

Barriers and Enablers to Climate Change Adaptation in North-Central Namibia

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The five-year ASSAR project (Adaptation at Scale in Semi-Arid Regions, 2014-2018) 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.

What are barriers to adaptation?

The Intergovernmental Panel on Climate Change (IPCC)¹ defines barriers to climate change adaptation as the “factors that make it harder to plan and implement adaptation actions or that restrict options.”

Barriers are different to limits: where limits are restrictive and cannot be resolved within a given time horizon, barriers can be overcome “with concerted effort, creative management, change of thinking, prioritization, and related shifts in resources, land uses, institutions, etc.”²

Introduction

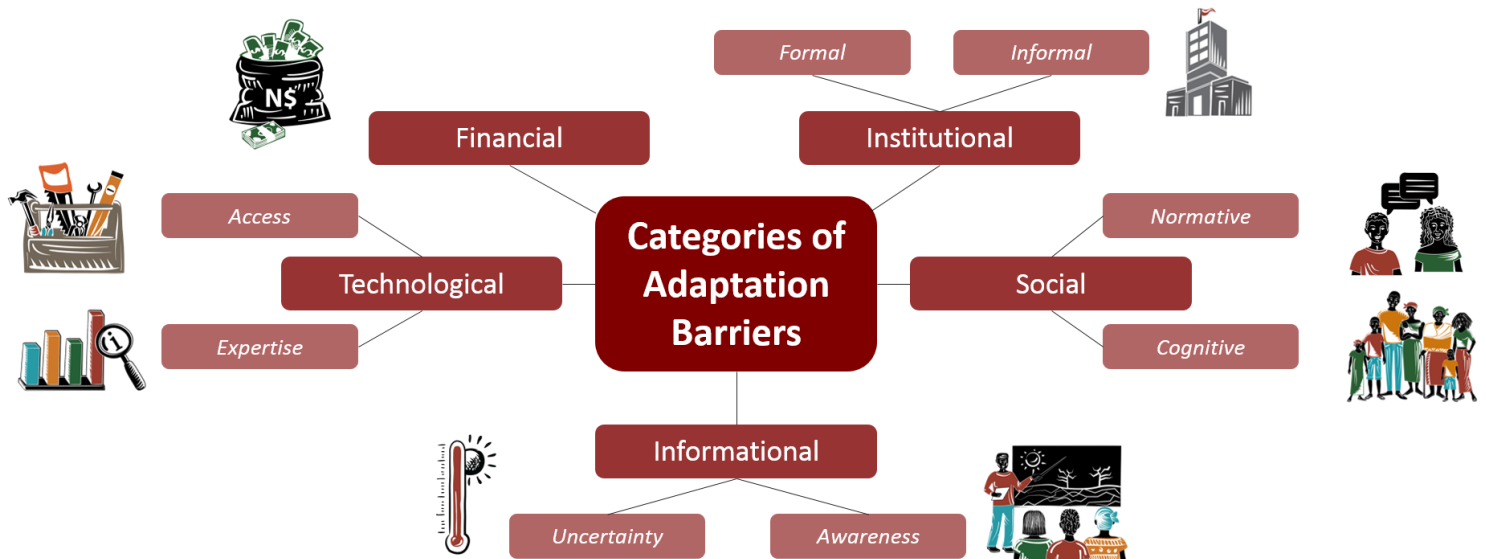
Despite a harsh climate, low soil productivity and scarce water resources, the livelihoods of communities in semi-arid north-central Namibia are sustained predominantly by rain-fed agriculture and animal husbandry³. Their dependence on natural resources means that these communities are highly vulnerable to climate variability and change. However, many of them lack the capacity to adapt to the increasingly warm, dry and more extreme conditions due to the presence of various barriers (described in this brief). These barriers “do not act in isolation but rather interact at different levels to inflict enormous damage on the livelihoods of households.”⁴



Adaptation Barriers and Enablers

Scholars have increasingly begun to document and categorise adaptive barriers, and some effort has been made to gain deeper insight into what the underlying drivers and indirect consequences of these barriers are. For example, in 2009, Biesbroek et al.⁵ explained that barriers to adaptation may arise from factors such as financial or material deficits (e.g. technology and infrastructure) or institutional and governance challenges. These may include: uncertainty; institutional voids or fragmentation; conflicting or short-term time horizons of politicians and policies; and the absence of motive or willingness to start adapting. Adger et al. (2009)⁶ focused more on the social barriers to adaptation, explaining that these are inherent in society and depend on engrained ethics, local knowledge and attitudes to risk and culture. Adger (2016)⁷ later contended that

place, wellbeing, and fairness shape priorities for adaptation to climate change. Moser and Ekstrom (2010)² developed a framework to diagnose barriers to adaptation. This framework considers the interactions between various actors, the governance and larger socio-economic context, and the system of concern that is to be managed for climate change. Lehmann et al.'s (2014)⁸ more analytical framework looks at the 'first tier' (underlying) variables which are the drivers of 'second-tier' (emergent) variables. This latter analysis fits with Biesbroek et al.'s (2015)⁹ contention that simple 'input-output' frameworks are inadequate for understanding barriers to adaptation. Instead, this 'black box' must be opened to reveal the inherently complex, social-ecological environment in which adaptation occurs.



North-central Namibia

In the context of north-central Namibia, the complexity of the 'adaptation environment' stems from the presence of various existing challenges such as pervasive poverty, inequality (including gender disparities), education deficits and poor governance. Whilst seemingly unrelated to climate change, these non-climatic factors increase the underlying vulnerability of communities, thereby reducing their capacity to adapt to the impacts of climate change¹⁰.

Drought is considered one of the most critical climate-related concerns in north-central Namibia, particularly as the frequency and intensity of dry spells is likely to rise in coming years¹¹. Flooding is also a substantial problem in this region of the country, yet there is a lack of infrastructure and technology to harvest and store water for productive use. The direct impacts of drought, coupled with unrealised water-harvesting opportunities during periods of high rainfall, include reduced availability of and access to water and food for both people and livestock. There are also numerous knock-on consequences. For example, lower crop yields mean that household incomes decrease and hunger and malnutrition increase. This, in turn, can lead to higher school dropout rates, increased occurrence of unlawful or risky behaviour (e.g. theft or transactional sex) and greater social conflict. Because livestock ownership is perceived as a direct measure of wealth and prestige, animal deaths may also reduce people's social status¹².

The various physical, social and economic impacts of climate change mean that it is essential for vulnerable communities to

increase their adaptive capacity. However, this is challenging when little is understood about the barriers and enablers of climate change adaptation in the context of Namibia specifically, despite that there is an increasing scholarship on this topic in a global and regional (including sub-Saharan African) context¹³.

This brief draws on qualitative data from multiple key informant interviews, focus group discussions and stakeholder engagement activities that have taken place since 2014, as part of ASSAR. Based on this information, it highlights the various barriers to climate change adaptation in Namibia, and discusses what factors might enable adaptation in this context. Drawing on the work of Antwi-Agyei et al. (2015)⁴, the barriers to adaptation that have been identified in north-central Namibia are categorised in this brief according to the following types: financial; technological (including access to technology and expertise); informational (including awareness and uncertainty); institutional (both formal and informal) and social (cognitive and normative). Formal institutional barriers relate to the laws, policies, plans etc. that govern adaptation. Informal institutions are the social processes (e.g. knowledge co-production) that underpin the development of these formal mechanisms¹⁴. Together, formal and informal institutions shape individual and communal expectations, interactions and behaviour¹⁵. Cognitive barriers relate to an individual's psychology and thought processes. Normative barriers to adaptation result from the influence of cultural norms and values on people's perception of, and thus reaction to, risks such as climate change⁴.

Financial Barriers

Findings from ASSAR's key informant interviews, focus group discussions & stakeholder engagements:

Government and non-government stakeholders from national to local level have expressed that adaptation is impeded by insufficient financial resources. At the local level, people are unable to invest in alternative livelihood approaches and cannot pay for farming implements and inputs, labour or extension services. There is a lack of access to alternative employment opportunities and resource deficits mean that authorities do not have the means to conduct ongoing stakeholder engagements or to hire more technical support staff. They are also unable to deal effectively with problems such as bush encroachment and the eradication of invasive species. This negatively impacts water resources, a problem that is felt most acutely by the rural poor

who already have limited access to potable water due to a lack of basic service delivery and the absence of any free water allocation. Individuals who are unable to pay for water have no choice but to consume contaminated water from sources such as *lishana*. Poor communities are also negatively impacted by inflexible government budgeting structures, and with a lack of collateral are often unable to secure loans from financial institutions such as Agribank. Whilst drought relief helps to meet the immediate needs of vulnerable communities, a member of an NGO explains that this can lead to a dependence on government hand-outs which, in the long-term, reduces people's capacity to adapt autonomously.

Similar or related barriers identified in the existing literature on Namibia:

- Limited access to resources and a lack of financial support from government hinders the upscaling of pilot projects, most of which are donor-funded^{10,17}.
- Limited financial capacity to provide extension services and to implement adaptation actions³.
- The continuity of adaptation initiatives is a problem because the approach taken towards project planning is generally programmatic (rather than systematic and integrated), which means that projects are not pursued or supported in the medium to long term because no dedicated finances can be negotiated when budget frameworks are determined¹⁷.
- Women are most vulnerable to financial barriers and many have no choice but to settle in marginal, flood-prone areas^{22,18}.

Technological Barriers (*access & expertise*)

Findings from ASSAR's key informant interviews, focus group discussions & stakeholder engagements:

Namibia's poor infrastructural capacity undermines the ability of communities to adapt. As explained by a regional government councillor, an absence of infrastructure also makes the country less attractive to potential investors, whose operations would be inadequately supported. Major infrastructural deficits that have been noted by Namibian stakeholders include a lack of: roads and bridges; state hospitals (in Onesi Constituency); stormwater drainage systems (in informal settlements); grain storage facilities; tractors; and government vehicles, the latter of which has implications for the mobility of technical staff and thus the efficiency with which their duties are executed. There is a lack of infrastructure to support livelihoods, for example access to

markets to sell farm produce, as well as insufficient access to technologies such as drought-resistant seed varieties and rainwater-harvesting tanks. There are also not enough water pumps to support the demand and a lack of water meters makes cost recovery difficult. Yet, existing water infrastructure is poorly maintained. Severe capacity deficits are also a key concern, particularly for farmers who are highly vulnerable to climate variability and require ongoing technical support. According to a Senior Agricultural Extension Officer, the ratio of technical staff members to farmers is 1:3-5000. This capacity shortfall is exacerbated by a lack of technical expertise.

Similar or related barriers identified in the existing literature on Namibia:

- Limited availability of and access to technology¹⁶.
- Some key existing infrastructures have reached the end of their lifespan. There is a need to retrofit old and develop new infrastructure. However, the rate of investment in infrastructure lags behind the levels required to propel Namibia's economic growth to high and sustainable levels, as envisioned in NDP4 and Vision 2030¹⁹.
- A lack of technology in rural areas means that farmers are unable to make use of early warning systems³.
- Limited skills capacity¹². Women in particular lack technical skills and are often unable to participate in formal employment. Many are therefore heavily reliant on natural resources to sustain their livelihoods, and in times of drought some women have no choice but to beg for food¹⁸.

Institutional Barriers (*formal & informal*)

Findings from ASSAR's key informant interviews, focus group discussions & stakeholder engagements:

At a policy and planning level, the mandate for climate change sits with the Ministry of Environment and Tourism (MET). However, local-level councillors and technical staff have expressed that at an operational level, the mandate for adaptation is unclear. This problem is driven, in part, by the absence of sufficiently detailed legal guiding frameworks for adaptation. Housing climate change within the MET also means that adaptation is positioned as an environmental issue, rather than one that is cross-cutting in nature. Ministries and departments are currently separated into silos, which means that planning occurs in a fragmented, top-down manner. Adaptation activities are also centralised at the national scale, despite that a decentralisation policy exists. Where decentralisation has occurred, it has in some cases led to maladaptation. For example, local communities in Onesi Constituency lack the capacity to manage communal water points effectively, which has led to

increased vulnerability. A lack of coordination between sectors has led to critical oversights, not least the failure to mainstream adaptation into national policies. The result of this is that adaptation objectives are incompatible with the focus of these policies, including the National Development Plan. Poor vertical and horizontal integration and insufficient sharing of information can cause conflict due to inter-ministerial power struggles and the politicisation of non-political (e.g. technical) issues. Moreover, whilst traditional authorities are formally recognised by government, they are not allocated sufficient budget and are therefore not adequately supported or empowered to implement interventions or undertake adaptation activities. There is also a lack of long-term planning (planning happens in five year cycles). This, coupled with high staff turnover, means that sustaining projects is difficult as successive leaders often have different priorities.

Similar or related barriers identified in the existing literature on Namibia:

- Adaptation projects are largely planned and implemented in a top-down manner²⁰. Insufficient stakeholder consultation means that gendered vulnerability to climate change has not been adequately considered or integrated into policies^{18, 22}.
- Most sectoral policies do not explicitly address climate change and in fact there is a limited understanding of climate-related issues in most sectors. Namibia's National Climate Change Policy (NCCP, 2011) thus conflicts with existing sectoral policy instruments and national development goals¹⁷.
- The designates of Namibia's National Climate Change Committee (NCCC) are mostly technical experts and middle to top management. This technical orientation means that there is less political 'muscle' to affect a climate change response¹⁷.
- The location of climate change within the MET is a barrier, as MET has less power and is allocated a lower budget than other ministries, which are considered more important. Climate change adaptation and disaster risk management (DRM) are not linked closely enough, particularly given that DRM is strategically located in the Office of the Prime Minister¹⁷.





Informational Barriers (*awareness & uncertainty*)

Findings from ASSAR's key informant interviews, focus group discussions & stakeholder engagements:

According to a stakeholder from an NGO, information gaps exist in terms of both the availability of, and access to, climate change data and adaptation options. This is particularly true at the local level and in rural areas, where there is a poor understanding of the problem. This means that whilst stakeholders often realise that something needs to be done (e.g. they need to access alternative water sources), they do not have the knowledge or skills to take action (e.g. to harvest and store rainwater for productive use). Yet, there are insufficient opportunities for skills development and training. A researcher from the University of Namibia (UNAM) explains that even where small grants facilities attempt to build capacity, success is measured in terms of the number of projects implemented rather than the impact of these projects on wellbeing. Education deficits in rural communities,

insufficient awareness-raising campaigns (e.g. for water saving) and a lack of discussion around the drivers and impacts of climate change at all levels, means that information is scattered amongst stakeholders. This is caused, in part, by infrequent stakeholder engagements and insufficient integration between scientific and traditional knowledge. Inadequate consultation across government spheres and between different ministries and service providers means that budgets are often determined arbitrarily. A lack of communication with the beneficiaries of adaptation projects can sometimes result in a mismatch between what types of projects international donors are willing to fund, and what the community actually needs. This leads to tension among stakeholders and even resistance to change.

Similar or related barriers identified in the existing literature on Namibia:

- Decision makers face significant uncertainty due to a lack of downscaled climate change projections and poor availability of / access to information about the likely climate change impacts on specific natural resources^{11, 16}.
- Information on climate change is largely disseminated through channels such as the Internet, television and newspapers. A lack of technology and high levels of illiteracy in rural areas means that this information is often inaccessible to many people. Hence, there is poor awareness and understanding of climate change and adaptation in rural communities¹⁰.
- A lack of stakeholder engagement in project implementation can make adaptation projects less effective²⁰.
- Many projects are driven by donor funding and are usually results-oriented and time-limited. The sustainability of these projects is questionable as there is a lack of capacity and resources to continue implementing activities once donor organisations pull out¹¹.
- Limited technical and human capacity to provide relevant information, forecasts and early warnings³.

Social Barriers (*cognitive & normative*)

Findings from ASSAR's key informant interviews, focus group discussions & stakeholder engagements:

Despite projections of an increasing warming and drying trend, Namibia has experienced above average rainfall in recent years. A member of an NGO explains that this has led to some scepticism around the severity of the climate change problem, which in turn prompts a reactive approach from government. Stakeholders have thus complained about a lack of agricultural support during non-drought times, when farmers may be facing challenges besides water shortages (e.g. the destruction of crops by pests or disease). Feelings of apathy ('not my mandate') or despair ('I do not care anymore') also pose a barrier to adaptation, as when stakeholders do not see themselves as role players, they fail to adequately buy in to strategies. As a result, adaptation is not considered in budget allocations. This may be linked to perceptions of climate change as a purely environmental issue, which is problematic in that government agendas tend to prioritise more immediately pressing issues such as poverty and socio-economic inequality, over environmental concerns. A poor sense of urgency also means that the implementation of adaptation activities is very slow. In some instances, cultural

norms and local traditions pose a barrier to adaptation. In certain belief systems, for instance, traditional knowledge is favoured over science while some indigenous communities believe that climate change is 'God's work.' In Namibia, livestock is a direct representation of wealth. This becomes a concern in times of drought, as farmers (particularly those who are older and more traditional) are often unwilling to sell off their animals despite severe food and water deficits, which increases their vulnerability. Sustainable farming practices are sometimes disregarded among farmers who have a poor sense of ownership of their land due to an absence of title deeds. Ongoing disputes around land tenure instil a sense of insecurity among communities and make farmers reluctant to invest in more sustainable measures in case they are forced to relocate. New challenges such as increasing population densities are also making adaptation more difficult, as some adaptive practices tend to be less effective on smaller pieces of land. Failure to adapt also occurs when there is a fear or distrust of the unknown, which is most evident among stakeholders who lack access to insurance.

Similar or related barriers identified in the existing literature on Namibia:

- Widespread migration has led to increased competition and conflict between herders and cultivators²¹.
- Some people in rural Namibia believe that shifts in rainfall intensity and the increased occurrence of drought is due to communities having abandoned traditional practices and rituals. Others, particularly those who hold strong Christian beliefs, perceive climate change to be a precursor to the so-called 'end of the world' (doomsday)²².
- Cultural attachment to livestock can increase people's vulnerability^{23, 12}.
- Competition over land use between settlement and cropping on the one hand, and grazing on the other²¹.
- Gendered vulnerability to climate change has not been adequately considered or integrated into policies^{18, 22}.



What enables climate change adaptation in Namibia?

Namibia ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1995, and reinforced the climate change agenda at the national level in 2011 with a National Climate Change Policy (NCCP). An enduring challenge, however, is the institutional location of the climate change function within the MET. Housing climate change in a more strategic ministry (such as Finance, Planning or the Office of the President) could increase the likelihood of it being considered a more urgent priority, and thus being allocated a sufficient budget. Nevertheless, there is now general agreement amongst government stakeholders and local communities that climate change is real and is affecting everyone. This means that the institutional and social environment is becoming more conducive for the implementation of adaptation projects. According to one respondent from the Parliamentary Standing Committee on Economics, Natural Resources and Public Administration, there are also willing and passionate people committed to driving the climate change adaptation agenda in Namibia. The presence of such ‘champions’ has proven to be highly valuable in cases where there is limited political will to respond to climate change, or when adaptation is not seen as a priority compared to more pressing social and economic development concerns²³. However, a lack of capacity means that champions are often overstretched, and it is therefore essential to maintain relationships and networks for support. A stakeholder from the United Nations Development Programme (UNDP) explains that building personal relationships with people not only makes collaboration easier, but enables certain agendas to be driven more effectively as one can engage directly with decision makers.

Whilst adaptation is yet to be mainstreamed into existing development practices, an opportunity exists to integrate adaptation with DRM more closely. This is because strengthening and coordinating DRM is currently seen as a development priority, and DRM has already played a key role in driving the climate change agenda, for example through awareness-raising initiatives.

Such initiatives have led to an increased understanding about the cross-cutting nature of climate change. This has enabled officials to find loopholes through which to secure funding for projects that may not be framed as adaptation initiatives, but which are related to climate change in some way. For instance, the Environmental Investment Fund of Namibia (EIF) raises funds from different international and national sources to focus on projects that improve social wellbeing and economic development, and which have environmental co-benefits. The EIF was accredited as the National Implementing Entity (NIE) for the Green Climate Fund in 2016. Prior to this, in 2015, the Desert Research Foundation of Namibia (DRFN) was accredited as the NIE for the Adaptation Fund. More opportunities for funding from national government, international donors and NGOs are thus beginning to arise.

Greater access to funding for adaptation projects should be coupled closely with ongoing stakeholder engagement and education about climate change at the grassroots level. This is important to ensure that these projects have the maximum possible impact and are effective in enabling vulnerable populations, including women, to better adapt to climate change. Importantly, community consultations must occur in the vernacular. As explained by a senior researcher at UNAM, this means not only communicating in the local language but speaking to people’s life experiences (e.g. loss of crops), especially as climate change is a seemingly abstract concept to many people. A further benefit of this bottom-up approach is that indigenous knowledge can be integrated with climate science, which may help more traditional communities to better understand and accept the concept. This is important, given the weight placed on traditional knowledge, culture and practice by some members of these communities. Moreover, people in rural areas have a long history of adapting to adverse climate circumstances and therefore hold valuable local knowledge about the land, which could complement scientific forecasts.

¹ IPCC. (2014b). Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the IPCC. Cambridge: Cambridge University Press.

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¹² Ziervogel, G. (2016). What Africa’s drought responses teaches us about climate change Hotspots. *Water Wheel*, 15(5), 31–33.

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Conclusion

Climate change poses a significant threat to vulnerable populations in semi-arid Namibia. Most at risk are communities who inhabit marginal environments, who are dependent on natural resources to sustain their livelihoods and who are already exposed to issues such as poverty, inequality (including gender disparities) and poor governance. This underlying vulnerability is augmented by a lack of capacity to adapt to climate change, due to various financial, technological, institutional, informational and social barriers. Overcoming these barriers is possible, but will require champions to drive the climate change agenda and to leverage opportunities for adaptation funding and support. Building relationships and networks, engaging stakeholders at all levels, aligning policy priorities and integrating science with traditional knowledge are also essential factors for enabling effective, sustained and widespread adaptation to climate change in Namibia.



ABOUT ASSAR

ASSAR uses 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 research 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 generates new knowledge of climate change hotspots to influence policy and practice and to change the way researchers and practitioners interact.

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