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Land Grab by Tribal Groups in a Fragile Environment, "Hawakir", of Wadi Salih Area in Southwestern Darfur, Sudan

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ABSTRACT [ENGLISH/ANGLAIS]

Based upon a survey carried out in December 2009, Land grab by tribal groups was investigated in the fragile environment of the tribal lands of Darfur which are known locally as Hawakir, and reviews the findings relating to Wadi Salih area in southwestern part of the region. Results depict that, farming and grazing has been managed through designated routes for nomadic movements and there are some reserved areas as stated by 82% of farmers and mobile herders. These are often ignored by farmers who cut off routes and trespasses onto reserved areas in order to deter nomads and to use the reserved areas for agriculture. They also interfere with water supplies created to assist conflict – free passages of nomads along designated routes. Many Hafirs (dug water reservoirs) were destroyed by farmers to discourage grazers and diverting the stored water for cultivation. Mobile herders intrude into field at the beginning and end of the rainy season. 49% of the mobile herders confirmed stated that they move into fields inside valleys to graze on crops and fields' remnants. Conflicts and land grabbing also occur between tribes living inside the Hawakir on fertile lands, pastures and water sources. 100% of the respondents attributed Land grab to environmental degradation; 88% to the collapse of the virtual relationship between farmers and herders; 69% to dilapidation of traditional administrative systems; 40% to population increase; and 90% to lack of basic infrastructure for community development. The author suggests promotion of Hawakir to alleviate land grab.

Keywords: Hawakir, land grab, tribal conflict, spatial mobility, peasants, drought

RÉSUMÉ [FRANÇAIS/FRENCH]

Basé sur une enquête réalisée en Décembre 2009, Land Grab par des groupes tribaux a été étudié dans l'environnement fragile des terres tribales du Darfour qui sont connus localement comme Hawakir, et examine les conclusions relatives au secteur de Wadi Salih dans la partie sud-ouest de la région. Résultats dépeignent que, l'élevage et des pâturages a été gérée par les voies désignées pour les déplacements des nomades et il ya quelques domaines réservés comme indiqué par 82% des agriculteurs et éleveurs mobiles. Ce sont souvent ignorés par les agriculteurs qui coupent les routes et les offenses sur les zones réservées en vue de dissuader les nomades et d'utiliser les zones réservées à l'agriculture. Ils ont également interférer avec l'approvisionnement en eau créé pour aider les conflits - des passages libres de nomades le long des routes désignées. Beaucoup hafirs (réservoirs d'eau creusés) ont été détruits par les agriculteurs pour décourager les brouteurs et en détournant l'eau stockée pour la culture. Éleveurs mobiles s'immiscer dans le champ au début et la fin de la saison des pluies. 49% des éleveurs mobiles confirmée déclaré qu'ils se déplacent dans les champs à l'intérieur des vallées de paître sur les cultures et les restes des champs ». Les conflits et l'accapement des terres également se produire entre les tribus vivant à l'intérieur du Hawakir sur les terres fertiles, de pâturages et de sources d'eau. 100% des répondants attribués accapement des terres à la dégradation de l'environnement; 88% à l'effondrement de la relation virtuelle entre agriculteurs et éleveurs; 69% à la vétusté des systèmes traditionnels d'administration, 40% pour augmenter la population et 90% du manque d'infrastructures de base pour développement communautaire. L'auteur suggère la promotion des Hawakir pour atténuer l'accapement des terres.

Mots-clés: Hawakir, accapement des terres, les conflits tribaux, la mobilité spatiale, paysans, sécheresse

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INTRODUCTION

Pastoralists have interacted with sedentary farmers for millennia. Population growth and increasing commodity production have led to the expansion of agriculture on formerly shared grazing lands, and have increased conflicts between these groups [1] in Sub-Saharan Africa [2], West African sub-region; southern Ethiopia,

Northern Kenya and Somalia [3]. Causes of conflict include drought, economic globalization; unsustainable consumption; population growth and economic warfare [4]. In Sudan, conflicts over resources are often escalated by high year-to-year variability in rainfall which leads to extreme seasonality and irregular distribution of rainfall over the year [5, 6], population increase and the state

policies [7] and over water and grazing rights [8]. Hawakir are tribal possession of lands and lined with animal passages “Masarat” of nomadic tribes. Hawakir were introduced in Darfur by Sultan Musa (1680-1700) of the Fur Sultanate intending to consolidate his power over tribes and migrants to Darfur [9]. This paper looks in some detail into land grab and at the physical and human factors responsible for that in the “Hawakir” of Wadi Salih area in southwestern Darfur.

MATERIALS AND METHODS

Wadi Salih area lies at 12° -14° N and 22° – 24° E, with an area of 22000 km². It is neighbored by Chad from the west, African Central Republic from southwest, Idd el Firsan locality from southeast, and Zalingi locality from east and Genaina locality from the north (Fig.1).

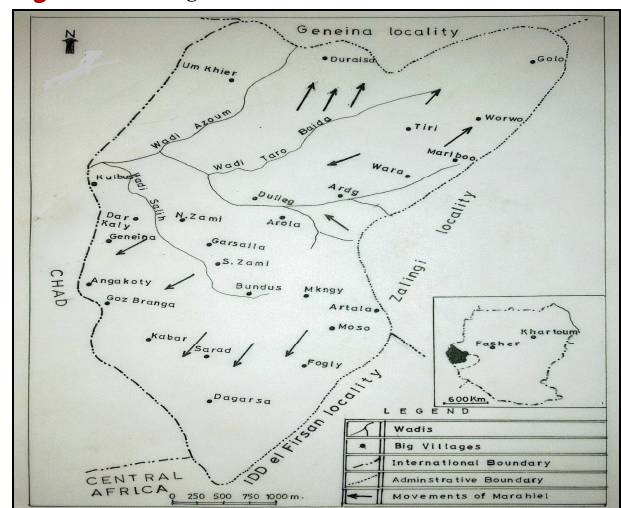
Basement complex form the underlying rocks. Surface is plain with some emerging hills such as Jebel Bila, Kartoo, Nebkaia, and Sandoo, and plateaus like Tussy and valleys of Salih, Azoom, Tara Baida, Dabry and Soro. Soils are dominantly sandy with some clayey soils with variable fertility. Rainfall is irregular and erratic with a peak in August and a long term average annual rainfall of 226mm. Natural vegetation is diverse with dominant of *Acacia Nilotica* (Sunut), *Acacia Senegal* (Talih), *Acacia Tortilis* (Seder) and annual and perennial grass species.

Wadi Salih is divided into four administrative units of Dulieg, Garsaiela, Bundus and Um Khier within which Hawakir are distributed. The traditional administrative system is headed by Sharaty for African tribes and by Omda for Arab Tribes. Tribes live in the study area include Fur, Arabs, Falatah, Masaliet, Dago, Zaghawa, Gimier and Tama and Arab tribes and mobile herders “Marahiel” who come during summer. Farmers settle near valleys, water points and fertile soils and constitute the majority of the sedentary population. People of the study area used to rear livestock, including cattle, sheep, goats, and camels within their neighborhood where their number amounts to 1, 8 million heads, distributed as 850,000 cows; 400,000 camels; 250,000 goats; 137,000 sheep; 70,000 donkeys and 50,000 horses [10].

The research upon which this paper is based was carried out during December 2009 in the Hawakir of Dulieg, north Zami, Fogly, Dagarsa and Duraisa (Fig.1). They were selected by simple random sampling procedure and represent 20% of the total number of “Hawakir” in the study area. In each Hakura, a group of 20 farmers and another group of 20 mobile herders “Marahiel” were studied by observation and interviewing through a

designated questionnaire. This gives a total of 200 interviewees in whole the study area. This gives 40 interviewees of farmers and mobile herders in each Hakura. Groups of farmers and “Marahiel” were collected by Heads of their entitled tribes whom were firstly contacted to facilitate interviewing. Because “Hakura” is characterized by irregular streets and houses are built of straw and lack numbering, farmers and “Marahiel” are chosen according to their accessibility during time of interviewing. Interviewing was focused on forms of land grab and responsible factors. Their answers were collected directly to form the base for the fieldwork data of this manuscript. Head of tribes have substantially contributed into the administration of discussion and into making language of communication easier. In addition, the fieldwork adopted research type interviewing methodology through general discussions with Head of the tribes, elder people and traditional administrators and focused on forms of land grab and responsible factors as well as current changes in tribal relations and socioeconomic environment of Hawakir. This is as well as collection of relevant office data. Only the percentages were calculated from the questionnaires where indicated to within the results section.

Figure 1: This figure shows Wadi Salih area



RESULTS

The results illustrate forms of land grab and the interrelated determining factors.

Forms of Land grab in Wadi Salih

The major crops cultivated are *dukhn* (bulrush millet: *Pennisetum typhoideum*) and *dura* (*Sorghum vulgare*), sesame, Arabic gum and groundnut as indicated by 100%

of famers. *Dukhn* does well on light soils. Its vigorous root system makes it an ideal crop for production on sandy *qoz* (sandy hill) lands of the study area. *Dura* does rather better on the patches of more clayey soils, though in practice both crops are grown on sandy soils. Farmers cultivate fields far from animal passages "Masarat" with varying farm size depending on the rainfall amounts as stated by 70% of the farmers. On the other side, Marahiel, and due to harsh climatic conditions, look for pastures and water where their "Masarat" usually extend 60 km directions-wards as indicated by 80% of mobile herders. Their movements (Fig.1) start at the beginning and end of the rainy season. They move into Dagarsa, Zalingi, Dulaig, Duraisa and Angakoty (Fig.1), concentrating near valleys and mountainous areas.

Farming and grazing has been managed through designated routes for nomadic movements and there are some reserved areas as stated on average, by 82% of both farmers and mobile herders. These are often ignored by farmers who cut off routes and trespasses onto reserved areas in order to deter nomads and to use the reserved areas for agriculture as stated by 67% of the interviewed farmers. They also interfere with water supplies created to assist conflict - free passages of nomads along designated routes. Many *Hafirs* (dug water reservoirs) were constructed to provide water for livestock but destroyed by farmers to discourage grazers and diverting the stored water for cultivation as claimed by 83% of the farmers. They also destroy some other *hafirs* constructed for human consumption because nomads were attracted to them and were providing a nuisance to local farmers as confirmed by 55% of the farmers.

Marahiel intrude into field at the beginning and at the end of the rainy season. At the beginning of the rainy season, rains are scanty, grasses are scarce, and farmers are preparing their lands for cultivation. Quite enough is that scarcity in water and pasture drive Marahiel to intrude their animals forcibly into fields even by using guns as happened in Sugy village near Garsaila (Fig.1) between Fur tribe and Arab Marahiel as confirmed by 82% of the mobile herders. It is certain that the true number of incidents is very much higher. Then again, they intrude into fields when they return at the end of the rainy season, when farmers have not completely collected their crops, or have collected their crops and not yet have finished collecting fields' remnants which are used as animal fodder during dry season or as building material as stated by 67% of the farmers. Marahiel also move into fields inside valleys when rain

decreases to graze on crops and fields' remnants which is confirmed by nearly half the number surveyed of mobile herders (49%).

Leaders of Marahiel and sedentary farmers used to renew landmarks of Masarat when they start disappearing, but nowadays such efforts were neglected by both sides as confirmed by the majority of the two sides, 75% of the farmers and 83% of the mobile herders. Herders will not follow designated Masarat and similarly farmers expand their fields into Masarat, leaving only narrow passages for animals as stated by 78% of the farmers. In these recurring situations, Marahiel do not take permission to open Masarat and even use guns as happened near Garsaila (Fig.1), when hundreds of acres were added to Masarat as confirmed by 74% of the Marahiel. Confrontations occur when leaders of both sides are not present. To avoid animal looting and killing, Marahiel move into big groups which might also enable them to intrude into fields as stated by 62% of them.

In addition land grab occur between the tribes live inside the Hawakir on fertile lands, pastures and water sources as stated by 91% of the farmers. The majority of those who have been interviewed during fieldwork could be described as in some way being associated with some of these activities as confirmed by 76% of farmers and 67% of mobile herders. Loss of life, animal and agricultural produce in some localities gives an example to the study area (table 1). Total figures give 6413446352 billion Sudanese Pounds [11] which equals 2,137,815 USD, depicting how far land grab and tribal conflicts have seriously damaged local economy of western Darfur including the study area.

Factors of Land Grab

The fieldwork results revealed that environmental degradation; collapse of virtual relationship between farmers and herders; and population increase; dilapidation of traditional administrative system; and lack of basic infrastructure for community development are the main factors for land grabbing in Wadi Salih area.

Environmental Degradation

This factor is stated by 100% of both farmers and mobile herders. Environmental degradation of the study area could be depicted by studying rainfall records, from 1995 through to 2008, over Nyala town, the nearest longstanding rain gauge which is almost similar to the study area (Table 2). The beginning of the rainy season in

late April is characterized by low rainfall amounts and in nine years out of fourteen years, rain did come in April while it has fluctuated between 3 to 14 mm in the remaining five years. Rainfalls in May have recorded 1 mm in some years; 10 to 30 mm in some others years and exceptionally 84.6 mm in 2003, while rains have

completely absent in some other years. This gives range value of 83.6 mm (1 – 84.6 mm) and depicts delay of the rainy season, its irregularity and abnormality. In June rains increased, but fluctuating and maldistributed when some years have as high as 157.6 mm rainfall and as low as 0.9 mm rainfall.

Table 1: This table shows estimated loss of life, animal wealth and agricultural produce in some localities in western Darfur in 1999

locality	Human			Animal loss in head				Agricultural produce loss in tons		
	Dead	injured	lost	camels	sheep	goat	cows	millet	Dura	sesame
Arafa	185	25	55	130	12285	50975	5900	60435	30375	4319
Morny	65	30	55	65	10261	20976	5435	55346	35156	3120
Abas Marra	95	45	12	265	7785	15375	4650	55304	231005	1798
Mustary	25	15	10	20	125	285	929	2343	29527	4363
Habila	69	20	20	25	2285	3725	850	40365	46432	2650
Total	436	117	152	490	32891	91536	15764	555340	52923	25059

Source: Committee on loss estimation [11]

Table 2: This table shows monthly rainfalls over Nyala town, 1995-2008

	April	May	June	July	August	September	October
1995	0	2.8	0.9	79.1	145.3	48.6	2
1996	0	3.9	108.7	63.8	70	70.6	29.4
1997	3.4	0	57	193.7	87.5	47	6.7
1998	5.8	24.3	4.4	257.6	107.3	103.4	38.4
1999	0	25.5	8.2	93.9	215.5	112.7	48.2
2000	0	10.7	45.1	127.7	142.7	145.3	34.4
2001	0	10.2	36	111.6	64.5	102.6	0
2002	0	1	17	46.4	95.7	75.5	57.5
2003	3	84.6	109.8	98.2	246.7	76.5	7.3
2004	14	0	20.6	137.1	186.2	39.7	34.8
2005	0	0.1	14.5	272.0	125	70.7	5.1
2006	0	18.1	86.1	132.1	140.7	69.5	3
2007	0	30.6	157.6	97.1	127.1	43.1	3.8
2008	6.8	20.9	25	137.3	249.2	47.8	11.6

Source: Sudan Meteorological Records [12]

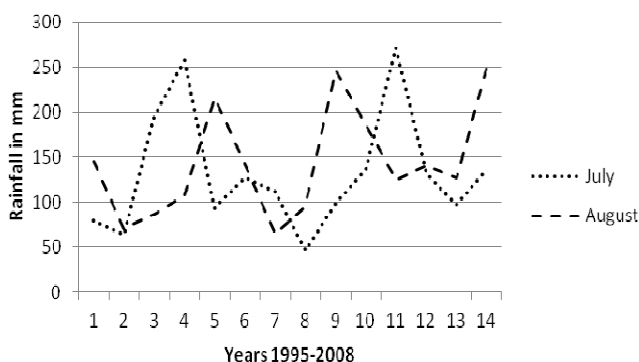
Rainfall climax is witnessed during July and August. In July rains record as lowest as 46.4 mm and as highest as 272 mm, with range value of 225.6 mm depicting somehow rainfall maldistribution (Fig. 2). Similarly, in August rains record 246.7 mm as the highest record and 64.5 mm as the lowest (Fig.2). From table 2, it can be noticed that rainfall records in some non-abundantly rainy months exceed those records in July and August. This phenomenon noticed in September and even in October. Although a period of 14 years is considered short

into detecting behavior of a climatic phenomenon like rainfall, these results might be indicative to environmental fragility exemplified by rainfall fluctuations, delay and shortening of the rainy season.

Rainfall records gave an example to environmental fragility of the study area, but deterioration of natural vegetation is also important as stated, on average, by 69% of farmers and mobile herders. Though the majority of the surveyed population has indicated to successive droughts, declining rainfall and temperature rising as

main reasons for deterioration of natural vegetation, 80% of the farmers have also stated that agricultural expansion had cleared up natural vegetation of the study area. Similarly, 73% of mobile herders confirmed heavily grazing as responsible for the disappearance of most of the palatable perennial grasses such as *Aristida* spp., *Panicum turgidum*, *Cymbopogon proximus*, *Memsonia* spp and *Cenchrus bifflorus* and shrubs and offshoots. Also, natural vegetation was deteriorated it is used for building of annually renewed animal fences and to fill forage gab during summer, as well as logging, of *Acacia* branches, fruits, leaves. Moreover, the majority of sedentary farmers (81%) stated that use of trees and grasses for building purposes, folk crafts and making of agricultural tools has contributed into natural vegetation deterioration particularly *Tamarix tenx* 'where the most affected places are located near human settlements.

Figure 1: This figure shows information about rainfall during July and August over Nyala town, 1995-2008



Collapse of Virtual Relationship between Farmers and Herders

Although Hawakir were entitled to a certain tribe, they can be used by other tribes provided a preceding agreement between the sides involved as indicated by 93% of both farmers and mobile herders. Although the tribes of the study area are a hybrid of different tribes, they have succeeded to bring about one homogeneous society on mutual relations between sedentary and mobile tribes, a fact confirmed by 67% of farmers and 58% of mobile herders. The socioeconomic and political environment of Hawakir was consolidated by successive efforts of heads of tribes and enhanced by religious men and People's judiciary organizations which strength tribal political relations as stated by 71% of farmers and 82% of mobile herders. One of these people's organizations is the council of "Agaweed" or mediators and "Fukaha"

(religious and wise men) who are responsible for looking into problems of killing, robbery, injuries and organizing joint tribal relations on grazing, water, and agricultural activities where in most cases there are more than forty tribes living together in a Hakura as stated by 69% of farmers. In the past, heads of the tribes usually encourage their people to respect neighborhoods, collective work, exchanging of gifts and gatherings in public festivals to show their folk dances as confirmed by 69% of farmers and 62% of mobile herders. In the past, social cooperation; intermarriage; brotherhood and companionship; and mutual trust enriched social life inside these tribal territories as confirmed by 82%, on average, of farmers and mobile herders.

Economic relations within and between Hawakir have included trading, exchanging of commodities and financial crediting. Trading is practiced into groups at times when any trader can get married with any woman of a certain tribe; he is economically dealing with it. Financial crediting either in the form or animals, had enhanced capital growth between African tribes and "Marahiel" as indicated by 81% of farmers and 78% of mobile herders. The majority of farmers (75%) and mobile herders (84%) stated that such situation has weakened and no longer exist in some Hawakir.

Generally, tribes used to authorize "Agaweed" to sign peace agreements between confronting peasants and Marahiel, and to pay compensation for life and wealth loss, as stated by 72%, on average, of farmers and mobile herders. These peace efforts were not comprehensive and do not remove bad memories of killing or robbery. Delaying payment for compensations would automatically be met by revenging, or when local folksingers "Hakamma" thoroughly motivate either of the confronting side to take revenge as confirmed by the majority of both farmers (86%) and mobile herders (74%). The fieldwork revealed that the well-established socioeconomic bounds between farmers and mobile herders has almost weakened, a factor perceived by both sides as triggering land grab in the study area as stated by 88% of farmers and even more by mobile herders (94%).

Dilapidation of Traditional Administrative System

Although Hawakir were basically introduced as common resource for tribes, but in some situations Hawakir were privately owned by some traditional administrations and landlords and hereunto there is private or "Gah" Hawakir with areas of more than 150000 feddans. The majority of

Hawakir were not officially registered, or being officially registered conditioned that Sharaty or Omda signs first as stated by 89% of farmers. They distribute land in order to get "Oshour" or tenth of harvest. When a family owns a field inside a Hakura, it also pays Oshour to the entitled local administration as well as to its representative to the Hakura office who eventually receives 1/3 of the harvest as confirmed by 91% of farmers. Local communities regard these "Oshour" as depriving their income and as a form of feudalism as stated by 69% of farmer.

Due to communist thought of the military government of May 1969, traditional administration has been concealed by the decree of Local Governance in 1970 which overruled the authority of such administrations over local communities. Land became the State property and the new administrative system has brought some officers who do not belong to the local people or to the study area as indicated by 71% of farmers and 69% of mobile herders. In addition, returnees to the study area, who have migrated during droughts, disobey their entitled local administrations; and similarly criminals were not punished as stated by 59%, on average, of farmers and mobile herders. This have encouraged armed looting of villages and animals as stated by 87% of farmers and 94% of mobile herders. Such armed groups have occupied, for instance, valley of Shagy which lays between Zalingi and Wadi Salih area twice in 1989 and 2007 and closed roads leading to villages as confirmed, on average, by 74% of farmers and mobile herders.

Lack of Basic Infrastructure

Although Wadi Salih area is rich with natural resources and human manpower, its population considers it the most underdeveloped area in Darfur as stated by 90% of both surveyed population. Here, general community services are rare. Water stations are few and subject to pressure during the summer season due to huge numbers of human and animals as indicated by 89% of farmers and 96% of mobile herders. Moreover, electricity service is absent, and there is only one hospital with one general doctor; and few almost closed up rural dispensaries, but had been replaced by some non-governmental organizations which offer free medical services as stated by 95% of farmers and 88% of mobile herders. Still yet, average of students per class is 80-100 students, with only six basic schools distributed within the four administrative divisions of the area, and two secondary schools for girls' and boys'. Schools are lacking

infrastructure and adequate staff while some are closed up [13]. Accordingly, higher levels of illiteracy and educational loss, in the view point of some farmers (84%), and mobile herders (69%) and heads of tribes (83%) were responsible for land grab and tribal conflicts. Also, Wadi Salih area lacks agro-animal based development projects that enhance community development as well as roads that could link the study area with other parts of Sudan. So far, these situations have been exacerbated by population increase from 272573 in 1990 to 587896 in 2000 with estimated annual increase by 3.1% according to Wadi Salih Hospital in 2009 as (40%),

DISCUSSION

Colonial policies have left the illiterate majority of Africans as either pastoralists seeking for pastures or traditional agriculturalists producing for self subsistence. Post-Independence Africa was therefore, challenged with very violent resource-based conflicts and tribalism. Darfur, which has been governed by Fur Sultanate, Ottoman Empire and the British, has witnesses land grabbing and tribal conflicts persisting, for example, over the 1970s between Ta'isha and Salamat tribes, over the 1990s between Ma'alia and Ruziegat tribes and in 1996 between Masaliet and Fur tribes against Arab Tribes. Wadi Salih area is not exceptional, where land grab and conflict were over water and grazing rights similar to other parts of Darfur [8]. The "Hawakir" of many tribes became targets for waves of displaced groups from Northern Darfur, especially the Zaghawa and various camel pastoralists whose traditional grazing lands had suffered [7].

There is clearly a close relationship between climate and land grab in the study area which is part of the Sahelian zone. In this zone, July-September rains (main season) are reduced [14]. Wadi Salih area has suffered from considerable rainfall fluctuations during the 20th century. In general terms, averaged annual rainfall decreased markedly since early sixties in Sudan where it varies from almost nil in the north to about 1500 mm at the extreme southwest of the country [15]. However, recent studies on global warming indicated to higher rates of heating in Africa, where the surface area of Lake Chad which is located at same latitude of the study area, has decreased from 25,000 km² in 1963 to 1,350 km² today. Consequently, Wadi Salih area has been classified by the United Nations under "very high risk" of desertification [16]. Also, deterioration of natural vegetation with its repercussions

on loss of pastures and agricultural lands are well documented in Sahelian zone of the Sudan. It is not, however, merely the total biomass that gets over-exploited by grazing and browsing animals, it is the selective exploitation by stock of particular palatable species that is really important. As a result vegetation may still appear quite dense after heavy grazing, whereas in fact selective grazing has eaten out many of the palatable species and reduced the carrying capacity dramatically [17].

These changing climatic conditions in the Sahelian zone had seriously caused many dramatic changes in the traditional subsistence societies living there by disturbing the rhythms of grazing, cultivation, and migration where land grab and tribal conflicts are expressions of unstable societies living in Hawakir. The resident population of the study area tends to increase their cultivation area by clearing wide areas to grow crops and so compete with livestock for both land and water. Although the Agricultural Conference held in 1973 recommended stopping of cultivation of areas with 300 mm and less to stop environmental degradation, people still cultivating these area [18]. The ignorance of suitable climatic boundaries for agriculture was one imperative reason for desertification [19].

Land grab reflects underdevelopment of resources utilization in arid and semi-arid Sudan. For centuries, resources were utilized by simple and primitive means. No innovation into production was introduced into traditional agriculture and grazing. Traditional farmers still use primitive agricultural tools, labor force and marketing procedure. On the other side, animal herders depend solely on movements looking for natural pastures following old passages for centuries. As far as lack of infrastructure in the study area, some development plans of the Sudan have included the development of Darfur. The development program of 1951-1956 recommended the extension of railways to reach Nyala in southwestern Darfur and the development program of 1957-1961 looked for improvement of the rainfed sector apart from private mechanized agriculture [20]. In addition, the ten-year plan of 1961/62-1970/71 proposed the development of Jebel Mara and the production of short – stapled cotton in the rainfed sector (20). The five-year plan of 1970/71-1974/75 proposed settlements of the nomads [20] while during the six year plan of 1977/8-1982/3 the project of Desertification and Drought Relief for digging boreholes in Darfur [20] was also not implemented . However,

"Western Ingaz Road" to link all Darfur together and with all other parts of Sudan was proposed in 2003 [20].

Generally, condominium and post-independence governments believed that the future of Sudan economy lies in commercial agriculture and has failed to provide any development strategy for the traditional peasant sector which holds the majority of Sudan's population [21]. Neglect of rainfed sector by successive Governments is partly due to that large investment sums which would be necessary to provide an adequate infrastructure of roads and marketing in such areas, without any attempts to develop peasant rainland farming effectively cannot succeed [22]. Rural water provision has been expanded dramatically without sufficient thought, so that considerable area of western Sudan has been degraded by over-cultivation and over grazing since 1960s and became more severe problem during the 1970s and 1980s [23]. The truth of this has been made plain by recent work in West Africa [24] and by Lange [25] who indicated that large numbers of animals and few water points leads to a heavy intensity of movement with 'ponching' of the ground, and to heavy grazing around them.

Land grab might be attributed to the nature of nomads to intimidate sedentary communities. The semi-arid lands south of the Sahara might be the new territory for the desert nomad homeland. This will definitely change tribal possessions of land and might constitute the future ethnographic map of Darfur. On the contrary, it might cut the geographic extension of Arab tribes into Mali, Chad and Darfur through an ethnic barrier of African tribes extending to western, central and southern Africa. However, from within the Hawakir emerged the military rebellious movements in Darfur raising issues of equality and justice. These traditional communities might have entered a new era of social change that might be attributed to globalization or to the inequitable relationship between center and periphery in Sudan as exemplified by the separation of south Sudan and the emergence of conflict in Darfur.

CONCLUSION

In conclusion:

- i. Land grab in Wadi Salih can be seen as a typical example of land grab in Darfur
- ii. Land grab took many forms amongst which is intrusion into farms by mobile herders and cut off animal passages and trespass onto reserved areas and destroy of *hafirs* by farmers.

- iii. Land grab could be attributed to environmental degradation, collapse of the virtual relationship between farmers and mobile herders, dilapidation of traditional administrative systems; government neglect of the traditional subsistence sector; lack of basic infrastructure for community development exacerbated by rapidly growing population.
- iv. Climatic change is vital into land grab.

Many peace conferences were held to alleviate land grab and tribal conflicts in Darfur such as El Fasher Conference on peace between Fur and Arab tribes in 1989, Kutum Conference in 1994, Genaina Conference in 1996, Duaain Conference in 1997, and Nyala Conference in 2007 [26]. However, such peace efforts are vital into social and political stability of these rural communities but, innovation in the animal and agricultural base societies is essential and must fulfill four main criteria [17]. It must fit into the existing physical environment conditions; be economically viable; be acceptable in terms of the existing socio-cultural constraints; and take into account the available administrative and managerial manpower [17]. Based on those criteria and on local people suggestions during the fieldwork, promotion of Hawakir in Wadi Salih could be possible. Introduction of appropriate water and pasture resources management policies to keep on resource sustainability; introduction of co-operative agricultural units; diversification of activities since many people is employed in marketing service enterprises as many of them already have more than one occupation both so often depend upon local natural resources, were suggested. In addition, replacement of fuel woods by solar energy is important and the introduction of culture of peace in schools' curricula might help alleviate tribalism. It is also essential is the enhancement of mutual economic linkages with Chad and Central Africa Republic that would ultimately generate income to the area's population.

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CONFLICT OF INTEREST

Nil

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