



Based on a wide breadth of experiences with climate change impacts and adaptation strategies, practitioners from Africa, Asia, and Latin America discussed their local climate realities, identifying shared challenges and exploring what could be learned from one another to improve upon current climate change adaptation in semi-arid and arid regions.

ADAPTATION IN SEMI-ARID AND ARID LANDS: KEY ISSUES AND RESPONSES

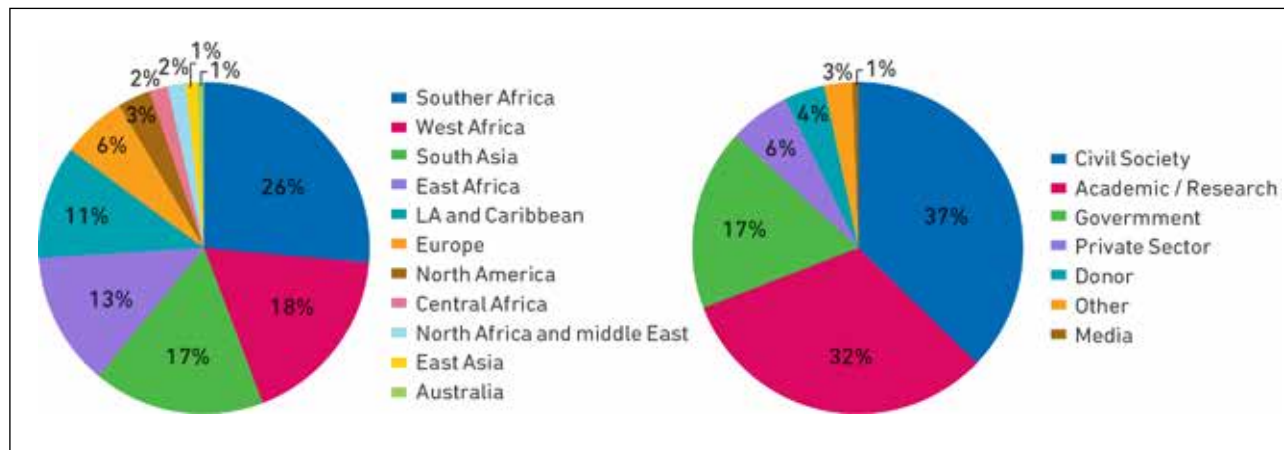
SUMMARY

The ELLA Learning Alliance on Climate Change Adaptation (CCA) in Arid and Semi-Arid Lands (ASALs) was a four-month online learning exchange with participants from Latin America, Africa and South Asia, all policymakers, practitioners or researchers working to confront climate related challenges in their respective countries. Each week the ELLA Moderators made thematic posts in the online learning space, exemplifying Latin American climate change adaptation strategies for communities living in ASALs, focusing on mechanisms and actions that increase regional and community level climate resilience. Best practices and methodologies from Latin America were shared with participants in the form of case studies, scholarly articles, interviews with relevant experts, and videos. Based on a set of guiding questions, participants were in turn invited to share experiences from their respective semi-arid and arid regions in the face of similar climate related challenges.





A total of 438 individuals joined the Learning Alliance. Based on a survey of 174 of these participants, the general composition of their home countries and professional sectors are as follows:



Module 1 of the Learning Alliance presented participants with discussion topics to explore how Latin American countries are addressing the challenges of climate change through adaptation, covering issues related infrastructure, water resource management, food security, subsistence agriculture, biodiversity and migration. To facilitate discussion among participants, case studies from Argentina, Bolivia, Brazil, Chile, Mexico, Paraguay and Peru were provided.

Learning Alliance participants from Africa, Asia and Latin America discussed how climate change planning and policy practices might be enhanced in their own countries. Participants noted that the plans and policies in Latin America’s ASALs were similar to their countries, but that implementation was weaker in Africa and Asia than in Latin America, due to such reasons as a lack of infrastructure, low institutional capacity and financial constraints. Participants agreed that central government support is essential in the development of effective climate change policy and planning strategies, while also recognising the importance of community-based adaptation, meaning that improved coordination between top-down support and bottom-up ideas is needed.

Introductory Materials

[Learning Alliance Module Outline](#), [Introductory Video](#), [Introductory Slideshow](#), [Getting Started Survey Results](#), [What the Learning Alliance Will Address](#), [Key Terms](#)

[Actors Seeking to Address Climate Adaptation Issues in Semi-Arid and Arid Regions in Latin America](#)

[Peru: Community Participation in Rural Infrastructure Projects for Climate Change Adaptation](#)

[Infrastructure for Access](#)

[Mexico’s Water for All: A Case Study](#)

[Community-Based Water Management in Northern Chile: A Case Study](#)



[Food and Nutrition Security Under Climate Change: Cases from Latin America](#)

[Climate Change Adaptation in Agriculture: Cases from Argentine and Northeast Brazil](#)

[God, Culture and Adaptation - Social Cause and Responsibility for Un-natural Disasters](#)

[Seeing REDD for Local Democracy: A Call for Democracy Standards](#)

[Vulnerability Does Not Just Fall from the Sky: Toward Multi-scale Pro-poor Climate Policy](#)

[Biodiversity, Ecosystem Services and Desertification: Lessons from Latin America](#)

[Climate Change and Migration in Semi-Arid Northeast Brazil](#)

[Infrastructure for Climate Change Adaptation in North East Brazil](#)

[VIDEO: Actors Seeking to Address Climate Change Adaptation Issues in Semi-arid and Arid Regions in Latin America](#)

[VIDEO: A Short Comment on Latin American Actors Working on Climate Change Adaptation Issues in Semi-arid and Arid Regions in Latin America](#)

[VIDEO: Interview with Ant3nio Carlos Magalh3es](#)

[VIDEO: Food Security under Climate Change - Interview with Renato Maluf](#)

[VIDEO: Vulnerability to Climate Change and Food Security - Interview with Jesse Ribot](#)

ELLA Background Materials

[ELLA Guide: Improving Small Farmers' Adaptive Capacity in Semi-arid Regions](#)

[ELLA Brief: Water and Climate Change: Improving Access and Management in Semi-Arid Brazil](#)

[ELLA Brief: An Integrated Approach to Improving Adaptive Capacity: The Adapta Sertao Experience](#)

[ELLA Brief: Brazil's Public Policy Package for Successful Farmer Adaptation](#)

[ELLA Spotlight on Publications: Adaptation in Semi-Arid Regions](#)

[ELLA Spotlight on Arguments: Adaptation in Semi-Arid Regions](#)

[ELLA Spotlight on Organisations: Adaptation in Semi-Arid Regions.](#)



Key Discussion Questions:

Participants were guided by the following questions:

- 1. Climate Change Impacts and Adaptation:** What are the impacts of climate change in your respective regions' ASALs? Are CCA efforts in response to these impacts integrated into the broader development agenda, has a new CCA agenda been drafted, or are climate change adaptation considerations fairly limited?
- 2. CCA Implementation:** How does the multi-actor approach in Latin America compare to your countries? Which actors are playing the most active roles in climate change adaptation (CCA) in the ASALs within your countries?
- 3. Infrastructure:** How does the situation in your country compare with the Latin American examples? What infrastructure are governments and other actors in your semi-arid and arid regions investing in to reduce vulnerability to climate change for inhabitants? What are the essential enabling factors of success for these investments?
- 4. Water Security and Social Participation:** What roles do water resource management frameworks (including irrigation development, the strengthening of stakeholder engagement, social participation, and reactive adaptation actions) play in adaptation efforts in ASALs?
- 5. Agriculture:** Do you think the Latin American examples of harvest insurance and knowledge transfer provide useful lessons for climate change adaptation in your region or country? Do you have cases of agriculture adaptation that may provide useful examples for other semi-arid and arid regions?
- 6. Conservation:** What is your critical assessment of the Latin American approaches, particularly regarding efforts to implement transboundary management? Are there experiences that successfully combine the fight against desertification and CCA in your region or country?
- 7. Migration:** How does the situation in other regions compare to that of Brazil in terms of climate-induced migration? Are climate change predictions (i.e. scenarios) effective tools for long-term CCA planning, especially related to migration decisions?

Key Conclusions:

Online discussions pointed to the following key conclusions related to climate change issues and responses in arid and semi-arid regions of Africa, Asia and Latin America:

Climate Change Impacts and Adaptation

- Climatological impacts were similar across the participants' various ASALs (such as increased variability of rainfall, reduced total annual precipitation, cycles of severe drought and floods, and desertification); however, the socio-economic impacts discussed were more acute in Africa and Asia due to what most participants attributed to a higher level of climate vulnerability in those regions



- CCA programmes, according to participants, are usually run by environmental ministries: in Latin America, programmes were said to be overly insulated within environmental ministries, thereby failing to integrate crucial social and economic components; in Africa and Asia, when CCA programmes did exist, they were often closely tied with development goals, but lacked scalability due to poor coordination, insufficient funds, and constrained institutional capacity
- Local/national NGOs, bilateral partnerships, and multilateral organisations are playing a pivotal role in CCA development across all regions by carrying out pilot projects, linking local and national stakeholders, scoping scientific research programmes, testing tools for community adaptation and supporting capacity building projects

Implementation of Climate Change Adaptation Strategies

- Decision-making, coordination, resource allocation, and implementation for CCA in ASALs in all regions are the outcome of complex multi-actor interactions, both domestic and international, with varying degrees of success (i.e. Bangladesh highlights strong institutional capacity; many African countries highlight short-lived continuity of many programmes)
- Multi-actor CCA initiatives commonly funnel through a centralised environmental agency as a focal point; Bangladesh has an advanced bureaucratic structure in which every ministry has a “Climate Change Centre” to help connect the dots on interagency goals and co-benefits
- Participants across all regions highlighted the need for improved CCA integration between top-down policies and bottom-up community implementation
- Participant perceptions of the role of NGOs in CCA programmes oscillated between highly beneficial (e.g. adept technical capacity) and detrimental (e.g. narrow missions and/or low staying power)
- Numerous participants from all regions suggested that communities should be reasserted as the focal point of CCA implementation and programme ownership – vis-à-vis indigenous knowledge integration, community consultation, and consensus building exercises – in order to increase CCA effectiveness and continuity in their ASALs

Infrastructure

- Africa, Asia, and Latin America have roughly comparable situations with respect to the drivers of large-scale infrastructure (access to water, electricity, commerce, etc.) and pending challenges with respect to climate-proofing infrastructure
- Beyond conventional large-scale infrastructure, participants dove deeper, making distinctions based the various types of CCA-specific infrastructure: micro-, decentralised, and natural infrastructure projects
- There is also soft-infrastructure (e.g. awareness generation, capacity building, knowledge sharing, networking, employment guarantee schemes, etc.), which focuses on climate risk management where it is most needed: at the regional and community level



Water Security and Social Participation

- Water project regulators and developers in ASALs tend to focus more on the fundamental and productive activities associated with access to water, but dedicate less planning to the environmental impacts of this development
- Local stakeholder engagement and coordination was widely supported as a best practice for sustainable water management
- Trans-boundary stakeholder mechanisms for water management will become increasingly important, especially for down-stream ASALs

Agriculture

- Knowledge transfer based on sophisticated climate forecasting and information dissemination, though widely praised by participants, must overcome major constraints to deploy (local?) weather stations, strengthen institutional processes in meteorological agencies, and dedicate long-term support to community-specific information services in often isolated ASALs; these programmes must be careful not to overlook the potential benefits of integrating indigenous knowledge
- Harvest insurance schemes were less widely supported by participants; one camp appreciated its value as a safety net but highlighted high costs, poor design and implementation, and corruption as key barriers that could possibly be overcome by well-organised, local and regional savings and credit schemes (SACCOs); another more sceptical camp pointed out that insurance functions off of historical baselines that become less relevant amidst CC, resulting in higher premiums and/or lower coverage, ultimately leaving small farmers with bigger bills, one way or the other

Conservation

- Developing regions are establishing new trans-boundary programmes to address biodiversity, ecosystem, and desertification (BED) issues; which is also being achieved by aligning existing water management schemes to include BED-oriented solutions
- Trans-boundary BED programmes must account for each country's and partner's institutional and financial capacity to support the framework; otherwise, weak implementation or insufficient funding will bottleneck or block conservation efforts
- Participating countries must also harmonise their natural resources management practices, institutional arrangements, ecological monitoring systems and policies, protocols, and agreements to facilitate smooth administration
- Stakeholder incentives must be considered in order to establish lasting trans-boundary BED programmes and guard against free riding; scepticism was expressed that this point may very well be insurmountable unless interdisciplinary research can improve programme design



Migration

- Forced migration due to climate change – and the climate refugees it creates – is of increasing concern in ASALs. A particularly vulnerable group are pastoralists. In Africa, traditional coping strategies amongst pastoralist groups are becoming markedly less effective, with the potential to drive other conflicts
- Additional migration drivers include untenable subsistence agriculture, as mentioned by participants from Zambia, Nepal, Bangladesh, Nigeria, India, Malawi, Ghana and Tanzania; and sea-level rise in Bangladesh, India and Ghana
- Predicting migration and the potential CC impacts that may drive it is no easy task, but participants supported the usefulness of linking CC and migration scenarios in order to better inform CCA planning and disaster preparedness
- Therefore, many participants stressed that climate scenarios facilitate the broad picture, which is already an important step to deepening discussions and planning CCA measures that balance a long list of assumptions, risks and opportunity costs amidst climatic, social and economic uncertainty

Learning Focus of Module One

Module 1 of the Learning Alliance presented participants with examples of how Latin American countries are addressing the challenges of climate change through adaptation, covering issues related infrastructure, water resource management, food security, subsistence agriculture, biodiversity and migration. Conclusions and findings from these discussions will be summarised below. The purpose of this module was to share climate-related challenges in ASALs across the developing world, while simultaneously assessing the effectiveness of climate change adaptation strategies designed to overcome said challenges. Participants were encouraged to explore the linkages between climate change adaptation and the broader development agenda, highlighting the distinct challenges that limit the ability of their respective countries to engage in climate change planning and policy actions.

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Module 1 Conclusions





Discussion Topic One: Climate Change Impacts and Adaptation

For this discussion, the CCA strategies of several Latin American countries were presented – including Argentina, Brazil, Chile and Peru – in order to spur conversations within the Learning Alliance. Participants were encouraged to share similar experiences from their own countries. Though the climatological impacts were relatively uniform across regions, the levels of socio-economic vulnerability varied from region to region.

“Higher temperatures, longer droughts, and increasingly frequent and violent storms are predicted to aggravate the current challenges faced by agricultural production systems in northern Nigeria. Already the rate of climate change is gradually exceeding the adaptive capacity of a broad range of crop and forage varieties, animal breeds, and tree populations - ten years earlier than the 2020 prediction of the IPCC climate model. Consequently, food production and access in many parts of the northern Nigeria are becoming more expensive - in some cases even scarce - exacerbating the problems of food security and malnutrition. Poverty, hunger, disease and communal conflicts amidst drought have brought about massive rural migration to urban and border towns.”

- Michael Uwagbae, Nigeria

Participants echoed some or all of the aforementioned climate impacts from their own regions, including: the Indo-Gangetic Plains of South Asia; the Western Hills of the Mustang Plateau, Nepal; the High Atlas Mountains, Morocco; the Albertine Rift Region, Africa; the Altiplano of Bolivia; Northwest Argentina; the Middle Zambezi Basin; the Sahel region of West Africa; the Shire River Valley, Malawi; and the Matebeland of Zimbabwe - just to name a few. Most of these regions are working to integrate both economic development and CCA as complimentary benefits enjoyed by more resilient communities.

“Bangladesh has been recognised as a model for its long-term disaster management experiences and expertise. Bangladesh’s Climate Change Strategy And Action Plan 2008 has already been endorsed by the national government. The current development agenda is reflected in the six strategic pillars of this Action Plan, namely, (1) food security, (2) social protection and health, (3) comprehensive disaster management, (4) infrastructure, research and knowledge management, (5) mitigation and low carbon development, and (6) capacity building and institutional strengthening.”

- Syed Amdadul Huq, Bangladesh

Amidst a sense of urgency, many countries in Africa and Asia have established [National Adaptation Programmes of Action](#) (NAPAs), which support Least Developed Countries (LDCs) in the process of prioritising responses to the urgent needs of CCA – especially in those cases where further delay increases population vulnerability and/or costs if action is not taken. NAPAs mix top-down national programmes or plans for development, poverty



reduction, anti-desertification efforts, agricultural research, and bottom-up initiatives tailored to communities. However, coordination of these actions remains weak in ASALs, where the implementation of plans and programmes could be much better.

“For the time being I can say that large-scale adaptation initiatives are not being implemented by the government of Malawi; firstly, due to lack of national climate change policy and, secondly, because of lack of funds to implement the National Adaptation Plan of Action (NAPA). These developments notwithstanding, governments, NGOs and faith-based organisations are undertaking several initiatives at the local level.”

- Frank Kamanga, Malawi

In contrast to participants' responses from Africa and Asia, many Latin American participants noted that their countries have, only recently, begun to consider CCA more broadly as an economic development issue. Although climate change mitigation and environmental conservation play a dominant role in the region's policymaking, adaptation specifically is often linked solely to the Ministries of the Environment - perhaps due to the visibility of illegal deforestation in many Latin American regions. Nevertheless, according to participants, Latin American governments and local community-based projects are beginning to integrate adaptation into their development agendas.

“In theory, adaptation and development come together; but in practice, from my experience in the Latin American context, I would say many countries are facing difficulties raising the issue of adaptation. Climate change issues in general are still in the environmental domain, led by environmental ministries, whereas key decisions and investments are still happening without any basic climate considerations. This is changing rapidly though, as international cooperation between organisations is pushing for more integrated approaches, and decision makers are also giving greater priority to climate change.”

- Javier Gonzales, Bolivia

In terms of the benefits gained by existing CCA programmes that support development-adaptation linkages, participants pointed to agricultural extension, improved access to markets by farmers, increased food security, targeted research & development (e.g. the dissemination of drought-resistant crops), alternative sources of income, crop insurance, grain banks, and in some cases even new large infrastructure. However, many participants were also quick to highlight that current and upcoming CCA policies and programmes in their countries are underperforming. This will be explored in greater detail in the next discussion section.



Discussion Topic One – Key Lessons

- Climatological impacts were similar across the participants' various ASALs (increased variability of rainfall, reduced total annual precipitation, cycles of severe drought and flood, and desertification); however, the socio-economic impacts discussed were more acute in Africa and Asia due to what most participants attributed to a higher level of climate vulnerability in those regions
- CCA programmes, according to participants, are usually run by environmental ministries: in Latin America, programmes were said to be overly insulated within environmental ministries, thereby failing to integrate crucial social and economic components; in Africa and Asia, when CCA programmes did exist, they were often closely tied with development goals, but lacked scalability due poor coordination, insufficient funds, and constrained institutional capacity
- Local/national NGOs, bilateral partnerships, and multilateral organisations are playing a pivotal role in CCA development across all regions by carrying out pilot projects, linking the local and national stakeholders, scoping scientific research programmes, testing tools for community adaptation, and supporting capacity building projects

Supplementary Materials

Participants were provided with the following resources in preparation for Discussion One:

- [Module 1 Survey](#)
- [Challenges and Opportunities for Water-Based Adaptation to Climate Change: Elements for a Regional Agenda](#)
- [Commission on Climate Change and Development: Climate Change and Drylands](#)
- [UN Water Policy Brief: The Pivotal Role of Water in Climate Change Adaptation](#)
- [Major Issues that Climate change Adaptation Seeks to Address](#)

During the exchange, participants shared additional resources and links to relevant organisations for those interested in exploring this topic further:

- [Weathering The Storm: Options for Framing Adaptation and Development](#)
- [The Kathmandu Call for Action](#)
- [Promotion and Research of Andean Products \(PROINPA\) Foundation](#)
- [Kenya Arid and Semi Arid Lands Research \(KASAL\) Programme](#)
- [ZERO Regional Environmental Organization](#)



- [African Centre for Technology Studies \(ACTS\)](#)
- [Communal Areas Management Programme for Indigenous Resources \(CAMPFIRE\)](#)
- [Centre for Agricultural Research Development \(CARD\)](#)
- [The Global Environmental Change and Food Systems \(GECAFS\)](#)
- [Food, Agriculture and Natural Resources Policy Analysis Network \(FARNPAN\)](#)



Discussion Topic Two: CCA Implementation

At the start of this discussion, participants were presented with an overview of the actors responsible for CCA planning and implementation in Latin America. By looking at CCA structures in Argentina, Bolivia, Brazil, Chile, Mexico and Paraguay, the overview demonstrated the diversity of organisations involved. In general, however, Latin American countries are rather uniform in terms of their basic CCA strategy: environmental ministries function as the CCA planning agency and hub for numerous other actors, both domestic and international. Perhaps not surprisingly, many countries and regions share this multi-actor approach.

"In South Africa, the National Department of Environmental Affairs spearheads all climate and adaptation related matters, including the submission of documents under the UN Framework Convention on Climate Change (UNFCCC) – Subsidiary Body for Scientific and Technological Advice (SBSTA). There are also organisations such as the Development Bank of South Africa involved in facilitating loans and grants for both mitigation and adaptation, and some private companies who are leaders in addressing climate change through managing their supply chain and end products."

- Farayi Madziwa, South Africa

Regarding this multi-actor CCA approach, coordinated by a centralised body (i.e. usually an Environmental Ministry), participants from Argentina, Bangladesh, Brazil, Ghana, India, Kenya, Mozambique, Nepal, Nigeria, Peru, South Africa, Tanzania, Zambia and Zimbabwe all remarked that this was the approach used in their countries as well. Although the approach is generally the same, the participants' perceptions of its effectiveness vary. On the one hand, some participants believe the approach is sound.

"At the national level, the Ministry of Environment and Forest (MoEF) leads climate change issues. They have formed the Bangladesh Climate Change Trust Fund (BCCTF) and the Bangladesh Climate Change Resilient Fund (BCCRF) for managing CC impacts effectively and efficiently. MoEF established a Climate Change Unit under a trust board, which consists of representatives from different ministries. In every ministry there is a Climate Change Cell (CCC) and a focal person dealing with CC activities. The Planning Commission, under the Ministry of Planning, mainstreams CC issues into national level planning process by incorporating CC into the country's five-year plans, as well as the annual development plans, projects and guidelines."

- Mousumi Pervin, Bangladesh

Not all countries have this level of interconnection, but as noted by participants, other countries have sophisticated set-ups for CCA as well, such as India, Nepal and now also Mexico. On the other hand, there were those participants who had their doubts about the efficacy of their country's current approach.



"The Latin American approach compares well with Kenya's case. In terms of implementation, scalability, and operationalization, however, the Kenyan scene is populated with many small-scale projects that have 'refused' to move beyond the piloting stage to full-scale implementation. In some cases, the projects have been replicated in different locations, but still remain at 'piloting' stage - it is like we have not learned enough lessons to move to implementation, which I doubt is the reason."

- Stephen Mutua Kinguyu, Kenya

Many participants from Africa, Asia, and Latin America echoed Stephen's frustration, identifying poor coordination between actors, minimal continuity of programmes, and insufficient top-down financial support for bottom-up solutions as the fundamental constraints to increasing their countries' CCA effectiveness. Maybe, then, the number of actors is not as important as the incentives that drive their relationship.

"This week's topic is very interesting in that in all countries, with or without a climate change policy, the list of climate change adaptation actors is endless, i.e. government departments/ministries, NGOs, private sector and of course the communities themselves. For me while this is important, the fundamental question is what is driving these actors to engage in climate change adaptation: is it the passion for combating climate change or is the fact that this is the area where most donors are interested in funding?"

- Reginald Sithole, Zimbabwe

Usually, following the money, especially when it comes to large issues such as climate change, can be extremely helpful for improving incentive structures. However, many participants from all regions, especially Africa, agreed that the proliferation of CC-related organisations was a problem, not only among NGOs but also within governments.

"It is also important to highlight that, in some cases, there are actors who actually present barriers to climate change adaptation, whereby (e.g. due to poor coordination in policy formulation and implementation) one arm of government might be facilitating adaptation while the other presents barriers."

- Shakespear Mudombi, South Africa

Many participants in Africa shared this view, that, more often than not, coordination seems to fail between different levels of government. High-level coordination typically works fine, but the linkage to local actors and communities continues to be rather weak. Interestingly, on a related note, the linkage is failing precisely at the point that nearly all participants feel to be the most critical: the community level.



“A multi-stakeholder approach is key to climate change adaptation. The challenge is who takes the lead? I believe that the number one actor should be the community, while other actors should be answerable to the needs of the community through consultation and consensus.”

- Halima Nenkari, Kenya

Participants from Bolivia, Bangladesh, Ghana, India, Zambia and Zimbabwe expressed similar views and identified the lack of integration of indigenous knowledge, community strategies and local contexts as primary concerns. This is clearly linked to issues such as the inherent difficulty of CCA mainstreaming as well as the lack of long-term financing for CCA programmes, challenges identified by many participants. Coordination is also difficult because what different stakeholders ultimately frame as adaptation can be quite different from actor to actor. Often organisations carry out conventional development activities and try to cast them as adaptation actions raising doubts on the true motivations of some actors for engaging in CCA. What, then, can be done?

“A key challenge is fostering adequate coordination to guarantee systematic and coherent adaptation programs. The bulk of the adaptation work is still driven by international NGOs, as they possess the technical (knowledge & skills) and financial capacity, but because interventions are supported through ‘time-bound and limited project cycles,’ continuity is a big issue. This is worsened by the general disconnect from local community and local NGO ownership of the processes. Thus, sustaining even the good CCA practices becomes an issue. It is essential that in-country CC desks, guided by the NAPAs, act as the central coordinating mechanism for coordinated CCA work.”

- Jimmiel Mandima, United States

The most common point of agreement regarding the question of who is ultimately responsible for CCA was expressed in relation to two general categories: coordination and implementation. For coordination, a well-networked central agency is critical because it provides the 30,000-foot view necessary to align the efforts of an orchestra of national and international actors with varying missions and specialties. However, for implementation, programme success hinges on community buy-in and empowerment during the development and deployment of CCA solutions, as they are the key actors responsible for boosting their resilience amidst evermore severe climate change, particularly when other actors move on to the next community in need. As one participant from Brazil, Rafael d’Almeida, put it, many actors working on CCA continue to “operate within a determined status quo that needs to be deeply contested.” Participants pointed to increased community-level engagement, greater financial support from top-down policies, and improved integration and coordination between local, provincial, and national agencies as crucial steps to reasserting community-level influence and empowerment.



Discussion Topic Two – Key Lessons

- Decision-making, coordination, resource allocation and implementation for CCA in ASALs in all Learning Alliance regions are the outcome of complex multi-actor interactions, both domestic and international, with varying degrees of success (i.e. Bangladesh highlights strong institutional capacity while many African countries experience short-lived continuity of many programmes)
- Multi-actor CCA initiatives commonly funnel through a centralised environmental agency as a focal point; Bangladesh has an advanced bureaucratic structure in which every ministry has a “Climate Change Centre” to help connect the dots on interagency goals and co-benefits
- Participants across all regions highlighted the need for improved CCA integration between top-down policies and bottom-up community implementation
- Participant perceptions of the role of NGOs in CCA programmes oscillated between highly beneficial (e.g. adept technical capacity) and detrimental (e.g. narrow missions and/or low staying power)
- Numerous participants from all regions suggested that communities should be reasserted as the focal point of CCA implementation and programme ownership – vis-à-vis indigenous knowledge integration, community consultation, and consensus building exercises – in order to increase CCA effectiveness and continuity in their ASALs

Supplementary Materials

Participants were provided with the following resources in preparation for Discussion Two:

- [Actors Seeking to Address Climate Adaptation Issues in Semi-Arid and Arid Regions in Latin America](#)
- [World Bank: Argentina - Country Note on Climate Change Aspects in Agriculture](#)
- [World Bank: Chile - Country Note on Climate Change Aspects in Agriculture](#)
- [Europe Aid Report: Climate Change in Latin America](#)
- [World Bank: Peru - Country Note on Climate Change Aspects in Agriculture](#)
- [UNDP Support to Drylands Development Activities and the UNCCD Process in Latin America and the Caribbean](#)

During the exchange, participants shared additional resources and links to relevant organisations for those interested in exploring this topic further:

- [The Water Harvester; African Technology Policy Studies Network](#)
- Climate Change Adaptation in Africa;
- [Kenya Climate Change Working Group](#)



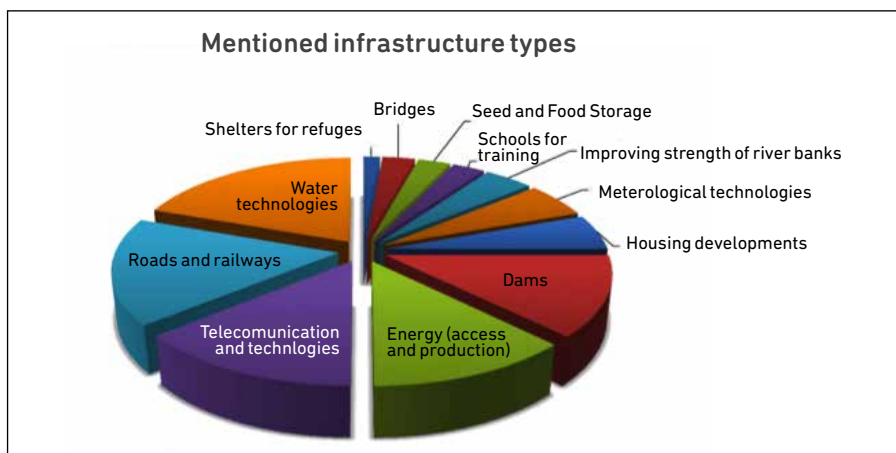
Discussion Topic Three: Infrastructure

In this discussion, the role of infrastructure was examined as a means to reduce CC vulnerability in ASAL communities. For example, dams provide electricity and increase water security for small farmers during droughts, and roads facilitate access to salaried jobs in cities, especially useful during droughts. It is precisely the broad range of potential benefits from infrastructure that makes it so sought after, and from one context to another, it can also be a contentious issue in terms of what constitutes the best allocation of resources.

“It has been established that it is the element of climate risk management that makes development both climate resilient and climate proof. Therefore, climate change adaptation = development + climate risk management. The role of infrastructure in development cannot be questioned. Without adequate infrastructure (dams, roads, telecommunication, etc.) we cannot reduce poverty nor reduce unemployment.”

- KR Viswanathan, India

Participants were presented with examples of CCA-focused infrastructure in the ASALs of Peru and Brazil. They were shown that these large-scale infrastructure investments had mixed results in terms of their ability to both increase the economic development and reduce the CC vulnerability of targeted communities.



Participants referenced many large-scale CCA infrastructure projects in their countries, such as irrigation dams in Ghana, ambitious road construction in Bangladesh and, more recently, widespread telecommunications coverage in Zimbabwe, all of which seem to be a reflection of how rural development is ultimately defined by different governments, as well as country capacity and needs. The graphic below shows the types of infrastructure projects most commonly mentioned by participants.



Africa, Asia, and Latin America are roughly comparable with respect to the drivers of large-scale infrastructure (access to water, electricity, commerce, etc.) and pending challenges with respect to climate-proofing infrastructure.

“The Latin American situation compares very well with the situation in the northern region of Ghana. In the ‘70s and ‘80s, the government invested in large-scale irrigation dams to address the issue of climate variability. These dams were poorly maintained and were also under-utilised by smallholder farmers. In the last two decades, emphasis has shifted to smaller dams that are managed by communities and farmer-based associations.”

- Samuel Adoboe, Ghana

Participants from Nigeria, Zimbabwe, India, Nepal and Bangladesh remarked that, early on, their countries implemented similar large-scale solutions, only to run into similarly large-scale problems with respect to general maintenance and insufficient climate proofing.

“Prior to economic problems in Zimbabwe, a number of large irrigation schemes with canals and water pumping engines were constructed serving over 1000 households. The problem with the majority of the schemes was that there was no maintenance plan for the canals and engines such that most of them are now non-functional.”

- Reginald Sithole, Zimbabwe

Additional large-scale projects were shared, ranging from the new radar systems that are helping Ghanaian farmers envisage erratic weather patterns to the 2,000 cyclone shelters constructed to help Bangladeshis fleeing ever bigger storms or the near universal telecommunications coverage in Zimbabwe linking rural areas to world markets. However, beyond conventional large-scale infrastructure, participants dove deeper, making distinctions based the various types of CCA-specific infrastructure. Broadly speaking, conventional infrastructure is fundamental in many cases, meaning it must be climate proofed.

“The main challenge is the lack of proper planning for climate change during infrastructure development, which, for example, led to the construction of a dam in the Western Cape Province about 6 years ago, but that dam silted up within 3 years. Climate modelling will help to inform infrastructure planning and development but the two processes are not linked.”

- Farayi Madziwa, South Africa



However, micro-, decentralised and natural infrastructure projects were identified as highly beneficial in ASALs as well. Examples of such efforts included residential water collection and cisterns, renewable energy water pump systems, drip-irrigation systems, creating big grain buffer stocks, and afforestation and protection of existing upstream forest watersheds to reduce downstream floods to name just a few.

There are also soft infrastructure programmes (for example, awareness generation, capacity building, knowledge sharing, networking, employment guarantee schemes, institutional specialisation, which focus on climate risk management where it is most needed: at the regional and community level. In this case, the knowledge required for and garnered from climate-proofing has many potential co-benefits. Incentivising research institutions, ministries and project developers to identify potential climate-related challenges for a big infrastructure project is a big step, for example. This information not only climate-proofs the design of said infrastructure, but can also help to highlight other CCA projects (such as an early warning drought system), that should be put in place based on an analysis of the historical probability of hazards for said infrastructure.

“A critical springboard to the potential uses and benefits of infrastructure in climate change adaptation is to adopt a holistic multi-sector, multi-institutional, national and sub-national approach. This is now being advocated by many development agencies. An aspect often forgotten in projects that result in infrastructure is “climate-proofing”. In addition, care should be taken that these infrastructure projects do not result in maladaptation. If these infrastructure investments are “no-regrets” they are expected to generate positive economic, social, and environmental social benefits irrespective of whether climate change or other natural disasters occur.”

- Todd Ngara, Denmark

Discussion Topic Three – Key Lessons

- Africa, Asia, and Latin America are roughly comparable with respect to the drivers of large-scale infrastructure (access to water, electricity, commerce, etc.) and pending challenges of climate-proofing infrastructure
- Beyond conventional large-scale infrastructure, participants dove deeper, making distinctions between three types of CCA-specific infrastructure: micro-, decentralised and natural infrastructure projects
- Soft infrastructure projects also exist (for example, awareness generation, capacity building, knowledge sharing, networking and employment guarantee schemes), which focus on climate risk management where it is most needed: at the regional and community level



Supplementary Materials

Participants were provided with the following resources in preparation for Discussion Three:

- [VIDEO: Interview with Antònio Carlos Magalhães](#)
- [Peru: Community Participation in Rural Infrastructure Projects for Climate Change Adaptation](#)
- [Infrastructure For Access](#)
- [Infrastructure for Climate Change Adaptation in North East Brazil](#)

During the exchange, participants shared additional resources and links to relevant organisations for those interested in exploring this topic further:

- [Zambia's Food Reserve Agency](#)
- [The Impact of Climate Change on Agriculture](#)
- [Plastic Bottle Drip Irrigation Case Study](#)
- [Kenya Vision 2030](#)
- [Konza Techno City, Kenya](#)
- [National Rural Employment Guarantee Act](#)
- [Western Orissa Rural Livelihoods Project](#)
- [Watershed Committees and User Groups](#)
- [Meteorological and Indigenous Knowledge-Based Forecasts For Reducing Poor Populations' Vulnerability To Climate Change and Variability](#)



Discussion Topic Four: Water Security and Social Participation

Water security is becoming increasingly problematic in ASALs. Predicted CC impacts include more intense droughts, reduced access to clean drinking water, and crop yield and livestock losses. However, many of these CC impacts are already occurring today in ASALs.

“During a period of prolonged drought, from 2000-2005, the region of Bugesera, Rwanda experienced substantial water scarcity. In the dry seasons, drinking water was expensive because people were forced to go more than five kilometres to fetch drinking water using bicycles. Irrigation under these conditions is totally impossible for most fields not bordering rivers or lakes. The population cultivated all the marshes surrounding the lakes and riverbanks, leaving wide barren shores. These conditions, combined with the prolonged drought, caused the Northern Lake Cyohoha to dry up to the point that people actually crossed on foot.”

- Mutuyeyezu Alphonse, Rwanda

To facilitate comparisons across regions participants received two case studies on experiences from Latin America: one in the Brazilian Northeast and the other in the Mexican Rio Conchos Basin. Participants diverged on their assessments of these cases. Generally, they pointed to Northeastern Brazil’s efforts as a sound example of sustainable adaptation, improving water resource management.

“The case of Brazil, where the government allocated resources for water infrastructure like dams, must be considered a successful adaptation strategy that addressed the access side of water resources. Civil society’s complimentary role in managing the water resources shows the importance of coordinating efforts among various stakeholders in water resource management.”

- Pascal Manyakaidze, Zimbabwe

In contrast, many participants felt that Mexico’s programme design was left wanting, leaving it with too many obstacles to be successful.

“While it would be difficult to label this case an example of successful adaptation, at least researchers are beginning to grasp the potential of multiple interacting stressors in the region, and how vulnerabilities could play out due to these stressors.”

- Benjamin Warner, United States



In both cases project developers and regulators focused more on the productive activities associated with access to water by industries, but dedicated less planning for the environmental impacts of this development – which were considerable, especially among marginalised communities. Therefore, environmental concerns must be integrated in water resource management, which was reiterated by many participants.

“Similar programmes and adaptation measures as those in Brazil and Mexico have been implemented for the Indian rivers the Ganga and the Yamuna over recent years without much progress. The socio-ecological conditions of both the Ganga and Yamuna rivers, the biggest river basin in India, have also been affected badly due to population pressure and rigorous use of surface & ground water for irrigation purposes.”

- Hari Shanker Gupta, India

Participants also pointed out a common shortcoming of these types of projects in their own regions.

“The mistake we often make in adaptation work is to address the production side (e.g. by making water available) and then forgetting about the rest of the value chain. Once the water constraint has been addressed, we have noticed that other constraints - such as access to affordable credit, technical support, communication and infrastructure - can impede sustainable adaptation.”

- Leonard Unganai, Zimbabwe

Increased local stakeholder engagement and coordination was a common suggestion as a best practice for water management. On this note, the discussion on water management was complimented by the sharing of three additional case studies from Latin America related to social participation in water resource management – those of Chile, Mexico and Northeast Brazil. Commonalities in approach across regions emerged.

“Northeast Brazil’s social participation experience is similar to some African CCA endeavours. A case in point is the Food-for-Work Programme whereby rural folk pool efforts in building earth dams for irrigation and livestock rearing as well as constructing rural roads for access to markets. These endeavours are usually funded by civic organisations and organised by local communities. This form of climate change adaptation is common in southern Zimbabwe in drought prone areas. This exercise pools communities’ efforts, socially, for a common good, thereby engendering a sense of ownership.”

- Todd Ngara, Denmark



However, care needs to be taken to ensure that social participation is truly participative, and not merely something to be showboated to funding agencies and donors.

“In some cases, it is also argued that if the role of beneficiaries in decision-making, planning, execution, monitoring and learning processes are not well established, then they are involved for the sake of showing local stakeholder participation only. We call it ‘facipulation’ (in the name of facilitation, project staff manipulate). So, involvement of social actors is pre-condition but self-governance and self-learning are equally important to manage broader issues of natural resources including water scarcity.”

- Ram Chandra Khanal, Nepal

Although many participants shared this concern, there was optimism regarding social participation within existing water management programmes.

“Community-managed water and sanitation boards were established in 35 peri-urban centres across the North [of Ghana]. Including innovative representation arrangements from key water-user groups in the towns and local leaders, the boards are now models for civil-society organisations in the sector. They have subsequently combined their assets, through the Association of Northern Water Boards, wielding considerable leverage. These water-sector projects are building the capacity of the community water organisations to manage their own local facilities. This includes the capacity to assess local needs, mobilise and account for funds, develop operation and maintenance skills and, ultimately, to assume full ownership of the systems. At the same time, projects are encouraging the participation of women in the aforementioned processes.”

- Stephen Awuni, Ghana

Lastly, it was also noted that, because rivers frequently extend beyond a single country’s boundaries, greater preparation for trans-boundary stakeholder mechanisms to manage water are needed.

“The River Pilcomayo is an international watershed shared with Argentina and Paraguay. A tri-national commission has been established to deal with the different challenges of the watershed, like silver mining upstream, deforestation, soil erosion and the accumulation of sediments and course changes downstream. In the case of mining, it is very difficult to enforce regulation due to the strong lobby of the mining sector.”

- Javier Gonzales, Bolivia



“The Volta River Water Basin is shared by a number of countries, including Burkina Faso, the Ivory Coast and Ghana. In order to effectively manage this water resource, the governments of these countries decided to establish the Volta Basin Authority, to facilitate regional cooperation.”

- Stephen Awuni, Ghana

Discussion Topic Four – Key Lessons

- Water project regulators and developers in ASALs tend to focus more on the fundamental and productive activities associated with access to water, but dedicate less planning to the environmental impacts of this development
- Local stakeholder engagement and coordination was widely supported as a best practice for sustainable water management
- Trans-boundary stakeholder mechanisms for water management will become increasingly important, especially for downstream ASALs

Supplementary Materials

Participants were provided with the following resources in preparation for Discussion Three:

- [Christian Aid Report: The Human Face of Climate Change](#)
- [ELLA Brief: Water and Climate Change: Improving Access and Management in Semi-Arid Brazil](#)
- [ELLA: Climate Change Adaptation And Water Resources Management In Latin American Countries: Responses From Institutions](#)
- [World Water Forum: Good Governance to Integrated Water and Resources Management \(IWRM\)](#)
- [Mexico’s Water for All: A Case Study](#)
- [Community-Based Water Management in Northern Chile: A Case Study.](#)

During the exchange, participants shared additional resources and links to relevant organisations for those interested in exploring this topic further:

- [Role of Social Capital in Coping Water Scarcity: Governance Lessons to Trans-Himalayan Region of Nepal from Pre-colonial South India](#)
- [The Volta Basin Authority](#)
- [Actions for Durable Environmental Development](#)
- [Canadian International Development Agency](#)



Discussion Topic Five: Agriculture

This topic explored the role of knowledge transfer and harvest insurance as agricultural CCA strategies in ASALs. The examples, the Hora de Plantar (HDP) programme in Northeast Brazil and harvest insurance mechanisms in Argentina, highlight the vulnerability of smallholder farmers in ASALs.

The Latin American examples on knowledge transfer and harvest insurance provide useful lessons for CCA in Bangladesh. The agricultural sector in Bangladesh is highly susceptible to the adverse impacts of CC, especially given ASALs' trade barriers, low technology dissemination, harsh climatic conditions, maladapted farming practices, missing finance, lack of information and safety nets. These farmers are vulnerable, even in today's context.

- Mousumi Pervin, Bangladesh

Although participants found both cases to be timely and effective, many participants were sceptical of their widespread feasibility for ASAL communities in developing regions.

"The case of knowledge transfer is ideally noble and a useful approach that would be useful for ASALs in Zimbabwe and other sub-Saharan African countries. However, reliable and consistent information from the meteorological departments and agriculture advisory teams could be a challenge to maintain, making it difficult to build farmers' confidence. When such information is available, additional challenges can arise due to lack of a consistent and financially sustainable means of disseminating it, as most extension services are already constrained and farmers' access print and electronic media is limited."

- Jimmiel Mandima, United States (USA)

Whereas technological capacity and dissemination of information present major barriers to knowledge transfer, the factors identified as obstacles to effective crop insurance were different.

"There is no doubt that harvest insurance is one of the good strategies to protect farmers. However, participation in expensive insurance plans are often cost prohibitive for small and subsistence farmers. On the supply side, the high transaction costs to contract farmers and monitor their activities are major reasons why insurance policies are so expensive in the first place. Yet, in the example of Argentina, where farmer cooperatives created a collective Solidarity Insurance Fund, this is a good approach that could be applied in Nepal. After all, farmer associations and cooperatives already have saving and credit activities, so the generation of the harvest insurance fund may prove to be easy."

- Ujjal Tiwari, Nepal



Two other key barriers to effective crop insurance in ASALs, in addition to prohibitive costs for farmers, were corruption and poor programme coordination, both of which reduce or completely absorb potential farmer compensation during times of hardship.

“For insurance to work all insured farmers must be willing to adhere to the instructions and guidance provided to ensure that crop failures do not occur because of negligence, such as poor weeding and agricultural inputs. In corrupt countries, the insurance may benefit those who do not deserve it and deny those who deserve (and need) it the most.”

- Damian Casmiri, United Republic of Tanzania

Many participants across all regions went so far as to posit that crop insurance, fundamentally, does not even constitute effective CCA.

“The problem with insurance is that it is not a long-term strategy that will allow smallholder farmers to overcome climate change. Insurance works on the premise that there is a ‘baseline’ climate, and farmers will be compensated for losses from extreme climate events. So, as extreme climate events become the new baseline, insurance companies will compensate by raising premiums or decreasing coverage. Insurance will not fund farmers’ livelihoods, year after year, without an expectation of an eventual pay-off.”

- Garry Brooks, Canada

Despite these concerns, participants also pointed to examples of government partnerships with NGOs that have impressive reach and a strong track record within their own countries, especially with respect to knowledge transfer in ASALs.

“An NGO called the Bangladesh Rural Advancement Committee (BRAC) provides information services to farmers in Bangladesh. BRAC set up Microclimatic Weather Stations in collaboration with the Bangladesh Meteorological Department (BMD) and the Ministry of Environment and Forest to ascertain microclimate variability. These data are used to advise local farmers when to grow seedlings, transplant cereal crops, and plan secondary crops. BRAC also works to raise the awareness of farmers regarding best practices, especially with hybrid seeds and working extensively to provide that information and technology to them and make sure it is put into practice. About 136,320 village organisations (VOs), 500,000 small and mid-sized farm families receive regular advice and services in agricultural activities under this initiative of BRAC.”

- Syed Amdadul Huq, Bangladesh



Other examples include UN-partnered Multiple Resource Centres (CERUM) and a Weather Insurance Index, both in Mozambique; Comprehensive Agriculture Sector Programmes (CASP) in South Africa; and a Technology Needs Assessment (TNA) Workshop (e.g. weather stations) in Ghana. However, the transfer of new knowledge to boost CCA was balanced by calls for preserving traditions that have already stood the test of time.

“Knowledge transfer is a very important decision-making and support tool. It is critical to invest and expand the transfer of indigenous knowledge to young farmers who are the future drivers of agriculture-based economies. Most young farmers lack this important traditional knowledge. Therefore, it is worth considering that indigenous knowledge must be transferred “in its wholesome state” from one generation to the next.”

- Pascal Manyakaidze, Zimbabwe

Discussion Topic Five – Key Lessons

- Knowledge transfer based on sophisticated climate forecasting and information dissemination, though widely praised by participants, must overcome major constraints to deploy weather stations, strengthen institutional processes in meteorological agencies, and dedicate long-term support to community-specific information services in often isolated ASALs; these programmes must be careful not to overlook the potential benefits of integrating indigenous knowledge
- Harvest insurance schemes were less widely supported by participants; one camp appreciated its value as a safety net but highlighted high costs, poor design and implementation, and corruption as key barriers that could possibly be overcome by well-organised, local and regional savings and credit schemes (SACCOs); another more sceptical camp pointed out that insurance functions off historical baselines that become less relevant amidst CC, resulting in higher premiums and/or lower coverage, ultimately leaving small farmers with bigger bills, one way or the other

Supplementary Materials

Participants were provided with the following resources in preparation for Discussion Five:

- [VIDEO: Food Security under Climate Change - Interview with Renato Maluf](#)
- [Food and Nutrition Security Under Climate Change: Cases from Latin America](#)
- [An Introduction to the Basic Concepts of Food Security](#)
- [Building up the National Policy and System for Food and Nutrition Security: The Brazilian Experience](#)
- [The Human Right to Food in Bolivia.](#)



During the exchange, participants shared additional resources and links to relevant organisations for those interested in exploring this topic further:

- [Vulnerability Before Adaptation: Toward Transformative Climate Action](#)
- [An Introduction to the Basic Concepts of Food Security](#)
- [Addressing Human Vulnerability to Climate Change: Toward a 'No-regrets' Approach](#)
- [Protecting Farmers Against Climate Change: Innovative Insurance Products for the Adaption to Climate Change in Ghana](#)
- [Adaptation to Climate Change in Semi-Arid Environments Experience and Lessons from Mozambique](#)
- [The Use Of Seasonal Climate Forecasting In Policymaking: Lessons From Northeast Brazil](#)
- [Impact of Climate Change on Agriculture and Food Security in India](#)
- [Sustainable Agriculture Network](#)
- [Committee on World Food Security \(CFS\)](#)



Discussion Topic Six: Conservation

Loss of biodiversity, ecosystems, and increased desertification (BED) are critical issues related to CCA. Participants were given a short ELLA brief, Climate Change Adaptation In Semi-Arid And Arid Regions: Biodiversity, Ecosystem Services and Desertification, that points to several links between climate change adaptation in ASALs and the fight against BED in Argentina, Brazil, Bolivia, Chile, Ecuador and Peru. It became clear from participants' contributions that this link is quite readily accepted in their regions as well. However, the processes that drive BED are not uniform and participants shed light on a variety of underlying factors that lead to desertification, by providing local or regional contexts and describing the impacts and consequences of desertification in Asia and Africa.

"In Kenya, the major threats to the forested habitat are encroachment by settlers, unclear forest boundaries, and ownership conflicts, including issuing of fake titles deeds, illegal logging and inadequate law enforcement. The situation has been complicated by political interference."

- Fathiya Abdulmajid, Kenya

"In Nepal, besides climate change, weak management of soil fertility is another driver responsible for desertification. Increasing use of chemical fertilizer and reducing bio-fert/material trigger the process of increasing pH level, degrade physical and chemical characteristics of soil and reduce microbial activities. This has also negative effects on soil biodiversity and provisions of soil-related ecosystems services. Continuously intensified rainfall has further eroded this fertile topsoil. Besides these impacts, deposition of construction material and other industrial waste, especially in the urban areas, also exacerbate the land desertification process."

- Ram Chandra Khanal, Nepal

As the positive feedback loops between local environmental degradation and global climate change accelerate these processes, policies to halt desertification in affected regions will require coordination well beyond traditional political boundaries. With this prescient challenge in mind, the development of effective trans-boundary approaches occupied the centrepiece of the remainder of this discussion. As was shown earlier with water management, trans-boundary approaches are already common in river basins. The potential benefits can be considerable and are aligned with efforts to combat desertification.

"In Kenya, we currently have a regional project - Lake Victoria Environmental Management Programme under the Lake Victoria Basin Commission (LVBC) implemented across three East African countries; Kenya, Uganda, Tanzania and extended to Rwanda and Burundi. Some of the project's interventions include sustainable land use practices and habitat restoration, among others, that are directly or indirectly linked to solving the problems of desertification and climate change."

- Caroline Achieng Odera, Kenya



Trans-boundary BED problems can be complex, involving interactions between droughts, floods, increased surface run-off, deforestation, overgrazing and spillage of excess water from dams or rivers “on the other side” of the border. Other projects mentioned included a collaboration between international NGOs and the Intergovernmental Authority on Development in Eastern Africa (IGAD) to develop a trans-boundary framework to mitigate drought and desertification; and the development of a bilateral management framework between Ghana and Burkina Faso, facilitated by the Savannah Accelerated Development Authority (SADA). So what are the lessons from trans-boundary management?

“A challenging aspect of international trans-boundary ecosystem approaches is putting in place an institutional framework that supports national management. While international frameworks may be agreed, the bottlenecks at national level (e.g. lack of capacity, financial resources, etc.) may work against the effective management of entire ecosystems. An example, combining the fight against desertification and climate change adaptation in our region, is in the dryland forests of the Miombo, which is spearheaded by the World Wildlife Fund in collaboration with the Miombo Ecoregion Conservation Programme.”

- Monica Chundama, Zambia

Even at the national level, institutions often seem to lack resources or scope to deal with desertification appropriately, such as in Mozambique where a drought and desertification programme (CERUM/INGC) only covers six of the country’s 27 ASAL districts. Whether the project is national or international, mutual understanding, commitments and cooperation are necessary.

“I believe strongly that the implementation of the trans-boundary management schemes in Latin America were successful due to the mutual understanding, commitments, and cooperation from all sides of the neighbouring countries.”

- Wilson Klutsey, Ghana

Participants from Africa were quick to point out that efforts to develop this level of cooperation do exist in their region as well, with some concrete best practice solutions and also some pending challenges.

“I Zimbabwe cooperates with South Africa and Mozambique in the Great Limpopo Transfrontier Park, which is a Transboundary Natural Resources Management initiative. For such collaboration to succeed the three countries had to harmonise their natural resources management practices, institutional arrangements, ecological monitoring systems and policies, protocols, and agreements. Although there has been some progress, the journey was not easy - especially when one looks at the expectations of local communities who were likely to be affected by the



development. One thing to note is that, for trans-boundary natural resource management to get buy-in from all stakeholders, there has to be an economic incentive. In our case, the concept was sold around tourism, which in some cases is yet to grow and result in economic spinoffs for local communities.”

- Leonard Unganai, Zimbabwe

Of course, getting a consensus will not always be easy. Therefore, fostering genuine political relationships is a key factor. However, this takes time: even in the successful Latin American case of the Gran Chaco it took over a decade from conception to project implementation, which can help set reasonable timelines for similar projects in the pipeline.

“Nepal has the possibility to learn and adopt the Latin American trans-boundary approaches. There are no such types of approaches developed yet. However, recently Nepal has developed Memorandum of Understanding (MoU) on forestry and biodiversity conservation between its neighbouring countries India and China. Hopefully this will be followed by the development of effective plans and programmes in the near future.”

- Ujjal Tiwari, Nepal

While some voiced the need for long-term trans-boundary programmes, others were sceptical about the prospects of such cooperation precisely due to the lack of political consensus in their regions.

“The experiences of regional cooperation, particularly in Asia, are not that inspiring in this regard. To ensure fruitful cooperation for implementing trans-boundary climate change management, political consensus supported by technical ways and means is crucial. Political consensus among the developing countries is really a tough task; despite the immense scope of, pressing need for, and potential benefit from trans-boundary climate change management.”

- Syed Amdadul Huq, Bangladesh

In fact, agreeing on actions with different values and goals among actors with different incentives can be extremely difficult.

“The Latin American approaches to the mitigation of desertification seem well thought out in theory. I am excited to see how these initiatives play-out in practice. Trans-boundary management has been proven to be extremely difficult to pull off due to the existence of different sets of goals and values between stakeholder groups, and due to



the potential for free riding. This is an issue that researchers from multiple disciplines, including development and political science, are exploring. I think adaptation research could greatly benefit through collaboration with these other disciplines that are interested in similar issues.”

- Benjamin Warner, United States (USA)

In the case of the Gran Chaco, the countries involved used local level institutions and, occasionally, an ad-hoc approach to tackle gaps in their trans-boundary policy and institutional framework. By the mid-90s, however, growing consensus among the involved governments bore the fruit of sustainable land use management. Getting this consensus, thus, takes time, resources, commitment and patience – one more reason to link the agendas of the fight against desertification to that of CCA (where we also deal with the long-term). As we will explore in the next and final section of module one, CCAs in response to severe climatic stressors can lead to entirely new migration patterns.

“India has got two major desert regions: the first is the cold desert of North Ladakh and, the other, a hot desert of “Thar” in the West - mostly lying in Rajasthan province. It is very well documented that, over a period of a few centuries, once fertile areas were converted into the arid desert of “Thar” of today. The major reason attributed to this change is human induced: a wasteful use of natural resources. This has led to massive migrations of population to other regions - either on a permanent or seasonal basis - as a form of CCA in this region.”

- Hari Shanker Gupta

Discussion Topic Six – Key Lessons

- Developing regions are establishing new trans-boundary programmes to address biodiversity, ecosystem, and desertification (BED) issues; which is also being achieved by aligning existing water management schemes to include BED-oriented solutions
- Trans-boundary BED programmes must account for each country’s and partner’s institutional and financial capacity to support the framework; otherwise, weak implementation or insufficient funding will bottleneck or block conservation efforts
- Participating countries must also harmonise their natural resource management practices, institutional arrangements, ecological monitoring systems and policies, protocols and agreements to facilitate smooth administration
- Stakeholder incentives must be considered in order to establish lasting trans-boundary BED programmes and guard against free riding; scepticism was expressed that this point may very well be insurmountable unless an interdisciplinary research can improve programme design



Supplementary Materials

Participants were provided with the following resources in preparation for Discussion Six:

- [Biodiversity, Ecosystem Services and Desertification: Lessons from Latin America](#)
- [A Drylands Call for Action - Declaration of Fortaleza](#)
- [Dynamic Causal Patterns of Desertification](#).

During the exchange, participants shared additional resources and links to relevant organisations for those interested in exploring this topic further:

- [Climate Change Adaptation in ASALs](#)
- [National Action Programme \(Nap\) to Combat Desertification in The Sultanate Of Oman](#)
- [Community Forestry in Nepal: A Policy Intervention for Local Livelihoods](#)



Discussion Topic Seven: Migration

Migrations are not random population movements insulated from local or regional socioeconomic pressures. Unequal land distribution, poverty, low political representation, lack of access to information, networks, markets, capital, technology and perceptions about better opportunities “elsewhere” make people migrate. Climate change is also causing important consequences in this context, particularly in regions where migration is already part of coping or adaptive strategies – such as ASALs. Participants were assigned a short brief, [Climate Change and Population Migration in Brazil’s Northeast: Scenarios for 2025–2050](#), a study by Barbieri et al. (2010) that analyses how migratory flows may change in the semi-arid Northeast of Brazil under different climate change scenarios.

Forced migration due to climate change – and the climate refugees it creates – is of increasing concern in ASALs. A particularly vulnerable group are pastoralists. In Africa, coping strategies of pastoralist groups are becoming markedly less effective, with the potential to drive other conflicts.

“Pastoralists use their mobility as a means of adapting to changes in climate, as they have for generations. They are now facing problems because more people and animals are competing over less space. The old ways of adapting are not quite working as they use to.”

- Huzi ishaku Mshelia, Nigeria

“Pastoralists in Uganda, especially those living along borders in the horn of Africa, often migrate across borders to search for water and pasture for their cattle, sheep and goats due to drought to which they regard as coping mechanism to climate change conditions. For example, Karamoja in North Eastern Uganda, shares a border with Northern Kenya. Over a long period of time, Karamoja has suffered tremendous setbacks as a result of climate change, including forced migration, loss of livestock, theft and overwhelming competition for animal survival resulting to ethnic conflicts within the region. In response, humanitarian actors developed a framework in collaboration with the Disaster Preparedness Unit in Office of the Prime Minister to mitigate the effects of Climate Change migration by institutionalizing strategies on Climate Change adaptation and conflict transformation.”

- Pamela Bella Nyamutoka Katooro, Uganda

Additional migration drivers include untenable subsistence agriculture as mentioned by participants from Zambia, Nepal, Bangladesh, Nigeria, India, Malawi, Ghana and Tanzania.

“In our region it is not common for people to migrate internally, but I have realised that in the South of Zimbabwe (Matebeleland) the area has been hit badly by droughts and it is difficult to do any meaningful agriculture. Most of the men have left for jobs in neighbouring countries like South Africa and Botswana.”

- Wilfred Miga, Zambia



Other factors such as political instability, poor governance or lack of employment opportunities and livelihood options can strongly influence migration decisions such as “if”, “when”, and “for how long”. Of course, when livelihood options (fishery or agriculture, for example) are permanently affected due to CC impacts (such as the salinisation of water resources), communities may decide to move away permanently. In terms of permanent migration, coastal flooding due to sea level rise is certainly a concern for many countries.

“Various studies and estimates warn that sea level rise is an impending threat to the coastal areas in Bangladesh, which has long and densely populated coastlines with many low-lying remote islands. In the severe climate change scenario, sea level rise threatens to inundate 18% of Bangladesh’s surface area, directly affecting 11% of the country’s population. Salt water intrusion from sea level rise in low-lying agricultural plains, along with other hazards, could lead to a 40% decrease in grain production and would increase forced migration to the urban slum areas. Estimates show that a 1- to 2-degree Celsius increase in temperature would force the physical dislocation of more than 35 million people in Bangladesh.”

- Syed Amdadul Huq, Bangladesh

Participants indicated other countries that are vulnerable to coastal inundation including the Sunderban Delta of India; and Ada Foah, Azizanya and Keta in Southern Ghana.

Under climate change, farmers will likely first adopt other adaptive strategies (such as water harvesting, new crop varieties, irrigation technology and boreholes for irrigation) and seasonal migration before thinking about permanent migration. If migration is necessary, uprooted farming families encounter stressful conditions in urban centres.

“The United Nations figures indicate that 40% of Africa’s one billion people currently live in urban areas; 60% of them live in slums. Urbanisation in Africa is occurring at such a rapid pace that planning for services lags far behind. Consequently, African cities are densely populated and plagued by high rates of poverty, weak infrastructure, and poor access to clean water and sanitation services. The effects of climate change will enhance these challenges.”

- Nancy A. Omolo, Kenya

These problems are common in Latin American and Asian countries as well, and climate change may exacerbate these problems. Thus, understanding the ‘who’ and ‘why’ of CC-induced migration is important to developing the appropriate solutions. Predicting migration and the potential CC impacts that may drive it is no easy task, but participants supported the usefulness of linking CC and migration scenarios in order to better inform CCA planning and disaster preparedness.



“My organisation conducted research on CC disaster risk reduction on the Nyando river basin in Kenya - an area affected by extreme floods. One of the local adaptation mechanisms included inhabitants mostly men, some single mothers, and widows migrating to the urban area (Kisumu) during droughts to work as casual labourers in Indian firms. Other women, usually housewives and elderly women, are left behind with their children or grandchildren, hence, subjected to starvation and drought-related sicknesses. Internal migrations also occur during floods whereby people from the affected areas are transferred to evacuation centres and taken care of by rescue teams such as the Red Cross and other humanitarian institutions. I therefore strongly recommend that Governments should include ways of dealing with migrations in their climate response agendas so as to help address problems and risks that may result from migrations including internal conflicts, diseases transfer, scramble for resources, and overpopulation among others.”

- Caroline Achieng Odera, Kenya

Presenting clear information to policymakers may in fact spur discussions on climate change adaptation, although quite a few problems exist linked to the creation of scenarios and impact assessment. Along this line of thought, a main concern among participants was that scenarios are not predictions; they are assumptions. CC impact assessments cannot be reliably built upon assumptions. All the steps involved in forecasting an impact assessment require a number of assumptions and significant uncertainty, and even agreeing on socioeconomic scenarios as a first step is immensely difficult among policymakers.

“Scenarios are indications of what is possible and tend to be underpinned by a number of assumptions. One cannot underestimate the importance of lack of opportunities or presence of opportunities as a migration driver or pull factor respectively. Therefore, if CC creates opportunities in one region, then depending on how easy it is for people to migrate there may be an incentive to migrate. There are people in some flood plains in Zimbabwe who refuse to move despite the hazard simply because they have good harvest in most of the years because of the rich soils and moisture. However, if their losses will exceed benefits many fold - I am sure they will migrate.”

- Leonard Unganai, Zimbabwe

“The types of scenario analyses presented here are useful to the discussion about the potential need for adaptation. When we use these types of scenarios, we must make sure that the public (i.e. stakeholders) understands that the presented material is not a ‘prediction’: Furthermore, scenarios cannot incorporate all the complexities and unexpected events of the real world. So, again, they must be used correctly - as a tool to foster discussion about adaptation. I do not think that scenarios results should be used as planning tools by policymakers.”

- Benjamin Warner, United States (USA)

So scenarios seem to be better for getting the broad picture; however, different emissions trajectories and unclear environmental feedbacks may trigger completely different outcomes. Amidst uncertainty, getting this



broad picture is already an important step to deepening discussions and planning CCA measures that balance a long list of assumptions, risks and opportunity costs. Lastly, before advanced climate scenario modelling, rural populations relied on indigenous knowledge to inform seasonal migration. Sadly, this too is becoming increasingly uncertain.

“In Southern Africa, there is an interesting local-level case of temporary migration as a climate change survival strategy. The Lozi people of Zambia have, for many years, been using their indigenous knowledge of the Zambezi River to escape from floods in the upper plains of the river through a traditional ceremony called “Kuomboka” (moving out of the water). The ceremony is a signal for temporary migration, led by the Lozi King, with the rest of the people following his lead out of the river valley to escape from annual floods. With climate change impacts being felt throughout Southern African, there have been recent reports of annual flooding occurring sooner than expected, with devastating consequences on livelihoods in Zambia’s Western Province.”

- Stanley Tirivanhu Mubako, United States

Discussion Topic Seven – Key Lessons

- Forced migration due to climate change – and the climate refugees it creates – is of increasing concern in ASALs. A particularly vulnerable group are pastoralists. In Africa, coping strategies of pastoralist groups are becoming markedly less effective, with the potential to drive other conflicts
- Additional migration drivers include untenable subsistence agriculture as mentioned by participants from Zambia, Nepal, Bangladesh, Nigeria, India, Malawi, Ghana and Tanzania; and sea-level rise in Bangladesh, India and Ghana;
- Predicting migration and the potential CC impacts that may drive it is no easy task, but participants supported the usefulness of linking CC and migration scenarios in order to better inform CCA planning and disaster preparedness
- Therefore, many participants stressed that climate scenarios facilitate the broad picture, which is already an important step to deepening discussions and planning CCA measures that balance a long list of assumptions, risks and opportunity costs amidst climatic, social, and economic uncertainty

Supplementary Materials

Participants were provided with the following resource in preparation for Discussion Seven:

- [Climate Change and Migration in Semi-Arid Northeast Brazil](#)

Participants did not share additional resources or links for this section.



MODULE 1 CONCLUSIONS

This Learning Alliance sought to offer readers a unique set of discussions regarding how climate change is affecting vulnerable communities, what decision makers are trying to do raise resilience, and where opportunities for improvement exist. Thanks to the participation of climate and development specialists from around the world in the online exchange members of the Learning Alliance were provided with insights and examples from professionals working on the current and future impacts of climate change.

Climate change is already beginning to affect the developing regions of the world. The severity of these impacts depends on the distinct socio-economic conditions and climate-related risks that result in varying levels of vulnerability across countries and their communities. Populations living in arid and semi-arid lands constitute some of the most climate vulnerable groups in the world. Climate scenarios predict ever-increasing variability and, amidst this uncertainty, policymakers and community leaders must find ways to mitigate risk. This was a common theme across the broad topics of infrastructure, water management, agriculture, food security, conservation and migration. Climate proofing infrastructure, new irrigation technologies, trans-boundary water management programmes and early warning disaster systems were just some of the topics discussed in this Learning Alliance. Generally, participants cautioned against scaling-up so-called “turn-key” solutions pushed out by many national governments and large NGOs because they tend to miss critical considerations at the local level.

Although turn-key *projects* are illusive at best, the potential for scalable CCA processes is enormous. In many ways, this was the resounding conclusion across all of these topics. Participants pointed to the need for socio-political innovation, expressing their hope for better mechanisms to increase local-level climate change adaptation planning and implementation. Potential benefits include sense of community ownership, location-specific programmes, integration of generations of indigenous knowledge and long-term programme viability based on community members’ intrinsic staying power.

In short, if continued innovations in top-down support can harmonise with bottom-up solutions, there is a real opportunity to develop effective, sustainable climate change adaptations supported by the communities that directly benefit from their own increased resilience.

MODERATORS AND GUEST EXPERTS

Charlotte Heffer (permanent moderator)
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To learn more about discussions on the Learning Alliance on Climate Change Adaptation in Semi-Arid and Arid Regions, contact the author, Jarrod Miles Russell (an ELLA Brazil Project Consultant at Jarrod.m.russell@gmail.com).

FIND OUT MORE FROM [ELLA](#):

To learn more about Latin America’s climate adaptation methods in semi-arid regions, read the [ELLA Guide](#), which has a full list of the knowledge materials available on this theme. To learn more about other development issues, browse other [ELLA themes](#).



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