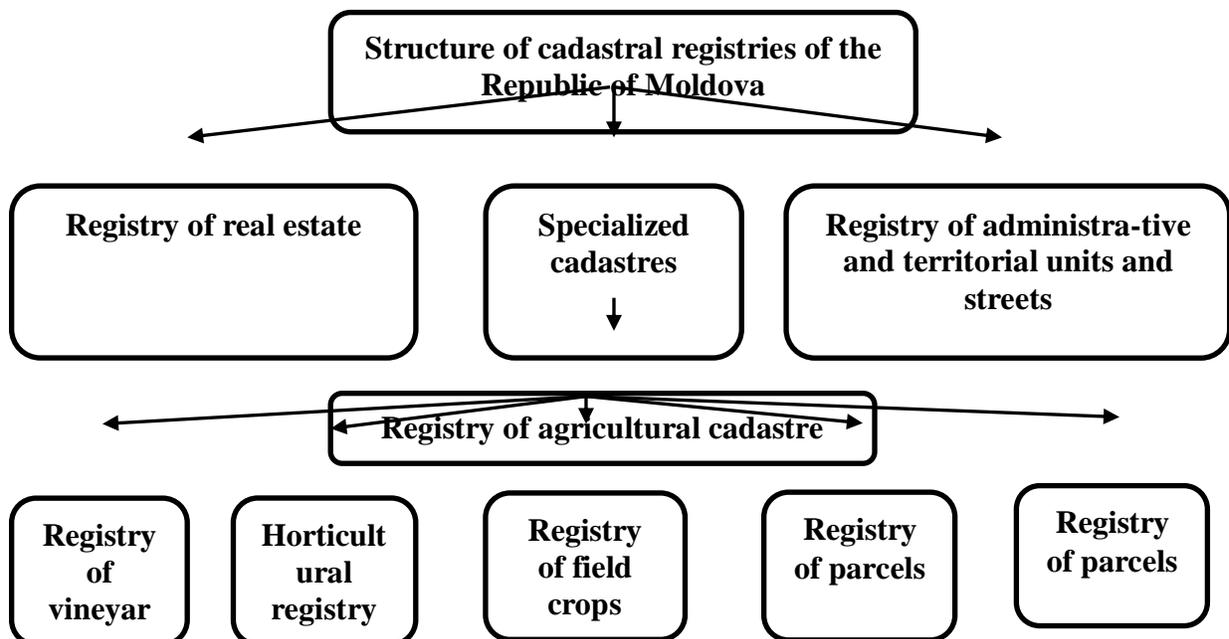


Figure 4. The structure of registries
The source: developed by the author

The structure of classifiers. The structure of classifiers plays an important role in the Information System. Classifiers within the registry are the mechanism, which helps to analyze the information that is gathered. The registry and the Information System as a whole will not achieve their purpose unless they include a complex system of classifiers. This is proved by the existence of the Information System of the Republic of Moldova. We cannot even analyze the categories of land plots and real estate destinations without the corresponding system of classifiers.

4. Cadastre of the Republic of Moldova

Multifunctionality of cadastre. At present cadastre is widely considered to be multifunctional. What does the multifunctionality of cadastre imply? What are the characteristics and the role of an information system in modern cadastre? Cadastre increasingly faces the question: "What is going to be the content of cadastre in the future?"

Therefore, some specific questions are addressed to the content of the Information System within a multifunctional cadastre. [6]

The right. The issue of acquiring rights to property becomes more and more pronounced. The title becomes a source of various interests: social, economic, environmental, etc. interests; they are limited in space. Protection of titles and interests of both individuals and legal entities becomes a relevant problem of the social character.

Cadastral measurements. This component part of cadastre starts with the protection of rights to land and registration of property, and then spreads among all its components: evaluation, administration, etc.

The right, as a social category, continues to develop, people's interest in the content of the right increases and there appear many questions regarding the measurement methodology. The 3D issue is an example that shows that in the nearest future we will have to reconsider the concept of ownership, in the light of measurements as well.

Land registration. Registration is the end of the first stage of cadastre. However, registration of land (real estate) increasingly turns into a process with its own content within the multifunctional integration of cadastre. Efficiency, quality of the land (real estate) registration process increasingly turns into the economic and social content. Successful registration process guarantees the protection of rights, implementation of economic policies, etc.

Land evaluation. Modern economy is multilateral, being based on the value of real property. The implementation of the fiscal policy based on the market value of real estate, mortgage, investment and subsidize policies – all these are based on land (real estate) valuation.

Evaluation of agricultural land is at its initial stage in the Republic of Moldova, regardless of the actions that have been taken. The process of massive evaluation of agricultural lands for tax purposes is quite complicated. Nevertheless, the fiscal policy promoted by the Ministry of Finance is aimed at overcoming all the obstacles. State Budget 2016 stipulates the use of the fiscal policy potential, based on the real estate value.

Land (real estate) management. The reforms promoted so far groundlessly ignored an important issue such as the development of the management process, based on the real estate cadastre. [5] Land management is of great significance, as responsibilities are divided between central and local authorities. Thus, there appears a pressing problem of our society - protection of limited natural resources in the sustainable development of our economy.

5. Conclusions

1. The acquisition of the right of ownership to land was the first action within the cadastral process initiated in 1992 and an important component of the land reform in the Republic of Moldova. Agricultural lands were acquired under the law by means of an administrative act (the decision of local authorities). "Provisional certificate" was the first document, dedicated to the right to land.

2. Land measurements carried out to identify the right to land in nature was the second action within the cadastral process. The provisional certificate was replaced by the Authentication Title of the land owner's rights as a result of terrestrial measurements. Each Authentication Title corresponds to an equivalent in nature with the spatial location that is known or liable to be known.

3. The third action within the cadastral process was the registration of the right of ownership to land. The main purpose of land registration was to develop a mechanism to protect rights to land (real property as a whole). Moreover, the registration process along with the protection of rights created favourable conditions for the development of both market economy relations and land market. Land registration had a massive, mandatory character in the Republic of Moldova.

4. The fourth action within the cadastral process refers to land valuation, valuation of the real estate as a whole. The need to evaluate land is primarily sought by the land market. However, the evaluation process is required by the mortgage policy in order to protect it. The need to evaluate land becomes obvious in subsidized and investment processes. At present the process of massive evaluation is the most popular, as it is aimed at implementing the fiscal policy, based on the market value of real estate.

5. Based on the information mentioned above, we can make a conclusion that all stages of cadastre are interdependent and integral. Thus, if they had not imposed acquisition, measurements and massive registration of rights at the first stages in the Republic of Moldova, at present (the fourth stage) there would not be possible to implement the fiscal policy, based on the general taxation of real property at its market price.

6. Finally, we can state that the Republic of Moldova has chosen the cadastre based on the mandatory registration and evaluation of property as a model, which will be the basis for the subsequent implementation of economic policies.

References

1. Botnarenco I., *Cadastru bunurilor imobile în Republica Moldova. Chişinău. Pontos. 2012. ISBN 978-9975-51-400-2.*
2. Botnarenco I., *Valoarea terenurilor–oglininda economiei. Iaşi. Simpozion ştiinţific internaţional GEOMAT 2013. Culegeri de lucrări ştiinţifice, 2013. P.13 ISBN 978-606-685-243-2*
3. *LAND REGISTRATION FOR THE TWENTY – FIRST CENTURY.A Conveyancing Revolution. www.lowcom.gov.uk/wp-content/uploads/2015/04/Lc271.pdf (vizitat 02.2016).*
4. Mircea Miclea. *Cadastru şi cartea funciară. Bucureşti: „ALL” 1995. 360 p. ISBN 973-571-110-9.*
5. *The Austrian Model for Cadastral And Land Registry. www.ie.unimeeb.edu.au/... / (vizitat 30.07.2015).*
6. Stig Enemark., Hans Sevatal. *Proprietatea funciară şi infrastructuri sociale cadastrale pentru dezvoltarea durabilă. Conferinţa ONU. Melbourne, Australia, 25-27 octombrie 1999.*