

Investigating the Effect of Land Consolidation Projects on Agricultural Sustainability (Case Study: Haraz Plain in Mazandaran Province)

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Extended Abstract

1. INTRODUCTION

The phenomenon of land consolidation has been the concern of economists, geographers, soil scientists, anthropologists, and politician in the last decades. It has achieved little success for agricultural development in Iran. Most of Iranian land consolidation schemes ignore to meet sustainability criteria as a critical phase in the planning process. Therefore, they have caused many environmental impacts on rural environment. While these new approaches have definitely improved the land structure and productivity, they have remained limited by un-sustainability of farming system. The entire project focuses on physical dimension and ignores environmental dimension. Thus, its sustainability is not important for the stakeholders. It is worth mentioning that, many studies have investigated the economic and sociological issues of land consolidation projects and used various measurements and criteria to assess its impact but there is little work to focus its effect on sustainability of farming system. Therefore, this study aimed to investigate the effect of land consolidation projects on agricultural sustainability in the Haraz plain of Mazandaran province.

2. THEORETICAL FRAMEWORK

Land consolidation can be an effective instrument in rural development. Agricultural development is one area in which land consolidation plays a vital role. Land consolidation can facilitate the creation of competitive agricultural production arrangements by enabling farmers to have farms with fewer parcels that are larger and better shaped, and to expand the size of their holdings. Consolidation of small, spatially fragmented land parcels is indispensable for agricultural

development in developing countries like Iran. The classical form of land consolidation involves changing the land tenure structure and providing the necessary infrastructure, such as roads and irrigation networks, for efficient agricultural development. New land consolidation projects carried out through reallocating the private ownership and location of spatially dispersed parcels of farms to form new holdings containing a single parcel, with the same size as the original area. This process accompanied by some complementary measures such providing farm road, irrigation systems and land leveling. Consolidation is still implicitly defined as reduction of dispersed ownership to achieve a single parcel as few as possible. While these dimensions of land consolidation ignore by related stakeholders and caused some failure for this process.

The objectives of land consolidation include:

- Grouping separate parcels to reduce the negative effects of fragmentation;
- Reduction of production costs; and
- Encouraging more effective agricultural plans and projects.

3. METHODOLOGY

The research design was semi-experimental and carried out based on survey strategy. The statistical population includes 3707 landholders within 12 villages targeted for land consolidation projects. Random sampling method with appropriate allocation were used to select two groups of farmers: one with consolidated land and the other with traditional land. Validity of questionnaire used as the data gathering instrument, was confirmed by experts of agricultural development, and Cronbach Alpha coefficient ($r = 0.62$ to 0.87) which ranges for different parts of the

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questionnaire) was used to confirm its reliability. Agricultural sustainability was measured based on three dimensions: ecological, economical, and social. Based on the literate review of sustainability, 10 ecological indicators, 8 social indicators, and 9 economic indicators were formulated. Using deprivation methods, indicators were scaled free and then principal component analysis was used for weighting. Data were analyzed using SPSS16 and Excel.

4. DISCUSSION

Results of one-sample t-test showed that, all the three dimensions of sustainability in two groups of villages were in an inappropriate position. The results of independent sample t-test showed significant difference between the two groups of farmers from ecological and economic dimensions. Ecological sustainability of traditional lands was more than consolidated lands while in economic dimensions, consolidated lands were better than traditional lands. The results of the comparison of the ecological indicators showed that application of Potassium manure and fungicide in consolidated lands was more than traditional lands. Moreover, physical quality of land in consolidated lands was better. The results of the comparison of social indicators showed that farming experience, family labor force, participation in local organizations, and agricultural sustainability knowledge in traditional lands, were more in consolidated lands;

while education, access to technical-extension service, and job satisfaction in consolidated lands were more in traditional lands. The results of the comparison of economic indicators showed that commercialization and insurance ratio in traditional lands were more than consolidated lands while gross product value, input productivity, land size, and mechanization in consolidated lands were more in traditional lands.

5- CONCLUSION

The results showed that, there is a significant difference between the two groups of farmers (farmers with consolidated lands and farmers with traditional land) from ecological and economic dimensions. Ecological sustainability of traditional lands was more than consolidated lands while in economic dimensions consolidated lands were better than traditional lands. Current study used social, economic, and ecological farm level indicator; therefore, future research should use household indicator to assess the effect of this project on sustainable livelihood. Also, implementing cooperative and collective farming system for cultivation and production planning in order to protect the environment of rural area is recommended.

Key words: Agricultural sustainability, composite indicators, land consolidation, traditional lands, Haraz plain.

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