ASSAR

ADAPTATION AT SCALE IN SEMI-ARID REGIONS

2014–2018

PUTTING **PEOPLE** AT THE CENTRE TO ENABLE EFFECTIVE **CLIMATE ADAPTATION** IN SEMI-ARID REGIONS

INSIGHTS FROM ETHIOPIA

ADDIS ABABA UNIVERSITY

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VULNERABILITY AND ADAPTATION TO CLIMATE CHANGE IN SEMI-ARID ETHIOPIA

ASSAR'S FOCUS IN ETHIOPIA

Semi-arid regions like the extensive drylands of Ethiopia, are highly dynamic systems that experience changeable and sometimes extreme climates, adverse environmental change, and a relative insufficiency of natural resources. Historically, people living in these regions have practiced livelihoods that are well-suited to deal with these conditions. Today, however, many communities are showing increased vulnerability due to challenges such as political marginalisation, underdevelopment, poverty, inequality, unfair governance systems, maladaptive policies and increasing population growth. Climate change is expected to exacerbate existing levels of vulnerability, as temperatures rise, and rainfall and seasonal climate patterns become more variable.

From 2014-2018, ASSAR's East Africa team worked in Ethiopia and Kenya to better understand these existing and upcoming challenges. Made up of a team of researchers and practitioners from the Addis Ababa University (AAU), University of Nairobi (UoN), University of East Anglia (UEA), and Oxfam GB, we concentrated most of our work in Ethiopia in the woredas (equivalent to districts) of Awash Fentale and Amibara in southern Afar region (our case study area). In both Ethiopia and Kenya we used a parallel case study approach in order to best analyse how changing social and environmental conditions interact in practice. We combined these analyses with activities at regional and national levels to generate transferable insights for policy and practice on the changing nature of vulnerability and response to environmental change. We hope that this detailed work can contribute to knowledge on how to enhance the ability of communities, local organisations, and government to adapt to climate change in ways that minimise vulnerability and promote long-term resilience.

Key insights

- Factors like gender, age, location, livelihood and status intersect with social and economic characteristics such as household composition, social capital, marital status, income and education level to determine people's capacity to respond effectively to climate risks and impacts. Adaptation policies need to consider these intersecting factors explicitly to enable the most marginalised to adapt.

- Although decentralisation has strengthened the ability of local officials to respond to local needs flexibly, greater coordination between levels and sectors of government, as well as more resources and better provision of timely and relevant information, would further strengthen action on water governance and disaster risk management.

- Policies and interventions on key issues such as villagisation, irrigation and invasive species management need to balance the competing needs of different stakeholders and population groups to enable more sustainable and equitable approaches to natural resource management and livelihood support in the face of climate change.

- Recognising that interventions will result in trade-offs, with some people winning and others losing, is important. Including affected populations more concretely in decisions about interventions will help to identify the main trade-offs, support more effective design and implementation of interventions, avoid unintended consequences – especially for the most vulnerable, and help to ensure that the needs of those typically excluded from decision making are heard and valued.

ABOUT THE RESEARCH

Research priorities

ASSAR's research in Ethiopia was structured around three overarching dimensions that were identified through an in-depth review of literature, and the insights and priorities of stakeholders at local, county and national levels. The first dimension was land and water use/access through which we examined the connection between human wellbeing, land tenure, resource access (such as water and pasture for livestock or crops for domestic use), and resource governance (including traditional mechanisms). Our second dimension was linkages at higher scales. Here the objective was to understand issues like the dynamics of pastoral mobility across larger-scale landscapes (such as districts and countries) and the ongoing process of fiscal and political decentralisation. The third and final distinctive dimension of our research was to understand how vulnerability, adaptive capacity, and the implications of different adaptation responses are socially differentiated – within communities, between individuals, and according to ethnicity, gender and age.

Research focus

Drawing on the three dimensions of adaptation outlined above, ASSAR's research in Afar focused on four specific research topics that were critically important in the semi-arid regions of Ethiopia.

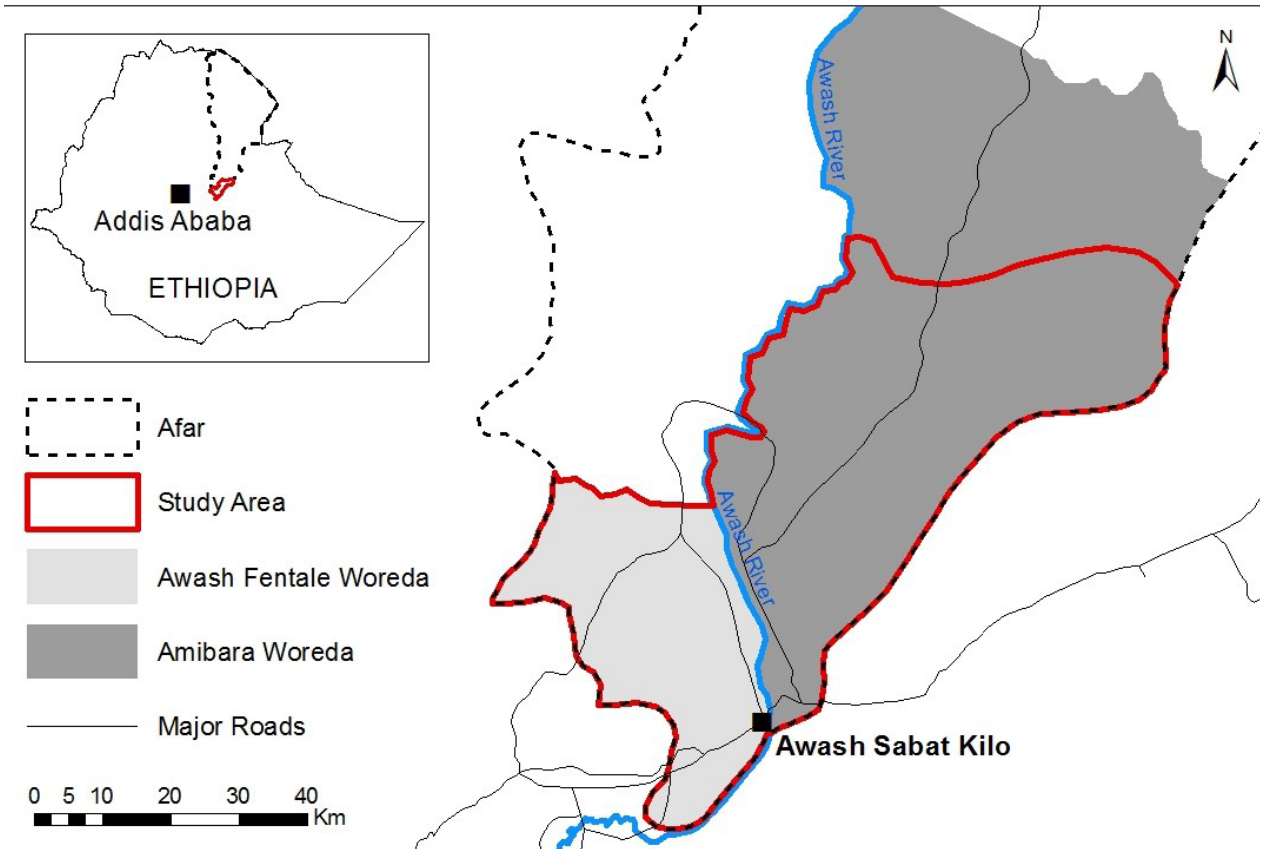
- *Intra-household dynamics* and resource access under social transition: We explored the association between changing resource access and household dynamics under social transition (agro-pastoral and urbanisation), including intra-household change in roles, relations, aspirations, livelihoods, and translocal risk and responses.

- Decentralisation and *governance for adaptation:* We examined how governance for adaptation is articulated through the decentralisation process (including key sectors such as water resources and disaster risk reduction), covering cross-scale dimensions from policy drivers to community / woreda interaction.

- *Villagisation*, small-scale irrigation, and water resource management: We analysed the implications of villagisation for vulnerability and adaptation to scarce water supplies in the context of wider livelihood advantages and disadvantages.

- Management of *Prosopis juliflora*: We analysed problems of invasive species in the rangeland and socially-differentiated perspectives on the management of *Prosopis*, a dryland exotic shrub that is spreading rapidly through the environment.

Our research was grounded in the prevailing dynamics of the case study sites (such as economic, development, migration, social, gender, cultural and policy change) and set within the broader dynamics of agro-pastoral transitions and the ongoing process of decentralisation (of planning and resources). Issues of gender and other forms of social differentiation were embedded within all the selected research topics. Through this research, we generated knowledge of who the current winners and losers are in relation to adaptation to climate-related, socio-ecological risks and some more critical understanding of the probable implications in terms of barriers and enablers as we look to the future (over the next 20-30 years).



Case study sites

Our main study site in Ethiopia covered two woredas – Awash Fentale and neighbouring Amibara – which lie in Zone 3 in the south of Afar Region adjacent to the borders with Oromiya region to the south-west, south and south-east, and Somali region to the east. Apart from isolated uplands, this is a lowland zone bounded by the perimeters of the Rift Valley, with a hot and dry climate and primarily semi-arid conditions. The Awash river runs through the southern section of Awash Fentale and then heads north, forming the border between the two woredas and continuing as the western border of Amibara. Several minor and seasonal watercourses join the main channel of the Awash river through the two woredas, but two major permanent tributaries, the Kessem and the Kabena rivers, cross eastwards through the northern section of Awash Fentale. The largest urban site in the case study area is Awash Sebat Kilo (Awash Town), which has a strategic location along the Djibouti-Addis Ababa highway, close to a river crossing and the junction with the main highway east toward the Somali region. A new railway linking to Djibouti has been constructed along the Awash valley and passes across the northern edge of the town. Two major conservation areas lie within the case study area. The Awash National Park occupies around half the area of Awash Fentale and is covered predominantly by acacia woodland and grassland, and the Aledegi Wildlife Reserve occupies much of the eastern rangeland of Amibara.

Historically the case study area and the Afar region as a whole have been a pastoralist zone, with traditional patterns of mobility and seasonal pasture areas. However, the region is undergoing transition, with changes in both livelihoods and settlement patterns associated with a shift from pastoralism to agro-pastoralism, and more intensive land uses. For several decades, agro-industrial developments based on government and private investment in large-scale irrigated plantations of banana, cotton and, increasingly, sugar cane cultivation have become a feature of the central part of the case study area. The communities across the case study area are confronted with multiple livelihood risks, resulting primarily from: rainfall variability, water scarcity and frequent droughts; changes in access to water and pasture resources; invasive plant species spreading across the rangeland; and limited alternative livelihood opportunities.

Approach

ASSAR's integrated research approach in Ethiopia was to operate primarily at the national level during the inception phase, before narrowing and deepening the research work, ultimately to focus in the latter stages of the project on a set of researchable topics that are important for communities, local government, non-governmental stakeholders, and national-level institutions.

Our initial work in Ethiopia began in November 2014, with meetings with stakeholders, including policy makers, NGOs and local government working on climate change adaptation, and with communities on the ground. These provided an important opportunity for the team to hear about activities and priorities in-country at a range of levels. We introduced the ASSAR programme and shared information about what ASSAR planned to do in the region. This was also a first opportunity for feedback from national-level stakeholders on the project approach. Discussions centred on: i) what people thought were the most critical issues relating to climate impacts, vulnerability and adaptation in semi-arid regions (including wider development pressures or challenges); ii) what they saw as the main research needs in order to address these issues and strengthen resilience (especially of the more vulnerable social groups); and iii) what key initiatives, projects, events and documents the project team should take into account.

The initial scoping work with stakeholders both built on and fed back into the stakeholder mapping exercise carried out during the inception period, which identified major actors (governmental, non-governmental, private organisations) working at national level, regional level (East Africa), and international level on various cross-cutting issues of climate change adaptation and vulnerability.

This early work with stakeholders also contributed to the Regional Diagnostic Study, which was completed in early 2015, together with a broad-ranging review of existing academic and non-academic literature. The diagnostic study highlighted that people's vulnerability to climate change is rooted in wider aspects of livelihoods and development trajectories, and that adaptation to climate change may need to look beyond business-as-usual approaches in development and environmental management.

Over ASSAR's lifetime, we engaged with stakeholders across scales, from the community level up to national policy makers in the relevant departments, as well as key NGOs and civil society organisations working in climate change adaptation and related areas in the region. For example, we held two workshops in February 2016 at national and local levels at the midpoint of the project to feedback to stakeholders, and to gain their feedback on emerging results and research priorities. These activities formed part of our Research-into-Use (RiU) strategy, which integrated our research work with uptake and dissemination activities to realise impact on the ground, and which used stakeholder engagement to focus on efforts which were most relevant for disempowered groups. Our Participatory Scenario Analysis (PSA) research on the issue of invasive species management provides a practical example of this integrated thinking. Through our applied approach – and by integrating research, RiU and capacity building activities – we supported stakeholders to analyse issues that were relevant to them, identified preferred solutions, and provided additional support to enable them to work towards achieving meaningful change on the ground. Building on the research and engagement work undertaken through the PSA process, ASSAR identified the issue of invasive species, particularly *Prosopis juliflora*, as an urgent field for additional research-for-impact activities, engaging both community and local government stakeholders in activities following on from the research. At a national level, members of the ASSAR team (Oxfam and AAU) actively worked with the National *Prosopis* Taskforce, and subsequently the Pastoral and Agro-Pastoral Taskforce (PAPTF) to disseminate findings and influence policy and practice.

Below, we detail the approaches taken for each of our research topics (intra-household dynamics and resource access under social transition, decentralisation and governance for adaptation, villagisation and water resource management, management of *Prosopis*) in the next section.

FINDINGS AND RECOMMENDATIONS

GENDER, AGE, LOCATION AND STATUS AFFECT THE ABILITY OF PEOPLE TO RESPOND TO CLIMATE CHANGE

Factors like gender, age, location, livelihood and status intersect with social and economic characteristics such as household composition, social capital, marital status, income and education level to determine people's capacity to respond effectively to climate risks and impacts. Adaptation policies need to consider these intersecting factors explicitly to enable the most marginalised to adapt.

What we did: Our study of intra-household dynamics and adaptation under social transition was based on in-depth interviews with households in the Awash River basin, conducted in October 2017. These comprised life history interviews with a selective sample of 35 households from the pastoralist village Dileyu (13 people), the agro-pastoralist and peri-urban centre Melka Sedi (six people), and the urban neighbourhood Awash Sabat Kilo (16 people). Where possible two people were interviewed in each household, typically the household head and senior man or woman, depending on the gender of the head. We looked specifically at monogamous, polygamous, divorced, widowed, and young households to see how household type can mediate adaptation to climate change. Given the centrality of age, gender and location in jointly shaping household structures and relationships, and consequently, the nature of risks as well as adaptation, our overarching research question was: How do men and women (of different groups, ages and statuses) use changing household structures and relationships to respond to risks and adapt more effectively?

What we found: We found that Afar pastoralists were not only 'stepping up' (increasing activity in an attempt to address climate-related impoverishment), but also 'stepping out': shifting from pastoralism into agriculture and salaried employment. This often involves splitting households across multiple locations, and we looked at the ways in which these splits change natal, conjugal and intergenerational relationships. Sometimes these have positive effects, but we also observed households that have 'fallen down and out' and discussed the reasons for this. Our findings suggest that youth aspirations, particularly in urban centres at least, are increasingly impossible to achieve. Further evidence suggests that government support to urban centres in relation to food security and livestock is insufficient, relative to that provided in rural areas. The gendered negotiation of intra-household relationships and resource access, and how this varies across different household structures, is not well understood in literature on climate change adaptation, and our dataset enables us to make a unique contribution to these debates. Numerous respondents observed the continued importance of migration (moving with their animals), which was under threat from the growth of *Prosopis juliflora*, the erosion of or encroachment on traditional grazing grounds, and clan warfare. Constraints on migration have particularly severe impacts on women and the elderly: Fatuma (pastoralist, monogamous) described how she and her husband *'suffered in times of drought by staying home and suffering the consequences due to [our] age*'. She emphasised how '*women will severely be affected by the problem as they have to stay home and suffer the consequences while the men look for pasture… it will be good for women to move with others and with the cattle in order to get what she needs such as milk, butter, etc.*'

Recommendations

- Adaptation and risk-reduction strategies and interventions are often based on external assumptions about who is most vulnerable, how people respond to risk, and what needs to be done to help them. However, greater collaboration with communities is needed to better understand local contexts and the intersecting factors leading to specific vulnerability profiles of communities and households.

- Households should not be treated as homogenous units. Instead, researchers, practitioners and decision makers should recognise the diversity of each household, the ways in which power and responsibilities are shared, the relationships that exist within them, and how these factors lead to particular risk management outcomes and levels of wellbeing for different household members.

- Adaptation policies and programmes should be more sensitive to the socially-differentiated nature of people's everyday realities and experiences. These strategies should seek to address the underlying causes of vulnerability and question the traditional and cultural norms that have led to unequal rights and opportunities among different groups.

- More support is required to increase employment opportunities that are not reliant on natural resources or affected by the vagaries of the weather and climate to help build adaptive capacity and resilience. For example, providing opportunities for young people such as skills training that matches up with the realities of the job market, taking into account youth aspirations for work outside farming. Recognising that currently there are few formal jobs outside regional centres, this could include access to affordable credit and initial capital to start micro-enterprises and ongoing training and mentoring to support these.

- For people who continue in natural resource-based livelihoods, support could include: increased access to drought-resistant livestock species or seed varieties that ripen quickly when rainfall is available; reduced infestation of plants such as *Prosopis;* and strengthening people's capacity to access agriculture insurance and low-cost water-saving technologies such as drip irrigation and rainwater harvesting. Pastoralist livelihoods should be underpinned by improved basic services such as health, including maternal health, and strengthened productive and social safety net programs to help more households recover from environmental shocks and stresses.

DECENTRALISATION PRESENTS OPPORTUNITIES AND CHALLENGES FOR ADAPTATION

Although decentralisation has strengthened local officials' responsibility to respond to local needs flexibly, greater coordination between levels and sectors of government, as well as more resources and better provision of timely and relevant information, would further strengthen action on water governance and disaster risk management.

What we did: Ethiopia has a long history of decentralisation (since the 1990s) which has been practiced in the natural resources sectors for years. However, there have been recentralisation tendencies at times, characterised by restricted freedom of expression, and limited civil society engagement. Our research asked how the decentralisation process and transfer of authority to local governments (also including institutions outside of formal governance) have influenced adaptation processes and outcomes in two key sectors of water and disaster risk management. Our analysis is based on 18 semi-structured interviews (mostly conducted at woreda and kebele levels in Awash) during two rounds of fieldwork in April 2016 and November 2017.

What we found: We found that there is insufficient 'nestedness' in policies, practices, and decision making across different levels and sectors of governance in Ethiopia. Despite the fragmented transfer of authority and power among various line agencies in Ethiopia, devolved power and authority has enabled woreda- and kebele-level officials to respond to local needs more effectively. For example, there have been positive impacts in terms of service delivery with improved water management and drought management responses, including positive impacts on livelihoods, especially for pastoralist women and children. However, access to timely and required information (e.g., climate and weather data, market information) is still lacking. Furthermore, a majority of actors and institutions at the woreda and kebele levels have problems of resource constraints. Resource allocation is determined at the federal level (mediated through the regional level), with only limited influence at the zonal and other levels. For example, woreda governments do not receive additional money in the case of emergency situations. The support from the federal government is more in the form of food aid. Local governments have to use contingency budget or part of other budgets for the purpose. Allied to the lack of resources are capacity deficits that often mean external assistance is valuable and necessary for interventions (e.g., the support of CARE for early warning systems on floods and drought). However, the greater freedom afforded by decentralisation means that there is greater flexibility to select and manage responses and infrastructures as required at a local level. For example, regional and woreda officials (e.g., Emergency Information Centre and Early Warning Systems) have found it useful to involve traditional forecasters and mix their knowledge with scientific systems.

Recommendations

- The management of a resource as scarce and susceptible to change as water is becoming increasingly critical, especially since future climate conditions are set to affect Ethiopia's water sector. Our findings indicate that a clear division of responsibilities and strong platforms for coordination are needed to make water governance more effective and inclusive.

- While technical solutions are important, successful management of scarce water resources and better disaster risk reduction requires meaningful participation from local actors. As part of this, decision makers need to understand the unique context of each community, and consider how factors like gender, age, wealth, education level and ethnicity impact people's abilities to participate in water governance.

- Effective governance of adaptation in the water and disaster risk management sectors requires a coordinated response between sectors and across different levels of government. Decentralisation is creating new institutional and political spaces for the governance of water and disaster risk reduction that need to be used to help integrate responses both horizontally and vertically.

- A key aspect of integration is the linking of different levels of decision making through 'nested' institutional arrangements that also address the issues of coordination, representation, inclusivity, capacity building, and knowledge sharing. These are critical to support more effective approaches to climate change adaptation.

IMPROVING WATER ACCESS IS IMPORTANT TO MAKE COMMUNITIES SETTLED THROUGH VILLAGISATION LESS VULNERABLE TO CLIMATE CHANGE

Villagisation has brought improvements in services and infrastructure that are often highly valued by settled populations. However, because the needs of large-scale commercial farms are prioritised, the provision of water and land for small-scale farming is currently inadequate.

What we did: We investigated the links between villagisation and water resource use and management, and the implications of these for current and future climate change adaptation efforts. We conducted 15 group interviews and 38 semi-structured interviews in Amibara and Awash Fentale woredas in the Middle Awash Valley, assessing impacts across different social groups differentiated by age, gender and economic status.

What we found: In our discussions with local communities, we found that villagisation has brought both benefits and challenges. Many people were positive about the social and infrastructural service developments associated with villagisation. They described enhanced water supply for domestic and field uses, and the provision of social services (school and health services, access to roads) – benefits that were regarded as particularly significant among women and older people. The introduction of small-scale irrigation allowed many residents to diversify their livelihood strategies in a way that may serve to increase their resilience to climate change related shocks. However, the practice of small-scale irrigation was largely challenged by shortages of water and land resources. The government of Ethiopia has jointly promoted irrigation development alongside the policy of villagisation of pastoral communities, encouraging communities to form villages where small-scale irrigation would be possible, usually near to commercial irrigation water supply canals. For this reason, the water supply system to a community is controlled by government agencies, such as the Awash Basin Authority (ABA). Villagers reported that ABA has prioritised supply to the commercial farms, leaving inadequate irrigation water for them to succeed in their new (agro-pastoral) livelihood strategies. Some also complained that they had not been allocated sufficient irrigation land to make a farming-based income viable. The overall problem has also been exacerbated by fluctuation in the volume of the Awash River (the main irrigation water source), mainly related to the occurrence of drought conditions in the rivers' upper streams in recent years.

This combination of resource management practices and recurrent drought has made small-scale irrigation a less effective and less attractive livelihood activity for many resettled households.

Recommendations

- To support local livelihoods and wellbeing, greater attention needs to be given to ensuring that water allocation and distribution schemes in villagised areas are both efficient and equitable. To this end, stakeholders from community, local, regional and national levels should work together to prepare policy guidelines on sustainable access to water resources between clan members of different communities, and among different age-groups. It is also critical that ABA and Kessem Sugar Corporation give equal opportunities to villagised communities in their water allocation schemes and do not prioritise state and private investors' irrigation farms.

- An additional priority should be the implementation of watershed management activities throughout the Awash river basin, in order to regulate and stabilise the water supply to the river, and to help ensure that water is available for both irrigation and home use. For example, the government could construct more water reservoirs in the Middle Awash Valley, develop existing underground water resources, and introduce water-efficient irrigation technologies. Irrigation methods such as drip or sprinkler irrigation could help to save water and minimise the risk of soil becoming salinised.

- Villagised communities should receive training on farming practices and forage improvements. The government and NGOs could also consider ways of supporting villagised communities that need to make upfront investments in order to switch to crop farming (e.g., seeds, fertilisers and irrigation water motor pumps).

- Now that farmers can grow locally marketable crops such as fruit and vegetables, it is important that the federal and regional governments, in collaboration with NGOs, help to create adequate market linkages. One option could be to create links with Consumer Associations, which are established for customers in different areas and institutions, particularly in large cities nearby such as Addis Ababa and Adama.

- Growing perennial fruit trees around homesteads and in farms (e.g., mango, papaya trees) would serve the dual purpose of providing cash crops for sale in the local market, and shade in the hot, dry climate. Research centres (e.g., Worer and Melkasa Agricultural Research Centres, ABA) could help support tree planting.

TACKLING THE PROBLEM OF INVASIVE SPECIES SUCH AS PROSOPIS REQUIRES APPROACHES THAT ACTIVELY ENGAGE WITH, RECOGNISE, AND RESPOND TO THE DIFFERENTIATED NEEDS OF AFFECTED COMMUNITIES

Interventions create winners and losers, and opinions vary about the best way to address the issue of *Prosopis*. Including affected populations more concretely in decisions about how best to tackle this invasive plant species will help to ensure that their needs and concerns are met.

What we did: One of the biggest problems the Middle Awash Valley faces is the spread of the invasive thorny shrub *Prosopis* (*Prosopis juliflora*), which is increasing rapidly in the region, reducing the availability of pasture, closing off access to water resources, and posing health threats to livestock and people. To date, management interventions have seldom been effective. In our research on *Prosopis* we focused on understanding both the problem and its potential solutions, including understanding how different ways of managing the problem are viewed by different people, and what helps or hinders different management approaches. We conducted PSA with three communities to explore the positive and negative trade-offs associated with different scenarios or visions for future *Prosopis* management, and assess the relative preferences for these. To augment our PSA work we used key informant and semi-structured group interviews to understand how the *Prosopis* problem was perceived and which solutions were most preferred. We also analysed remotely sensed data to understand the distribution (and change) of *Prosopis* in the study area.

What we found: The current rate of spread of *Prosopis* creates an urgent need for effective management interventions. However, attempts to control or contain the shrub have struggled not only because of the rapidity and tenacity of its spread but also because such initiatives have commonly suffered from design

and operational issues. For example, attempts to stimulate sustainable use have been hampered by the use of inappropriate technologies that have failed to operate effectively, and economic barriers that deny widespread access to livelihood opportunities associated with the harvesting of *Prosopis* wood and seed pods. Moreover, many interventions have been designed with generally little voice given to grassroots perspectives, increasing the likelihood that interventions will fail, with potentially negative consequences for populations already experiencing the impacts of the invasive plant. Making *a priori* assumptions about how people in a particular setting are likely to perceive and prioritise a specific form of intervention would be a risky endeavour.

Results from our PSA research show that marked differences in preferences for different management scenarios were evident between the three participant communities – despite their proximate locations – as well as between participants within the same workshop. The communities understood the risks and trade-offs associated with each of the scenarios, and were able to critically appraise both the stated (overt) and potentially more hidden (covert) motivations of implementing actors and agents. We found a divergence in scenario preference when comparing the community workshops with the NGO and government workshops. A scenario that encompassed a community-focused approach was highly favoured by NGOs and, to a lesser extent, by government, but that view was not mirrored in the communities. This indicates that interventions might represent the perspectives of more remote stakeholders rather than the concerns and priorities of those living daily with the risks and consequences of the invasive species. The divergent viewpoints exhibited between participants within the same workshop also highlights the importance of consulting in a way that is sensitive to the socially-differentiated nature of communities. Any intervention will result in winners and losers; recognising this should form an important element of design and implementation.

Recommendations

- Present available technology makes it difficult to completely remove *Prosopis* from the landscape. This may never be a viable goal. It is advisable instead to propose a mosaic of management methods suited to specific geographical settings: strategies that are likely to comprise both its use in some less productive areas, and removal from some of the most productive areas used for irrigation cropping and rangelands.

- The views and perspectives of affected communities must be included within decisions on the most appropriate ways and means to manage environmental change. In the context of *Prosopis*, this is important because the invasive plant is likely to result in ecosystem 'bads' and disservices as well as ecosystem 'goods' and services, which will be distributed unevenly across affected populations. Policy and action cannot rely on decontextualised narratives and aggregated notions of wellbeing that pre-define and structure how institutional actors see, understand and, by implication, frame solutions.

- Affected populations experience the impacts of *Prosopis* in socially-differentiated ways and, crucially, have a plurality of views and opinions on the most appropriate responses to the issue in hand. Any intervention will result in winners and losers. Recognising the potential for unintended social consequences should form an important element of the design and implementation of any intervention, with efforts taken to minimise negative impacts on the most vulnerable groups.

- Intervention on such a complex and difficult problem as *Prosopis* management will produce trade-offs. Exposing and making these trade-offs explicit, particularly those that affect marginalised populations, can aid institutional actors identify not only which interventions are preferred, but by whom and at what cost or benefit.

WORKING WITH STAKEHOLDERS TO IMPROVE ADAPTATION AT MULTIPLE SCALES

ASSAR has successfully worked across various scales in Ethiopia, from national to local levels. Given the differing capacity needs of stakeholders at these scales, we adapted our communication and capacity-strengthening strategies to suit different audiences. These audiences included local community members, government and NGOs working at woreda and regional levels; representatives from ministries at national government and those with international funding agencies. Through a range of activities, we worked to enhance stakeholder understanding of vulnerability and adaptation, and encourage increased uptake and support for the policy and practice interventions highlighted by our findings.

Ultimately, one of the goals of adaptation is to reduce the vulnerability of different groups to climate-related impacts. Through our partnership work with different stakeholders we have actively sought to embed ASSAR findings into the practices of local governmental and non-governmental organisations in Afar. Using the existing networks cultivated by AAU and Oxfam, and fostered through the research activities, we have been able to engage in depth over a sustained period of time with representatives of government and NGOs alike. Through the relationships that we have built up over this period, we have been able to exchange knowledge and explore ways in which ASSAR research can contribute to changes in policy and practice. We are currently engaging with key contacts supportive of RiU engagement in the Ministry of Agriculture and Livestock, the Ministry of Water, Irrigation and Energy, and the Ministry of Environment, Forest and Climate Change.

The stakeholder mapping helped us to identify who to engage with in a more strategic and sustained way over the life of the project at a national level. For example, ASSAR supported officers of the Ministry of Agriculture and Livestock and the Ministry of Water, Irrigation and Energy to attend the Climate Science Winter School in Cape Town, building capacity and good working relationships. This engagement has been maintained through the lifetime of the project and has provided ASSAR with an important means of disseminating key findings and influencing organisations that sit at the interface of policy, practice and research with national reach.

One of the primary ways we engaged with stakeholders was through the PSA process. As outlined above, the PSA work sought to achieve impact on the ground by boosting capacity of participants to analyse key challenges and identify possible solutions. Building on the engagement in the PSA work, we brought together stakeholders to discuss the findings of the *Prosopis* research at a local scale and identify priorities for ongoing support and advocacy. We also contributed research findings to the strategic discussions of the National *Prosopis* Taskforce and subsequently the Pastoral and Agro-Pastoral Taskforce (PAPTF).

In addition to these targeted, face-to-face engagement with stakeholders, we reached audiences through blogs, social media and research outputs (infographics, photo essays, multimedia, and journal articles). ASSAR team members have also organised additional local capacity development work on *Prosopis* management in the Afar region, and are developing proposals for expanded socio-environmental research on *Prosopis* expansion, impacts, management, and use in the region and beyond. Collectively, with these activities ASSAR has embedded its key messages in a coalition of stakeholders that should be able to communicate the findings and help to translate them into action long after ASSAR has finished.

NEXT STEPS FOR RESEARCH, POLICY AND PRACTICE

Climatic conditions in the arid and semi-arid regions of Ethiopia are becoming less predictable. This unpredictability, along with other changes that are occurring, is increasing the pressure on many people's lives and livelihoods. Whilst many initiatives have been implemented in these areas, too many tend to be short lived and run the risk of increasing the dependency of communities on handouts. One of the most effective ways to support communities in these areas is to increase their own agency and give them a stake in the decisions that affect them. People in these communities are not just agentless victims, they can and do actively manage the risks to which they are exposed. Supporting these people to give them more agency and power to enact changes in their own lives and influence the decisions that impact on them, is crucial.

While times are hard for everyone, some people are more affected than others. Ethnicity, gender, age, religious beliefs and traditional norms all affect people's vulnerabilities to climate change, and their responses to it. There is a clear need to recognise and value these differences when designing, planning and implementing interventions. People and communities in the semi-arid regions are not all the same yet are often treated as such. Our research has highlighted how there are substantial differences between people. For example, micro-finance initiatives typically target women, yet young men would also benefit from this form of support. Similarly, older women and men tend to have different vulnerabilities and capacities from younger groups, highlighting the value in targeting different types of support at different groups of people.

Much rhetoric about reducing vulnerability focuses on the need to take a long-term approach. Too often, however, efforts seem to concentrate on crisis management rather than tackling the more fundamental and structural issues that are at the root of many of the more episodic events more commonly attributed to drought or poor rainfall. Tackling vulnerability to climate change means acknowledging that much progress can be achieved by addressing the many developmental challenges that exist. For example, providing safe water and sanitation, and supporting enterprise and increasing livelihood opportunities are all as (if not more) important for building resilience in arid and semi-arid regions as the interventions that are targeted more specifically at risks linked to a changing climate.

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Photographs in this section: Lucia Scodanibbio, Jennifer Leavy, Mark Tebboth

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