

Methodology for Selection of Land Consolidation Areas

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Land consolidation represents the most comprehensive proven instrument of development of agriculture and rural regions. Land consolidation in Serbia has a long tradition, over 1,700,000 hectares of agricultural land has been consolidated in the past. However, there are still large areas of agricultural land, especially in undeveloped parts of Serbia that needs to be consolidated. Since the funds are limited and land consolidation cannot be carried out in all areas in short period of time, there is a need for finding the right mechanisms to choose the areas and municipalities in which the land consolidation will produce the most results and bring the most benefits. This research defines the main steps in process of selection of municipalities for land consolidation. It also defines the selection criteria which were regarded in two major categories. This research was implemented in project "Rural Development: Effective Land Management" financed by European Union and German Federal Ministry for Economic Cooperation and Development. This project served as case study for implementation of this research.

Key words: *land consolidation, rural development, selection criteria for land consolidation*

1. INTRODUCTION

The main objective of land consolidation has always been the consolidation (re-allocation) of the agricultural holdings into the fewest number of better designed parcels, in order to improve the primary agricultural production and promote its development. Namely, the development of agriculture is one of the essential factors of development and improvement of rural living. In many countries for quite some time village has not been perceived as the training ground intended solely for agricultural production. For that reason, land consolidation also serves as the means for comprehensive rural development. The new rural development concept treats land consolidation as a complex project which, among other things, aims at continual renewal and promotion of the rural community. Succe-

ssfully implemented land consolidation leads to overall upgrading of agriculture, increase in productivity, efficiency and competitiveness of the entire agricultural sector.

It also leads to a better planning and land management, creates new jobs in agricultural regions, facilitating the flow of private and public investments into this field, contributes to promotion of the environment protection and enables efficient natural resources management.

Serbia has a long history of using land consolidation as a tool for improving agricultural production. The first land consolidations were carried out in 18th century and today in Serbia there is more than 1.700.000 hectares of consolidated agricultural land, most of which in second half of the 20th century. Those land consolidations were and still are conducted in agriculturally developed parts of the country.

Many researches have been conducted on improvement of the land consolidation process in Serbia. One the most significant and recent are in the area of optimization of land consolidation distribution process [1] and evaluation of land banks [2]. However, most of

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those researches are focused on agriculturally developed areas.

On the other hand, in less developed parts of country land consolidation never had the significant level of application. In transitional period conditions of life in those less developed rural areas of Serbia have become worse. High unemployment and bad infrastructure are main reasons that made villages less attractive for living. Furthermore, Serbia is one of the CEE (Central and Eastern European) countries. These countries faced two remarkable socio-economic changes in a period of less than 50 years i.e. after the introduction of a centrally planned economy in the middle of the 20th century, which was often exemplified by the restrictions of private ownership of land, a relatively fast transition to the market economy has taken place since the early 1990s [3]. Land consolidation could be one of the measures that could change such unfavorable situation because it is a complex project which, among other things, aims at continual renewal and promotion of the rural community.

Since land consolidation requires a significant amount of funds, it is impossible to implement it in all areas that need to be consolidated in a likely future. Even much wealthier countries cannot afford to consolidate all agricultural land in short period of time. That is why there is a need for mechanisms of selection of areas and municipalities in which the land consolidation will produce the most results and bring the most benefits.

The aim of this research is to define the main steps and the selection criteria in process of selection of municipalities for land consolidation. It is of great importance to carefully identify the areas where land consolidation will bring the most benefits and to discard the areas where it will not significantly improve the quality of living, so the limited funds are not wasted. This kind of analysis will insure that land consolidation process applied in selected municipalities brings the most benefits and serves as good examples for other areas.

This research used project "Rural Development: Effective Land Management" as case study. In the framework of activities on Strengthening Municipal Land Management in Serbia, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH has started with the implementation of the project Rural Development: Effective Land Management. The project is financed by the European Union as well as by the German Federal Ministry for Economic Cooperation and Development. The objective is to support overall objectives of rural development policy through an effective management of agricultural land. It will facilitate the implementation of land consolidation

schemes as well as measures to reduce abandoned agricultural land. The Project shall contribute to the development and implementation of land policy programs and appropriate legal regulations concerning agricultural land. To achieve this it is also important to strengthen administrative structures and capacity building within the Directorate of Agricultural Land of the Ministry of Agriculture, Forestry and Water Management and selected pilot municipalities, which are the main beneficiaries of this project.

2. SELECTION CRITERIA

Selection criteria were regarded in two major categories [4]:

- A high probability to implement the project successfully (i.e. minimizing problems)
- A high probability to achieve significant benefits (i.e. potential for benefiting from land consolidation)

Criteria include:

A high probability to implement the project successfully

- A strong willingness by local government to participate in the project. The community leadership should be constant during the life of the project (e.g. community elections should not be scheduled during the project)
- A strong willingness by individual members of the community to participate in the project
- The absence of strong opposition to land consolidation
- Suitability of the area proposed for land consolidation
- A relatively small number of absentee owners
- A relatively small number of long-term lease agreements
- Clear situation regarding ownership and small number of land disputes
- The existence of good records documenting land ownership. It is desirable that the land records (land ownership and cadastral maps) of the community are in digital form.

A high probability to achieve significant benefits

- The existence of small farms and fragmented, scattered parcels for which there is a potential for consolidation and enlargement, and a desire for it on the part of their owners (i.e. a number of farmers should own several parcels which are located some distance apart)
- The size of the project area should be suitable for achieving results. In ideal circumstances, the project area should not be so small that benefits of the project are not achieved, nor should the area be

so large that the project cannot be completed within the schedule. However, in practice it may be necessary for the project area to include an entire community. The project area may thus be larger than desirable

- The availability of land from a public land reserve (state or community) to allow the expansion of holdings and for the construction of new public facilities, etc.
- Good agricultural potential (e.g. good soils, the existence of suitable infrastructure for drainage and irrigation, etc.)
- Potential for land consolidation to result in significant improvements. For example, if farmers already have established marketing channels they should be able to benefit immediately from increased production that would result from land consolidation. Close access to major highways could also be a factor
- Potential to link the project to the community's development plan
- Potential to link the project to planned activities of line ministries (e.g. the construction of irrigation facilities or public facilities, environmental protection, etc.)
- Potential to link the project to other donor-funded projects
- Potential to link the project to private investment initiatives

Taking into account all relevant accessible information, following 8 selection criteria were chosen [5]:

1. Strong support from local authorities
2. Strong willingness by community members to participate in the project
3. Updated land registry and cadastre maps
4. The existence of fragmented, scattered parcels with potential for consolidation and enlargement
5. Developed agricultural production and established marketing channels
6. A relatively small number of absentee landowners
7. Suitability of the area proposed for land consolidation
8. Potential link to other development projects

3. SELECTION PROCESS

Selection process includes a thorough investigation of potential candidates for the project site to ensure that the selected area has the characteristics needed for a successful project.

Approach for this selection is:

- 1 Definition of the key selection criteria by the expert team. These criteria should influence the successful outcome of the project

- 2 Preparation of "public awareness" materials, targeted to communities, which describes the proposed project
- 3 Meetings with local governments. The meetings have two objectives:
 - To introduce the proposed project to the local government, using the public awareness materials and the selection criteria
 - To invite local government to propose communities that fit the criteria.
- 4 Collection of basic data on each community identified as a candidate for selection. Types of data required include:
 - Number of landowners in the community (to give the size of the community)
 - Parcel sizes and extent of land fragmentation
 - Orthophoto of proposed area for project
 - Size of the state or community land reserve with a potential for agricultural production (i.e. eligible for use to enlarge farms)
 - Percentage of uncultivated land
 - Economic activities in the community by sectors
- 5 Workshop with each community identified as a candidate for selection. These workshop with communities are part of the public awareness campaign
 - The workshop is used to explain the project to the community leaders, and inform local farmers and landowners about benefits and advantages of land consolidation and combating abandonment land and get their views through discussion and questionnaires.
 - The workshop helps to assess the suitability of the community (e.g. the willingness of community leaders and members to participate)
- 6 Analysis of the suitability of each community. A simple analysis (SWOT – Strengths, Weaknesses, Opportunities and Threats) should be carried out on the basis of the information gathered in order (a) to identify that the project will bring value to the community, and (b) to identify potential risks. The analysis should result in a final short list of communities for consideration.
- 7 Final selection of the community. The results of the analysis may show some communities to be clearly superior to other candidates on the shortlist. However, it is possible that the analysis will show several communities that could be suitable, and with little difference between them. If such a situation arises, possible options are:
 - Further interviews with the communities in order to better assess critical criteria such as a willingness to participate in the project, and to identify

contributions to the project that the communities might make

- Discussions by the representatives of the Ministry for Agriculture, Forestry and Water Management, local governments and experts to reach a consensus as to which community would be best, based on additional insights and views which were not defined as key criteria.

4. CASE STUDY

Project “Rural Development: Effective Land Management” was used as case study in this research. In the framework of activities on Strengthening Municipal Land Management in Serbia, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH has started with the implementation of the project Rural Development: Effective Land Management. The project is financed by the European Union as well as by the German Federal Ministry for Economic Cooperation and Development.

The objective is to support overall objectives of rural development policy through an effective management of agricultural land [6]. It will facilitate the implementation of land consolidation schemes as well as measures to reduce abandoned agricultural land.

A major purpose of a pilot project is to serve as an example for subsequent projects. In starting the first pilot project, there is the problem that people have to take the project statements “on faith”. In a second project, if people in a selected community ask questions about the land consolidation, they can be shown the first project community as a visible demonstration.

Selection of the pilot site can be difficult when communities (local leaders, landowners and other residents) do not have any knowledge of land consolidation. A local community is likely to be reluctant to volunteer to be a pilot site if its members do not understand what is proposed in the project. The process of explaining what a land consolidation project aims to do become more difficult when there is a lack of trust between citizens and the government.

Trust and confidence in the project team (as representatives of government) will have to be built up during the initial stages of the project; the project team will have to earn this trust. Based on previous experiences it has been observed that the support of local government is extremely weak in areas without significant experience in the field of land consolidation. This is not the problem only in Serbia but in many CEE countries [7].

4.1. Meetings with local authorities

Main objective of meetings was to inform local municipal leaders about Project and motivate them to

actively participate in the process of land consolidation. Project was presented by project manager for land consolidation and abandoned land and expert from Ministry of agriculture, forestry and water management.

For the purpose of detailed analysis of potential for successful implementation of land consolidation pilot projects in specific municipalities, local authorities were asked to provide basic information about proposed area for land consolidation (between 250 and 300 ha) that can be part of one or more cadastral municipalities.

Introductory meeting was held with the representatives of following municipalities (total of 21): Jagodina, Paracin, Razanj, Sokobanja, Knjazevac, Svrlijig, Boljevac, Negotin, Kladovo, Majdanpek, Blace, Kursumlija, Prokuplje, Zitoradja, Vlasotince, Vranje, Vladicin Han, Dimitrovgrad, Piro, BelaPalanka, Aleksandrovac.

4.2. Collection of basic data in each community identified as candidate for selection

From 21 municipalities from the first round of meetings, 13 have expressed willingness to participate in the land consolidation pilot project and submitted basic information.

That information regarded on: area of potential land consolidation project, the percentage of abandoned land, the state of Land Registry (whether it is up to date, are there digital cadastral maps), number of parcels depending on type of ownership, average parcel area depending on type of ownership. Other important issues regarding potential land consolidation area were also investigated like existing of mostly elderly households as a result of migration, birth rate, implementation of modern technologies, market channels etc.

After workshops held in 13 municipalities the additional data was collected, based on the information from participants gathered through the questionnaire. This information regarded on: whether the farmers produce products for their own needs or for the market, whether the farmers possess proper documentation on land ownership, the size of land they own and the way they want to participate in land consolidation project (exchange of parcels, selling, buying)

Following is the example of the data collected for one of the potential land consolidation areas:

Municipality Boljevac

- Cadastral municipality proposed for land consolidation pilot project: KriviVir
- Land consolidation area: 250 ha
- Total area of abandoned land and reasons for agriculture land abandonment: About 30 % of total

proposed area is abandoned land. Main reasons for this are fragmentation of land, a large number of elderly households and the uncertainty of market and a lack of new technology is the reasons.

- Is the data in the Land Registry up to date, and whether there are digital cadastral maps? In the municipality of Boljevac there are digital cadastral maps for a number of cadastre municipalities, and the on-going development of digital cadastral maps for Krivi Vir. Data is up to data almost every day (Table 1, Figure 1 -4).

Table 1. Data from the Land Registry

Types of ownership	Land consolidation area		
	Number of parcels	Total parcels area (ha)	Average parcel area (ha)
private	1347	478	0,36
social	20	15	0,75
state	25	12	0,48
cooperative	-	-	-
In total	1392	505	0,36

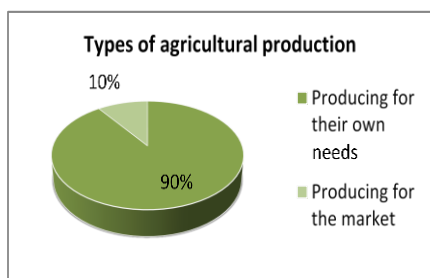


Figure 1 - Types of agricultural production

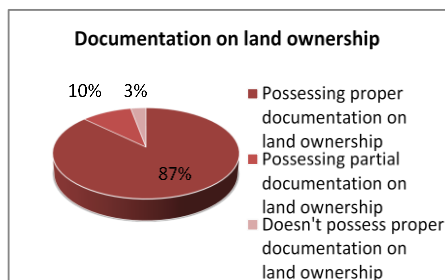


Figure 2 - Documentation on land ownership

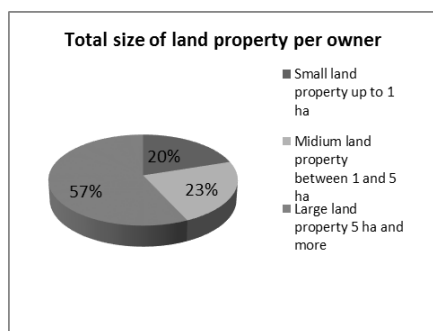


Figure 3 - Total size of land property per owner

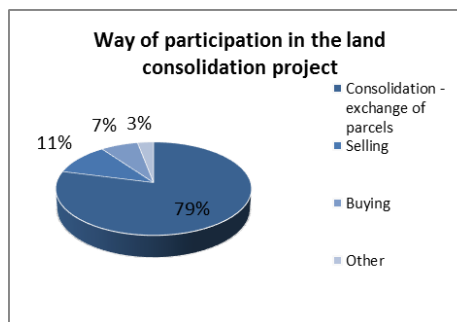


Figure 4 - The way the owners want to participate

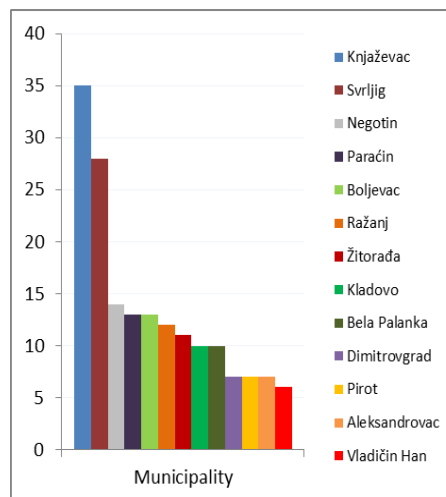


Figure 5 - Average number of parcels per owner

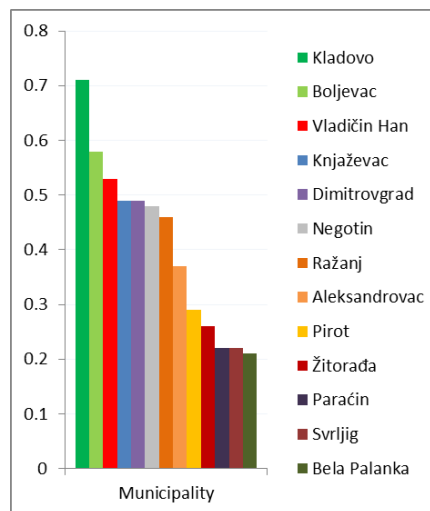


Figure 6 – Average parcel size per owner

Comparative presentation of the average number of parcels per owner in 13 municipalities is shown in Figure 5.

4.3. Public awereness materials

Bearing in mind that strong support of local authorities, as well as landowners, is very important for implementation of land consolidation pilot project, the project team prepared following information material

for implementation of workshops in 14 municipalities that have expressed willingness to participate in the project:

- Poster
- Leaflet with program presentation and brief description of land consolidation project
- Questionnaire for participants of land consolidation

4.4. Workshop with each community

Workshops had two main objectives. The first was to inform landowners, farmers, agriculture organizations, cooperatives and other representatives of local community on the project and motivate them to actively participate in the pilot project. The second objective was to ensure active discussion, provide answers and explanations, open all relevant issues and collect information from participants through questionnaire, with aim to make assessment and evaluate eligibility of local community for successful implementation of land consolidation pilot project.

4.5. Analysis of the suitability of each community and final selection of the communities

The methodology for the selection of pilot municipalities is based on the comparison of indicators (collected through questionnaire, site visit and discussion with workshop participants) with the criteria for selection.

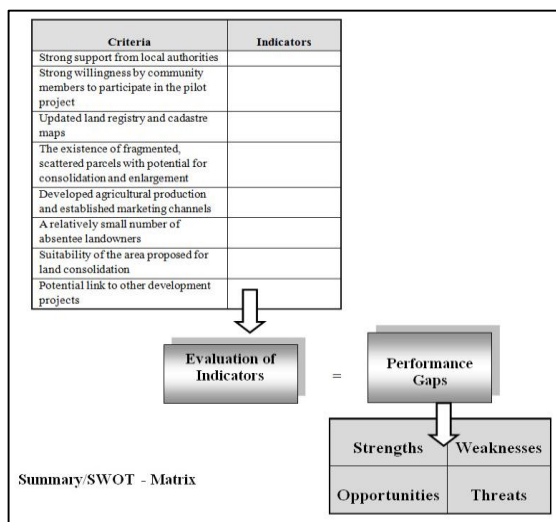


Figure 7 - Methodology for evaluation of municipalities [8]

Figure 7 shows the methodology for evaluation of municipalities [8]. In the first column in the table are defined 8 selected evaluation criteria. Second column contains trend indicators that define situation in the particular municipality.

Characteristics of each municipality are established through evaluation of indicators for 8 defined criteria, and in the conducted SWOT analysis critical

performance, that can have the greatest impact on the successful implementation of the land consolidation pilot project, were identified.

Based on the SWOT matrix with presented basic characteristics of each municipality in accordance with selected criteria, the following ranking list of municipalities eligible for the pilot project of land consolidation was established (Table 2).

Table 2. Ranking list of municipalities

No.	Municipality	S	W	O	T
1.	Pirot	6	1	2	0
2.	Knjaževac	6	1	1	0
3.	Žitoradja	6	1	1	0
4.	Paraćin	6	1	1	0
5.	Negotin	6	1	1	0
6.	Boljevac	5	2	3	0
7.	BelaPalanka	5	2	2	0
8.	Kladovo	5	2	2	0
9.	Svrljig	5	2	1	0
10.	Ražanj	5	2	1	1
11.	Vladičin Han	4	3	2	0
12.	Dimitrovgrad	4	3	0	0
13.	Aleksandrovac	4	3	0	1

Taking into account all available relevant data, conducted analysis and table with ranking list of municipalities, eligible for the pilot project, we can conclude that this assessment also clearly grouped municipalities in 3 categories.

First group represents 5 municipalities with excellent potential for successful implementation of land consolidation projects: Pirot, Knjaževac, Žitorada, Paraćin and Negotin.

Second group represents 5 municipalities with good potential for successful implementation of land consolidation projects: Boljevac, BelaPalanka, Kladovo, Svrljig and Ražanj.

Third group represents 3 municipalities with weak potential for successful implementation of land consolidation projects: Vladičin Han, Dimitrovgrad and Aleksandrovac.

Since results of the analysis showed that first 5 municipalities are clearly superior to other candidates on the shortlist, recommendation is that they should be selected for pilot project without further analysis.

If there are available resources to include more than 5 municipalities in the pilot project for land consolidation, recommendation is that additional activities should be undertaken with aim to better assess which

municipalities from the second group would be more suitable for pilot project since there are little differences between them.

5. CONCLUSION

The proposed methodology for selection of municipalities for land consolidation was developed in order to maximize the effects of land consolidation in circumstances where the funds are limited. In such circumstances it is not possible to conduct land consolidation in all areas that is needed. That is a well known problem for many countries and its solution depends on the specifics of legal and economic systems of different countries.

This research was conducted in order to define the best methodology for selection of municipalities for land consolidation in Serbia. The selection criteria and selection process were defined regarding the circumstances in undeveloped parts of Serbia taking into account the legislation and other factors significant for development and improvement of rural living. For this purpose, selection criteria were divided in two categories. The first category regards the criteria that enable high probability of successful implementation of land consolidation. If this group of criteria were not included, the implementation of land consolidation would be jeopardized. That could lead to complete failing of the project which means wasting funds and more importantly losing confidence in land consolidation. This way, failed project would be a bad example for other communities that have potential for land consolidation projects.

The second category regards the criteria that enable a high probability of achieving significant benefits to the individual land owners and the whole community. This group of criteria maximizes the positive effects of the land consolidation. This way, the funds would be put to best use and the project area would be a good example for other communities to initiate the land consolidation.

The methodology was tested in project: "Rural Development: Effective Land Management" financed by European Union and German Federal Ministry for Economic Cooperation and Development which was the case study for this research. Based on the criteria defined in the research, the selection of appropriate land consolidation areas was conducted. Out of 21 potential municipalities 5 were selected as areas with excellent potential for successful implementation of land consolidation projects. In addition to those, 5 more municipalities were qualified as areas with good potential for successful implementation of land consolidation projects. Depending on the available funds, some of these municipalities could be included in the

project. In order to achieve the definite conclusion about these areas further activities should be undertaken with aim to better assess which municipalities from would be suitable for land consolidation.

Additional activities should include more detailed interviews with the communities and additional insights in order to better assess critical criteria. Thanks to the developed methodology, the risk of land consolidation projects failing is reduced to minimum by dismissing 11 municipalities as potential land consolidation areas.

That doesn't mean that these 11 municipalities could not benefit from land consolidation. It just means that available funds are not sufficient to implement the land consolidation based on defined criteria. It is also possible, in future, for the local authorities and individual members of the community to make an effort to meet the defined criteria and increase the chances of their community to be the suitable area for land consolidation in circumstances of limited funds.

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REZIME

METODOLOGIJA ZA ODABIR KOMASACIONIH PODRUČJA

Komasacija predstavlja najsveobuhvatniji instrument za razvoj poljoprivrednih i ruralnih područja. Komasacija ima dugu tradiciju u Srbiji, preko 1,700,000 hektara je komasirano u prošlosti. Uprkos tome, još uvek postoje velike poljoprivredne površine, naročito u nerazvijenim delovima Srbije, koje treba komasirati. Budući da su sredstva ograničena i da komasacija ne može biti sprovedena na svim područjima u kratkom vremenskom roku, postoji potreba za pronalaženje mehanizama za izbor područja gde će komasacija proizvesti najveće koristi. Ovo istraživanje definiše glavne korake u procesu izbora opština najpogodnijih za komasaciju. Pored toga, definiše kriterijume za izbor koji su podeljeni u dve glavne kategorije. Istraživanje je primenjeno u projektu „Ruralni razvoj: Efikasno upravljanje zemljištem“ finansiranom od strane EU i Nemačkog ministarstva za ekonomski razvoj i saradnju. Ovaj projekat je služio kao eksperimentalno područje za primenu istraživanja.

Ključne reči: komasacija, ruralni razvoj, kriterijumi za izbor komasacionih područja