

THE ROLE OF WATER SCARCITY IN MIGRATION OF FARM OWNERS AND WORKERS. A CASE STUDY OF RAFSANJAN, IRAN.

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As the vital resource for life, water has been a central theme on the international agenda for several decades. The impacts of climate change and drought have been highly problematic in developing countries. Agriculture and water scarcity have double-barrel effect on each other. Agriculture is the most important reason of water shortages in cities with agricultural based economy like Rafsanjan. The main agricultural product of Rafsanjan is pistachio. About 70 percent of total population of the city and its suburban areas are occupied in agriculture. Pistachio has an important contribution in economic situation of Rafsanjan's residents and the country. In the last decades the city has faced with an extreme drought, the risk of major crop losses and water restrictions for its population. Water scarcity and the decline of agriculture in Rafsanjan has influenced the social life and the economy of the city. The fall of agricultural industry and decreasing income of farm owners and relatively the amount of available job has had serious local, national and global consequences. Because of the available job opportunities in agricultural industry of Rafsanjan it has been a popular destinations for refugees from neighboring countries. But the decline of agricultural industry has result in migration of refugees from Rafsanjan to other countries especially in Europe. In a global level, this movement of refugees can affect refugee crises in European countries. The Local Agenda 21 for the city of Rafsanjan in one of global efforts that was made to save the city of Rafsanjan and its agricultural industry. The Local Agenda 21 for Rafsanjan is an UN-HABITAT Program. The Local Agenda for Sustainable Development has been seeking a strategy aimed at managing the living space and urban development. The program tried to find the required resources, evaluates and uses them for the development purposes. Despite the national and international efforts to solve these issues, increasing immigration rate has faced city with the risk of becoming a ghost town in the near future.

This research has studied the impact of water scarcity and unsustainable agricultural practices in Rafsanjan on immigration of farm owners and workers and the impact of local, national and global development plans on adaptation of agricultural practices in Rafsanjan to climate change. The research has used a quantitative data collection method through a questionnaire consisting of 13 questions, which its content validity was confirmed by experts in the field and its reliability was calculated by the Cronbach's alpha. The target group of the survey were 200 farmers who have sold their lands and 180 people who were working for them and lost their jobs in past seven years. The result has shown that water scarcity was the most important reason for farmers to sell their lands. It also suggests that those who have abandoned agriculture were using unstainable irrigation methods, were not familiar with any climate change resistance agricultural practices and no global or national program was supporting their activities. A large number of foreign agricultural workers who lost their jobs were living the in suburban areas, inside farms or refugee camps. Most of them are still unoccupied, living illegally with the risk of deportation and have the intention to migrate to a third country.

The research concludes that the impacts of climate change on agriculture and is already alarming. The changes in precipitation and temperature which has led to water shortages in Rafsanjan has damaged the agricultural industry and consequently farmers and agricultural workers life. The study suggests that adapting agriculture to climate change through climate resistance and efficient irrigation system as a short term solutions and mitigation of climate change through adoption of sustainable agricultural practices as a long term solution are essential for future of cities like Rafsanjan.

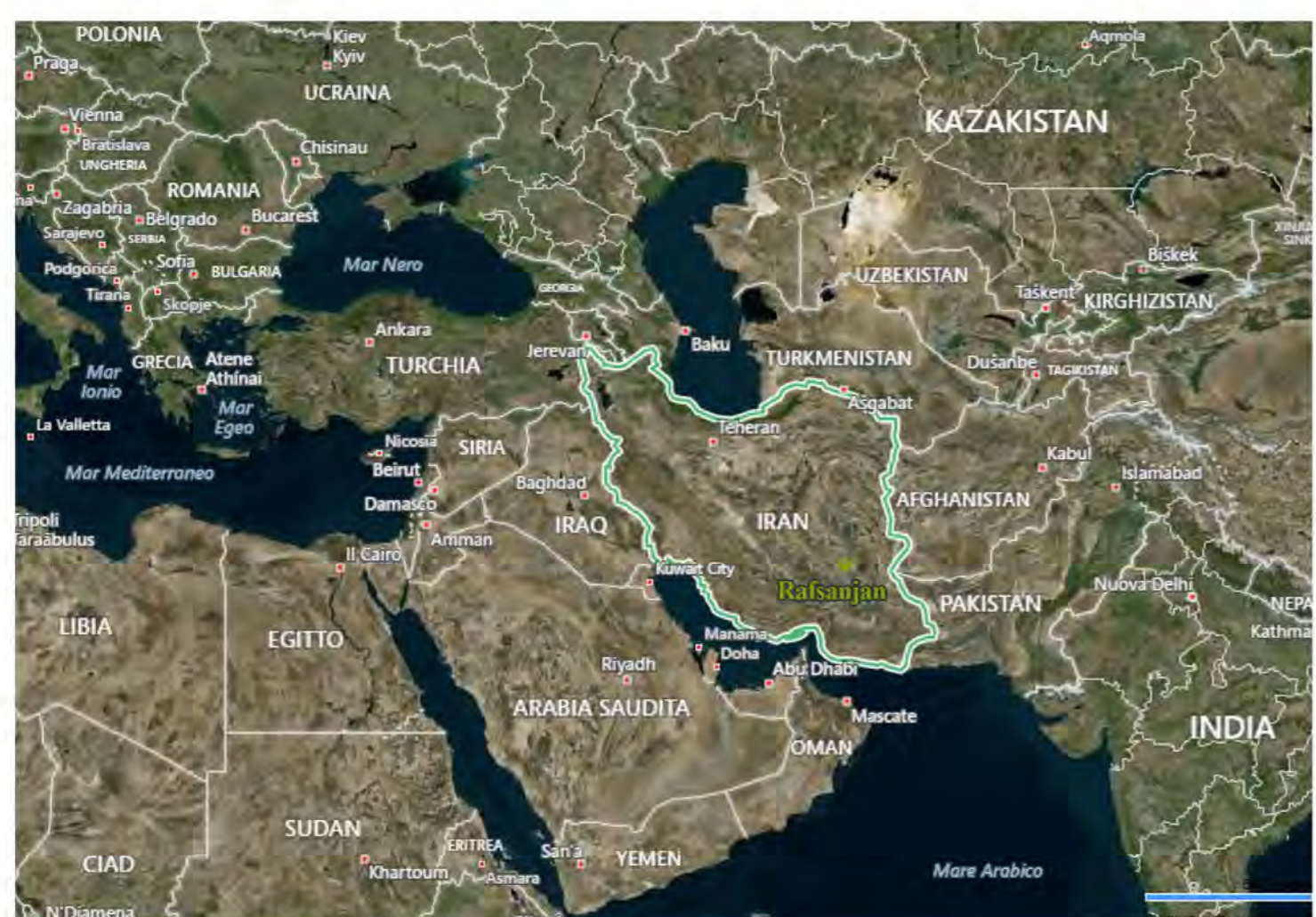


Figure 1 The map of Iran (Bing map)



Figure 2 Aerial view of Rafsanjan (Bing map)



Figure 3 Agricultural land in south Rafsanjan (Jafari)

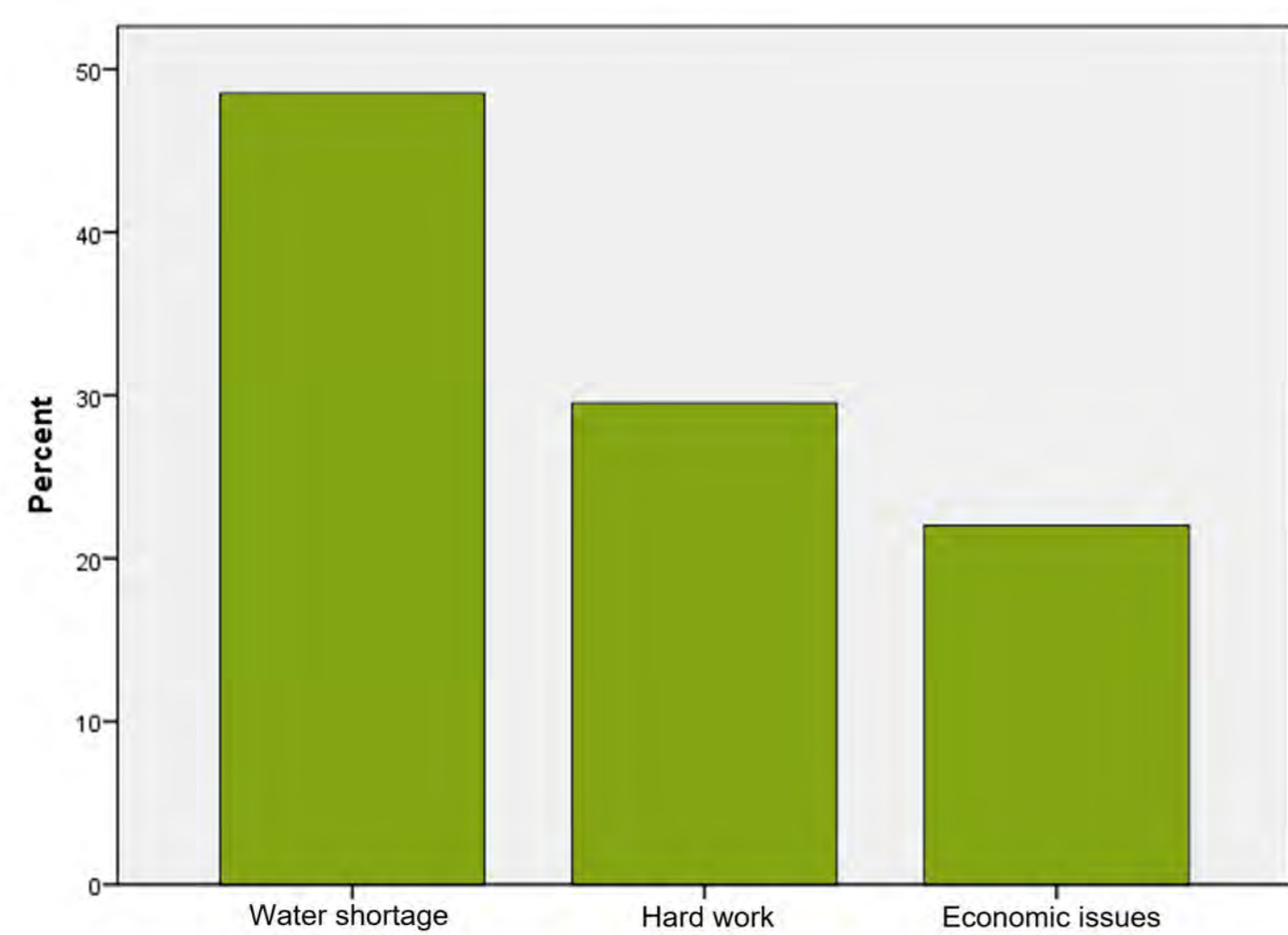


Table 1. Reasons for farmers to sell or abandon their agricultural lands in Rafsanjan

Reason	Frequency	Percent	Valid Percent	Cumulative Percent
Water shortage	97	48.5	48.5	48.5
Hard work	59	29.5	29.5	78.0
Economic issues	44	22.0	22.0	100.0
Total	200	100.0	100.0	

water scarcity was the most important reason for farmers to sell their lands

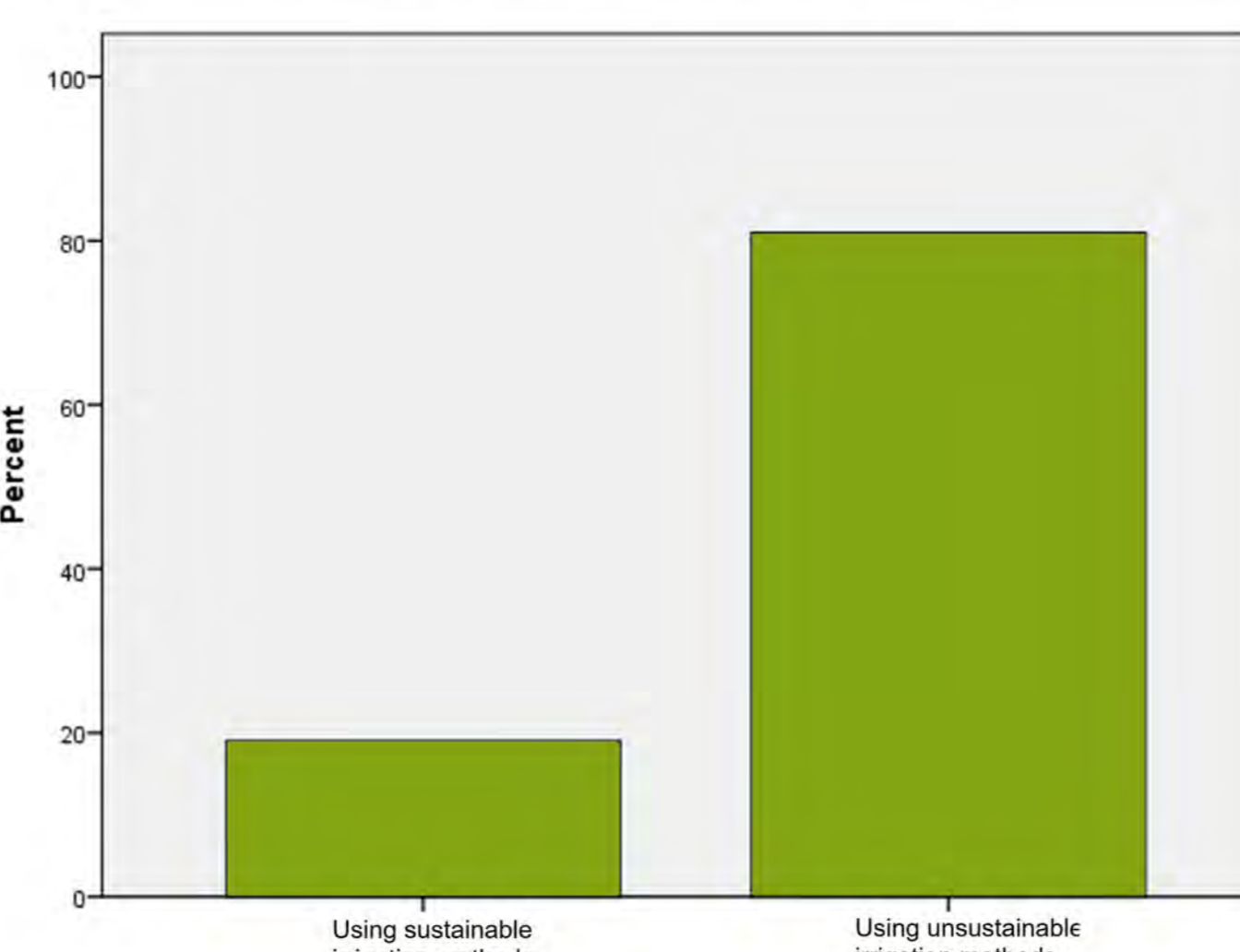


Table 2. Numbers of farmer who are using sustainable irrigation methods

Method	Frequency	Percent	Valid Percent	Cumulative Percent
Using sustainable irrigation methods	38	19.0	19.0	19.0
Using unsustainable irrigation methods	162	81.0	81.0	100.0
Total	200	100.0	100.0	

Farmers who have abandoned agriculture were using unstainable irrigation methods

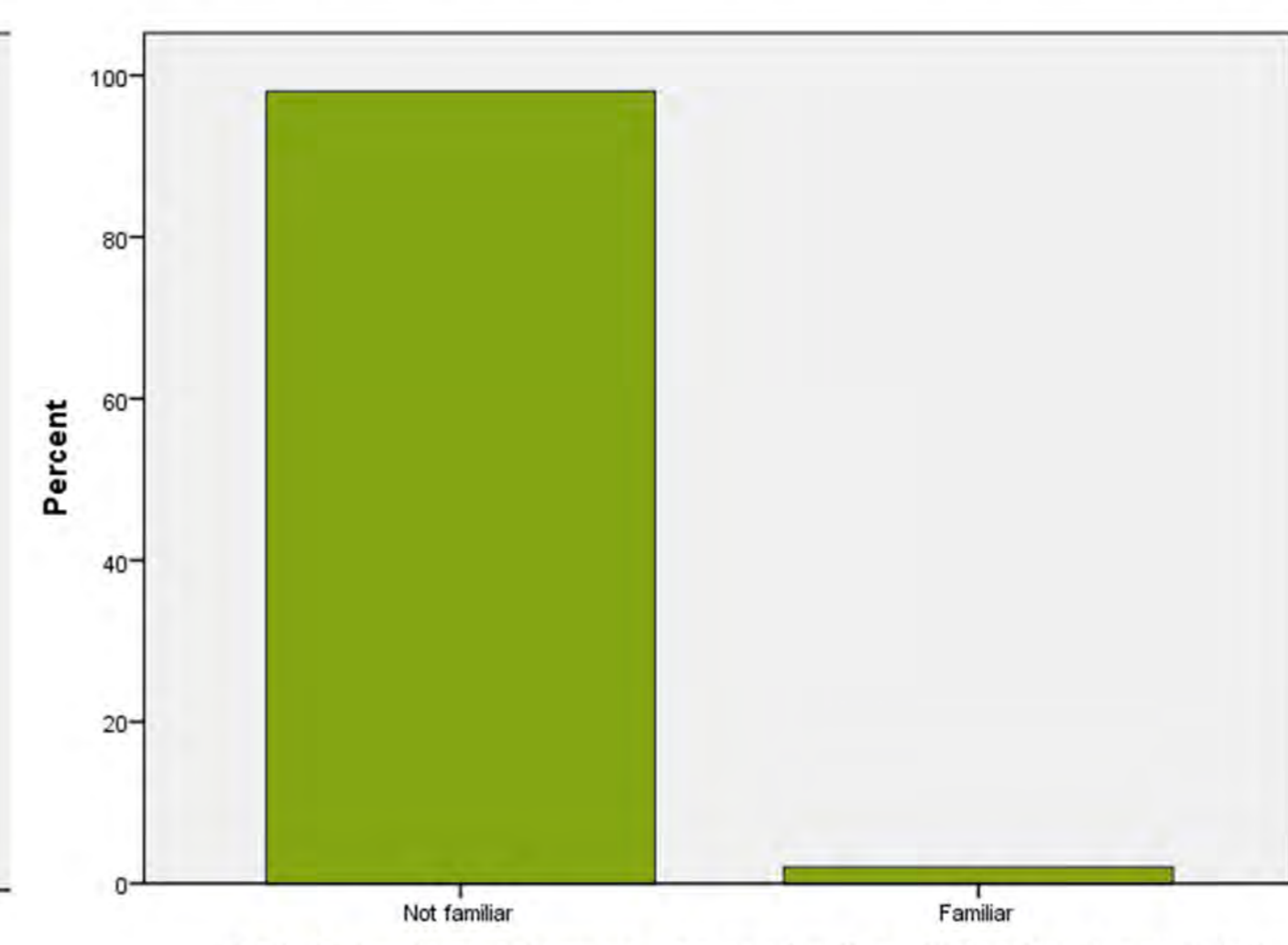


Table 3. Numbers of farmers who are familiar with local/national/global plan/programs to solve current issues of agricultural industry in Rafsanjan

Familiarity	Frequency	Percent	Valid Percent	Cumulative Percent
Not familiar	196	98.0	98.0	98.0
Familiar	4	2.0	2.0	100.0
Total	200	100.0	100.0	

Farmers were not familiar with any climate change resistance agricultural practices and no global or national program was supporting their activities

Table 4. The status of refugees that came in Rafsanjan to seek job as farm workers

Status	Frequency
Unchanged and have been able to find work	12
Unable to find work in Rafsanjan, but stayed there with economic issues	28
Have migrated to other cities	15
Live in refugee camps	18
Returned to their country	11
Emigrated to European countries	5
Want/decided to emigrate to Europe	41

A large number refugees who were farms workers in Rafsanjan as a result of water scarcity and decline of agricultural industry in Rafsanjan have lost their jobs.

Most of them are still unoccupied, living illegally with the risk of deportation and have the intention to migrate to a third country.

The result of this study shows that beside war and conflicts in middle east issues like climate change, water scarcity and the decline of agricultural industry are forcing the refugees to immigrate in western countries.