DISASTER RISK REDUCTION ASSESSMENT
UNDERSTANDING LIVELIHOOD RESILIENCE IN JORDAN

ASSESSMENT REPORT

NOVEMBER 2016
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Executive Summary

Context

According to the INFORM 2016 risk index, which assesses global risk levels based on hazard exposure, fragility of socio-economic systems and insufficient institutional coping capacities, Jordan has a medium risk profile, with increasing socio-economic vulnerability being a particular area of concern. Since 1990, Jordan has also experienced human and economic losses due to flash floods, snowstorms, cold waves, and rain which is indicative of the country's vulnerability to physical hazards. Such risk factors are exacerbated by the fact that Jordan is highly resource-constrained; not only is it semi-arid with only 2.6% of arable land, but it has also been ranked as the third most water insecure country in the world. Resource scarcity aggravates vulnerabilities within the agriculture sector which could have severe implications given that agriculture provides an important means of livelihood for 15% of the country's population, primarily in rural areas. Resilience of agriculture is also closely linked to food and nutrition security.

The onset of the crisis in neighbouring Syria in 2011 and subsequent arrival of large numbers of refugees has further exacerbated these existing vulnerabilities. It has brought about concerns over increased pressure on existing socio-economic and natural resource systems and what such pressure means for the resilience of livelihoods. For the purpose of this assessment, ‘resilience’ has been defined as the ability of communities to prevent, absorb and recover from disasters and shocks, employing the livelihood assets and safety nets accessible to them. While it is acknowledged that the current crisis has exacerbated existing vulnerabilities, understanding about how the interaction of pre-existing vulnerabilities with disruptions brought about by the crisis is aggravating livelihoods and what implications this has for future risk resilience remains deficient. Further, there also appears to be a lack of information regarding existing mitigation and preparedness strategies at the local levels. Insufficient information hinders the capacity of actors seeking to build resilience to design programming based on priority concerns and vulnerabilities among at-risk communities.

In light of the above and to inform the tailoring and targeting of such resilience-based programming, between June and July 2016 the Regional Food Security Analysis Network (RFSAN), in collaboration with the Food and Agriculture Organization of the United Nations (FAO) and REACH, conducted a nationwide Disaster Risk Reduction (DRR) assessment in Jordan. The assessment employed a qualitative approach with two key components: a macro-level secondary data review, followed by community level data collection through 52 Focus Group Discussions (FGDs).

Prior to the start of data collection, a preliminary zoning exercise was conducted with support from REACH’s Geographic Information System (GIS) team to understand the relevance of geographic features to risk assessments and facilitate the selection of communities where FGDs would take place. From this exercise, six ecological zones were identified based on land cover, elevation and sloping. Overall, the goal of this assessment is to improve the understanding of the risks communities face in sustaining livelihoods, context-specific ways in which communities are currently mitigating these risks and challenges they face in mitigation. Such an understanding could be useful to guide relevant actors in strengthening livelihood resilience through community level DRR programming in the country.

1 INFORM is a collaboration of the Inter-Agency Standing Committee Task Team for Preparedness and Resilience and the European Commission which assesses the risk of humanitarian crises and disasters in 191 countries. See also: http://www.inform-index.org the report outlining results from the 2016 Index for Risk Management is available here.
2 INFORM, Jordan Country Risk Profile: http://www.inform-index.org/Countries/Country-profiles In the 2015 index, Jordan was ranked 19th in the world in terms of socio-economic vulnerability. See also: Prevention Web, Jordan Disaster and Risk Profile
3 Prevention Web, Jordan Disaster and Risk Profile (data as of 2014)
4 World Bank Global Database (last updated 2013)
5 Maplecroft, Water Security Index (2014) available online
6 FAO, Plan of Action: Resilient Livelihoods for Agriculture and Nutrition Security in Areas of Jordan Affected by the Syria Crisis (January 2014), p.6
7 For this assessment, Disaster Risk Reduction (DRR) was defined as any activity undertaken at the household, community or government level which seeks to protect livelihoods from disasters and sudden shocks, build the resilience of people and their communities and make people more capable of absorbing the impact of shocks as well as of recovering from them.
8 Zones 1-4 are rural areas, whereas Zones 5 and 6 include urban areas. For this assessment, urban areas were differentiated based on settlement sizes and population densities. Zone 5 covers big urban settlements in Amman, Irbid and Zarqa; and Zone 6 includes smaller urban settlements across remaining governorates. Zone 1 comprises rural parts in Amman, Ma’an, Mafraq and Zarqa governorates which have mostly barren land cover, high elevation and low sloping. Zone 2 includes rural parts of Aqaba, Karak and Tafilah which share common characteristics in terms of barren and shrub land land cover, medium elevation and high sloping. Zone 3 covers rural parts of Ajloun, Irbid and Jerash as they have similar land cover (mostly croplands and shrub lands) and high sloping. Zone 4 comprises rural parts of Balqa and Madaba with shrublands land cover, low elevation and medium sloping.
Key Findings

Based on data collected through FGDs, key findings from this assessment are as follows:

- **The key challenges perceived to be affecting livelihood resilience are related to socio-economic, environmental or structural factors.** Socio-economic factors include inflation, price shocks and increased costs of living; unemployment and insufficient job opportunities; and pressures brought about by abnormal population growth due to conflicts and subsequent displacements in the region. Environmental factors such as seasonal performance, climate change and scarcity of natural resources were also perceived to be relevant, especially in rural areas. Finally, structural factors include a perceived lack of institutional support to strengthen resilience, heightened regional insecurity and its effects on trade and tourism and an uneven distribution of development in the country.

- **Pre-existing vulnerabilities such as resource scarcity, unsuitable climatic conditions and rapid population growth are perceived to be at risk of being exacerbated by crisis-related disruptions.** Crisis-related risks include inflation, price shocks and a subsequent inability to meet basic needs; disruptions to trade and tourism; increased job competition and unemployment; and further population growth which could disrupt ability of infrastructure to cope with the needs of the population.

- While resource scarcity emerged as a key environmental risk at a household level, problems related to insufficient water and arable land may be characterized as resource management challenges. Existing land and water resources may be sufficient if used more efficiently and efforts to conserve them for the future are intensified.

- **Socio-economic shocks are a priority concern for communities in urban areas whereas shocks associated with environmental factors are more of a priority in rural areas.** These variations can be attributed to the higher reliance on agricultural livelihoods in rural areas. Such findings reinforce the relevance of area-based approaches to tailor DRR programming which account for variations in types of livelihood activities, especially between urban and rural contexts.

- **In addition to livelihood variations, findings also indicate the relevance of geographic and ecological variations to risk perceptions.** For instance, this assessment found that water scarcity was a particularly important concern for communities in the Badia desert region (large part of Zone 1). Similarly, economic shocks brought about by border closure and disruptions to trade were found to be particularly relevant in areas closer to the Syrian border such as Ramtha and rural parts of Irbid Governorate. Further, areas with predominantly barren land cover such as Karak and Aqaba governorates (Zone 2) cited scarcity of arable land as a specific future risk.

- **Women and men tended to prioritise different risks as being relevant to livelihood resilience.** While men prioritised macro-level challenges such as inflation and unemployment, women gave more weight to micro-level factors such as increasing debt burdens, existing barriers to accessing employment opportunities and insufficient external support to develop and sustain livelihood activities.

- **In terms of existing strategies for risk mitigation and preparedness, households predominantly employ short-term coping strategies in response to existing socio-economic challenges.** Community level initiatives and government support for mitigation and longer term preparedness were found to be present to a certain extent for climate change related risks; for example, in anticipation for winter floods and snowstorms, existence of snow ploughing equipment and mechanisms to drain water from farms were discussed.

- **Key challenges faced in risk mitigation and preparedness are a perceived lack of structural capacities for risk assessment, monitoring and planning (for example, deficient early warning systems); inadequacy of resources at the household level to invest in future planning and preparation (both materially and in terms of practices and technical knowledge); and inadequate awareness about existing support mechanisms.**

- **Although the situation in the distant past (i.e. prior to the Syria crisis) was perceived to have been relatively better for all assessed communities, some instances of past shocks similar to present challenges were also discussed. Past shocks were either socio-economic, brought about by outbreaks of conflict in the region and subsequent arrivals of refugees, or environmental, brought about by climate-related hazards such as drought. The repetition of shocks over time indicates the possibility of anticipating effects of similar shocks in the future and thus the scope to adopt a more preparatory planning approach for DRR programming in Jordan.**

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8 For the purpose of this assessment, factors were defined as any influence, shock or event/ incident which affects the overall quality of life; the discussion of such effects were based on how they impact availability of resources required to provide for the needs of the household and challenges faced in accessing such resources.

9 The Badia is characterised by less than 200mm of rainfall per year See also: FAO Jordan, Country Pasture/ Forage Resource Profiles
Conclusion and Recommendations

Based on these key findings, the following priority concerns and scope for future programming can be identified:

Priority Concerns for Disaster Risk Reduction:

- **Price instability, lack of adequate employment opportunities and the growing inability to sustain living costs appear to be key concerns across all assessed communities.** Enhancing socio-economic development through initiatives for employment generation, vocational training, and provision of micro-finance support could thus strengthen resilience in the event of future economic crises. For rural areas with perceived low levels of job opportunities as shown in Map 4, improving access to public transportation could enhance access to livelihoods, since insufficient reliable and affordable transportation was cited as a key factor affecting access to employment opportunities in these areas.

- **Sustaining livelihoods in the backdrop of rising prices and decreasing availability of job opportunities appears to be a pressing concern for women.** As such, gender-targeted interventions providing tailored support could strengthen women’s resilience to future socio-economic shocks. Female FGD participants discussed the need for such support to develop and sustain home-based business projects such as handicrafts, small-scale olive farming and dairy production. Need for support appears to be for both material support (provision of financial support and/or equipment and inputs) and technical support (capacity building and vocational training programmes). While there is a demand for such home-based business projects, challenges have been faced in the past in effectively marketing the goods they produce, suggesting a need for more diverse approaches to promoting female livelihoods or at least, increased support to ensure that such projects receive the support they need to become sustainable in the long term.

- **Agricultural communities are at a particular risk of being unable to sustain agricultural practices due to increasing costs of agricultural inputs.** The provision of material support such as fertilisers, seeds, and livestock fodder in the short term could help strengthen resilience to future shocks. In some areas in southern Jordan Valley such as Ghoursafi (Karak Governorate), there appears to be a higher need for other specific inputs such as greenhouse infrastructure.

- **In addition to the rising costs of inputs, inadequate technical knowledge and capacity also appears to be affecting communities’ abilities to sustain agricultural practices.** Provision of technical guidance and support could thus contribute towards strengthening the sustainability of agricultural livelihoods in the longer term. This includes providing capacity building support and technical guidance to promote and encourage sustainable agriculture practices, including in sustainable water management and land use practices. Inadequate knowledge and experience needed to maintain agricultural livelihoods appears to be a priority concern for youth; youth-targeted technical guidance and knowledge sharing interventions could thus also be useful to strengthen resilience of agricultural livelihoods.

- **Water scarcity is one of the biggest issues affecting agricultural livelihoods and it can become a greater issue in coming years because of climate change and abnormal population growth.** Creating awareness of sustainable water management strategies for irrigation, especially techniques to improve efficient water use by altering agricultural practices in a way that generates higher returns per unit of water, could help communities in mitigating risks related to water scarcity. Water scarcity was most commonly cited as a risk in Zones 1 and 3 which reflects the scope for area-based interventions targeted at communities engaging in agriculture in these areas.

- **Agricultural communities in the Jordan Valley cited challenges arising from the inability to sell agricultural produce due to trade disruptions and import policies that are perceived as being unfavourable to farmers.** In terms of the latter, participants perceived that trade policies result in situations in which the supply of agricultural goods exceeds demand. There may be a strong role for the private sector in developing these markets and efforts should be made to better connect farmers with those that can help them add value to what they produce.

- **Farming communities in the Jordan Valley also cited increased outbreak of pests such as tuta absoluta** as key challenges affecting agricultural production. This suggests that there is a greater need for support in pest control measures for these communities than there is elsewhere.

10 These priority concerns are based on the writer’s own conclusions; they have been identified based on key findings and specific details within the factors cited most commonly as affecting resilience of livelihoods in Jordan.

11 Tuta absoluta is a species of moth commonly known as tomato leaf miner, tomato borer and South American tomato moth. See also: FAO, "FAO steps up response to serious tomato pest in Near East" (July 2012).
Rapid population growth brought about by conflicts and displacement in the region have added pressure on services and infrastructure, exacerbating pre-existing vulnerabilities. Public infrastructure which was found to be specifically relevant for livelihoods includes education and transportation, both of which are linked to enhancing access to employment opportunities. Improving access to services and strengthening public infrastructure could thus help to strengthen community resilience to risks associated with population pressures. The need to improve access to services and strengthen public infrastructure seems to be a priority for smaller urban settlements across the country (Zone 6) and for those rural areas which have a high proportion of communities hosting refugees.

In terms of risk mitigation and preparedness, a key challenge appears to be insufficient awareness about existing support mechanisms. Raising awareness about existing institutional support mechanisms and response capacities for DRR could thus be an important starting point to address this challenge. Better understanding of how to access existing support mechanisms could be generated through targeted awareness raising campaigns using media outlets and public service announcements in radio, news broadcasts, newspapers, etc.

Outlook and Further Research Needs

By providing a baseline of key factors affecting livelihoods, including common risk perceptions and the strategies currently in place to prevent, mitigate and prepare for these risks, this assessment outlines priority areas of concern vis-à-vis livelihood resilience in Jordan. The qualitative nature of the assessment has enabled the identification of key themes which can contribute towards the establishment of a resilience baseline through which relevant organizations and agencies can measure the results and impacts of future programming.

The following avenues for further research can be identified:

- Since this was a qualitative assessment with a relatively small sample size, findings identify key themes and issues but not the wider prevalence of these issues. Further quantitative research using indicators based on these themes could be useful to measure the prevalence of risk perceptions and understand further why these perceptions vary across geographically dispersed communities.

- For factors affecting resilience of agricultural livelihoods, additional quantitative research to obtain specific details and measure the wider prevalence of these issues could contribute towards enhancing targeting of DRR programming in agricultural contexts. Additional research can also help to further differentiate risks and DRR programming options amongst the sub-sectors of agriculture. Future assessments that examine agricultural contexts in greater depth should utilize Jordan’s existing agro-ecological zoning.

- The assessment identifies mitigation and preparedness strategies at the local level; nevertheless, further research could be conducted to determine the extent to which these strategies are used. Since community and municipal level mitigation and preparedness strategies identified in this report are based on what was cited by participants during FGDs, further research may be needed to determine the validity of findings, verify the extent to which such initiatives are functional on the ground and obtain more specific details to understand how these initiatives fit into the broader approach to DRR in Jordan.

- While this assessment sought to understand the perception of risks at a household and community level in Jordan, it should be emphasized that the risks highlighted by FGDs is not exhaustive. Disaster risk reduction experts highlighted a number of risks that were not mentioned or frequently discussed in FGDs including dust storms, water quality, displacement caused by future conflicts in the region, wastewater, waste disposal, air pollution and earthquakes. Some of these risks may pose Thus, future efforts to understand disasters and risks in Jordan should rely on a combination of expert opinion as well as community contributions.
### List of Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>ACC</td>
<td>Agriculture Credit Corporation</td>
</tr>
<tr>
<td>CBOs</td>
<td>Community Based Organisations</td>
</tr>
<tr>
<td>DRR</td>
<td>Disaster Risk Reduction</td>
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<tr>
<td>DRM</td>
<td>Disaster Risk Management</td>
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<tr>
<td>FAO</td>
<td>Food and Agriculture Organisation of the United Nations</td>
</tr>
<tr>
<td>FGD(s)</td>
<td>Focus Group Discussion(s)</td>
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<tr>
<td>GIS</td>
<td>Geographic Information System</td>
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<tr>
<td>JOD</td>
<td>Jordanian Dinar</td>
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<tr>
<td>JRP</td>
<td>Jordan Response Plan</td>
</tr>
<tr>
<td>MoA</td>
<td>Ministry of Agriculture</td>
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<tr>
<td>MoL</td>
<td>Ministry of Labour</td>
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<tr>
<td>MOPIC</td>
<td>Ministry of Planning and International Cooperation</td>
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<tr>
<td>NCARE</td>
<td>National Centre for Agricultural Research and Extension</td>
</tr>
<tr>
<td>NGOs</td>
<td>Non-Governmental Organisations</td>
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<tr>
<td>ODK</td>
<td>Open Data Kit</td>
</tr>
<tr>
<td>RFSAN</td>
<td>Regional Food Security Analysis Network</td>
</tr>
<tr>
<td>UNHCR</td>
<td>United Nations High Commissioner for Refugees</td>
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<tr>
<td>UNRWA</td>
<td>United Nations Relief and Works Agency for Palestine Refugees in the Near East</td>
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</table>
Geographical Classifications

**Governorate:** The highest administrative boundary in Jordan below the national level. It has an executive and advisory body; the governor is the highest executive authority in the governorate and the representative of the executive authority and leads all government employees in the governorate. The governor also has authority over all governorate departments except for judges.

**Districts and sub-districts:** All 12 governorates in Jordan are divided into districts which are further divided into sub-districts.

**Municipality:** A civil financially independent institution that can decide its borders. The municipality plans, prepares and implements programmes for sustainable development in consultation with local communities. It manages all services, local facilities and projects which have been assigned to them on their own or through partnership with the private sector and/or civil society institutions. The municipal administration council consists of a chairman (Mayor) and members and the council is directly elected by the community residents.

**Zones:** The six ecological zones identified for the purposes of this research were based on predominant land cover, mean elevation and mean sloping. They were developed to inform the selection of communities where focus group discussions would take place as well as to guide the reporting of results.
INTRODUCTION: CONTEXT AND OBJECTIVES

Context

Over the past two and a half decades, Jordan has reported combined human and economic losses as a result of natural hazards such as flash floods, snowstorms, cold waves, and rain. This is indicative of the country's vulnerability to physical hazards which can have severe implications for resilience, especially in agricultural contexts. Furthermore, according to the INFORM 2016 global risk index which assesses risk levels based on hazard exposure, fragility of the socio-economic system, and lack of institutional coping capacities, Jordan has a medium risk profile, with increasing socio-economic vulnerability being a particular area of concern.

Existing vulnerabilities within Jordan's socio-economic system include perceptions of limited access to public services or poor service quality; limited communication and engagement between citizens and local governments, including limited participation of women in the public sphere; limited employment opportunities and prospects for youth; and perceptions of uneven resource allocation between governorates. In the past, Jordan has also faced high levels of unemployment and inflation. When looking specifically at the agricultural sector, socio-economic vulnerabilities include food insecurity; abnormal population growth, urbanization and the resulting loss of farmlands; rural poverty and the vulnerability of rural populations to price volatility.

Resilience of agricultural livelihoods is specifically important to understand given that agriculture provides an important means of livelihood for 15% of the country's population, primarily in rural areas. Despite agriculture's declining share of the Gross Domestic Product (GDP)—from 40% in the 1950s to less than 4% in 2011—the sector remains critical to the livelihoods of Jordan's poorest citizens. Approximately 25% of the population classified as 'poor' rely on agriculture as a primary means of livelihood. Resilience of the agriculture sector is also closely linked to food and nutrition security; exposure of food production systems to socio-economic shocks, physical hazards and other disruptive events could threaten food supply and the overall food security situation of vulnerable communities.

Such socio-economic vulnerabilities are compounded by the fact that Jordan is already considered to be one of the most resource-constrained countries in the world; not only is it semi-arid with only 2.6% arable land, but the country also faces severe water scarcity challenges. In terms of the latter, Jordan has 92 cubic meters of per capita of renewable internal freshwater resources, such as internal river flows and groundwater from rainfall, which is extremely low in comparison to the world average of 5,925 cubic meters. Indeed, a global risk analysis of water security conducted in 2014 found Jordan to be the third most water insecure country in the world. Resource scarcity especially aggravates vulnerabilities of agricultural livelihoods given the centrality of land and water for the sustenance of livelihoods within this sector.

Such vulnerabilities have been further exacerbated by the onset of the crisis in neighbouring Syria in 2011 and the subsequent arrival of large numbers of refugees. As the crisis becomes more protracted, it has brought about growing concerns over increased pressure on existing socio-economic and natural resource systems and what this means for the resilience of Jordanians and their livelihoods. Within the agriculture sector, the crisis has had severe implications in terms of the

12 Prevention Web, Jordan Disaster and Risk Profile (data as of 2014)
13 INFORM is a collaboration of the InterAgency Standing Committee Task Team for Preparedness and Resilience and the European Commission which measures the risk of humanitarian crises and disasters in 191 countries. See also: http://www.inform-index.org/
16 See also: International Labour Organisation (ILO), Labour market transitions of young women and men in Jordan, June 2014; World Bank data 2006-2014 (last accessed 18 January 2016)
18 FAO, Plan of Action (January 2014), p.6
20 World Bank Global Database (last updated 2013)
21 World Bank Global Database (last updated 2014)
22 A summary of the water security index compiled from this analysis is available online
disruption of food trade, with the closure of borders with Syria bringing about a 25% decline in agricultural exports.23 This decline is especially significant because prior to the conflict, Syria served as a significant market for Jordan’s agricultural products. Indeed, more than a quarter of Jordan’s fruits and vegetables were exported to Syria in 2010.24

The crisis has also disrupted access to cheap agricultural inputs from Syria which has, in turn, brought about a decrease in yield, especially of barley and wheat, specifically in Ajloun, Mafraq and Zarqa governorates.25 Other effects of the crisis on agricultural livelihoods include forced abandonment of farmlands as a result of insecurity along border areas; increased risk of transboundary pests, crop and livestock diseases with the collapse of sanitary controls at border crossings; and a cessation of irrigation water supplies from Syria which has decreased the area cultivated with vegetables from 49,000 hectares in 2010 to 36,000 hectares in 2012.26 On a more general note, findings from recent assessments reveal that a number of pre-existing socio-economic structural challenges in Jordan have been exacerbated by the Syria crisis, specifically in terms of competition for jobs and services.27 Despite increasing concerns over how these pre-existing challenges are being aggravated by the current crisis, there is limited information related to the impact on the resilience of livelihoods in Jordan, especially at the community levels.

Generally, there appears to be a lack of thorough understanding about how the interaction of pre-existing vulnerabilities with disruptions brought about by the crisis are aggravating the livelihood situation and what implications this has for resilience to future risks. Within this context, there is also a need to understand the impact of these challenges on agricultural livelihoods because of the relevance of agriculture to food security and the rural economy. Further, there also appears to be a gap regarding the mitigation and preparedness strategies in place to deal with such impacts, especially at the community level.

Specifically, the following information gaps can be identified:

- Although studies in the past have provided risk analyses for rural livelihoods, focus appears to be mainly on natural hazards such as snowstorms, floods, and drought with very limited focus on man-made hazards arising from socio-economic and political crises. A more comprehensive understanding of risks based on this broader definition of ‘disasters’ in the Jordanian context is therefore needed, especially in light of the aforementioned impacts of the crisis on livelihoods in the country.

- There also appears to be a key information gap in relation to existing risk resilience, response and mitigation strategies at the household and community levels. Information currently available provides an overview of the legislative and governance framework for Disaster Risk Management (DRM), rather than looking into mitigation steps being taken at the community and household levels. A thorough understanding of community-based approaches could be insightful to understand challenges faced in risk mitigation so as to inform more targeted and effective programming to strengthen resilience of communities in Jordan.

In light of these information gaps, there appears to be a need to gain a better understanding of the strengths and weaknesses of existing socio-economic and resource systems across different communities and livelihood groups in Jordan. Specifically, there is a need to understand how pre-existing structural challenges interact with vulnerabilities brought about by the Syria crisis to feed into risk perceptions for communities. There is also a need to understand local approaches to risk mitigation and preparedness and how these approaches fit into the larger institutional DRM framework; this could enable the establishment of a coherent and all-inclusive approach to DRR in Jordan. Furthermore, by highlighting variations in risk perceptions across different communities, such an understanding will also assist in the tailoring of ongoing programming to achieve optimal impact and provide a starting point for developing projects in a way that meets the specific needs of targeted communities.

25 FAO-REACH, ‘Food Security and Livelihoods Assessment: Central and Northern Jordan’ (January 2015), p.20
26 FAO, Plan of Action (January 2014), p.iv
Objectives

To inform the tailoring and targeting of such resilience-based programming, RFSAN, in collaboration with FAO and REACH, conducted a qualitative Disaster Risk Reduction (DRR) assessment across all 12 governorates in Jordan in June-July 2016. The overall goal of this assessment was to help FAO and other relevant actors identify programming options that target disaster risk reduction through strengthening the resilience of Jordanians working in the agriculture sector across the country.

In support of this, this assessment sought to better understand livelihood risks being faced by communities in Jordan, improve understanding of how communities are currently mitigating these risks and identify challenges faced in risk mitigation. Overall, this assessment intends to outline a baseline of risks and mitigation measures against disaster and shocks at the community level. Findings from this assessment can be further validated and measured through future quantitative assessments so as to identify specific indicators that can be used both for identifying beneficiaries and for measuring outcomes of subsequent projects.

Figure 1: Assessment goal and objectives

Objectives

Report Structure

This report will provide a detailed description of the assessment methodology and why it was chosen, followed by an overview of the key assessment findings organised into the following sections:

- **Challenges and Risks**: This comprises of three separate sections on socio-economic, environmental and structural challenges and risks. Each section provides a detailed overview of specific factors within these categories reported to be affecting the resilience of livelihoods. Each section then concludes with existing mitigation and preparedness strategies at the household, community and government levels.

- **Livelihood Resilience - Trends over Time**: This section explores how livelihood resilience has been affected over time, specifically looking into past experiences with shocks and how these are linked to challenges currently being faced and to future risk perceptions.

- **Challenges Faced in Risk Mitigation and Preparedness**: In light of existing mitigation strategies in place at the household, community and government levels, this section outlines overarching challenges faced in risk mitigation and preparedness.

- **Summary**: This section provides a snapshot summary of key findings, looking at how pre-existing vulnerabilities and crisis-related disruptions feed into communities’ perceptions of future risks.

- **Conclusion and Recommendations**: The concluding section of the report reviews key findings within the larger context and objectives of the assessment and provides suggestions on how the highlighted issues may be further investigated or addressed.
METHODOLOGY

Methodology overview: key components and justification

This assessment employed a qualitative approach with two key components. First, a macro-level secondary data review was conducted to identify common risks, government responses to these risks and existing social safety nets. This was followed by community level data collection through 52 Focus Group Discussions (FGDs) across the country.

A preliminary zoning exercise was conducted with support from REACH’s Geographic Information System (GIS) team prior to the start of data collection. FGDs also included a participatory mapping exercise to help identify the different livelihood and risk zones in Jordan and a participatory timeline exercise to trace livelihood stability over time. The aforementioned approach was also chosen to capture key themes which can help with the identification of specific indicators to be measured in future household level quantitative assessments. While not intended to supersede existing geographical zones used by individual sectors, the zones identified through the preliminary zoning exercise may provide a useful delineation of areas in Jordan where specific risks or hazards may apply based on select ecological criteria. Details of the criteria used for the zoning exercise have been outlined in Table 1.

The aim of the preliminary zoning exercise was to identify ecological zones based on land cover, mean elevation and mean sloping. The zoning exercise was intended as a method to understand how different regions may be susceptible to certain risks based on these select criteria and accordingly, to guide the selection of communities where focus group discussions should take place. It is worth noting that the selection of these three criteria was determined by geographical data accessible for REACH at the time.

Annex 3 contains the maps used to identify zones through this exercise. Urban and rural areas were classified within two different layers to account for variations between the types of livelihood activities in these two contexts. Map 2 highlights the ecological zones identified in Jordan based on these criteria. Table 1 below shows the ecological zones developed, the criteria for each designation and the number of FGDs conducted per zone. To ensure that geographically dispersed communities in each zone were well represented, an average of 6-10 FGDs were conducted per zone.

Figure 2: Overview of Assessment Methodology

Identify core themes and specific indicators to be measured in a quantitative survey

Preliminary Zoning Exercise
Focus Group Discussions
Participatory Mapping
Timeline Exercise

Macro-level Desk Review
Table 1: Zones utilized in the assessment

<table>
<thead>
<tr>
<th>Governorates</th>
<th>Criteria for zoning</th>
<th>Number of FGDs</th>
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</thead>
<tbody>
<tr>
<td><strong>RURAL</strong></td>
<td></td>
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</tr>
<tr>
<td>Zone 1</td>
<td>Amman, Ma’an, Mafraq, Zarqa</td>
<td>10 5 5</td>
</tr>
<tr>
<td>Zone 2</td>
<td>Aqaba, Karak, Tafilah</td>
<td>6 3 3</td>
</tr>
<tr>
<td>Zone 3</td>
<td>Ajloun, Irbid, Jerash</td>
<td>10 5 5</td>
</tr>
<tr>
<td>Zone 4</td>
<td>Balqa, Madaba</td>
<td>6 3 3</td>
</tr>
<tr>
<td>Zone 5</td>
<td>Amman, Irbid, Zarqa</td>
<td>10 6 4</td>
</tr>
<tr>
<td>Zone 6</td>
<td>Ajloun, Aqaba, Balqa, Jerash, Karak, Ma’an, Madaba, Mafraq, Tafilah</td>
<td>10 4 6</td>
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**URBAN**

<table>
<thead>
<tr>
<th>Criteria for zoning</th>
<th>Number of FGDs</th>
</tr>
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<tbody>
<tr>
<td>Large urban settlements¹</td>
<td>10 6 4</td>
</tr>
<tr>
<td>Smaller urban settlements</td>
<td>10 4 6</td>
</tr>
</tbody>
</table>

Focus Group Discussions: Coverage and Participant Profiles

Overall, **52 Focus Group Discussions (FGDs) were conducted between 5th June and 12th July among urban and rural communities in 31 different locations across the country.**² FGDs were conducted by a team of two, comprised of one moderator and one transcriber. To allow for an exploration of potential differences in perceptions between men and women, FGDs were divided between male and female FGDs. Data collection teams were provided with training prior to the start of data collection, both on the purpose of the assessment—including the concepts of resilience, DRR and risk mitigation—as well as on the Question Route and the conduct of FGDs.

**FGDs were conducted in both rural (including communities in two of Jordan’s main agricultural production zones, the Badia ³ rangelands and the Jordan Valley) and urban contexts (See Map 1).** Although the initial focus of the assessment was to target rural communities engaging in agriculture, the scope was expanded to cover urban and rural livelihoods to gain a more comprehensive understanding of livelihood resilience and to allow for comparisons of perceptions between urban and rural contexts. However, for each FGD, an engagement question on the importance of agriculture as a livelihood activity was raised at the beginning of the discussion to ensure that sufficient emphasis was placed on related issues.
to allow for comparisons of perceptions between urban and rural contexts. However, for each FGD, an engagement question on the importance of agriculture as a livelihood activity was raised at the beginning of the discussion to ensure that sufficient emphasis was placed on related issues.

The emphasis on agriculture was aimed at understanding future risks to agricultural livelihoods. From a resilience perspective, it is particularly important to understand the vulnerability of agricultural livelihoods given that this sector provides an important means of livelihood for 15% of the country’s population, primarily in rural areas. Furthermore, for some rural communities agriculture appears to be the primary and often only means of income generation. Resilience of agricultural livelihoods is also important to understand because of its links to food and nutrition security; vulnerability of food production systems could threaten access to food and the food security situation of vulnerable communities.

The selection of locations to conduct FGDs was purposive, targeting communities based on specific characteristics – such as involvement with agricultural activities in the Jordan Valley - which could meet the objectives of the study. In urban areas, FGDs were conducted in the capital city of each governorate as well as in other big cities within the governorate such as Russeifah in Zarqa and Ramtha in Irbid. Participants were either recruited on the field on the day of data collection, or through pre-identified Key Informants (KIs) and Community Based Organisations (CBOs) from past REACH data collection exercises.

In terms of the profiles of FGD participants, the average age of all participants was 40 years and a large proportion of the participants (44%, or 126 out of 288 participants) reported to be the head of household. This implies that they were well placed to provide information on household livelihoods as well as on risk perceptions and mitigation strategies at the community level. On average, participants reported to have lived in Jordan for about 34 years which is suggestive of their ability to recall and discuss disasters/ shocks which may have affected livelihoods in the distant past.

Expert Panel Meeting

Following the production of an initial draft of the report based on the secondary data review and FGDs, RFSAN convened a panel of disaster risk reduction experts to review and discuss the findings. The expert panel meeting, which was held on October 25, 2016, consisted of experts from FAO, the Ministry of Agriculture, and Jordanian research institutes (The Badia Research and Development Program and the National Centre for Agricultural Research and Extension – NCARE) as well as other UN agencies involved in disaster risk reduction. The issues raised in the panel discussion were integrated into the final draft of the report and were used primarily to contextualize findings from the FGDs. In instances when the expert panel provided information that contrasted with the findings of the FGDs, the feedback received from the expert panel was used to caveat or qualify the information collected during the FGDs.

Challenges and limitations

- Limitations related to representativeness of findings: Given that this was a qualitative assessment with a relatively small sample size, findings cannot be considered generalizable or representative of the wider population. Furthermore, since participants were predominantly older in age and heads of households, risks and vulnerabilities outlined in this report may not be relevant to perceptions of younger age groups. While risks and mitigation strategies reported in this research may not represent an exhaustive list, they are nevertheless indicative of the most commonly perceived risks and strategies being used by communities. This helps in identifying key themes in relation to resilience in Jordan whose prevalence can be measured further through subsequent quantitative assessments.

- Limitations of data collected and subsequent analysis: In some cases, facilitators faced difficulties in obtaining information and generating discussions on community level DRR practices and on government support for risk mitigation and preparedness. This could either imply an under-reporting of such support or a perceived irrelevance of existing support mechanisms for specific challenges faced by communities. Furthermore, in terms of community level initiatives for risk mitigation and preparedness, what is outlined in this report is based on what was cited by participants during FGDs. Further research may be needed to determine the validity of these findings, verify the extent to which such initiatives are functional on the ground, and identify similar initiatives being undertaken in neighbouring areas. Additional community-wide practices may exist which were not reported during this study.

28 FAO, Plan of Action (January 2014), p.6
Limitations related to gender analysis in an agricultural context: While this study did disaggregate FGDs by gender to capture difference in perceptions between men and women, limited differences in such perceptions were found. This is specifically true for agricultural communities assessed which could be because agriculture in these areas is primarily a male activity. Thus, gender-based differences presented in this report are not as prominent as what was anticipated at the start of the study. In light of this, further research on the role of women in agriculture in Jordan could be helpful to guide gender-based DRR interventions within the agriculture sector in Jordan.

Map 1: Areas covered by Disaster Risk Reduction assessment (sub-district level)
Map 2: Ecological Zones identified based on land cover, sloping and elevation (by Governorate, urban/rural)

JORDAN - Disaster Risk Reduction Assessment

Ecological Zones identified in Jordan based on land cover, sloping and elevation

Note: Data, designations and boundaries contained on this map are not warranted to be error-free and do not imply acceptance by the REACH partners, associates or donors mentioned on this map.

Zone 1 - Rural (High elevation, low sloping/ flat low-lying plains, predominantly barren land cover)
Zone 2 - Rural (High elevation, high sloping, predominantly barren land cover)
Zone 3 - Rural (Elevation differs, relatively high sloping, land cover predominantly croplands and shrub land)
Zone 4 - Rural (Low elevation, medium sloping, land cover differs)
Zone 5 - Urban (Big urban settlements)
Zone 6 - Urban (Smaller urban settlements)
FINDINGS

This section of the report presents main findings from data collected through Focus Group Discussions (FGDs); where relevant, this data has also been corroborated by secondary data review findings. Specifically, the section outlines key factors affecting livelihood resilience in Jordan - both generally as well as specific to agricultural contexts - and seeks to understand how these factors relate to pre-existing vulnerabilities and feed into perceptions of risks for the future. This section also outlines existing mitigation and preparedness strategies to understand what steps are currently being taken to strengthen resilience to these risks, as well as challenges faced in risk mitigation.

As shown in Table 2 factors cited most commonly are socio-economic in nature; specific factors include inflation and price shocks; unemployment and insufficient job opportunities; and pressures brought about by abnormal population growth. Additionally, environmental factors such as seasonal performance, climate change and scarcity of natural resources were also commonly perceived to be having a negative effect on livelihood resilience, especially in rural areas.

Finally, structural factors such as the perceived lack of support needed to sustain livelihoods (for example, through job creation and regulation of prices), conflict in neighbouring countries and its effects on trade and tourism, and perceptions of uneven allocation of investment and resources between governorates were also perceived to be having negative effects on resilience. Table 2 also demonstrates that some geographical variations do exist, specifically in terms of varying levels of priority granted to each factor across the different zones.

A key dynamic which stood out for communities across rural areas was the perceived risk of being unable to sustain agricultural practices. The prevalence of this perception among rural communities is explicable given the higher dependence of rural livelihoods on agriculture in comparison to urban ones. During this assessment, a total of 24 FGDs reported agricultural production as a primary or secondary means of livelihood and income generation. This includes 14 focus groups across two of Jordan’s main agricultural production zones, Jordan Valley (crop farming) and the Badia rangelands (livestock). Map 3 below shows the agricultural areas covered by this assessment. Across all agricultural communities assessed, the overarching perceived risk of being unable to sustain agricultural practices was linked to present challenges. These challenges are either socio-economic (such as increasing prices of agricultural inputs, disruptions to market access), environmental (such as natural hazards, climate change, scarcity of natural resources) or structural (progressive decline of structural support for and investment in the sector) in nature.

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Table 2: Most Commonly Cited Factors affecting livelihoods, by Zones (the darker the more common)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Zone 1</th>
<th>Zone 2</th>
<th>Zone 3</th>
<th>Zone 4</th>
<th>Zone 5</th>
<th>Zone 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflation/Price Shocks</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Unemployment/low job opportunities</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Seasonal/Climatic factors</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Population Growth</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Lack of government support</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Water scarcity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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28 For the purpose of this assessment, factors were defined as any element, shock or event/incident which affects the overall quality of life within a community; the discussion of such effects was based on how they impact availability of resources required to provide for the needs of the household and challenges faced in accessing such resources.
Map 3: Agricultural areas covered by this assessment (sub-district level)

Type of Agriculture:
- Crops
- Livestock
- Crops and Livestock
- FGD Locations (From GPS)

Note: Data, designations and boundaries contained on this map are not warranted to be error-free and do not imply acceptance by the REACH partners, associates or donors mentioned on this map.
Socio-Economic Challenges and Risks

Inflation and Price Shocks

One of the most commonly cited socio-economic challenges across all assessed communities were **inflation and price shocks, and the subsequent increase in costs of living**. This was perceived to be particularly challenging because there has not been a simultaneous increase in income levels to meet increase in prices. **Across all FGDs, the outbreak of the Syria crisis and an increase in the number of refugees since 2011 was perceived as a watershed moment which has negatively affected stability of prices in Jordan.** Figure 3 below shows examples of such increases as discussed within some FGDs. As shown in Figure 3, costs of living are perceived to have increased by almost 50% since 2011. This also holds true when compared to findings from past research; for example, according to the 2015 Jordan Response Plan, there has been a 300% rise in the cost of rent in various locations nationwide due to higher demand for housing and core services.30 As a result of these increase in prices and costs of living, which have been unaccompanied by corresponding increase in income levels, respondents commonly felt that it is **becoming increasingly difficult to maintain pre-crisis standards of living.**

![Figure 3: Perceived increase in average monthly costs of living since the Syria crisis (in JOD)](image)

Unemployment and the Job Market

Another commonly cited socio-economic risk factor was unemployment and insufficient job opportunities. Map 4 below highlights perceptions of availability of job opportunities in Jordan, as indicated by respondents during the participatory mapping exercise. Opportunities were perceived to be lowest in rural areas and in southern governorates including Ma’an, Tafilah and Karak. Meanwhile, opportunities were perceived to be highest in big cities such as Amman, Irbid and Zarqa because of the greater presence of industries and the private sector.

Within smaller urban areas (Zone 6), livelihood opportunities were perceived to be available in Aqaba (tourism and service industry), Salt (farming) and Al Khalidiyah in Mafrak (factories and farms). Opportunities to pursue agriculture were perceived to be available within the Jordan Valley as well as in rural areas in north-western Jordan such as Sakhran (Ajloun Governorate), and Faisalah, Maen, Mlaith, and Wadi Al Mujib in Madaba Governorate. Muaqqaar in Amman and parts of Tafilah were also perceived to have opportunities in the agriculture sector. Finally, opportunities in the tourism and service industry were perceived to be high in Petra and Wadi Musa in Ma’an, and in Aqaba city.

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31 The increase displayed here represents specific examples cited by respondents during some FGDs. It is worth noting that despite price shocks brought about by the Syria crisis being discussed as a challenge during majority of the FGDs, specific examples as these (i.e. in terms of how much the increase has been) were only cited during some discussions.
Map 4: Perceptions of availability of job opportunities as per participatory mapping findings

Note: Data, designations and boundaries contained on this map are not warranted to be error-free and do not imply acceptance by the REACH partners, associates or donors mentioned on this map.

Thematic Data: REACH - FAO, July 2016
Administrative Boundaries: UNOCHA
Background Imagery: USGS
Projection: GCS WGS 1984
File: REACH_JOR_Map_AgricultureAreaCoverage July2016_AC.mxd
Contact: reach.mapping@impact-initiatives.org

It should be noted that some of these areas such as Alroyshed in Mafraq are largely desert areas and are likely to have lesser human settlements and low population densities.
Impact of the Syria Crisis

Challenges related to unemployment and the job market have reportedly been exacerbated by the Syria crisis; FGD participants reported job competition to have intensified in their respective areas because Syrian refugees are willing to accept lower wages and work for longer hours. These perceptions are in line with findings from past research on the impacts of the Syria crisis on hosting communities in Jordan. During a study conducted by REACH in collaboration with the British Foreign and Commonwealth Office (FCO) in May 2014, 14% of Syrian and 7% of Jordanian assessed households cited increased job competition as the most prominent change they had witnessed in their communities. The overwhelming majority of households (81%) agreed that this increase in job competition has led to discontent in their community.

Nevertheless, all FGDs commonly acknowledged that not all sectors have been affected to the same degree by such an increase in job competition. Sectors perceived to have been most affected include informal sectors, especially construction and unskilled labour. In Amman, for example, in the construction sector, Syrian refugees reportedly accept 90 Jordanian Dinars (JOD) per month which is lower than the monthly wages for Jordanians at 200 JOD. These findings are also corroborated by recent quantitative research. A 2015 study conducted by the International Labour Organisation (ILO) in collaboration with Fafo found that since the start of the Syrian crisis, an increase in employment of Syrians in construction and agriculture has been simultaneously accompanied by a decrease of Jordanians working in these sectors. 30% of Jordanians who were employed in construction and in agriculture just before the crisis do not work in these sectors today.

Meanwhile, according to FGD participants, sectors which have not been affected by increased job competition are public sector jobs or self-run businesses. The latter in fact is perceived to be doing better as shop owners and landlords are benefiting from rapid population growth and increased demand. Similarly, small business owners, especially large scale farmers and employers in the service industry, are perceived to be benefiting because they can hire labour for lower wages.

In terms of future risk perceptions, some FGD participants perceived challenges associated with increased job competition to worsen in light of recent political developments in the country; previous regulations restricting Syrian refugees’ access to employment were reviewed by the Ministry of Labour (MoL) earlier in 2016 to enable better access to work permits for Syrian refugees in host communities.

Difference in perceptions between men and women

In terms of variations in perceptions of livelihoods challenges between men and women, female participants highlighted challenges in relation to barriers to women’s employment. For example, female FGDs in urban areas emphasized the role that cultural norms play in limiting opportunities to work outside the home. Women were also more likely than men to perceive the insufficient external support for their own employment as a key challenge. Need for support was defined both in terms of material support (provision of financial support and/or equipment and inputs) as well as technical support (capacity building and vocational training programmes). This support is reportedly needed to develop and sustain home-based business projects and income generating activities such as handicrafts, olive farming and dairy production. Furthermore, debt accumulation was perceived as a key challenge only by female FGD participants, possibly as an outcome of women’s limited access to livelihood options and their greater reliance on external support.

When comparing these perceptions to those of men, while women emphasized a lack of support or other physical barriers to their personal employment, men highlighted macro-economic factors. Men perceived that global and regional economic shocks were responsible for their diminished opportunities and stressed the effects of such shocks on the country as a whole. The higher importance granted to macro-economic challenges by men could be because men are more involved in the public sphere and are therefore more likely to be exposed to the overall socio-economic situation and its implications for individual livelihoods.

The wide gap between the labour force participation of males and females in Jordan 36 could offer a possible explanation for such differences in perceptions. This gap implies that women are less likely to be employed and earn a wage and in consequence, more likely to be reliant on external support. It is also likely that during the FGDs women were more willing and comfortable to discuss the need for external support in comparison to men. Another possible explanation for the greater prioritization of micro-level factors among women could be that because women are more involved in domestic work, they tend to be more involved in the day-to-day functioning of the household, and therefore are more aware of immediate household concerns such as accumulating debts.

Another interesting dynamic which stands out when looking at difference in perceptions between men and women is that on some occasions, perceptions tended to vary within communities in the same geographical areas on the importance of agricultural livelihoods. For example, in Shobak (Ma’an Governorate) and Qadisyah (Tafilah Governorate), only male participants perceived agriculture to be important whereas in Naur (Amman Governorate), only females perceived agriculture as an important livelihood activity. This difference could be based on perceptions of alternative livelihood opportunities available in the area. In Naur for example, men may not consider agriculture as important because it is located near Amman city which is likely to have more job opportunities in comparison to Tafilah and Ma’an. Women may be less likely to perceive these opportunities as available because of more restricted mobility, i.e., women are less likely to travel out of their areas of residence to pursue work.37 Thus, in contexts where the main livelihood opportunity is agriculture, this sector appears to be a male-dominated sphere. However, in contexts where there are multiple job opportunities available, agriculture might fall within the sphere of female livelihood activities.

Population Growth

In addition to price shocks and unemployment, another commonly cited socio-economic factor affecting resilience is abnormal population growth. Indeed, over the past 60 years, the population in Jordan has increased from 0.59 million in 195238 to about 9.5 million as of 2016.39 Such population growth has, over time, brought about increased pressure on natural resources, public infrastructure and scope for employment. These pressures are perceived to have been further exacerbated by the current crisis and the arrival of large numbers of refugees from Syria. For instance, participants in Azraq perceived an increased pressure on water supply as an important challenge that has risen since the crisis.40

36 As of 2014, the female labour force participation rate in Jordan stands at 36.4% which is almost half of that for males at 59.7%. See also: ILO, Statistics Database (Jordan Country Profile)
37 In terms of geographic variations, population pressure is an especially important challenge in Zone 6; this is discernible since this Zone consists of the smaller urban settlements which, in comparison to larger urban settlements, are more likely to have weaker public infrastructure. Some FGD participants in Zones 3 and 5 also perceived overpopulation as a key risk; while this was associated with refugee arrivals in Zone 3, in Zone 5 the risk of population growth was associated with negative effects of urbanisation. Overall, population growth is perceived as a risk because it can affect resilience through three interlinked effects: increased pressure on resources and infrastructure, increased costs of living and increased competition for jobs.
38 Higher Population Council (HPC) and Health Policy Project (HPP), ‘Population Growth and its Impact on Land Use’ (November 2013), p.5
39 Government of Jordan (Department of Statistics), 2015 Population and Housing Census Results. See also: Ghazal, Mohammad. ‘Population stands at around 9.5 million, including 2.9 million guests’ (January 2016). The Jordan Times.
40 Quotes included in text boxes within this report have been paraphrased from translations of original FGD transcripts to reflect common points discussed across FGDs.
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**Inability to Sustain Agricultural Livelihoods**

Within agricultural contexts, a key socio-economic risk is the inability to sustain agricultural livelihoods because of two interlinked factors: increase in the costs of undertaking agricultural activities and disrupted access to markets for agricultural produce.

**Increase in costs of undertaking agricultural activities**

A key risk perception which stands out within rural communities is the inability to sustain agricultural engagement due to increasing expenses and diminishing returns. These increasing expenses are related to high costs of agricultural inputs such as tools and equipments, pesticides, fertilisers, livestock fodder, etc.; high costs of transporting produce to markets; and high wages demanded by hired farm labour. Such increased costs can bring about a reduced ability among communities to sustain agricultural practices and a subsequent diversion to other livelihood activities. Overall, these perceptions are in line with findings from a food security and livelihoods assessment which was conducted by REACH and FAO in collaboration with the Ministry of Agriculture in 2014. As per findings from this assessment, since the onset of the Syria crisis, an increase in the price of inputs and a lack of access to better quality and cheaper inputs from Syria has brought about an overall decrease in agricultural yield in Jordan.41

In this context, an interesting contrast emerges when comparing perceived socio-economic effects of the Syria crisis on livelihoods in general, with challenges discussed specifically by agricultural communities. While lowering of wages was perceived as key socio-economic challenge for livelihoods in general, agricultural communities did not highlight such decreased wages but instead perceived challenges associated with increased costs of hiring farm labour. A possible explanation for this could be that the higher costs of hiring farm labour do not imply an absolute increase in wages but an increase relative to the fact that gains and returns from agriculture are no longer as high as they were before. Therefore, while financial resources were sufficient to hire farm labour before, this may no longer be the case now.

In Dair Alla (Balqa Governorate) which falls within the Jordan Valley, FGD participants also reported challenges related to increasing price of land. High costs of owning land could be having an effect on households’ ability to engage in agriculture as a primary means of livelihood. For instance, expensive land could be a possible explanation for the fact that despite Dair Alla being a part of the country’s main agricultural production zone for crops with relatively greater availability of arable land, FGD participants stated that only 20% of the population in the area rely on agriculture as a primary means of income generation.

Other reported sources of income for residents in Dair Alla include public sector employment (such as the military, municipality, healthcare and education centres), income-generating activities such as driving taxis and working in shops for men and home-based handicraft production for women.

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41 FAO-REACH, ‘Food Security and Livelihoods Assessment: Central and Northern Jordan’ (January 2015), p.20

There has been a massive increase in the price of land over the past five years which is negatively affecting farming communities; sorted land for agriculture which used to cost between 2000 and 2500 JOD (for ½ dunum / 500 square meters) before 2011, now costs about 13,000 JOD.

- Focus Group participant, Dair Alla
Disrupted Access to Markets for Agricultural Produce

Closely linked to the increase in costs of undertaking agricultural activities are challenges associated with disrupted access to markets and inability to sell agricultural produce. This is reportedly making it unviable for communities to rely on agricultural production as a primary source of income. Disrupted market access is perceived to be an outcome of both inability to sell produce in local markets as well as access to external markets in former trading partners like Syria and Iraq brought about by ongoing conflict and a closure of borders. The latter is corroborated by findings from a joint study conducted by UNHCR and UNDP in 2015 which estimated a 25% decline in agricultural exports to Syria since the onset of the crisis.

In terms of the inability to sell agricultural produce in local markets, participants perceive that as a result of unfavourable trade policies – which allows for the importation of food items such as tomatoes, onions and olives, that are already produced in bulk locally – supply often outruns demand and prices of locally produced food items are lowered because of similar food items being imported and sold in local markets. Reportedly, this is bringing about wastage of produce thus making it difficult for small-scale farmers to sustain agricultural livelihoods in the longer run. In light of this, some participants suggested that supporting the development of small business projects to encourage dairy production as well as production of fruit juices and tomato products (such as tomato juice and canned tomatoes) would prevent produce from going to waste and help in strengthening resilience of agricultural livelihoods.

Interestingly, challenges associated with disrupted market access were only perceived to be relevant among communities engaging in crop farming in the Jordan Valley. A possible explanation for this could be that the communities assessed for livestock are undertaking herding on a relatively lower scale and therefore have better access to markets for their products than those engaging in small-scale or marginal farming. Further, participants perceived that these disruptions do not affect large-scale farmers to the same degree because they have more access to capital which enables them to export their produce to countries in the Gulf and in Europe.

While FGD participants highlighted a need for more restrictive trade policies to curb the effects of imports, the expert panel discussed how imports are typically only allowed in cases in which the production of key commodities has fallen short of projected needs. Providing better information to farmers on the profitability and marketability of goods to reduce the need for imports as well as encouraging policies and infrastructure that develop new markets and value chains for domestic produce within the private sector would help mitigate the difficulties farmers have in meeting demand.

When coupling such internal and external market disruptions with the increase in costs discussed earlier, it can be concluded that returns from agriculture are declining. This, in subsequence, will make it difficult and economically unviable to sustain agriculture as a main livelihood source or income generating activity.

Strategies to Mitigate Socio-Economic Risks: Household, Community and Government Roles

Household strategies

A large proportion of existing risk mitigation and preparedness strategies reveals steps being taken at the household level to deal with socio-economic risks such as inflation and unemployment. Two kinds of such strategies can be identified. Firstly, there are short-term response strategies which have been developed to mitigate effects of inflation; these include households reducing their non-essential expenditures and increasing their reliance on loans. In rural contexts like Azraq (Zarqa Governorate) and Kofranja (Ajloun Governorate), households have reportedly started producing food at home to meet their immediate needs and lower costs.
Secondly, some **longer-term strategies for preparedness and prevention** can also be identified; these are aimed at strengthening household capacities to deal with similar risks in the future and primarily include undertaking additional employment and income-generating activities. Specifically, women cited taking on informal work such as small-scale farming and home-based business projects in handicrafts and dairy production as a means of generating additional income. In Kofranja (Ajloun Governorate), women are also engaging in seasonal olive farming. On the other hand, men are taking on secondary employment in the informal sector or other additional income generating activities such as driving taxis after official working hours.

To mitigate effects brought about by the increasing expense of sustaining agriculture, households are also taking steps to deal with rising costs. In Naur (Amman Governorate), for example, in response to a growing inability to afford farm labour wages, farm owners (especially men) have reportedly started working on farms themselves.

Another cited strategy to strengthen household preparedness is related to migrating to places outside areas of residence to access better job opportunities. While in rural areas it is more common to move to neighbouring cities like Amman or Irbid, in urban areas and specifically in Amman, it is reportedly more common to move to other countries, particularly the Gulf states. Participants in urban areas also cited abandoning private businesses to seek more secure employment such as in the public sector as a way of preparing for future shocks.

**Community level strategies**

FGD participants highlighted several community level initiatives which provide support in the mitigation of socio-economic risks. A large proportion of these strategies aim to encourage women’s employment and strengthen women’s capacity to mitigate future socio-economic shocks. For example, in Madaba, the Jordan River Foundation is reportedly providing training for women in soap production to help them develop skills and secure employment in handicraft production. Efforts to strengthen women’s capacities to cope with future socio-economic risks were also cited in Shooneh Shamalya (Irbid Governorate); here the Noor Al Hussain Foundation reportedly grants interest-free loans to Community Based Organisations (CBOs) in the area, which are intended to support local women develop home-based business projects such as dairy production. A few months ago, the foundation reportedly granted 27,000 JOD in interest-free loans to support the development of 52 such projects. To prepare rural communities around Madaba for socio-economic risks, the Hashemite Fund for the Development of Jordan Badia has reportedly been providing poor families with livestock to enable them to undertake livestock production as a means of income generation.

**Municipal and government support**

To mitigate risks associated with unemployment and the lack of job opportunities, institutional efforts are being made to generate employment at the local level. For example, in Madaba, the Ministry of Tourism is reportedly providing courses in mosaic work which could help communities mitigate these risks. It should be noted that as was the case for community level strategies, government support outlined here is based on what was reported by participants. Additional research may therefore be needed to further verify the extent of such support.

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42 It is worth noting that these community-level initiatives have been reported based on what was cited by participants during FGDs. Further research may be needed to determine the validity of these findings, verify the extent to which such initiatives are functional on the ground, and identify similar initiatives being undertaken in neighbouring areas.
Environmental Challenges and Risks

Scarcity of Natural Resources

Water Scarcity

Scarcity of natural resources is a pre-existing vulnerability given the country’s high level of resource insecurity. In line with this, FGD participants cited water scarcity as a key environmental risk. Water shortage was found to have two distinct effects. Firstly, it is perceived to be increasing costs of living; shortage of water from public supply networks forces people to buy water from alternative, more expensive sources such as private trucks. Furthermore, water shortage also has a direct effect on agricultural livelihoods in terms of insufficient water for irrigation. Specifically, agricultural communities perceive water scarcity to be seasonally felt risk which is especially grave during summers when a lack of rains coupled with hot and dry climatic conditions create additional challenges for irrigation.

Water scarcity was perceived to be a particularly important risk in Zone 3. This is a reflection on the higher presence of agricultural livelihoods here and the additional need for water for irrigation. Challenges associated with scarcity of water were also commonly cited in Zone 1. In some areas, participants highlighted a need for alternative sources such as dams and wells to compensate for water scarcity. For example, in Dieban (Madaba Governorate), shortage of water was perceived to be a key factor hindering the community’s ability to engage in agriculture. It is interesting to note that residents living in and around Dieban reported challenges related to water scarcity despite the fact that Dieban is located very close to the Alwalah dam in the Yarmouk River which has one of the highest storage capacities (110 million cubic meters) and annual yield (81 million cubic meters) among all dams across Jordan.

In addition to the necessity of water for agriculture, the relatively higher importance attributed to shortage of water in rural areas could also be because urban areas are more likely to have better access to services, including public water supply networks, as well as to alternative sources of water. For instance, water scarcity was not perceived as a negative factor at all by assessed communities within large urban areas in Zone 5.

Despite being one of the most water insecure countries in the world, risks associated with water scarcity may also be closely related with the inefficient use of existing resources. Although practices that exacerbate risks associated with water insecurity did not emerge as a major theme in the FGDs, they were highlighted in the expert panel. As one panelist argued, risks associated with water scarcity have more to do with the inefficiency and mismanagement than with Jordan’s existing water resources. Along these lines, one of the greatest risks to future water availability is that proper conservation methods are not put into place. Members of the expert panel stressed several immediate measures that could be taken, including building small wells/micro-catchments at a community level to replace household wells, improving sludge treatment during wastewater processing, and adapting crop cultivation patterns to better account for water salinity.

Scarcity of agricultural land

Along with water scarcity, another risk perception found to be specifically relevant within agricultural contexts is the scarcity of agricultural land. Scarcity of land was perceived both as a past challenge related to the overall unavailability of agricultural land as well as a future risk because of urbanisation bringing about loss of already limited agricultural land. Indeed urban expansion on rain-fed lands suitable for agriculture had decreased these lands by 36%, from 2.2 million dunums in 1999 to 1.4 million dunums in 2012.

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43 According to an assessment conducted by REACH to evaluate the support provided by the World Bank to municipalities in northern Jordan under the Jordan Emergency Services and Social Resilience Project (JESSRP), almost $50\%$ of the assessed households reported purchasing water to cope with water shortage, either bottled water from shops ($26\%$) or from private trucks ($21\%$). The average household expenditure on private water was 32 JOD per month. See also: REACH, ‘JESSRP Monitoring and Evaluation Framework: Baseline Study’ (May 2015).


45 In Jordan, owing to low rainfall, soil infertility, and limited supply of irrigation water, only 420,000 hectares of the land is considered arable and suitable for agriculture. (See also: FAO, Plan of Action, p.6)

46 1 dunum = 0.1 hectares

47 Higher Population Council (HPC) and Health Policy Project (HPP), Population Growth and its Impact on Land Use (November 2013), p.21
In addition, **FGDs in some areas reported the lack of land titles and ownership over land** as an important barrier. In some areas like Shooneh Shamalya (Irbid Governorate), even though the land is suitable for agriculture, it is owned by absentee landlords engaged in commercial farming. Similar perceptions also persist in Quairah (Aqaba Governorate) where agricultural practices are reportedly affected by two land-related challenges. Firstly, most of the cultivable land in Quairah is government-owned which affects people’s ability to establish farms. Further, over the past 10 years, people in the area have reportedly been losing their agricultural land because of an inability to produce proper documentation.

**Scarcity of land was identified as a key challenge for areas with predominantly barren land cover such as Ghoursafi (Karak Governorate) and Quairah (Aqaba Governorate).** This geographical distinction implies that there is a higher need to promote sustainable land use practices in these areas. In terms of geographic variations, another interesting observation is that in the only two urban areas which considered agriculture as an important livelihood activity – Salt and Ramtha – a common perception was the risk of running out of agricultural land because of urbanisation.

Indeed, findings from past studies also reveal that **urbanisation has had an adverse impact on land use**; for instance, over the past 25 years, scarce productive land has been used to absorb urban spill-over effects of the two rapidly growing cities of Amman and Zarqa, resulting in a loss of agricultural lands in the west, north and south of Amman. A similar trend has also taken place in Irbid.48 This loss of land has adversely affected agricultural production; for example, in 1990, 650,000 dunums of land in Jordan were planted in wheat but by 2011, as the land previously used for wheat production was being used for other purposes like housing, the number of dunums planted with wheat fell to 103,000 dunums. This resulted in a massive decrease in wheat production; from 83,000 megatons of wheat produced in 1990 to about 20,000 megatons in 2011.49

Finally, some variations in perceptions related to land scarcity can be identified between the Jordan Valley and Badia rangelands. Unlike in the Badia where scarcity of land was discussed as an overarching challenge, participants in the Jordan Valley perceived scarcity of land to be more of a future risk linked to urbanisation and a lack of ownership over land. For those who do own agricultural land, the quality and quantity has reportedly been affected by fragmentation on account of this land having been inherited and passed down generations.

As with discussions regarding water resources, FGDs and the expert panel had divergent opinions on how to best characterize Jordan’s scarcity of arable land. While FGDs tended to highlight a shortage of resources that would pose a threat in the future, the expert panel emphasized the inefficient use of existing resources. In other words, the expert panel discussed how Jordan has sufficient land for agriculture; however, agricultural lands should be better managed to conserve them for future use. According to the panel, there is a need to promote awareness of efficient land use strategies, particularly in terms of planning cultivation and soil use but also in terms of land suitability for crops.

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48 Ibid, p. 21
49 Ibid, P.25-26
Risks Related to Climate Change

In addition to resource scarcity, climate change and seasonal variations also constitute environment-related risks. Drastic changes in climatic conditions over the past few years have reportedly been felt through hotter summers/heat waves, a gradual decrease in rains received and harsher winters/cold waves, especially the increased occurrence of frost and snow. FGD participants in the Jordan Valley also reported increased occurrence of flash floods. In terms of the overall impact of these variations on resilience, participants pointed out that harsh climatic conditions have the potential to disrupt the smooth functioning of businesses and other livelihood activities.

Specific to rural contexts, a large number of FGDs associated climate change with the disruption of agricultural practices. The most commonly perceived effects of climate change on agricultural practices were decrease in rains and hotter summers that are aggravating water scarcity issues and drying up agricultural land. Other perceived effects include harsher winters and an increasing incidence of snow and flooding which is bringing about the damage of crops and death of livestock.

Some participants also associated climate change with increased exposure of crops to pests and other crop diseases. In some parts of the Jordan Valley such as Shoonah Shamalya (Irbid Governorate) and Ghoursafi (Karak Governorate), increased incidence of flash floods were also reported. Participants in Ghoursafi perceived this area to be particularly vulnerable to winter flooding because it is low lying and lacks the necessary infrastructure to mitigate the effects of flooding.

Climate change related risks were cited widely across Zone 1. This can be understood in light of the fact that this Zone is predominantly barren with a large part falling under the Badia region which is characterised by less than 200mm of rainfall per year. Furthermore, environmental challenges were also cited commonly by FGDs in Zones 3 and Zone 4; this is reflective of the fact that these Zones comprise of areas within the Jordan Valley and are thus more likely to have agricultural livelihoods that are dependent on seasonal performance and other environmental conditions. In Zone 2, a specific concern raised was in relation to hotter summers drying up existing wells for the future. This further demonstrates the relevance of geographical features to resilience; Zone 2 comprises of rural areas in Aqaba, Tafilah and Karak, i.e., the three southern governorates that most likely face hotter and drier climatic conditions than elsewhere in the country.

Overall, climate change appears to be a long-term risk which is bringing about a reduction in agricultural productivity and changes in agricultural practices. In the Jordan Valley specifically, the 1980s was cited as an important decade when sudden changes in climatic conditions were experienced which brought about a change in agriculture practices – such as changes in types of crops being cultivated – and lowered overall productivity within the sector. In West Badia (Mafraq Governorate), climate change and subsequent reduction of yield has reportedly led to the total abandonment of wheat production.

Natural Hazards and Other Environmental Risks

Along with resource scarcity and climate change, unreliable seasonal performance and poor soil conditions were found to be overarching environment-related concerns. These challenges were perceived to be further aggravated by natural hazards such as drought, winter frost, floods and an increased incidence of pests, all of which have negatively affected agricultural resources in the recent past. In the future, likelihood of the occurrence of natural hazards is perceived to increase because of climate change and its effects as outlined earlier.
When looking at geographic difference in perceptions, increase in pests was perceived as a risk only in the Jordan Valley. Here, a recent increase in pests like *tuta absoluta* has reportedly been bringing about the damage of crops; an overall increase in the risk of exposure of crops to pests and other crop diseases has therefore become an important challenge faced by farming communities. Meanwhile, risks associated with natural hazards such as drought appears to be a concern for communities engaged in livestock farming in southern parts of the country. In Quairah (Aqaba Governorate), for example, since 1988 drought has reportedly led to the drying up of grazing lands which negatively affected those whose livelihoods were reliant on livestock.

While FGDS emphasized environmental risks related to resource constraints and climate change, it is worth mentioning other risks that emerged during the expert panel discussion that were not mentioned in the FGDS or mentioned less frequently. FGDS did not frequently mention air pollution or dust storms, although expert panel members discussed how the risks posed by air quality may worsen in the future. While FGDS emphasized issues related to water scarcity and availability, expert panel members also discussed the risks of increasing water salinity in the Jordan Valley and the unsustainability of current wastewater treatment and solid waste disposal methods. Finally, expert panel members highlighted that earthquakes, which were not frequently mentioned during the FGDS, also pose a major natural hazard risk to Jordan and the region.

**Strategies to Mitigate Environmental Risks: Household, Community and Government Roles**

**Household level strategies**

Despite the overarching importance given to water-related challenges, very few participants discussed steps taken at the household level to manage this risk. For example, in Kofranja (Ajloun Governorate), people have been digging wells at home as a preparedness strategy in case of running out of water in the future. Short-term response strategies such as reducing daily household water consumption and better management of water consumption (for example, re-using water from washing dishes and clothes to clean the house) were also cited.

In agricultural contexts, an important household level strategy to mitigate effects of climate change appears to be adopting new agricultural practices and changing cultivation patterns to adapt to seasonal variations. For example, in Kofranja (Ajloun Governorate), there is an increasing tendency to replace the predominant olive farming in the area with loquat farming because it has a shorter harvest season of one month and has higher returns than olives. Similarly, in parts of northern Jordan Valley such as Shoooneh Shamalya (Irbid Governorate), people have reportedly switched from farming vegetable crops towards cultivating fruit trees, especially citrus fruits. Meanwhile in Quairah (Aqaba Governorate), to mitigate the effects of drought, households engaging in livestock are reportedly switching to buying fodder for livestock instead of solely relying on grazing lands. This is, in subsequence, increasing costs associated with agriculture.

As discussed in the expert panel, strategies to alleviate environmental risks, particularly ones related to land and water scarcity, should first emphasize the more efficient use of existing resources. For agriculture, this may entail improving irrigation infrastructure and transitioning from the cultivation of more water-intensive crops to ones that use less water.

**Community level strategies**

Very few steps are being taken at the community level to mitigate the risk of resource scarcity. However, in Azraq, participants did cite one important example. Here, a local CBO, the Azraq Society for Developing Ecotourism, is reportedly promoting wastewater treatment to be reused for irrigation.

In comparison to resource scarcity, community level preparedness appears to be stronger for mitigating climate change related risks. In Ajloun, for instance, participants perceived their community to be prepared for snow and winter storms because of the presence of a local emergency committee set up to deal with such risks. Similarly in Kofranja (Ajloun Governorate), residents purchased a communal snow plough with men taking turns to clear streets of snow. In Quadisyah (Tafilah Governorate), community food storage mechanisms have been established in anticipation for harsh winters and snowstorms that could damage crops.

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50 *Tuta absoluta* is a species of moth commonly known as tomato leaf miner, tomato borer and South American tomato moth. It is a serious pest affecting tomato crops in Europe and South America but past outbreaks have also been reported in countries across the Middle East including Egypt, Iran, Iraq, Jordan, Lebanon, Syria and Yemen. See also: FAQ, “FAQ steps up response to serious tomato pest in Near East” (July 2012).
Municipal and government support

Examples of government support to help communities prepare for water shortage issues can be found in Shooneh Shamalya (Irbid Governorate); here the Ministry of Planning and International Cooperation (MOPIC) recently constructed a water station for filtering purposes. This is not only increasing the availability of potable water but has also created scope for additional employment. In a few areas, there were also perceptions of an active involvement of the municipality in taking preventive measures for climate change related risks. In Hosha (Mafraq Governorate) and Soof (Jerash Governorate) for example, in anticipation of snow and winter floods, the municipalities have reportedly provided equipment to clear snow off streets and pumps to drain flood water from farms. FGD participants provided examples of how their municipalities are working to strengthen their communities’ resilience to environmental risks. FGD participants in Ghoursafi (Karak Governorate) highlighted how their municipality has assumed responsibility for pest control, including regular fumigation measures, as an example of a local government initiative to protect crops and promote public health. Furthermore, the municipality is also contributing towards risk preparedness and prevention by building small dams in the area.

In Dair Alla (Balqa Governorate), the municipality has reportedly distributed land and equipments to encourage farming. However participants did not perceive this to be sufficient. In general, participants did cite challenges related to the inadequate planning and preparation at the local levels to mitigate impacts of natural hazards on crops and livestock, especially floods and snowstorms. In Shooneh Shamalya for example, participants mentioned that although the municipality had begun building a culvert box to drain flood water from farms, the progress made on this is slow and the necessary infrastructure may not be ready for when flooding occurs.

In addition to these strategies cited during FGDs, members of the expert panel review also outlined other existing strategies to mitigate resource scarcity risks which were not highlighted during FGDs. These include the Yarmouk River Basin Project and soil conservation initiatives undertaken by the Ministry of Agriculture such as the Zarqa River Project and King Talal Project.
Structural Challenges and Risks

Crisis in Syria and Disruptions to Trade and Tourism

Heightened insecurity and political instability in the region is perceived as an important risk, particularly for communities in the northeastern part of the country. Growing insecurity was especially highlighted as a key risk in Ramtha (Irbid Governorate) which is discernible in light of the close proximity of this city to the border with Syria.\(^1\)

In rural communities, especially in the Jordan Valley (Dair Alla and Shooneh Shamalya), the effects of regional insecurity are being felt in terms of border closure and trade disruptions. Once again, this can be linked back to the relatively higher reliance on agricultural livelihoods in rural areas and implications which trade disruptions can have on the ability to access foreign markets and export agricultural produce.

In contrast, the repercussions of heightened insecurity within urban communities were discussed in terms of the subsequent deterioration of investment and tourism. In Karak and Jerash specifically, FGD participants associated the deterioration of livelihoods in the recent past with a decline in tourism since 2011. This is discernible because both cities are located near areas with important sites of touristic interest (Karak castle and Jerash archaeological site) and therefore tourism is likely to play an important role as an income-generating activity.

Decline in Structural Support for Agricultural Livelihoods

In terms of structural challenges specific to agricultural contexts, there is a perceived progressive decline in structural support and investment that is needed to sustain agricultural practices and to make the economic environment conducive to agriculture as a primary income generating activity. In addition to inadequate promotion of markets for agriculture outlined in the preceding section, other challenges include a perceived gap in the provision of structural guidance, technical knowledge and capacity building support to promote sustainable agricultural practices. Some community members saw these as a risk because they are concerned that younger generations lack knowledge about sustainable agriculture that may lead to its abandonment in the long run.

A key dynamic which stands out when breaking down these findings by sub-sectors is that none of the assessed communities which reported livestock as a primary or secondary means of livelihood cited the decline of structural support as an important risk. This could be a possible reflection of the fact that crop farming is relatively more skill and resource intensive i.e. requires more technical knowledge and infrastructural support (for example, equipments, pest control, sustainable water management and land use practices).

Strategies to Mitigate Structural Risks: Government Roles

Municipal and government support

The government is reportedly playing an exclusive role in mitigating risks of heightened insecurity in the region. On most occasions, FGD participants perceived their community to be prepared for this risk because of an active involvement of the government and its strong security infrastructre. In the city of Ramtha located next to the border with Syria, participants specifically mentioned that warning systems (sirens) were in place to declare emergency security situations. However, participants were not aware about what steps should be taken when the siren goes off.

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\(^1\) The Daraa border crossing between Jordan and Syria is located between Ramtha in Jordan and Daraa in Syria.
Livelihood Resilience: Trends over Time

When comparing changing trends to understand how livelihood resilience has been affected over time, across all communities assessed, most participants expressed that their livelihood situation was better and more stable prior to the onset of the Syria crisis. Specifically, prices and costs of living were reportedly lower and more stable, job market conditions were better, climatic conditions were more conducive to agriculture, and there was less pressure on existing resources and infrastructure. Nevertheless, some FGD participants also discussed instances of past disasters and shocks which temporarily affected livelihoods in the distant past, especially during the 1980s and 1990s.

**Figure 4: Events/shocks cited as having a negative impact on livelihoods in the distant past (before 2011)**

When comparing current challenges and risk perceptions with these past experiences, some similar trends can be traced. As Figure 4 above shows, this is especially true for disruptions brought about by the current Syria crisis; key moments discussed were related to past crises in neighbouring countries and associated effects in terms of economic shocks and mass displacements. Repetition of trends is also true for environmental shocks; past experiences with climate change and drought during the 1980s can be useful to better understand how these can affect livelihoods in the future. Overall, these understandings could be useful in anticipating and preparing for effects of similar shocks in the future and to enable a longer term approach for risk preparation and planning.

Challenges Faced in Risk Mitigation and Preparedness

In light of existing mitigation strategies in place at the household, community and government levels, some overarching challenges faced in risk mitigation and preparedness can be identified.

- **Challenges related to risk governance and management:** This was a commonly-cited challenge across a large number of FGDs in rural contexts. In general, there is a perceived lack of structural support for DRR at the local levels as well as inadequate planning for the future, specifically, to mitigate the effects of natural hazards such as floods, earthquakes and landslides. FGD participants also acknowledged that financial constraints hinder institutional capacities to enhance risk governance. One theme regarding the role of government during the expert panel discussion was a need to build the capacity of local governments, particularly their ability to coordinate with other institutions and levels of government. While the capacity of national government is high, the local governments, which play a key role in implementing DRR in communities, is often low and falls below the expectations of the local population.
• **Challenges related to investing in risk reduction:** Another commonly cited challenge was that household resources and knowledge were inadequate to invest in risk reduction efforts. This inadequacy of resources could be a reflection of the fact that inflation, unemployment and the increasing inability to sustain costs of living were perceived to be some of the most important factors affecting resilience.

• **Challenges related to inadequate information for risk assessment and mitigation:** Overall, there also appears to be a general lack of understanding among communities about risks that affects planning. In some cases, there also appears to be a lack of awareness regarding existing social safety nets and support mechanisms. For example, in both Mafrak and Madaba governorates, participants highlighted that while there is government support available, there is inadequate information regarding how to access such support. These areas could, therefore, benefit from campaigns which raise awareness about existing institutional support mechanisms and response capacities.
Summary

An overview of present challenges and associated risk perceptions reveals that livelihood resilience is perceived to be a joint outcome of pre-existing vulnerabilities, crisis-related disruptions, and climate change.

Figure 5: Livelihood Resilience in Jordan (Past, Present and Future)

As Figure 5 demonstrates, risk perceptions associated with pre-existing vulnerabilities include resource scarcity, unsuitable climatic conditions and pressures brought about by abnormal patterns of population growth. Such pre-existing vulnerabilities are further exacerbated by disruptions brought about by the ongoing crisis in Syria.

When looking at differences in perceptions, women and men prioritised different challenges and risks as being relevant to livelihood resilience. While men prioritised more macro-level challenges such as inflation and unemployment, women gave more weight to micro-level factors such as increasing debt burdens and lack of external support to develop and sustain livelihood activities.

When looking at urban-rural variations, socio-economic shocks, as outcomes of the ongoing crisis and increased population pressures, appear to be affecting communities in urban areas most severely. However, in rural areas, environmental concerns are more of a priority. This higher relevance attributed to socio-economic shocks is also reflected in secondary data findings; for example, a study conducted by REACH and the British Embassy in Amman in 2015 found that due to higher population density in urban areas of northern Jordan, increased job competition since the onset of the Syria crisis was cited more commonly by urban residents (14%) compared to residents in peri-urban (7%) and rural locations (6%).

In agricultural contexts, an overarching perception is the risk of being unable to sustain agricultural practices. At the very outset, water scarcity was perceived as one of the biggest issues affecting agricultural livelihoods and it can become a greater issue in coming years with climate change affecting rainfall variability and abnormal population growth, putting additional strain on national water supply. Another key challenge in maintaining the resilience of agricultural livelihoods is poor planning and preparation at the local levels to mitigate impacts of natural hazards on crops and livestock, especially floods and snowstorms.

In addition to such environmental risks, risks associated with socio-economic challenges were also found to be relevant. Specifically, there is a growing challenge associated with increasing costs and the inability to afford inputs to enhance agricultural practices. This is further aggravated by disruptions to market access and inability to sell agricultural produce. Finally, the overall risk of being unable to sustain agricultural practices is also associated with wider structural vulnerabilities such as an inadequate technical knowledge and a lack of safety nets (or awareness thereof) to support communities in dealing with unexpected losses, such as the damage of crops and death of livestock due to harsh climatic conditions.

Overall, perceptions of risks within agricultural contexts are also a joint outcome of pre-existing vulnerabilities (such as resource scarcity), current crisis related disruptions (such as inflation, price shocks and trade disruptions) and seasonally felt factors (such as hotter summers, lesser rains and colder winters). However, in agricultural contexts, pre-existing vulnerabilities and seasonally felt factors appear to be more relevant to resilience in comparison to socio-economic challenges and other disruptions brought about by the current crisis.
CONCLUSION AND RECOMMENDATIONS

This report has provided a detailed overview of findings from a nationwide Disaster Risk Reduction assessment conducted between June-July 2016. The overall goal of this assessment was to improve understanding of risks faced by communities in the sustenance of livelihoods, context-specific means by which communities are currently mitigating these risks, and challenges faced in risk mitigation. Such an understanding could be useful to guide relevant actors in strengthening resilience through community level DRR programming. While the study looked into livelihoods overall, specific focus was placed on agricultural livelihoods to account for resilience in this context, given agriculture’s links to food security and the rural economy.

The most commonly cited challenges were socio-economic in nature, including inflation, price shocks and increased costs of living; unemployment and insufficient job opportunities; and pressures brought about by abnormal population growth patterns. Environmental challenges such as natural hazards, poor seasonal performance, climate change and scarcity of natural resources were also commonly perceived to be relevant, especially in rural areas. Finally, structural challenges such as the inadequate support needed to sustain livelihoods (for example, through price regulation and investment in the agricultural sector), regional insecurity and its effects on trade and tourism, and unequal distribution of development in the country were also reported.

Based on this overview, the following priority areas of concern and programmatic gaps can be identified.

**Socio-Economic Risks**

Price instability, limited availability of job opportunities and subsequent inability to meet costs of living

- **Need:** Socio-economic development to strengthen resilience of vulnerable households
- **Potential modalities:** Employment generation and micro-finance initiatives for business development
- **Priority areas:** National, Poverty Pockets

**Increasing costs of undertaking agricultural activities**

- **Need:** Provision of agricultural inputs such as seeds, fertilisers, machinery and equipments; accompanied by knowledge-sharing efforts to improve the efficient use of assets and resources
- **Potential modalities:** Material support provided directly to farmers or allocated through local cooperatives and farmer organisations. Provision of material support could be integrated into other agricultural extension interventions targetting capacity building and dissemination of technical knowledge
- **Priority areas:** National

**Population growth increasing job competition and pressure on existing resources and infrastructure**

- **Need:** Improve public infrastructure and communities’ access to basic services
- **Potential modalities:** Strengthening existing infrastructure, especially for education and transportation, which are both relevant to improving access to livelihoods
- **Priority areas:** Smaller urban settlements across the country; rural areas with (1) high proportion of communities hosting refugees and (2) perceived low levels of job opportunities

**Disrupted market access, inability to sell produce and growing inability to sustain agricultural practices**

- **Need:** Development of alternative outlets to promote agricultural production; assist farmers with planning cultivation and marketing produce.
- **Potential modalities:** Investing in and supporting the development of local business projects and cooperatives for the production of fruit juices, and tomato and dairy products
Priority areas: Agricultural communities in Jordan Valley

Lack of land ownership and titling issues in some specific cases

Need: Improve understanding of land titling challenges being faced by these specific communities

Potential modalities: Further research to identify legal constraints faced by communities, especially in terms of how access to land is affected by and interacts with modern land administration systems

Priority areas: Agricultural communities in Jordan Valley; rural areas in Aqaba governorates

Environmental Risks

Scarcity of land and water adversely affecting agricultural production

Need: Promote sustainable, efficient water management and land use strategies

Potential modalities: Structural guidance programmes to improve awareness of existing water management techniques and sustainable land use practices; building on existing practices—such as the Azraq Society for Developing Ecotourism’s efforts to promote wastewater treatment for irrigation use—and developing similar strategies to mitigate water scarcity risks; development of ecotourism initiatives which would not only contribute to the preservation of Jordan’s natural resources but also provide livelihood opportunities for rural communities.

Priority areas: Agricultural communities in Jordan Valley; rural communities in Zone 1 and Zone 3

Extreme climatic conditions threatening crop production in southern Jordan

Need: Greenhouses and plastic sheeting to prevent crop damage

Potential modalities: Greenhouses distributed through farmers cooperatives and local organizations; accompanied by training and capacity building efforts

Priority areas: Southern Jordan Valley

Structural Risks

Deteriorating institutional interest and inadequate technical know-how to sustain agriculture, especially among younger generations

Need: Youth-targeted technical assistance through skill development and capacity building initiatives to provide knowledge about sustainable agriculture practices

Potential modalities: Vocational training/on-farm advice; agricultural extension services disseminating knowledge on advanced practices and technologies to adopt to climate and market changes; building capacity of Jordan’s National Center for Agricultural Research and Extension (NCARE) to mainstream innovative methods and best practices in its agricultural extension approaches

Priority areas: National

Risk Mitigation and Preparedness

The majority of risk mitigation strategies discussed during this study reveal greater reliance on short-term coping and response strategies rather than longer term community-wide practices for mitigation and preparedness. This low prevalence of community practices could be attributed to a range of reasons. From a governance perspective, the reported lack of community practices could be due to the fact that scaling up DRR measures often requires a large upfront investment with limited guarantee of the benefits or success for such measures.
Limited access to resources and technologies to invest in future planning and preparation

- Need: Enhance household and community capacities to cope with unexpected losses, such as crop damage and death of livestock due to harsh climatic conditions
- Potential modalities: Programmatic interventions to improve access to knowledge, resources and technologies for mitigation and preparedness of natural hazards
- Priority areas: National

Lack of awareness about existing social safety nets and support mechanisms

- Need: Improve understanding of existing institutional response capacities and how existing support mechanisms can be accessed in the event of a disaster
- Potential modalities: Targeted awareness raising campaigns through media outlets and public service announcements in radio, newspapers, news broadcasts, etc.
- Priority areas: National

Cross-Cutting Recommendations

In addition to the above, some general recommendations can also be made to inform overall DRR programming:

- Relevance of preliminary zoning exercises, livelihood variations and ecological criteria for area based approaches to DRR: While this assessment utilized an ad hoc approach to zoning, primarily as a means to inform sampling, the results reinforce the relevance of using area-based approaches to tailor DRR programming. As reflected in the findings, such approaches should account for both variations in ecological factors as well as variations in types of livelihoods, particularly between urban and rural contexts. Indeed, a comparison of perceptions between both contexts reveals that while socio-economic shocks is a priority concern for communities in urban areas, shocks associated with environmental factors are more of a priority in rural areas. Rainfall levels, soil quality, and climatic features are also critical factors that should inform DRR programming. In the future, such approaches may be based on Jordan’s recognized agro-ecological zones to facilitate coordination.

- Gender-targeted interventions to strengthen women’s access to livelihoods: Sustaining livelihoods in the backdrop of socio-economic shocks appears to be specific concern for women. For instance, female FGD participants discussed the need for external support to develop and sustain home-based enterprises. The need for such support was perceived both in terms of material support (provision of financing, equipment and inputs) and technical support (capacity building and training). Given that a number of such supports already exist and that small home-based enterprises already face challenges in marketing their goods, there is a need to diversify and expand the range of opportunities available to women to ensure that female access to livelihoods remain adequate and sustainable over time.

53 As highlighted in the Limitations section earlier, this lack of awareness could either imply an under-reporting of such support or a perceived irrelevance of existing support mechanisms for specific challenges faced by communities.
• Developing early warning mechanisms and a more proactive DRR planning approach based on past trends’ analysis: Jordan has experienced similar socio-economic and environmental shocks and risks as the ones being experienced now. Past experiences with drought, climate change and regional crises prompting economic shocks and large-scale displacement offer insights into preparation for the effects of similar shocks in the future, thereby enabling the development of a longer term DRR approach.

Recommendations for Further Research

The following prospects for additional research can be identified to further inform DRR programming in Jordan:

• Further research to obtain more in-depth understanding of how susceptibility to risks varies across geographical areas: To further inform and maximise the impact of DRR programming, there is a need for further research which breaks down rural zones based on variations in types of livelihood activities and examines urban zones in light of more comprehensive economic data.

• Further research to explore specifics of risk perceptions in agricultural contexts: Although this assessment has identified key themes in terms of risk perception and mitigation among agricultural communities, additional research to explore specific details and measure the wider prevalence of these issues can contribute towards enhancing targeting of DRR programming in agricultural contexts. Such research could entail detailed, quantitative risk assessments specific to agricultural contexts based on Government of Jordan’s existing agro-ecological zoning; this would help necessary actors design programming by agricultural sub-sectors.

• Further research to understand women’s role in agriculture: Gender-based differences presented in this report are not as prominent as was anticipated to be at the start of the study. Therefore, further research on women’s role in agriculture, particularly women’s roles in mitigation and in the household economy, could be helpful to guide gender-based DRR interventions within the agriculture sector.

• Further quantitative research to measure prevalence of key findings: Since this was a qualitative assessment, findings identify key themes but not the wider prevalence of these themes. Further research based on household surveys or key informant interviews may therefore be needed to determine the validity of findings, verify the extent to which reported strategies are functional, and obtain specific details on how such strategies fit into the broader institutional approach to DRR in Jordan.

In sum, this report has outlined priority areas of concern to strengthen livelihood resilience in Jordan. By looking into how pre-existing vulnerabilities and crisis-related disruptions jointly feed into risk perceptions, the report promotes a nuanced understanding of resilience of livelihoods in Jordan. Furthermore, by tracing resilience trends over time and exploring the effects of past socio-economic and environmental shocks, findings could also be useful to anticipate effects of similar shocks in the future and enable the adoption of a more preparatory and proactive approach to DRR in Jordan. Finally, by outlining variations in perceptions based on gender and geographic differences, this report could inform tailoring of DRR programming in a way that could meet the priority needs of most vulnerable communities and achieve optimal programmatic impact.
ANNEX 1: FOCUS GROUP DISCUSSION QUESTION ROUTE

INTRODUCTION

A. Facilitator’s welcome, introduction and instructions to participants [5 minutes]

- Facilitator completes an ODK form for each participant, recording the FGD code, location, number of participants, and start and end times of the discussion. Facilitator assists each participant in filling out their portion of the ODK form - age, sex, size of household, household demographics, type of residence, and number of years lived in Jordan.

- Welcome and thank you for volunteering to take part in this discussion. You have been asked to participate as your point of view is important. I appreciate your time.

- This discussion is designed to understand the overall welfare situation in your community and factors and risks affecting this welfare amongst communities like yours across Jordan.

- **Anonymity**: I would like to assure you that the discussion will be anonymous. We would appreciate it if you would refrain from discussing the comments of other group members outside of this session. If there are any questions or discussions that you do not wish to answer or participate in, you do not have to do so; however please try to answer and be as involved as possible.

- The discussion will take no more than 1-1.5 hours. We will have a quick break in between.

B. Ground rules [2 minutes]

- The most important rule is that only one person speaks at a time. There may be a temptation to jump in when someone is talking but please wait until they have finished.

- There are no right or wrong answers.

- You do not have to speak in any particular order.

- When you do have something to say, please do so. There are many of you in the group and it is important that I obtain the views of each of you.

- You do not have to agree with the views of other people in the group.

- Does anyone have any questions? (answers)

- With this in mind, may I tape the discussion to facilitate its recollection? (if yes, switch on the recorder)

- OK, let’s begin.

QUESTION ROUTE (90-60 minutes)

Stage 1: IDENTIFYING LIVELIHOODS AND RISKS [35-45 minutes]

We are interested in understanding your day-to-day life: what kinds of income generating activities/work you engage in to access resources and provide for the needs of your household, and how different factors or events can influence this.

1. **[Engagement Question]** What kinds of income generating activities do you or other members of your household engage in in order to access and acquire resources that meet your household needs?

   - Note to facilitator: Ask participants to distinguish between formal employment and informal livelihoods
activities, as well as to note their primary income generation source versus secondary, tertiary, etc.

[Probing Questions]

a. In your opinion, how important is agriculture as an activity for your household or other households in this area? What challenges (if any) are faced in undertaking agricultural activities?

b. In your opinion, how do the employment opportunities and/or income generating activities (IGAs) in your area of Jordan compare with the rest of the country? Do you perceive fewer or greater opportunities outside of your region?

c. [Participatory Mapping] Direct participants to the map and ask them to mark the boundaries of their region/area of residence (black marker). Then, ask participants to mark the following:

- Where within these boundaries are different employment opportunities and IGAs available (red marker)?
- (If agriculture is an important activity in this area) Where within these boundaries are agricultural activities (crops and livestock) being undertaken? (green marker shaded)
- Where outside of these boundaries employment opportunities and IGAs are perceived to be greater (blue marker)
- Where outside of these boundaries employment opportunities and IGAs are perceived to be fewer (green marker)?

d. Where in Jordan do people engage in employment opportunities and/or income generating activities that are different from yours, and what are these different activities? Where are they similar?

e. [Participatory Mapping] Direct participants to the map and ask them to mark the following:

- Where in Jordan do people engage in activities different from yours? (red marker)
- Where in Jordan do people engage in activities similar to yours? (blue marker)

f. What factors allow for this diversity in activities? (Hint: e.g. differences in climate, physical geography, types of settlement, population demography, access to government services, etc.)

2. Based on the aforementioned discussion of access to formal employment, other income generating activities, and financial resources, how would you present quality of life (e.g. very good, good, neutral, bad, very bad)?

- Note to facilitator: Remind participants that the determination of this rating should be based on: access to formal employment opportunities, other income generating activities, and/or availability of financial resources to meet household needs.

[Probing Questions]

If present quality of life is good:

a. Why is it good? (Facilitator notes down reasons on flip chart and Scribe records reasons as well. Scribe to highlight seasonal factors in notes.)

b. What potential risks can negatively change the present situation?

c. Are risks similar elsewhere? If yes, why do you think this is?
If present quality of life is bad:

d. Why is it bad? (Facilitator notes down reasons on timeline and Scribe records reasons as well. Scribe to highlight seasonal factors in notes.)

e. What potential risks can worsen the present situation?

f. Are risks similar elsewhere? If yes, why do you think this is?

3. [Timeline Exercise – try limiting to 15 minutes] Facilitator introduces timeline exercise: We can use this timeline to mark your present quality of life as good or bad. The horizontal line shows a stable situation; the higher we mark above the line, the better the situation (good, very good); the lower we mark below the line, the worse the situation (bad, very bad).

- Facilitator draws timeline divided between “distant past” and “recent past” with March 2011 indicated between the two. Lastly, facilitator marks present year at the end of the horizontal axis as good/ bad depending on preceding discussion.

4. When in the recent past (e.g. since the Syria crisis started) has your quality of life been better than the present quality? When has it been worse? (Mark on timeline)

**[Probing questions]**

a. Why was it been better/worse? What events in the past impacted your quality of life positively/negatively (Scribe notes these reasons and/or events)

b. How was your day-to-day work and welfare affected?

c. Did it affect everybody at the same, or different people in different ways? How? (Hint: For example, men and women could have been effected in different ways)

d. [if worse] What steps did you take to protect yourselves from these effects?
5. When in the distant past (e.g. before the Syria crisis started) has your quality of life been better than the present quality? When has it been worse? In what ways has it been better/worse? (Mark on timeline)

[Probing questions]

a. Why was it been better/worse? What events in the past impacted your quality of life positively/negatively (Scribe notes these reasons and/or events)
b. How was your day-to-day work and welfare affected?
c. Did it affect everybody at the same, or different people in different ways? How? (Hint: For example, men and women could have been effected in different ways)
d. [if worse] What steps did you take to protect yourselves from these effects?

Stage 2: FACTORS AFFECTING LIVELIHOODS [15 minutes]

Based on what we have discussed so far, I have compiled a list of factors that appear to be important for the welfare of this community. (Note to facilitator: Based on reasons cited in Stage 1, list down factors on flipchart.)

6. What, in your opinion, are the most important or influential factors among these?

- Note to facilitator: Using the list of factors, ask each participant to put a dot to highlight the top 5 most important factors. Add up the dots to list down the 5 most important factors.

[Probing questions]

a. How are these factors likely to be affected in the near future?
b. If climate change is an important factor for your community, what is the local impact/effects felt by it?
c. How do these effects change over time? (For example, if rain/availability of water is a main factor, how does this availability vary over the year?)

Stage 3: RISK RESILIENCE AND MITIGATION [20 minutes]

7. We have talked about risks and the ways in which the situation in your community could be negatively affected in the future. What preparations or steps are being taken by you, your household, or your larger community/local government to protect yourselves in case such an event takes place?

[Probing questions]

a. What types of risks do you feel you or your community are most prepared for responding to effectively? Least prepared for?
b. Looking beyond just your household, what kinds of risk mitigation processes take place at the community level? At the municipal level? Please describe.
c. How are the roles of men and women different in risk mitigation preparations?
8. What are the challenges faced while making these preparations?

[Probing questions]

a. What resources are available within your community to deal with the risks at hand? Are they adequate? (Hint: For example, availability of information to assess future risks, availability of financial and material resources, equal involvement of the community, etc.)

b. What kind of support is provided by the government or other local/ international organisations for those in need? In what areas is this support lacking or insufficient?

c. What further steps could be taken to enhance the community’s resiliency?

CONCLUSION [5 MINUTES]

- Thank you for participating. This has been a very successful discussion. We hope you found it interesting.
- Your opinions will be a valuable asset to the study.
- I would like to remind you that any comments featuring in this report will be anonymous.
- Before you leave, please ensure you have completed the personal details questionnaire.
ANNEX 2: ELEVATION, LANDCOVER, SLOPING MAPS USED FOR ZONING EXERCISE

JORDAN

Elevation

Map 5: Mean Elevation Levels, by Governorates

Data Source: District Boundaries - UNHCR; Land Cover Broxton et al. (2014)
Projection: WGS 1984 UTM Zone 37N
File: REACH_JOR_Map_Elevation_Mar2016_A1.mxd

Data, designations and boundaries contained on this map are not warranted to be error-free and do not imply acceptance by the

Note:
Map 6: Types of Land Cover, by Governorates

% Land Cover by Governorate

<table>
<thead>
<tr>
<th>Governorate</th>
<th>Land Cover Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aqaba</td>
<td>Barren or Sparsely Vegetated, Shrublands, Croplands, Urban and Built-Up</td>
</tr>
<tr>
<td>Tafilah</td>
<td>Barren or Sparsely Vegetated, Shrublands, Croplands, Urban and Built-Up</td>
</tr>
<tr>
<td>Maan</td>
<td>Barren or Sparsely Vegetated, Shrublands, Croplands, Urban and Built-Up</td>
</tr>
<tr>
<td>Mafraq</td>
<td>Barren or Sparsely Vegetated, Shrublands, Croplands, Urban and Built-Up</td>
</tr>
<tr>
<td>Zarqa</td>
<td>Barren or Sparsely Vegetated, Shrublands, Croplands, Urban and Built-Up</td>
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<tr>
<td>Karak</td>
<td>Barren or Sparsely Vegetated, Shrublands, Croplands, Urban and Built-Up</td>
</tr>
<tr>
<td>Amman</td>
<td>Barren or Sparsely Vegetated, Shrublands, Croplands, Urban and Built-Up</td>
</tr>
<tr>
<td>Madaba</td>
<td>Barren or Sparsely Vegetated, Shrublands, Croplands, Urban and Built-Up</td>
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<tr>
<td>Balqa</td>
<td>Barren or Sparsely Vegetated, Shrublands, Croplands, Urban and Built-Up</td>
</tr>
<tr>
<td>Irbid</td>
<td>Barren or Sparsely Vegetated, Shrublands, Croplands, Urban and Built-Up</td>
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<td>Jarash</td>
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<tr>
<td>Ajloun</td>
<td>Barren or Sparsely Vegetated, Shrublands, Croplands, Urban and Built-Up</td>
</tr>
</tbody>
</table>

Data Source: District Boundaries - UNHCR; Land Cover Broxton et al. (2014)
Projection: GCS WGS 1984
File: REACH_JOR_Map_Landcover_Mar2016_A1.mxd

Note: Data, designations and boundaries contained on this map are not warranted to be error-free and do not imply acceptance by the partners, associates or donors mentioned on this map.
Map 7: Mean Sloping, by Governorates

Mean Slope (Degrees)

<table>
<thead>
<tr>
<th>Governorate</th>
<th>Mean Slope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aqaba</td>
<td>12.4</td>
</tr>
<tr>
<td>Jerash</td>
<td>11.4</td>
</tr>
<tr>
<td>El Bayda</td>
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<tr>
<td>Al Balqa</td>
<td>10.7</td>
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<td>Madaba</td>
<td>9.7</td>
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<tr>
<td>Al Karak</td>
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<tr>
<td>Irbid</td>
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<td>Balqa</td>
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<td>Zarqa</td>
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<td>Al Mafraq</td>
<td>2.8</td>
</tr>
<tr>
<td>Maan</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Data Source: District Boundaries - UNHCR; Land Cover - Broxton et al. (2014)
Projection: WGS 1984 UTM Zone 36N
File: REACH_JOR_Map_Slope_Mar2016_A1.mxd

Note: Data, designations and boundaries contained on this map are not warranted to be error-free and do not imply acceptance by the
ANNEX 3: LIVELIHOOD ZONES IN JORDAN (PARTICIPATORY MAPPING EXERCISE)

JORDAN - Disaster Risk Reduction Assessment
Findings from Participatory Mapping of Livelihoods in Jordan

Livelihood activities
- Private sector, industrial jobs and self-employment
- Government and military employment
- Agriculture (crops and livestock)
- Others (includes NGO and volunteering work, education sector, manual labour, shopkeeping, trade, tourism and service industry)
ANNEX 4: RISK PERCEPTIONS ACROSS JORDAN

JORDAN - Disaster Risk Reduction Assessment
Community Level Risk Perceptions For Livelihoods in Jordan

Risk
- Overpopulation
- Socio-economic risks
- Climate change
- Inability to sustain agricultural practices
- Water shortage
- Heightened insecurity and political instability

FGD Location

Division of Zones
- Zone 1
- Zone 2
- Zone 3
- Zone 4
- Zone 5
- Zone 6

Thematic Data: REACH - FAO, July 2016
Administrative Boundaries: UNOCHA
Background Imagery: USGS
Projection: GCS WGS 1984
File: REACH_JOR_Map_Risk_July2016_A1
Contact: reach.mapping@impact-initiatives.org

Note: Data designations and boundaries contained on this map are not warranted to be accurate and do not imply endorsement by the FAO, UNOCHA, UNHCR, REACH, or associates or donors marked on the map.