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Analysis of Unauthorized Change of Agricultural Land-use in East Azarbaijan province, Based on Driving Force-Actor-Land Change (DF-A-C) Model

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Abstract

This study aimed to investigate the phenomenon of unauthorized agricultural land-use change (outside the city, towns and villages involving the Hadi Plan) in East Azarbaijan province, Iran. The present study was based on the Driving Force-Actor-Land Change (DF-A-C) Model. Qualitative content analysis was performed to conduct the research. The participants of the study consisted of activists in the agricultural sector and managers and experts at the Agricultural Jihad Organization. Using snowball sampling method, 20 of them were selected for the interview. Fifteen actors were found to directly and indirectly affect the preservation of agricultural land-use in East Azerbaijan province. Apart from the Agricultural Jihad Organization, 13 other relevant organizations or institutions and 4 regulatory organizations were involved in this issue. Also, 104 driving forces were found to have effect on the unauthorized agricultural land-use change in the province, and were classified into 24 groups. In this regard, the following driving forces accounted for the highest frequency, respectively: "Pressure and influence of influential and rent-seeking people", "Lack of manpower in Land Affairs Management", "Greed of intermediaries and profiteers", "Absence of a comprehensive program to preserve agricultural land-use" and "Low income for agricultural activities". Considering the fact that out of 104 driving forces, 48 driving forces affected the decision-making and behavior of agricultural land owners, farmers, land-use changing individuals, and institutions, and that 124 driving forces affect Jihad Agricultural Organization, relevant organizations, institutions, and regulatory organizations; it is suggested that planners and officials in charge of agricultural land conservation pay special attention to this issue.

Keywords: Agricultural lands, Iran, East Azarbaijan province, unauthorized land-use change, Driving Force-Actor-Land Change (DF-A-C) Model

Introduction

Preservation of agricultural lands is one of the main elements of sustainable development and its use change means dependence on foreign imports for it threatens food and national security. If the current population growth rate stabilizes, the Iranian population will be 94 and 138 million by 2021 and 2061, respectively. Therefore, it is essential to provide and supply more food (Fazel Saatchi, 2012). Over the past 50 years, over one third of the planet's arable land has been lost due to erosion and is projected to continue at a volume of 10 million hectares per year (Mojarad Ashenaabad and Rohani, 2008). From 1995 to 2016, approximately 54,699 hectares of land experienced unauthorized land-use change and the use of 99,115 hectares of land was changed under state license, totaling 153,814 hectares of agricultural land-use change (Specialized Statistics of the Country's Lands, 2016). Each year, the use of as many as 8,000 hectares of unauthorized lands is changes, which could amount to slightly over 10,000 hectares with amendments to the laws. Since 2006, approximately 60,000 hectares of land-use, has been changed, and 50,000 hectares of land have been under state license, totaling 110,000 agricultural hectares (Mohammad Sharifi, 2015).

According to the FAO's definition, land-use is referred to the function or goal set by humans to use the land. In other words, it includes a variety of human activities that either use the lands directly, or use their resources, thus leaving an impact on the lands and relevant resources (Briassoulis, 2005).

The Law on Conservation of Agricultural Lands and Gardens was approved in a meeting in 1995. It consisted of eight articles and seven notes amended in 2006. Article (1) of this law prohibits the land-use change of agricultural lands and gardens outside the legal limits of cities and towns, except for necessary cases (Islamic Consultative Assembly Research Center, 2014). According to the executive regulations of the law amending the foregoing law (2006), "Land-use change" denotes any measure that forbids the exploitation and continuation of arable and agricultural lands and orchards in the form of building, removing or increasing sand, and any other actions deemed to land use change at the discretion of the Ministry of Agriculture Jihad.

Land-use change generates irreversible economic and environmental consequences and engenders perils for international trade, global climate, wildlife, and politics (Lubowski et al., 2008). FAO (2008) reported that agriculture and land-use change, such as deforestation, account for 13 to 17% of greenhouse gas emissions (due to human activities) (Murphy et al., 2009).

Urban development, agricultural pressures, land degradation processes, land scarcity, leaching of soil salts, fragmentation of landscapes, and other adverse effects on the environment are among the key factors destroying lands in Europe (Ceccarelli et al., 2013). The most important economic factor affecting land-use change is the difference between the price of agricultural lands and that of other land-uses. Agricultural land prices should be formally determined by the quality of soil, not by market prices (Popelková, 2014). In urban and rural development plans (Rural Hadiplan, detailed and comprehensive urban plans), protection of agricultural lands was not under the agenda

with the agrarian lands being legally destroyed and changed as these plans were implemented. Approximately 200,000 hectares of active agrarian lands are included in the so-called RuralHadi plan (Afshar, 2015). Poor management, tourism, and second homes in north of Tehran villages and other cities (most cities across the country, especially northern cities) have caused water pollution, destruction of natural landscapes, land-use changes, increased migration, stagnation of agricultural activities and social duality. (Pour Mohammadi et al., 2013).

Change actors are often location-specific. So far, no universal theory of land-use change analysis has been proposed. However, an approach has been developed on the conceptual models to determine driving forces of land-use change. The identification of important change actors is a prerequisite for the development of realistic land-use models. Another issue is how these actors are represented (Veldkamp and Lambin, 2001). In their research, Olson et al. (2004) have categorized models of land-use change analysis and land coverage actors into four groups including, field, location (spatial), and process-based and actor-based model (ABM).

Hersperger et al. (2010) proposed four conceptual models for relating land-use change and land cover to driving forces and actors:

1. Driving force-change (DF-C) model (land-use and cover): In this model, driving forces are directly related to land change. This approach is a widely used approach in the science of land change (land-use and cover). Much research has been conducted based on this model, which seeks correlation within a large set of simple spatial and land-use variables.

2. Driving force-actor-change (DF-A-C) model (land-use and cover): In this model, driving forces influence the actors and then the actors make changes. Research based on this model seeks answers to questions such as: Which driving forces affect actors and how do they ultimately create change?

3. Driving force or actor-change (DF/A-C) model (land-use and cover): Research- based on this model attempts to provide answers to the question: How the earth changes as a result of the interaction between driving forces and the actors? Studies based on this model cover small to medium geographical areas. The findings are location specific and extrapolation (analogy or prediction) in space is difficult.

4. Actor-change (A-C) model (land-use and cover): The question is: How do attitudes, biographies, and household characteristics affect decisions on land-use? and How can one model the decision-making process of actors? Specific decision-making strategies are defined and explained for a limited number of actors (farmers, resident households, and government agencies). Many actor-based models (ABMs), increasingly considered in land-use change research, are founded on this model. Studies based on this model often focus on a small (relative) geographical area because they rely on the details of the actor's behavior.

Literature Review

In previous researches, often performed based on the Hersperger's first model, factors have directly been related to land-use change. On the contrary, in the present study, which is based on the premise of Hersperger's second model, the role played by the actors and driving forces affecting each actor are also considered. and each of them is analyzed separately. In the third and fourth models, a more detailed and accurate analysis is performed on a small scale, which is not suitable for the province since the data required for these models are lacking. Therefore, according to the research objectives, available data and the scope of the studied area, the second Hersperger model was selected to be implemented in the present study. Most studies in this field have investigated natural-biophysical, economic, political, and institutional factors while social factors have been less focused. The studies conducted are mostly quantitative with one or more dimensions of the land-use system being studied. Some of these sources studies are mentioned below.

Ghasemi's (2003) study entitled "Investigation of factors affecting land-use change in Shabestar city" indicated that the influential factors, in the order of importance, were lack of proper access to inputs and support services by the government, improved economic and social situation, restricted access to water resources, soil fertility problems, production unit topography, restrictions related to the location of the production unit, psychological and educational barriers, and improved access to urban facilities and amenities. However, according to the views of experts such factors as inconsistencies between organizations, government's agricultural policy, migration, population growth, compulsion by government organizations, defects and shortcomings in land management, and absence of land management and legal factors can also affect this phenomenon.

Study findings by Hosseinzadeh Daliret al. (2009) suggested that economic growth, population growth, policies and planning, psychological issues, low land prices, access to infrastructures such as main roads, utilities, telecommunications, the need to move industrial units to the outskirts of cities, lack of land to create urban spaces, and the presence of many social and economic problems in cities were considered to be factors contributing to the conversion of agricultural land around Tabriz to residential, industrial, and infrastructure uses.

In a study, Espindola et al. (2011) explored the distribution map and share of four agricultural land-uses from 2000 to 2007 in Amazon, by designing and extracting the factors affecting deforestation and agricultural uses, including pasture land, and temporary and permanent agriculture. As many as 300 influential factors for 1997 and 2007 were classified into three groups, of market access, public policy, and land (property) structure.

In another study carried out in Selangor, Malaysia, Olaniyi et al. (2015) investigated the future agricultural land-uses under different economic scenarios. The results demonstrated that the application of national development policy led Malaysia to industrialization with capital flowing out of the agricultural sector. yet, the type of agricultural land-use was determined in this region through urban planning, access to agricultural land, agricultural labor, aging, climatic factors and availability.

In a study entitled "Comparative study of urban land-use change mechanisms: The United Kingdom, the United States, India, Turkey and Iran", Taghizadeh (2016) analyzed the principles of strengthening land-use change mechanisms based on the experiences gained in the countries mentioned. The findings suggested that in Iran, the most essential principle applied is to follow local to national hierarchy while the least essential principle is to hold a referendum and collaborate with the residents and civil society. The findings also indicated that the private sector, including developers and landowners, the public sector (municipality), and relevant government commissions were involved in land-use change, respectively. Furthermore, in each of the mentioned principles, a gap was noted between the situation in Iran and the stated countries, especially in terms of observing environmental laws, public participation and gaining consensus among stakeholders.

In a research conducted by Saadi and Avatefi Akmal (2018) with the title of "Factors affecting the agricultural land-use change in rural areas of Hamadan city", it was demonstrated that the five groups of actors, i.e., agricultural underdevelopment in the country, economic ineffectiveness of the agricultural sector, poor information and poor implementation of rural development programs, urban development, and young people's willingness for non-agricultural occupations explained 60% of the variance.

Busko and Szafranska (2018) in their research, examined the results of a research that has studied the issue of land use in Malopolska in recent years. The results showed that over time, 68% of the land which was converted to non-agricultural land was allocated to residential use. An important point was that 19% of this land is from the best land class, e. classes 1 and 2, which constitutes only 7% of the province. They comprise a part of the total agricultural land in Malopolska. Furthermore, 79% of the converted land was part of the middle class land, Class 3, which constitutes only 26% of the province at the time of writing.

Sadeghloo et al. (2019) analyzed the impulses and effects of land use change in the rural areas of Mianjamin rural district of Torbat-e-Jam city. The results showed that the components of infrastructure improvement such as communication roads, ignorance of land protection laws, erosion and lack of proper soil productivity due to the intensity of exploitation, urban expansion to peripheral villages, and urban creep, lead to construction growth. The construction of second houses and villas were the most important drivers of change in agricultural land use. The results also demonstrated that the most negative effect is related to the reduction of rural productive population due to their migration to cities. The most positive effects were related to indicators such as increased environmental health, construction of new housing with more durable building materials, widening of roads, facilitating the movement of new vehicles and improving infrastructure.

Mohammadzadeh et al. (2020) in a study, investigated the factors affecting the farmers' behavior towards changing the use of agricultural land in the southern catchment area of Lake Urmia, using diagnostic analysis. The results showed that there was a significant difference in the behavior of

the respondents, in terms of age, participation in extension courses and the amount of agricultural land. However, there was no significant difference in the behavior of the respondents with regard to the level of education. The findings also indicated that economic, regulatory, and managerial factors had the greatest impact and participation in extension courses had the least impact, on farmers' behavior.

In a study, Burja et al. (2020) analyzed the relationship between land grabbing and sustainable agricultural development in Romania. The results of the study showed that in comparison to other European countries, land grabbing in Romania has significant dimensions that have led to inadequate soil structure and negative effects on the sustainable performance of agricultural resources and sustainable development of rural areas.

In East Azarbaijan province, the development of the second house and villa construction in a good climate and suburban areas, the pressures mounted by land seizures, etc. made this phenomenon a vital issue, and caused it to intensify, especially in cities, such as Tabriz, Shabestar (Sufyan), Marand, Bostanabad, Azarshahr and Maragheh. This made the province one of the ten critical provinces of the country. In this province, from 2006 to mid-2016, the use of 3199 hectares had their uses changed legally while 4578 hectares of land was changed totaling lawfully 7775 hectares of agricultural lands (outside the city and villages).

It is necessary to study have an integrated and comprehensive view of the driving forces and actors affecting this phenomenon to preserve and manage how to use agricultural lands. It is necessary to identify, classify and analyze the driving forces influencing the actors who cause this phenomenon. Therefore, this study aimed to investigate and analyze the unauthorized agricultural land-use change (outside the cities, towns and villages with a Hadi plan) in East Azerbaijan province of Iran.

Methodology

The data collection method applied in the present study was field survey. It was implemented based on the second model of the four models proposed by Hersperger (2010), which is called driving force-actor-change (DF-A-C) model. In this model, driving forces affect the actors and then the actors cause changes. To perform the research, qualitative content analysis method was used.

Content analysis (quantitative or qualitative) is an independent method used to achieve a pattern or conceptual framework, to describe and summarize data, and to infer a theory. Also, in this method, areas as research design, objectivity, validity, reliability and generalizability intended are considered (Momeni Rad et al., 2013). Content analysis approaches are divided into three groups. The first group is "customary or conventional", which is often used when existing theories or research literature on the phenomenon under study are limited. Second one is "directional" and is often used when there is a previous theory or research on the phenomenon under study, but it is not exhaustive and needs further description. Finally, the third one is "summarized or cumulative"

and is used when the purpose is to recognize and quantify specific words or themes in the text (Iman&Noshadi, 2011).

The subjects of the present study were experts on the phenomenon of land-use change in East Azerbaijan province (figure1), consisting of activists in the agricultural sector (Farmers Association, trade union system, engineering system, Ranch union, etc.) as well as officials and experts at the Agricultural Jihad Organization. Using purposive sampling method and based on expertise and records, 20 people were selected for interview and the interview continued until the theoretical saturation was reached.

Documentary, library and internet resources, in-depth observations, and (semi-structured) interviews were implemented for collecting data. First, library and internet resources were reviewed, and a general body of knowledge was obtained. Then, interview questions were designed and experts on the phenomenon of land-use change in the province were interviewed. Using qualitative (directional) content analysis method, the interview transcriptions were examined line by line and the relationship between the concepts and meanings was obtained, and were then conceptualized and coded. First, the effective actors were identified, then all the driving forces were extracted and classified, and finally the driving forces influencing each actor were identified and explored.

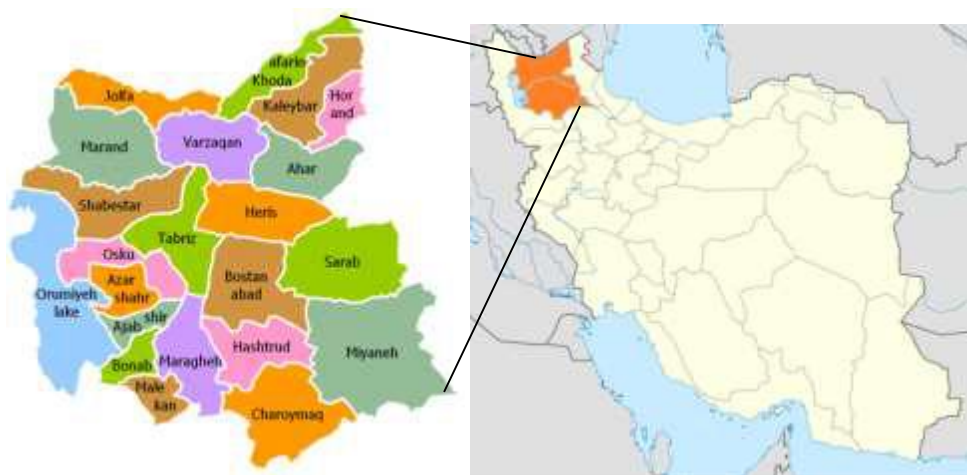


Figure 1. A general map of Iran illustrating the location of the study area

Research Findings

Using the qualitative (directional) content analysis method, the data from the interviews were instigated line by line, the relationship between the concepts and meanings was shown, and the data were analyzed in three stages.

First stage: In this stage, the actors (catalysts) affecting the phenomenon of unauthorized land-use change in agricultural territories of East Azerbaijan province, were identified (Table1). Fifteen actors who were found to have direct and aedindirect effect on the preservation of agricultural

lands in the province, were determined. Apart from the Agricultural Jihad Organization, which enforces the Law on Conservation of Agricultural Lands and Gardens, 13 other relevant organizations or institutions and 4 regulatory organizations were also engaged in this issue.

Table (1) - Extracting effective actors using qualitative content analysis

Influential actors
1. Provincial and national policymakers and planners 2. Land and real estate traders and investors 3. Agricultural landowners, farmers, and land-use changing individuals and institutions. 4. Profiteers and intermediaries 5. Real estate advisors 6. Influential people and rent-seekers 7. Private companies and institutions 8. Local community and popular organizations 9. Dehyars and members of villages' Islamic councils (local management) 10. Relevant organizations and institutions: (1) Judiciary, (2) Provincial Governor's Office, Governor's Office, (3) Environment Organization, (4) Rural Housing Foundation, (5) General Directorate of Roads and Urban Development, (6) Municipality, (7) Central Council of Architecture and Urban Planning, (8) Property and Real Estate Registration Organization, (9) Service Offices (Electricity, Gas, Water and Telephone), (10) Provincial Land Protection Council, (11) General Administration of Natural Resources and Watershed Management, (12) Industry, Mining and Trade Organization 11. Regulatory organizations (Provincial Governor's Office, Governor's Office, General intelligence Office, and General Inspection Office) 12. Agricultural Jihad Organization (Land Affairs Management) 13. Universities and education and research centers 14. Law-makers 15. jurists and lawyers (active outside the relevant organizations)

Second stage: In this stage, 104 driving forces (primary code) were identified and classified into 24 groups (secondary code) (Table 2). The highest frequency pertains to "pressure and influence of influential and rent-seeking people" and all 20 subjects mentioned this actor. Furthermore, out of 20 people, 18 people referred to "lack of manpower in land Affairs Management", 17 people mentioned "income of intermediaries and profiteers", 15 people referred to "Absence of a comprehensive agricultural land conservation program " and finally 15 to people mentioned the driving force of "low income for agricultural activity".

Table 2 - Extraction and classification of driving forces using qualitative content analysis

Primary codes(driving forces)	Secondary codes(Group)
Absence of comprehensive land survey (8) Absence of a comprehensive agricultural land conservation program (15) Weak role of the Agricultural Jihad Organization in decision-making to increase the boundaries and privacy of cities and villages (1) Superficial and political treatment of preserving agricultural land-use (2) Incomplete and non-comprehensive urban and rural Hadi plans (failure to determine the actual boundaries and privacy) (2) Failure to use private companies' capacity to preserve agricultural land-use (8) Failure to use local communities' capacity and popular organizations to preserve agricultural land-use (8)	Lack of land survey and absence of a comprehensive plan for preserving agricultural land-use

Interference with the duties of the Agricultural Jihad Organization and other related and monitoring organizations (5)	
Pressure and influence of influential and rent-seeking people(20)	Pressure and influence of influential and rent-seeking people
Failure to locate a special place for construction of villas and recreational places(7)	Poor and incorrect management and planning
Failure to price correctly as allowed in Note 1 licenses(1)	
Length of licensing process(7)	
Lack of transparency in matters and user preservation processes(1)	
Impossibility of preparing requested documents for obtaining a license(1)	
Impact of time-lapse law(6)	Violating rules and regulations
Evading use change fees (1)	
Abuse of Note 4 (circumvention of the law(9)	Lack of comprehensive rules and regulations for use preservation
Multiplicity of rules and regulations(3)	
Clamp downs being ineffective(5)	
Ambiguity in- laws(4)	
Rules not being up-to-date and non-responsiveness to needs(6)	
Legal vacuum and inconsistency between laws, regulations and bylaws(5)	Poor performance of related and regulatory organizations and institutions
Poor performance of relevant organizations(1)	
Lack of cooperation and coordination between related organizations(7)	
Poor performance of regulatory organizations(6)	
Double and multiple treatments by regulatory bodies(1)	
Non-inquiry of service Offices (electricity, gas, water, telephone, etc.) from the Jihad Agricultural Organization(12)	
Lack of cooperation on the Rural Housing Foundation (2)	
No cooperation from real estate registry offices(2)	
Non- inquiries from governorates and districts(1)	
Lack of cooperation betweenDehyars and members of villages' Islamic councils (local management)	
Lack of cooperation from real estate advisors (8)	
Municipalities' failure to inquire from the Agricultural Jihad Organization in the city (10)	
The difference between the price of agricultural land and the price of other uses (7)	High difference between the price of agricultural land and the price of other uses
Trading agricultural lands by agreement papers (agricultural lands do not have an official document(11)	Trading agricultural lands by agreement papers
Greed of Intermediaries and profiteers(17)	Greed of Intermediaries and profiteers
Low income for agricultural activities(15)	Agriculture sector problems
Production problems in agriculture(3)	
Agricultural marketing problems(3)	
No guaranteed purchase of agricultural products(1)	
Fragmentation and scattering of agricultural lands(10)	Fragmentation and scattering of agricultural lands
Defective and unsuitable planning structure within the country(3)	Weaknesses of the policy and planning system
Lack of attention to planning(1)	
Absence of necessary expertise and experience among planners(2)	
Lack of interaction and cooperation between planners and the enforcing department (lack of bottom-up planning(1)	
Absence of local, provincial, and regional planning(1)	
No interaction and cooperation between planners and the research department(1)	
Lack of cooperation among planners and popular organizations(1)	Problems facing the control and regulation system
Failure to properly implement rules in Regulatory organizations(1)	
regulatory organizations lack of executive power(1)	
Lack of credit and facilities in Regulatory organizations(1)	
Managers and experts' lack of expertise and ability within regulatory organizations(4)	
Lack of commitment and responsibility in managers and experts at regulatory organizations(3)	Land market status
Land market status (Land traders and investors)(4)	

Prolonged legislative process(1) The influence of stakeholders and influential people on the legislative process(2) Lack of necessary expertise in the lawmakers(2) Lack of interaction and cooperation between executive organizations and legislators(1) Failure to adopt laws on time and with foresight (passing laws out of coercion)(2)	Weaknesses and shortcomings of the legislative system
Lack of necessary expertise and competence in managers and experts at the Jihad Agricultural Organization and relevant organizations(4) Lack of commitment and responsibility in the managers and experts at the Agricultural Jihad Organization and relevant organizations(3) Agricultural Jihad Organization's failure to support land Affairs Management (1) Shortage of credit in the Agricultural Jihad Organization(6) Shortage of human resources in Land Affairs Management(18) Shortage of facilities, machinery and equipment in the Jihad Agricultural Organization(13) Shortage of funding, salaries, bonuses and benefits of Land Affairs Management(7) Earning money by Service Offices(1) Discriminate attention to the issue in Service Offices (1) Failure to follow justice in judgment(1) Pursuing financial benefits of municipalities(1) Under regulation by the Jihad Agriculture Organization Land Affairs Management(1)	Shortcomings and weaknesses of the Agricultural Jihad Organization and related organizations
Construction of industrial towns in deprived and inaccessible places(2) Insufficient number of industrial towns(1) Expensive lands in industrial towns(5) Interest in building a production unit on one's land(1)	Problems of using industrial towns
People's unhealthy competition for possessing villas and garden houses(3) Cultural change (luxury lives and non-obedience of Islamic clothing)(4) People's need for entertainment and fun(7) Lack of facilities and services in villages(1) Population growth and development of cities and villages(2) Migration of young people, loneliness, and the farmers being elderly(5) Security reasons and people's feelings(1)	Changing culture and the existence of social problems and needs
Lawyers and jurists' lack of expertise (outside the relevant organizations)(1) Lawyers' pursuit of personal interests (outside the relevant organizations)(1)	Lawyers and jurists' lack of commitment and expertise (outside the relevant bodies)
Water scarcity and drought (3) Flood and erosion(2)	Environmental and ecological factors
Public unawareness of laws and regulations(12) Public unawareness of the value of land and environment(8)	Public unawareness of laws and the value of environment
Failure to invite and organize private companies and popular organizations(1) Failure to train and empower private companies and popular organizations(1) Failure to create a competitive environment for private companies(1) Shortage of facilities and creation of necessary infrastructure for the activities of private companies and popular organizations(1) Failure to register sales information in real estate consulting offices(9) Illegal and unauthorized activities of some real estate consulting offices(4)	Absence of organization and proper management of private companies, popular organizations and real estate consulting offices
Officials and higher departments' interference in the duties of the members of Islamic councils of villages(1) Lack of knowledge and expertise of Dehyars and members of the Islamic Council of villages(1) Profiteering and the pursuit of financial benefits by Dehyars and members of the Islamic Council of villages(1) Lack of regulation and supervision over the performance of Dehyars and members of the Islamic Council of villages(1) Lack of transparency and segregation of duties of Dehyars and members of the Islamic Council of villages(1) Lack of commitment and responsibility of Dehyars and members of the Islamic Council of villages(1)	Barriers to interaction and cooperation between Dehyars and members of the Islamic Council of villages (local management)
Absence of a special research division in the field of land management(1) Low quality level of educational centers and universities(2) Failure to pay attention to education and research in the country and the agricultural sector(1)	Weak education and research in the field of agricultural land management

Insufficient funding for education and research(1)

Lack of interaction and cooperation between education and research and performance department(2)

Step 3: In this step, driving forces affecting each actor were identified and extracted (Table 3). Out of 104 driving forces identified, the following were, in order of priority, found to have affected the unauthorized agriculture land-use change. They include 48 driving forces affecting "Agricultural Land Owners, Farmers and Land-use Changing Individuals and Institutions", 46 driving forces affecting "Agricultural Jihad Organization", 45 driving forces affecting "Relevant organizations and institutions (other than the Agricultural Jihad Organization, including 13 organizations or institutions)", 33 driving forces affecting "Regulatory organizations", 33 driving forces affecting "profiteers and intermediaries", 30 driving forces affecting "land and real estate traders and investors", 26 driving forces affecting "real estate advisors", 25 driving forces affecting "influential and rent-seeking individuals", 24 driving forces affecting "Dehyars and members of villages' Islamic councils (local management)", 19 driving forces affecting "national and provincial policymakers and planners", 11 driving forces affecting "jurists and lawyers (active outside the relevant organizations)", 10 driving forces affecting "local community and popular organizations", 8 driving forces affecting "law-makers", 8 driving forces affecting "Universities and education and research centers", and finally 7 driving forces affecting "private companies and institutions".

Table 3 - Extraction of Effective driving forces on each actor using qualitative content analysis

Actor	Driving forces(F)
Agricultural land owners, farmers and land-use changing individuals and institutions	48
Agricultural Jihad Organization (Land Affairs Management)	46
Relevant organizations and institutions(Except Agricultural Jihad Organization)	45
Regulatory Organizations	33
Profiteers and intermediaries	33
Land and real estate traders and investors	30
Real estate advisors	26
Influential people and rent-seekers	25
Dehyars and members of villages' Islamic councils (local management)	24
Provincial and national policy makers and planners	19
Jurists and lawyers (active outside the relevant organizations)	11
Local community and popular organizations	10
Law-makers	8
Universities and education and research centers	8
Private companies and institutions	7

Conclusion

According to the findings of the present study, driving force groups including "problems facing the agricultural sector", "environmental and ecological factors", "pressure and influence from influential and rent-seeking people", "Lack of land survey and a comprehensive plan for preserving agricultural land-use", "Lack of comprehensive rules and regulations for use preservation", "Poor performance of related and regulatory organizations and institutions", "Low public awareness of environmental laws and values", "Weak education and research in the field of agricultural land management", and "Shortcomings and weaknesses of the Agricultural Jihad Organization and related organizations". were found to effectively have some effects on the phenomenon of unauthorized agricultural land-use change in the province. This corresponds to the results of Ghasemi's (2003) research, which proposes factors such as "improper access to inputs and support services provided by the government and improved economic and social status", "restricted access to water resources, soil fertility problems and topography of the production unit", "restrictions from the location of the production unit" and "Coercion by government organizations", "Failures related to land management and government agricultural policy", "legal factors", "inconsistencies between bodies and organizations", "psychological and educational challenges", and "problems and shortcomings pertaining to land management".

The present study suggested that the driving force groups of "Lack of land survey and absence of a comprehensive plan for preserving agricultural land-use", "The difference between the price of agricultural land and the price of other uses" and "Changing culture and the existence of social problems and needs" were found to have some effects on this phenomenon, which was in line with the findings of the study carried out by Hosseinzadeh Dalir et al. (2009), describing the groups of "policies and planning", "low land prices", and "population growth and the existence of socio-economic problems in cities".

According to the results, driving force groups of "problems facing the agricultural sector", "Lack of land survey and a comprehensive plan for preserving agricultural land-use", and "trading agricultural lands with an agreement paper" were effective on this phenomenon. They respectively correspond to Espindola et al.'s (2011) research, which divided the driving force groups into "market access", "public policy" and "land structure", respectively.

The results also indicated that driving force groups of "problems facing the agricultural sector", "environmental and ecological factors", and "Changing culture and the existence of social problems and needs" were affecting the phenomenon of unauthorized agricultural land-use change in the province. This finding is in line with the results of Olaniyi et al.'s (2015) research, describing actor groups of "agricultural labor force", "availability of agricultural land and climatic factors", and "urban planning and aging", respectively.

Preservation of agricultural lands plays a major role in achieving the goals of sustainable development programs and a resilient economy. The results of the present study will help the planners and officials of the province to operate better within the integrated and correct management of agricultural lands. According to the results, 15 actors directly and indirectly

affected the preservation of agricultural land-use in East Azarbaijan province, Iran. In addition to the Agricultural Jihad Organization, 13 other relevant organizations or institutions and 4 regulatory organizations were also involved in this issue.

In the meantime, 104 driving forces were found to be effective in the unauthorized agricultural land-use change in the province, and were classified into 24 groups. In this regard, the following driving forces accounted for the highest frequency, respectively: "Pressure and influence of influential and rent-seeking people", "Lack of manpower in Land Affairs Management", "Greed of intermediaries and profiteers", "Absence of a comprehensive program to preserve agricultural land-use" and "Low income for agricultural activities". Out of 104 driving forces identified, the following were, in order of priority, found to have affected this phenomenon. They include 48 driving forces which affect "Agricultural Land Owners, Farmers and Land-use Changing Individuals and Institutions", 46 driving forces affecting "Agricultural Jihad Organization", 45 driving forces affecting "Relevant organizations and institutions (other than the Agricultural Jihad Organization, including 13 organizations or institutions)", 33 driving forces affecting "Regulatory organizations", 33 driving forces which affect "profiteers and intermediaries", 30 driving forces affecting "land and real estate traders and investors", 26 driving forces affecting "real estate advisors", 25 driving forces affecting "influential and rent-seeking individuals", 24 driving forces affecting "Dehyars and members of villages' Islamic councils (local management)", 19 driving forces affecting "national and provincial policymakers and planners", 11 driving forces affecting "jurists and lawyers (active outside the relevant organizations)", 10 driving forces affecting "local community and popular organizations", 8 driving forces affecting "law-makers", 8 driving forces affecting "Universities and education and research centers" and lastly, 7 driving forces which affect "private companies and institutions". Considering the fact that out of 104 driving forces, 48 driving forces affect the decision-making and behavior of agricultural landowners, farmers and land-use changing individuals and institutions, and that 124 driving forces affect Jihad Agricultural Organization, relevant organizations and institutions, and regulatory organizations; it is suggested that planners and officials in charge of agricultural land conservation pay special attention to this issue.

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