



The five-year (2014-2018) Adaptation at Scale in Semi-Arid Regions (ASSAR) project uses insights from multi-scale, interdisciplinary work to inform and transform climate adaptation policy and practice in ways that promote the long-term wellbeing of the most vulnerable and those with the least agency.

Working in Botswana, Namibia, Kenya, Ethiopia, Ghana, Mali and India, ASSAR is a research project that aims to deepen the understanding of the barriers and enablers for effective, medium-term adaptation within the dynamic and socially differentiated semi-arid regions of Africa and Asia.

ASSAR is generating new knowledge about how adaptation processes – especially those linked to governance systems, policies and adaptation responses – can be modified or improved upon to achieve more widespread, equitable and sustained adaptation.

We are particularly interested in understanding people's vulnerability and, in doing so, exploring the dynamic structural and relational aspects linking vulnerability to social difference, governance and ecosystem services.

THE DYNAMICS OF DROUGHT IN SEMI-ARID REGIONS

Semi-arid regions of the world are often thought of as being particularly vulnerable to climate change. They are already climatically stressed with high temperatures, low rainfall and long dry seasons. Semi-arid ecosystems are highly dynamic, with bursts of productivity in the wet season and in good years, and very low productivity in dry years, often leading to temporary or longer-term land degradation.

Traditionally, inhabitants of semi-arid areas managed this variability in natural resource availability through pastoralism or agro-pastoralism. Nowadays, population growth, land-ownership issues, national borders and competition with other land-uses has reduced the opportunities for people to respond in traditional ways to the ecosystem dynamics of these systems, and has resulted in many instances of enhanced vulnerability to climatic variability.

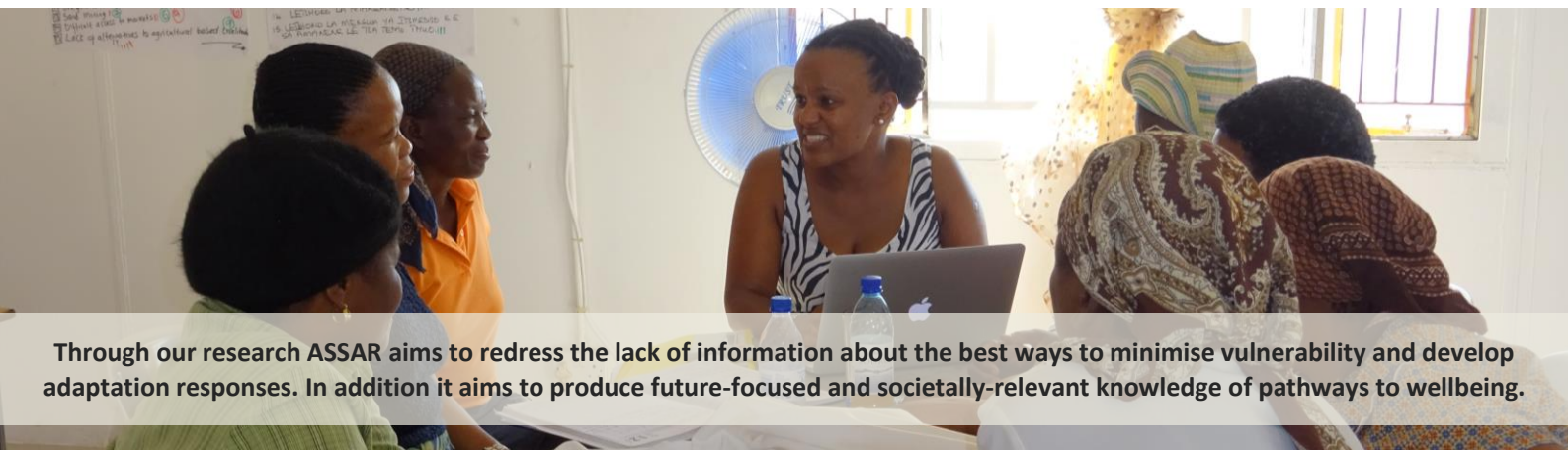
It is clear that drought is already affecting many parts of the system in semi-arid regions, and climate change is likely to make drought events more frequent. Therefore, it is critical to assess the viability of scaling up successful local solutions to this challenge, and to identify new solutions. Importantly, this needs to be done in a participatory manner, with researchers and practitioners working alongside local stakeholders, local government and non-governmental organisations (NGOs).

WHY DO SOUTHERN AFRICANS CONSIDER DROUGHT TO BE ONE OF THE MOST IMPORTANT ISSUES THEY'RE FACING?

By Gina Ziervogel

ASSAR Researcher, University of Cape Town

In vast expanses of arid southern Africa, the daily struggle to cope with a changed climate is well underway. The impact of drought has been acutely felt in 2016, as El Niño hit hard. Perhaps this is what we might expect under future climate change conditions and so we need to learn how to prepare for more frequent years that record less rainfall than usual, along with the associated crippling impact on livelihoods and the economy. In northern Namibia and eastern Botswana, working with village leaders, NGOs and government officials (amongst others), ASSAR is striving to understand what is currently working and not working in relation to managing climate impacts. In both of these regions, stakeholders consider drought to be one of the three most important issues they are facing.



Through our research ASSAR aims to redress the lack of information about the best ways to minimise vulnerability and develop adaptation responses. In addition it aims to produce future-focused and societally-relevant knowledge of pathways to wellbeing.

The impact of drought in Namibia

During our March 2016 workshop in the Onesi Constituency in Namibia, stakeholders identified the following indirect impacts of drought on livelihoods:

- ❖ Reduced crop yields from crop failure leading to loss of income and inadequate food supply in households, with an impact on health.
- ❖ Reductions in water available to wildlife leading to loss of animals, affecting tourist numbers and tourism earnings.
- ❖ Reduced fodder production, heat stress and outbreak of diseases affecting livestock health and mortality rates. This reduced milk and meat production leads to loss of income.
- ❖ The death of livestock often leads to loss of status and prestige and reduced participation in social networks. Livestock deaths limit the ability of people to participate in social and cultural events like wedding ceremonies.
- ❖ All of the above lead to lower household incomes and increased hunger. Malnutrition of school children leads to poor health and a greater number of school dropouts. Limited household food availability can also increase participation in risky behaviour such as theft and transactional sex in exchange for food or cash. These then lead to an overall increase in household social conflicts.

Solutions from local communities

Our workshops help stakeholders to identify solutions they think could be strengthened or implemented at the local or district level. In **Namibia**, there was a discussion about promoting food banks to address food insecurity at the community level. As part of this, each household is encouraged to contribute 20 litres of *mahangu* (millet) that is stored by the traditional authority and used in time of distress. In **Botswana**, a number of strategies were mentioned like irrigation using underground water, leaving *phane* worms on the ground to allow them to reproduce for the next season and using water harvesting more often. There was also support for moving away from dependency on government projects.

The impact of drought in Botswana

During our November 2015 workshop in Bobirwa, Botswana, stakeholders raised both similar and additional points relating to drought impacts:

- ❖ Rainfall patterns have not been consistent in the past 15 years and the frequency and impact of drought have increased.
- ❖ Arable farmers, livestock keepers and *phane* (mophane worm) harvesters are most vulnerable to drought because a lack of water increases the likelihood that their crops will fail, animals will die and mophane worms will be in short supply.
- ❖ Livestock farmers in the area are highly vulnerable to drought because they are not able to migrate with their animals in search of water. Those who have migrated have experienced livestock theft when they move closer to the South African border.
- ❖ Traders were thought to be moderately affected by drought, not only because some items are scarcer in a drought but because households have less income to spend.
- ❖ Youth are particularly sensitive to drought. In some cases, youth who take out loans for an agriculture business cannot repay them during a drought resulting in further hardship. In some families, during drought periods, the youth are not needed to help in the fields or to harvest *phane* and so they are unoccupied and get into trouble.
- ❖ When there is a drought the elderly have to use their old-age grants for food instead of other vital supplies and services. This is made worse by their limited physical fitness.
- ❖ The associated lack of food and income can have far reaching social consequences. These include people adopting risky behaviours such as drug and alcohol abuse, truancy, criminal activities, theft and corruption, all of which can lead to family breakdowns.



SHOULD LIVESTOCK DEATH BE AN INEVITABLE CONSEQUENCE OF DROUGHT?

By Roger Few

ASSAR Co-Principal Investigator, University of East Anglia

It is timely to discuss the burgeoning numbers of livestock deaths in the region of Ethiopia associated with the drought of 2015 and 2016. During our work in the Middle Awash Valley in Ethiopia over this time, we saw and heard plenty of evidence of cattle deaths, and how the situation is becoming increasingly difficult. Clearly the climatic conditions of the past several years have created a deep underlying crisis, and the long months without rain have seen animals steadily weakening, while pastoralists increase the extent of their migrations in an effort to find water and pasture in an extremely dry landscape. It is possible that animals may also be forced to drink from shrinking water bodies contaminated by pathogens and toxins. The environmental triggers of cattle deaths are plain for all to see.

But, we also know that this is not the whole story. It is very easy to be environmentally deterministic in our thinking on this, but just as human famines are widely recognised now to be a failure primarily of distribution and entitlement to food, so the same can apply to the livestock that are such a vital

mainstay of the livelihoods of pastoralists and agro-pastoralists in the region. Should we just see the mass cattle deaths as a product of drought? Disaster risk reduction approaches remind us that, with political will and effective resources, much could be done to reduce the impacts of hazards, avoid hazards turning into disasters, and strengthen people's capacity to reduce the impacts of future hazards. Is that just wishful thinking?



Some of this is about behaviour change, some of it is about development, some of it may be about considering carrying capacity; but a lot of it has to be about governance – international, national and local. We can point to the sky, or, in this year, evoke the even more remote phenomenon of El Niño, but the roots of disaster are likely to be found closer to the ground.

The underlying vulnerability of people in the rangelands has many causes, including changing land use and increasing restrictions on mobility, which are associated with development pathways. There are intense debates in research and policy circles around development pathways that may exacerbate the underlying causes of vulnerability to drought. But even if we limit the consideration to crisis management – through preparedness and emergency response – it seems much could be done.

In ASSAR's work in Ethiopia and Kenya, we have a strong focus on identifying the multiple, interlocking and multi-scalar stressors and drivers of vulnerability. We are also exploring the spectrum of responses to climate-related risks that people are currently practising, from coping to transformation, and the barriers and enablers to achieving equitable forms of adaptation. Through this work, we aim to contribute to the understanding of what is needed to strengthen livelihoods and wellbeing of households facing the impacts of environmental change.



ADDRESSING DROUGHT THROUGH WATER GOVERNANCE

Semi-arid areas of Africa and India tend to experience chronic water stress in the context of increasing temperatures brought about by climate change. In addition to these physical challenges, there are often conflicts between local, district and national priorities with regards to the use and management of water. Stakeholders working at these different levels, particularly in government, are often challenged in effectively and sustainably managing water resources.

While semi-arid areas undergo high levels of social, environmental and economic change, the impacts of piecemeal and non-participatory decision-making are often borne by the poorest and the most vulnerable. There are, however, also many examples of bottom-up initiatives that are developed in order to both adapt to climate change and deal with water scarcity.

In this context, ASSAR aims to better understand water-related challenges and responses at the local level, particularly for supporting households and livelihoods (including agriculture), in the face of climate change and projected temperature increases.

We analyse existing water-governance arrangements (including bottom-up responses) critically to understand whether they increase or decrease the vulnerability of different social groups.

Looking forward, we intend to make recommendations on how to address the trade-offs and strengthen the cross-scale linkages that exist between the local and sub-national levels, in order to effectively deal with the challenges of climate change and meet the needs of the most vulnerable.

ASSAR'S RESEARCH IN THE CONTEXT OF DROUGHT

How do age, gender and ethnicity influence people's abilities to deal with drought?



MARGARET ANGULA
University of Namibia

Climate variability and change has diverse effects on local people whose livelihoods mostly depend on rain-fed agriculture and the exploitation of natural resources for subsistence. Those socially less advantaged – women, the elderly, orphans and youth (among others) – bear the heavier burden of climate change impacts due to their socio-economic statuses, socio-political factors and differential access to productive assets.

Namibia is one of the semi-arid countries considered to be hotspots for climate change and related risks. It's variable and unpredictable climate system exacerbates already high levels of poverty and unemployment among rural people. These marginalised populations, who rely heavily on subsistence farming and natural resources for their livelihoods, are even more vulnerable to erratic flood and drought patterns.

In this context, ASSAR aims to understand the impacts of climate change on individuals in the Onesi Constituency (Omusati Region, north-east Namibia) in a much more nuanced way, focusing on how the combination of different ethnicity, gender and age factors shape and influence levels of vulnerability in a given community.

With this understanding, we intend to provide recommendations on how to enhance the future capacities of individuals to adapt to drought and water scarcity, and their agency to respond to climate change.

In-depth interviews, focus group discussions and experimental methodologies – including the use of games and scenario-building – will help to better account for socially-differentiated needs (e.g. according to age, gender, social position) and their role for shaping the capacity of local communities for transformative adaptation.

How does drought governance facilitate or undermine climate adaptation?



KULTHOUM OMARI
University of Cape Town

Currently, little attention is paid to how droughts are governed and the institutional dimensions needed for effective drought management. For instance, local drought resilience can be undermined by centralised and top-down forms of resource governance that give little regard to other actors who may possess essential knowledge necessary for effective climate adaptation. Understanding the governance dimensions of drought therefore provides a useful way of assessing how responsive institutions are, and whether or not they enhance resilience to drought.

In this context, ASSAR aims to explore the multi-level nature of drought governance in Botswana and understand whether this form of governance facilitates or undermines climate adaptation.

We are also investigating the extent to which the normative principles of 'new' forms of governance – such as participation, collaboration, learning and leadership – are applied in the governance of drought and climate adaptation.

This is useful in understanding how droughts are governed, and how they might contribute to and shape sustainable and resilient pathways for successful adaptation.

To what extent should people's aspirations and values be considered when addressing drought?



IRENE KUNAMWENE
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The impact of drought on the lives of subsistence crop and livestock farmers in semi-arid northern Namibia extends beyond hunger and exacerbated poverty levels. Good relationships form the social glue of communities in this area, and food shortages as a result of drought can erode these bonds. Relationships with family, neighbours and friends influence

the adaptation responses that are taken.

Current development interventions often fail to address the underlying causes of people's vulnerability and make it difficult for adaptation to be successful due to their narrow view around addressing vulnerability. A wellbeing approach has the potential to offer a different, people-centred way of informing climate change adaptation because it explicitly integrates people's aspirations (e.g. achieving food security) and values (e.g. freedom or a good quality of life).

This approach also considers the broader socio-economic circumstances affecting the community, as well as the role of social networks and cultural identity for sustaining livelihoods.

In this context, by applying the wellbeing concept to different communities facing drought, **ASSAR seeks to further determine** the ability of a wellbeing lens (as compared to a vulnerability lens) to generate an enhanced understanding of climate change impacts.

We hope that an improved awareness of existing drought responses, the factors affecting their implementation at a local level, and the way they enhance or undermine wellbeing, will help to strengthen the planning and implementation of adaptation responses so that they also consider people's aspirations and values.

FOR MORE INFORMATION: www.assaradapt.org

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