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Investigating the Effects of Drought on the Economic Status and Lives of Farmers in Qala-e-Naw District, Badghis Province, During the Year 1403

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ABSTRACT

Drought is a natural phenomenon that has recently exerted significant negative impacts on the population of Afghanistan. Unfortunately, adequate mitigation measures have not been adopted within the country; consequently, the detrimental effects of this phenomenon on the Afghan population are escalating daily. This study aims to investigate the impact of drought on the economic status and livelihoods of farmers in the Qala-e-Naw district of Badghis province during the year 1403. Through quantitative research employing a questionnaire, data were collected 61 farmers who were selected purposively. on The findings revealed that consecutive droughts in 1403 have had devastating effects on the economic and livelihood conditions of farmers in the Qala-e-Naw district as a result of reduced rainfall and available water resources have led to a decrease in cultivated land area, the destruction of orchards, and severe damage to crops, including wheat, melons, and watermelons. More than 80% of farmers in this district have experienced drought directly and severely, with approximately 55% of agricultural crops sustaining damage. Water procurement costs have risen, compelling many families to rely on non-conventional sources such as water tankers; this has exacerbated living expenses and deepened poverty. This phenomenon has resulted in a reduction or complete cessation of income for over 70% of farming households, increased seasonal unemployment, diminished food security, and migration to urban areas. Furthermore, social tensions regarding water resources have intensified. Consequently, based on these findings, implementing supportive policies and strategic planning to develop appropriate mechanisms to mitigate the impact of this crisis is essential.

Keywords: Drought; Net Income; Farmers; Economic Status; Qala-e-Naw District.

INTRODUCTION

Drought is a natural atmospheric hazard that occurs in every region of the world and has various impacts on human societies. This phenomenon typically occurs in arid or semi-arid regions and entails adverse economic, social, and environmental consequences. Consequently, researchers globally emphasize comprehensive drought management today (Nasrati, 2018). Afghanistan is a landlocked country vulnerable to a range of natural disasters, including droughts, floods, avalanches, earthquakes, and landslides. Furthermore, according to reports from international organizations, Afghanistan ranks sixth globally in terms of vulnerability to climate-related hazards, such as droughts and floods. Due to its location, the country lies within the global arid belt and has an arid climate (Safi et al., 2024). For this reason, drought intensity varies across Afghanistan's provinces based on drought vulnerability indices. According to reports, nearly half of the Afghan population is severely exposed to natural hazards such as droughts, landslides, avalanches, and earthquakes. Drought, one of the most prominent global climate threats, has had profound impacts on rural communities, particularly farmers in arid and semi-arid regions and developing nations, including Afghanistan

(World Bank Group, 2017). In Qala-e-Naw district of Badghis province, similar to many other regions of the country, reduced precipitation, dwindling water resources, and rising temperatures have led to a decline in agricultural output, a reduction in the income of farming households, an increase in seasonal unemployment, international migration, and the emergence of extensive social challenges (Qutbudin et al., 2019). Farmers in drought-prone areas face higher production costs, limited access to financial resources, and difficulties securing family livelihoods, in addition to declines in both the quantity and quality of agricultural products.

Analyzing the coping and adaptation strategies of farmers—particularly at the local level—is of paramount importance; formulating support policies and programs based on empirical evidence can play a crucial role in mitigating the impacts of this climatic phenomenon on farmers' socio-economic conditions. Drought in Afghanistan is the result of a complex interaction between climatic and anthropogenic factors and has become one of the primary drivers of humanitarian needs across the country. Since 1969, Afghanistan has experienced at least eight widespread droughts. In 2018 alone, over 13 million people were affected, followed by approximately 11 million in 2021. The depletion of groundwater levels, particularly in river basins such as the Helmand, Kabul, and the North, has restricted sustainable access to water for millions of people (Karim et al., 2015).

Climate projections indicate that rising temperatures, melting glaciers in the Hindu Kush region, and shifting precipitation patterns will further exacerbate drought conditions in the future. The La Niña phenomenon, which is typically associated with reduced precipitation in the region, could intensify this situation (Aliyar et al., 2022). Concurrently, policies such as the opium cultivation ban enacted by the ITA (International Trade Administration) in 2022 and its replacement with wheat and other water-intensive crops have exerted increasing pressure on water resources, raising the exploitation of surface and groundwater to alarming levels.

Drought has affected not only natural resources but also the human and social dimensions of society. The depletion of groundwater levels, contamination of water sources, and urban population growth—particularly following migration from rural areas—have heightened the risk of water scarcity in cities such as Kabul and Herat. These shortages will have direct impacts on public health, especially in areas with informal settlements. Furthermore, an increase in gender-based violence, intensified child malnutrition, the outbreak of waterborne diseases, and reduced access to sanitation and health services are among the human consequences of this phenomenon (Bakker et al., 1999). Vulnerable groups, including internally displaced persons (IDPs), returnees, women, children, persons with disabilities, and impoverished families, experience the most severe impacts of drought. Concurrently, increasing competition over water and land resources heightens the risk of local tensions, ethnic conflicts, and the weakening of social cohesion and political stability. Accordingly, the primary objective of the present study is to provide a comprehensive and evidence-based analysis of the drought situation in Afghanistan, with a specific focus on the Qala-e-Naw district of Badghis province. It also examines the impacts on farmers' livelihoods and food security, while offering recommendations for planning and critical strategies for managing drought and water resources.

MATERIALS AND METHODS

This study, titled "An Investigation into the Effects of Drought on the Economic Status and Livelihoods of Farmers in Qala-e-Naw, Badghis Province during the year 1403," was conducted employing a mixed-methods approach (qualitative and quantitative) to assess the impact of drought on the economic and livelihood conditions of farmers. The required data were collected through semi-structured interviews and a 24-item questionnaire. Purposeful sampling was u. Approximately 61 questionnaires were distributed among the respondents, consisting ofsed to select participants. Approximately 61 questionnaires were distributed to farmers residing in the study area who were directly affected by the drought.In addition to primary field data, secondary sources were utilized, including books, relevant scientific articles, case and comparative studies, and policy documents regarding drought management and risk reduction in Afghanistan.

The collected quantitative data were analyzed using SPSS. Descriptive statistics (mean, percentage, and standard deviation) were used to examine relationships among variables. Furthermore, the qualitative data were analyzed using Thematic

Content Analysis to extract farmers' perspectives and experiences regarding the impacts of drought and their coping strategies..

RESULTS

As stated in the Materials and Methods section, this study was conducted utilizing both library and field resources. The theoretical framework and introduction were compiled from library sources, whereas this section presents the analysis of the fieldwork results.

Data collection constitutes a critical phase of this research, and the necessary data can be gathered through various methods. The questionnaire is a common research tool and a direct method for data collection. This study was undertaken to examine the effects of drought on the economic status and livelihoods of farmers in Qala-e-Naw, Badghis Province, in 1403. The various parameters investigated during the study have been analyzed and are discussed in the following sections.

Household Size	Frequency	Percent	Valid Percent	Cumulative Percent
3 to 5 Members	10	16.4	16.4	16.4
5 to 7 Members	20	32.8	32.8	49.2
7 or More Members	31	50.8	50.8	100.0
Total	61	100.0	100.0	

Table 1. According to the research findings, the majority of respondents belong to large households; specifically, 50.8% of them have families consisting of 7 or more members. Furthermore, 32.8% of participants report a household size of 5 to 7 members, while 16.4% report a household size of 3 to 5 members.

Respondents' Age	Frequency	Percent	Valid Percent	Cumulative Percent
15–20 Years	28	45.9	45.9	45.9
20–25 Years	3	4.9	4.9	50.8
25–30 Years	27	44.3	44.3	95.1
30–35 Years	3	4.9	4.9	100.0
Total	61	100.0	100.0	

Table.2: Respondents' Age

Based on the research findings, the age distribution of the farmers indicates a predominantly young agricultural workforce in the region. Specifically, 45.9% of the farmers are aged between 15 and 20 years, while 44.3% fall within the 25 to 30 age bracket.

Education Level	Frequency	Percent	Valid Percent	Cumulative Percent
Illiterate	20	32.8	32.8	32.8
Primary Education	24	39.3	39.3	72.1
Grade 12	11	18.0	18.0	90.2
Grade 14 (Diploma)	4	6.6	6.6	96.7
Bachelor's Degree	2	3.3	3.3	100.0
Total	61	100.0	100.0	

Table.3. Education Level

According to this research, the literacy level among farmers is low. Specifically, 32.8% of the respondents are illiterate, while 39.3% have only attained a primary education. In contrast, only a marginal 3.3% of the participants hold a ' 'Bachelor's degree.

Type of Produce	Frequency	Percent	Valid Percent	Cumulative Percent
Cereals	55	90.2	90.2	90.2
Vegetables	6	9.8	9.8	100.0
Total	61	100.0	100.0	

Table.4. Type of Product

The results of this study indicate that the overwhelming majority of farmers—over 90%—engage in cereal cultivation. Conversely, only a minor proportion, ranging from 3% to 9%, are involved in the cultivation of vegetables.

Land Area	Frequency	Percent	Valid Percent	Cumulative Percent
1 to 3 Jeribs	1	1.6	1.6	1.6
3 to 5 Jeribs	57	93.4	93.4	95.1
5 to 10 Jeribs	1	1.6	1.6	96.7
10 or More Jeribs	2	3.3	3.3	100.0
Total	61	100.0	100.0	

Table.5. Cultivated Land Area According to this study's findings, the majority of farmers in this region have limited agricultural landholdings. Specifically, an overwhelming 93.4% of the respondents hold only 3-5 jeribs of agricultural land.

Annual Income	Frequency	Percent	Valid Percent	Cumulative Percent
5,000 to 10,000 AF	60	98.4	98.4	98.4
10,000 to 50,000 AF	1	1.6	1.6	100.0
Total	61	100.0	100.0	

Table.6. Types of Crops and Plants

Based on the findings of this research, drought has had a devastating impact on income levels. An overwhelming 98.4% of farmers earn a highly negligible annual income, ranging from 5,000 to 10,000 AF.

Farming Type	Frequency	Percent	Valid Percent	Cumulative Percent
Drip Irrigation	3	4.9	4.9	4.9
Rain-fed (Lalmi)	58	95.1	95.1	100.0
Total	61	100.0	100.0	

Table.7.Annual Income Level

According to this research, agriculture in this region is highly dependent on precipitation. This is evidenced by the fact that 95.1% of farmers practice rain-fed (dryland) farming, whereas only 4.9% have adopted drip irrigation systems.

Crop Type	Frequency	Percent	Valid Percent	Cumulative Percent
Cereals	59	96.7	96.7	96.7
Vegetables	2	3.3	3.3	100.0
Total	61	100.0	100.0	

Table.8. Type of Farming

Statistical analysis of this table indicates that the cultivation pattern in the study area is predominantly monocultural and based on cereals. According to the data, 96.7% of the respondents (59 out of 61) are engaged in cereal production, whereas only 3.3% (2 individuals) cultivate vegetables. This high concentration on cereal crops reflects the dominance of traditional subsistence agriculture in the Qala-e-Naw district. Under drought conditions, the high sensitivity of cereals to water scarcity significantly escalates the economic vulnerability of the farmers.

Impacted by Drought?	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	61	100.0	100.0	100.0

Table.9. Types of Crops and Plants

According to the research findings, 100% of the respondents confirmed that the drought over the past two years has profoundly impacted their lives, resulting in a drastic reduction in income and causing extensive damage.

Damaged Product	Frequency	Percent	Valid Percent	Cumulative Percent
Cereals	44	72.1	72.1	72.1
Vegetables	16	26.2	26.2	98.4
Fruits	1	1.6	1.6	100.0
Total	61	100.0	100.0	

Table.10. Drought Impact Severity

Research findings regarding the impact of drought on agricultural yields indicate that cereals are the most vulnerable group to climate change, accounting for 72.1% of total losses. Vegetables follow in second place with 26.2%, while fruits recorded the lowest level of damage at only 1.6%. This statistical distribution demonstrates that the water crisis directly threatens food security through the destruction of strategic crops (cereals), highlighting the urgent need to revise irrigation systems and increase support for farmers in this sector.

Proposed Measure	Frequency	Percent	Valid Percent	Cumulative Percent
Drought-resistant crop training	59	96.7	96.7	96.7
Financial aid/loans	1	1.6	1.6	98.4
All of the above	1	1.6	1.6	100.0
Total	61	100.0	100.0	

Table.11. Damaged Products

According to the research findings, 96.7% of the farmers believe that providing training on drought-resistant crops is the most effective strategy for mitigating the impacts of climate change.

Performance Rating	Frequency	Percent	Valid Percent	Cumulative Percent
Effective and continuous aid	57	93.4	93.4	93.4
Limited and ineffective aid	3	4.9	4.9	98.4
No assistance received	1	1.6	1.6	100.0
Total	61	100.0	100.0	

Table.12. Effective Measures to Reduce Impacts

The analysis of these findings indicates a high level of satisfaction with supportive interventions among the target community; specifically, 93.4% of the farmers (57 out of 61) evaluated the assistance from relevant authorities and aid organizations as 'effective and continuous.' In contrast, only 4.9% perceived the aid as limited, and a mere 1.6% reported receiving no assistance. This statistical distribution suggests that, despite climatic challenges, the humanitarian and technical aid distribution networks in the region have operated successfully, extending their support to the overwhelming majority of affected farmers.

Received Training?	Frequency	Percent	Valid Percent	Cumulative Percent
Yes, trained	1	1.6	1.6	1.6
No, not trained	60	98.4	98.4	100.0
Total	61	100.0	100.0	

Table.13. Performance of Relief Agencies

According to this study's findings, despite the high demand, 98.4% of farmers have received no training in modern water resource management techniques.

Impact on Income	Frequency	Percent	Valid Percent	Cumulative Percent
Severely decreased	61	100.0	100.0	100.0

Table.14. Educational Gap

Based on the results of this study, 100% of the respondents confirmed that the drought over the past two years has profoundly affected their lives, resulting in a drastic decline in income and causing extensive damage.

Resource Trend	Frequency	Percent	Valid Percent	Cumulative Percent
Severely decreased	61	100.0	100.0	100.0

Table.15. Drought Impact Severity

According to the research findings, 100% of the farmers reported a severe depletion of water resources. Currently, 98.4% of them depend on deep or semi-deep wells for irrigation.

Adopted Measure	Frequency	Percent	Valid Percent	Cumulative Percent
Well digging for irrigation	1	1.6	1.6	1.6
Changing crop varieties	60	98.4	98.4	100.0
Total	61	100.0	100.0	

Table.16. Water Resources Status

According to this study's results, to cope with current conditions, 98.4% of farmers have changed their crop varieties.

Gross Annual Income	Frequency	Percent	Valid Percent	Cumulative Percent
5,000 AF	1	1.6	1.6	1.6
10,000 AF	60	98.4	98.4	100.0
Total	61	100.0	100.0	

Table.17. Measures Adopted by Farmers

The research results indicate that an overwhelming majority of farmers (98.4%) earn an annual income of approximately 10,000 AF, highlighting a critical subsistence crisis and extreme economic poverty in the region. This high statistical concentration at the lowest income level reflects the low productivity of agricultural activities due to drought impacts and a lack of diversified income sources. Such a meager income level severely restricts the farmers' capacity for reinvestment in their land and their ability to cope with environmental shocks.

Experienced Challenge	Frequency	Percent	Valid Percent	Cumulative Percent
Yield reduction	61	100.0	100.0	100.0

Table.18. Annual Income Levels

Statistical analysis reveals that the drought has had a 100% impact on the entire sample population; all 61 surveyed farmers reported experiencing a severe decline in agricultural production. This absolute consensus in the data (a frequency of 61 out of 61) signifies the absolute vulnerability of the region's agriculture to climate stressors and the total erosion of farmers' livelihood stability during the year 1403 (2024-2025)

Primary Water Source	Frequency	Percent	Valid Percent	Cumulative Percent
Surface water (Canals/Rivers)	1	1.6	1.6	1.6
Deep or semi-deep wells	60	98.4	98.4	100.0
Total	61	100.0	100.0	

Table.19. Drought Impacts and Experienced Challenges

Data analysis from this table illustrates a compulsory shift and a critical reliance of the region's agriculture on groundwater resources. According to the statistics, 98.4% of the farmers (60 out of 61 respondents) depend on deep or semi-deep wells for land irrigation. Conversely, the share of surface water (canals, streams, and rivers) has dwindled to a negligible 1.6%. This trend signifies the near-total depletion of surface water bodies, forcing a precarious over-reliance on aquifers that may lead to long-term hydrogeological instability in the district.

Crop Category	Frequency	Percent	Valid Percent	Cumulative Percent
Rain-fed crops (Lalmi)	60	98.4	98.4	98.4
Irrigated crops	1	1.6	1.6	100.0
Total	61	100.0	100.0	

Table.20. Primary Irrigation Water Sources

The findings of this table indicate that the vast majority of drought-induced losses are concentrated in rain-fed agriculture; specifically, 98.4% of the respondents (60 out of 61) emphasized that 'rain-fed crops' suffered the most extensive damage. In contrast, only 1.6% (1 individual) reported significant losses in irrigated lands. This stark statistical disparity underscores the heavy reliance of Qala-e-Naw farmers' livelihoods on precipitation and the lack of sustainable irrigation infrastructure. Consequently, under climate crisis conditions, rain-fed farming becomes the primary and most significant casualty.

Scarcity Level	Frequency	Percent	Valid Percent	Cumulative Percent
Very High	61	100.0	100.0	100.0

Table.21. Drought-Affected Crop Types

Based on the results of this research, 100% of the farmers reported a severe depletion of water resources. Currently, 98.4% of them depend on deep or semi-deep wells for irrigation.

Cultivation System	Frequency	Percent	Valid Percent	Cumulative Percent
Rain-fed (Lalmi)	1	1.6	1.6	1.6
Irrigated	1	1.6	1.6	3.3
Both	59	96.7	96.7	100.0
Total	61	100.0	100.0	

Table.22. Status of water resource

Based on the results of this research and the data presented in the table, the total number of respondents for question 22 is 61. The findings indicate that an overwhelming majority of respondents selected the 'Both' option, with 59 individuals—representing 96.7% of the total—choosing it. This demonstrates that nearly all surveyed participants utilize or endorse both 'Rain-fed' (Lalmi) and 'Irrigated' farming systems simultaneously.

Impact Level	Frequency	Percent	Valid Percent	Cumulative Percent
High	61	100.0	100.0	100.0

Table.23. Type of Cropland Cultivation

Based on the results of this research, 100% of the respondents confirmed that the drought over the past two years has profoundly affected their lives, resulting in a drastic reduction in income and causing extensive damage.

Proposed Strategy	Frequency	Percent	Valid Percent	Cumulative Percent
Digging deep wells	60	98.4	98.4	98.4
Building dams for rain/snow storage	1	1.6	1.6	100.0
Total	61	100.0	100.0	

Table.24 Farmers' proposed adaptation strategies to drought

According to the research findings, an overwhelming majority of the farmers (98.4%) recommend the drilling of deep wells as a primary strategy to mitigate the impact of drought.

DISCUSSION

The findings of this study demonstrate that the 1403 (SH) drought was not merely a short-term climatic phenomenon, but rather a profound economic, social, and structural crisis for the farmers of Qala-e-Naw District in Badghis Province. These results indicate that drought remains one of the most significant threats to the livelihoods of communities dependent on subsistence agriculture in arid and semi-arid regions (FAO, 2021; IPCC, 2022). The severe reduction in precipitation and the resulting limitations on water resources have led to a substantial decline in the production of primary crops, including wheat, barley, melons, vegetables, and horticultural products. Similar studies suggest that beyond reducing production quantity, drought severely impacts the quality of agricultural yields due to water stress and diminished soil fertility (Lesk et al., 2016). This situation has directly reduced farmers' income, severely limiting their capacity to procure essential agricultural inputs such as seeds, fertilizers, and pesticides (Wheeler & von Braun, 2013). According to the research results, 98.4% of farmers report annual incomes between 5,000 and 10,000 AF, and recurrent incomes between 5,000 and 10,000 AF, indicating absolute poverty and extreme livelihood vulnerability. These findings align with research conducted in vulnerable rural areas, which indicates that drought exacerbates the cycle of poverty, indebtedness, and dependence on humanitarian aid (Dercon, 2004; World Bank, 2020). Under such circumstances, rural households are compelled to liquidate their productive assets as a survival strategy, thereby significantly diminishing their resilience to future drought episodes. A pivotal factor exacerbating the impacts of drought in this region is the agricultural structure, which is predominantly rain-fed (dryland) farming; notably, 95.1% of all agricultural activities depend directly on precipitation. Research indicates that rain-fed agricultural systems in arid regions are the most sensitive to climatic fluctuations. Consequently, without the implementation of modern water management techniques, food security in these regions will remain chronically

endangered (Rockström et al., 2010; Falkenmark et al., 2019). The fact that 100% of respondents reported a drastic decline in income further underscores this structural vulnerability. Furthermore, while 93.4% of farmers perceived assistance from relevant organizations as effective and consistent, a staggering 98.4% reported receiving no technical training in water resource management or drought adaptation strategies. This significant disparity between emergency relief and sustainable empowerment poses a fundamental challenge for drought management policies in developing nations (UNDP, 2018). Research emphasizes that in the absence of training and technical knowledge transfer, supportive aid interventions yield only short-term effects and fail to foster sustainable shifts in agricultural practices. The shift by 98.4% of farmers toward excavating deep and semi-deep wells as an emergency measure to address immediate water requirements poses a significant long-term risk of severe groundwater depletion and intensified hydrological drought. Numerous studies indicate that the over-extraction of groundwater resources during drought periods jeopardizes ecosystem sustainability and the livelihoods of future generations (Gleeson et al., 2012). Furthermore, the degradation of rangelands and the scarcity of fodder resources have led to a decline in livestock value, posing a critical threat to the livelihoods of pastoralists—a consequence frequently highlighted in the literature on drought and traditional animal husbandry (Thornton et al., 2011). These economic and livelihood pressures have driven many rural households to migrate to the city of Qala-e-Naw. Research indicates that drought-induced migration often leads to the expansion of urban poverty, unemployment, increased pressure on infrastructure, and heightened food insecurity (Black et al., 2011; World Bank, 2021). From a social perspective, the increase in local conflicts over water resources, psychological stress, family tensions, and mental health issues reported in this study align with findings that identify drought as a catalyst for social crises and mental health challenges in rural communities (Stanke et al., 2013). Finally, the results demonstrate that although over 90% of farmers continue to cultivate cereal crops, these yields have suffered the most from the drought (72.1%). The willingness of 96.7% of farmers to receive training on drought-resistant crops indicates a high level of social readiness to modify cultivation patterns. This finding is consistent with the scientific literature, which emphasizes crop diversification, the cultivation of low-water-demand crops, and high-value agriculture as key strategies for drought adaptation (Kahiluoto et al., 2019). In conclusion, the present results confirm that the 1403 drought in Qala-e-Naw District was a multidimensional crisis. Addressing it effectively requires a transition from short-term relief-based approaches to comprehensive, sustainable, and climate-resilient strategies that encompass Integrated Water Resources Management (IWRM), technical training for farmers, and the restructuring of agricultural patterns.

CONCLUSION

The findings of this study demonstrate that the 1403 drought in the center of Qala-e-Naw was not merely a climatic phenomenon, but a full-scale economic crisis for the region's farmers. Data analysis reveals a state of structural poverty: despite 93.4% of farmers reporting receiving aid from relevant organizations, their livelihoods have plummeted, with 98.4% of households earning an annual income of only 5,000 to 10,000 AF.The extreme vulnerability of rain-fed (dryland) agriculture, which accounts for 95.1% of the region's farming, coupled with the concentration of 96.7% of farmers in cereal cultivation, has led to a 100% decline in yields and income following reduced precipitation. A critical educational gap further exacerbates these impacts, as 98.4% of farmers have received no technical training regarding water resource management under crisis conditions. Furthermore, the depletion of surface water has compelled 98.4% of farmers to resort to deep and semi-deep wells, signaling a hazardous drop in future groundwater tables. The successive droughts have led to increased indebtedness and livelihood instability. This situation is compounded by limited access to financial resources, the absence of agricultural insurance, and insufficient government support programs.

RECOMMENDATIONS

1. Water Infrastructure Development: Construction of water dams and check dams to harvest seasonal runoff and facilitate groundwater recharge.

2. Provision of Agricultural Inputs: Distribution of certified, improved, and drought-tolerant seed varieties among farmers to ensure yield stability.

3. Financial and Technical Assistance: Provision of targeted financial subsidies and technical support to drought-affected farmers and pastoralists to rebuild their livelihoods.

4. Modernization of Irrigation Systems: Expansion of modern irrigation technologies, remarkably drip and localized irrigation, to maximize water-use efficiency.

5. Risk Management Mechanisms: Establishment of agricultural crop insurance schemes to protect farmers against climatic shocks and production losses.

6. Livelihood Diversification: Promotion of off-farm employment opportunities and vocational training in rural areas to reduce over-reliance on rain-fed agriculture.

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