



Photo by: Hillary Masundire

Working in the semi-arid regions of Africa and India, the five-year, multi-institutional ASSAR project (Adaptation at Scale in Semi-Arid Regions, 2014-2018) used 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.

ASSAR's focus in Botswana

Semi-arid regions (SARs) like eastern Botswana are highly dynamic systems that experience variable and sometimes extreme climates, adverse environmental change, and a relative paucity of and decline in natural resources. Historically, people living in these regions have adopted several coping mechanisms to deal with these conditions. Today, however, many communities exhibit low levels of adaptive capacity due to challenges such as marginalisation, underdevelopment, poverty, inequality, weak governance, maladaptive policies, and increasing population growth. Climate change is expected to augment existing levels of vulnerability as temperatures rise, rainfall decreases, and seasonal climate patterns become more variable.

From 2014-2018, ASSAR's Botswana team worked in the Bobirwa sub-district of the country to better understand these existing and upcoming challenges. Made up of a team of researchers and practitioners from the University of Botswana (UB), University of Cape Town (UCT), and Oxfam GB, we worked with stakeholders from national to household levels to understand what makes people vulnerable to climate change, what the barriers to adaptation are, and what could enable more effective, sustained and widespread adaptation to climate change.

Five ways to build climate resilience and enhance adaptive capacity in Botswana's SARs

1. Botswana is one of the countries in Africa that will experience the most extreme changes in temperature and precipitation under global warming scenarios of 1.5°C-3°C above pre-industrial levels. These changes will have significant negative impacts on agriculture and other water-dependent sectors. There is an urgent need for communities and government to respond to climate change with measures that will build resilience and enhance wellbeing.
2. In recent years, there have been adverse changes in the quantity, quality, distribution and timing of certain ecosystem services (ES) due to increasing human pressure and climate change impacts. As dependence on and access to ES varies by gender, men and women are affected differently by these ecosystem changes. ES need to be sustainably and equitably managed through improved monitoring and restrictions on harvesting. Access to alternative livelihood options should also be enhanced.
3. To increase the use of seasonal climate forecasts by people with different values, customs and belief systems, meteorological and place-based climate information needs to be integrated through participatory processes with traditional and religious leaders. Forecasts should also be tailored and communicated in a way that is relevant and understandable to farmers, and should include information on what actions farmers should take.
4. Climate change is causing the frequency, severity, duration and spatial extent of droughts to increase. Yet, institutionally, drought and climate change are managed separately. There is a lack of coordination among departments responsible for drought management, and responses are largely reactive and crisis-driven. While emergency drought response does have an important role to play in drought management, a more proactive and integrated approach is needed to build the longer-term resilience of vulnerable people, ecosystems and the economy.

About the research

Research priorities

ASSAR's research in Botswana had several main focus areas, each of which was considered through the lens of barriers and enablers to climate change adaptation. The first of these priority research areas assessed the most recent global climate change projections to determine how global warming scenarios of 1.5°C–3°C above pre-industrial levels is likely to affect vulnerable sectors in Botswana. A different, although related, body of work considered the challenges and opportunities for producing and communicating seasonal climate forecast information across scales in ways that are relevant and useful to local farmers, as well as credible among people with different belief systems.

A third major area of work assessed the dynamics of ES in Botswana in the context of climate variability and change. Here we sought to find out which ecosystem services are pivotal to

human livelihoods in the Bobirwa sub-district, how the availability of and access to these services are changing, and in what ways people are differentially affected by these dynamics.

Our research also focused on the governance of climate change, and drought in particular. In this regard we sought to identify the key institutions that have been responding to and adapting to climate change, and to assess what challenges are being faced. Gender and social differentiation were cross-cutting themes in all of our research. The survey that we conducted in over 300 households in several villages in the Bobirwa sub-district was one research activity that contributed to our understanding of how men and women of different ages, socio-economic statuses, and ethnicities are vulnerable to climate change.

Research questions

ASSAR research in Botswana was designed to contribute to the project's overarching research question, namely: **what are the barriers and enablers to effective, sustained and widespread adaptation to climate change?** Through this lens, we sought to answer the following specific research questions:

1. How might Botswana's climate change in future, what are the consequences of these changes for different sectors and social groups, and what actions need to be taken to ensure effective adaptation?
2. What ES are important for sustaining the livelihoods of resource-dependent communities in the Bobirwa sub-district, how accessible are these services to different social groups, what determines this accessibility, and how can ES be sustainably managed in future?
3. How credible and scale-relevant are the seasonal climate forecasts that reach communities in Bobirwa sub-district, and how do these factors influence their decision-making and livelihood activities?
4. What institutions are responsible for and/or involved in responding to drought/climate change and how effective are they?
5. What role does participation have in policy and planning processes? Which stakeholders are important to include in such processes, and how might collaboration across sectors and scales – and with marginalised groups – contribute to improved climate change adaptation responses?



Photo by: Salma Hegga

Case study sites

Our main study site was the Bobirwa sub-district, which is situated in the Central District of Botswana and has a population of over 72,000 people. Bobirwa sub-district borders Zimbabwe to the east and South Africa to the south. The area is characterised by low rainfall, high temperatures, and frequent droughts. Temperatures range from minimums of below 10°C to maximums of over 30°C. The largest village in Bobirwa is Bobonong, with a population of about 20,000 people. In total, there are 14 villages in the sub-district. Eight of these were included in our household survey, in which 310 households participated.

Livelihoods in Bobirwa are largely dependent on natural resources and primary production, with rain-fed agriculture, rain-fed agriculture, livestock rearing, and harvesting of Mopane caterpillars being key livelihood activities.

This makes people highly susceptible to climate variability and change. Vulnerability to climate is augmented by non-climatic drivers such as poverty, inequality, and HIV/AIDS. Cattle in the Bobirwa sub-district also experience frequent outbreaks of foot-and-mouth disease. In addition to increasing livestock mortality, the disease restricts trade beyond the sub-district due to the establishment of foot and mouth borders, across which the movement of exposed animals and related products is prohibited.

Approach

Our work in Botswana began in December 2014 with a preliminary [introduction of the ASSAR project](#) to the sub-district administration and tribal leadership, including chiefs and headmen from all 14 villages in Bobirwa. Then, in January 2015, we introduced the project to key stakeholders at both national and local levels, including government representatives from various ministries, non-government stakeholders and community members. The findings from this introductory phase of ASSAR contributed to a [regional diagnostic study](#), which was completed in early 2015. A literature review and feedback from community (*Kgotla*) meetings and focus group discussions also informed the diagnostic study. These initial engagements were critical for [establishing traction for the project](#) at an early stage, and for gaining early insights into the community's perceptions around climate change, as well as the [impacts thereof on people's livelihoods and wellbeing](#).

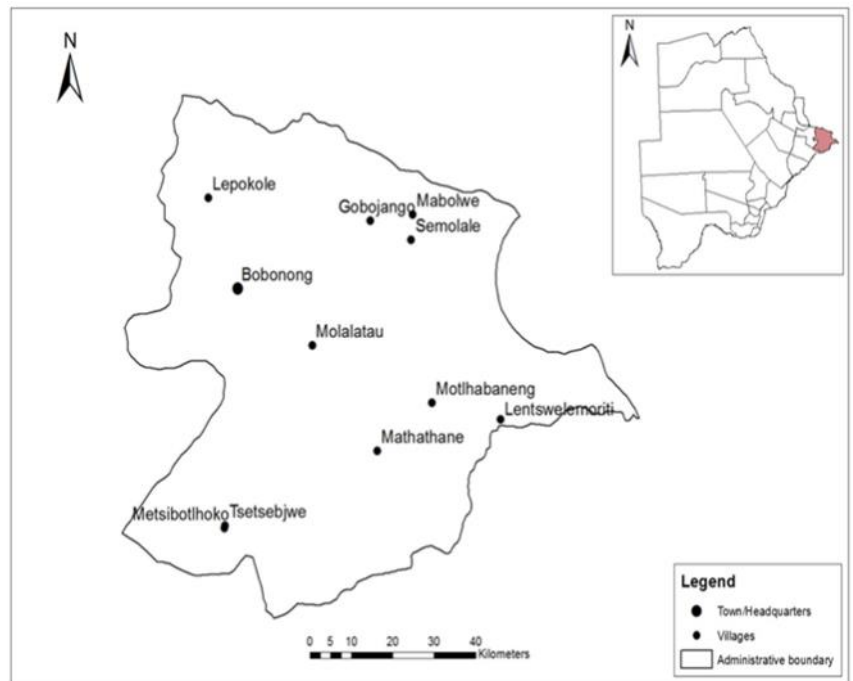
Throughout the project, we also collected data through questionnaires, key informant interviews and focus group discussions, which looked at a range of issues including: [drought and climate change governance](#), barriers to and enablers of adaptation, [gender and social differentiation](#), the credibility and scale-relevance of seasonal climate forecasts, and people's [perceptions with regards to the dynamics of ES](#). We also conducted analyses of historical, remotely-sensed climate data and field observations to determine how climate variables such as temperature, rainfall and evapotranspiration have changed from 1982 to the present. We used the normalised difference vegetation index (NDVI) from remote sensing data as a proxy to show trends in vegetation condition, and to indicate the capacity of the local ecosystem to generate provisioning services.

Towards the end of 2015 we held a [Vulnerability and Risk Assessment \(VRA\) workshop](#) in Bobonong, which was attended by 22 participants, making up what was known as the 'Knowledge Group'. The VRA workshop revealed what the community considered major hazards to be, which social groups they thought to be most vulnerable to these hazards, and what

measures they could take to adapt. Some key hazards identified during the VRA included drought and high temperatures, foot-and-mouth disease, a lack of access to markets and non-agricultural based livelihoods, and under-resourced extension services, amongst others. The VRA process was well-received and we were requested to train district managers to conduct the VRA process in-house. In preparation for this training workshop, a half-day [stakeholder mapping exercise](#) was held in Mahalapye Sub-District on the 24th of July 2018. A total of 28 stakeholders attended this workshop, and the whole VRA process eventually crystallised in a national-level event where economic and planning officers from all districts of the country were trained on VRA in August 2018.

In 2016, the ASSAR research team and several stakeholders from the sub-district attended a training workshop [Transformative Scenario Planning \(TSP\)](#) with [Reos Partners](#). Subsequently, in October 2017 and January 2018, we held two [TSP workshops](#) in Bobirwa, at which an average of 30 stakeholders attended. The main cross-cutting issues identified during the TSP process were: (i) the future of land for productive agricultural use; and (ii) human-wildlife conflict. Over the course of these two workshops, stakeholders realised the importance of working together rather than in isolation, and the groundwork was laid for them to collaborate on important issues in the longer-term.

The final research activity that we conducted in Botswana was a household survey, during which we interviewed 310 households from eight villages in the Bobirwa sub-district. The survey, which was completed in March 2018, was preceded by the training of 10 enumerators who subsequently conducted the survey and entered the survey data into SPSS, a statistical analysis programme. At the end of project, we produced a documentary summarising the project's main objectives, activities and key findings. The video documentary, alongside some printed communications materials, was shared with stakeholders at feedback events held in Gaborone and Bobirwa in November 2018.



Key findings detailed

Botswana is heating faster than other countries globally and needs to urgently respond

Climate projections indicate that temperatures in Botswana are rising more rapidly than most other countries globally. Without concerted action to adapt to a hotter, drier future, Botswana's people, ecosystems and economy will suffer. It is imperative that communities and government respond to climate change with urgency by implementing measures that will build resilience and enhance wellbeing, both now and in the long-term.

Botswana is likely to get **hotter, drier and more water-stressed in future** and is also likely to experience **greater climate extremes**, including more frequent and intense droughts, floods and heatwaves. By 2024 Botswana may already be, on average, 2°C hotter than pre-industrial temperatures, which is a **substantially more rapid rise in temperature than other regions of the world**. The effects of higher temperatures will be felt across all sectors, including those such as agriculture, health and water that are essential to the prosperity of people and the economy. Agriculture is particularly vulnerable to shifts in climate, and farmers are likely to experience reduced crop yields and increased livestock losses. Rain-fed agriculture – a key livelihood activity in the Bobirwa sub-district – is already marginal, and anticipated climate change may well make current agricultural practices unviable, even if global warming is capped at 1.5°C above pre-industrial levels.

The **progressively serious climate impacts from 1.5°C to 3.0°C** in Botswana demand concerted action, both locally and internationally. Botswana needs to anticipate and plan for rapid changes in local weather and climate. It needs an acceleration in the development of adaptation strategies, which should be implemented in a way that works for all people and economic sectors. The time for pilot adaptation projects and experiments is over, and the moment to start mainstreaming climate resilience into the public, private and community sectors has arrived.



Photo by: Hillary Masundire

Recommendations

1. Communities and governments need to understand the **current and potential impacts of climate change on different sectors and stakeholders**. This is crucial for targeted adaptation planning, and for responding urgently and effectively to these impacts. Doing so will also require ongoing collaboration between government, researchers, practitioners and communities to find joint solutions to the **challenges of global warming of 1.5°C and higher**.
2. Capacity needs to be built for identifying, monitoring and **communicating early warnings** about extreme climate events. This will require investments in technology, infrastructure and skills development, which should form part of longer-term, strategic plans that are aimed at, and budget for, building resilience to climate change.
3. Awareness raising and education about climate change, **its impacts and possible adaptation interventions** are important for building resilience across scales. Generating this knowledge together is key, and climate change data should be jointly analysed with communities and vulnerable groups, and shared in a way that is easy to understand.
4. Mainstreaming climate-smart agricultural practices into policy and planning, and enabling farmers with the capacity and resources required to implement these measures, will be essential for ensuring that the agricultural sector is well adapted to hotter, drier conditions and that the country is food secure in future. Policymakers also need to be strategic in planning for future water security, and should encourage rainwater capture and storage, and the implementation of water saving measures.
5. Addressing the **underlying causes of vulnerability** to climate change impacts is critical for ensuring that responses are sustainable in the long-term. In doing so, the focus should be on the interconnection of existing environmental and climatic conditions, and the interplay of governance, socio-economic, health, education, and cultural issues.

Ecosystem services need to be managed more sustainably and equitably, and alternative livelihoods sought

Provisioning ES are fundamental to the livelihoods and wellbeing of communities in the Bobirwa sub-district. The enforcement of restrictions on harvesting; monitoring of government programmes to improve agricultural productivity; and the enhancement of alternative livelihood options could all help to reduce the pressure and overreliance on vulnerable ES.

With few alternative livelihood options, communities in the Bobirwa sub-district are [heavily reliant on ES](#), whether directly or indirectly. Crop and livestock production, and the exploitation of timber and non-timber forest products are particularly important for maintaining food security and wellbeing. However, in recent years, there have been adverse changes in the quantity, quality, distribution and timing of certain ES. Contributing factors include less predictable rainfall, more pervasive droughts, an increased demand for agricultural land, and an expansion of villages. Mopane caterpillars (phane), which local people have harvested for centuries, are one important ecosystem service that has seen a [significant decline in the last decade](#). An overexploitation of woodlands has also been observed, while the clearing of shrubs for crop cultivation has resulted in trade-offs with other provisioning ES, such as communal grazing land.

Dependence on and access to ES [varies by gender](#). Women are most affected by changes in the availability of water for the household, firewood, wild vegetables and palm leaves for basket-making. On the other hand, men are disproportionately affected by changes in the availability of timber, pasture and water for livestock. Both men and women are affected by the fluctuating availability of phane caterpillars, firewood, and fertile soils for crop production. Part of the challenge around declining natural resources is that there is a mismatch between how national authorities and local communities view ES. While the latter feel that ES in Bobirwa belong to them, at the national level ES are considered a common resource. Competition from people residing beyond the sub-district therefore means that local communities have little incentive toward conservation.

Recommendations

1. ES need to be sustainably managed through regulatory measures, including permitting and restrictions on the timing of harvesting activities, as well as the volume of resources collected. Given their [dwindling numbers](#), it may be necessary to place a ban on the harvesting of phane caterpillars for two or three consecutive breeding seasons, to allow the population to recover, and avoid losing this important source of protein and income entirely.
2. All decisions around ES should be made through inclusive and participatory processes that emphasise the integration of community knowledge and values into plans for the management and use of ES under a changing climate. This is important for ensuring buy-in among traditional leaders, local authorities and, importantly, the grassroots people dependent on ES.
3. [Shifts in the availability of ES in Bobirwa](#) impact people differently. For example, women and children are particularly vulnerable to declines in the availability of phane caterpillars as they are sometimes forced to camp far away from their homesteads in unhealthy conditions in order to access this dwindling resource. Such [socially differentiated vulnerabilities](#) should be a key focus of policy and planning around ES.
4. Possible ways to engage communities and resource users in enforcing regulatory measures and monitoring the state and trends in ES should be explored.
5. Key to supporting the communities that depend on declining ES is to ensure that they have other ways to make a living or survive off the land. Access to [alternative livelihood options](#) needs to be enhanced, and monitoring of government programmes aimed at increasing agricultural productivity should be improved. This is also important for reducing the increasing pressure being placed on towns and cities from the [in-migration of rural youth in search of work](#).



Photo by: Ephias Mugar

Climate information should be relevant, credible, and accessible to stakeholders

Meteorological and place-based climate information need to be integrated, tailored to the needs of the users, packaged in ways that resonate with traditional and religious narratives, and communicated in ways that are understandable.

The large spatial and geographical resolution of national meteorological seasonal climate forecasts (SCF) limits their **usability and relevance to local farmers in the Bobirwa sub-district**. As such, some farmers use ecological indicators and place-based observations instead of, or in addition to, these forecasts. However, the number of people that still have skills in traditional forecasting is declining, thereby making meteorological climate data an increasingly important source of information. Even so, **some farmers do not use SCF at all**. While in some cases this can be attributed to a lack of understanding or access to meteorological forecast information, a major reason for their low uptake is that some farmers perceive SCF to lack credibility, due to them having been inaccurate in the past.

The use of both meteorological and place-based climate forecasts is affected by traditional norms and religious beliefs. Some farmers, for example, disregard forecasting information because they prefer to farm as they always have done, or because they are required by custom to wait for the chief's permission before they can start planting. Other farmers believe that God controls the rain and that it is not possible for humans to predict the future. Hence, they have faith that God will provide and do not change their farming practices in accordance with the forecast. If farmers don't take heed of **climate forecasts and information on adaptation options**, then it is likely that they will be more vulnerable to climate variability and change in future.

Recommendations

1. For farmers to be better equipped for future climatic conditions, they need to be more forward-looking in their decisions. To enable this, awareness needs to be raised about **climate change and adaptation options**, so that farmers understand how their vulnerability might shift and so that they are empowered to make informed decisions about their farming practices and livelihoods.
2. Ongoing conversations need to be held among the producers, disseminators and users of climate forecast information. This is important for improving coordination and for ensuring that forecast information is packaged in ways that resonate with the diverse needs, values and perspectives of the target audiences.
3. For **forecast information to be more useful to farmers**, meteorological and place-based forecast information should be integrated through a participatory process that enables meteorologists to collaborate with traditional forecasters. This process should seek synergies and identify discontinuities between the different sources and types of information, and integrated forecasts should be **communicated in ways that are understandable and relevant** to farmers.
4. Forecast information should be made accessible to their users through different entry points, which might include platforms such as the radio, kgotla meetings or church services. Importantly, this **information should be communicated** through messengers that are relevant to and trusted in the community, be these local councillors, traditional authorities, village headmen or religious leaders, for example. This will increase the likelihood that people with different values and belief systems will use the information that is provided.
5. Any **climate forecast information that is communicated to farmers**, or communities in general, should include advice on what adaptation actions (if any) should be taken. Where relevant, climate-smart agricultural practices should be a key focus of such recommendations. The advice that is provided should also be paired with on-site demonstrations and the practical training of farmers through capacitated extension services.



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Effective adaptation to drought requires a more strategic and proactive governance paradigm

Short-term, crisis-driven responses to climate-related disasters such as drought are no longer appropriate in the face of increasing climate variability and extremes. Instead, emergency responses should be viewed as complementary to a more long-term, proactive and integrated approach to governance. This is important for enabling more effective adaptation to drought, and to climate change more broadly.

Drought has always been considered a natural part of Botswana's climate. As such, there is no official definition of drought, nor any overarching policy framework to guide the management of drought at the state level. However, anthropogenic climate change is causing the frequency, severity, duration and spatial extent of drought periods to increase. There is now an urgent need for a [more effective approach to drought governance](#) which, to date, has been largely in the form of piecemeal, emergency-led interventions, whereby authorities only respond to disasters once they have already happened. Part of the problem is that, institutionally, drought has been managed separately to climate change, and there is a lack of coordination among the departments responsible for drought management itself, which work in silos: while the official mandate for managing drought sits with the Ministry of Local Government, the sectors that are most affected by drought – such as water and agriculture – are dealt with in different ministries, and within different policy environments.

In the absence of proper coordination and planning, reactive and crisis-driven responses have ensued. A major oversight of this approach is that there is a lack of early warning systems and other processes to inform local authorities and farming communities timeously about impending droughts, or other climate-related disasters. While emergency drought responses do have an important role to play in drought management, they only help those affected by drought to cope in the short-term, leaving them no less exposed to future impacts. Some people have even become dependent on emergency drought relief, which has undermined their capacity to adapt autonomously. In this light, and in recognition of the vulnerability of the country's people, ecosystems and economy to the impacts of drought, the Government of Botswana has initiated the development of a national policy and strategy for drought management. As it embarks on this process, the below recommendations should be taken into consideration.

Recommendations

1. The institutional and technical links between drought and climate change need to be emphasised. The dominant [dominant policy framing of drought](#) should be from a more holistic perspective, rather than one that focuses primarily on agricultural production and poverty eradication. This will require an [improved understanding around the complexities of drought](#), the [effects of which do not act in isolation](#) but intersect in a myriad ways to impact national and local economies, affecting all sectors, livelihoods and wellbeing.
2. Improved collaboration and coordination between all ministries and departments responsible for drought management is required if an integrated approach to governance is to be achieved. In addition to vertical (from local to national level) and horizontal (across different sectors) integration within government, it is important that government speaks, on an ongoing basis and iteratively, with local leaders, community members, NGOs, academics and other actors who could – and should – play a key role in the management of drought and climate change in Botswana, to avoid the development of policies that could result in [unintended consequences](#) for certain groups.
3. Proactive planning and risk management are important for shifting away from a crisis-based approach to drought management, towards more effective strategies that target the underlying drivers of vulnerability to drought, and emphasise the role of disaster preparedness and long-term resilience building alongside short-term emergency responses, such as drought relief.
4. A critical component of dealing with drought, and indeed other climate-related disasters, is the provision of timely and accurate information to local authorities and communities. The establishment of an effective early warning system that is developed and implemented in an integrated manner is essential for enabling this, and for ensuring that the [most vulnerable groups](#) are able to prepare and adapt effectively.
5. The roll-out of a long-term, proactive and integrated approach to drought management will depend on the availability of and access to the financial resources needed to do so. Botswana should thus seek innovative sources of funding and establish a portfolio of funds that predefine where and how these resources will be allocated and disbursed. The financial and accounting system set up for drought management should be flexible enough to allow funds to be rapidly re-allocated, or existing programmes rapidly upscaled, in the event of an emergency.

Participation and collaboration are key for realising integrated climate change response

Multi-sector and multi-scalar participatory processes that enable engagement with and between representative and marginalised stakeholders are important for enabling collaborative planning and eliciting integrated responses to climate change.

Climate change is a wicked problem that requires [innovative, integrated approaches](#) to identifying and implementing adaptation solutions. These approaches, and the adaptation decisions emerging from them, should be aimed at addressing the root causes of vulnerability and seek to [build the long-term resilience](#) of the people and systems most severely affected by climate impacts. [Multi-stakeholder participatory processes](#) are one way of enabling this, as they allow people with diverse interests, objectives and values to start collaborating to improve their understanding of common problems, and to begin planning and co-creating solutions that will lead to a more resilient future for everyone. Such processes are also needed to move beyond incremental forms of adaptation, towards more [transformational thinking and action](#).

The [VRA](#) and [TSP](#) processes that were carried out in Botswana were found to be highly enlightening and useful for the

stakeholders that participated. An important outcome of the VRA was that it allowed the voices of the most marginalised groups to be heard in a safe and trusting environment. For instance, the challenges faced by women whose livelihoods depend on harvesting phane caterpillars, and who are therefore disproportionately affected by declining quantities thereof, were brought to light. This was achieved by engaging with power relations and establishing a narrative of inclusivity and participation throughout the [VRA process](#). On the other hand, the [TSP process](#) was valuable because it allowed key issues to be prioritised (in this case the optimal use of land and the reduction of human-wildlife conflict), and enabled the diverse group of participants to begin collaboratively identifying solutions to these problems. In doing so, emphasis was placed on what can and must be done by the people in the room.



Photo by: Salma Hegga

Recommendations

1. Top-down approaches to conducting vulnerability assessments, and to adaptation policy and planning more generally, are not sufficient for dealing with [complex challenges in the context of climate change](#). More inclusive, participatory approaches that allow important socio-economic and governance issues to be surfaced from a range of perspectives should be embraced.
2. Grassroots stakeholders play an equally important role in participatory processes as those in positions of power. Such processes should thus bring together diverse groups of actors who are representative of different sectors, levels of governance and socioeconomic backgrounds. This is important for surfacing issues that may otherwise be overlooked due to dominant [power relations that typically determine patterns of inclusion and exclusion in decision making](#).
3. About 80% of households in Bobirwa are female-headed, and women and men are differentially affected by the impacts of climate change. Similarly, [factors like age, ethnicity, marital status and household composition affect people's vulnerabilities](#) to climate change, and their [adaptive capacities](#). To facilitate the inclusion of [gender](#) and [social differentiation](#) in policies, practices and extension services, these nuances should form a fundamental focus in participatory dialogue spaces like VRA and TSP. To surface the differences between different groups it is often critical to [engage with them separately](#).
4. [Multi-stakeholder participatory processes](#) open up the possibilities for social learning. For example, government authorities can learn from local knowledge and gain practical insight into key issues being faced on the ground, which are often [different or more complex than they appear](#) at face value. On the other hand, communities can learn about existing or proposed policies, programmes, projects and communication channels that might benefit them.
5. Participatory workshops are only a first step toward realising more inclusive and collaborative responses to climate change in practice. For this approach to be effective in the long-term, open dialogue and ongoing engagement with and between representative and marginalised stakeholders should be encouraged and enabled beyond the confines of multi-stakeholder workshops.



Photo by: Hillary Masundire

Working with stakeholders to improve adaptation at multiple scales

ASSAR has successfully worked across scales in Botswana, from national to regional and local levels. Given the differing capacity and needs of stakeholders at these scales, we adapted our communication and capacity-strengthening strategies to suit different audiences. These audiences included government representatives from a range of different sectors and governance scales; non-government stakeholders including those from NGOs, development agencies and the private sector; professionals from research/academic institutions; local community members and tribal authorities. Through a range of research and engagement activities, we worked to enhance stakeholder understanding of vulnerability and adaptation, and encouraged an increase in the uptake of adaptation measures.

Ultimately, one of the goals of adaptation is to reduce the vulnerability of different actor groups to climate-related impacts. For this to happen, people need to have the right information to make appropriate decisions. Prior to ASSAR's work in Botswana, the Bobirwa sub-district was a very under-researched site. The challenges being faced by local people, and the socially-differentiated nature of their vulnerabilities to climate change, were thus not well understood. The information generated from the project has therefore been very well received by the local government administration who expressed a need for such data

at the start of the project, and during the course thereof. The tribal administration of Bobirwa, including the Senior Chief, found the work of ASSAR to be equally valuable.

Engaging stakeholders in our work has greatly enhanced the potential for uptake of our findings as well as the work's **impact**, in the short and long term. At the national level, we achieved impact with our research in two main areas. Firstly, we contributed to the development of a national drought policy and strategy through the publication of a '**strategy-ready**' [background paper](#). Secondly, we held a national-level [workshop](#) aimed at training all District Economic Planners (from the Ministry of Local Government and Rural development) and all District Development Officers (from the Ministry of Presidential Affairs) in how to conduct a VRA process. This was hailed as a significant contribution to capacitating these development planners and practitioners, who work directly with local communities, with the skills required to influence adaptation actions at the local community level as well as at the national level. This came about after holding a participatory VRA in Bobirwa sub-district which caught the attention of national government, who in collaboration with Oxfam GB and the University of Botswana organised the country-wide training.



Photo by: Hillary Masundire



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Next steps for research, policy and practice

Botswana is experiencing temperature increases at a far more rapid rate than most other countries globally. This necessitates an urgent and collaborative response that integrates scientific research and awareness raising activities focused on the trends and implications of rising temperatures, with clear adaptation options for policy and practice that are mainstreamed into development planning across all sectors. In doing so, emphasis should be placed on the importance of improving natural resource management and building the resilience of people and systems to climate change. Key to realizing a more sustainable and climate-resilient future in practice will be building the capacity of stakeholders and enabling alternative livelihoods for communities through the provision of training and skills development and the creation of jobs, markets and economic opportunities.

A more integrated response to climate change is also critical and requires that emergency-led responses to climate-related disasters such as drought are complemented by more long-term, strategic and proactive approaches to planning and management. Greater vertical and horizontal integration between sectors and governance scales is critical for enabling this, and for enhancing the effectiveness of adaptation at the local level. In addition, the implementation of adaptation measures requires that relevant information and advice is available to authorities, as well as to community members, so that they can make more informed decisions about how best to respond to climate change. This information needs to be co-produced among relevant stakeholders and should include both meteorological and place-based forecast information, as well as information on practical adaptation options such as climate-smart agriculture, alternative livelihood opportunities and the formation of self-help groups.

- There is need for research on heat stress and its impact on people and economically-important sectors, as well as the appropriate responses that are required.
- Policy needs to incorporate a longer-term stance that mainstreams climate change and adaptation across sectoral and development policies.
- Tailored adaptation information needs to be developed and disseminated across different sectors and levels of government.
- As has been recognised by national government through their experience of the VRA process, there is a need for more inclusive decision-making spaces for adaptation planning. These should include marginalised groups who can gain more power and influence in this setting and decision makers who can benefit from a richer understanding.



Photo by: Hillary Masundire

ABOUT ASSAR

ASSAR used insights from multiple-scale, interdisciplinary work to improve the understanding of the barriers, enablers and limits to effective, sustained and widespread climate change adaptation out to the 2030s. Working in seven countries in Africa and South Asia, ASSAR's regional teams researched socio-ecological dynamics relating to livelihood transitions, and the access, use and management of land and water. One of four consortia under the Collaborative Adaptation Research Initiative in Africa and Asia (CARIAA), ASSAR generated new knowledge of climate change hotspots to influence policy and practice and to change the way researchers and practitioners interact.

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