

Natural Resources Management: Local Perspectives from North and Central Darfur



A Feinstein International Center Field Report 

Hassan-Alattar Satti with Hussein Sulieman, Helen Young, and Anne Radday

January 2020

Acknowledgements

We would like to extend our gratitude to our Taadoud II partners—Darfur Development and Reconstruction Agency (DDRA), Oxfam America, and Norwegian Church Aid (NCA)—for their support in facilitating field trips to communities; for linking us with stakeholders at state and federal levels; and for generously providing accommodation and office space in North and Central Darfur. Without their support this work could have never been completed. Special thanks go to Mohammed Fadiel and Hawary Abdallah who joined and facilitated Feinstein International Center, Friedman School of Nutrition Science and Policy at Tufts University trips to the communities in North and Central Darfur. The advice and recommendations they offered on how those trips should be organized were invaluable. We would like also to acknowledge Mr. Omer Ali Abdallah for linking Feinstein with a nomads' group in Um Jalbagh, North Darfur. Finally, we are grateful to the communities we visited, who were open and generous in sharing their time and experiences with us.

List of Acronyms

FGD	Focus group discussion
FNC	Forests National Corporation
IDP	Internally displaced person
IWRM	Integrated water resources management
KII	Key informant interview
NGO	Non-governmental organization
NRM	Natural resources management
OR	Operational research
SWC	State Water Corporation
UNEP	United Nations Environment Programme
WES	Water and Environmental Sanitation Project

Table of Contents

Acknowledgements.....	2
List of Acronyms.....	3
List of Tables	5
List of Figures	5
Executive Summary.....	6
Introduction	8
Methodology.....	11
Limitations.....	12
Issues of access to natural resources in Taadoud areas	13
Traditional farming and access to land	13
Multiple land governance arrangements	13
Availability of land.....	15
Livestock production and access to rangelands	16
Pastoralist groups and their mobility.....	16
Governance arrangements of rangelands	17
Expansion of croplands and livestock migratory routes blockage.....	18
The role of the Native Administration and the <i>talaig</i>	20
Government interventions	21
Engagement of pastoralists in development agencies' projects	22
Access to water and governance of water resources	23
Water services in North and Central Darfur	23
Government interventions, achievements, and gaps.....	24
Governance of water resources.....	27
Management of water facilities.....	29
Deforestation and access to forest resources	29
Drivers of deforestation.....	29
Government interventions	32
Governance of forest resources.....	33
Discussion and conclusion	33
Access to land issues.....	34

Pastoralists and access to rangelands.....	35
Challenges of access to water.....	35
Deforestation and access to forests	36
Recommendations for Taadoud II implementing partners	37
Recommendations for Taadoud II operational research.....	38
References	40

List of Tables

Table 1. The communities that Feinstein and consortium members visited during field work.....	11
Table 2. Access-to-land modalities identified by communities	15
Table 3. The levels of mobility practiced by livestock keepers in Taadoud villages visited.....	17
Table 4. Different water facilities management options	28

List of Figures

Figure 1. Bean production in alluvial soils during the dry season as a form of continuous cultivation.	10
Figure 2. Crop residues fenced at the end of farming season.....	18
Figure 3. <i>Mashish</i> (a shallow, hand-dug well) near Zalibgie in Central Darfur.....	24
Figure 4. Dry season cultivation in wadi Abata, February 2019.	26
Figure 5. Rangeland hay supplies in El Fasher camel market.	31
Figure 6. Pastoralist cutting a tree to feed his herd near Jaddah, Central Darfur.....	32

Executive Summary

The importance of natural resources in Darfur is derived from the fact that the predominant rural livelihoods of the region depend primarily on those resources. Land is of particular importance, but other landed resources like water, forests, and rangelands are also significant. The condition of those resources and their contribution to rural livelihoods is influenced by various environmental, demographic, and governance factors.

Indeed, the differences in seasonality of production and availability of natural resources in Central and North Darfur are reflections of environmental variability across the region. Variation in rainfalls influences the choices of crops produced in Central and North Darfur as well as the type and density of vegetation cover. Rainfall variation also influences the seasonality of livestock mobility. Despite the fact that annual average rainfall is higher in Central Darfur than in North Darfur, Central Darfur State must be considered a state that is poor in water resources as its soil is dominated by the basement complex aquifers. Thus, any generalization about the state of natural resources within the state or amongst states is misleading. This report reflects on discussions with a wide range of stakeholders and communities that took place throughout 2019 in North and Central Darfur states. The aim of those discussions was to investigate major issues in natural resources management in North and Central Darfur. Additionally, we consulted different stakeholders about gaps in knowledge and research on natural resources management that could be filled with Taadoud II¹ operational research (OR) activities. The ultimate goal is to ensure proper research uptake that engages with all Taadoud stakeholders. The following are the key areas investigated in our field trips.

Governance of natural resources

In North and Central Darfur, governance of natural resources in a sustainable and equitable way is challenged by different factors. Demographic shifts in population growth, displacement, and urbanization have increased demand for land and landed resources. Commercialization of natural resources and production has resulted in considerable shifts in land use and intensified natural resources degradation. These shifts are taking place within an institutional context characterized by overlapping institutions for accessing land that has resulted in the evolution of multiple-rights system and has hindered the overlapping rights that farmers and pastoralists used to enjoy over land. The multiple-rights system is underpinned by government land registration, although at local level people are inclined to rely more on customary arrangements of the Native Administration for protecting their rights. Indeed, the Native Administration continues to play its role in facilitating access to natural resources and in mitigating conflicts around them through structures like *ajawid*.² Enforcing laws related to natural resources management (NRM) has been raised as a major issue, particularly in forest and rangeland conservation as well as organizing access to water.

¹ Taadoud II is four-year project funded by United Kingdom's Department for International Development (DFID) in Sudan. Its overall objective is to enhance livelihoods resilience throughout the five states of Darfur region. Further information is available in the Introduction.

² Local committee for negotiating disputes, especially involving livestock. For more details, please see Young et al., 2019.

Availability of natural resources

Stakeholders in North and Central Darfur indicated that availability of different natural resources is influenced by many factors. Livestock and human population growth, and urbanization have an impact on availability of natural resources. Of particular concern for many actors is the expansion of croplands, as it is seen as a major driver of deforestation and rangeland degradation, which has intensified competition and disputes between farmers and pastoralists. Growth of the timber trade as a result of urbanization has further exacerbated deforestation in North and Central Darfur. Availability of water is different for different users, and little attention is paid by different actors to promoting access to water for pastoralists. Limited access to water for pastoralists with the progress of the dry season contributes to disputes between farmers and pastoralists.

Government interventions and gaps

Lack of financial and institutional resources for local government departments is an obstacle that all the key informants, particularly those from government departments, raised during the Darfur trip and in Khartoum. Different NRM-related departments interviewed in Central and North Darfur have plans for projects and interventions, but the lack of resources prevents operationalizing those plans and projects into actions. In some cases, projects were not completed due to cuts in funding. Positive legal and policy development have not resulted in more engagement from government in improving access to natural resources. Even when government departments implement national project and interventions, there is very little cross-sectoral coordination between the departments leading different sectors. The lack of coordination has very negative implications on governance of natural resources, including very low impact of projects, conflicting interventions, and competitive relationships between different government institutions. As an example, the link between water development and other natural resources within the water sector is missing, which means there is a lack of consideration for the high impact that water development intervention can make on the overall natural resources base. A systems management approach that recognizes the interconnectivity and interdependence between natural resources requires more efforts to establish links and relationships between different government departments at different levels and across different sectors.

Competition and disputes over natural resources

Despite the long history of conflict in the region, there are many examples of cooperation and peaceful resolution of disputes in Taadoud areas that were visited as part of the consultative process. Sharing water resources between neighboring communities and between farmers and pastoralists was mentioned in different villages of North and Central Darfur. In addition, there are examples of disputes resulting from animals trespassing into farms and blocked migratory routes that were resolved peacefully. However, the relationship between different users is still shaped by competition and different expectations of how natural resources must be shared. Different communities show different capacities in conflict resolution. Some communities are able to manage disputes locally, while others require external support to resolve those disputes. Different disputes over natural resources take place in different seasons.

Introduction

Across Sudan, natural resources represent the backbone of the national economy, with the agricultural sector contributing 39 percent to Sudan's gross domestic product (GDP) (ILO, 2014). Demographically, more Sudanese people live in rural areas than in urban areas, and their livelihoods rely mostly on natural resources (Mohamed and Egemi, 2012). According to the International Labour Organization (ILO), 45 percent of Sudan's population is employed in the agricultural sector (ILO, 2014). Moreover, 58 percent of women in Sudan work in the agricultural sector (World Bank, 2019). Indeed, the region of Darfur is no exception. Peoples' livelihoods throughout the region rely heavily on access to natural resources, and those livelihoods have been historically adapted to the climate variability that characterizes the region (Young et al., 2019).

As a region located on the edge of the desert, Darfur's environment is characterized by environmental variability in terms of precipitation, temperature, and vegetation cover. Rainfall variability is the most important factor as it directly affects water resources, vegetation, and agriculture (Bromwich, 2008). Rainfall varies between years and over decades. However, within the same year, rainfall is also variable in different places and during different seasons. In Darfur, an obvious annual rainfall gradient with higher rainfall in the south and lower rainfall in the north results in a nutrients gradient, with the most nutritious yet sparser pastures to be found in the northern rangelands during the rainy season (Young and Ismail, 2019). For livelihoods to thrive in such an environment, communities need to develop management strategies that ensure access to natural resources for all users and livelihoods.

The two major natural resources-based livelihoods systems in Darfur are rain-fed agriculture and pastoralism, as reviewed in depth in our Feinstein desk study (Young et al., 2019). Up to four decades ago, those two systems enjoyed a symbiotic and integrated relationship through which the systems exchanged a wide range of benefits (Young and Ismail, 2019). Both livelihoods strategies use the same natural resources base but in different ways, aiming at achieving slightly different objectives. The shared natural resources and the common objectives create an enabling environment for cooperative use of resources in an equitable and sustainable way (Fitzpatrick and Young, 2016). When the rainy season starts, farmers start sowing the cultivable land, while pastoralists move with their herds away from the farming areas towards rangelands in more northern, drier areas. At the end of the rains, early in the dry season, farmers harvest their rainy season crops and herders return to graze their animals on crop residues of the harvested fields. Hence as the more northern rangelands become drier and water sources become scarce, the pastoralist herds move southwards to dry season grazing areas with better fodder and dry season grazing conditions (Sulieman and Young, 2019). Together or separately, agriculture and pastoralism are a very good example of how, in dryland conditions, agricultural livelihoods can perform well by "working with variability" and not against it, and that is the heart of their dominance as primary livelihoods in the region (Young and Ismail, 2019).

Despite the integrated nature of the two livelihood systems, many in the humanitarian sector treat them in isolation from one another. This view has been intensified by the ongoing conflicts in Darfur and has led to a failure in recognizing the vulnerability of some groups. In fact, even today humanitarian agencies continue to focus humanitarian assistance on internally displaced people (IDPs) while ignoring the vulnerabilities of pastoralist communities (Young and Ismail, 2019). Although it might be useful from a practical point of view to describe a household's primary livelihood as "pastoralist" or "farmer," this

description conceals the reality that often the same household practices a combination of both activities. Instead, Barth emphasized the value of focusing on peoples' livelihoods activities and how those activities are interlinked:

We can focus not on two kinds of society, but—initially—on the total activities of a region. If we stop for a while thinking basically of groups of people, and think instead of types of activity we can then disaggregate the activities that take place in a region into some middle-range sub-systems which are systems of production, or “productive regimes.” (Barth in Young and Ismail, 2019, p. S319)

Using this lens of a wider regional system, pastoralist livestock production and rain-fed cultivation could be viewed as sub-systems. As Young and Ismail discuss, this view is in line with the recent resilience thinking about socio-ecological systems as well as non-equilibrium systems. The non-equilibrium thinking suits environments characterized by uncertainty and environmental variability like Sudan and most of Africa. It represents a move away from the dominant view within the development sector that sees climate predictability and early warning systems as the right interventions for resilience building, towards a new approach that recognizes uncertainty as part of the day-to-day life of many rural communities where interventions should be centered around integrated, participatory learning and adaptation (Scoones, 2004).

Focusing on the interlinkages between the sub-systems of pastoralism and rain-fed cultivation requires understanding the institutions that facilitate those linkages. Cleaver defines institutions as “arrangements between people which are reproduced and regularised across time and space and which are subject to constant processes of evolution and change.” The definition implies that institutions are arrangements that govern people's behavior. It also implies that although those arrangements might be permanent, they are not static and are always subject to change (Cleaver, 2012, p. 8). The *talaig* institution is an example of an institution that facilitates the transition of land between the pastoralist and rain-fed farming systems. The *talaig* is the date by which all farmers must ensure that they have harvested all their crops to allow pastoralists to graze their animals in the harvested lands. The aim of agreeing on a *talaig* is to prevent crop losses and conflict. It is agreed via negotiations between farmers, pastoralists, and local authorities. When the *talaig* date comes, pastoralists have every right to use the land even if farmers have not fully harvested their fields. As a customary institution, it has evolved through local practices of local communities, their leadership, and formal government structures (Osman et al., 2013).

Indeed, the natural resources base over which the two subsystems interact faces many environmental, demographic, and governance challenges that affect its viability and sustainability. Changing patterns of rainfall in the form of highly localized inter-seasonal, inter-annual, and multi-annual variability directly affect rain-fed agriculture and pastoralism. Deforestation is taking place at an increased rate due to many economic and demographic factors. Moreover, human and livestock population growth have put more pressure on accessible land and landed resources (UNEP, 2007; Young et al., 2019).

In addition to the above-mentioned environmental and demographic changes, the rules governing access to natural resources have been continuously changing. Expansion of croplands as well as the erosion of the traditional customary arrangements governing access to land have undermined the

symbiotic relationship that farmers and pastoralists had historically enjoyed (Young et al., 2019). On the one hand, the erosion of customary arrangements and the evolution of private ownership gave way to individual rights, thereby eliminating the rights of other users whose rights used to overlap with those of farmers on the same parcel of land. On the other hand, the expansion of rain-fed cultivation and intensification of wadi dry season cultivation (see Figure 1) have taken place on the previous “open access” expanses of rangelands (Young and Ismail, 2019). These new developments have serious implications for how different users access natural resources.



Figure 1. Bean production in alluvial soils during the dry season as a form of continuous cultivation.

Taadoud II is a four-year project funded by the United Kingdom’s Department for International Development (DFID) in Sudan. The project is implemented by a consortium led by Catholic Relief Services (CRS). Its overall objective is to enhance livelihoods’ resilience throughout the five states of the Darfur region. Feinstein International Center, Friedman School of Nutrition Science and Policy at Tufts University is the operational research (OR) partner in Taadoud II consortium. The OR is planned to generate evidence that will fill evidence gaps and help Taadoud II implementing partners in enhancing the effectiveness of their resilience-building interventions. Indeed, Taadoud II OR will build on the findings of the Taadoud I OR, which indicated that for a household to be resilient it must enjoy access to sufficient natural resources, and that any reduction of access to natural resources limits the capacity of households to recover from major shocks (Fitzpatrick and Young, 2016).

As the first step to determining the direction of the OR, Feinstein completed a desk study by reviewing available literature on natural resources management and resilience in Sudan and other drylands contexts (Young et al., 2019). This desk study will be followed by brief reports on specific natural resources issues in Darfur. To ensure that topics serve the needs of the stakeholders, we carried out a

consultative process with key informants. This process targeted senior staff from government departments, leaders of civil society organizations, and Native Administrations. Feinstein’s National Research Manager interviewed key informants and stakeholders in Khartoum as well as in Central and North Darfur. This report presents the major outcomes of those interviews and discusses them against the background of existing literature on NRM in Darfur, with a focus on access to natural resources and institutions that organize this access. This focus will help shed light on relationships between different users of natural resources as well as the limits and opportunities for cooperation between them.

The report starts with a description of the methodology followed to collect the information, with detailed information about the areas visited and the key informants interviewed. The methodology section is followed by a section presenting the major findings against the background of NRM literature (for a wider review of this literature, see the Taadoud/Feinstein desk study—Young et al., 2019). A concluding section provides an overview of the findings and their implication for the Taadoud II project.

Methodology

Feinstein’s National Research Manager collected the information presented in this report during monitoring trips to North and Central Darfur that aimed at supporting Taadoud II implementing partners to develop a better understanding of the natural resources management contexts in their Taadoud II target communities. Feinstein staff organized three field trips from January to August 2019 to North and Central Darfur in coordination with Oxfam and Norwegian Church Aid (NCA). During the first two field trips, a team from Feinstein and the implementing partners visited five communities in North Darfur and two communities in Central Darfur. In the third field trip, the Feinstein team visited North Darfur to meet with different stakeholders and discuss the issue of pastoralist engagement in developing projects. The villages visited were diverse in terms of ethnic identities and primary livelihoods of their dwellers (see Table 1 below). The diversity of the villages visited in terms of the dwellers’ background and the historical events that affected them suggests that any generalization will be tricky and that stakeholders need to allow time to understand the communities’ history and background. The team facilitated one focus group discussion (FGD) in each of the seven villages visited. The national research manager interviewed ten key informants in El Fasher, Zalingei, and Khartoum representing a diversity of stakeholders, including those from government departments and civil society organizations, and independent experts and Native Administration leaders. The table below provides background about the communities visited.

Table 1. The communities that Feinstein and consortium members visited during field work

Area	Number of participants	Description
Rural El Fasher Locality, North Darfur		
1 Azagarfah	12	One of the oldest villages in northern El Fasher, established in the nineteenth century. Fires affect the area; the latest was in 2014 and destroyed half of the village. Armed rebels attacked the area during the conflict and imposed taxes on people in the form of grains and cash. As a result, many young men and women fled to El Fasher. Inhabitants practice farming and livestock rearing.

2	Hilat Rahad	7	Located in northern El Fasher; inhabitants mainly practice farming and pastoralism. Two hundred households live in the area. Droughts affected the area in the 1980s, which led to loss of livestock and wild animals. In 2015 and 2016, drought also affected the area severely. There are high-quality farming lands and pastures in the area.
3	Majdoub (A)	10	Located in western El Fasher; the community practices diverse livelihoods. The community is 100 years old, and people moved to the area from El Fasher. Two hundred eighty-six households live in the village. Drought affected the area severely in the 1980s, which led to loss of crops and livestock. As a result, many people migrated to central Sudan. In 2004, the conflict displaced 90 percent of the population to IDP camps.
4	Abudegais	15	Located in western El Fasher; people established the village in 1918. Availability of land was the main reason people moved to the area. Droughts affected the area four times from 1978 to 1985, which caused huge losses in terms of livestock. As a result, many people moved to El Fasher and to South Darfur. In 2004, the conflict affected the area, but people did not move to camps or other villages. Instead, many people from Jebel Si and Korma moved to the village.
5	Um Jalbagh	6	Located in northern El Fasher near Korma. A large portion of the community practices nomadic pastoralism; the community identifies themselves as nomads. Many have settled in the village and are increasingly involved in farming. Livestock theft is a major threat to the community.
Zalingie Locality, Central Darfur			
1	Jaddah	17	Located in northern Zalingie; the majority of the community members are farmers. A group of pastoralists established the village back in 1960s, and the community gradually settled.
2	Abata	30	Abata is a cluster of villages; diverse ethnic groups live in the area. Community members practice farming and pastoralism. A large proportion of pastoralists live in <i>damras</i> (semi-permanent settlements) around Abata.

Limitations

- The duration of the visit was too short to gather detailed information about the communities, their livelihoods, and how access to natural resources affects those livelihoods. Because the analysis is based on limited information, it must be treated with caution. Despite this limitation, the information provided in this report is useful for opening discussions about access to natural resources for farmers and pastoralists and the issues they face. It also provides some hints for NRM practitioners on the information to look for in villages other than those covered by this report.

- The villages that were visited as part of this consultative process are not representative of the whole region, nor are they representative of their states. Therefore, information provided here cannot be generalized for all Darfur. Discussions presented in this report reflect the views of specific communities in North and Central Darfur as well as state-level government departments in those two states. An integrated approach for NRM research would require much wider consultation in both states to cover more localities and stakeholders.
- The FGDs and key informant interviews (KIIs) were not gender balanced. Even when women took part in group discussions, their participation was not very active. Unless asked direct questions, they barely talked about the issue. In some communities, like Abudegais, women talked more freely than women of other communities. This difference might be attributed to the fact that Abudegais is one of the rural El Fasher communities that was part of many international non-governmental organization (NGO) projects in which a lot of effort was made to organize women and to ensure their participation in projects.

Issues of access to natural resources in Taadoud areas

The purpose of this section is to present the major feedback from FGDs and KIIs held as part of the field work carried out in January and March 2019. It highlights concerns and issues of different communities to show the major NRM challenges they face. The major natural resources that will be discussed are cultivable land, rangelands, water resources, and forests. An integral part of the discussion will be around relationships between different users and how this relationship is influenced by natural resources management.

Traditional farming and access to land

This section provides information about access to land, the arrangements organizing that access, and the key shifts people are witnessing in those arrangements. The section also highlights some examples of disputes over access to land involving different users of natural resources.

Multiple land governance arrangements

The land tenure system in Darfur has been significantly changing ever since the region's annexation to Sudan under the Anglo-Egyptian colonization in 1916. Since then, traditional customary laws have coexisted with modern statutory laws. According to customary law, land ownership is for the community, while under statutory law all the land is owned by the state, which then grants individuals and groups exclusive multiple rights if they register the land (Osman et al., 2013).

Successive Sudanese governments since the Anglo-Egyptian colonial rule have left those two systems to work in parallel in Darfur and other regions of Sudan. The coexistence of the statutory and customary laws comes with risks of disputes that can turn into conflicts. According to a senior staff member in a civil society organization, no one can claim that there is a functioning land law in Darfur because of the ambiguity created by the coexistence of the two systems. He added that government does not fully recognize the customary law but at the same time it has no clear strategy on land registration. Some communities and Native Administrations assert that land owners are well known based on the customary laws, while other communities say that the land is owned by the government. He went on to

state that these two conflicting views about the legitimacy of the customary system reflect the contradictory interests amongst different users and groups. An expert in North Darfur from the United Nations Environment Programme (UNEP) added that “the government does not have any clear vision on how to organize access to land in a way that can provide people with access to croplands but also ensures that rights to access forestlands and rangelands are protected.”

Native Administration leaders and communities interviewed claimed that Native Administrations have absolute authority over land. Indeed, many of the customary arrangements concerned with land still apply in those communities. For example, any land that has not been used by the individual to whom it was first allocated must be returned to community ownership, and the *Sheikh*³ will reallocate it to another individual. In this case, individuals can continue to claim the right to use the land allocated to them unless they stop cultivating it, which contradicts the statutory law under which land is registered for a fixed period, beyond which it must be returned to the government. Indeed, this is in line with the findings of Osman et al., who indicated that the coexistence of the two land tenure systems is problematic because of the confusion it creates over rights of access to land. Osman et al. state that the state legally claims ownership of all lands in the country under the statutory law, while on the ground, the Native Administration claims authority over organizing access to land retained by customary law (Osman et al., 2013). Thus, what is happening on the ground, where land is mostly governed by customary laws, is barely influenced by formal statutory institutions (Young et al., 2019).

In all the FGDs with Native Administrations and communities, there was a consensus on the primacy of the customary system. Their response to the question of the role of government in organizing access to land was that “only Native Administration oversees access to land.” This response could be attributed to three factors. First, Native Administrations see the statutory law as undermining their powers and authority in the area. According to a head of civil society organization, for Native Administrations across the region, their authority is always linked with their capacity to demonstrate power over land. He adds that any new structure organizing access to land must be under the Native Administration, and the new structure cannot be parallel to the Native Administration for it to be accepted to the communities. Second, the political land administrations barely have contact with the communities at the very local level; their presence stops mostly at the locality level. Finally, communities might have trust in customary law and Native Administrations as protectors of their rights more than any statutory arrangement that could possibly limit their rights or make those rights conditional on payment of high fees and taxes. Indeed, land registration, its recent development and its limitations, is an area where there is a knowledge gap that Taadoud II operational research could aim to bridge.

In North and Central Darfur, small-scale disputes within communities take place between farmers around the boundaries dividing the farms between different households or individuals. According to Osman et al., boundary disputes are associated with changes in the land tenure system. Their frequency is increasing with the permanent land use as well as the use of fencing for marking boundaries (Osman et al., 2013). According to community members, boundary disputes are easy to resolve through local conflict resolution councils called *ajawid*.

³ An executive at community or village level.

The conflict of Darfur itself adds to the ambiguity of the system in terms of protecting communities' rights. According to the head of a civil society organization (CSO), communities that were displaced to Sag Alneam from northern parts of North Darfur as a result of the 1980s drought cycles have been cultivating and living in the area since then. They were hosted by local communities, and land was allocated to them by the Native Administration of the host community. Despite the four decades they spent living in the area, they kept loyal to the Native Administration in their areas of origin and not to the local Native Administration that hosted them. When the conflict erupted, these northern migrants claimed that the land belonged to their northern Native Administration, and the power dynamics at the beginning of the conflict strengthened that claim. When that balance shifted, they were expelled from the area, and the land was stripped from them by the host Native Administration. Any arbitration that will take place in this case will be very complex and difficult to settle. On the one hand, the local Native Administration does not recognize the rights of these former migrants. On the other hand, statutory arrangements recognize their rights based on long-term settlement and acquisition.

Availability of land

All interviewed Native Administration leaders indicated that all the land under the authority of *Sheikhs* has been already allocated to their community members, so they do not have any more land to allocate. Currently, the land parcels that individuals can claim the right to use are inherited and often shared with other inheritors. The increased demand began to take place three decades ago due to factors including migration, and human and livestock population growth. As these demographic shifts happened in a context shaped by conflicting land tenure systems, land conflicts became inevitable (Osman et al., 2013).

The move towards individual property rights allowed for the evolution of new modalities of access to land. For example, when a person with a property right to a parcel of land allows someone else to cultivate his/her land, this is usually done through an agreement that guarantees the owner a percentage of the produce or the profit.

Native Administration representatives indicated that women can and do access land via these types of arrangements. The two modalities of access mentioned above are in line with Osman et al., who indicated that "inheritance-based acquisition in accordance with Sharia Islamic law has become the dominant means of land transfer and acquisition." Moreover, sale and rent and fencing of a land evolved as new modalities of accessing land (Osman, et al., 2013, p. 18). Community members and Native Administrations highlighted different modalities of land access (see Table 2).

Table 2. Access-to-land modalities identified by communities

	Modality
1	Inheritance based
2	Land purchase
3	Rent
4	Partnership or rent by sharing produce or profit

Privatization of land has become a trend in Darfur. It was highlighted as an issue by stakeholders in Central and North Darfur. Government elites and businessmen represent the major categories of those who practice land acquisition through purchase. The ambiguity created by the coexistence of both a

customary and statutory land tenure system has created a very good environment for this trend to grow. Indeed, discussions with stakeholders in North Darfur suggest that Native Administrations play the role of brokers in the land market, which has increased their incentive to encourage more people to sell their land. This area is one of the potential research areas for Taadoud II OR that could provide stakeholders with a better understanding for the evolving trend of privatization, as well as the motives and drivers behind it in Darfur. Particularly, there is a need to understand the vulnerabilities of farmers that prevent them from maintaining their access to land. Privatization of land usually takes place in highly fertile alluvial soils around wadis. Property rights to such land are dependent on the length of residence in the area. Recent arrivals usually have no access unless they rent or purchase land from original owners (Scoones in Young, et al., 2019).

In both Central and North Darfur, different interviewees reported that government is promoting land registration, and it is taking place at a higher rate. According to a staff member from the Directorate of Agriculture in Central Darfur, the registration fee is very high, which prevents many farmers from registering their land and exposes them to loss of land in the future. The registration cost is increased by the high value of agricultural land, which has increased due to the higher demand for agricultural land in Darfur. The size of the plot determines its price. The larger the size, the higher the price of the land. Moreover, the price of the land depends on the location (fertility, availability of water, and proximity to towns). The better the location, the higher the price of the land.

Indeed, many farmers are keen to keep their land, but they may not have adequate resources to pay for registration. In North Darfur, an expert said that any plan for mass registration of land is going to cause problems if it does not accommodate all the overlapping rights over land and if it gives exclusive right to some groups while ignoring the rights of others.

Livestock production and access to rangelands

In this section, we discuss the livestock sector in North and Central Darfur and the existing pastoralist groups in the areas that we visited. We also provide information on the existing arrangements for accessing different grazing zones and the issues that pastoralists in North and Central Darfur face. The section highlights the key challenges faced by pastoralist communities in North and Central Darfur and the major causes behind those challenges from the perspective of pastoralists themselves.

Pastoralist groups and their mobility

Sulieman and Young classify pastoralists based on the grazing zones they access, i.e., home area, close grazing land, and distant grazing land. Pastoralists access those three different grazing zones using different degrees of mobility. The sedentary pastoralists access only home area grazing zones. Pastoralists who practice short-distance mobility access the home area grazing zones as well as close grazing lands. The pastoralists who practice long-distance mobility organize their mobility in a way that allows them to exploit the three different grazing zones (Sulieman and Young, 2019). Pastoralists practice one or more than one of those three livestock production systems in the villages visited in North and Central Darfur. Pastoralists are either members of those communities or pass by them during their seasonal mobility. Table 3 below shows the livestock systems practiced in each village.

Table 3. The levels of mobility practiced by livestock keepers in Taadoud villages visited

Locality	Community	Degrees of mobility practiced in visited villages		
		Long-distance mobility	Short-distance mobility	Sedentary
Rural El Fasher	Azagarfah	√		√
	Hilat Rahad	√		√
	Majdoub (A)			√
	Abudegais	√		√
	Um Jalbagh	√	√	√
Zalingie	Jaddah		√	√
	Abata	√	√	√

Lives and livelihoods of nomadic pastoralists have undergone significant changes in the last 20 to 30 years. Those changes include changes in livestock species reared (with a shift towards raising sheep as opposed to cattle and camels, as well as the introduction of new sheep cross-breeds); in patterns of mobility; and in patterns of settlements (Young et al., 2016; Young et al., 2013). Amongst the communities that were visited as part of the field work, the two communities with significant pastoralist components were Um Jalbagh in North Darfur and Abata in Central Darfur. FGDs revealed some of the above-mentioned changes. In Um Jalbagh, Native Administration and community leaders indicated that a considerable number of the mobile pastoralists have settled. The majority of those settled still have mobile herds but they are no longer seasonally mobile with their herds and instead hire herders to move the herds. Others are becoming increasingly reliant on rain-fed cultivation and have small herds of goats and sheep they graze in close grazing zones near their communities. This change might be attributed to the rise in living expenses, which pushed many pastoralists to adopt crop cultivation to generate cash and thus maintain their herd sizes (Young et al., 2016). There appears to be variation within the Um Jalbagh community, in terms of numbers of livestock owned by households. Native Administration representatives indicated that some pastoralists have many camels, while other have few. In Abata, pastoralists live in semi-permanent settlements called *damras* as part of the Abata cluster of villages. Most of them originally practiced long-distance mobility but are increasingly settled, with a portion of their livestock still involved in the south-north seasonal migration and another portion of livestock grazed in grazing zones around the area. A small proportion of the community still practices long-distance mobility. In all the communities visited, many farmers keep animals, and there is always an area near the village dedicated to grazing of animals (see Table 3).

Governance arrangements of rangelands

In Darfur, customary arrangements for accessing cultivable land differ from those related to rangelands. Two major systems for accessing rangelands coexist. On the one hand, there is the common property institution system in which access to land is granted by the *Sheikh* of the village. The land accessed through this customary institution has a well-defined border, and its size is relatively small. On the other hand, open grazing areas, which represent the natural base for the pastoralist and nomadic systems, cover a vast area of multiple seasonal grazing regions from north to south in Darfur. Throughout this vast area, animal corridors and resting areas cross diverse ecological and administrative zones. While access to land under the common property arrangements is granted through rules and regulations

governed by the Native Administration, access to rangelands and their services requires careful negotiation or is through coercion and competition that occasionally escalate into conflict (Behnke, 1994).

Discussions with farmers and pastoralists in the communities visited highlighted diminishing cooperation between the two groups. Storing and fencing of crop residues is a common practice in all the seven villages that were visited as part of the consultative process (see Figure 2). When farmers were asked about the exchange of inputs with pastoralists in the form of crop residues for manure, they all praised it, but they all indicated that selling crop residues during the dry season is of economic value. The revenues they make from selling crop residues can secure some credit to meet daily household expenses during the dry season. Alternatively, it can be a source of feed for their own livestock during the dry season as well as a building material. The increase in the number of livestock that farmers rear is a resilience strategy through which they aim to reduce the amount of grains they sell to meet their cash needs (Fitzpatrick and Young, 2016).



Figure 2. Crop residues fenced at the end of farming season.

Expansion of croplands and livestock migratory routes blockage

Stakeholders who were interviewed as part of the consultative process, particularly from rangelands and forests departments, expressed concerns about expansion of croplands at the expense of rangelands as well as blockage of animal routes. They agree that in comparison to the past, grazing areas are shrinking, and livestock migratory routes are not as open or as accessible as they used to be. According to one Eastern Darfur pastoralist who seasonally migrates between East and North Darfur, “There is no a palm-

size area left for grazing animals, it has all been converted into farms.” One could consider this statement an exaggeration, but it is in line with the findings of previous studies, which indicated that Eastern Darfur’s pastoralists expect difficulties as they move from their dry season grazing areas in the south towards the northern rainy season grazing areas. Usually, herds begin their journey towards northern grazing zones early in July, a period during which livestock migratory routes become almost entirely blocked by expanding farms. In order to avoid conflict with farmers over farm damage by trespassing animals, herders move with their livestock at a steady and fast pace (Young et al., 2016; Young et al., 2013).

According to pastoralists and farmers who took part in FGDs, livestock migratory routes are historically well known to farmers as well as pastoralists who live around those routes. The blockage of those animal routes was mentioned as the number-one challenge in all the interviews and FGDs that involved pastoralists. Although farmers and pastoralists have a common recognition for migratory routes passing by specific areas, the number, directions, and boundaries of those routes are often disputed. When pastoralists are blocked by crops grown in the migratory route, community leaders and pastoralists moving through the area negotiate a settlement by identifying a route through which pastoralists can travel without damaging the crops. Such a case happened in Azagarfah, a Taadoud II village in northern El Fasher. An animal route passes near Azagarfah. Because of successive poor rainfalls in the area, pastoralists did not use the animal route for couple of years. As 2018 was an exceptionally good rainy season, pastoralists moved further north through the animal route near Azagarfah, but as they were approaching the village, they found the route blocked. Most of the area was cultivated and crops were well-established, so pastoralists had to move northward at a quicker pace away from the area to avoid disputes with farmers that could result from animals trespassing into farms. In response, pastoralists and farmers negotiated the issue with support from the Taadoud II team and its peacebuilding committee in North Darfur. After the first round of negotiations, leaders of both groups agreed that the Azagarfah community would identify a temporary passage for pastoralists to continue their journey northwards. They also agreed that, in coordination with state and local authorities, the pastoralists and Azagarfah community would demarcate the animal route that passes by the area.

According to a senior Forests National Corporation (FNC) staff member, “Although livestock migratory routes blockage due to expansion of cultivation is a major issue, a lot of actors and communities do not recognize it, but it remains a very big challenge across the whole Darfur region.” He added that, in the last two decades, many attempts were made by different actors to open and demarcate livestock migratory routes in different parts of Darfur region, but sustainability has been a limiting factor for all those attempts. In many cases, expansions of farms over animal routes took place after a demarcation process was completed. In the Um Jalbagh community of North Darfur, pastoralists said that they were not satisfied with the way livestock migratory routes are demarcated. They said that most of the time they were not consulted in the process nor represented in the committees that led the demarcation activities. They added that even when pastoralists are represented, they are represented by the Native Administration from El Fasher who have very limited knowledge about animal routes. Those claims need further investigation as they were raised by different actors and communities in North and Central Darfur. Such an investigation would benefit from focusing on the sustainability of previous efforts to demarcate animal routes. It would also benefit from looking at pastoralists’ representation in structures

of the Native Administration to understand whether those structures allow them to stay well informed about activities that directly affect their livelihoods or not.

The role of the Native Administration and the *talaig*

According to the Rangeland Department in Central Darfur, the role of the Native Administration in organizing and facilitating access to rangelands and through animal routes is very important. According to the Rangeland Department, Native Administrations know the animal routes in the state very well. With their cooperation, the government can make a lot of progress in opening the routes and protecting livestock migratory routes from crop field encroachment. They add that, unfortunately, the role of the Native Administration has been weakened by the Darfur conflict as it has become more politicized and partisan.

The role of Native Administrations in organizing access to rangelands and in resolving disputes between different users varies from place to place. In some cases, the parties are more inclined to abide by the decision made by *ajawid* while in others they are not. In Abata, many pastoralists raised the issue of exaggerated fines on livestock owners when their animals trespass into a cropland, but they indicated that they cooperate with the *ajawid* in the end. According to farmers and pastoralists in Abata, issues are resolved by *ajawid* at the local level. Other communities in North Darfur indicated that they rely more on the “Agricultural Season Protection Committee,” which brings together Native Administrations, the department of agriculture, and the police. This committee is very active during the cultivation season. Its responsibility is to handle issues related to violating the *talaig*. State government supports this committee with resources and facilities to interfere in any case of violation of the *talaig*.

The difference in the two cases shows that some communities are more able to develop rules and arrangements to resolve conflicts than others. In the case of Abata, communities maintained a good relationship to one another, which helped in having a locally-supported dispute resolution system. However, the North Darfur case shows poor relationships between communities such that, in order to resolve a dispute, an external support is needed.

Violating the *talaig* was a shared concern amongst farmers who took part in the FGDs in all seven communities. It was much discussed in North Darfur FGDs. Pastoralists justify the violation of the *talaig* by the poor conditions in the northern rainy season grazing areas. When water and fodder become scarce in the northern grazing areas due to a poor rainy season, pastoralists are pushed to move to their dry season grazing areas much earlier than they usually do to access better rangelands with sufficient grass and water, which in turn results in violating the *talaig*.

The right timing for the *talaig* remains a highly contested issue between the groups. While pastoralists want the date to be earlier, the farmers would like to delay it as much as possible. These conflicting views about *talaig* timing are the result of the different expectations of the two groups. On the one hand, farmers increasingly have limited interest in exchanging crop residues for animal manure and would like to have sufficient time to harvest crop residues. In addition, farmers around wadis have expectations of continuous cultivation to grow cash crops during the dry season. Indeed, crop residues’ economic values are becoming increasingly more valuable to them than exchanging benefits with pastoralists. On the other hand, pastoralists have expectations of being able to access crop residues. The

earlier the *talaig* time, the higher the possibility they will be able to access more of those residues as farmers will not have enough time to harvest all the residues.

Government interventions

Young et al. report key improvements in government recognition of the contribution that pastoralist livestock production makes to the national economy, particularly as oil revenues are declining (Young et al., 2016; Young et al. 2013). This recognition of the pastoralist production system resulted in positive policy changes, which included enacting a national law for pasture regulation in 2015 (Republic of Sudan, 2015); and the approval of new livestock policy (Ministry of Animal Resources, 2018). The new livestock policy gives explicit recognition to the role that pastoralist livestock production plays in Sudan's economy. The policy deems rangelands as the backbone of livestock sector (Ministry of Animal Resources, 2018).

Despite the improvement made in livestock production policies and the increased recognition of pastoralist production contributions to the national economy, those major changes have not resulted in more federal or state support for actions that could improve rangeland management. Indeed, staff members in Central Darfur felt that rangelands issues are the least prioritized in terms of finance and staff capacity building. The department lacks the necessary financial support and facilities needed to perform its job effectively.

Based on our own assessment, this neglect by government departments of pastoralists and their issues could be attributed to three reasons. First, the overall limited financial capacity that many departments have been complaining of. Given the current economic crisis in Sudan, this situation is not expected to improve anytime soon. Second, the lack of awareness about the economic and environmental importance of the nomadic and pastoralist production systems, especially within departments other than the animal resources department, like State Water Corporations (SWCs), whose contribution is important for improved rangeland management. These two reasons are exacerbated by a third one, the fact that the Rangeland Department was disassociated from Forests National Corporation (FNC) and annexed to the Animal Resources Administration. According to staff members in the Rangeland Department, this administrative change was expected to result in more prioritization for the rangelands agenda, but that agenda remains a bottom priority within the Animal Resources Administration. One of the major outcomes of this gap between policy and implementation is the very limited interaction between government departments and pastoralist communities. Moreover, the gap between policy and implementation contributed to the long history of limited interaction between NRM departments within states as well as between state-level NRM departments and their counterparts at the federal level. In a meeting with the Rangeland Department in Central Darfur, staff members said that although they were supposed to be directly responsible for providing services to nomads in rangelands, their links to those communities are very limited. There is a very good opportunity for Taadoud partners to support bridging the gap between government Rangeland Departments and pastoralists, benefiting from the great energy and enthusiasm within those departments for supporting pastoralists. Investing in enhancing the relationship between livestock departments and pastoralists would significantly contribute to the sustainability of the project impact too.

Indeed, livestock migratory routes lack essential services that are crucial for livestock herds moving through them (Fitzpatrick and Young, 2019). According to Central Darfur's Rangeland Department, there

is a significant gap in water sources across all migratory routes, despite the huge potential for water interventions in the state. The Rangeland Department also thinks that, given the increase in livestock population, there is an animal feed gap that needs to be filled, especially during the dry season. Although water services interventions would support pastoralists significantly, this view of the need for technical intervention to cover the feed gap reflects a limited understanding of how the pastoralist system works and its inherent capacity to work with the variability and not against it. In addition, such a view overlooks the urgent issues of access and supportive policies needed to ensure access to grazing resources. This limited understanding of pastoralism is not systematic across government departments in North and Central Darfur. Our discussions with the Rangeland Departments in North Darfur reveal a clear recognition of the advantages of livestock mobility and the sophisticated knowledge of pastoralists associated with it.

Engagement of pastoralists in development agencies' projects

As part of our consultative processes, we interviewed pastoralist community leaders, Native Administrations, and livestock departments within line ministries. What all those stakeholders agree on is the limited engagement of pastoralists in development projects that national and international agencies implement in Darfur. This limited engagement of pastoralists was highlighted in previous studies focusing on natural resources management and pastoralism (Young and Ismail, 2019; Krätli et al., 2013). This long-term neglect of pastoralists by NGOs and international agencies has led pastoralists to mistrust NGOs and international agencies. According to government officials and development experts, poor engagement of pastoralists affects different pastoralist groups, but pastoralists who practice long-distance mobility remain the least engaged when compared to sedentary pastoralists and pastoralists who practice short-distance mobility. The lack of engagement left pastoralists behind in terms of development services like education and water when compared with sedentary groups. According to different informants, this lack had a great impact on pastoralists in general and pastoralist women in particular because they benefited less from women empowerment interventions that development agencies implemented in the region.

Despite this overall limited engagement of pastoralists in development projects, there are some good experiences of working with pastoralists in North Darfur that many in the development sector can learn from. UNEP and Practical Action engaged pastoralist groups in North Darfur in their NRM interventions. For pastoralist Native Administrations, the two agencies were successful in involving pastoralist groups in project design and in management committees formed as part of their NRM interventions. UNEP and Practical Action project activities were distributed in an equitable manner amongst different natural resources users. Taadoud II partners as well as UNEP and Practical Action would significantly benefit from opening a channel for sharing knowledge and experience.

Stakeholders highlighted diverse reasons for the poor engagement of pastoralists. Contextual issues related to insecurity and access to pastoralist areas are the common causes that many informants from the development sector mention. For them, insecurity characterized the areas in which pastoralists groups are concentrated, particularly the northern parts of North Darfur, for most of the last 15 years and prevented development and humanitarian actors from addressing pastoralists needs and vulnerabilities. However, pastoralist communities and their Native Administrations indicated that development agencies lack the capacities and genuine will to intervene in their areas, a view that some

in government departments share. The very limited understanding and some predominant perceptions about pastoralists who practice long-distance mobility and their cycles of mobility limit the ability of agencies to engage them properly. Those perceptions include the continuous mobility of pastoralists and the perceived difficulties of working with mobile communities. As participants in a project designed based on understanding the interaction between pastoralism and rain-fed cultivation in Darfur, Taadoud II partners are in a good position to deviate from the norm by showing that mobility is not a challenge for working closely with pastoralists. Taadoud II partners have an opportunity to show that working with pastoralists is not a risk for project success, something that many development agencies interviewees mentioned. Moreover, the experiences of Taadoud partners will contribute significantly to the learning about how pastoralists could be involved in long-term development interventions.

Access to water and governance of water resources

This section presents information on water resources in North and Central Darfur. We highlight the major water sources in Taadoud villages and the challenges the communities face in accessing water for domestic and livelihoods uses. The section also reflects on the current arrangement for accessing water in Taadoud areas. We highlight the gaps in government department interventions for promoting access to water in North and Central Darfur.

Water services in North and Central Darfur

Different communities in Central and North Darfur rely on different water facilities. In the five communities that were visited in North Darfur, *hafirs*⁴ and sand dams are frequently the major source of water for households and animals. *Donkis*,⁵ handpumps, and hand-dug wells are supplementary sources of drinking water. In Central Darfur, sand dams are not a suitable option due to the rocky nature of the soil. The soil has very low water storage capacity, which allows water to leak through gaps between the rocks. However, because of high annual precipitation, water in wadis is available year-round at a very shallow depth. Communities that do not have facilities installed rely on shallow, hand-dug wells in the wadi called *mashish* (see Figure 3). *Mashish* exist in some parts of North Darfur like Kabkabyah.

⁴ A rectangle-shaped surface dam established by digging the earth and surrounding it with sand embankments. A *hafir* ranges 500 to 10,000 cubic meters in volume.

⁵ A *donki* is a water yard comprised of a borehole and diesel pump connected to a tank.



Figure 3. *Mashish* (a shallow, hand-dug well) near Zalibgie in Central Darfur.

For communities visited during the field work, the quality of water is less prioritized than its availability. Hilat Rahad and Azagarfah in North Darfur both have *hafirs* that are refilled during the rainy season by wadi flooding. However, Azagarfah has an additional reservoir that is used mainly for their livestock as well as the livestock of other pastoralists when they pass by the area. Azagarfah and Hilat Rahad both rely on their *hafirs* until they dry up in February or March. Once the *hafir* in Hilat Rahad dries up, Azagarfah's Native Administration allows them to access water in their reservoir. Water in the reservoir is contaminated and of low quality due to the concentration of livestock around it, particularly during the dry season. However, communities find themselves with no option but to use the reservoir as it is the most convenient for them at that time. In Jaddah and Abata in Central Darfur, the communities reported that they rely on shallow wells, but their quality is also vulnerable as contaminants can fall easily into them. This situation is compatible with the overall poor water services in Darfur. More effort is required to improve access to water through cooperation between different actors. *Donkis* and boreholes are available in all the communities but in many cases were not functioning. In many cases, water services at those facilities are not free; people often pay fees to access water. In establishing new water services, Taadoud II should focus on distribution of water services within community catchment areas and plan new facilities to improve access. Access improvement must consider reducing pressure on some facilities and ensuring that there are separate facilities or outlets for livestock to prevent water contamination.

Government interventions, achievements, and gaps

In North and Central Darfur, senior staff members of SWCs indicated that the efforts made by actors in the humanitarian sector as well as government projects like the federal project "Zero Thirst" improved access to water in rural areas. According to the head of the rural water department in North Darfur, average distance to a water point from a village is about 2 km currently, while in the past it was about

15 km. This shortening of the distance to water has made a significantly positive social impact in terms of education and health. In central Darfur, the government established seven *hafirs* in Jebel Ahmar, Goroli, Arkom, Wadi Tamatim, Aljecto, Umjakti, and Damrat Shiribna. All those *hafirs* were established through the “Zero Thirst” project between 2016 and 2018.

Despite all the above-mentioned achievements, discussions with different stakeholders revealed gaps in promoting just and equitable access to water resources. Senior staff members in North Darfur indicated that communities in the northern parts of the state have very poor access to water due to low levels of annual rainfall as well as a lack of water services. This poor access directly affects the livelihoods of pastoralist households. Once fodder in the northern grazing zones dries up, the northern Abbala (camel herders) find it very hard to stay in these rangelands due to limited water sources for their livestock. Thus, pastoralists find themselves forced to move south, although rangelands may still have the capacity to provide feed for their animals. The head of the SWC in North Darfur was aware of the challenges faced by pastoralists in those areas when he was interviewed. He believes that provision of water services, especially in rangelands and animal routes, could transform the lives of pastoralists.

In the FGD that was held in Abata in Central Darfur, pastoralists explained that they can easily access water for livestock during the rainy season. Rainfall allows formation of surface pools, which are a good option for their livestock. Towards the end of the rainy season, Abata pastoralists said that most of the surface pools dry up and they begin facing difficulties accessing water. Although water is available in wadi Abata, accessing that water is very difficult due to the beginning of the dry season cultivation on the banks of the wadi. On many occasions, pastoralists find themselves pushed to trespass into the cultivated area to access water in the wadi, which results in disputes. The expansion of dry season cultivation (see Figure 4) has promoted continuous cultivation in which land is cultivated with no fallow periods. This continuous cultivation undermines the overlapping rights of multiple users, including pastoralists’ herds access to water in the wadis. In promoting access to water, Taadoud II would benefit from putting efforts into understanding the challenges that pastoralists face in different catchments to ensure that its interventions respond to the needs of different users. Moreover, Taadoud II must try to investigate feasible technical options that would allow pastoralists access to water during the hot dry season, when water becomes scarcer and more likely to be more contaminated, without the need for them to trespass into cultivated areas.



Figure 4. Dry season cultivation in wadi Abata, February 2019.

From an integrated water resources management (IWRM) perspective, equity is an utmost criterion, which implies that access to water with sufficient quantity and quality is a basic right to which all people should be entitled (TAC, 2000). Discussions that were held with staff members of different stakeholders revealed views that contradict the idea of equity as an overriding IWRM criterion. One example of those strong views is the one expressed by a senior staff member of a SWC who said that it was very difficult to provide water service to pastoralists who are in continuous movement. “Today they are here and tomorrow they are there, how could services be provided in such a kind of unstable production systems? They either settle down or it will always be difficult to provide them with water services.” This view has been shared by some senior staff members in SWCs as well as a local NGO in North and Central Darfur. It appears that some staff within SWC share with the Rangeland Department their lack of understanding of the logic behind pastoralist mobility, underpinning the need to invest in the capacity building of government departments on pastoralist mobility and why it is such an important element of how the system works.

Indeed, it is important to recognize that this view is not shared amongst all interviewed in the water sectors. When asked about access to water in livestock migratory routes, the head of SWC in North Darfur said that from a technical point of view mobility does not represent a challenge. In our discussions with him, he showed a lot of support for promoting services for pastoralists in rangelands and migratory routes. Although this discussion indicates that not all staff members hold discriminative views about the rights of pastoralists to access water, equity principles are not institutionally imbedded within the organizations of those stakeholders. More effort is needed to promote those principles amongst all stakeholders at the Darfur level. Doing so is very important to prevent conflicts between different users in Central and North Darfur (Omer Ali in Young et al., 2019).

Governance of water resources

In the rural communities of Central and North Darfur, the responsibility for managing water resources lies with the rural water departments of the SWCs. However, the mandate of the rural water directorate is influenced by government departments at state and federal levels. In addition, directorates within the Ministries of Health and Agriculture have overlapping mandates. This overlapping has very negative implications for governance of water resources, including very low impact of projects, conflicting interventions, and competitive relationships between different government institutions (Abdo and Salih, 2011). Particularly, it has led to a dispute amongst different departments about who should be responsible for water facilities management. In Central Darfur, the dispute was highlighted by a senior staff member in the rural water department who indicated that all stations that are established in rural communities must be handed to their department, but the current practice is that the Water and Environment Sanitation project (WES) is managing those facilities and collecting their revenues. Moreover, authority over water facilities and water resources in North and Central Darfur is not consistently organized; it differs from one place to another. In some cases, the communities are in charge, while in other cases a government department is in charge. Table 4 provides an overview of the various management options of water facilities in Darfur. According to Behnke, management often depends on the water storage capacity of the water source as well as the capacity of the community or the government to manage it (Behnke, 1994). In tackling water governance issues, Taadoud II needs to investigate different models for different contexts. Community management must be promoted where facilities do not require sophisticated technical support, but inclusivity must be ensured to allow access to different users.

Good governance of natural resources requires enforcing the laws that organize rights and access to water through clear rules. Stakeholders reported gaps in enforcing laws that govern access to water in Darfur. In 2006, the Ministry of Agriculture, Irrigation, Natural Resources and Forests in North Darfur issued a ministerial decree deeming any informally constructed dam or barrier across any wadi to be illegal and considering those involved in its construction as legally accountable (Alnahlah, 2016). This decree was one of the achievements in water resources governance in North Darfur that came about as a result of UNEP's project at Wadi El Ku. According to a senior staff member in SWC, the project contributed to a paradigm shift from "building as much number of dams as possible" to "building dams with the right technical specification to maximize the impact and reduce negative social and environmental damages." This government decree fell short of enforcing mechanisms that guarantee their implementation as legally binding statements. The practice of constructing dams and barriers across wadis without formal approval by government authorities continues. More efforts are needed to ensure that laws protecting the rights of different communities across the catchment area are respected and environmental damages are prevented.

Different interviewees from different sectors indicated that there is limited coordination between water development and other natural resources. When asked about water for livelihoods or forests, interviewees from SWCs had limited feedback or said that it is the responsible agriculture or animal resources department that should be asked about it. This response indicates a lack of consideration for the high impact that water development intervention can make on the overall natural resources base. A system approach requires more efforts to establish links and relationships between different government departments at different levels and across different sectors.

An example of working across different sector successfully is the Wadi El Ku Project in North Darfur. It was praised by every single key informant interviewed from the government and civil societies in North Darfur, mainly for the governance structure it established. One of the major factors behind its success according to different stakeholders is the formation of a technical committee with the mandate of providing technical support to the project. The committee brought together technical experts from a wide range of interrelated disciplines and from different government departments. The project developed a governance forum, in which communities were represented by their community-based organizations (CBOs) to manage the project in coordination with government departments (EU, 2017).

Table 4. Different water facilities management options

Management system	How it works	Key issues
SWC management	This system exists mostly in urban centers. Government is responsible for the operation and maintenance of water facilities and collect tariffs.	Lack of SWC commitment to providing maintenance services.
Co-management system involving SWC and the community	This system exists in some semi-urban areas and rural communities. SWC is supposed to technically support the operation and maintenance of water facilities, and the Native Administration collects the tariffs and distributes the revenues to the locality, SWC, and local management committee.	Most of the time, the local committee does the operation and maintenance without support from SWC.
Local committee management system	In areas where there is no SWC presence. A local committee managed by the Native Administration is responsible for the operation and maintenance of the water facilities.	High maintenance costs mean that in some cases the community cannot afford the water facility.
Co-management system involving an NGO and the community	This system works in IDP camps and rural areas. The NGO establishes the water facility and provides technical support for a certain period of time during which it builds the capacity of the community to manage water facilities efficiently.	In some cases, local committees fail to properly manage the facility financially. In some cases, the trained personnel move to other areas.
Private management of water points	In this system, an individual or group of individuals establishes a water point as a private business and sells water to different users. Sometimes, the government co-manages facilities in partnership	Inflated cost for the beneficiaries.

	with the private sector based on an agreed-upon revenues percentage.	
--	--	--

Management of water facilities

Overseeing a water services comes with the responsibility for maintaining the facilities as well as for ensuring the sustainability of the service. However, many government departments lack the essential institutional and human resources capacities needed to manage and develop the water sector effectively (Abdo and Salih, 2011). Indeed, the financial resources available for SWCs from state and federal governments are very limited. According to different staff members of SWCs in North and Central Darfur, lack of resources has been an obstacle that prevents government departments from contributing sufficiently in promoting water services in both areas.

Local community leaders appear to be not satisfied with the government’s performance in terms of managing waters services. However, in cases where communities are managing their own water resources, local government departments also appear not to be satisfied with the situation of water facilities managed by community structures. For communities, the revenues collected by the government are not a guarantee that government will maintain or replace any malfunctioning facility. For government departments, the communities lack the capacity to manage water facilities properly. In North Darfur, a senior staff member from SWC indicated that facilities like earth dams and *hafirs* are beyond the capacity of the locals to manage. Those facilities may last a shorter time than their expected lifespan under the community management. He adds that it is very important that facilities’ management is not left to the communities alone and stronger links between the government and communities is needed. The lack of a strong link between government and communities is one of the weaknesses in managing water resources.

Although senior staff members of the SWC in Central and North Darfur were critical of Native Administrations’ capacity to manage water, they all agreed that the Native Administrations have a very important role to play in terms of organizing access to different services as well as in mediating and resolving any conflict that might erupt over water resources. Dialogue between government water departments and Native Administrations to arrive at a mutual understanding on how best they can support each other and share responsibilities for managing water resources is the right approach for overcoming water governance challenges in Darfur. Taadoud partners are in a very good position to advocate for this dialogue if they ally with other national and international agencies concerned about this sector.

Deforestation and access to forest resources

This section highlights the key issues we discussed with the communities and stakeholders in regards to management of the forestry sector. We begin by discussing views on deforestation and its drivers in North and Central Darfur.

Drivers of deforestation

In North and Central Darfur, government and civil society organizations’ key informants were concerned about loss of forest resources. FNC senior staff indicated that high reliance on biomass as a source of

cooking fuel is one of the major causes of high demand for firewood and timber in both states, which is a primary cause for deforestation in the region. They add that a shortage of liquid petroleum gas (LPG) in urban centers has intensified the growth of firewood and charcoal markets in big towns. However, a UNEP study on the firewood and timber trade in Darfur indicated that growth in demand for timber and wood is a direct result of the rapid process of urbanization that has stimulated an unprecedented level of construction. This is partially influenced by concentration of IDPs in camps around big towns (UNEP, 2008) and the uncontrolled extraction of forest resources by these IDPs. Indeed, access to clean energy is a gap that Taadoud II should aim to tackle through lobbying and advocacy with others who work in this area. Those interventions should focus on promoting access to clean energy in urban centers. The political environment is very enabling for pushing such an agenda with Sudan's transitional government.

FNC staff members indicated that the poverty and limited sources of income that affect a large percentage of the population in Darfur make cutting trees for wood and charcoal a major driving force behind deforestation. They add that the labor market in Darfur and the Darfuri economy remain highly reliant on forest and rangeland resources (see Figure 5), which overburdens those resources, a view that is shared by various government and civil society actors. Poverty and limited sources of income are exacerbated by a concentration of IDPs in camps. According to senior staff at FNC, IDPs have very limited livelihood opportunities, and those limited options include selling firewood.

The Native Administration and community leaders in Jaddah, Central Darfur reported that people with horse carts from outside the village come to the area to log trees on a regular basis. As previous studies suggest, those who come to Jaddah could be urban poor or IDPs hired by wood wholesalers to collect firewood from other areas (UNEP, 2008) However, there is a need to update knowledge about the wood and timber trade in Darfur urban centers to understand its volume, drivers, and the people involved in it.

Low income pushes villagers to cut trees and fodder at an unprecedented rate, which contributes to degradation of natural resources as well as damaging relationships between different users of those resources (Fitzpatrick and Young, 2016). Conserving natural resources is very essential for livelihoods resilience but it is unlikely to be achieved by awareness raising and inclusive natural resources structures alone. As UNEP puts it, "As many of those who collect firewood for the brick kilns are desperate to earn a living in an environment where there are few alternatives, encouraging them not to cut green wood for the brick kilns is unlikely to work as long as there is a market for it and few other opportunities" (UNEP, 2008, p. 35). Indeed, Taadoud efforts to build livelihoods resilience by increasing reliance of households on high-return activities of cultivation and livestock rearing would help in decreasing reliance on the maladaptive income activities of fodder and wood collection. This area is one that could be further investigated by project monitoring and evaluation activities to improve the learning of different actors on the link between resilience-building actions and natural resources conservation.



Figure 5. Rangeland hay supplies in El Fasher camel market.

Despite the above-mentioned negative impact of displacement, FNC senior staff in El Fasher said that displacement has resulted in a positive unintended impact in areas from which people were displaced in that these areas are experiencing a significant improvement and regeneration of vegetation cover. The challenge facing all stakeholders is how to engage returnees' communities in protection of forest resources in their original villages. Taadoud partners could contribute a lot in this area by investigating the extent of vegetation regeneration in the villages where there is a considerable number of returnees and by aligning their NRM activities to supporting conservation activities in those areas. The improved forest cover in the areas affected by displacement could be one of the reasons behind the improved vegetation cover in Darfur as a whole that the desk study highlighted (Young, et al., 2019).

In response to a question about the groups that are more reliant than others on selling firewood, some FNC staff members believed that farmers are more dependent on selling firewood than pastoralists and nomads. However, the findings of the Taadoud II baseline for the income stream index (ISI) suggest that pastoralist groups spend more time in firewood (see Figure 6) collection than do farmers (Fitzpatrick, 2019). Indeed, there is a need to investigate the reliance on selling timber and firewood by different groups, whether demographic or livelihood groups, in a more sophisticated manner as it will help different actors in developing strategies that can tackle the challenge of deforestation in a way that not only reduces reliance on biomass but also promotes alternatives for biomass demands.



Figure 6. Pastoralist cutting a tree to feed his herd near Jaddah, Central Darfur.

Key informants interviewed in Central Darfur, including from FNC and Rangeland Departments, have flagged the military involvement in the timber trade as one of the major drivers behind deforestation. This damaging involvement of the military is well documented in previous reports and studies (UNEP, 2008; UNEP, 2007). Given the current political environment, Taadoud II could lobby with others to advocate for law enforcement in terms of forests resources protection.

Government interventions

In its attempts to tackle the challenges in the forestry sector, the government has tried different strategies. In response to the poverty challenge, the government developed a national program called “Gum Arabic Belt Renaissance,” led by the FNC in different states. The project works with farmers and encourages them to start gum arabic gardens. According to the FNC head in North Darfur, rural households lack income opportunities during the lean season, and that is why they rely on environmentally damaging practices like selling firewood. Production of gum arabic from *Acacia senegal* trees can provide households with access to cash during this critical period. Additionally, the FNC in Central and North Darfur does many conservation activities, including production of seedlings, rural extension in collaboration with the state radio and TV, and field trips to promote forest conservation awareness. It is important for the Taadoud II project teams to consider aligning their NRM interventions to projects like “Gum Arabic Belt Renaissance,” as such an alignment would leverage the impact of the interventions.

The issue of poor institutional and financial resources is limiting the FNC’s ability to perform its duties properly. According to FNC senior staff members, the corporation has very limited resources to protect forests. In the past, the FNC hired and trained guards to protect forestlands, but due to lack of resources they can no longer do so. To tackle the lack of resources issue, Native Administrations have been the best option, as they protect forest resources free of cost. An FNC staff member in Central Darfur adds

that Native Administrations play that role out of awareness and knowledge of the importance of forests conservation for their communities. However, Native Administrations lack the necessary resources to play the role of forest conservation leaders effectively, and their authority at the local level is often contested (Mohamed and Egemi, 2012).

Governance of forest resources

In all the communities visited, the Native Administrations indicated that they have customary laws organizing access to forest. As a practice, establishing community forests is common across the Darfur region. According to Forests and Renewable Natural Resources Act of 2002 (Republic of Sudan, 2002), community forests should be managed by committees selected by the communities. In the rural El Fasher village of Azagarfah, the community has a well-established community forest. Like many other communities in North Darfur, the Azagarfah community planted their community forest in response to the risks of soil erosion and desertification. The community was very proud of their forest and their strict rules for organizing access to it. One of those rules is that unless there is a social occasion in the village, no one is allowed to cut branches or fell a tree.

The Forests and Renewable Natural Resources Act of 2002 recognizes the role of the Native Administrations. Senior staff members of FNC in Central and North Darfur have stressed the important role the Native Administrations play. Despite the coordination between local Native Administrations and the government FNC, there are major limitations to governance of forest resources. The critical governance issue that was raised both in North and Central Darfur was that forests law is not enforced. Native Administrations that were interviewed as part of the consultative process complained about the limited role played by FNC and government in protecting forests by enforcing laws. They said that, as Native Administrations, they report to FNC when violations in the form of unlawful cutting of trees happen, but law enforcement in terms of policing and the judiciary is always missing. Indeed, law enforcement is an issue for government departments as well. As indicated earlier, formal government forces are often involved in large-scale forest logging activities in Central Darfur without being held accountable by any legal entity. This government involvement was a major source of concern for both FNC and Rangeland Departments at state level. They add that fines associated with illegal logging activities do not deter those involved, as they are very minimal in comparison to the rewards of logging.

Access to trees and forest resources sometimes involves disputes between different community members and users. In Central Darfur, the charcoal trade is very rampant, with many actors involved. One of the common disputes that erupts is when someone fells tree(s) that are planted on land that belongs to an individual. The Native Administration usually punishes those involved by charging them fines that are used as compensation for the individuals affected by the damage caused.

Discussion and conclusion

This field trip report is an outcome of numerous discussions and interviews with community leaders, Native Administrations, and government officials in North and Central Darfur. Those discussions and interviews aimed at identifying the key areas of concern, in terms of natural resources management, for Taadoud II OR audiences and stakeholders to ensure that Taadoud II research activities respond to the needs of those stakeholders. Hence Taadoud partners designed the project based on socio-ecological thinking that recognizes the interdependence of rain-fed cultivation and pastoralism, and perceives

them as sub-systems within a wider regional system. We tuned our field trip activities to meet with the key stakeholders who have particular interest in both sub-systems at different levels, including community, state, and federal levels. The following section highlights the major findings from our field trips to North and Central Darfur.

Access to land issues

The coexistence of multiple arrangements for access to land continues to be the case in Darfur but at local level the statutory law appears not to be functioning, and its legitimacy is not recognized by Native Administrations or their communities. This finding is in line with previous studies, which indicated a disassociation between what happens on the ground and the statutory arrangements (Young et al., 2019; Osman et al., 2013). However, the two growing trends we identified in terms of access to land are the continuous evolution of new arrangements for accessing land and the government promotion of land registration in Darfur. State governments have not adopted a clear registration strategy. The registration procedures involve high costs, which makes many people inclined not to register their lands. Experts warn that if registration is promoted without consideration for the historical rights and needs of different users, it will cause a lot of problems.

Communities have also reported an increase in disputes between farmers about boundaries of farmers' lands. Previous studies indicated that the increase in disputes was influenced by the increasing trend of land fencing and permanent use of land by farmers. This increase should all be read within the context of a land tenure system that is changing from community ownership to individual rights in which farmers would like to ensure that they can protect their multiple rights of land use (Osman et al., 2013). Recently, the farmer-herder conflict has received more attention than disputes between farmers. However, there is a need to understand disputes between farmers over farms boundaries in order to assess their prevalence and the effectiveness of dispute resolution mechanisms in order to prevent those disputes from intensifying into conflicts within communities in the future.

In Central and North Darfur, different stakeholders indicated that pastoralists and farmers are increasingly less cooperative and there are tensions over shared natural resources like water and land. The economic value of crop residues for farmers' own livestock during the dry period makes them more inclined to harvest the residues before the arrival of pastoralists at their dry season grazing areas. Farmers reported that violations of the *talaig* date are also prevalent in Taadoud areas, particularly in North Darfur. In addition, the expansion of rain-fed and wadi cultivation causes blockages in livestock migratory routes and affects pastoralists' capacity to access water in wadis during the dry season. Proper interventions to resolve issues require inclusive land governance arrangements for farmers and pastoralists, through which they can restore their collaboration in managing shared natural resources. This restoration of collaboration should be supported by NRM interventions that can promote livelihoods services for both communities. Inclusive NRM forums are one of the areas that Taadoud is working in. However, Taadoud would make an outstanding impact if it were to document the learning of the project in this area and aim to influence other stakeholders' strategies using that learning. Moreover, Taadoud partners will benefit a lot from sharing learning and experiences with other stakeholders working in NRM. The learning of other agencies would help Taadoud in improving the effectiveness of implementation.

The capacity and legitimacy of Native Administrations in resolving conflicts is different in different parts of Darfur and depends to a large extent on the damage that affected the relationships between different groups. Taadoud partners would benefit from assessing the strength and capacity of Native Administrations in resolving conflicts between farmers and pastoralists. Such an assessment will allow Taadoud to identify the optimum options for supporting the Native Administrations in playing their important roles of facilitating access to natural resources and resolving disputes over them.

Pastoralists and access to rangelands

Despite the increasing recognition for pastoralism and its contribution to the national economy (Ministry of Animal Resources, 2018), the pastoralist system receives very little support from the government's Rangeland Departments in North and Central Darfur. Water services on migratory routes and in grazing zones are still very limited. Our analysis suggests that within government departments responsible for managing different natural resources, many staff members do not recognize the importance of pastoralism or how it works. Rangeland Departments within the government are poorly financed, and their administrative affiliation is torn between the livestock administration and the FNC. The major outcomes are less interaction between Rangeland Departments and pastoralists, and poor coordination and synergy between different departments within the government.

The poor engagement of pastoralists is not the problem of government departments alone, as many in the development sector have turned a blind eye to pastoralists' vulnerabilities and challenges. Many NGOs and United Nations (UN) agencies have not been able to engage pastoralists, particularly those who practice long-distance mobility, in their interventions, which has led pastoralists to mistrust development agencies. Taadoud is well equipped to show a more inclusive way of working with different users of natural resources, facilitated by learning from previous experiences and by creating channels for sharing experiences and learning with others who work in the NRM sector.

The Taadoud project covers the large area of five states in Darfur. The environmental variations within and between those states are very significant. Environmental variations and differences affect available resources to a large extent. This is particularly true for water resources in North and Central Darfur, as different Taadoud villages rely on different water resources. In Taadoud areas, there are good examples of communities sharing water resources, but in some cases, there is competition over and limitations to access. In North Darfur, we found that some communities welcome neighboring communities and pastoralists to share available water sources in their areas. In Central Darfur, pastoralists and farmers have disputes during the dry season when pastoralists trespass into fields in an attempt to access water in the wadi.

Challenges of access to water

Many of the existing water facilities in North and Central Darfur communities are broken. The government has not been sufficiently committed to rehabilitating those services, although in most cases it collects fees from the communities. Equity in terms of ensuring access to different communities and different users is also a challenge. The Taadoud project would contribute significantly towards tackling this issue if it designed its water interventions in an inclusive way. Such a design would allow the project to respond to the needs of different communities and groups in an equitable manner. Moreover, it

would contribute to reducing the access limitation that pastoralists face during specific seasons, which results in competition between them and other groups.

Just as in other government departments, SWCs are poorly financed and most of the time rely on projects funded by the federal government. However, our findings suggest that government departments suffer some institutional limitations that need to be overcome if equitable access to water is to be implemented. Particularly, there is a persistent view amongst some staff about difficulties in providing water services for mobile pastoralists. Taadoud would maximize its impact if it worked closely with SWCs to benefit from their technical expertise, but at the same time, challenge misconceptions about water services for mobile pastoralists.

In terms of management of water facilities, there are disagreements between different government departments as well as between government department and communities. There are conflicting mandates between SWCs and the WES project over the responsibility for managing rural water facilities, which is a governance issue within the government. Moreover, community leaders and Native Administrations disagree on who should manage water services. The central cause of the dispute between different government departments appears to be the revenues. This desire to control revenues of water tariffs on the part of the Native Administrations could be considered a way of consolidating power at the local level; this position is also shaped by their experience of the failure on the part of the government in maintaining the services for their communities. However, the government believes that facilities like dams and *hafirs* cannot be managed by the communities effectively. Moreover, laws regulating access to water lacks proper enforcement mechanisms to prevent practices that represent a risk for equitable and quality access to water in Darfur. These issues represent a governance challenge affecting management of different natural resources characterized by lack of clarity in terms of who should manage what, access what, when, and with what standards.

Deforestation and access to forests

In our discussions with different stakeholders, they were concerned about two major issues. First, the increased demand for wood and timber due to urbanization and high reliance on wood as a cooking fuel in urban areas. Second, the limited sources of income for rural and urban poor that pushes many of them to engage in trading wood and timber. As a resilience-building project that focus on increasing income from the high-return activities of farming and cultivation, Taadoud would be able contribute to reducing high levels of deforestation. The project generates learning by observing the impact of improved income from high-return activities that reduce the amount of effort and time spent in collecting firewood. Taadoud II OR may also consider investigating the reliance on firewood by different groups (IDPs, pastoralists, farmers) to help different actors in designing their conservation interventions in a way that responds to the vulnerabilities of those groups. Moreover, the project would maximize its impact by engaging with stakeholders in the energy sector to advocate for improved access to alternative sources of energy to reduce the high reliance on wood and timber in Darfur.

FNC is making a lot of efforts in conserving forest resources and in building livelihoods resilience in rural Darfur. The “Gum Arabic Belt Renaissance” project is designed to support farmers in diversifying their income, particularly during the dry season. Despite the FNC plans and projects, FNC at state levels suffers from lack of financial resources sufficient to operationalize its efforts. In the past, FNC had

resources to hire local guards and staff to protect forests, but the financial limitations make that impossible now. Increasingly, FNC relies on Native Administrations to partially fill the gap in staffing.

At the local level, there are some Native Administration initiatives for protecting forests and increasing forest cover. These initiatives include customary arrangements prohibiting cutting trees as well as local initiatives for establishing community forests. One of the key challenges for cooperation between FNC and Native Administrations is lack of government law enforcement for forest protection. Taadoud partners at their respective state levels as well as at federal level would contribute to improving their resilience-building efforts by advocating for more law enforcement in terms of forest protection.

Recommendations for Taadoud II implementing partners

As a means to improve the effectiveness of project interventions, the Taadoud II project team should invest time and effort in the following.

- 1. Increasing of Taadoud's engagement with nomads and understanding of pastoralist issues**

The Taadoud project should continue to engage more with pastoralists, particularly those who are involved in long-distance mobility. This involvement must take the form of bringing pastoralists into the project's forums, informing them about the project, and working with them to implement NRM activities that respond to their needs. Without this involvement, the project will not only lack the system vision that considers farming and pastoralism to be integrated components of the same system but will contribute to historical discrimination against pastoralists by development actors. During the field trips to North and Central Darfur, we noticed that some pastoralist communities were not targeted by Taadoud II although they were geographically within the target localities of the project. Building relationships with the Native Administrations of those communities is the right move towards engaging pastoralists in the project.

- 2. Stakeholder engagement**

Taadoud II will benefit a lot from engaging consistently with line ministries and government departments. This engagement must not stop at the procedural level of getting permits and technical agreement, but rather extend to generating a mutual understanding with those departments as institutions and not only with specific individuals within them. Such engagement will allow NGOs access to a wealth of experiences and knowledge within those departments that can alert Taadoud II partners about specific challenges as well as opportunities for more effective delivery of the NRM interventions. In meetings with different stakeholders, we noticed that some of the key informants (heads of departments and senior officers) did not have any idea about Taadoud II project.

- 3. Capacity-building activities**

Taadoud II will achieve sustainability and long-term impact by investing strategically in stakeholders' capacity building. The Taadoud II project team cannot successfully implement its interventions following a system approach without ensuring that partner stakeholders have a socio-ecological understanding that allows them to recognize the importance of designing NRM interventions in a way that promotes interdependence and cooperation between farming and pastoralist livelihoods. Moreover, such an approach will alert key stakeholders about the importance of promoting NRM services in a way that is compatible with the way sub-systems

work, e.g., water resources must be planned with an understanding of mobility patterns. The aim should be to promote socio-ecological and non-equilibrium thinking within the institutions of key stakeholders. Feinstein and its partner universities in North and Central Darfur can support Taadoud II in the delivery of those capacity-building interventions.

4. Tackling inequities

Taadoud II partners need to give more focus to tackling inequities within sub-groups in terms of access to natural resources as well as development interventions in general. This focus should be done through emphasis on providing assistance to the most vulnerable segments of the same subgroup, including women and the poorest of the poor. The aim here should be to ensure those vulnerable groups enjoy access to natural resources in a way that can enhance their livelihoods resilience.

5. Law enforcement and advocacy

The project needs to lobby with other stakeholders and advocate for justice in terms of laws regulating access to different natural resources. The aim should be to resolve the ambiguity created by the presence of two tenure systems and to ensure that the future legal framework does not undermine the historical rights of different groups through which farmers and pastoralists have thrived together. Further integration between farming and pastoralist sub-systems can be achieved by ensuring that Taadoud II treats them as part of the same system. Indeed, this effort must be accompanied by genuine attempts to address grassroots problems. Moreover, Taadoud II should advocate for the need to ensure law enforcement in terms of forests and rangelands protection to prevent damaging activities.

6. Sharing learning and experiences

Taadoud is a unique resilience project in many ways. It works in a conflict-torn region and targets different, but interconnected, livelihoods sub-systems. Increasing the impact of the project at a higher scale requires the project to share the learning from its interventions with other stakeholders effectively. This shared learning will create room for positive engagement with those stakeholders who can influence future interventions in Darfur. Shared learning is particularly important for the inclusive NRM forums as well as for the social and environmental impacts of resilience-building activities.

7. Access to clean energy

Access to clean energy is a gap that Taadoud II should aim to tackle through lobbying and advocacy with others who work in the area. Interventions should focus on promoting access to clean energy in urban centers. The political environment is very enabling for pushing such an agenda with Sudan's transitional government.

Recommendations for Taadoud II operational research

Based on consultations with the key stakeholders in North and Central Darfur, the following areas should be prioritized for inclusion in the NRM briefs and associated follow-up investigations.

1. The conflicting land tenure systems of Darfur are problematic for the future of access to land. There is a need for a brief highlighting the challenges to access to land based on the current situation. The brief could also present different options for just access to land in the region, which could be used for opening discussions about how to address the issue in Darfur.

2. Deforestation has a very damaging impact on the environment as it leads to deterioration of soil fertility. There is a need to investigate the groups involved in wood and timber trade. Such an investigation will help different actors to develop strategies that can reduce the reliance of these groups on the wood and timber trade. Reducing reliance on selling timber and wood would increase the cost of cutting trees for this trade and would push the market towards other energy alternatives.
3. In tackling water governance issues, Taadoud II needs to investigate suitable models for different contexts. The project and other stakeholders would benefit from a brief on the best options for promoting equal access to water and co-management of water facilities by different users. The brief can also promote understanding on how technical options may affect the model of co-management for water services as well as the role of government departments in managing those services.
4. In the last eight years, many actors have attempted to address the tensions between farmers and herders through demarcating livestock migratory routes. Discussions with pastoralists and stakeholders revealed gaps in the effectiveness and sustainability of livestock migratory route demarcation. A brief presenting lessons from previous interventions will be of high value for Taadoud II partners and other stakeholders.

References

- Abdo, G., and A. Salih. 2011. Water Resources Management in Darfur. *University of Khartoum Engineering Journal* 1(1): 41–49.
- Alnahlah, A. M. 2016. *Ministerial Decree No. 8, 2016*. El Fasher (North Darfur): North Darfur State, Ministry of Agriculture, Irrigation, Natural Resources and Forests.
- Behnke, R. 1994. Natural Resource Management in Pastoral Africa. *Development Policy Review* 12(1): 5–28.
- Bromwich, B. 2008. Environmental Degradation and Conflict in Darfur: Implications for Peace and Recovery. *Humanitarian Exchange* 39(June): 22–29.
- Cleaver, F. 2012. *Development through Bricolage: Rethinking Institutions for Natural Resource Management*. 1st ed. New York: Routledge.
- European Union (EU). 2017. Wadi El Ku Integrated Catchment Management Project (Phase 2): Action Document .https://ec.europa.eu/europeaid/sites/devco/files/eutf-hoa-sd-37-sudan-wadi-el-ku_en.pdf. Accessed September 11, 2019.
- Fitzpatrick, M. 2019. Taadoud II Operational Research ISI Baseline Report. Feinstein International Center, Friedman School of Nutrition Science and Policy at Tufts University, Boston.
- Fitzpatrick, M., and H. Young. 2016. Risk and Returns: Household Priorities for Resilient Livelihoods in Darfur. Feinstein International Center, Friedman School of Nutrition Science and Policy at Tufts University, Boston.
- Fitzpatrick, M., and H. Young. 2019. Part Four: Natural Resource Systems and Institutions. In *Lessons for Taadoud II: Improving Natural Resources Management: A Feinstein International Center Desk Study*. Feinstein International Center, Friedman School of Nutrition Science and Policy at Tufts University, Boston.
- International Labour Organization (ILO). 2014. *A Roadmap toward a National Employment Policy for Sudan*. International Labour Organization, Geneva.
- Krätli, S., O. H. El Dirani, and H. Young. 2013. *Standing Wealth: Pastoralist Livestock Production and Local Livelihoods in Sudan*. United Nations Environment Programme, Nairobi.
- Ministry of Animal Resources. 2018. *Livestock Policies in Sudan*. Khartoum: Republic of Sudan.
- Mohamed, Y. A., and O. Egemi. 2012. *Environmental Governance in Sudan: An Expert Review*. United Nations Environment Programme, Nairobi.
- Osman, A. M. K., H. Young, R. F. Houser, and J. C. Coates. 2013. Agricultural Change, Land, and Violence in Protracted Political Crisis: An Examination of Darfur. *Oxfam America Research Backgrounder series*, 1–43.
- Republic of Sudan. 2002. *Forests and Renewable Natural Resources Act of 2002*. Khartoum: Republic of Sudan.

Republic of Sudan. 2015. *Pasture Regulation and Fodder Resources Development Law*. Khartoum: Republic of Sudan.

Scoones, I. 2004. Climate Change and the Challenge for Non-equilibrium Thinking. *IDS Bulletin* 35(3): 114–119.

Sulieman, H., and H. Young. 2019. Transforming Pastoralist Mobility in West Darfur: Understanding Continuity and Change. Feinstein International Center, Friedman School of Nutrition Science and Policy at Tufts University, Boston.

Technical Advisory Committee, Global Water Partnership (TAC). 2000. Integrated Water Resources Management. TAC Background Papers No. 4. Global Water Partnership, Technical Advisory Committee, Stockholm.

United Nations Environment Programme (UNEP). 2007. *Sudan: Post-Conflict Environmental Assessment*. Nairobi: United Nations Environment Programme.

UNEP. 2008. *Destitution, Distortion and Deforestation: The Impact of Conflict on the Timber and Woodfuel Trade in Darfur*. United Nations Environment Programme, Khartoum.

World Bank. 2019. Employment in Agriculture, Female (% of Female Employment) (Modeled ILO Estimate). <https://data.worldbank.org/indicator/SL.AGR.EMPL.FE.ZS>. Accessed July 5, 2019.

Young, H., and M. A. Ismail. 2019. Complexity, Continuity and Change: Livelihood Resilience in the Darfur Region of Sudan. *Disasters* 43(S3): S318–S344.

Young, H., H. Sulieman, R. Behnke, and Z. Cormack. 2013. Pastoralism in Practice: Monitoring Livestock Mobility in Contemporary Sudan. United Nations Environment Programme, Nairobi.

Young, H., R. Behnke, H. Sulieman, S. Robinson, with A. Mohamed. 2016. Risk, Resilience, and Pastoralist Mobility. Feinstein International Center, Friedman School of Nutrition Science and Policy at Tufts University, Boston.

Young, H., M. Fitzpatrick, A. Marshak, A. Radday, F. Staro, and A. Venkat. 2019. Lessons for Taadoud II: Improving Natural Resource Management: A Feinstein International Center Desk Study. Feinstein International Center, Friedman School of Nutrition Science and Policy at Tufts University, Boston.