More than one billion people live in deltas, semi-arid lands, and glacier-dependent basins in Africa and Asia, hotspot regions that are the most vulnerable to climate change.

Over 7 years, the CARIAA program supported collaborative research to strengthen resilience in these hotspots by informing policy and practice. CARIAA brought together more than 450 researchers across 15 countries through four consortia, with selected study areas based on geographic and social similarities—with the aim of sharing knowledge and experiences across disciplines, sectors and geographies.

The CARIAA Novel Insights series provides a snapshot of the key insights that emerged from this work, on the most pertinent topics for climate adaptation, including: 1.5°C Warming, Migration, Gender and Social Equity, Effective Adaptation, and Research for Impact.
THE COLLABORATIVE ADAPTATION RESEARCH INITIATIVE IN AFRICA AND ASIA WAS A 7-YEAR, CAD$70 MILLION PROGRAM THAT FUNDED RESEARCH TO INFORM DECISIONS AND PRACTICES OF COMMUNITIES, BUSINESSES AND GOVERNMENTS TO ADDRESS THE LONG-TERM EFFECTS OF CLIMATE CHANGE.

CARIAA focused on helping the most vulnerable communities in South Asia and Africa, located in areas we call hot spots: geographic regions that are home to a large number of poor people whose livelihoods depend on economic activities that are threatened by a changing climate. These areas include:

- Deltas, such as the Ganges- Brahmaputra-Meghna in Bangladesh and India, where sea-level rise and cyclones threaten a large population
- Semi-Arid regions, like the plains of Kenya, where droughts and changing rainfall patterns impact agricultural livelihoods and water security
- Glacier-fed river basins, such as the Indus in Pakistan, where extreme events like floods endanger communities’ health and safety

Because climate change demands collaboration, CARIAA funded four consortia, each focusing on a different hot spot. The consortia brought together researchers and practitioners, from the North and the South, with different backgrounds and expertise, to create and share knowledge that will help poor people build resilience to climate change.

While climate change is a global threat, some parts of the world are especially vulnerable to the extreme effects of climate change, such as sea level rise, changes in precipitation patterns, and the melting of glaciers. The geographic location and ecological sensitivity of semi-arid lands, deltas, and glacier- and snow-pack dependent river basins make them 3 examples of such vulnerable regions. Climate change in these “hot spots” threatens the livelihoods of large populations: over a billion people in total, a majority of which are poor.

CARIAA’S OBJECTIVES

CARIAA aimed to help build the resilience of poor people to climate change by supporting a network of consortia to conduct high-
caliber research, informing adaptation policy and practice in hot spots in Africa and Asia.

To achieve this aim, CARIAA developed:

- New knowledge: high-calibre, peer-reviewed, co-generated research on vulnerability, adaptation and resilience within and across hot spots. This research was widely shared, in multiple formats for a range of audiences, through proactive ongoing outreach and a commitment to open access publication.

- New capacities: collaborative networks that strengthened adaptation and resilience expertise among researchers, policymakers, and practitioners. Opportunities for early career scholars helped prepare the next generation of researchers.

- Better-informed policy and practice: Interaction with research users was integral to CARIAA’s design and vision. Continuous engagement with communities, practitioners and policymakers ensured that results inform action on multiple levels.

**OUR APPROACH**

Hot spots: CARIAA used the hot spot as a lens for research on common challenges across different contexts. The program focused on three types of hotspots in Africa and Asia:

1. Semi-arid regions of Africa and South and Central Asia
2. Deltas of Africa and South Asia
3. Glacier and snow-pack dependent river basins in South Asia

Collaboration through consortia: Research on climate change adaptation demands collaboration across disciplines. While other programs conduct or support research addressing particular sectors, countries and/or regions, CARIAA filled a gap by working within and across them. Each consortium focused on a different hot spot, outlined in the table below:

<table>
<thead>
<tr>
<th>CONSORTIUM</th>
<th>HOT SPOT</th>
<th>COUNTRIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptation at Scale in Semi-Arid Regions (ASSAR)</td>
<td>Semi-arid lands</td>
<td>Botswana, India, Ethiopia, Ghana, Kenya, Mali, Namibia</td>
</tr>
<tr>
<td>Deltas and Vulnerability to Climate Change: Migration and Adaptation (DECCMA)</td>
<td>Deltas</td>
<td>Ghana, India, Bangladesh</td>
</tr>
<tr>
<td>Himalayan Adaptation, Water and Resilience Research on Glacier and Snowpack Dependent River Basins for Improving Livelihoods (HI-AWARE)</td>
<td>Glacier- and snowpack-dependent river basins</td>
<td>India, Bangladesh, Nepal, Pakistan</td>
</tr>
<tr>
<td>Pathways to Resilience in Semi-arid Economies (PRISE)</td>
<td>Semi-arid lands</td>
<td>Burkina Faso, Senegal, Kenya, Pakistan, Tajikistan, Kyrgyzstan</td>
</tr>
</tbody>
</table>
1.5°C WARMING

GLOBAL TEMPERATURE INCREASE OF 1.5°C EXPECTED IN LESS THAN A DECADE, WITH HIGHER WARMING ANTICIPATED IN HOTSPOTS.

An increase in global temperatures by an average of 1.5°C above pre-industrial levels is fast approaching within the next decade, with temperatures in the Himalayan Mountains and the African semi-arid lands projected to increase more than this global threshold. What does this mean for the global population, and the ecosystems at risk?

• With 1.5°C warming, at least a quarter of the ice on the Himalayan mountains today will be lost, affecting 13% of the world’s population.
• Semi-arid lands will also experience high variations in precipitation, with significant impacts on power production, agriculture and health.
• The impact in low-lying deltas will not be measurable until around the 2040s, when the area of land under inundation is expected to be about 2.5 times larger.
RESPONDING TO THE CALL FOR EVIDENCE ON THE IMPACTS OF A 1.5°C WARMER WORLD

A huge policy challenge emerged when the Paris Agreement called for a special report from the Intergovernmental Panel on Climate Change (IPCC) on the impacts of global warming of 1.5°C above pre-industrial levels, due to a lack of existing sound scientific analysis. Not only was the literature on 1.5°C warming impacts sparse (Hulme 2016), but the literature published at the time also lacked a regional or hotspot focus. Similarly, although we know the difference between 1.5°C and 2.0°C global warming is significant, we do not know how this manifests at the regional and hotspot scales, as different places will experience different levels of impacts at these temperature intervals. This gap in knowledge is what triggered CARIAA scientists to investigate the ways in which warming of 2.0°C over 1.5°C would be significant in each of three hotspots—low-lying deltas, snow-melt and glacier-fed river basins, and semi-arid lands.

Both 1.5°C and 2.0°C Warmer Worlds Are Rapidly Approaching

Our model studies revealed that the 1.5°C global warming limit is being approached very quickly, and is expected to be reached within a decade in the studied hotspots. The median expected timing of global warming of 1.5 and 2.0°C is 2025 (2008–2043) and 2039 (2022–2058), respectively (Zaroug et al. 2018—submitted). Observed concentrations of CO2 have been largely tracking the IPCC’s RCP 8.5 scenario and divergence from this scenario will be slow, even with ambitious policy interventions. These timing ranges are hence considered reasonably likely. Therefore, both 1.5 and 2.0°C increases are expected to arrive rapidly, pointing to challenges for adaptation at local scales (Zaroug et al. 2018—submitted).

Warming in Hotspots Will Be Varied and Significantly Higher Than the Global Average

In the Indus, Ganges and Brahmaputra (IGB) river basins in South Asia, a global average warming of 1.5°C results in a much higher warming of 2.1°C (1.4–2.6) while a 2.0°C global warming leads to 2.7°C (2.0–3.4) (Lutz et al. 2018—submitted; Kraaijenbrink et al. 2017). The higher the altitude in the IGB, the greater the difference between global and hotspot warming levels. In the semi-arid regions (SARs), at least 44 African countries will warm more than the global warming mean of 1.5°C, with 11 of them warming by over 25% more than the global mean change. In all cases, national temperatures under both 1.5°C and 2°C of global warming will be climatologically different. Countries with arid and semi-arid climates and those with more continental locations will warm more than those with predominantly humid and maritime conditions. For each increment of global
warming, temperature extremes between countries are statistically different, indicating markedly different regional climates at different levels of global warming (Nkemelang et al. 2018).

29–43% of the ice mass in the Indus-Ganges-Brahmaputra Mountains will be lost by the end of the century. Under a global 1.5°C temperature increase scenario, 29–43% of the present-day ice mass in the high mountains of Asia would be lost by the end of the 21st century (Kraaijenbrink et al. 2017). These changes will lead to seasonal shifts in water availability and may have serious consequences for mountain and river basin communities—about 910 million people who depend on the glacier and snow-melt water as a key water source for livelihood-related activities. Global warming of 1.5°C will also lead to increased precipitation extremes and floods, heat stress, and droughts in this region. All of these phenomena will increase linearly to 2.0°C, affecting agricultural production, hydropower production, and human health at both limits of global warming.

NO IMPACT WILL BE DISCERNIBLE IN LARGE DELTAS UNTIL THE 2040S

In the world’s largest and most highly populated deltas—the Ganges-Brahmaputra-Meghna (GBM), Volta and Mahanadi deltas—the differential effects (both sea level rise and increased river flows) of a 1.5°C warmer world compared to 2.0°C may not be discernible until at least the 2040s due to annual variability. At that point in time, monsoonal flooding in the GBM delta will become more frequent and widespread under climate change, increasing in a 3°C world. The average depth of flooding is expected to double, while the average area of land under inundation would be about 2.5 times larger. The greatest number of people affected by flooding in the GBM delta are projected to be in Khulna and Barisal.

AFRICAN SEMI-ARID LANDS TO EXPERIENCE HIGH WARMING AND RAINFALL VARIATIONS

In general, coastal countries in West Africa and most countries in East Africa show lower relative warming, while Sahelian, North African and southern African
countries show greater relative warming. About 30 other countries are projected to experience reductions in rainfall, largely in southern Africa, western West Africa and western North Africa. On the other hand, countries in East Africa, eastern West Africa and eastern North Africa will have increased rainfall. Decreases in mean rainfall and increases in dry-spell length are also projected at each increment of global temperature increase in already water-stressed Botswana. These impacts will lead to more frequent water shortages in today’s urban and agricultural supply systems. At global warming of 1.5°C, 14.3 million livestock holder families in East Africa will be affected by the 30°C cattle production threshold, above which cattle productivity falls. In Kenya alone, 1.7 million heads of cattle will be lost due to these conditions, an equivalent of US$680 million today. Even higher cattle losses are expected at 2°C of global warming.

LOOKING FORWARD

IT WILL BE NEARLY IMPOSSIBLE TO STAY BELOW THE 1.5°C/2°C THRESHOLDS

To meet the 1.5°C or even the 2°C global warming target will be a difficult task. There is a need to slow the pace of warming and to invest in resilience to the unavoidable warming already locked into the climate system. Consequently, formulation of robust climate change adaptation policies and actions needs to be based on the full range of climate change projections and not just 1.5°C, while being cognizant of regional differences and circumstances.
Further reading


CARIAA papers already published as open access:


Publications under review for publication in different journals:

- SARs: National Climate Change at 1.5°C and 2.0 °C Global Warming over Africa
- Basins: Regional Environmental Change South Asian river basins in a 1.5°C warmer world
- Deltas: What are the Implications of sea-level rise for a 1.5°C and 3.0°C rise in global mean temperatures in vulnerable deltas?

A final synthesis paper led by CARIAA’s Climate Science Working Group is in preparation for publication in the 6th Assessment Report of the IPCC (AR6):

- Characterising climate signals in complex climate hotspot systems in the developing world
Migration, mostly internal, is used by populations vulnerable to climate change as an adaptation strategy, but needs appropriate policies and services based on quantitative evidence and changing realities in order to be successful.

Migration is a complex phenomenon, linked to people’s perceived needs for best adapting to a dynamic environment, and to their aspirations for better well-being. Climate change is often not recognized as a primary cause of mobility, but it influences other immediate drivers of migration: economic, social, political, and demographic. Specifically:
• Often, the decision to migrate is correlated with reaching thresholds for household size, education level of family members and income. By shifting some of these critical thresholds, climate change influences who migrates and where, and when individuals or groups decide to migrate or are forced to do so. While data on temporary displacement triggered by extreme events are becoming increasingly available, quantitative data on slow-onset migration are still sparse.

• The decision to move is highly dependent on the life histories of each family and household, and on the historical sequence of economic, climate, health and social shocks it has undergone. CARIAA developed a visual analysis approach to look at life histories and changes in well-being associated with possible thresholds that would lead to a migration decision in individual households.

• Internal (in-country) migration has been on the rise in climate hotspots and is far more predominant than international migration. When international migration occurs, it is mainly South-South.

• Migration can increase resilience under certain conditions, mainly when the availability of services in receiving and sending areas allows migrants to profit from their skills, and enables household members left behind to invest remittances productively. In the absence of such support services, migration can lead to the transfer of vulnerability across different groups and communities.

• The number of women migrating is increasing in hotspots, and this has been well documented in South Asia in particular. This, in turn, has environmental impacts through greater likelihood of land degradation. At the same time, women in receiving areas are exposed to different risks, which require the rethinking of education, employment, and health services for mobile groups. The starting point is measuring mobility reliably: in Orissa state, for instance, research uptake resulted in the setup of a more reliable system for tracking internal mobility in climate sensitive areas.
a symptom of a problem to be solved. And, as often happens in the health sector, the focus has shifted to considering the symptom as a problem in itself. This narrative is still prominent in many national political discourses within the current debate on South-North migration.

Current research based on historical evidence has, however, shown that the link between international migration and climate change has been weak so far, while the majority of displacement and long-term migration directly or indirectly attributable to climate change has been within national borders or within regional boundaries in southern countries.

In addition to this, partially thanks to the consultative process that led to the UN Global Compact on Migration in 2018, in the Global South the discussions have widened to reflect a broader conception of human mobility. This includes a deeper understanding of the climate-migration nexus as more strongly intertwined with slow development processes than as just a simple response to crises.

The idea that human migration can represent a legitimate adaptation strategy has now emerged, as well as higher visibility of and a focus on trapped populations. This appears to be a positive development, marked by softer tones that move away from a purely national security-oriented narrative and embed migration in a narrative centered on sustainable development.

A number of research initiatives dedicated to this topic were recently initiated, such as the United Nations University “When the Rains Fall” migration network, the TRANSRE collaboration, the Hugo Observatory on Environmental Migration and the KNOMAD initiative, as well as CARIAA itself. At the policy level, the Nansen Initiative opened a broad consultative process on international migration, which culminated in informing the work leading to the UN Global Compact on Migration. Some of the results of these research efforts are synthesized in works such as the Atlas of Environmental Migration (Ionesco et al. 2017) and the Groundswell report.

The Global Compact is a welcome evolution of this discourse. But it will be a non-binding agreement for member states, focusing mainly on the normative and regulatory aspects of human mobility. A stronger link to quantitative research, showing the connection between embracing migration as a fact and the achievement of the Sustainable Development Goals, will be of paramount importance for the Compact’s successful implementation.

NEW INSIGHTS

CARIAA research has led to key novel contributions to the discourse on migration.

MIGRATION AND ENVIRONMENTAL CHANGE

- The primary drivers of human mobility in all climate hotspots are perceived socio-economic inequality and aspirations for better livelihood, employment and economic opportunities. In South Asia, the single major driver is economic for 48% of households that have at least one migrant family member in deltas. This figure is 44% in river basins, 55% in semi-arid plateaus, and 82% in semi-arid plains. Only 6-10% of households recognize
environmental change as the primary cause of their decision to move.

• However, when the life histories of individual households are probed, it becomes clear that environmental degradation and extreme weather events contribute importantly to the decline of livelihoods that makes the perception of economic inequality and vulnerability more urgent. This is more evident in semi-arid regions than in deltas and coastal areas, likely due to the fact that continuous ecosystem deterioration does not allow recovery after shocks, while this is still possible to a certain extent in more fertile lands.

• Moreover, perception of local environmental change processes and of vulnerability to climate change is higher in migrant families than in non-migrant ones, and

• The resilience level of households in the sending areas is directly correlated with migration, provided that: remittances are sent back and conditions enable the reinvestment of remittances into social protection schemes and productive activities. In the absence of such schemes, vulnerability can simply be transferred. This is particularly true in coastal Bangladesh and Orissa state (India) where relocation away from cyclone-prone areas and highly saline agricultural regions exposes migrants to security and health hazards in peri-urban areas of fast-growing cities.

• Accordingly, migration from coastal areas is on average more cyclic and of shorter duration. Permanent migration is more prominent in those areas where deterioration is more permanent, in particular due to soil erosion and salinization.

INTERNAL VERSUS INTERNATIONAL MIGRATION

• Migratory fluxes from climate hotspots are steadily increasing.

• Internal and South-South international migration are increasing faster than and are numerically dominant in comparison to South-North international migration. More than 80% of migration is internal in South Asia, varying from...
61% in semi-arid plains in Pakistan to virtually 100% in semi-arid plains in the Indian sub-continent. In sub-Saharan African hotspots, more than 90% of migrants remain on the continent.

- **However, different types of migration are often correlated in space and time.** In Senegal or Bangladesh, for instance, migration to a large city can be a first step to subsequent permanent or semi-permanent international migration. In India, migration is predominantly national, but inter-state; while in Burkina Faso, international migration is mainly periodic, rural-rural, and to neighbouring countries such as Ivory Coast.

### CHANGES IN WHO MIGRATES AND THE IMPORTANCE OF GENDER

- **Migrants from climate hotspots are still predominantly young males in the 20- to 30-year age category.** However, the migration rate of women is increasing faster than men’s. Female migration reaches 16% in deltas and up to 26% in semi-arid plateaus in India. Women’s migration is particularly high where skills and education are available to women; or where slow-onset environmental degradation is so high that remittances are not sufficient and the whole family considers moving.

- **Women’s migration has environmental impacts.** For instance, CARIAA research suggested that in mountain areas of Nepal a 1% increase in women migrating in Nepal may increase the likelihood of agricultural land contraction to 37%, because of the more efficient ways women take care of the land. This is a much larger percentage than in the case of male migration.

- **Migrants in climate hotspots belong to the medium-to-highly skilled labour force.** Between 48% (in semi-arid plateaus) and 69% (in deltas) have over 10 years of schooling or specific technical skills. This in turns means that:
  - Migration is more effective as an adaptation strategy when skilled migrants find the conditions to be employed for their skills in the receiving areas.
  - Policies that encourage skill building and education in the sending areas are positive per se, but do not necessarily decrease migration, and may increase it in some cases.
  - Within this category, migrants are increasingly willing to travel longer distances, to reach district or capital cities where prospective earnings are higher. In line with this, there is a robust correlation between length of migration and level of remittances.
  - **Patterns of internal mobility at the household level are changing.** For example, CARIAA research shows that rural-urban migration is not the only mobility pattern, with rural-rural migration as well as daily commuting to mega and fast-growing cities equally common. Peri-urban populations as well as migrants from rural areas prefer to stay in peri-urban areas and commute to cities for work rather than migrating to the cities themselves. This helps them to avoid the vulnerability traps of informal settlements with low services and poor living conditions in cities, or the consequences of climate-related events with amplified effects in urban settlements, such as heat waves.

- **In rural areas, the average critical household size that triggers migration is also lowering in many cases by one to two units on average.** This is correlated with: i) households who deal with multiple moves within the family, and where the push factors (like environmental degradation) are particularly strong; ii) parents who need to invest more in education of their children before sending them in search for qualified jobs, in areas where the decision to move is dominated by pull factors. This again has implications in terms of services to migrants’ communities, as people’s moves are driven less by demographic pressure than by other factors.
Due to the fact that the gender makeup and skills of migrant populations are shifting, there is a growing need to adapt education, health, employment and legal services for migrants to their changing needs. This is of particular importance in view of the universal nature of the Sustainable Development Goals, and calls for a fundamental reconsideration of boundaries and legal restrictions that prevent mobility of services. It also presents challenges in particular for services that usually require hard infrastructure, such as good quality water and sanitation.

At the same time, however, a changing migrant population can offer different services and skill sets. This picture invites us to work towards a world where, contrary to considering migrants as people in search of better services, services move with people and people have the opportunity, by accessing those services, to use their skill sets optimally.

In the short term, these findings call for:

- At the international level, a stronger recognition of the importance of internal migration in the Global Compact on Migration, and of the connection between different types of migration and mobility.
- Putting more emphasis on employment and services opportunities rather than focusing solely on the regulatory and legal aspects of migration; promoting technological and social innovation in the mobile services sector.
- Improving data and analysis to provide evidence on the linkages between environmental change and migration for decision makers; regulating human population fluxes in fragile ecosystems.
- Better tracking of mobility fluxes. For example, research uptake in Orissa state saw the setup of a more reliable system for tracking internal mobility in climate sensitive areas. Such examples need to be scaled, as it is unrealistic to plan for better services for and by migrants if we do not know who and how many people move, when and where they do so.

CARIAA research has led to key novel contributions to the discourse on migration. CARIAA’s new findings add quantitative robustness to previous knowledge on internal migration, and contribute to dispelling myths on migration and mobility, highlighting opportunities to provide services to people on the move, and can guide investment on adaptation and climate resilient development.
REFERENCES


ADAPTATION MEASURES MUST RECOGNIZE THAT VULNERABILITY IS MULTI-FACETED, AND SEEK TO BETTER UNDERSTAND HOW GENDER AND SOCIAL INEQUITY AFFECTS ADAPTIVE CAPACITIES.

CARIAA has advanced our understanding of gender and social equity, recognizing vulnerability comes in different forms and is not limited to women. Impacts of climate change are experienced differently by different people, based on their exposure and capacity to respond to risks. CARIAA evidence speaks to how the gendered nature of decision-making and access to resources creates differential capacities of women and men to adapt to climate change. Capacity to adapt is determined by gender, age, ethnicity, class, and household structure. The remoteness of hotspots also matters, as people living in mountains and floodplains, semi-arid lands, and river deltas face distinct risks and opportunities.
Efforts to strengthen adaptive capacity have largely failed to recognize the gendered nature of everyday realities and experiences. Gender roles and responsibilities shape women’s and men’s access to, ownership of and control over resources, as well as capacities to respond to stress caused by climate change. The existing literature recognizes gendered experiences of climatic change, with poorer women and female-headed households as the most vulnerable. Yet it also undervalues women’s agency and ignores other forms of social difference. Empowerment requires taking into account the resources available to people, and how they use those resources. Entrenched social structures and power relations shape women’s adaptive capacity in complex ways. People exercise their agency by drawing on available material or social resources, using a variety of strategies.

Past research has shown that gender relations involve both cooperation and conflict across scales from the household and community to markets and the state. Where state social protection is lacking, both poor women and men may be more inclined to cooperate with each other to ensure household survival and growth. This has implications for climate adaptation measures. The UNFCCC Paris Agreement, for example, creates new demand to incorporate gender into climate adaptation, for instance through gender action plans and inclusion of gender in climate finance and adaptation planning. The literature recognizes that people’s experiences of climate impacts are also influenced by factors beyond gender, and CARIAA has expanded on this, contributing new evidence from lived experience in Africa and Asia.

CARIAA sought to build on existing literature with new research that has allowed us to develop a deeper and more nuanced understanding of gendered vulnerabilities and other related topics. Some of the key insights that have emerged from this work are outlined below.

**Vulnerability comes in different forms**

Gender is one of many factors that influence how people are impacted by and respond to climate change (see Figure 1). A person’s vulnerability to the impacts of climate change depends on whether they are a man or a woman, young or old, and on social and cultural status. Policies need to be more sensitive to the gendered nature of everyday realities and experiences. Household relationships help determine whether and how one can—or cannot—respond to environmental pressures. CARIAA sought to recognize the diversity within and across households: the ways in which power is shared, the relationships that exist within them, and how these factors lead to particular risks, outcomes, and levels of wellbeing for different household members. For example, CARIAA evidence suggests:
In Kenya, gender, marital status, and household composition affect how people manage climate risks. In Ghana, cultural norms, marital status and education levels shape who is vulnerable. In India, young men who are poorly educated and lack access to land are among the most vulnerable.

Ultimately, adaptation strategies should enhance cooperation rather than conflict within households. It must also be recognized that women are not necessarily victims or powerless: they are often striving to diversify their livelihoods and increase their agency.

**WOMEN IN HOTSPOTS**

Research into the lived experience of vulnerable communities shows how climate change is pushing women into new roles and spaces, and changing household structures and relationships. These in turn shape the vulnerability of women and men to respond to risk and adapt to stress. CARIAA found evidence of new forms of cooperation between women and men (switching of tasks), a rise of multi-generational households (as women move in with female relatives), and increased asset and labor sharing with other households. Compared to men, women invest more in cooperation within and across kin groups. Vulnerabilities are not just related to sex, but also age, economic class, geographic location. The remoteness of climate hotspots limits access to markets and opportunities to diversify livelihoods. Position within a household also matters, as a youngest daughter or a daughter-in-law often has less power than a female head.

Research in hotspots revealed that adaptive strategies are affected by gender and other conditions, such as:

- In glacier-dependent basins, migration leads women to enter traditionally male roles, such as off-farm labour and commerce, requiring them to deal with moneylenders and government officials.
- In semi-arid lands, aspirations shift during drought, as households seek to leave pastoralism by investing in education for children to pursue work elsewhere and eventually look after parents. During rains, farmers instead seek opportunities to shift their agriculture practices to build resilience.
- In deltas, women-headed households are likely to move to new locations or construct storm shelters, while male-headed households are likely to take loans or modify homes.

**CHANGING AGENCY AND ADAPTIVE CAPACITY**

Climate stressors and socio-economic changes have increased the vulnerability of families in hotspots. CARIAA found evidence that climate stress dampens adaptive responses and negates women’s agency. Women do exercise agency for sheer survival, but this does not contribute substantively to developing longer-term adaptive strategies. Learning across multiple case studies in Africa and Asia suggests that women’s adaptive capacities are influenced by key conditions such as material assets, social relations (trust and reciprocity), and women’s working conditions. Analysis suggests that stressed environments, adverse working conditions, institutions (formal and informal), and poverty tend to limit women’s agency.

Young men are moving out of villages in search of alternative sources of income to cope with farm failure and poverty, or to access pastures for their livestock. Across hotspots, migration is often a distress response, as people can no longer thrive where they are. However, migration can improve overall household resilience. Evidence from Senegal and Tajikistan suggests that remittances have helped women develop entrepreneurial skills and to invest in micro agribusiness. Yet the benefits of remittances are seldom shared equitably by all members of the household.

When men migrate, women who remain behind not only face greater responsibilities for household and care, but added responsibilities for farming and ‘outside’ work that was hitherto the domain of men.
Increases in workload sometimes lead to feeling overwhelmed and stretched for time. Yet by being exposed to new roles, women also gain additional skills and negotiate public spaces. Women’s increased access to information and new networks can create additional sources of income, and at times increases their agency and voice. This, however, depends on the presence of adequate support mechanisms to reduce or redistribute women’s work burdens. For example, social networks and community groups help enhance the resilience of women-led small enterprises in Kenya and Senegal.

Men often remain in charge of decision making, whether as family members guiding how household farms operate or as officials in the institutions women must interact with. Given the aforementioned changing trends, there is an opportunity for public and private institutions, ranging from government to banking, to better recognize women as leaders at home and in the community. In addition to pushing towards recognition, women must be better equipped to handle their new roles. Efforts to strengthen the adaptive capacity of poor women and men need to move beyond stereotypes to think creatively about a range of resources and opportunities to exercise agency.

**ASSESSMENT AND IMPACT: CARIAA’S EXPERIENCE**

Beyond constituting a focus of research and action, the CARIAA initiative sought to incorporate gender and social equity throughout its work. This experience offers insights for broader adaptation research, planning, and practice, namely to reflect on what is done, how it is done, who does it, and what is achieved.

In terms of what is done, CARIAA assessed its research activities according to the extent to which they adopt an intersectional perspective, build on the most recent literature, address masculinities, generate disaggregated data, bridge across...
scales (from households to society), and mobilize appropriate research methods. These dimensions offer entry points for understanding how research addresses social difference, going beyond the simple spectrum of gender aware-to-transformative, to suggest how interventions and support mechanisms address the specific needs of the most vulnerable, empowering them to take decisions that can enhance their wellbeing.

In terms of how it is done, CARIAA incorporated gender in overall research design. Having sex-disaggregated data and gender-sensitive methods meant that insights emerged from areas where they otherwise would have remained invisible. For example, CARIAA conducted a survey of over 6000 households in river deltas (with male and female respondents), and more than 200 focus groups discussions in glacier-dependent basins to gather data on gender roles and responsibilities. Interrogating gender and social differences was not a stand-alone set of activities, but included in all research streams, leading to more robust and informative findings. A number of CARIAA researchers are convinced that this helped them to do better research.

In terms of who does it, CARIAA sought to build capacities and engagement across groups, including amongst researchers. A concerted effort was made to ensure participation of diverse groups in the research process. By 2018, peer-reviewed publications generated in CARIAA had involved over 300 authors, of whom more than one-third were women and two-thirds were affiliated with institutions in Africa and Asia. Moreover, IDRC nominated women scientists as IPCC authors and engaged the Global Commission on Adaptation to strengthen participation from Africa and Asia. CARIAA also provided training in researching gender, defined as going beyond the physical differentiation of the sexes to include other factors like caste or class, and looking at how these different groups experience environmental change differently.

In terms of what is achieved, CARIAA identified and engaged with relevant stakeholders to bridge policy demands with research evidence in diverse ways. In India, CARIAA research inputs to the Odisha State government were incorporated into the Action Plan on climate change 2018-2023, resulting in a separate chapter on gender. In Namibia, Kati-FM’s radio show brought public attention to gender and cultural norms that are preventing adaptation, and the ways men and women have adapted in response to climate change.
Capacity to adapt is determined by multiple factors including gender, age, ethnicity, class, and household structure. This intersectionality is less understood in climate and gender based research. In addition, vulnerabilities in the context of climate change are an interplay of external factors such as market forces, consumerism, urbanization, globalization, infrastructure development and technological intervention, and geopolitical-socioeconomic factors of social and gender structures.

Moving forward, research and policy must go beyond simple sex-disaggregated data, and strive to understand and address the root causes of vulnerability. Adaptation measures must address gendered issues on the ground in vulnerable communities since women and men have different roles and responsibilities and experience climate change differently. Proactive policy measures need to be framed and implemented to regulate access and safety of women in markets, financial transactions, and public spaces. In the future, adaptation that addresses gender and social inequities must:

**Challenge assumptions:** Gender is one of many factors that influence how people are impacted by climate change. How people experience and respond to risk varies depending on factors like age, ethnicity, gender and class. Elucidating such nuances requires evidence, to inform decisions about risk reduction strategies and adaptation options with data on who is most vulnerable, how people respond, and what needs to be done. Effective adaptation eschews universal solutions, and embraces the reality of specific peoples and places.

**Recognize women as leaders:** Gender relations are changing in terms of divisions of work and responsibilities across scales from the household and community to markets and the state. Beyond interventions to address practical needs, women’s economic and productive contributions must be recognized and supported, including access to credit and land. Proactive policy measures need to be framed and implemented to regulate access and safety of women in markets, financial transactions, and public spaces. Ultimately, if adaptation considers gender and other socio-cultural variables, it can better promote equality and help to improve people’s wellbeing.

**Address masculinities:** Foster cooperation between men and women, and avoid stereotypes of men as negligent or absent. Climate change is also pushing men into new roles and spaces, and new forms of cooperation are emerging regarding who is responsible for caring for family, earning income, and managing assets. Migration makes households more networked across different places, yet men can contribute to adaptation back home, supporting relatives and themselves as they face different risks and opportunities. Engage men in recognizing ways in which power is shared and their actions can enable greater resilience and wellbeing for different household members.

**Looking forward**
FURTHER READING

• ASSAR (2018) Gender infographics.
• DECCMA (2018) Climate change, migration and adaptation in deltas: Key findings from the DECCMA project.
• Gonda N (2017) Mid-term evaluation of gender and social inclusion in the CARIAA consortia.
WE NEED TO RETHINK HOW TO DEFINE ‘EFFECTIVE’ ADAPTATION, CONSIDERING WHO BENEFITS, WHEN IT IS NEEDED, AND HOW IT OCCURS.

Effectiveness depends on who benefits from adaptation and by whom is it done, when adaptation is needed and when benefits emerge, and how adaptation occurs (including enabling technologies and practices). CARIAA has amassed new insights on these three fundamental questions, based on the grounded experience of people and communities living in climate change hotspots.
Article four of the 2030 Agenda for Sustainable Development pledges “that no one will be left behind” and “to reach the furthest behind first”. Article seven of the Paris Agreement establishes a global goal on adaptation, calling for strengthened cooperation to identify effective adaptation practices. But there is limited agreement on what constitutes effective adaptation, due to a lack of clear methods, sources of evidence, and concepts (Tompkins et al 2018). Adaptations to coastal inundation in deltas, for example, comprise a different set of actions by different people and in response to different stresses, compared with adaptations to increased rainfall variability in semi-arid zones.

Access to climate financing inspires efforts to measure, report, and verify (UNEP 2017). Yet effectiveness cannot be judged solely by funders in terms of economic return, the dollar amount of income generated or loss avoided. Such decisions influence justice and social equity, including access to resources and funding availability, as well as the sustainability, flexibility and robustness of adaptation options. Effectiveness in climate hotspots in Africa and South Asia is tied to considerations of for and by whom, when, and how adaptation occurs.

While donors or national treasuries focus on cost effectiveness, people and communities focus on how adaptation contributes to a future they value: the results in terms of livelihoods, vulnerability, and equity.

**WHO ADAPTS AND BENEFITS**

Adaptation is intimately tied to considerations of social equity and justice. Like all regions, Africa and South Asia have a history of social difference where race, caste, gender, and other characteristics privilege some members and marginalize others. The burden of climate impacts, ranging from heat stress to water scarcity, falls disproportionately on those who are disadvantaged. Society shapes where people live, the risks they are exposed to, the material conditions at their disposal, and the power and capacity they have to create their future.

Adaptation needs are rooted in historical experience, and we need to be cognizant of the changing face of vulnerability. For example, limited and eroding livelihoods encourage male out-migration and increase the burden on women and girls, but also open opportunities for women to exercise greater agency and control over decisions and assets. Household structures influence wellbeing and the availability of adaptation choices, and these structures are shifting, with women and men renegotiating their roles, responsibilities and resource allocations.

People and communities judge adaptation partly by its effect on distributional and procedural justice, how actions enable people of different races, castes, genders and ages to realize dignity and a life they find meaningful.
WHEN TO ACT AND IMPLICATIONS OVER TIME

Individuals and communities make decisions about their future, and are more susceptible to climate impacts, at different moments. A drought or storm during sowing or harvest can be much more damaging than the same event at another time in the year. Similarly, past shocks accumulate over time to erode adaptive capacity and increase vulnerability. Yet communities can also envision and pursue the future they want, supported by scenario planning and adaptation pathways that anticipate and navigate among alternatives. While adaptation often focuses on what to do to respond to climate impacts, such approaches draw on future thinking and risk management, to focus on when outcomes of adaptation actions emerge over time.

The concepts of critical moments and turning points examine the effectiveness of adaptation over time. Critical moments are when households and livelihoods are especially vulnerable. The timing and frequency of extreme climate impacts, such as heat waves and floods, can matter more than the average change in temperature or rainfall. For example, communities along the Soan River in Pakistan rely on rainfall in December for germinating wheat crops and are vulnerable in April when water is scarce.

Turning points describe when climate change impacts exceed a certain threshold, inducing policy failure or unacceptable change. For example, when might wheat yields in the Indus valley diminish due to heat stress?

To test these concepts, CARIAA researchers traced the history of how villages had responded to stress over time. Their experience shows that critical moments are not fixed: shocks in one year can affect susceptibility in future years, and slow-onset stress does not emerge at a single point in time.

CARIAA research also examined how African small and medium-sized enterprises respond to climate risks, finding that repeated exposure to extreme events was associated with a higher likelihood of response. Adaptation tended to enhance the business after one or two events, such as accessing loans or insurance, and switching crops or commodities. Yet repeated climate stressors tended to erode the business, triggering the sale of assets and reducing the number of employees. In this regard, the experience of African business shares a feature with Asian communities: namely, that a cascade of critical moments experienced over time can surpass the limits of adaptation. Lives and livelihoods are more vulnerable after floods disrupt agriculture, communication, value chains, and sanitation.

Transformative scenario planning in West Africa, India, and southern Africa brought together diverse and influential actors to reflect on their situation and work together for change. Scenarios are stories about potential futures: what could happen—created collectively as a step towards building trust and collective action. In East Africa, participatory scenario analysis sought to engage hard-to-reach populations traditionally excluded from decision making, to understand who stands to gain and lose from adaptation options, before engaging local and national governments to identify equitable responses. In India and southern Africa, scenarios involved landless poor and farmer movements, and used local languages. Participants challenged their perspectives and considered ways communities could exercise their agency to achieve desirable futures for land use, agriculture, and access to water. In Mali, communities developed proposals for local adaptation grants towards improving farmer access to seed and income opportunities for young women.
HOW ADAPTATION OCCURS

Three sets of adaptation technologies were refined and piloted by CARIAA. In Pakistan, smallholder farmers switched from diesel fuel and flood irrigation, to solar-powered water pumps and a package of techniques including drip irrigation, multi-cropping, kitchen gardens, and tunnel farming. The result was improved crop productivity and better use of scarce water, and the approach is being scaled by the government to reach 30,000 farmers. In Bangladesh and India, flood-resistant housing and eco-san toilets have raised floors or platforms that allow people to stay dry above rising waters. In Pakistan and India, research examined how people are exposed to heat stress in rural and urban settings, and collected original data using mobile sensors. Different roofing materials were tested, including novel modular roofing panels in Sawda Ghevra outside New Delhi, and were found to lower indoor temperatures compared to corrugated roofs.

Work on African small- and medium-sized enterprises identified distinct adaptation strategies, including adjustments in finance, capacity, and production. Financial adjustments include getting a loan or mortgaging assets; capacity adjustments include sale of assets; and production adjustments include introducing a new commodity or crop. At the same time, the policy environment shapes the ability of firms to respond to climate risks. Financial barriers and insufficient market access increase the probability of business contraction, while access to information, government support and specific adaptation assistance all increase the probability of sustainable adaptation.

Novel evidence on the enablers of and barriers to adaptation confirms that the opportunities to adapt are limited by factors such as meagre size of landholdings (too small to warrant investing in adaptation), lack of irrigation and water infrastructure, climate and weather information that is poorly-timed or packaged, weak capacity in local government, and isolation of climate from the rest of the government apparatus. There are differences in the access that female-headed and male-headed households have to what they deem to be successful adaptations.
In South Asia, barriers to adaptation include remoteness of vulnerable communities, caste discrimination, water stress, and lack of income and livelihood diversity. Rather than merely listing barriers, it is key to identify ways of addressing them that permit interventions to secure better outcomes. At the same time, what is good adaptation in one place, can be maladaptation elsewhere, such as when upstream conservation of water leads to scarcity downstream. Factors that enable adaptation in hotspots include secure land tenure, access to markets and urban centres, access to information and social networks, and social protection schemes.

**LOOKING FORWARD**

Under the Paris Agreement, the goal on adaptation (Article 7) and preparations for a global stock-take (Article 14) are stimulating efforts to assess and report on progress. It is tempting to simply use existing tools for tracking investment or mitigation, yet people and communities living in hotspots focus on who adapts and benefits, when to act and implications over time, and how adaptation occurs.

**Who adapts and benefits:** Adaptation must contribute to social equity and justice. In prioritizing research and investment, it is essential to enhance the ability of communities, local organisations and governments to adapt to climate change in a way that minimizes vulnerability and promotes long-term resilience.

**When to act and implications over time:** Histories and futures vary between communities, and point to a need to consider how the implications of adaptation unfold over time, as well as a need for research that connects basin-wide modelling with household perception surveys.

**How adaptation occurs:** There are opportunities to refine and scale technologies and practice grounded in the reality of people living in hotspots. There is also a continued need to integrate climate into development plans and investment decisions, such as building roads in ways that conserve water courses, and ensuring irrigation districts will still be viable in 40 years.

There is a reason that adaptation is part of the Sustainable Development Goal 1 (No Poverty). Target 1.5 is to build the resilience of the poor and reduce their exposure and vulnerability to climate-related extreme events. Twenty years ago, the 1998 Nobel Prize in Economics recognized poverty as lack of capabilities, rather than merely counting income. As part of eradicating extreme poverty by 2030, ease of measurement cannot be our sole consideration of the effectiveness of adaptation.
FURTHER READING

- Tompkins et al. (2018) Documenting the state of adaptation for the global stocktake of the Paris Agreement. WIREs Climate Change. (doi:10.1002/wcc.545)
Researchers, practitioners and donors need to integrate flexibility and learning into programming in order to pursue research for impact.

Research for impact is about seeking opportunities for research to create positive change in the face of complex sustainability challenges. There are no easy steps toward achieving impact: It is about working with people, building long-term relationships, and accepting that achieving research impact will be an unfolding journey that takes time. There are no ‘solutions’ to the challenge of how to pursue research for impact. However, there are ways of working collaboratively that effectively support climate change adaptation, where the goal is often to influence both policy and practice. Reflexive ways of working that hold flexibility and learning as core principles for practice are critical for achieving research for impact. Truly internalising these principles has significant implications for donors, researchers and practitioners.
From the pioneers of action research in the 1990s, to social learning and transdisciplinary approaches more recently, researchers long ago abandoned the idea of themselves as passive observers and documenters of environmental and social change.

- Action research methodologies significantly built our understanding of stakeholder engagement and have been effective in generating buy-in and empowering participants at community scales.
- As complex environmental challenges such as climate change became more prominent over the past twenty years, a growing body of scholarship on social learning emerged. Here the intention has been to support collective action and ensure that learning moves across scales through facilitated processes of knowledge co-production, experimentation, and reflection.

Throughout these shifts, multiple knowledge systems and ways of knowing have been forced into conversation, fundamentally challenging traditional notions of disciplinary rigour, objectivity and ‘truth’. Transdisciplinarity has emerged as a philosophical position and emerging practice that encourages problem-oriented research in service to society. Transdisciplinary approaches involve co-production processes between researchers, practitioners and other societal actors, with the explicit intention of generating research impact or a positive change in the world.

Although the imperative of research for impact has existed for some time, neither action research, nor social learning, nor transdisciplinarity offer easy recipes for how to practically pursue it. Learning in CARIAA has offered insight into effective ways of pursuing research for impact.

To facilitate impact a variety of activities must be pursued simultaneously

Research for impact includes the following interrelated activities (see Figure 1 below):

- Capacity building of both researchers and research users
- Stakeholder engagement that is long-term, sustained, needs-focussed and strategic

- Generating credible, relevant and contextualised evidence, often through knowledge co-production with potential users of the research
- Building of strategic partnerships with practitioners and other actors who can support the development and uptake of contextualised knowledge
- Research communication that is targeted, accessible and appropriate in form
- Reflective monitoring that is intended to improve practices in all of the previous related areas of work
Purposeful and Long-term Learning is Central to Achieving Research Impact

Learning cycles that create ongoing opportunities for reflection and sharing experiences are fundamental to both responding to evolving opportunities for impact, and embedding learning within larger networks of practice. To achieve this, it is important to create opportunities for a shared repertoire of language, approaches and activities to emerge. In other words, to create opportunities for a community of practice to develop. In CARIAA we achieved this by creating face-to-face learning opportunities every 6 months, co-developing a common framework of what we understood the key practices necessary for research impact to be, and by developing (with outside support) a shared learning framework for reflection on successes and failures at project level.

Figure 2 presents the shared practices co-identified by the group involved. These practices offered the substance for much of the reflection and learning about research for impact in the program. Each consortium placed different levels of emphasis on each of these practices as they pursued research for impact, but because they had a shared language, it was possible to share learning in ways that were understandable to all involved. Through implementing these activities and reflecting on the outcomes, we have developed a number of insights about approaches that support impact.

It is Essential to Move Beyond Stakeholder Engagement

Too often, research teams consider stakeholder engagement as their approach to research for impact. Stakeholder engagement is important, but it is only one of many strategies that can support impact. The goal should be building relationships and trust with stakeholders, and that might require flexible combinations of activities such as capacity building, communications and partnerships to achieve.

In Nepal and Pakistan, for example, research teams learned the importance of being open to offering capacity building to stakeholders, often on topics that were not part of their stakeholder engagement plans. This kind of flexibility and responsiveness has been key to strategic partnerships and deeper impact.

In the case of the HI-AWARE (Himalayan Adaptation, Water and Resilience on Glacier and Snowpack Dependent River Basins for Improving Livelihoods) consortium, initial engagement with Nepalese leaders in the national adaptation planning process, revealed that capacity building was needed to support the country in its efforts to develop a National Adaptation Plan. Therefore, although the research team had originally intended to engage these leaders on the project’s specific research findings, they changed direction and offered a certified course on climate change adaptation for those involved in the development of the National Adaptation Plan. This resulted in sustained relationships with key stakeholders, and in HI-AWARE data on observed climate trends in Nepal being used to inform the National Adaptation Plan reports, launched in February 2018.

Similarly, in Pakistan, outcome mapping approaches adopted by the PRISE (Pathways to Resilience in Semi-arid Economies) consortium indicated that despite heavy
investments to engage parliamentarians on climate issues emanating from the research project, the impact was limited. Based on these findings, the team changed direction and offered capacity building to parliamentarians to increase their understanding of key basic climate change and adaptation concepts. This led to a tangible increase in engagement and enabled PRISE’s evidence-based policy recommendations to be shared in high-level national and international fora and policy documents.

A clear vision of the desired impact is essential, but must be paired with flexibility

Flexibility and a willingness to deviate from carefully laid (and budgeted for) plans has been a feature of all successful research for impact efforts in CARIAA.

In the case of PRISE, flexibility was pursued through a demand-driven approach, which strengthened the commitment of key decision makers in seven study areas by responding to identified (existing) policy issues. The use of outcome mapping led to an iterative process and allowed projects to deal with increasing interest from stakeholders, recognizing the impact of their activities and adapt to changes in the political contexts in which they worked. Overall, the outcome mapping approach enabled PRISE to see that their initial impact plan was not useful, and their willingness to change direction lead to much greater opportunity for impact.

In Senegal, for example, where the intention was to influence the private sector and enhance key actors’ ability to integrate climate resilience into businesses plans, PRISE originally targeted larger multinational organisations, which were deemed to have greatest leverage for change. However, it became apparent that these organisations were showing little interest or willingness to engage with PRISE research, and the team concluded that these were not strategic entry points to influence change. The engagement strategy therefore shifted substantially to focus on small and medium enterprises (SMEs). The result has been growing demand from SMEs and government agencies working with the private sector for information and support.
The DECCMA (Deltas, vulnerability and Climate Change: Migration and Adaptation) consortium was able to capitalise on two unexpected opportunities to inform policy in Ghana and India. In Ghana, the parliamentarian heading the National Expert Advisory Group, who is also a member of the Parliamentary Committee on Science, Environment and Technology, intervened during the development of the Coastal Authority Development Bill to ensure that a representative of academia is included on the board. In the Mahanadi delta in India the DECCMA team responded to calls for inputs to the draft Odisha Action Plan on Climate Change 2018-23 (the only research institution to do so) and, as a result of their inputs, the plan contains a chapter on gender. Neither opportunity could have been foreseen at the start of the project.

In almost all cases of successful impact, the ASSAR (Adaptation at Scale in Semi-arid Regions) consortium has had to be flexible and responsive to unexpected demands for their inputs from stakeholders. For example, in Botswana, the government invited the project team to contribute toward the country’s national drought management strategy by developing a guidance paper for them. This required time and resources to be diverted from other planned activities and devoted to this opportunity for impact. Also in Botswana, ASSAR sub-district level work on contextualising adaptation challenges and using these findings to inform development planning led to a request to offer much larger scale training for economic and development planners at the national level. Responding to this request, and the opportunity for impact that it represented, required significant changes to work plans, and budgets. While research institutions were less interested in offering such training, practitioner partners drove the process forward, highlighting the importance of these kinds of partnerships in research for impact.

**PROFESSIONAL COMMUNICATIONS AND ATTENTION TO BRAND RECOGNITION CAN IMPROVE THE CHANCES OF RESEARCH UPTAKE FOR LARGE-SCALE PROJECTS**

Professional science communication can be a powerful tool to assist research teams in their efforts to achieve impact. In most cases, consortia
While we tend to think that capacity building as part of a research for impact plan is aimed at the users of the knowledge that will be produced through a project, our experience is that capacity building for researchers themselves is critical to achieving impact.

Shifting researchers’ mindsets through training in stakeholder engagement techniques, power analysis or advocacy and influencing, as well as ongoing mentorship, was critical. Researchers in ASSAR, HI-AWARE and DECCMA identified new ways of thinking about impact, communications and the benefits of their research as among the highlights of their involvement in the CARIAA program. In ASSAR, the close interactions between researchers and practitioners led to shifts in research approaches, the priority given to the policy and practice implications of the findings, and the importance accorded to communicating results.

Building the capacity of researchers to pursue research uptake is just as important as capacity building for knowledge users.

Prioritising flexibility and learning has significant implications for funders and researcher-practitioner teams alike.

• Funders need to support research teams to be responsive to their growing understanding of the context, and the leverage points for change, by building flexibility into grant agreements.

• Researchers and practitioners need diversified teams where the skills needed to both identify opportunities for impact, and to support learning and reflection, are present. Opportunities for reflection and course adjustment must be budgeted for at the outset of a project, as should flexible funds that allow teams to mobilise swiftly in response to opportunities for impact.

• In large programs that involve multiple partners working in diverse contexts, it is important to create opportunities for a dedicated group of research for impact leaders to emerge. Regular face-to-face engagements, and a common language and set of practices, are key to succeeding in this.

In addition to the above, as we move toward research for impact quite generally, the issue of gender deserves closer scrutiny. Some questions we don’t yet have the answers to, but that we hope others will explore in the future, include how the gender of researchers influences the kinds of relationships that they are able to forge in the pursuit of impact, and how women researchers and practitioners can be supported to pursue impact in patriarchal contexts.

Looking forward
REFERENCES + FURTHER READING


