

## **Stability Analyzing of Smallholders and Farming Corporation Farming Systems (Isfahan Province - Golpayegan)**

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*Received: 2 June 2018*

*Accepted: 24 September 2018*

### **Extended Abstract**

#### **1. Introduction**

The economic structure of Iran is shaped by agriculture. Agriculture accounts for more than 20% of the country's both gross domestic products and employment. There are many economic activities that are dependent on agriculture such as marketing, processing industries, and agriculture product imports. The majority of farmers in Iran possess small lands that yield small amounts of agricultural products; therefore, these farmers have an insignificant share in the market and subsequently, their gains are insignificant as well. Since 1960, the Iranian government introduced two modern farming systems including rural production cooperatives and Farming Corporation. By 2017, the number of these farming systems reached 1369 rural production cooperatives with 402177 members and 3191507 acres of land along with 30 agricultural stock companies with 7847 members and 775321 acres of land.

#### **2. Review of Literature**

The farming system is a social organization consisting of a set of interconnected elements that enable the production of agricultural products through unified identity and administration under the social and natural conditions of its environment. Adherence to the capacity of natural resources is the main condition for farming system sustainability. In fact, sustainability analysis involves specifying this capacity and can be considered as a logical criterion for indicating environmental standards that control the extent to which resources should be utilized. Sustainability analysis somehow indicates and expresses the extent and criterion regarding the distance between the sustainable and new state of a natural phenomenon. In sustainability analysis, resource capacity and economic sustainability are examined, analyzed, and controlled simultaneously with respect

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to the intended production requirement. Sustainability evaluation is a complex process and encompasses the complicated interactions among technologies, the environment, and society. Sustainability refers to ecologic health or compatibility which guarantees the preservation of the living forces present within agricultural ecosystems. Agricultural sustainability can be analyzed through a variety of dimensions including social (population, education), economic (economic growth, investment, and employment), natural (land, water, and biodiversity), and agricultural (cultivation and production patterns). There are five different methods put forth for sustainability evaluation including prescriptive approaches, timeline, various quantitative and qualitative indices, and system simulation. In general, there are no comprehensive methods in line with analyzing or evaluating the sustainability of all systems; however the only common technique among all methods is the utilization of an all-inclusive sustainability assessment by taking into account the environmental, economic and social dimensions.

### **3. Method**

The present inquiry is a mixed, applied study in which data collection was carried out using the descriptive method; it is also a survey study conducted using the cross-sectional method. Total population of the study includes 242 operators and members of the rural production cooperative, 635 operators and members of the Farming Corporation, and 1025 smallholders. Sample population was calculated using Cochran's formula. Shannon's entropy method was used for sustainability analysis.

### **4. Results and Discussion**

The entropy method was used to indicate the weight of each examined index. According to the literature, the key effective indices in the sustainability status of farming systems including smallholders, production cooperative and Farming Corporation include economic, social, and environmental dimensions. Shannon's entropy method was employed to prioritize and indicate the weight of each examined index through the perspective of each farming system.

### **5. Conclusion**

The development and sustainability of the rural society is not only an essential requirement, but also an inevitable end; results of studies suggest that such an end would not be attainable unless via reforming the farming system in line with the principles of sustainable agriculture, as the core of agricultural developments. In this study, the required data to achieve robust answers were collected from farming systems including smallholders, rural production cooperative, and Farming Corporation. Given the obtained results, the Farming Corporation has a higher relative sustainability compared to the two other systems in terms of economic and environmental dimensions. In the social dimension, the smallholder farming system enjoys relative sustainability as a result of high level of participation in rural areas' agricultural and public affairs, the extent of memberships in local communities, high percentage of the employed household work force in

agricultural activities, the extent of social agreements and solidarity, and the presence of social capitals. The Farming Corporation system is at a semi-sustainable state in social and economic terms while in environmental terms, it is found to be unsustainable. Increased use of nitrogen fertilizers, phosphates and agricultural toxins have resulted in the unsustainability of all three types of farming systems in environmental terms; however, the severity of this unsustainability is lower in Farming Corporation compared to other systems due to adherence to the technical principles of cultivation and maintenance, and more utilized application of production factors. Subsequently, the following recommendations are presented: Given how the index of the average total income produced by farmers is considered as an unsustainable index in the examined region within the smallholder farming system, the specification of a guaranteed price proportionate to production costs can be effective in improving the income levels of the farmers.

Considering the unsustainability of the Farming Corporation in the social dimension, it is recommended to adopt a participatory approach in the formation of the new Farming Corporation.

As the majority of agricultural activities are carried out by smallholders, then smallholder agriculture organization should be prioritized.

**Keywords:** Sustainable Agriculture, Farming Systems, Smallholders, Farming Corporation, Agricultural Sector

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#### How to cite this article:

Nekoei Naeeni, S. A., Ghanbari, Y., & Barghi, H. (2020). Stability analyzing of smallholders and farming corporation farming systems (Isfahan Province-Golpayegan). *Journal of Geography and Regional Development*, 17(2), 101-122.

URL <http://jgrd.um.ac.ir/index.php/geography/article/view/73248>