

## Analysis of Farmers' Coping Capacity against Drought Hazard (Case Study: Farmers of Fariman County)

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### 1. Introduction

Climate change has become a global issue today, an issue that many people around the world are at risk of severely changing. These changes have led governments to put the preparation of their communities at risk at the forefront of their actions and programs. In this context, the role of governments at the local and national level and minimization programs of the impacts on communities and their associated consequences are important. In order to reduce the direct and indirect vulnerabilities of drought-affected areas, including social, economic, and environmental, and in broader geographical areas, these areas need strategies to mitigate the effects of drought and boost coping capacities. Focusing on adaptability to current climate changes is the most viable response in the face of an uncertain climate future. Since drought is a multifaceted phenomenon in terms of its impact on farmer driven communities, various social, economic and environmental aspects have to be considered to assess the capacities needed to counter this rough phenomenon.

Khorasan Razavi is one of the provinces of Iran experiencing a very high drought with amount of 7.89%. On average, 3.7% of the area of Khorasan Razavi province has severe drought and 7.17% suffers from very severe drought. Five province counties have the severe drought more than 50 percent. According to the data from the Meteorological Organization of Iran, until June 2019, Fariman is one of the regions with intense drought conditions in the province with a severe drought of %1.40, a very severe drought of %2.50, and a total of 3.90% of drought. The purpose of the present study was to investigate the perceptions of rural farmer households of Fariman County against drought and long-term strategies for dealing with it to reduce the resulting damages.

### 2. Study Area

According to the latest divisions of the country, Fairman is one of the cities of Khorasan Razavi province, which is located in the north of the province. This county located at 58 degrees and 31 minutes to 60 degrees and 34 minutes east longitude and 35 degrees and 28 minutes to 36 degrees and 1 minute north latitude and has an area of about 3225 square

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kilometers which is equivalent to 1.3% of the total area of the province. The center of this city is Fariman, which is located 75 km southeast of Mashhad along the Mashhad-Torbat-Jam and Herat routes, which is 216 km from the Afghan border. The city is also located at the altitude of 1411 meters above sea level and is 26 square kilometers. At present, this city includes two at the present time, the city consists of two central and non-central parts.

### **3. Materials and Methods**

To do this research, based on Lucas and Hilderink's (2005) triple approach, which includes knowledge, ability, and action, we assess the dealing capacities and adaptability in rural communities. Then, two approaches, crisis management knowledge (such as dimensions of prevention, preparedness, exposure and institutional-communication) and local community resilience approach (including structural and non-structural approach), were combined with Lucas and Hilderink's triple approach and examined based on an integrated model. The present study, with a descriptive-analytical approach and practical nature, seeks to evaluate and measure the coping capacity of farmers in Fariman, which includes two basic steps: 1) Determination of indicators and criteria for the dealing capacity and adaptability among rural households using desk studies; 2) Field studies were conducted through survey method and questionnaire tools. The main theoretical approach of the research is the theory of Lucas and Hilderink (2005) on promoting the dealing capacity against drought hazard which includes three dimensions of awareness, ability, and action.

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

Findings at levels of dealing capacity and adaptability indicate undesirable and weak conditions of farmers against drought. According to the results of the study, farmers have known lack of precipitation with amount of 3.61% of the drought, the According to the results, farmers have considered the lack of precipitation with amount of 3.61% as the main cause of drought in their village, which is consistent with the experience of drought in Iran, especially in the last two decades. Their village, which this issue is consistent with the experience of drought in Iran, especially in the last two decades. The goal of dealing and adaptability strategies is to increase farmers' ability to cope with drought and its effects in different areas. Therefore, assessing ability against drought is another step that points to assessing the potentials of farmers for dealing drought hazard. As the findings of the study show, the average resilience dimension in the prevention dimension was estimated to be 2.27 and it suggests that in the absence of sufficient awareness, the indigenous people will not be able to take preventive measures at the individual or broader level to cope the drought and As the research findings show, the average ability in the prevention dimension was estimated to be 2.27, which indicates that in the absence of awareness, consequently cognitive to predict risks such as drought is not formed or is very weak. This factor makes the indigenous person unable to take preventive measures at the individual or wider level in the face of drought even in structural dimensions of action capacity, the average was reported to be 2.18, indicating a very low capacity of farmers against the consequences of drought in their rural area. In other two dimensions of ability, namely, preparedness and exposure, the mean level was 2.19 and 2.16,

respectively. These average levels explicitly These levels explicitly indicate the low level of farmers' ability in the context of coping capacity and adaptability. below the level of ability of farmers in terms of dealing capacity and adaptability. When the low ability capacity is perceived, it does not necessarily lead to action capacities against drought. In the non-structural and institutional-communication dimensions, the findings indicate a worse situation. This means that the local government does not receive significant performance from farmers in discussing the institutional-communication element for drought management and minimizing its effects. This low institutional performance points to the incompatibility between local people and local government, which will be an additional factor in the wider drought in the region.

## 5. Conclusion

Overall, the findings suggest that short-term coping capacity and long-term adaptability by farmers are at serious risk. Findings show that at all three levels of awareness, ability, and especially action, the situation is undesirable, and if no effective action is taken either to increase the resilience of farmers or to manage the drought crisis in rural areas, this situation, in the long run may lead to complete soil degradation, loss of groundwater resources, and even complete evacuation or removal of the settlement. Therefore, in this regard, it is better for the local government, with the help of the central government and considering entering the wet season, not only to improve and repair the resources and infrastructure lost during the drought, but also with the adaptive capacity approach to further development the sustainability among local people and at the level of rural development and provide the necessary infrastructure.

**Keywords:** Drought, Coping Capacity, Rural Farmers, Fariman County

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