

Research Paper

Investigating the Drivers of Rural Agricultural Land use Change to Villa Gardens: A Case Study of South Baraan and Kararaj Rural Districts in Isfahan County

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ABSTRACT

We have investigated the drivers of agricultural land use change to villa gardens in South *Baraan* and *Kararaj* rural districts in Isfahan County. Questionnaires were distributed among 184 farmers randomly selected from 426 in five selected villages. As the results showed, among spatial (i.e. environmental, economic, and social) drivers, environmental drivers (including dehydration) had the greatest impact. Social drivers, including the prevalence of constructing second homes and increasing demand in the land market, and economic drivers, including high agricultural inputs, were in the next ranks. The study of managerial drivers suggested that the interference of government in the agricultural market was a major driver in land use change. The same questionnaire was taken by 30 different land use experts selected by the snowball method. The results showed that, among locational-spatial drivers, social drivers had the greatest and economic drivers had the least impact on land use change. Also, among social drivers, the most effective factor was the purchase of land and construction of second homes. Among environmental drivers, the most effective factor was the cut-off of the Zayandehrud River. Of economic drivers, the most effective one was the higher income of tourism land use. Finally, the most effective management drivers were the poor monitoring, administrative corruption, and the ploy of some employees in government institutions. In the examined conditions, the farmers had little tendency to continue farming activities. This was strengthened by the shift of land use to more productive and less cumbersome activities.

Key words:
Rural agricultural,
Land use change,
Villa garden,
Isfahan

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Extended Abstract

1. Introduction

If the change of agricultural land use does not within the framework of laws and regulations or land capabilities and

sustainable development, it can lead to inconsistencies in land exploitation, loss of resources, environmental degradation and challenges in sustainable rural development. In this research, the drivers of agricultural land use change to villa gardens have been investigated in Markazi District of Isfahan County, which has been affected by land use changes in recent decades.

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2. Methodology

Using satellite images and interviews with experts from Isfahan Agriculture-Jahad Organization, extensive land use changes were identified in South *Baraan* and *Kararaj* rural districts. Then, to determine the extent of the land use change to villa gardens, a survey was conducted with questionnaires given to farmers and experts in the region. Among a total of 426 farmers, 184 were randomly selected to complete the questionnaires. There were also 30 expert respondents from the relevant organizations selected through snowball sampling. The validity of the questionnaire was confirmed by the experts in land use and university professors. In a pre-test with a sample range of 30, the Cronbach's alpha coefficients for the spatial and management drivers were found to be 0.811 and 0.830 respectively, which are good reliability indices.

3. Results

The Kolmogorov-Smirnov test showed that the research data were not normal. Therefore, the binomial non-parametric test was used. Initially, the average of each person was calculated for the questions related to the economic, social, environmental and managerial drivers, which positively affected the increase of rural agricultural land use change. The average values less than 3 were placed in one group, and those greater than 3 were placed in the other group. Using the binomial test, the group with the average value of higher than 3 was considered to be of stronger effect with a p-value of 0.5. With 95% confidence, it was proved that the spatial (i.e. economic, social and environmental) drivers and the management drivers were effective in the increase of rural agricultural land use change.

4. Discussion

The analysis of the locational-spatial indices showed that, from the farmers' viewpoint, environmental drivers have the greatest impact on the land use change. As a result, they have to adapt their economic conditions to the bad governance of water resources and climate in the case of any wrong land use change.

Through the examination of the social indicators from the farmers' viewpoint, four social strands were found to outline the chain of factors which push farmers to change their land use management. Those strands include a) the prevalence of secondary home, b) the increase in demand and land market prosperity in the studied villages, c) the increase in the cost of living of villagers and the formation of land black market by land dealers to encourage farm-

ers to supply, and d) permissible or unauthorized land use change.

According to the farmers, the least locational-spatial effect on the land use change belongs to economic drivers. Of these drivers, the greatest impact is exerted by the high cost of agricultural inputs. This is in contrast to tourism which has cheaper inputs and generates more income and capital returns. Investing in the agricultural sector through bank credits and employment of manpower costs the operators of this sector a lot. Simply put, a farmer at a primary cost-benefit level finds it difficult or impossible to continue using all or part of a farm or a garden. In the farmers' opinion, among spatial drivers, economic drivers have the least effect on land use change. Of these drivers, the greatest impact is exerted by the high cost of agricultural inputs. On the other hand, tourism users have cheaper inputs and generate more income and capital returns. Investing in the agricultural sector through bank credits and manpower employment costs the operators of this sector a lot. Simply put, a farmer at a cost-primary benefit level finds it difficult or impossible to maintain the use of the whole or part of a farm or a garden.

An analysis of the descriptive indexes of management drivers from the farmers' viewpoint showed that the management/regulation/interference of governmental institutions and organizations in physical and virtual agricultural markets is the most important factor affecting the land use change. Pricing products, importing cheaper crops, guaranteed purchases, support for farmers, coordination in equitable access to monetary and financial market resources and facilities, distribution of inputs, facilitation of access to physical markets, and legislation to restrain the land market have all pushed the farmers to change their agricultural land use to villa gardens. In their opinion, the lack of sustainable management of access to diverse agricultural markets is rooted in the administrative corruption in providing unlawful permissions for land use change, discrimination or lack of discretion, lack of inter-sectoral coordination in dealing with exploits, and non-deterrence of some laws and notes.

As the experts stated, there are different influential factors involved in the change of land use, but, of environmental, economic and social drivers, the most and the least effective ones are social drivers and the economic drivers respectively. Also, among the social drivers, the most effective parameter is the purchase of land and second homes, among the environmental drivers, the most effective one is the cut-off of the Zayandehrud River, among the economic drivers, the most effective driver is the higher revenue of tourism land use, and of the man-

agement drivers, the most effective factor is the poor monitoring, administrative corruption and the ploy of some employees in government agencies and institutions.

5. Conclusion

According to the results, from the viewpoint of the farmers and the experts, the average impact of locational-spatial drivers on the change of agricultural land use was greater than that of management drivers. In the studied sub-scales, based on the farmers' statements, the environmental driver had the highest average impact but the economic driver had the lowest mean. According to the experts' statements, however, the social driver had the highest average impact while the economic driver scored the lowest mean. With regard to the situation of land use and the status of the other drivers in the study area, it is predicted that farmers will have just a slight tendency to continue farming activities; instead, they will be attracted to more productive and less crowded activities, which will aggravate the rural agricultural land use change.

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Conflict of Interest

The authors declared no conflicts of interest