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The Adaptation at Scale in Semi-Arid Regions (ASSAR) project uses insights from multi-scale, interdisciplinary work to transform climate adaptation policy and practice in ways that promote the long-term wellbeing of the most vulnerable and those with the least agency.

Semi-arid regions in Namibia are characterised by high rainfall variability, persistent droughts and floods, and extreme temperatures. In addition, there is weak governance and structural inequalities that exacerbate the vulnerability of communities. The wellbeing and livelihoods of communities in areas such as the **Omusati Region** generally depend on rain-fed agriculture and livestock rearing, have limited livelihood options and employment opportunities, depend on activities that are sensitive to the impacts of climate change, face high levels of poverty, are exposed to high levels of HIV/AIDS, and are affected by limited institutional capacity and weak resource governance. These factors combine to make communities vulnerable to food insecurities and unstable livelihoods as well as leading to unsustainable agro-ecological systems, crop failure and unproductive rangelands.

INTRODUCTION

- ❖ In March 2016 ASSAR's southern Africa researchers – from the University of Namibia and University of Cape Town – held a two-day [Vulnerability and Risk Assessment](#) (VRA) workshop in the Omusati Region, Namibia.
- ❖ The workshop was attended by various government officials, Constituency Development Committee members, local community members, farmer associations, CBOs, NGOs and academics, collectively known as the VRA Knowledge Group (KG).
- ❖ The VRA process aims to develop a common understanding among various stakeholders of the main hazards and issues affecting those living in a given socio-ecological landscape. This is done in order to design measures that reduce risk, enhance wellbeing and promote resilience to hazards in the landscape.
- ❖ We applied [Oxfam's VRA](#) methodology over two days, in a series of four steps including:
 - ❖ an Initial Vulnerability Analysis (IVA),
 - ❖ an Impact Chain Analysis (ICA),
 - ❖ an Adaptive Capacity Analysis (ACA), and
 - ❖ alignment of findings with opportunities.

FINDINGS FROM THE VULNERABILITY AND RISK ASSESSEMENT

Interviews before the workshop helped to identify hazards and issues affecting different social groups and livelihood activities. In the first part of the workshop, the KG identified 10 social groups and 13 issues and hazards of greatest concern. This was followed by an **initial vulnerability analysis** where the main aim was to assess levels of exposure and sensitivity of different social groups or livelihood activities to the identified hazards and issues. This exercise provided information on who is vulnerable to what and why.

We based our classifications of social groups on the main livelihood activities and social differentiation in the Onesi Constituency. The following is a summary of the thinking developed by the VRA KG on the vulnerability of these social groups to various hazards and issues (**shown in bold**).

Exposure and Sensitivity

- 1. Drought and low rainfall:** Subsistence farmers, small-scale emerging farmers and horticultural farmers were identified as having the highest levels of exposure because drought increases the likelihood that crops will fail or animals will die. Drought has affected food production directly over the last 15 years. This has led farmers to finish their stock of *mahangu* in granaries before the next rainy season.
- 2. Floods and heavy rainfall:** Subsistence farmers and small-scale emerging farmers have the highest exposure and sensitivity to floods. Floods increase the likelihood that crops will be underwater and farmers will not be able to harvest. Horticulture farmers were considered less sensitive to floods as they have resources to apply Climate Smart Agriculture practices such as building ridges that reduce flooding.
- 3. Inadequate access to climate information:** This is a serious concern for those who depend on land and natural resources and need to know what climate to expect. This is especially true for farmers who incur the direct costs of damage from increased extreme weather events.
- 4. Limited agricultural extension services:** People depending on social grants and living with HIV/AIDS are most sensitive to limited agricultural extension services. Inadequate resources and inadequate numbers of extension officers prevent extension officers from visiting and consulting with the community. Most people on social grants are not able to walk long distances to solicit information and access free inputs. This group also does not have transport to bring the few extensions officers to their farms for advice.
- 5. Cultural beliefs stopping new practices:** Generally, people are becoming more inclined to use new agricultural practices and technology. However, the elderly often switch to their old traditional ways of cultivation, particularly during times of uncertainty.

A handwritten list titled 'HAZARDS AND ISSUES' on a piece of paper. The list contains 13 items, each with a number, a description, and a series of vertical tick marks. To the right of each item is a circled number. The items are: 1. DROUGHT, low rain (29); 2. LIMITED ACCESS/AVAILABILITY + USE OF SEASONAL CLIMATE FORECAST INFORMATION (11); 3. FLOODS + heavy rain (33); 4. LIMITED UPTAKE OF NEW AGRICULTURAL PRACTICES + TECHNOLOGY (7); 5. LIMITED AGRICULTURAL EXTENSION SERVICES (8); 6. CULTURAL BELIEFS STOPPING NEW PRACTICES (10); 7. LACK OF ALTERNATIVES TO AGRICULTURAL-BASED LIVELIHOODS (4); 8. YOUTH + MALE MEMBERS MIGRATE TO URBAN AREAS (4); 9. LIMITED ACCESS TO POTABLE WATER (2); 10. LIMITED MARKETING + SELLING OF LIVESTOCK (8); 11. HIGH TEMPERATURES (5); 12. AIR POLLUTION (1); 13. LITTLE KNOWLEDGE ABOUT CLIMATE CHANGE (3).

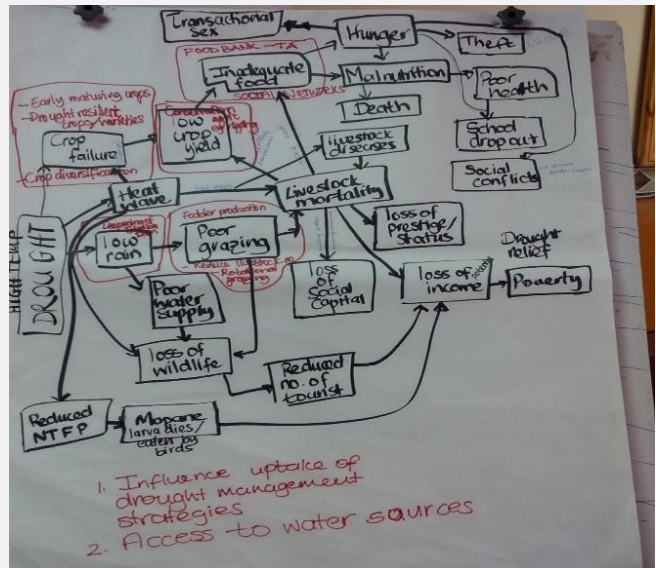
- 6. Limited marketing and selling of livestock:** Limited marketing and selling of livestock reflects poor pricing mechanisms at the regional level. Subsistence farmers and small scale emerging farmers are the most sensitive to existing market constraints linked to livestock sale.
- 7. Limited uptake of new agricultural practices and technology:** Whilst uptake of new agricultural practices was perceived to be challenging in the past, the KG suggested that subsistence and small-scale farmers attitudes have changed and more farmers are receptive to new practices. Horticultural farmers seem to be very active in applying new agricultural practices.
- 8. High temperatures:** Subsistence farmers, small emerging farmers and horticultural farmers, as well as Mopane worm harvesters were considered most sensitive to high temperatures. Extreme high temperatures over the past 15 years have been associated with the outbreak of pests and diseases that impact both crops and animals. Mopane harvesters were rated as highly sensitive because extreme temperatures impact Mopane worms as the eggs get hot and burst before they hatch. Sensitivity for those on social grants, such as the elderly and those living with HIV/AIDS was seen to be high, because they will not be able to work long hours in their fields if it is too hot. Small-scale traders are less sensitive because they do not directly depend on natural resources. However, their products are likely to expire faster due to heat stress.

Impact Chain Analysis

The second part of the exercise was to create a visual representation of the consequences of individual hazards. This allowed the KG to assess the possible positive and negative future impacts of the identified hazards and issues.

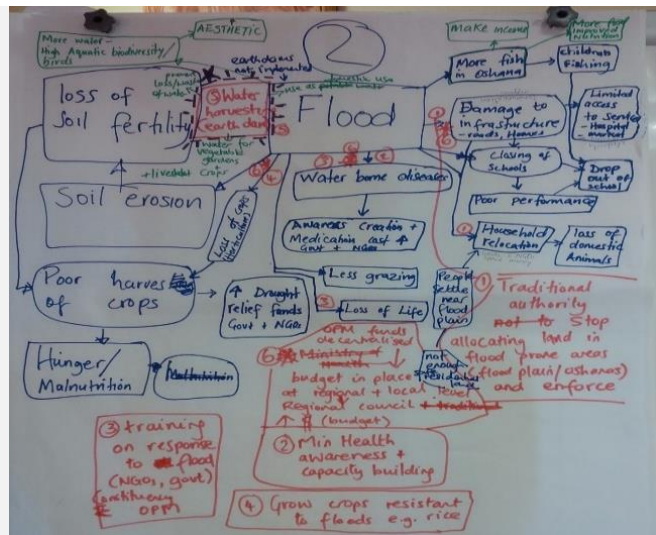
Group 1 worked on drought ICA and highlighted four direct impacts to different sectors/livelihood activities:

1. Crop failure → Reduced yields and low fodder production for crop production.
2. Low rainfall → Reduced water and grass for grazing in the livestock sector.
3. Heat wave → Reduced non-timber forest products and loss of wildlife.
4. Decreased water availability → Reduced water supply and grass for grazing in the wildlife sector.



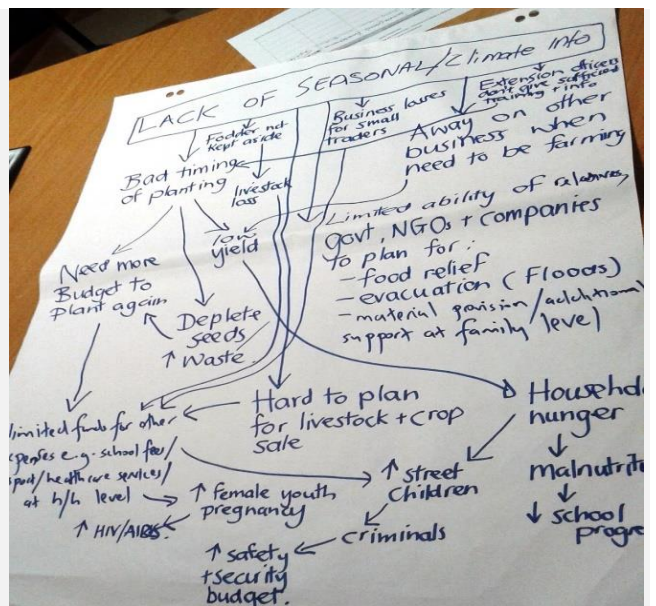
Group 2 worked on the flood ICA and highlighted six direct impacts to different sectors/livelihood activities:

1. Damage to infrastructure such as roads and homes.
2. Water borne diseases.
3. Loss of life.
4. Reduced grazing.
5. Loss of horticulture crops.
6. Soil erosion.



Group 3 undertook an ICA to explore the impacts of inadequate access to climate information, and identified four direct impacts:

1. Poor timing of crop planting.
2. Compromised planning on the farm – which may lead to people prioritising other business when they should be farming.
3. Failure to set aside fodder for livestock.
4. Limited ability of relatives, the government, NGOs and other stakeholders to plan for important interventions such as food relief, evacuation (in case of floods), material provisions and additional support.



Adaptive Capacity Analysis

The third stage of the VRA provided an opportunity for the KG to explore possible solutions/strategies that build resilience and help people to adapt to the vulnerabilities identified in the initial vulnerability assessment and ICA exercises.

Example from Group 1: Potential responses to drought and high temperatures

1. Initiatives to address inadequate food supply/food security

- a) Promote 'food bank' mechanisms to address food insecurity at the community level (e.g. by encouraging households to contribute 20 litres of *mahangu* to the Traditional Authority to be used in time of distress).
- b) Use of social networks such as families and relatives for accessing food and exchanging livestock for food.
- c) Remittances from family members and government.

2. Increase crop yields and reduce impacts of crop failure

- a) Promote the use of drought-resistant crop varieties.
- b) Use early-maturing crops for faster yields.
- c) Advise people to practice crop diversification such as *Okashana* which is ready in the short-term.
- d) Apply conservation agriculture practices such as ripping.
- e) Irrigation.



3. Initiatives to promote production in the livestock sector

- a) Irrigation to increase fodder production.
- b) Practice rotational grazing (when there are healthier pastures to which to move the livestock).
- c) Reduce livestock number through destocking and selling.

4. Initiatives to ensure adequate water supply during drought/dry seasons

- a) Deepening of Etaka Dam to increase its capacity to store water during heavy rains (rainwater harvesting).







The final part of the **adaptive capacity analysis** was for the KG to focus on one possible measure to reduce vulnerabilities for a specific hazard/issue. This was done in an attempt to build adaptive capacity in the community/constituency development plan. For this exercise the KG explored the different components for the successful implementation of three adaptive measures: 1) influencing the uptake of drought-management strategies, (2) using earth dams for flood control, and (3) strengthening uptake and use of seasonal climate information.

| Component | (1) Uptake of drought management strategies | (2) Use of earth dams for flood control | (3) Seasonal climate information |
|---|---|---|---|
| Assets base <i>What will be needed in order to accomplish the expected output?</i> | <ul style="list-style-type: none"> ◆ Increase number of farming implements. ◆ Secure financial resources. ◆ Social networks e.g. <i>Okakungu</i> (a network that supports agriculture in exchange for a meal) and <i>Ondjambi</i> (working for others in exchange for a traditional drink). ◆ Use of the canal and Olushandja Dam for water supply. | <ul style="list-style-type: none"> ◆ Financial support. ◆ Material and equipment. ◆ Labour, e.g. casual workers, engineers. ◆ Land availability. ◆ Expertise on relevant income generation activities. | <ul style="list-style-type: none"> ◆ Increase the number of extension officers. ◆ Stable flow of funds for extension services. ◆ Demonstration plots for extension officers. ◆ Training workshops in the villages. ◆ Communication materials (e.g. booklets, pamphlets, radios, picture messages). |
| Institutions <i>What kind of support is needed to do the work?</i> | <ul style="list-style-type: none"> ◆ Several institutions are already in place but the KG highlighted the need to strengthen them (e.g. VDC, farmers committees, MAWF and DRMC). ◆ Mechanisms to ensure extension service providers are adequately equipped to provide services in time. ◆ Technical support for Namwater. | <ul style="list-style-type: none"> ◆ Government. ◆ NGOs, donor agencies. ◆ Business people. ◆ Traditional Authorities and community members. | <ul style="list-style-type: none"> ◆ Strengthen outreach to the elderly and people with disabilities. ◆ Engagement with influential actors for better uptake of climate information, e.g. regional councilors, village headmen. ◆ Platforms for climate information exchange. |
| Information & knowledge <i>What kind of information is available and necessary?</i> | <ul style="list-style-type: none"> ◆ New farming practice information is needed. | <ul style="list-style-type: none"> ◆ Site identification – Environmental Impact Assessments. ◆ Knowledge in building and maintaining a dam. ◆ Relevant information on income-generating activities. | <ul style="list-style-type: none"> ◆ Extension officers turning climate forecasts into actionable agricultural information. ◆ Forecasts to be more area specific (improved spatial resolution). |
| Innovation <i>What new skills, technology and assets necessary to facilitate the work?</i> | <ul style="list-style-type: none"> ◆ Skills of new farming practices. ◆ Use of new crop varieties. | <ul style="list-style-type: none"> ◆ Dams built in a way that does not affect water quality. ◆ Fencing off the dam for safety. ◆ Income generation projects. | |
| Flexible and forward looking governance <i>What steps, institutions and assets are needed to address future problems?</i> | <ul style="list-style-type: none"> ◆ Formation of cooperatives – for crop and livestock marketing. ◆ Adjusting cropping calendar to changing climatic conditions. | <ul style="list-style-type: none"> ◆ Maintenance committee (community members, regional council, MAWF, technical advisor, Rural Water Supply). | |

Conclusions and Key Learning

The VRA exercise in Omusati created an open space for dialogue for different stakeholder groups to discuss their experiences of risks and vulnerability, and hence provided an opportunity for participatory knowledge generation that could feed into decision making.

A number of insights emerged about the importance of the VRA to inform ongoing policy and decision making at local, constituency, or regional levels, for the development and implementation of issues related to climate change adaptation, disaster risk management and development. While there are other institutions such as Constituency Development Committees where the local community can discuss the issues they experience, the VRA offered a focused platform for detailed discussion and analysis that was inclusive in nature.

In ASSAR, VRA findings have been used to develop stakeholder-informed understanding of vulnerability that specifically address social differentiation. Similarly the issues highlighted during the VRAs will contribute to future work in the context of the **Transformative Scenario Planning** scheduled to take place in May and September 2016.



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