

Institutional Arrangements: A Gate Towards Sustainable Land Use

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***Abstract.** Various common problems can be observed of the ongoing land management processes in Central and Eastern European (CEE) countries. The problems appear mainly because of conflicting legislation, performance of procedures, political unwillingness, lack of capacity of the local municipalities and other public administration, insufficiency of information and people participation, lack of skills of the professionals and in public administration. Source of all the mentioned problems is insufficient understanding of the institutional setting of the land management processes.*

The aim of this contribution is to introduce the reader to the theory of the institutional economics and discuss its importance for systematisation of both the regulatory framework, i.e. institutions – ‘rules of the game’ and the procedures in the fields of territorial planning and real property formation. This theory provides a vocabulary to describe the balance between the regulatory structures (public sector) and the market forces (private sector) that will allow controlled growth and will be perceived as of general economic and social well being to the populace. Thus, the paper is intended to activate and urge politicians, governmental authorities, non-governmental organizations, academic staff and managers of private firms. This contribution also can be seen as a source for further development of concepts for analysis of the observed problems. Hence combining the theory with appropriate methodology may suggest, how to deal with the stated various problems.

Monographic descriptive method and logical analysis have been used in this contribution.

Keywords: *institutional economics, institutional arrangement, land management, land administration, land use efficiency, cooperation and coordination, regulatory framework, public participation*

1 Introduction

“During the last fifty years, the countries of central and eastern Europe (CEE) have experienced two profound changes in the dominant political ideology – a transition to a socialist command style economy during the early 1950’s, followed by a transition back to a market economy in the years following 1989. The socialist years had a significant impact on the socio-economic and legal framework” (Dale and Baldwin 1998). The results of the study carried out during 1997-1998 and described by above mentioned authors show how the economies are developing through the prism of existing institutions in the countries of transition.

The land management domain is underspecified from a theoretical point of view. Therefore, land management needs development of appropriate theoretical basis. It is assumed that a potential source is institutional economics and its branch – new institutional economics.

The economics of real property rights has been explored by many researchers such as Alchian (1965), Cheung (1968), Barzel (1989) and others. To organize various strands of the new institutional economics it is useful to begin with distinction between both terms the ‘institutional environment’ and ‘institutional arrangements’. The situation found in the mid-90s is re-analysed from the perspective of theories of institutions, focusing on the legal and administrative framework, rule of law, and civil society by North (1990; 1994) and De Soto (2000).

In the beginning of 90’s, by ‘socialistic legacy’ – cast of mind, traditions, management structures, skills etc, various CEE countries started the land reforms to reorganize the legal, economic and social relations of the land. In fact, the land reform in each country was supported by specific land policy, which was implemented through laws and regulations to fulfil specific goals and objectives.

It can be observed generally that previous ownership rights were restituted and the State property privatised during land reforms in CEE countries. Although a lot of work has been done up till now – roughly the land was distributed through decision-making, field surveying, registrations, enforcement of rights, plenty of mistakes can be identified. Often the land has been distributed without economic substantiation and correct legal solutions. In some countries the process of territorial planning lagged the results of the land reform, and the land-use planning did not include planned land reorganization and land consolidation measures during land reform. Particular examples of land tenure development and legal provisions has been described and analysed by Auzins (2003) in Latvia.

This contribution argues that the people involved into land management activities should pay more attention to new institutional economics.

2 Theoretical foundation

Institutional economics refers to the branch of economics, which stresses the importance of institutions in determining how economies really work (Black 2002). Thus, practised norms of land ownership are important in economic development.

For instance, the lack of clearly defined and enforced property rights is proving a handicap in the transformation from planned to market economies in Eastern Europe. This should not exclude the analysis of social-economic influences on institutions itself. It is assumed that trying to model economies without taking into account these influences may lead to serious mistakes.

2.1 Basic concepts (on link between institutions and wealth)

The economics of institutions employs the term *property rights* in a general sense (which differs from its role in legal doctrine) to define the rights of an actor to use valuable assets (Alchian 1977). The property rights of an actor are embodied both in *formal rules* and in *social norms and customs*, and their economic relevance depends on how well the property rights are recognized and enforced by other members of society. It is important to note that the ability (power) of an actor to use valuable resources derives both from *external* and *internal control*. External control depends on the property rights of an actor or, in other words, on how his/her institutional environment – constitutions, statutes, regulations, norms, enforcement, and sanctions – constrains and directs both the actor in question and outsiders. Internal control is established by the actors themselves through various investments aimed at gaining control over scarce resources, involving monitoring, fencing, hiring private guards, checking reputations, and other measures (Alston *et al.* 1996).

Transaction cost economics is an approach to the economic explanation of institutions (Black 2002). This considers the relative merits of conducting transactions within organizations and between different actors (organizations) using markets. It takes account of bounded rationality, information problems, the costs of negotiating contracts, and opportunism.

The term *transaction costs* refers to an actor's opportunity cost of establishing and maintaining internal control of resources. Transaction costs, the costs of measurement and enforcement, are incurred to protect values both in voluntary exchange and against involuntary exchange, such as theft (Alston *et al.* 1996). There can be explored 'trade-off between enforcement benefits and consent costs' according to the interesting contribution written by Arrunada (2001), but this is another matter for additional investigations.

Institutions are the rules of the game in a society or, more formally, are the humanly devised *constraints* that shape human interaction. Institutions are established to reduce uncertainty by providing a structure to everyday life. According to North's study a crucial distinction is made between institutions and organizations. Like institutions, organizations provide a structure to human interaction. Indeed, when we examine the costs that arise as a consequence of the institutional framework, we see they are a result not only of that framework, but also of the organizations that have developed in consequence of that framework (North 1990).

Term *organization* refers to a set of actors (groups of individuals) who

cooperate or act jointly by some common purpose to achieve objectives. Organizations include political bodies (political party, the parliament, a municipal council, a regulatory agency), economic bodies (firm, family farm, cooperatives), social bodies (an association, NGO, church), and educational bodies (school, university, a training centre).

2.2 New institutional economics

New institutional economics (NIE) is an interdisciplinary enterprise combining economics, law, organizational theory, political science, sociology and anthropology to understand the institutions of social, political and commercial life. Its goal is to explain what institutions are, how they arise, what purposes they serve, how they change and how – if at all – they should be reformed (Klein 1999).

Institutional environment refers to the background constraints or ‘rules of the game’ that guide individuals’ behaviour, and it forms the framework in which human action takes place.

Institutional arrangements, by contrast, are specific guidelines what Williamson (1975) who originated the term ‘new institutional economics’ calls ‘governance structures’ that are designed by partners to mediate particular economic relationships. Business firms, long-term contracts, public bureaucracies, non-profit organizations and other contractual agreements are examples of institutional arrangements. The study of governance is more prosaic than the study of the institutional environment (Klein 1999). Mundane questions of whether to make or buy particular maps to be used as background information for making territorial planning or whether to organize the land planning offices at each local municipality or more centralized are ones that arise at the governance level.

The fundamental theoretical problem underlying the question of *cooperation* is the manner by which individuals attain knowledge of each other’s preferences and likely behaviour. Moreover, the problem is one of common knowledge, since each individual is required not only to have information about others preferences, but also to know that the others have knowledge about its own preferences and strategies (Schofield 1985). Since an organisation associates group of individuals, it is assumed that the issues of cooperation are important to stress on both inside the one organisation and among various organisations. As institutions are both formal and informal rules of the game in a society that must be enforceable, it is necessary to have a mechanism how these rules can be enforced. Here appears need to make people cooperate. Cooperation in common with organisation of the mundane work and execution of the bounded functions of an organization has meaningful place when we are talking about institutional arrangements leading to the efficiency issues.

3 Efficient land management and land administration

Land is considered for continuous redistribution among various bodies, and so

as ownership on the one hand and as object of the specific purpose of use on the other.

Land management means a process by which the resources of land are put to good effect. Accordingly, *Land administration* refers to the processes of capturing, maintaining and disseminating information about the ownership, value and use of land and its associated resources. Thus, land administration system has to provide a wide range of society with access to relevant real property data and to take charge of actualisation and security of these data. Land management involves the implementation of fundamental policy decisions about the nature and extent of investments in the land. From an institutional perspective, land management includes the formulation of land policy, the legal framework, resource management, institutional arrangements, and land information management. It entails both governmental and private initiatives (UN ECE 1996).

The key issue in land management is the *harmonization* of the relationship between both the individuals and the land. Therefore, two dimensions – rights in land and utilization of the land can be seen, from which arise economic and social aspects. Also two subjects can be identified when dealing with land management and land administration matters – public (governmental) sector and private sector. Different from above in chapter ‘theoretical foundation’ mentioned, three sets of actors play meaningful roles operating the land management procedures – politicians (decision makers), professionals and society (participatories).

It is generally accepted that the State must have a dominant role in setting up and operating land management and land administration systems, because the *public sector* – the governmental organisations and municipalities is responsible for wealth of the society on the whole. However, the influence and extent of involvement of the private sector differs among the countries.

For the purpose of the following analysis, it is assumed that the administration and control of various processes like land-use planning, cadastre and land registration etc. is within the domain of the public sector while a various amount of responsibilities can be delegated to the private sector. Thus, the State may operate a legal process of the land management using governmental authorities with little input from the private sector. In many countries, however, private licensed (delegated) professionals perform various duties.

Land-use planning is concerned with both the formation of new units of real properties and the readjustment of the existing ones involving changes in both the purposes of their use and their spatial structure. Economically, land-use planning is justified in terms of land consolidation, definition of ‘best use’, territorial readjustments (land reorganization) or imposition of restrictions. Therefore, land-use planning is enforced to increase the utility and the market value of the land as real property.

For the assessing the *efficiency* of the land management and land administration systems, the responsible authorities must address a number of major issues, such as: intergovernmental coordination, centralization/decentralization,

the roles of the public and private sectors, mechanisms to ensure that user needs are met, management of the particular organizations, relevant information and human resources, education, training and research, and international cooperation. By coordinating the main relative activities, responsible authorities can avoid the duplication of effort and develop an integrated policy. Through that, they can have a clear picture of all land management issues and they can jointly focus towards considering 'best practice', resolving the problems and applying good land administration, which would promote an active land market and efficient land use.

The *efficiency of land use* is determined on the basis of economics and may vary with different types of ownership and specific purposes of land use. However, different aspects of land management involve: economic, legal, ecological, social efficiencies (Kaing 2003). Generally, the land use can be considered as efficient if society (people) receive possible maximum yield from real property.

Land-use planning and efficiency measures take place because of limited land resources and the need for increasing the efficiency of the economic land use.

4 Unarranged institutions: main reasons and consequences observing CEE countries

The land administration functions established in the transition economies have concentrated on the re-establishment of the necessary legal framework, the establishment of a services (land information management) network and the registration of title to land property, as well as the support for the property privatisation, restitution and compensation for previous ownership or similar programmes, which differs among CEE countries. In some cases it is recognised that the institutional arrangements may not be optimal for efficient land management and land administration systems, and in other areas it is clear that the organisations face significant problems in introducing modern technologies that are also constantly changing besides to rapid movement of transition process.

The comparative study into land markets in CEE countries was carried out during 1997-1998 and described by Dale and Baldwin (1998). It examined progress in six countries en route from a command driven economy to a market based economy that is compatible with the requirements of the membership of the EU. The investigation involved detailed case studies in the Czech Republic, Hungary, Latvia, Poland, Slovakia, Slovenia and sought those elements that are necessary for an efficient land market (Dale and Baldwin 1998). The overall assessment of the land market indicators of these countries reflected data about the following sectors of land market: policy framework (legal basis), market assessment (actors, commodity, financial instruments), and three pillars - land registration and cadastre, market based land valuation, financial services. Observing the transitional curve from command economy driven by reforms to market economy driven by harmonization for the case study countries can

be concluded that the way is just, roughly, near to half. Why the processes are developing so slow, what are the reasons for that? Who has to take the initiative and appropriate responsibilities?

Land and property ownership has long been identified as a prerequisite for economic development, but De Soto (2000) has given vivid flash to that theory in his fastidious and attractive book 'The Mystery of Capital'. Broadly, he argues that with the problem identified, the solution - creating proper national legal system as in the West – is a matter of political will. Thus the central question arises – why capitalism triumphs in the West and fails everywhere else?

The main reasons for the lack of expedient and deliberative cooperation and coordination among various stakeholders in land management are rather common in CEE countries. Those reasons relatively can be separated regarding its character, but they have interrelated influence:

- *political issues* (insecure environment for investments, unwillingness of the politicians, different priorities and interests, “socialistic legacy” – cast of mind, traditions)
- *legal issues* (lack of the executive mechanism, contradictory legislative norms)
- *Organizational issues* (inefficient public administrations and performance of their functions, duplication of the responsibilities, lack of knowledge, skills and awareness, meagre information)
- *financial issues* (deficient of finances, inappropriate selection of the priorities, unavailable credit resources)
- *technical issues* (shortage of technologies, incompatible methods, software and data sets).

Regarding to the above stated, it can be identified that the results of the land reforms according to its aims and goals to a great extent have overtaken the development of the territorial planning systems, and thus, the interrelation between land distribution and sustainable planning is very weak.

Mainly in rural areas where the land is not properly used or unused at all, access to the land, or in other words - the provision for economic land use becomes more important than the enforcement of the real property rights on that land. The market forces initiate a detail planning and in this respect high-pressure public authorities broadly, but it is clear long before that the market mechanism alone – without dominance of public sector – cannot generate the capital assets.

Observing the official data of the land registries, it can be identified that a very small percentage of lands is in ownership of the public sector comparing with the lands registered, and so belonging to the private sector in some CEE countries. It indicates on the fact that public authorities do not hurry to enforce the real property rights to specific areas of land. In addition, there can be burdened the possibilities to develop certain areas, if the public sector does not have enough reserved resources of land.

Several extended case studies and strategy papers on land fragmentation and land consolidation in CEE countries recently have been prepared by FAO in cooperation with GTZ and presented in conference, which took place in Technical University of Munich (2002).

Thus, it is identified that the consequences of the unfinished land allotments and consolidations have a serious impact on the preparations of investment aims and on the development of cities and villages in Czech Republic. It complicates regional planning and the construction process, and could be an obstacle for the flow of foreign investments into country. It also creates problems for the tax offices during tax collection from real estate and complicates the selling (distribution) of State land (untitled).

Land sale-purchase market has become operating under a legal framework since 1998 in Romania. The share of households that had land transactions is low, less than 1% of the total agricultural land area while the transacted land areas are small – 1.26 ha on average. It must be mentioned that land transactions have not taken place in all the localities of the country – in 1516 of the total 2686 communes in Romania.

The present transition state of agriculture and forestry in Bulgaria is not yet favourable for systematic land consolidation, despite the vast problems posed by fragmentation. Public attitude, land policies, the legislative framework, land administration reform, the lack of planning experience and the unstable structure of farming enterprises are not conducive to classical consolidation schemes involving the rearrangement of ownership rights. On the other hand, some practical solutions for the fragmentation issues have emerged that may well function within the present framework, relying more on the leasing market and driven by purely economic motives. These need special attention and timely support in order to achieve better results and to sustain the structural reform of farming enterprises (TU Munich 2002).

As a result of the real property privatisation and restitution of the previous ownership there is 'divided' ownership in Latvia. Therefore, it is possible that different persons own a land parcel, a building on this land parcel, and a flat within this building. Up till the last stage of the land reform, which is not concluded yet, there is no special law that would regulate matters of such divided real property in Latvia (Auzins 2003). During the land reform dealing with the three different real property types without even law on cadastre, not saying about missing regulations on real property formation procedures, but with rather well developed cadastral system the Latvian situation is regarded to be complex (Auzins 2003).

Unclear picture regarding to appropriate terminology resources and its proper use can be identified as well. The specific glossary of terms in the field of land management and administration should provide the people related to the field with unitary understanding about use of particular term in accordance with the appropriate context, traditions and received practice. Before developing such a terminology resources, it is usable to organise expertise, exchange of experiences

(also internationally driven), investigation of existing glossaries and dictionaries (databases), legislative acts and other materials (Auzins 2003).

5 Methodological considerations

The present contribution may be seen as source for working out the concepts for analysis of the observed problems. Hence combining the theory with appropriate methodology leads to the findings how to deal with the stated various problems. Therefore, the main effort of the exploration is to describe, in an objective, way, the land management process, that is: routine, ongoing activities, implications of social-economic and legal nature. The complexity of sustainability and diversity of various fields of activities that refer to land use in different countries necessities the use indicators as measures of appropriate problem scope. Efficiency is one such indicator.

The comparative analysis can be followed by an explorative analysis of the causes of economic efficiency. The indicator may be applied to relevant processes, for instance, to real property transactions and privatisation, and to institutional performance. The methodology for national acquisition of evidence, and for international comparison can be described on the basis of outcome of *modelling*.

The formalisation of various activities through modelling effort includes a survey of available techniques and facilities, and assessment of different approaches as background taking appropriate *problem domain*. Stubkjær (1999) proposes the cadastral problem domain when modelling real property transactions. The diagram in Figure 1 adopts the traditional Owner-Rights-Parcel structure.

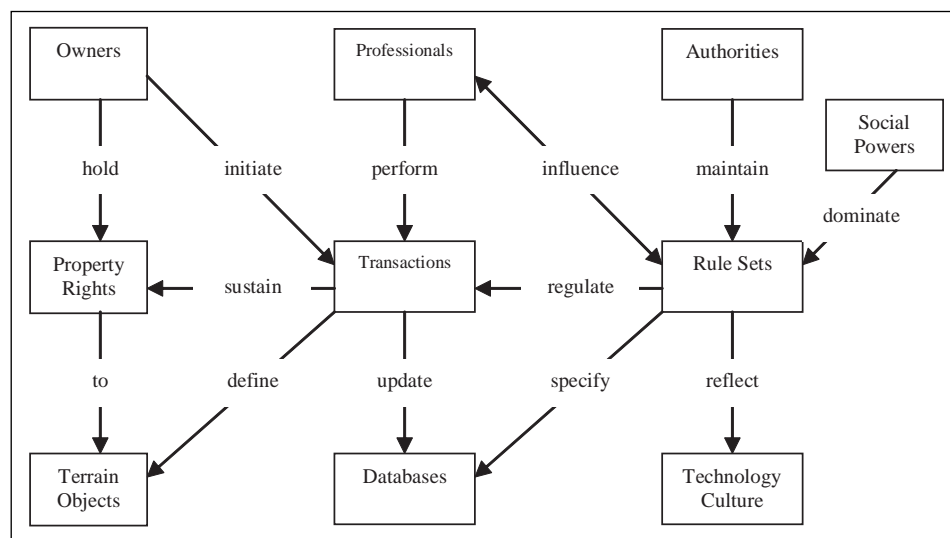


Figure 1. A view of the cadastral problem domain (Stubkjær 1999)

Development of formal methods that are feasible for modelling can be supported by system analysis approach and relied on object oriented methodology. The modelling approach is based on the standardised geographical information developments, its reference models and terminology. The formal descriptive technique can use *Unified Modelling Language (UML)*, which is the standardised conceptual schema language. The UML is the industry-standard language for specifying, visualising, constructing, and documenting the artefacts of software systems (Booch *et al.* 1999).

Using modelling as tool for description, representation and comparison of different data sets of national variety, can be updated and improved information flows, legislation, relevant procedures and performance of organisational structures dealing with land use, thus improved efficiency, as effective land management and land administration systems can support real property markets and sustainable land use.

The incumbent topics of modelling of real property transactions from principled problems, specific situations in different European problems via technology for supporting the process of modelling to some partial solutions to the problems are reflected in the book issued under the European COST research action G9 ‘Modelling Real Property Transactions’.

Thus, the basic setting for modelling the inner and outer views of cadastral system, developing and using a specific modelling methodology for conceptual formalism is described and a framework for the formal models presented by professor Sumrada (2003, p. 139-148). In compliance with described methodology, UML models for the simplified Slovene cadastral subdivision case have been developed and outcomes on the several UML diagrams presented in parallel with the description of development stages. According to Sumrada’s study, the identification and description of use cases, actors and the important interactions among actors and use cases, as well as presentation of the use case model on a set of use case diagrams is subjacent to use case analysis and modelling. Hereafter he organised the use cases into suitable groups and presented the organisation of use cases and their hierarchy on package diagrams.

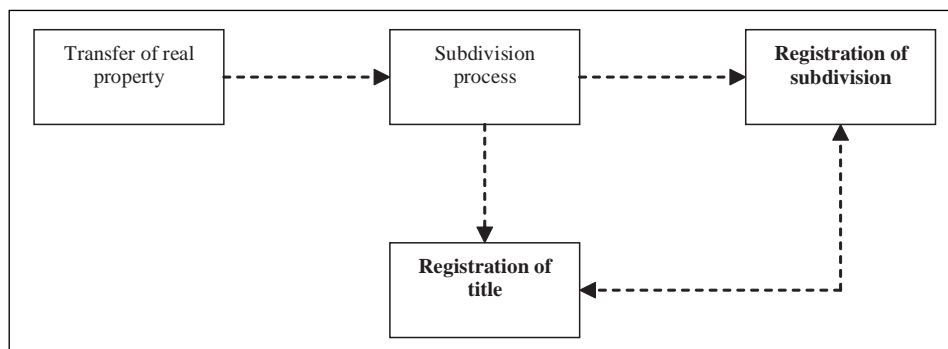


Figure 2. Use case model for the Slovene subdivision case – package

Thus, analytical class diagrams designed the problem domain objects, i.e. real world abstractions, their classes and the relationship among them. The main efforts were oriented to the development of dynamic structure, i.e. processing behaviour of classes. Developed activity diagram for a real property transfer process in the case of subdivision is useful for analysing the use case, and for depicting and understanding the workflow of business processes. Robustness analysis (class diagram) identifies the set of participating objects for the use case. Developed sequence diagram shows the order of processing responsibility and serves for analysing the message and data interchange while collaboration diagram shows the key transactions between identified objects, which form the critical path or the main scenario of the use case. Finally, detailed analysis class diagram was made for the Slovene subdivision case, which reflects the completion of the analytical phase of the development process and serves for future development of the case (the information system).

The problem domain of the real property formation can be developed for further modelling this process in CEE countries, especially where the new real properties are formed and registered in cadastre and land registry. For this purpose another - following study is briefly presented in this paper.

One of the results of investigation of Latvian situation is concerned with the proposal of the problem domain of real property formation process (see Figure 3). It is assumed that the proposed problem domain is actual starting point for future activities investigating more deeply and modelling also processes related to real property formation (transactions, land consolidation), as well as institutions. The core idea is to explicitly encode a shared understanding (ontology) of the domain that should be agreed among different parties.

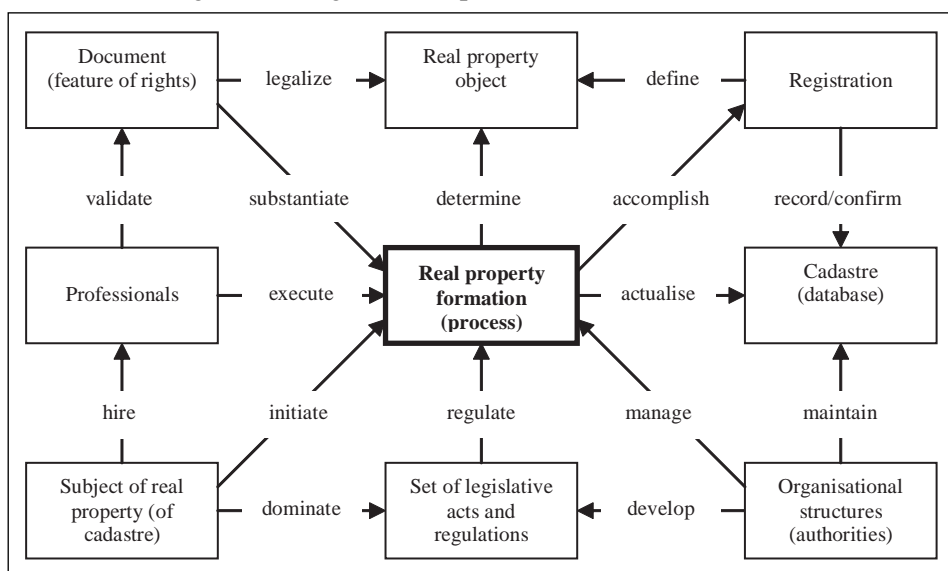


Figure 3. Problem domain of real property formation (Auzins 2003)

According to the *conception of cadastre* in Latvia, the real property formation includes procedures as a result of which as altogether of real property objects is registered new real property or changed the content of existing one in Cadastral information system (IS). In fact, the procedures ‘in the field’ are related to the physical – *real property objects* that are determined through procedures:

- subdividing real property objects into several real property objects
- amalgamating real property objects into one object
- the part of real property object adjoining to the proximal object do not shaping this part as new real property object
- changing the configuration or size of already registered real property object (building, group of premises).

Thus, *real property* in Cadastral IS is formed:

- shaping new real property
- subdividing registered real property into several independent real properties (including partition of joint properties)
- amalgamating several real properties into one real property (including liquidation of real properties – buildings)
- changing the content of already registered real property adjoining to it or disjoining from it real property object.

The problem domain in Figure 3 may be extended and considered to be as background for modelling both the institutions and the related processes. There can be explored, for instance, relation between documentation (feature of rights) and fact of registration, or data flow, or influences of real property subject (here the person – owner or user – representing a social power) to the legislation, as well as influences of organisational structures to the legislation, or the role of legislature, etc. by using the above stated problem domain.

6 Conclusions

Reference has been made to land reforms of CEE countries, which so far do not serve for generating of the capital, and thus – to the inefficient land use.

Formal property is more than just ownership. It has to be viewed as the indispensable process that provides people with the tools to focus their thinking on those aspects of their resources from which they can extract capital. “Formal property is more than a system for titling, recording and mapping assets – it is an instrument of thought, representing assets in such a way that people’s minds can work on them to generate surplus value” (De Soto 2000).

No doubts that theory of real property economics is right and Western experience convincing. The people in Eastern – post soviet countries are making territorial plans on permitted land use in future, but anyway the question arise – why should we invest in planning of unused land if there is lack of provisions for efficient land use and the political-economic future is still unclear in a country?

Generally, the government is responsible for establishment and enforcement of the institutional framework within which the land markets are able to operate properly. The State also needs an efficient land management and land administration capability in order to meet other national policy objectives, including justice and home affairs, revenue generation through tax policies, environmental controls, rural development, cross border issues and municipal administration at every locality (Dale and Baldwin 1998).

In conclusion, this paper wishes to emphasise on some key issues in the form of statements to be considered for future explorations. The following statements are assumed to reflect the need for institutional arrangements that will facilitate sustainable land use:

- The concept of new institutional economics may serve as umbrella under which the institutional frameworks can be developed in CEE countries.
- Although the term 'institution' is widely used to refer to an organisation in countries of transition, it is assumed here that properly it means 'regulatory framework' and is concerned with both the regulatory norms (legal framework) and the organisations (administrative framework).
- It is assumed that institutional economics would answer that a persons, including authorities, are willing to cooperate if and when they perceive a benefit as a result of cooperation. However, it must be understood that sustainability of land management and related processes is achievable looking from long-run and comprehensive perspective, thus, often it is difficult to see considerable benefits in short-run period.
- Use of quasi-formal modelling based on investigations may serve to improve the transparency of real property markets and to provide stronger basis for the reduction of land management costs by preparing appropriate models, which are correct, formalised, and complete according to stated criteria. Then, it could be possible to assess the economic efficiency (costs) of the process of real property formation and others, related to it, and to evaluate the influences of institutional performance to land use.
- Although, roughly describing, the results of modelling show (clarify) what already '*is known*', it might be considered as effective tool to get optimal (desirable) results – discussed models of appropriate institutions and processes and based on particular problem domains. It is assumed that a clarification through modelling might be incumbent in CEE countries, taking into account observed processes.
- The discussions on appropriate terminology resources and development of the glossary of terms in the field of land management would allow to exchange the relevant experience and avoid possible misunderstandings.

References

- Alchian, A.A. (1977). Some Economics of Property Rights. *Il Politico* 30, 816-29 reprinted in *Economic Forces in Work*. Indianapolis: Liberty Press.
- Alston, L. J., Eggertsson, T., North, D.C. (1996). *Empirical Studies in Institutional Change*. Cambridge University Press, p. 7-8.
- Arrunada, B. (2001). Property Enforcement and the Organization of Consent. Universitat Pompeu Fabra. Economics and Business Working Paper Series 564.
- Auzins, A. (2003). Terminology Resources in Land Management: development need and possibilities. Proceedings of the International Scientific – Methodical Conference “Baltic Surveying’03”, Estonian Agricultural University, Tartu, p. 5-11.
- Auzins, A. (2003). Land Tenure and Real Property Transaction Types in Latvia. The Ontology and Modelling of Real Estate Transactions, International Land Management Series, Stuckensmidt H., Stubkjær E., Schlieder C. (eds), p. 83-96, Ashgate Publishing Ltd. UK.
- Auzins, A. (2003). Institutional Aspects of Real Property Formation: The Case of Latvia. Presented in FAO workshop in Sigulda, Latvia, October 30-31, 2003, submitted for publishing in the conference proceedings of Agriculture University of Latvia, April 2004.
- Black, J. (2002). *A Dictionary of Economics*. Oxford University Press.
- Booch, G., Rumangh, J. and Jacobson, I. (1999). *The unified modelling language user guide*. Addison-Wesley, Reading Mass.
- Dale, P. and Baldwin, R. (1998). Lessons Learnt from the Emerging Land Markets in Central and Eastern Europe. Working Paper under the Action for Co-operation in the field of Economics (ACE). EU programme.
- De Soto, H. (2000). *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else*. A Black Swan Book.
- Kaing, M. (2003). Land Management Efficiency in Market Economy. Proceedings of the International Scientific – Methodical Conference “Baltic Surveying’03”, Estonian Agricultural University, Tartu, p. 77-81.
- Klein, P. G. (1999). New Institutional Economics. Department of Economics, University of Georgia, 0530, p. 456-463.
- North, D. C. (1990). *Institutions, Institutional Change and Economic Performance*. Cambridge University Press.
- Schofield, N. (1985). Anarchy, Altruism and Cooperation: A Review. *Social Choice and Welfare*, 2:207-19, p. 12-13.
- Stubkjær, E. (1999). Cadastral Research – Issues and Approaches. *Kart og Plan* 59 (3), p. 267-278.

Stubkjær, E. (2003). Modelling Real Property Transactions. The Ontology and Modelling of Real Estate Transactions, International Land Management Series, Stuckensmidt H., Stubkjær E., Schlieder C. (eds), p. 1-21, Ashgate Publishing Ltd. UK.

Sumrada, R. (2003). Conceptual Modelling of Cadastral Information System Structures. The Ontology and Modelling of Real Estate Transactions, International Land Management Series, Stuckensmidt H., Stubkjær E., Schlieder C. (eds), Ashgate Publishing Ltd. UK, p. 139-148.

TU Munich. (2002). Land Fragmentation and Land Consolidation in CEE countries. A gate towards sustainable rural development in the new millennium. Documentation of the International conference by FAO, GTZ, FIG, ARGE Landentwicklung and TU Munich. TU Munich, February 25-28, 2002.

UN ECE. (1996). Land Administration Guidelines: with special reference to countries in transition. UN ECE Geneva. ECE/HBP/96.

Williamson, O. E. (1975). The Mechanisms of Governance. New York, NY. Oxford University Press.