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TECHNICAL REPORT

PATHWAYS TO PEACE SERIES: ADDRESSING CONFLICT AND  
STRENGTHENING STABILITY IN A CHANGING CLIMATE

AN ASSESSMENT OF MELLIT AND UMM KEDDADA  
LOCALITIES IN NORTH DARFUR STATE, SUDAN



August 2019

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Cover Photo: AECOM/Fashir Project Office. Women from Abu Homeira and Armal villages receiving agricultural inputs and tools.

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Prepared for:

United States Agency for International Development  
Adaptation Thought Leadership and Assessments (ATLAS)

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# ACRONYMS

IDP	Internally Displaced Person
LPG	Liquidified Petroleum Gas
NAP	National Adaptation Plan
NAPA	Sudan National Adaptation Programme of Action
TEPS	Toward Enduring Peace in Sudan
UNEP	United Nations Environment Programme
UPO	United Peace Organization
USAID	United States Agency for International Development

# GLOSSARY

<i>Ajaweed</i>	Respected elders and traditional leaders, often part of the socioeconomic elite
<i>Dar</i>	Homeland
<i>Diyya</i>	Blood payment
<i>Hafir</i>	Earth excavation, traditionally used for harvesting and storing rainwater in cisterns for the drinking of humans and animals; widely recognized and used on the rain lands of Sudan away from the Nile and its tributaries
<i>Hakura</i>	A customary method of land allocation established during the Fur Sultanate in the 1500s, wherein the individual rights to land given to the tribes were recognized and remained under the ownership of the tribe
<i>Jubraka</i>	Traditional home gardens, commonly located around or adjacent to one's home; usually managed by women, they produce quick-maturing crop varieties
<i>Kantar</i>	A widespread Arabic unit of mass, approximately equal to 99 pounds (45 kilograms)
<i>Kulkab</i>	Farm boundaries
<i>Mukhamas</i>	A unit of measure for land; one mukhamas is equivalent to approximately 1.25 acres
<i>Native Administration</i>	System of government through local authorities in concert with the central government, established by the British administration
<i>Omdas</i>	Head of tribal subsections or segments; one of the middle-tier leaders of the Native Administration
<i>Sheikhs</i>	Village headmen; the lowest level of the Native Administration leadership structure
<i>Urf</i>	Traditions
<i>Wadi</i>	A valley, ravine or channel that is dry except in the rainy season

# EXECUTIVE SUMMARY

Present-day Sudan experiences four major challenges: 1) weak governance; 2) local-level conflicts; 3) deep poverty; and 4) severe land degradation and vulnerability to climate change. These challenges have combined to create an environment characterized by human insecurity and polarization along political, ethnic, religious and geographic lines. Sudan ranks 167 out of 189 countries and territories on the 2017 Human Development Index and hosts one of the largest concentrations of internally displaced persons (IDPs) in the world. The situation is particularly bleak in Darfur, where recent decades of conflict have made humanitarian support the primary intervention of national and international actors.

The one-year pilot “Improving Community Resilience in the Face of Conflicts and Environmental Shocks: Mellit and Umm Keddada Localities in North Darfur State” was implemented within this context. The pilot was carried out from July 2017 to July 2018 under the Toward Enduring Peace in Sudan (TEPS) pilot funded by the United States Agency for International Development (USAID). With a focus on two village clusters situated in the Mellit and Umm Keddada localities—Armal and Abu Homeira—the pilot carried out a variety of climate change adaptation interventions designed to increase community resilience, enhance livelihood strategies, reduce local conflicts and improve natural resource management capacity.

This study analyzes the early results and lessons learned from the adaptation interventions undertaken in response to climate risks and related conflict dynamics. The assessment was based on primary qualitative data collected through direct field work in the two target areas and supported by secondary data from available sources. The assessment was grounded in a participatory consultative process using data collection tools that included group interviews, focused discussions on specific topics and key informant interviews.

## BACKGROUND

Sudan is a large, arid country (nearly one-fifth the size of the United States) with low rainfall and frequent drought. Around 60 percent of Sudan’s total area is desert and semi-desert. The impacts of climate change, including greater climate variability and more frequent and intense droughts, are evident and felt widely in the country. Sudan’s National Adaptation Plan (NAP), the country’s strategic framework to address climate change adaptation priorities, estimates that 60–70 percent of the country’s population face high vulnerability to climate change. Most of the country’s 40 million people live in rural areas and pursue climate-sensitive livelihoods centered on small-scale crop farming and pastoralism.

Sudan entered the twenty-first century mired in deep conflicts and related threats to human security. Most of the country’s conflicts are linked to land and natural resources, involving pastoralists and farmers and disputes over land, water, grazing areas and forest resources. They also include competition within and between tribal groups over community boundaries, mining resources and livestock routes. These conflicts can range in intensity from ad hoc,

occasional skirmishes to large-scale violent conflicts between entire population groups. The conflicts are deeply rooted in overlapping, inconsistent legal frameworks related to land tenure; uneven access to land and natural resources; diffuse and ill-defined local governance arrangements; and weak institutions. This complex landscape of governing regimes is characterized by the encroachment of the central government on the powers of the subnational government units. Climate impacts have intensified these structural problems. The situation is particularly difficult in Darfur, where decades of conflict have destroyed key components of development and administration.

While the most violent manifestations of conflict have been largely confined to western Darfur, virtually the entire population of Darfur has been directly or indirectly affected by conflict. Livelihood options are extremely limited, and the strategies pursued and adopted remain insufficient to meet basic needs. Approximately one-third of the population of Darfur have received some form of food aid for the past decade. The delivery of basic services such as water has been severely constrained by insecurity and the weakness of service institutions. Years of protracted conflict have contributed to the fragmentation of Darfur's population along ethnic, tribal and political divides.

The Mellit and Umm Keddada localities, situated within North Darfur State, are culturally diverse. The total population of the two targeted clusters of the pilot, Armal and Abu Homeira, was 26,144 persons in 2017, with around one-half of the population under the age of 17. Social services at the village level in the two clusters are minimal, with water supply the most limited resource. The two localities reside within a fragile ecosystem where natural resources are sparse and seasonally distributed. Land degradation is a serious problem. Land tenure is based on the customary regime of the *hakura* system established during the Fur Sultanate in the sixteenth century. In this system, the Native Administration is the custodian of land, entrusted with the administration of land and the resolution of related conflicts. Access to grazing land and forests is a common right. One notable exception to this system is the status of gum arabic trees, which provide supplementary livelihood opportunities and are privately owned.

The population of the two localities is fully sedentary and their livelihoods depend on a mix of traditional, rainfed crop farming and animal husbandry. Millet constitutes the staple food; other crops grown are sorghum, watermelon, hibiscus and cowpeas. The area cultivated by the nuclear family is generally small (5–9 *mukhamas*, where one *mukhamas* is equivalent to approximately 1.25 acres of land). Because of the very low crop yield (180–270 kilograms per *mukhamas*), people cultivate the land continuously to compensate for declining yields and incomes, therefore adding to the problem of land degradation. Women play a key role in agriculture, accounting for approximately 60 percent of the total labor force in the sector. Livestock are raised as an integral part of the farming system.

The agropastoral system of the two clusters is supported by a wide range of supplementary activities that provide additional sources of income while contributing to food security. Such activities include collection and sale of firewood, production and sale of charcoal, collection and sale of edible wild fruits, petty trade in weekly rural markets, casual labor in nearby towns, and

seasonal migration of youth to work in agricultural harvests. The completion of the paved road linking El Fashir to Khartoum has significantly increased economic opportunities, particularly for women, including boosting growth for small businesses along the road.

Conflict in the two localities is of low intensity compared to tribal confrontations in other parts of Darfur. The only exception is the Berti-Zyadia conflict of 2014–2015, which originated in disagreements over the demarcation of territorial tribal land. In this instance, the Zyadia tribe began transitioning from nomadic to sedentary farming-based livelihoods. An alliance with the central government facilitated the settling of land by the Zyadia beyond their traditional holding. This unequal allocation of public resources and support upset the balance of power and historical coexistence with the Berti tribe who were the dominant landowners within the locality. Differing tenure structures (traditional customary versus inherited) and valuation further complicated ownership claims, creating challenges for the reconciliation of disputes. This conflict is illustrative of the dominant types of conflict between the two localities, which are often resource-based and involve tensions among farmers over farm boundaries. Other types of conflict include disputes over water resources, animal thefts and crop damage. The absence of livestock routes in the area limits the presence of pastoralists and farmer–herder conflicts in the two localities.

#### **PILOT OBJECTIVES, ACTIVITIES AND ACHIEVEMENTS**

Climate variability and change pose risks to traditional livelihoods by altering the quantity and quality of water, range and tree cover within the localities. Increasing temperatures, modified precipitation patterns and drought are among the stressors contributing to conflict within the target communities. These climate risks are significantly undercutting livelihoods and reducing economic growth potential.

Beginning in the third year of implementation of the TEPS project, a series of adaptation options and interventions were introduced as a pilot program designed to reduce or eliminate the adverse impacts of these climate risks by lessening the intensity of competition for scarce natural resources and of conflict between stakeholder groups. To further detail the objectives of the pilot, the following theory of change was compiled from the activity's broader theory of change narrative:

***IF** communal capacity to manage and maintain valuable natural resources, such as water, is improved, and **IF** resource management is achieved in a collaborative and inclusive manner across various groups including, nomadic herders, sedentary farmers, women, and youth, to ultimately build intercommunal trust and create a network around the use of natural resources, **THEN** the likelihood of conflict over natural resources will be reduced as intercommunal relations are normalized and resource management is sustainable.*

To achieve these objectives, the pilot sought to address three immediate priorities to reduce conflict and improve adaptive capacity among target communities by: 1) strengthening peacebuilding capacities at the local level, with a focus on engagement of women and youth; 2)

improving natural resource management to reduce friction between users; and 3) increasing resilience of food production systems and food security in support of livelihoods and coexistence. Out of the direct target of 9,346 persons, 5,966 persons (63.7 percent) were approached and directly participated in the TEPS project, including a representative mix of men, women and youth. The gender distribution was nearly balanced, with women representing 47 percent of the participants. An additional 20,853 persons, including mobile pastoralists, indirectly benefited from the pilot, especially through interventions in water resources. Under the pilot, an overarching community peace structure or “Higher Committee” was established, with specialized subcommittees for peace, water, rangelands and forest, microfinance, women and youth. Twelve exchange visits took place between village clusters, and TEPS conducted intercommunity dialogue sessions that made use of mobile theater and drama shows at the village level. Two youth centers, powered by solar units, were constructed and equipped with TV sets. Two open performance days, featuring mobile theater and drama shows, were attended by more than 5,000 persons.



Youth training on microfinance and small enterprises. (Picture taken by Omer Egemi, August 2018)

Through a series of focused training events for women and youth, local leaders, farmers, pastoralists and the specialized committees, the pilot provided capacity building in peacebuilding, climate change adaptation, natural resource management and microfinance. Training on microfinance was attended by 56 youth, both male and female. Women and youth were trained on the use of liquified petroleum gas (LPG) and efficient cook stoves and the production of stabilized sand blocks as alternative building materials.

In supporting climate change resilience, drought-tolerant crop varieties (millet, sorghum, cowpeas, melon seeds, okra) and improved agricultural implements were distributed, benefiting a total of 4,989 households. Beneficiaries were also trained on climate-smart husbandry practices. In addition, two water points were rehabilitated. In the Armal cluster an *ahafir* or water reservoir was restored; in Abu Homeira cluster, a water yard (which functions as a tower with several elevated reservoir tanks pumped directly from nearby water points) was renovated. As of November 2018, both continue to be functional. Abu Homeira’s water yard was equipped with solar units to run the pump. Annexed to the water yard is a nursery where around 10,000 seedlings of indigenous acacia trees, including *Acacia senegal* (gum arabic tree), were transplanted and the seeds of climate-resilient crop species distributed.

## PILOT IMPACTS, SUSTAINABILITY AND LIMITATIONS

The pilot is recognized and described by all stakeholders and partners as highly relevant to the two targeted localities, which have been seriously affected by drought, land degradation and economic losses since the mid-1980s. The two localities—in part because they have not been directly embroiled in the Darfur conflict—have been largely neglected by both national and international actors. The pilot interventions, therefore, addressed fundamental needs. These

interventions have proven relevant to the ecological and social contexts of the two targeted localities, while also being consistent with the Government of Sudan's priorities for climate change adaptation as specified in the 2016 NAP and the priorities of the 2013–2019 Darfur Development Strategy.

Despite the short, one-year duration of the pilot and the fact that the pilot began midway through the rainy season which saw significantly heavy rains initially, followed by a period of drought, the contribution of the pilot to improved resilience to climate change and environmental and economic shocks was appreciated by the target communities and pilot partners, including local government authorities. An emphasis on improved integration of all groups within the community modified traditional power structures by giving voice to previously underrepresented groups and providing a platform for increased participation in conflict prevention and reduction. Key contributions to reduced conflict and improved social resilience as stated by informants included:

- Community empowerment through investment in the organization, orientation, mobilization and participation of communities. This included the peace committees structured to ensure fair and comprehensive representation of all groups within the community, providing harmony and increased social cohesion.
- Empowerment of women through their engagement as active participants in all pilot interventions, including their representation in the “Higher Committees” as well as specialized committees.
- Empowerment of women through improved economic opportunities and training. Women established their own revolving fund groups, while investment in potable water sources and LPG for cooking significantly reduced their labor burden. The provision of climate-resilient seed varieties and agricultural implements improved women's productivity, and training opportunities made a significant difference in women's lives by breaking the historical isolation under which they have lived.
- Enhancement of the role of youth in community life, as the pilot effectively and successfully managed to engage youth to emphasize their positive role in the community, adding to their visibility, recognition and overall participation in community activities.
- Modernization and democratization of peace and conflict management institutions by the inclusion of youth in institutions that had historically been the exclusive domain of tribal leaders and the *Ajaweed* (elders and traditional leaders).
- Reshaping of local power structures, as through the increased presence and participation of women and youth in the committees, local power structures were diversified.

Technical advances that strengthened climate resilience included:

- Improved supplies of drinking water through rehabilitation of the two water sources at Armal and Abu Homeira clusters, with impacts extending to thousands of people in neighboring villages as well as mobile pastoralists.

- Enhanced resilience to climate change and economic shocks, including the substantial production of watermelon seeds using a drought-resistant variety in Abu Homeira introduced through the pilot, which contributed significantly to economic resilience. Economic savings also resulted from the use of LPG stoves.
- Innovation in energy, as the introduction of the solar energy system to operate the water tank in the water yard in Abu Homeira and the two youth centers in Armal and Abu Homeira was praised by both communities as well as authorities in the Water Corporation as an important innovation.

The brevity of the pilot does, however, raise questions about sustainability, which is likely to vary according to the nature of the interventions.

For example, gender empowerment is clearly one area the pilot should be proud of. The changes that have taken place, including the engagement of women in key discussions and playing important roles in decision making, are very visible. Women's revolving fund groups provide concrete evidence of how women are committed and empowered agents of change within their communities. Such an investment will not be lost, but the challenge is how to consolidate, sustain and scale up the momentum generated by the pilot.

Youth are enthusiastic and actively engaged in the pilot activities and the two established youth centers have become instrumental as public spaces. However, the lack of resources will constrain their full operation. Some possibilities exist for the generation of new resources, including stabilized sand block machines that have not been made fully operational yet.

The established Higher Committees are active in resolving day-to-day community problems and conflicts at the village level, but they have no capacity or legitimacy to resolve larger tribal and intragroup conflicts. Because of that, their presence will continue to be overshadowed by the indigenous tribal institutions. To fully realize and promote the democratization process initiated by the pilot, continued support to these new mechanisms is required.

The rehabilitated water sources are providing recognizable support to communities and are therefore fully owned, well-guarded and cared for by the communities. As a result, it is likely that these sources will be sustained.

Similarly, the climate change resilience interventions (e.g., climate-resilient seed distribution) proved relevant and adoption rates were high. The economic and social gains generated from these activities were considerable and encouraging to the people in each community.

The pilot was also characterized by several limitations. First was its short duration as a one-year pilot, limiting the activities both in duration and scale. These limitations precluded the incorporation of early results to improve the effectiveness of the interventions, and in turn, increase the number of potential beneficiaries. Second, the pilot did not begin implementation until late in the rainy season (mid-August), which prevented farmers from benefiting from the early rains. The need for farmers to attend to their crops during this period, as well as

inaccessibility of roads during the rain, further constrained participation by beneficiaries. Third, the pilot design did not address the impact of external governance factors that generate vulnerability and reduce resilience to drought and climate change. Rather it focused on the role and capacity of communities to prevent and address the conflict dynamics that are undercutting resilience at the local level. The important national policy and institutional aspects of vulnerability, while critical contributors to resilience and conflict prevention, are beyond the scope of this pilot. Although many national and international actors in Sudan are focused on related climate change issues, pilot partnerships were limited to the two TEPS project implementing partners.

Finally, it was noted during the fieldwork for this assessment that residents of Abu Homeira village historically constitute the powerful elites of the pilot area, and therefore dominate other members in the Higher Committee. For example, they received over 80 percent of the LPG stoves distributed. This type of outcome appears to be the result of a lack of close monitoring and effective management and supervision of the interventions.

## LESSONS LEARNED AND CONCLUSIONS

- *Implementation timing is critical.* In North Darfur, where rainfall is erratic and the rainy season is very short, it is of paramount importance to time the start of weather-sensitive interventions with ample time ahead of the rainy season.
- *Climate change adaptation and peacebuilding need to be advanced in the context of community dynamics.* The pilot demonstrated that in rural areas where the majority of the population depends directly on the land, recognizing and explicitly targeting the links between natural resource management, livelihood security and peacebuilding is essential. Communities can be brought together through cooperative processes that reduce social and political tensions by establishing a general sense of shared interests, while addressing priority livelihood issues.
- *Gender-based challenges and solutions should be prioritized.* By actively engaging women, the pilot successfully challenged the stereotypes of the cultural trap whereby the subordination of women is the accepted norm and that norm is highly resistant to change.
- *Community priorities must be solicited and addressed.* Pilot interventions in water resources were the communities' top priority. The success of those interventions demonstrated that the process of socioeconomic transformation and livelihood security can be advanced if planned interventions align with and address the priorities of communities.
- *Innovative programming pays dividends.* Promoting and scaling up solar energy innovation has the potential to significantly improve and transform rural livelihood conditions by serving as an alternative to high-cost fuel, supplementing energy needs, and reducing the burden and environmental impact of wood collection.
- *Actively engaging local community members has multiple benefits.* Given farmers' and pastoralists' direct contact with the land and its natural resources, actively engaging rural community members often leads to solutions that better address community needs and are more sustainable.

- *Target communities can be empowered to take initiative.* Although “dependency syndrome” has become a factor in parts of Darfur where long-term humanitarian operations are entrenched, the pilot communities demonstrated strong willingness and preparedness to contribute to activities intended to address their priority needs.
- *Activities must be designed in alignment with community needs and government policies.* The pilot demonstrated strong relevance to the ecological and social context of the two targeted clusters and were aligned with the Government of Sudan’s priority policy agenda for climate change adaptation.
- *Even pilot activities need ample time to demonstrate sustainable results.* A one-year pilot is realistic for some intervention types, but those focused on the annual agricultural cycle likely require at least two full cycles (e.g., two years) to demonstrate sustainable solutions that can be scaled. This one-year pilot, however, was negatively impacted by two factors: 1) its late start toward the end of the rainy season, and 2) the drought.

Despite the short, one-year duration of the pilot and its implementation during a drought year, the contribution of the pilot to improved resilience to climate change and enhanced quality of life was recognized and appreciated by the communities and pilot partners, including relevant local- and state-level government actors.

## RECOMMENDATIONS

1. For weather-sensitive interventions, future activities must begin well in advance of the rainy season. This is critical for limited-duration pilots.
2. Given that many of the interventions implemented were significantly constrained by limited rain, it is strongly recommended that this pilot be extended for at least one additional year. Significant work was started but is still unfinished. Some interventions, especially climate resilience interventions, need to be consolidated and scaled up.
3. Clearly defined investment in good governance and leadership activities for community leaders, women and youth is urgently needed. The apparent domination of Abu Homeira village over other communities in the pilot area led to perceived inequity of resource distribution.
4. Women in the two clusters benefited greatly from the pilot, but more investment is needed in women’s capacity and productive skills.
5. Continued investment in the capacities of the Higher Committees and the specialized committees should be ensured. The creation of these committees is an important step toward day-to-day local conflict resolution.
6. Youth in the two localities, like other youth in Darfur, face the serious problem of unemployment. Focused and targeted intensive training on production skills, for both males and females, is strongly recommended.
7. Support for home gardens (*jubraka*) should be expanded and diversified as a key intervention increasing household livelihood resilience in a variable climate, including a

focus on creating economic opportunities for women and testing other climate- and drought-resilient, quick-maturing crop varieties.

8. Implementation of the pilot's chicken breeding intervention using local chicken breeds should be supported.
9. Support for a landscape approach to "agroforestry" should be explored, as it is an important measure to combat the effects of climate change. The cultivation of drought-resistant trees in the nursery adjacent to the water yard in El Fashir and the broadcasting of drought-resistant seeds into the rangelands undertaken during the pilot are a good start and should be continued and scaled up.

# 1. INTRODUCTION

## BACKGROUND

Present-day Sudan faces four substantial challenges: 1) weak governance; 2) local-level conflicts; 3) deep poverty; and 4) severe land degradation and vulnerability to climate change. These challenges have combined to bring about an environment characterized by human insecurity and polarization along political, ethnic, religious and geographical lines. Sudan ranks 167 out of 189 countries and territories on the 2017 Human Development Index and hosts one of the largest concentrations of internally displaced persons (IDPs) in the world. The situation is particularly bleak in Darfur, where recent decades of conflict have made humanitarian support the primary intervention of national and international actors.

The pilot “Improving Community Resilience in the Face of Conflicts and Environmental Shocks: Mellit and Umm Keddada Localities in North Darfur State” was implemented within this broader context. This report provides an assessment of the lessons learned from this pilot in North Darfur (**Figure 1**).

**Figure 1. Map of North Darfur, Sudan**



## IMPROVING COMMUNITY RESILIENCE IN THE FACE OF CONFLICTS AND ENVIRONMENTAL SHOCKS: MELLIT AND UMM KEDDAD LOCALITIES IN NORTH DARFUR STATE PILOT

This pilot was implemented from July 2017 to July 2018 under the program “Toward Enduring Peace in Sudan (TEPS),” funded by the United States Agency for International Development (USAID). The pilot proposed a variety of adaptation options and interventions that are designed to reduce conflict, increase community resilience, enhance livelihoods and improve local natural resource management capacity. To further detail the objectives of the pilot, an inferred theory of change was developed for this assessment to represent the relationship between climate variability and conflict in the Millit and Um-Kaddada localities in North Darfur State:

***IF*** communal capacity to manage and maintain valuable natural resources, such as water, is improved, and ***IF*** resource management is achieved in a collaborative and inclusive manner across various groups including, nomadic herders, sedentary farmers, women, and youth, to ultimately build intercommunal trust and create a network around the use of natural resources, ***THEN*** the likelihood of conflict over natural resources will be reduced as intercommunal relations are normalized and resource management is sustainable.

This formulation is based on the understanding that climate variability and change are among key stressors contributing to conflict within the target communities, creating climate risks that are significantly undercutting livelihoods and reducing economic growth potential. Therefore, interventions designed to reduce or eliminate the adverse impacts of these climate risks should contribute to an improvement in the conditions for household livelihood security and economic growth.

The specific **objectives** of the pilot were to:

- Establish community-level conflict prevention and resolution mechanisms
- Support youth and women’s organizations to effectively engage in peacebuilding processes
- Improve the natural resource base and enhance livelihood options

The pilot had two anticipated **outcomes**:

- **Outcome 1:** Peace, coexistence and sharing of natural resources among community groups improved
- **Outcome 2:** Resilience of communities to climate change, environmental and economic shocks improved

Specific **activities** of the pilot were described as follows:

- **Activity 1.1.1:** Establish a local peace committee in Armal Village Council and in Abu Homeira Village Council. The peace committee will ensure fair representation of all

villages and ethnic groups included in the village council. The formation of the peace committees will be led by local leaders and traditional administration of the village council. Following its establishment, the peace committee will form six specialized subcommittees on natural resource management, water, range and forest, microfinance, women and youth. All subcommittees, in addition to their technical functions, will act as early warning systems in drawing the attention of the mother peace committee to any potential conflict over resources or any social unrest.

- **Activity 1.1.2:** Conduct study on reasons and dynamics of conflicts over natural resources in the two targeted areas during the first three months of implementation. The findings of the conflict analysis will inform peacebuilding efforts as well as provide an opportunity to reassess the proposed natural resource management activities and see if they are feasible.
- **Activity 1.1.3:** Implement a series of village-level dialogue sessions on peace and coexistence. Conduct 10 village-level workshops/dialogue sessions led by the Native Administration and local leaders. The objective of these workshops is to promote mutual coexistence and remove old grievances.
- **Activity 1.1.4:** Promote social peacebuilding and enhancement through mobile theater and drama at the village/community level. Drama groups such as “Alfashir Star Group for peacebuilding through use of drama” should be engaged to implement this activity.
- **Activity 1.1.5:** Conduct community exchange visits within the state and interstate to learn from communities affected by similar conflicts and gain exposure to best practices on reconciliation (for example, in Blue Nile). The selection of the visiting members should be done in such a way that women, youth, IDPs and other groups are represented. Awareness and discussion about the visit should take place before the selection of members.
- **Activity 1.1.6:** Establish youth clubs supported by solar energy for lighting and television facilities and educational films on peace and related practices, with emphasis on female youth participation.
- **Activity 1.2.1:** Conduct tailored, well-designed training events to improve knowledge and skills of the peace committee and the six specialized subcommittees, based on a quick training needs assessment. Suggested awareness and training activities include:
  - Awareness creation on peacebuilding, natural resource and climate change impacts and adaptation through local dialogue sessions, radio, extension, information education, communication materials (booklets, manuals, brochures, posters and leaflets) and drama.
  - Training on peacebuilding strategies, risk analysis and mitigation techniques.
  - Disaster risk reduction and environmental conservation.
  - Training on climate change, mitigation strategies and building community resilience.
  - Training of targeted farmers on the early-maturing, drought-tolerant crop varieties and other climate-smart technologies to improve farmers’ awareness, ensure sustainability and promote adoption.
  - Training of agropastoralists on climate change adaptation practices, range management and fodder conservation, and pest and disease control.

- Water harvesting and management.
- Microfinance opportunities, access and management.
- Training of women on liquid petroleum gas (LPG) and other biomass alternative energy sources, home garden management, revolving funds and income-generating activities (livestock fattening, poultry, goat milk production).
- Training of youth on stabilized sand block making and other biomass alternative building materials at village level.
- Training of community animal health workers.
- **Activity 2.1.1:** Rehabilitation of water sources for human and livestock drinking. Activities should be done in close collaboration with and supervision of the relevant government institutions/department to ensure proper training and continuity of the extension and guidance services to the communities, even after completion of implementation of this plan.
- **Activity 2.1.2:** Rehabilitation and conservation of tree cover. Suggested activities include:
  - Establishment and rehabilitation of forestry nurseries.
  - Rehabilitation of community forests' tree cover.
- **Activity 2.1.3:** Rehabilitation and conservation of the rangelands:
  - Reseeding of the degraded rangelands at Millit (Armal) and Um Kaddada (Abu Homeira) localities. Rehabilitation of community range enclosures (protected pasture reserves).
  - Broadcast of recommended seeds in open rangelands in the two village councils, conducted by community under the leadership of the range and pasture committees and the government departments.
  - Establishment of fodder bank as demonstration for forage production. Introduce drought-tolerant species such as cowpea, pigeon pea and Asian pigeonwing. Creation of demonstration fields in both Armal and Abu Homeira to pilot cultivation of these crop species.
  - Establishment of fire lines to reduce fire hazards during the dry season.
- **Activity 2.1.4:** Diversify alternative livelihood sources. Suggested alternative sources include the following:
  - In Armal, women should be supported to have a communal *jubraka* (traditional home garden) in the clay soils of the *wadi* (a valley or channel that is traditionally dry except during the rainy season) using the residual moisture content to grow vegetables. Organize women into formal groups with a budget created by their own contributions and seed resources funded through this plan to establish the farms.
  - In Abu Homeira, already established women groups will grow their crops under rainfed conditions using climate-smart agricultural practices. Provide the groups with millet, cowpea, watermelon and sorghum seeds.
- **Activity 2.1.5:** Introduce alternative biomass household energy to reduce pressure on vegetation cover. Support alternative household energy options such as LPG and solar

cookers to reduce the rate of deforestation and remove the current pressures on natural resources.

- **Activity 2.1.6:** Establish income and employment opportunities for youth groups, such as non-fired brickmaking where each group of youth (aged 5–10) will be provided with one brickmaking machine and associated training. This activity targets male youth. The activity was requested by targeted communities to facilitate the shift from the traditional building style that uses trees and shrubs to a brick-building style that supports and contributes to natural resource conservation.
- **Activity 2.2.1:** Improve crop production through adoption and use of promoted climate-smart technologies and water harvesting:
  - Introduction of early-maturing and drought-tolerant crop varieties of millet, sorghum, sesame and watermelon. The farmers who receive seeds in the first season will keep seeds for the next season to ensure a sustainable supply after completion of this plan.
  - Adoption of water-harvesting techniques at the farm level, with demonstration at selected fields.
  - Animal-drawn implements for ploughing (tractors should be avoided in sandy soils).
  - Agricultural practices (spacing, weeding, microfertilizers, etc.).
  - Integrated Pest Management.
- **Activity 2.2.2:** Improve livestock production by:
  - Strategic feeding for lamb fattening and for goats to increase milk production.
  - Introduction of improved male goats to increase local goat milk production (25 for Armal and 25 for Abu Homeira). Supply drugs for external and internal parasites.
  - Introduction of improved poultry male breeds for local poultry improvement for women's groups in Armal and Abu Homeira village councils.

The anticipated **results** of the pilot include:

- Increased movement, trade and social exchanges
- Strengthened Sudanese capacity for peacebuilding
- Strengthened civil society capacity at national and subnational levels
- Increased citizen engagement (including women, youth and other marginalized groups) in democratic processes
- Provision of productive employment and income-generation activities to citizens as meaningful alternatives to participating in conflict activities
- Increased coordination on early recovery and resilience activities

The two implementation sites of the pilot (**Figure 2** below) were:

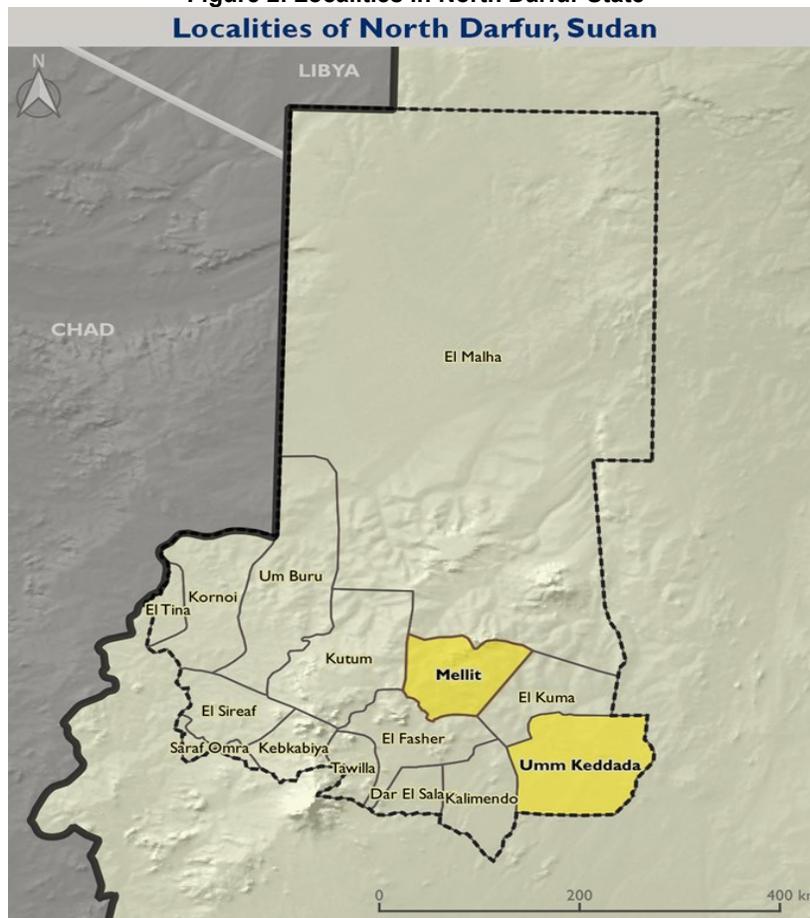
- Armal in Mellit Locality (25 km southeast of Mellit town), which consists of a five-village cluster

- Abu Homeira in Umm Keddada Locality (30 km south of Umm Keddada town), which also consists of a five-village cluster

Both locations are situated within the eastern part of North Darfur State, where most of the population are sedentary rural inhabitants engaged in a combination of crop farming and animal raising as their fundamental livelihoods. The area is severely affected by drought, land degradation and the impacts of climate change, with substantial adverse impacts on these livelihoods.

The pilot was implemented through two partners: Sahari and United Peace Organization (UPO). Both organizations are Sudanese nongovernmental organizations established under the 2006 Humanitarian Law. In implementing the pilot, the implementing partners maintained close linkages and coordination with key institutions and stakeholders relevant to the proposed activities, such as the Ministry of Agriculture and Animal Resources, Agricultural Research Stations, the Rural Water Corporation, financial institutions, the Native Administration, research institutions, the localities, and other civil society and localities authorities.

**Figure 2. Localities in North Darfur State**  
**Localities of North Darfur, Sudan**



## 2. METHODOLOGY

The purpose of the assessment is to 1) identify and document relationships between the implementation of climate change adaptation actions to improve long-term community and household resilience, and 2) how implementation of these actions can help improve conflict dynamics in the targeted areas. To that end, the following five key questions were used to guide the assessment:

1. What is the substantive and geographical relevance of the pilot?
2. To what extent has the pilot achieved its objectives?
3. What are the main challenges faced by the pilot?
4. What are the possibilities for sustaining the achievements/impacts of the pilot?
5. What lessons are to be learned from the pilot implementation?

This study is an effort to analyze the implementation and early results of the adaptation interventions undertaken in response to climate risks and related conflict dynamics, drawing lessons learned from the implementation of the piloted interventions. Considering the limitations of time and resources, the assessment was based on primary qualitative data collected through direct field work and supported by secondary data from available sources. The assessment was grounded in a participatory consultative process using data collection tools that included group interviews, focused discussions on specific topics and key informant interviews.

### DESK REVIEW

This desk review involved consultation and review of available secondary sources. Key among these were:

- The Pilot Implementation Plan, April 2017
- Pilot Final Report Prepared by pilot consultants, April 2017
- USAID Mid-Term Evaluation of “Toward Enduring Peace in Sudan” Program, April 2017
- TEPS Quarterly Reports, prepared by AECOM
- USAID TEPS Mellit and Umm Keddada Localities Conflict Analysis Study, November 2017
- Conflict Analysis Study for Umm Keddada and Mellit Localities, prepared by UPO, November 2017
- Grantee Final Report, prepared by Sahari, April 2018
- Pilot Monitoring and Evaluation Data, provided by the TEPS Khartoum Office

## PRIMARY DATA

The field work, the main source of primary data, was undertaken at three levels:

1. **National-level meetings** in Sudan's capital, Khartoum. Consultations were held that involved meetings at the offices of the two TEPS implementing partners for the Darfur activity, Sahari and UPO; a meeting with USAID in Khartoum; a meeting with the TEPS team at AECOM's office; and a meeting at the Higher Council for Environment and Natural Resources.



2. **State-level meetings** in El Fashir, the capital of North Darfur State. Consultation meetings were held with the TEPS program officer at the pilot office; the Director General of the Ministry of Agriculture and Animal Resources; the Commissioner and Deputy Commissioner of the Humanitarian Assistance Commission ; the Sahari Program Manager in North Darfur; the UPO Program Manager in North Darfur; and the Deputy Director of Water and Sanitation, Office of North Darfur Water Corporation. Secondary data were also solicited and collected from the TEPS office, implementers and government offices, especially the Ministry of Agriculture and Animal Resources. This involved mainly rainfall data records and data on agriculture in the state.



3. **Community-level visits** to Armal and Abu Homeira. The consultant was supported during the three-day field visit by two research assistants with expert knowledge of the two locations. During the field visits, the following data collection tools were applied: group interviews, focus group discussions and key informant interviews. Meetings and discussions with Native Administration



leaders (*omdas* and *sheikhs*), tribal leaders, and youth and women's groups, including revolving fund groups, were also held. Interviews were held with members of the Higher Committee and subcommittees in the two locations. During the field work, UPO was also



organizing training sessions on microfinance and small business development. This gave the consultant the opportunity to meet and talk to the trainees. During the field research, baseline socioeconomic and environmental data were collected.

Finally, an unscheduled consultation meeting was held with a group of pastoralists from the Midob tribe of the northern part of North Darfur State during their stop to water their camels and collect water from the rehabilitated water yard in Abu Homeira.

# 3. BACKGROUND

## CLIMATE CHANGE, ENVIRONMENT AND CONFLICT

According to United Nations Environment Programme (UNEP), 40–60 percent of conflicts globally over the past 60 years have been linked to competition for natural resources (UNEP 2015). Climate change has a direct, adverse impact on natural resources in the aggregate and exacerbates the impact of natural resources on the potential for conflict. The effects of climate change tend to fall disproportionately on the world’s most vulnerable populations.

USAID identifies three common categories in which climate change and conflict connect:

- Direct resource competition in response to greater relative scarcity of a specific natural resource due to climate change.
- Increased grievances over relative deprivation derived from climate change-induced resource scarcity (and the ensuing competition), leading to changes in relative prosperity that may reinforce grievances or mistrust between groups.
- Complex crisis and human insecurity in which climate change contributes to or intensifies natural disasters, such as floods or droughts, which can have socioeconomic impacts (USAID 2015).

The countries and regions most likely to experience conflict and insecurity associated with climate change are fragile states—those that already lack the human resource capability and robust institutions needed to manage vulnerabilities. Evidence also suggests that even within fragile states, the poor, excluded and marginalized segments of society are more vulnerable to environmental stresses and impacts of climate change.

The relationship between climate change and conflict is not necessarily a direct and linear one, but under certain circumstances climate-related change can influence factors that lead to or exacerbate conflict. Structural resource scarcity, social inequalities, elite capture of resources, migration, changing patterns of pastoral mobility, poor natural resource management and unstable politics are all factors that are exacerbated by climate change impacts (Egemi 2007). By these standards, the majority of Sudan’s population is highly climate vulnerable.

Conversely, the linkages between environment and peacebuilding, reconstruction and development are globally recognized. According to the UN Peacebuilding Support Office (2008), “Ignoring the environment as a peacebuilding tool misses a serious opportunity for reconstruction and reconciliation in post-conflict situations.”

The relevance of environment and natural resources in the promotion of peace is attributable in part to the following:

- Environmental challenges extend beyond political and administrative boundaries.

- Addressing environmental issues lends itself to people-to-people interaction.
- Environmental characteristics help in the creation of regional identity and regional interests.
- Ongoing interaction over environmental matters fosters and improves communication and brings parties closer to each other.

Environmental cooperation based on equitable access and joint management of natural resources provides for the integration of communities in cooperative negotiation processes that usually reduce political tensions by establishing mutual trust and a general sense of shared interests and rights. Because of that, cooperation in managing natural resources is generally viewed as a constructive first step toward initiation of an ongoing dialogue that may be difficult to establish through existing political channels.

## **NATURAL RESOURCES AND CONFLICT IN SUDAN**

Since gaining its independence in 1956, Sudan has been in protracted conflict, ranging from small local conflicts over herding routes to the decades-long civil war that crippled the nation. Concentration of power and wealth by the central government resulted in unequal access and distribution of public services, economic opportunities and representation. Weak governance, ethnic tensions and continued marginalization of populations in the periphery of the country (Darfur, Kordofan, Blue Nile, Beja and the South) have manifested in growing opposition and outbreaks of violence. Once the largest nation in Africa, Sudan now ranks third in size after the succession of South Sudan in 2011. Establishment of the Republic of South Sudan sent economic shockwaves throughout the country, as it lost nearly one-third of its territory and significant oil reserves. The revenue from these reserves accounted for more than one-half of Sudan's government revenue and 95 percent of its exports.

In April 2019, Sudan's President Omar al-Bashir was ousted after ruling Sudan for more than 30 years. His ouster was fueled by large-scale protests, mainly by those peripheral populations, stemming from an increase in the price of fuel and bread earlier in the year. Sudan is now in a period of military and civilian power sharing until a new government can be formed.

Despite a century of modernization, Sudan remains rural in social, economic and cultural terms. Most of the country's 40 million people live in rural areas and pursue natural resource-based livelihood strategies founded fundamentally on small-scale crop farming and pastoralism. Natural resources are also the main base of the country's gross domestic product, with the agriculture sector contributing around 37 percent (Central Bank of Sudan 2013). Natural resources are also the backbone of other sectors of the economy, especially manufacturing, transport and trade. The economic importance of natural resources increased after the loss of about 75 percent of the nation's oil revenue to the Republic of South Sudan.

Sudan is an arid country exhibiting typical Sahelian zone characteristics, with low amounts of rainfall, water scarcity and a short three- to four-month agricultural season. Drought is a recursive phenomenon and the country frequently experiences drought cycles extending over

two to three years. Out of the country's total area (1.862 million km<sup>2</sup>), 60 percent is desert and semi-desert; the remaining 40 percent is divided between low rainfall savanna (300–500 mm of annual rainfall) and the rich savanna (over 500 mm of annual rainfall) that extends into the Republic of South Sudan (FAO and UNEP 2011). Rainfall records from El Fashir, North Darfur, show a decrease in rainfall beginning with the drought in 1972. Sixteen of the twenty driest years recorded have occurred since 1972 (Dahlberg and Slunge 2007). Climate change models predict a more than 20 percent reduction in the length of the growing period between 2000 and 2020, with similar reductions across nearly all of Darfur by 2050 (Bromwich 2008).

The allocation of, and access to, land and natural resources remains a critical factor in many of Sudan's conflicts, especially in areas where traditional rainfed crop farming is dominant, such as TEPS's target localities of Mellit and Umm Keddada. Land ownership, and ownership over subsurface resources, played a central role in the conflict in Southern Sudan between the central government and local communities.

Water resources are extremely important to Sudan's continued economic development and social cohesion. The Nile serves as Sudan's main source of water supply. Access to water from the Nile has been a source of inter- and intranational conflict. Increasing temperatures and variable rainfall are likely to exacerbate these tensions as water demand for continues to rise.

Irrigation accounts for 94 percent of water demand and projected increases in agricultural development combined with population growth are projected to outpace supply by 2030, even without climate change. Food shortages accumulating from consecutive years of drought have already created recurring food emergencies and famine across the country. In addition, drought and reduced rainfall have reduced available grazing lands. This has led to an increase in pastoralists transitioning to sedentary farming, and increased competition for already limited resources. Drought has also been a stress factor on pastoralist communities—particularly in Darfur and Kordofan—contributing to regional conflict.

The ongoing or potential resources conflicts in the country fall into four broad categories:

1. **Local-level conflicts:** Conflicts in this category include local conflicts between pastoralists or nomads on the one hand, and farmers on the other, or among pastoralist communities, over land, water, grazing and forest resources. They also include competition within and between tribal groups over community boundaries, mining resources and livestock routes that become major zones of conflict. These conflicts can range in intensity from ad hoc, occasional skirmishes similar to the Berti-Zyadia conflict noted previously, to large-scale violent conflicts between entire population subgroups such as the war in Darfur.
2. **Conflicts over investment capital:** Large-scale investments in land, water and natural resources—especially involving dam construction, mechanized agriculture, and oil exploration and drilling—have fueled a wide range of conflicts in the country. In Southern Sudan foreign interests sought or acquired more than 2.6 million hectares of land between 2007 and 2010 in the agriculture, forestry and biofuel sectors alone (Deng 2011). Seeking to

replace lost oil revenue due to the succession of Southern Sudan, the government in Khartoum has begun leasing large swaths of arable land to foreign governments for food production including Saudi Arabia, Bahrain and Jordan. These conflicts are symptomatic of a wider lack of capacity on the part of the state and other stakeholders to ensure that large-scale investments in land and natural resources consider local needs and rights, and that wealth generated through these resources yields dividends for the affected communities. Inroads by semi-mechanized agriculture into community farming and the appropriation of pastoral resources and closure of pastoral routes have incited conflict in many parts of the country through the displacement of rural populations.

3. **Internal regional conflicts:** Conflicts in this category involve the current conflicts in Darfur, South Kordofan and Blue Nile. Although they involve a complex web of historical, political and economic factors, these conflicts are driven in large part by land and natural resources. In the lead-up to independence of Southern Sudan in 2011, fighting broke out between the Sudanese Army and the Sudan People's Liberation Movement in the southern states of South Kordofan and Blue Nile. Consultations were suspended, preventing people in this region from participating in the southern succession. While technically part of Sudan, large portions of the population identify with Southern Sudan and conflict continues over the contested area. The centrality of land and its perceived alienation feature very prominently in Nubaland and in relation to the Beja movement in East Sudan, and contribute to ongoing tension over the oil-rich region of Abyei.
4. **Cross-border tensions:** This involves potential conflicts over contested areas with neighboring countries, especially with Ethiopia in the east (Fashaga area), Egypt in the north (Halaib) and the Republic of South Sudan in the south (Kafi Kingi, Abyie, Lake Abydh, Migenis, Heglig). While resolution of these disputes is happening at the national level, local outbreaks of conflict over contested land continue.

The root causes of resource-based conflict in the country can be attributed to a complex set of interrelated factors that have their origin in the heightened competition over natural resources under conditions of eroded environmental governance, including:

- *Poor management of natural resources* and the failure to transform the potential of these resources into broad-based socioeconomic development.
- *Emerging new demands from oil, gold mining, and domestic and regional agribusiness investors.* The independence of the Republic of South Sudan closed off many pastoral routes and resulted in the need to relocate a population of returnees from that country in the border states. Growing human and livestock populations are increasing the pressure on land, and climate change is multiplying these pressures.
- *Increased vulnerability to climate change, resulting in shifts in population and economic activities* toward the relatively rich savanna in Darfur, Blue Nile and South Kordofan. This in turn has led to intensified pressures on resources and land competition, and fueled conflicts that have started to take on ethnic dimensions.
- *The multiple, parallel and weakly coordinated systems of land administration and governance.* In combination with the sectoral nature of land use policies, the critical

legislative gaps in land tenure and natural resource management, and the eroding legitimacy and authority of traditional leadership, weak systems have created an environment in which land uses are open to dispute. Confusion over claims to land and natural resources is common, and conflicts proliferate and play out in a destructive manner.

- *Serious land degradation*, driven in part by ill-defined land governance arrangements. Degradation is characterized by extensive deforestation, soil erosion, a decline in biodiversity and increasing vulnerability to the effects of climate change.

## CLIMATE CHANGE IN SUDAN

Already burdened with recurrent droughts, food insecurity, water problems, malaria outbreaks, widespread poverty and severe land degradation, Sudan is highly vulnerable to the impacts of climate change. The 2007 Sudan National Adaptation Programme of Action (NAPA) highlights the acute climate vulnerability of the country. As much as 60–70 percent of the population are considered at risk from climate change. Vulnerability mapping for Sudan indicates that North Darfur State is the most vulnerable state (Ministry of Environment, Natural Resources & Physical Development 2016).

The NAPA, submitted to the United Nations Framework Convention on Climate Change (UNFCCC) in 2007, identified 32 urgent adaptation initiatives in agriculture, water and health to reduce the increasing vulnerability of rural communities to climate change risks. The underlying vision of the NAPA is to contribute to climate change-resilient communities, businesses and productive systems across the country.

## DARFUR CONTEXT: ENVIRONMENT–CONFLICT DYNAMICS

The conflict in Darfur has created a tragic and complicated crisis. The situation evolved from a rebellion with narrowly defined political and developmental aims to a conflict increasingly overshadowed by shifting alliances, defections, regional and international meddling, and growing and complex tribal confrontations. To date, the conflict has resulted in the internal displacement of an estimated 2 million people, as well as a flood of refugees into neighboring Chad.

The entire population of Darfur, an estimated 8 million people, is arguably affected to some degree by the conflict (UNDP 2013). Apart from the 2 million who are still displaced, people in rural and urban areas continue to face enormous risks to their safety. Livelihood options remain extremely limited after 15 years of conflict and the strategies pursued and adopted are largely insufficient to meet basic needs. IDPs in the camps continue to live in appalling conditions.

Almost two-thirds of the population in Darfur live below the poverty line. Government services—especially health, education and water services for rural communities—have been overburdened or discontinued. Conflict has damaged and destroyed infrastructure, seriously curtailed markets, and disrupted trade, employment and investment. Approximately 38 percent of the total population of Darfur received some form of food aid in recent years (UNDP 2013).

Because of the long years of conflict, the Darfur population is currently highly divided along ethnic, tribal and political lines, making social reconciliation an urgent priority.

The Darfur conflict has initiated a wide range of debate and perspectives regarding its root causes. These perspectives range from attempts to trace the root historical causes to, for example, accounts focused on recent factors that shaped the events producing the crisis. National, regional and global factors have been considered. Issues of history, ethnicity and identity, politics, economics, environment and regional geopolitics have been recognized and elaborated. However, the consensus is that environmental factors, including climate change, remain a root cause of the problem.

Global climate change was cited in the Stern Review, which argued that the Darfur conflict resulted from the long periods of drought during the 1970s and 1980s and the consequent breakdown in coping strategies of both pastoralists and farmers, who migrated toward the more ecologically rich areas of southern, western and central Darfur (Gray and Kevane 2008). Land issues have been widely recognized and stressed as critical in the Darfur conflict. This stems from the fact that land is not only an economic resource but also a mark of political power. Tribes that are in control of a *dar* (homeland) have had a distinct political advantage; as the majority groups, they have dominated political representation and control over and access to resources.

#### Drought in Africa in 1984

In 1984, drought severely affected all countries from Mauritania to Ethiopia. In Sudan, rainfall hit a record low since the start of meteorological observations around the turn of the century. The rainy season started with some early showers that in many cases encouraged people to start sowing. The crops then either died or were severely damaged by the inadequate rainfall during June. Since rainfall was overall extremely low, replanting was impossible and crop yields of millet and sorghum dropped to 20 percent of normal rates (Olsson 1993 and Gomme 1996).

The severe drought of the mid-1980s (see textbox above) and the associated large-scale land degradation remain a landmark in the environmental and social history of Darfur, as they involved mass population movement from North Darfur toward the rich areas of South and Central Darfur. The displaced people brought strong challenges to the prevailing customary land tenure arrangements founded on the *hakura* system. The community-level land governance vacuum created by the dissolution of the Native Administration system in 1971 left most conflicts unresolved. The recent creation of autonomous emirates (administrative areas) for migrant groups within the traditional homelands of indigenous groups is held responsible for the escalation of the conflict in Darfur. The remarkable shift in the balance of tribal powers associated with militarization of society, under conditions of eroded formal and informal governance structures, and weakening of the rule of law added significantly to human insecurity throughout Darfur.

Recent tribal conflicts in the region have been mostly linked to increasingly intense competition over land resources and administrative power and triggered by animal rustling, blood payment (*diyya*) or drought. In North Darfur, the 2014–2015 conflict between Berti and Zyadia was caused by disputes over the demarcation of tribal land.

Key to development in Darfur is the Doha Document for Peace in Darfur, signed in 2011. This agreement, which addresses the root causes of the conflict and its consequences and serves as the framework for the comprehensive peace process, also recognizes that assistance must evolve. Article 31 lays out the main objectives of post-conflict economic recovery and development with emphasis on short- and medium-term objectives in rehabilitation, reconstruction, construction and development, while considering urgent needs and the need to work out the basis for long-term development (UNAMID 2011). To that end, the 2013–2019 Darfur Development Strategy evolved as a roadmap for sustainable development in Darfur, with gender and youth as cross-cutting considerations and three interlinked pillars: governance, accountability and reconciliation; reconstruction; and economic recovery.

# 4. PILOT AREAS: DEMOGRAPHY, ENVIRONMENT, LIVELIHOODS AND CONFLICT

## HISTORY, ETHNIC COMPOSITION AND DEMOGRAPHY

The pilot area covers the two sites of Armal in Mellit Locality and Abu Homeira in Umm Keddada Locality. Each of the two targeted communities consists of a cluster of five villages, with Armal and Abu Homeira being the central villages in each cluster. The two localities of Mellit and Umm Keddada are ethnically diverse, with the Berti ethnic group representing the overwhelming majority (at least 80 percent in the seven villages where Berti is the majority ethnic group) of the population, particularly in Mellit Locality (**Table 1** below). The second largest ethnic group is the Baza, constituting at least 60 percent of the population (in the three villages where Baza is the majority ethnic group) and concentrated mainly in Abu Homeira and its satellite village of Sahg Alsimayat. Other groups present are in the minority and include the Zyadia, Tunjur, Tama, Bargo, Bani Omran and Ireigat.

The total population of the two localities according to the most recent Sudan population census in 2009 was 229,223 (**Table 2** below), accounting for 10.9 percent of the total population of North Darfur State (World Bank 2009). In 2017, the total population in the two targeted clusters was 26,144 persons, of whom 85 percent were concentrated in Abu Homeira, with the remaining 15 percent in Armal. The low population density and small size of villages in the Armal cluster could be attributed to the hilly nature of the terrain and the poor natural resource base that inhibits population concentration and the growth of large rural settlements. As in other areas of Darfur, the population in both clusters is very young. Fifty-two percent of the population is under the age of 17. This is reflective of high fertility rates and creates a high demand for services like water, education and health, especially maternal services.

**Table 1. Population Ethnic Composition and Distribution in Target Villages**

Village	Date Established	Population	Majority Ethnic Group	% of Population	Other Ethnic Groups (% of population)
Armal West (Main Village)	1881	500	Berti	95%	Zyadia (1%), Bani Omran (0.5%), Iraigat (1%), Tunjur (0.5%), Tama (1%) and Bargo (1%)
Om Homairon	1917	1,200	Berti	90%	Bani Omeran (3%) and Zyadia (7%)
Armal East	1954	600	Berti	95%	Zyadia (1%), Bani Omran (1%), Iraigat (1%), Tunjur (1%), Tama (0.6%) and Bargo (0.4%)
Bamba Tefi	1890	800	Berti	80%	Zyadia (20%)
Arid	N/A	850	Berti	93%	Bani Omeran (7%)
Abu Homeira	1912	10,000	Baza	70%	Bani Omeran, Bani Fadul and Jelaidat (no percentages available)
Sahg Elnil	1957	1,714	Baza	40%	Bani Omeran (5%), Bani Fadul (5%), Jelaidat (10%) and Berti (40%)
Sahg Alsimayat	1905	3,800	Baza	65%	Berti (35%)
Hejair Jebril	1972	5,000	Berti	80%	Zyadia (10%), Bani Omeran (7%) and Bani Fadul (3%)
Omradim	1900	1,680	Berti	95%	Zyadia (3%) and Iraigat (2%)

Source: USAID, Final Report–Umm Keddada and Mellit Localities Conflict Analysis Study, November 2017

**Table 2. Population of Mellit and Umm Keddada Localities**

	Total Population			Population < 17 Years of Age	
	Total	Males	Females	Total	Percentage of Total Population
North Darfur State	2,113,626	1,079,936	1,033,690	1,056,805	50.0
Mellit	135,831	68,506	67,325	70,113	51.6
Umm Keddada	93,392	44,612	48,780	49,056	52.5

Source: Fifth Population Census, Government of Sudan, 2009

Social services at the village level in the two clusters include schools, health care dispensaries and water sources (**Table 3** below). However, the water sources in the Armal cluster are principally *hafirs* (underground rainwater cisterns), which are not sustainable sources of water given the low amount of annual rainfall, the short duration of the rainy season (two to three months) and the frequency of drought. This is in addition to the enormous health hazards associated with the use of *hafir* water, which is usually shared between humans and animals.

**Table 3. Basic Services and Community Organizations in Mellit and Umm Keddada**

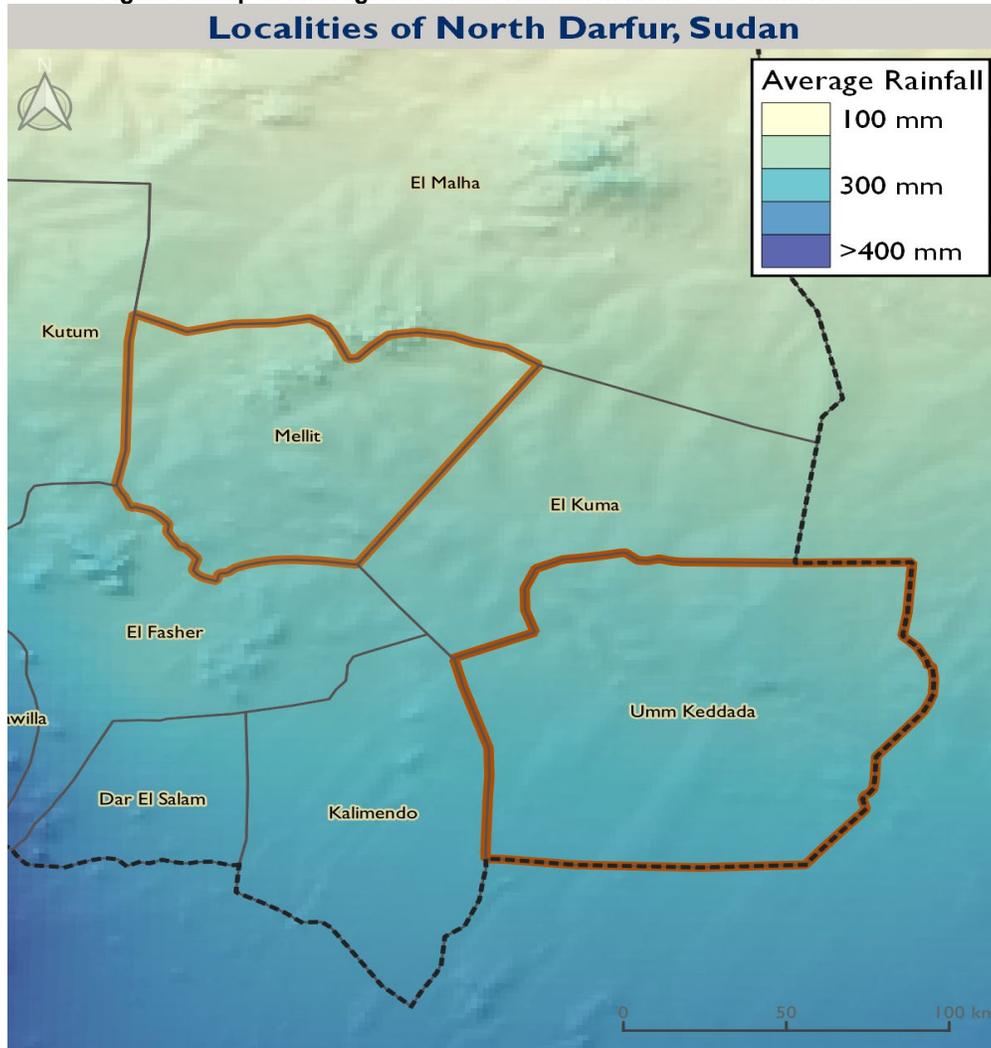
Village	Basic Services			Committees and/or Community-Based Organizations
	Schools	Health	Water Resources	
<b>Armal West (Main Village)</b>	Basic (mixed)	Dispensary	<i>Hafir</i>	1. Women Society 2. Youth Society 3. Water Committee
<b>Om Homairon</b>	Basic (mixed)	Dispensary	<i>Hafir</i>	1. Women Society 2. Youth Society
<b>Armal East</b>	Basic (mixed)	Dispensary	<i>Hafir</i>	1. Women Society 2. Agriculture Society 3. Youth Society 4. Charity
<b>Bamba Tefi</b>	Basic (boys) Basic (girls) Secondary	N/A	<i>Hafir</i>	1. Women Society 2. Youth Society
<b>Arid</b>	Basic (mixed)	N/A	<i>Hafir</i>	1. Women Society 2. Youth Society
<b>Abu Homeira</b>	Basic (boys) Basic (girls) Basic (mixed)	Dispensary	Water point	1. Heritage Society 2. Pastoralist Society 3. Community Health Committee 4. Water Committee 5. Certified Professional in Rangeland Management (CPRM) Committee
<b>Sahg Elnil</b>	Basic (boys) Basic (girls) Basic (mixed)	Dispensary	Water point	1. Women Society 2. Youth Society
<b>Sahg Alsimayat</b>	Basic (boys) Basic (girls)	Dispensary	Water point	1. Women Society 2. Youth Society 3. CPRM Committee
<b>Hejair Jebiril</b>	Basic (boys) Basic (girls) Basic (mixed)	N/A	Water point	1. Women Society 2. CPRM Committee
<b>Omradiim</b>	N/A	N/A	Water point	1. Women Union

Source: USAID, Final Report–Umm Kadada and Mellit localities Conflict Analysis Study, November 2017

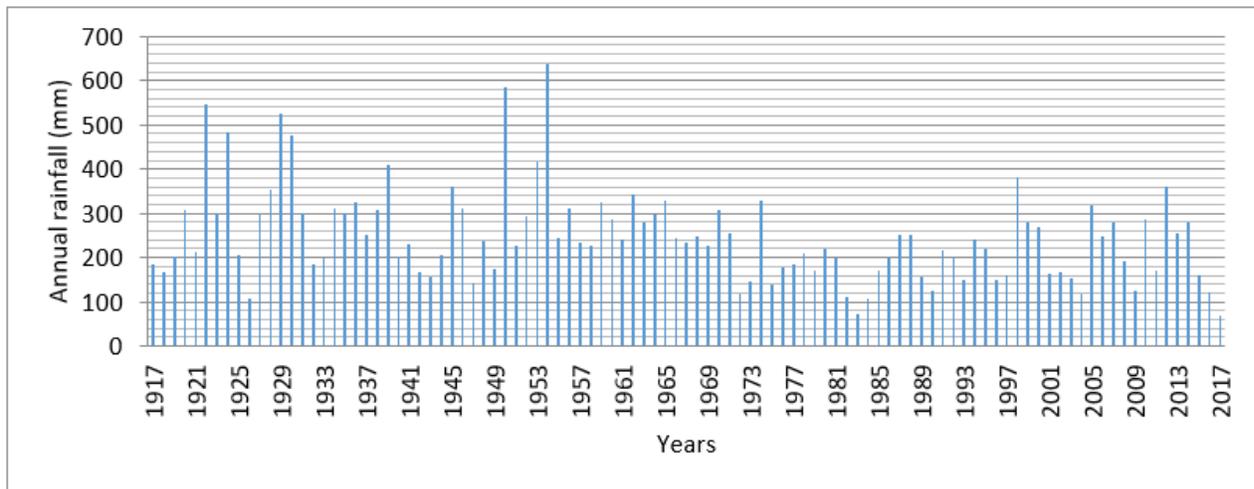
## ENVIRONMENT

The targeted areas exhibit typical Sahelian zone characteristics, with low rainfall that varies enormously both spatially and temporally (**Figure 3** below). Drought is a recursive phenomenon and drought cycles extending two to three years are not uncommon. For example, from 1996 to 2016, Umm Keddada Locality experienced drought conditions, with below-average annual rainfall in 12 of 20 years. The pilot implementation year of 2017 experienced a drought, with total annual rainfall amounting to only 75 mm in the targeted areas. **Figures 4–8** below illustrate annual amounts of rainfall for the towns of Umm Kaddada, Mellit, Toisah and Leait, and for the period covering 1996 to 2016, respectively.

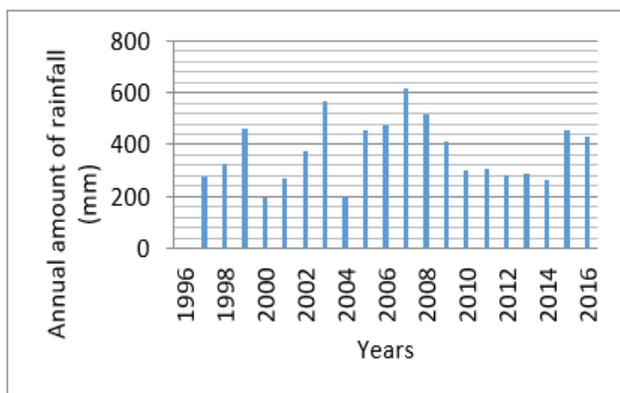
**Figure 3. Map of Average Historical Rainfall in Mellit and Umm Keddada Localities of North Darfur, Sudan**



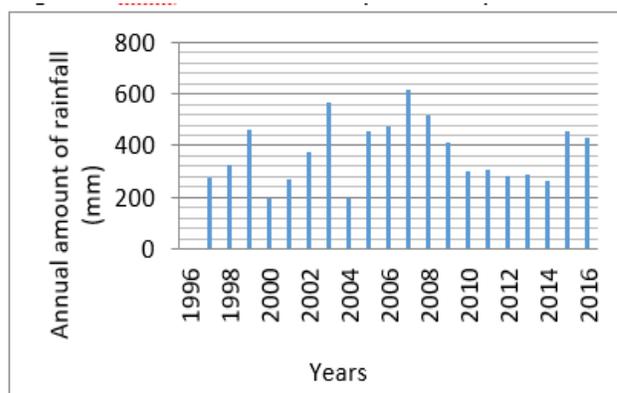
**Figure 4. El Fashir Annual Rainfall (1917–2017)**



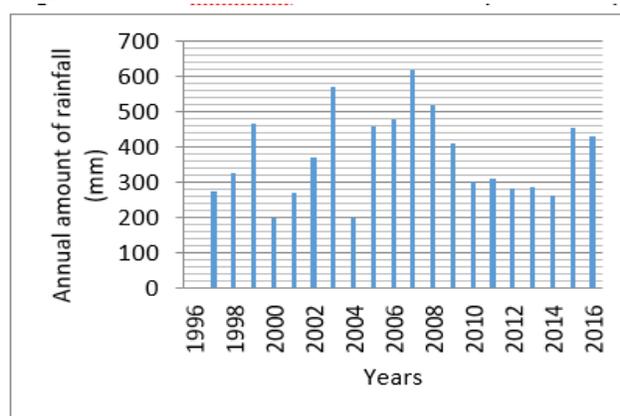
**Figure 5. Toaisha Annual Rainfall (1996–2016)**



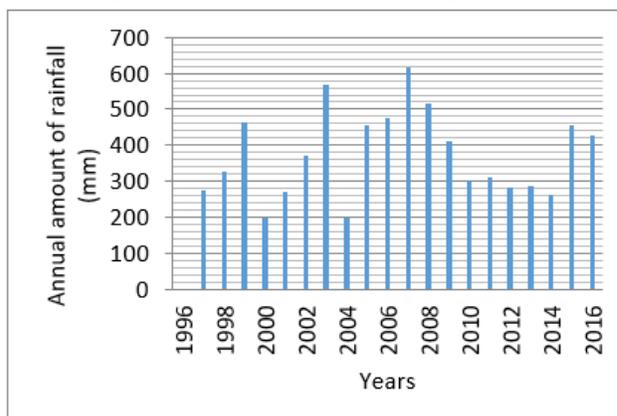
**Figure 6. Leait Annual Rainfall (1996–2016)**



**Figure 7. Umm Keddada Annual Rainfall (1996–2016)**



**Figure 8. Mellit Annual Rainfall (1996–2016)**



Source: El Fashir Meteorological Station, North Darfur State, 2018



*Landscape of Armal during the rainy season (Pictures taken by Omer Egemi, August 2018)*

The landscapes of both localities are characterized by a flat, sandy plain interrupted by scattered hills and dry *wadi* beds. The *wadi* beds are often covered by loamy sands and alluvial soils, both of which provide high potential for agriculture during periods of rain, though the wadis

are also prone to flash flooding during extreme rainfall events. The general soil classification in Mellit Locality is 70 percent sand, 20 percent gravel and rocky soils, and 10 percent clay soils (Mellit Locality Report 2018). The amount of rainfall significantly affects the drainage pattern and the nature of flora. Because of that, large *wadi* systems are limited in number, the most important of which is Wadi Mellit. Other significant *wadis* include Wadi Al-Sayyah, Wadi Mado and Wadi Sani Hayi in Mellit Locality and Wadi El Arais and Wadi Abyad in Umm Keddada. The vegetation cover is poor, made up of scattered shrubs and small trees dominated by different types of acacia and annual grasses. However, during the rainy season, the land is covered by diverse grass species. During the long hot summer, the land is almost entirely devoid of vegetation except for widely scattered trees.

## LAND TENURE

In Darfur, land tenure was historically based on a customary regime founded on the *hakura* system established during the Fur Sultanate in the middle of the sixteenth century (UNDP 2013; Abdul Jalil 2006). Within the *hakura* system, the collective security of the tribe was assured and individual rights to land were recognized and could be inherited but remained under the ownership of the tribe. The Native Administration is the custodian of land. The lowest level leadership position in the Native Administration structure, the *sheikh*, is directly responsible for customary land tenure (Table 4).

**Table 4. Native Administration Systems in Mellit and Umm Keddada**

Village	Omdas	Sheikh	Total Native Administration Systems
Armal West (Main Village)	7	1	8
Om Homairon	4	1	5
Armal East	7	1	8
Bamba Tefi	2	1	3
Arid	2	1	3
Abu Homeira	4	1	5
Sahg Elnil	5	1	6
Sahg Alsimayat	2	1	3
Hejair Jebril	4	1	5
Omradiim	4	1	5

Source: USAID, Final Report–Umm Keddada and Mellit Localities Conflict Analysis Study, November 2017

The jurisdiction of *sheikhs* is restricted to acting as local government agents for collecting taxes and enforcing regulations. They can also act as mediators in conflict situations. People outside the local tribe are secondary rights holders who cannot access land without the consent of original land custodians and must have recognition of ownership by the others. Sometimes tensions arise, particularly when incoming group numbers increase and claims for primary rights

are raised. Such claims are perceived by members of the indigenous group as a threat to their historical power privileges, leading to tensions.

The field work in Armal indicated that land can also be accessed permanently by outsiders as blood compensation. Examples include a piece of land (70 *mukhamas*, where 1 *mukhamas* is equivalent to approximately 1.25 acres) near the village (Jebel Areed), which was given to Bani Omran (an Arab group) as blood compensation more than 60 years ago. Bani Omran settled on the land until 2015, when they supported the Zyadia in a conflict against the Berti. As a result, they were expelled from the land. A second example is in the village of Taital, which is Berti land given to the Zaghawa as blood compensation around 40 years ago. It is still controlled by the Zaghawa.

All land rights are usufructuary, whereby one continues to hold rights over a piece of land if he or she continues utilizing it. In this sense, there is no private ownership. However, usufructuary rights are inheritable, and land is often passed from parents to their children. Accordingly, most land owned by households is gained through inheritance. In the customary tenure system, if a person stops utilizing the land voluntarily for five consecutive years, it reverts to the community and can be reallocated by the sheikh to a new person. This customary principle is, however, not applied in exceptional conditions like war or displacement due to famine, so persons affected by such eventualities do not lose their rights over land.

Access to grazing land is a common right for everyone. Grazing areas include all land that is not under cultivation. Thus, forests and uncultivated land are considered typical grazing areas. Harvested farmland is also subject to open grazing rules. Range management is traditionally performed through Native Administration officials, who are also responsible for guarding against wildfires by establishing what is known as fire lines (clearing grass along certain corridors to enable containment of fire if it breaks out). They also resolve conflicts related to land and enforce regulations prohibiting cutting of mature trees. Gum arabic trees are an exception to the common ownership arrangement, as they are recognized under private ownership. Farmers are considered owners of trees that grow on their farms. Access to open forests is free for all, whether the user belongs to the indigenous community or is a visitor. However, use of the forest is subject to regulations about how forest land and forest products can be used, and these regulations are enforced by the Native Administration. One of the outcomes of the Darfur conflict is that the practical authority of the customary land custodians has diminished.

## **LIVELIHOODS AND LOCAL ECONOMY**

Unlike neighboring communities in other parts of Darfur, the populations of Mellit and Umm Keddada Localities are fully sedentary, depending on a mixed economy primarily based on traditional crop farming and animal husbandry. Both systems in the two localities share common characteristics in that they: 1) evolved as specific forms of adaptation in response to prevailing environmental conditions; 2) were founded on common property customary land tenure arrangements; 3) are rainfall-based activities; and 4) are based on low levels of technological inputs.

Crop farming is a high-risk practice in this region as it depends exclusively on rainfall. During years of good rains, good harvests are collected. The cropping system in the two localities is millet-based, with millet serving as the localities' staple food. Other crops grown are sorghum, watermelon, hibiscus and cowpeas. The latter three crops are usually grown as cash crops, for which Mellit, Umm Keddada, Abu Homeira and Koma provide important local markets. The cultivated area is typically 5–9 *mukhamas* per nuclear household, the main production and consumption unit.



*A healthy growth of millet crop in early August 2018 when good rains were received. (Picture taken by Omer Egemi, August 2018)*

Crop yields are generally small, around two to three sacks (180–270 kg) per *mukhamas*, which is a very low yield compared to the situation 20 to 30 years ago, when a yield of 540–720 kg per *mukhamas* was prevalent. This trend is attributed to declining land productivity as a result of overcultivation associated with increases in population size, drought recurrence, low technological inputs and a rapid transition to a market economy, which forced people to cultivate the land continuously to compensate for the declining yields and reduced incomes from the land.



*Women in Abu Homeira and Armal actively cultivate the land. (Picture taken by Omer Egemi, August 2018)*

Women play a key role in agriculture and account for approximately 60 percent of the total agricultural labor force. Planting, weeding, harvesting, threshing, winnowing, cleaning and bagging are typical tasks carried out manually by women. Although this relates to the historical gender division of labor throughout Darfur, the engagement of women in agriculture increased dramatically after the eruption of the conflict in 2003. Community members explained this trend as a result of the growing outmigration of men, which increased the number of women-headed households and deepened the insecurities associated with the conflict.

Agropastoral and transhumance systems are the two broad categories of animal raising in the two pilot localities. The agropastoral system—the sedentary production of animal husbandry alongside cultivation— dominates; pastoralists derive most of their income or sustenance from small numbers of livestock reared in their villages. Livestock, including camels, cows, donkeys, goats and sheep, provide sustenance in the form of milk and meat, as well as farm labor and transport. Goat and sheep breeding in small quantities is a common strategy of securing quick income to meet cash needs for living expenses. Cattle breeding has been curtailed by the drought since the 1980s. Camels and donkeys are kept as animals for burden and transport. Men and women share ownership of all livestock, aside from camels, which are owned only by men. Animals that are taken away from the village are looked after by young men, while women take care of animals kept at home (e.g., donkeys and goats).



*Livestock are an integral part of the local economy.  
(Picture taken by Omer Egemi, August 2018)*

The transhumance system, on the other hand, is practiced by households that own larger herds of animals; owing to their size, the herd cannot be kept in the villages. As such, part of the family moves with its herd outside the village in limited, seasonal and cyclical transhumance migration patterns. The percentage of families practicing transhumance is around 10–15 percent. The practice was on the rise prior to the 2003 conflict but has since come to a standstill. There are indications, however, that the combined effects of the development of the export meat market in Sudan and the completion of the Fashir–Khartoum asphalt road have generated a revival of interest among farmers to invest in transhumant livestock raising.

The two localities, especially Abu Homeira, are visited by pastoralists from the extreme northern part of North Darfur. Historically, it seems that pastoralist groups and more sedentary groups had more contact, but the situation has changed significantly since the mid-1980s, when drought and desertification resulted in pastoralists moving farther south toward the savanna areas. Residents of Abu Homeira asserted that no conflict has been recorded between the pastoralists and farmers in recent years.

The agropastoral system of the two localities is supported by a wide range of supplementary activities that provide additional sources of income, thus increasing food security. Such activities include the collection and sale of firewood, the production and sale of charcoal, the collection and sale of edible wild fruits, petty trade in weekly rural markets and nearby towns, seasonal migration of youth to groundnut production areas in Leait and its surrounding areas, and seasonal migration to large urban centers in Darfur (Nyala and Fashir) and Khartoum. Migration

to Libya, a historical destination for Darfur youth, is no longer viewed as an attractive option given Libya's destabilization.



*Young girl managing food and tea shop along Khartoum-Fashir road near Umm Keddada. (Picture taken by Omer Egemi, August 2018)*

Completion of the Fashir–Khartoum paved road has provided enormous economic opportunities to people in the two clusters. Besides providing access to markets in other parts of Darfur and central Sudan, the road has created important opportunities for the growth of small businesses along the road, especially for women.

## **CONFLICT DYNAMICS IN THE PILOT LOCALITIES**

Conflict in the two localities could be safely described as “low-intensity” in nature, in contrast to the tribal confrontations in other parts of Darfur. This is confirmed by community consultations as well as the available literature and the conflict analysis study undertaken by UPO in late 2017. The dominant types of conflict that exist in the two localities are resource-based and mostly involve conflict among farmers over farm boundaries (locally known as *kulka*), especially at the beginning of the rainy season. Other types of conflict include disputes over water resources, animal thefts and crop damage. The absence of livestock routes limits the presence of pastoralists and farmer–herder conflicts in the two localities.

## 5. PILOT RELEVANCE

At the level of both conceptualization and design, the pilot is recognized and described by all stakeholders and partners as highly relevant to the context of the two targeted localities. The two localities were among the most severely hit by the drought of the mid-1980s and the associated tragic famine. Indicators of severe land degradation are widespread, including expansion of desert areas (e.g., sand creep); degradation of forests, water resources and rangelands; and depletion of wildlife and biodiversity. Gum arabic trees and forests, once an important cornerstone of the local economy, have disappeared. Because of the collapse of the rural economy, urban centers like Umm Keddada were largely abandoned and community members migrated to El Fashir or Khartoum in central Sudan in search of livelihoods. In addition, the two localities are largely neglected by national and international actors as they are not directly affected by the Darfur conflict.



*Houses in Umm Keddada left deserted as a result of the collapse of the rural economy and stagnation of the town (Picture taken by Omer Egemi, August 2018)*

The pilot interventions also demonstrated particular relevance to the ecological and social contexts of the two targeted localities. This is consistent with the Government of Sudan's mapping of climate change vulnerability. The NAP 2016, the country's main strategy to deal with the impacts of climate change, classifies North Darfur as one of the areas of very high vulnerability to climate change. Umm Keddada and Mellit were also identified as localities with highly vulnerable agriculture, rangelands and forests. These are all key landscapes addressed by the pilot.

## 6. PILOT IMPACTS

Despite the short, one-year duration of the pilot, and the fact it was a drought year, the contribution of the pilot to improved resilience to climate change as well as environmental and economic shocks was appreciated by the communities and pilot partners, including both state and local government authorities. Mubarak, a member of the High Committee in Abu Homeira, described the impacts of the pilot, saying, “It is a tree that has been very recently planted and is well cared for; it is a promising tree and we should be patient enough to see and get the sweet fruits, they are coming.”

The pilot planned to directly target 9,346 persons, including a representative mix of men, women and youth. As implemented, 5,966 persons (63.7 percent of the targeted population) were approached and participated directly in the pilot. The gender distribution was nearly balanced, with females representing 47 percent of all participants (**Table 5**). Although the targeted population is modest, an additional 20,853 persons indirectly benefited from interventions in water resources and agriculture.

**Table 5. Pilot Target and Actual Beneficiaries**

	Beneficiaries (Target)	Achievements					
		Adult Beneficiaries (Actual)	Female Adult	Male Adult	Youth Beneficiaries	Male Youth	Female Youth
<b>Total</b>	<b>9,364</b>	<b>4,871</b>	<b>2,346</b>	<b>2,405</b>	<b>1,095</b>	<b>645</b>	<b>450</b>

Source: Monitoring and Evaluation Section, AECOM, Khartoum Office, 2018

### IMPROVED WATER SECURITY

In recognition of the fact that water is the greatest constraint experienced by the communities, the pilot intervention in water provision was widely commended and appreciated as the pilot’s most tangible impact. In the Armal cluster, people collected 400,000 Sudanese pounds to invest in improving water supplies in the cluster, demonstrating commitment to contributing to

the activities intended to address priority needs. Women noted the enormous impacts of improved water supplies on their lives. In the Armal cluster, women now spend one to two hours per day to bring water to their homes compared to five to six hours previously. This is in addition to improved child health and hygiene conditions in households. The impact of water has extended not only to targeted cluster villages but also to thousands of people in neighboring villages. For example, the Sayyah Administrative Unit shares the rehabilitated *hafir* and affixed water tank with the Armal cluster. Migratory pastoralists also directly benefit from improved

*The sustained supply of clean water will be a continuous reminder to us that we are not struggling alone, but there are other people who, although far away, care about us.*

-- AHMED MOHAMED EL RADI, OMDA, ABU HOMEIRA

water supplies, taking advantage of them as a stop along their migration route. The design and spacious nature of the water yard was commended by authorities, including the Minister of Physical Development, who inaugurated its opening. The installed solar energy system is widely described as an important innovation. The Water Committee's capacity was supported through training on water management, sanitation issues, bookkeeping and conflict mediation. However, more focused training was requested by the community.

## COMMUNITY ENGAGEMENT

Empowerment is an important aspect of social change. It is a process that unlocks potential in people, individually and collectively, for use in their own lives, in their communities and in their society by acting on issues that they define as important. The pilot made important contributions toward the orientation, mobilization and participation of community members and the development of their capacities. Community structures and committees were created to lead and manage community development activities. Rather than creating parallel or competing structures, the newly created structures—for example, the peace committees—were closely integrated into the existing and legitimate social structure of the communities, improving cohesion within the target communities. In the process, a strong sense of community cooperation, collaboration and solidarity was constituted, according to a strong consensus of all those interviewed. A positive trend of economic, political, environmental and social change could be easily observed in the two clusters.

Under the Higher Committees, six specialized committees for peace, water, range and forest, microfinance, women and youth were established. Each subcommittee consists of 10 to 12 men, women and youth community representatives from the villages. Except for the microfinance committees, all other committees are functioning. The total membership of these committees in the two clusters is 150 persons comprising 50 women, 50 youth and 50 community leaders. All committees were given focused training.

## EMPOWERMENT OF WOMEN

Confined to the traditional gender division of labor, women in the two clusters have historically been in a very difficult situation. Besides caring for children and husbands, they shoulder the burden of fetching water and firewood from distant sources—taking on average five to six hours per day—and providing agricultural labor using manual tools, while lacking control of assets and agency in community public life. Women disproportionately bear the adverse impacts of land degradation, drought and food insecurity. “Our life as women was extremely very hard,” said one woman from Armal community.



*A women member of the Higher Committee  
(Picture taken by Omer Egemi, August 2018)*

Women are presently active participants in all pilot interventions. They are represented in the Higher Committees as well as specialized committees. They also established their own revolving fund groups for investment in activities that directly influence their livelihoods. The investment in water significantly reduced the burden on women as did introduction and distribution of LPG stoves. The provision of climate-resilient seed varieties and agricultural implements provided enormous support and contributed to improved economic conditions. The training that women attended was described as making a remarkable difference in their lives by breaking the historical isolation in which they lived. Now, they participate in decisions that affect their lives and the lives of their children and other household members. All interviewed perceived women as active participants in committees and community affairs compared to the previous situation, when their presence was limited to the household. Women are now motivated to take initiative. However, the struggle for women's empowerment is a long process. Coordinated support for women will remain a top priority for the community development agenda.



*Women in Abu Homeira describing their lives before and after the project, and future plans (Picture taken by Omer Egemi, August 2018)*

## ROLE OF YOUTH IN THE COMMUNITY

The issue of youth in North Darfur is critical. A history of neglect and marginalization and nearly two decades of war in Darfur left an entire generation without access to proper education, trapping youth in a vicious circle of poverty, illiteracy, unemployment and social exclusion. Unemployed, poor and aggrieved, the youth in Darfur constituted the main pool from which the opposing parties in the region, the government and rebel groups, obtained fighters. Accordingly, harnessing the positive potential of young people continues to be a serious challenge. The pilot effectively and successfully managed to engage youth, both boys and girls, and to enhance their positive role in the community.



*Youth Center at Armal. (Picture taken by Omer Egemi, August 2018)*

Youth are increasingly active in their respective villages as representatives in the committees, spearheading development interventions. They are engaged in following up, monitoring and executing interventions. Their active engagement running youth centers has given visibility and recognition to their role in community. They are, in fact, the contacts or focal points at the community level with whom implementing partners liaise. As stressed by many of them, "We are satisfied with what we are doing, and we feel important to ourselves and our people." However,

given the two key constraints of limited employment opportunities outside of the traditional agropastoral sector and lack of resources for youth engagement in community development, youth hold the conviction that the training and investment in upgrading skills is not enough.

## ENHANCED RESILIENCE TO CLIMATE CHANGE AND ECONOMIC SHOCKS

Strong empirical evidence is available suggesting that the pilot is on the right track toward strengthening community resilience to economic and natural shocks. A good example is the remarkable production of watermelon seeds in Abu Homeira. Although 2017 was a drought year, farmers provided with drought-tolerant melon seeds were able to produce large quantities that reached markets both inside and outside Darfur. The calculation of the economics of watermelon cultivation (**Table 6**) reveals that individual households managed to earn a net profit, contributing significantly to enhanced household resilience.

**Table 6. The Economics of the Cultivation of One Mukhamas of Watermelon Seeds**

<b>Seed Cultivation: Total Cost, Sale, and Profit (per mukhamas)</b>	<b>SDG</b>
Cost of 1 kg of seeds	60
Planting	150
Harvesting	700
Cost of empty sacks (2x20 SDG)	40
Transport of 2 sacks from farm to village (2x70 SDG)	140
Loading and offloading of 2 sacks (2x10 SDG)	20
<b>Total cost of seed cultivation</b>	<b>1,110</b>
<b>Sale of seeds: 2 sacks produce 3.5 kantar x 850 SDG</b>	<b>2,975</b>
<b>Net profit from seed cultivation (per mukhamas)</b>	<b>1,865</b>
<b>Residue Production: Total Cost, Sale and Profit (per mukhamas)</b>	<b>SDG</b>
Watermelon residues (1 sack of seed produces 2 sacks of residue)	0
Cost of 4 empty sacks (4x5 SDG)	20
Preparation of residue (packing) (4 x5 SDG)	20
Transport of 4 sacks (4x5 SDG)	20
Loading and offloading of 4 sacks of residue (4x10 SDG)	40
<b>Total cost of residue preparation</b>	<b>100</b>
<b>Sale of residue (4x50)</b>	<b>200</b>
<b>Net profit from residue (per mukhamas)</b>	<b>100</b>
<b>Seed Cultivation &amp; Residue Production: Combined Cost, Sales and Profit (per mukhamas)</b>	<b>SDG</b>
<b>Total cost of seed and residue production</b>	<b>1,210</b>
<b>Total sales from seeds and residue</b>	<b>3,175</b>
<b>Net profit</b>	<b>1,965</b>
<b>Profit from 5 mukhamas (5x1965 SDG)</b>	<b>9,825</b>

Watermelon is cultivated for the production of seeds, not fruit. The improved seeds were brought from the El Obied Agricultural Research Corporation through Sahari. The average area cultivated by the household is five *mukhamas*. One kilogram of seeds is used to cover one *mukhamas*, which produces on average two sacks (3.5 *kantar*, where 1 *kantar* is equivalent to approximately 99 pounds or 45 kilograms).

Watermelon was one of a range of drought-tolerant crop varieties introduced as part of the pilot. Other were millet, sorghum, cowpeas and okra. The pilot also distributed improved agricultural implements to community farmers. These agriculture-focused interventions benefitted a total of 4,989 households, divided almost equally between the two clusters. Beneficiaries were trained on climate-smart animal husbandry practices, the use of donkey ploughs and Integrated Pest Management. **Table 7** summarizes the details of these interventions.

**Table 7. Drought-Tolerant Seeds and Agricultural Implements in Targeted Clusters, 2018**

Item	Abu Homeira			Armal		
	Quantity (kg)	Beneficiaries	Per capita	Quantity (kg)	Beneficiaries	Per capita
Sorghum	2,800	794	3.0 kg	2,850	695	4.1 kg
Millet	3,000	600	5.0 kg	2,000	400	5.0 kg
Melon seeds	2,000	400	5.0 kg	1,520	400	3.5 kg
Cowpeas	1,250	500	2.5 kg	500 kg	100	5.0 kg
Okra	50	100	0.5 kg	100 kg	200	0.5 kg
Plough	100	100	1 plough	5,850	500	11.7 kg
Improved hoe	50	50	1 hoe	100	100	1 plough
Chickpea	N/A	N/A	N/A	50	50	1hoe

Source: Agricultural Offices, Mellit and Umm Keddada, 2018, Reports on Agricultural Activities

Important savings were also realized from the use of LPG stoves. Traditionally, the average household consumes two bundles of wood (each bundle is 15–20 kg) per week for domestic household energy, equivalent to SDG 100 (US\$2.10). The average monthly cost for two bundles of wood thus costs SDG 400 (US\$8.40). A one-month supply of LPG costs SDG 280 (US\$5.90), allowing for potential monthly savings of SDG 120 (US\$2.50) or SDP 4,800 (US\$100) annually. Women and men stressed additional benefits, including time savings for women, improved household environment and sanitation, reduced labor burden on women and girls, improved health of women and children, and the remarkable reduction in dependence on biomass and tree cutting. “Now one can cook quickly and have a clean healthy house,” commented one woman. Using LPG stoves also contributes to enhancement of the natural environment and strengthens adaptation and resilience to climate change. The annual revenue from the cultivation of watermelon and savings from the use of LPG stoves (SDG 15,050 or US\$316) is remarkable in such a rural setting.

However, the small number of LPG stoves distributed in the two clusters (340 total) and the high demand for the service forced women to establish a revolving fund to finance the cost of LPG tanks and to invest in LPG stoves for distribution to other households. In both Armal and Abu

Homeira, women's groups managed to obtain an additional 30 LPG stoves for distribution. In Abu Homeira, the women set a target of five years to cover all households in the cluster. Besides its direct impact on climate resilience, the revolving fund process adds significantly to strengthening social cohesion, solidarity and cooperation among community members.

## **INTEGRATING WOMEN AND YOUTH INTO LOCAL POWER STRUCTURES**

Community organizations and the increased presence and participation of women and youth in the committees significantly reshaped the power structure within the community. Power was previously the monopoly of male elites (tribal leaders and elders). The process gave recognition and voice to youth and women, who are now active protagonists in the decision-making process. At a basic level, simply exposing youth and women to new information and increasing their direct interaction with the world beyond their immediate communities through training sessions and consultation meetings contributed to self-realization and confidence building, and in turn, increased power. The representation of youth and women is about vesting power in those groups. The change observed is a gradual process of democratization and social transformation necessary for providing a better future for those communities. The road to attain this goal, however, is very long, and carefully considered, sustained efforts are needed.

## **MODERNIZING AND DEMOCRATIZING PEACE AND CONFLICT MANAGEMENT MECHANISMS**

Historically, conflict resolution and management were the exclusive power of tribal leaders and the *Ajaweed* (wealthy and well-respected elites). Conflict resolution among such communities is not about establishing truth but essentially about reaching consensual solutions and compromises. Traditional conflict resolution requires deep understanding of the history of tribes and groups, and the relationships among them. Also required is deep knowledge of the traditions (*urf*) verbally transmitted from one generation to the next. Knowledge of these traditions remains the monopoly of tribal leaders and the *Ajaweed*. This context provides perspective on the importance of youth participation and representation, of both boys and girls, in the peace committees. Besides allowing for the transmission of knowledge and skills, the process paves the way toward the democratization and modernization of the traditional conflict management and resolution institution. This is particularly relevant since tribal native institutions are accused of being politicized, manipulated by the government, and held accountable to the government instead of their respective communities and constituencies on the ground. For these reasons, the call for reform remains persistently on the agenda.

## **INNOVATION**

The introduction of solar power to operate both the water yard in Abu Homeira and the two youth centers in Armal and Abu Homeira is praised as an important innovation by the communities and authorities in the state Water Corporation, especially given the nationwide energy shortage. Since February 2018, Sudan has been experiencing a very acute shortage of fuel throughout the country, including in the capital city, Khartoum. The price of one gallon of

fuel reached levels up to 10 times the official price on the black market. The significant loss of lives due to the lack of drinking water—linked to a lack of fuel to run well pumps—was widely reported in the country during the hot, dry months of April to June 2018. Without the solar energy, the situation would have been disastrous for the people of Abu Homeira and mobile pastoralists, who also made use of the new energy source. According to authorities in the Water Corporation, the government is seriously considering the application of solar technology in all water yards of North Darfur State to reduce dependence on fuel.

# 7. SUSTAINABILITY

The short duration of the pilot raises questions about sustainability, which is likely to vary according to the nature of its different accomplishments. For example, gender empowerment is a key successful result of the pilot. Women speaking up and playing important roles in decision making are salient accomplishments. Women's revolving fund groups for the purchase of LPG stoves provide concrete evidence of how women have become active agents for change; they are committed and empowered to diversify their fuel sources, increase their resilience and enhance the overall quality of their lives. Such an investment will not be lost, but the challenge is how to consolidate, sustain and scale up the present momentum for gender empowerment and equality.

Youth are enthusiastically and actively engaged in the pilot activities and the two established youth centers have become instrumental public spaces. However, the lack of resources will constrain the centers' continued viability. Some possibilities exist to generate new financial support, including making fully operational a set of machines that produce stabilized sand blocks for construction.

The established peace committees are active in resolving day-to-day community problems and conflicts at the village level, but they have no capacity or legitimacy to resolve larger tribal and intragroup conflicts or issues such as land rights and access. Given this limitation, the presence of these committees will continue to be overshadowed by longstanding tribal institutions. For the full realization of the democratic process that was initiated, continued support to these mechanisms is necessary.

The rehabilitated water sources are providing recognizable support to communities and are fully owned, well-guarded and cared for by the communities. Therefore, it is safe to conclude that these sources will be sustained. However, the maintenance of solar units needs careful attention. Similarly, the agriculture-focused climate change resilience interventions (e.g., drought-resistant seeds, agricultural implements) proved relevant and adoption rates were high. The economic and social gains generated were considerable and encouraging to people. However, the investment was limited in scale and requires consolidation and scaling up if it is to have lasting effects.

## 8. PILOT LIMITATIONS

The pilot was characterized by several limitations, as described briefly below:

*Short implementation period.* The short, one-year time span coupled with starting activities late into the rainy season (mid-August) presented key challenges. Given these challenges, farmers were unable to benefit from the pilot's interventions at the time that the early rains began, and the effectiveness of the agriculture-focused climate adaptation activities—specifically the provision and distribution of drought-tolerant seeds and agricultural implements—was adversely impacted.

*Focus at the community level.* The pilot approach worked only with communities at the local level, not focusing on the external structural factors that are a significant source of community and household vulnerability, which limited community-level resilience to drought and climate change. Specifically, the policy and institutional aspects of vulnerability were not addressed. Influencing government policy is a key part of interventions intended to support communities and strengthen their resilience to climate change and economic shocks. Support for civil society development at higher levels of governance (state and federal levels) to facilitate reforms of existing policies or develop new regulations is a critical aspect of improved local governance.

*Coordination with local and international organizations.* It is likely that the TEPS-funded interventions would have benefited from coordination with other donors and donor-funded pilots actively working on climate change in Sudan. Such partners include UNEP, the Sudan Environment Conservation Society, Pan Sudan, Practical Action and SOS Sahel Sudan. Partnering, including knowledge sharing and exchange, would have added value to the pilot.

*Prioritization of conflict resolution.* The two targeted localities are in one of the most secure areas in greater Darfur. Therefore, the emphasis on conflict resolution, focusing on the establishment of peace committees (e.g., the Higher Committees), may not have been the most practical prioritization of objectives. It would have been more appropriate if modernization and democratization of traditional conflict resolution mechanisms was explicitly spelled out as an objective. The sustainability of the Higher Committees is in question, given that their legal status appears to be uncertain. The lack of legal status for the Higher Committees limits the ability of other committees, including the established women's groups, to access formal credit institutions.

*Cancellation of chicken-raising activity.* The planned intervention in chicken raising was not implemented because Sahari failed to get the specified breed (Zambian Chicken). Aside from improving food security, this activity would have been an important way to improve women's economic situation and overall household financial security. In both clusters, women explicitly asked for the implementation of this intervention, using local breeds that are adapted to local ecological conditions, rather than importing new breeds.

*Concerns about equity.* Finally, it was noted during the field work that residents of Abu Homeira village historically constitute the elite of the Abu Homeira cluster, and therefore dominated over other members in the Higher Committee, influencing pilot results. For example, they received over 80 percent of the LPG stoves distributed. This type of outcome appears to be the result of a lack of close monitoring and effective management of the interventions. Future activity design and implementation in these clusters should take into consideration demographics, the socioeconomic distribution of wealth and power relations to ensure these interventions equally benefit all community members.

# 9. LESSONS LEARNED AND CONCLUSIONS

Based on this review of the TEPS pilot activities in North Darfur, the following lessons learned and conclusions are offered:

*Implementation timing is critical.* In regions like North Darfur, where rainfall is erratic and the rainy season is very short, it is important to start weather-sensitive interventions with ample time ahead of the rainy season. The late start of TEPS-funded activities, together with the shortage of rain during the remaining part of the rainy season, severely affected the impact of some pilot activities, especially the climate resilience interventions related to agriculture and the rehabilitation of rangelands. The rangelands activity showed that drylands have good potential to enhance household livelihoods by improving the quality and quantity of tree and scrub biomass for both human and livestock use when these resources are effectively managed.

*Climate change adaptation and peacebuilding need to be advanced in the context of community dynamics.* The pilot demonstrated that in rural areas where most of the population depends directly on the land, recognizing and explicitly targeting the links between natural resource management, climate change adaptation, livelihood security and peacebuilding is essential. Communities can be brought together into cooperative processes that reduce social and political tensions by establishing a general sense of shared interests, while addressing priority livelihood issues. However, when working with communities that historically have lacked planned interventions in community governance and social capital development, capacity building based on limited training is insufficient.

*Gender-based challenges and solutions should be prioritized.* By actively engaging women, the pilot successfully challenged the stereotypes of the cultural trap whereby the subordination of women is the social norm and is therefore a practice highly resistant to change. The pilot demonstrated that the active participation of women in interventions addressing peacebuilding, livelihoods and climate resilience produced significant benefits.

*Community priorities must be solicited and addressed.* Pilot interventions in water resources were the communities' top priority. The success of those interventions demonstrated that the process of socioeconomic transformation and poverty reduction can be advanced if planned interventions align with and address the priorities of communities.

*Innovative programming pays dividends.* The use of solar energy to run the water yard at Abu Homeira proved to be an important innovation. Without that source of energy, the operation and sustainability of the water supply would have been questionable. Promoting and scaling up the

solar energy innovation has the potential to significantly improve and transform rural livelihood conditions.

*Actively engaging local community members has multiple benefits.* Given farmers' and pastoralists' direct contact with the land and its natural resources, they are often more knowledgeable about climate change and its impacts on their livelihoods than planners and decision makers in government. Therefore, actively engaging rural community members often leads to solutions that better address community needs and are more sustainable.

*Target communities can be empowered to take initiative.* Although "dependency syndrome" has become a factor in parts of Darfur where long-term humanitarian operations are entrenched, the pilot communities demonstrated strong willingness and preparedness to contribute to activities intended to address their priority needs. The community revolving fund for purchasing LPG stoves is one example. Yet these local resource mobilization mechanisms are challenged by a persistent lack of resources, a situation that compromises their sustainability.

*Activities must be designed in alignment with community needs and government policies.* The pilot demonstrated strong relevance to the ecological and social context of the two targeted clusters. Its activities were also well-aligned with the Government of Sudan's priority policy agenda for climate change adaptation. The climate resilience interventions implemented were relevant and responded to the communities' immediate and long-term priorities. From this perspective, the pilot is perceived by the communities as a development pilot that invested in the future of the people of Darfur.

*Even pilot activities need ample time to demonstrate sustainable results.* The pilot, however, was negatively impacted by two factors: 1) its late start toward the end of the rainy season, and 2) the drought. Accordingly, it is strongly recommended that the duration of the pilot be extended or that future USAID assistance continue the work initiated through TEPS.

Despite the short, one-year duration of the pilot and its implementation during a drought year, the contribution of the pilot to improved resilience to climate change and enhanced quality of life was recognized and appreciated by the communities and pilot partners, including the relevant government authorities at state and local level. Improved water security, increased youth and women's empowerment, and enhanced resilience to economic and environmental shocks are tangible and recognized impacts of the pilot interventions.

# 10. RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made to USAID to improve the sustainability of the achievements in Mellit and Umm Keddada Localities in North Darfur State and for scaling up these achievements to other areas:

1. For weather-sensitive interventions, future activities should begin well in advance of the rainy season. This is critical for limited-duration pilots.
2. Given that many of the interventions implemented were significantly constrained by limited rain, it is strongly recommended that activities from this pilot be incorporated in ongoing TEPS work, or perhaps more realistically, considered for future USAID programming to facilitate a consolidation and scaling up of climate resilience interventions in the localities.
3. Clearly defined investment in good governance and leadership activities for community leaders, women and youth is urgently needed. The apparent domination of Abu Homeira village over other communities in the pilot area led to perceived inequity of resource distribution.
4. Women in the two clusters benefited greatly from the pilot, but more investment is needed in women's capacity and productive skills. To guide a rigorous process of investment in building women's capacity and empowerment, the model of "Young Professionals" adopted by international actors in other parts of Sudan should be introduced and adopted. The young professionals perform the role of gender sensitizers, community mobilizers, and community development and extension agents. In the process, they obtain knowledge and experience that help them to compete in the labor market.
5. Continued investment in the capacities of the Higher Committees and their specialized committees should be ensured. The creation of these committees is an important step toward day-to-day local conflict resolution. However, they lack legal status and legitimacy in the face of Native Administration structures. It is crucial to start and complete the legalization (registration) of the two Higher Committees established by the pilot. USAID could support the communities in doing that, and the guidelines and directives at the Ministry of Social Affairs of the State can provide the required roadmap. Formally recognized committees provide an essential channel through which the community, particularly women's groups, can access formal credit and microfinance institutions.
6. Youth in the two localities, like other youth in Darfur, face the serious problem of unemployment. Focused and targeted intensive training on production skills, for both males and females, is strongly recommended. A prerequisite for this is a market assessment of the potential skills required to meet market demand. The training provided on production of stabilized sand blocks for construction has significant potential for providing job training,

while promoting an environmentally sound technology. It is also a relevant climate resilience intervention.

7. Support for home gardens (*jubra*) should be expanded and diversified as a key intervention increasing household livelihood resilience in a variable climate, including a focus on creating economic opportunities for women and testing other climate- and drought-resilient, quick-maturing crop varieties.
8. Implementation of the pilot's chicken breeding intervention using local chicken breeds should be supported.
9. Support for a landscape approach to "agroforestry" should be explored, as it is an important measure to combat the effects of climate change. The cultivation of drought-resistant trees in the nursery adjacent to the water yard in El Fashir and the broadcasting of drought-resistant seeds into the rangelands undertaken during the pilot are a good start and should be continued and scaled up.

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