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Conflicts and Natural Environment of the Sudan with some Emphasis on Darfur Region

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Abstract

This paper is an attempt to find the close relation between misuse of natural resources or resource degradation and conflicts in Sudan and vice versa. Critical review of relevant review was done to satisfy the above mentioned objective. Causes of conflicts in Darfur can be summed up as follows: Expansion of Cultivation at the expense of rangelands due to increase in population and the prevailing climatic conditions, Drought and desertification and its impact on Range and Pasture all resulted in the decrease of the carrying capacity of the remaining rangelands, Animal Routes are seriously affected by the dissolution of the native administration during Nemiri Regime, Scarce Water resources and A lack of development and livelihood options.

Outside of the Main Urban Areas

Environmental degradation and resource scarcity are an underlying cause of conflict in dry land Sudan-including Darfur and have resulted in the following impacts: competition for scarce resources has always been a catalyst for conflict between different rural groups, increased human and livestock population pressures, displacement by mechanized agricultural schemes, reduced and unreliable rainfall, desertification, soil depletion and soil erosion are ongoing and the general trend for displacement to the south and to the cities and increased frequency of local level clashes.

The Environmental Impacts of Conflicts could be Summarized as Follows

Direct impacts: include landmines and explosive remnants. While, Indirect and secondary environmental impacts of conflict as a result of population displacement are The severe and complex environmental consequences of displacement include: deforestation in camp areas; de-vegetation in camps areas; unsustainable groundwater extraction in camps; water pollution in camp areas; uncontrolled urban slum growth; the development of a 'relief economy' which can locally exacerbate demand for natural resources; fallow area regeneration and invasive weed expansion; and return- and

recovery-related deforestation. Not all displacement in Sudan is due to conflict. Drought and economic factors are also major contributing causes.

The following recommendations can be drawn recommended the following measures: strengthening the local institutions, preparation of land use guiding maps for the whole country, regular maintenance of traditional animals' migratory routes, capacity buildings and involving local population in development, change the local culture which looks to the number of animals as source of prestige and political power.

Keywords: Conflicts; Environmental Degradation; Displacement; Scarce resources

Introduction

Environmental resources are crucial to people's lives, livelihoods and cultural identity in Darfur. One of the most important livelihood assets in a subsistence economy are the environmental resources. Darfur's environment is particularly resource poor and suffers from very high natural variability and unpredictability.

Over the last three decades demands have increased as the population has risen, and the resource base has been eroded by unmanaged intensification of farming, grazing and deforestation. Over the same period the native administration system has been eroded, rainfall has been low, populations have migrated to more fertile areas, and political instability and violence has increased [1].

The environment is a crucial part of the current conflict. Environmental resources are being fought over and are being destroyed as a feature of the violence. The drivers for conflict over environmental resources have been significantly exacerbated by the current crisis. Actions include the destruction of crops and water points, the restriction of livestock migration causing local overgrazing, and the destruction of trees and rangeland [2].

Traditional environmental management systems have collapsed in the context of conflict. A high level of deforestation is taking place in the context of conflict. The current crisis has caused unprecedented concentrations of demand for water, forest products, grazing and other environmental resources. This has caused significant localised depletion of these resources [1].

Protection provided to internal displace persons (IDPs) is significantly worsened by the depletion of natural resources, as resource collection becomes more difficult. The humanitarian programme is heavily dependent on environmental resources. The depletion of resources already limits the delivery of the relief programme.

Livelihoods that are thriving in the context of the crisis, such as brick-making and charcoal-making, are placing unsustainable demands on natural resources. These are important livelihoods in the IDP camps.

The heavy environmental impact of prolonged displacement is degrading some of Darfur's most valuable agricultural land. Many IDP camps are built around agricultural market towns, which means that land degradation affects prime farmland, undermining livelihoods for both the displaced and the host population, affecting the crisis as well as the future recovery period [1].

The demands for forestry will be considerable at the time of reconstruction. With two million people displaced, and a single family compound requiring 30–40 mature trees to be rebuilt, the demand for reconstruction if all IDPs returned would be 12–16 million trees.

Environment as a cross-cutting theme is not adequately integrated in the relief programme and suffers from a lack of technically skilled personnel. The omission to undertake monitoring of groundwater depletion in camps in an arid area over a three year period is a significant one [1].

Research Problem

In Darfur, there is t clear linkages exist between environmental problems and the conflict. Indeed, climate change, land degradation and the resulting competition over scarce natural resources are among the root causes as well as the consequences of the violence and grave humanitarian situation in the region. Natural resource management and rehabilitation, therefore, are not only

fundamental prerequisites to peace building in Darfur and the rest of Sudan – they must become a national priority if the country is to achieve long-term social stability and prosperity.

Desertification, climate change and other forms of environmental degradation strongly contribute to poverty, displacement and conflict in dry land Sudan caused by the expansion of cultivation on traditional grazing lands associated with extraordinarily increase in animals number. Negative indicators of environmental degradation can be summarized as follows: a 50 to 200 km southward shift of the boundary between desert and semi-desert has occurred since the 1930s, rainfall in Northern Darfur has dropped over 30% over 50 years, climate change and crop models forecast a drop of 20-70% in food production capacity in parts of the Sahel Belt by 2030-home to several million rural Sudanese, ongoing deforestation crisis in northern and central Sudan, large scale displacement and conflict already directly linked to resource scarcity and environmental degradation. Efforts to combat these challenges are limited in scale and as yet uncoordinated. This study is highly dependent on official reports prepared by international organizations and agencies through preparing a critical summary of these reports.

The impact of conflict on the environment can be summed up into the following: the direct impacts from armed conflict were limited some targeted natural resource destruction (forests in Darfur, the indirect impacts were severe: population displacement, conflict-related resource exploitation, short term survival strategies vs. sustainable development, lack of environmental governance and rule of law Environmental degradation and resource scarcity as an underlying cause of conflict in dry land Sudan- including Darfur, competition for scarce resources has always been a catalyst for conflict between different rural groups, historical reconciliation mechanisms have broken down and pressures are on the increase, increased human and livestock population pressures, displacement by mechanized agricultural schemes, reduced and unreliable rainfall and desertification, soil depletion and soil erosion are ongoing.

Objectives

1. To identify the relation between the misuse of natural resources and conflicts
2. To find out the causes and effects of conflicts in Darfur-Sudan

Materials and Methods

Description of the Study Area

Area and geographical location: The Greater Darfur region occupies an area of five hundred thousand square kilo-meters approximately, in the north western part of the Sudan, located between the parallels 08:15 and 20:00 North and 22:00 and 27:30 East. The desert part extends from north of parallel 16:00 to 20:00 in an area of about one hundred and forty-five thousand square kilometers representing twenty-eight percent of the total area of the region. The desert part is virtually unoccupied and therefore it has no human activities that utilize water or land for agriculture or range [3].

Climatic region and rain fall: The region mainly consists of four main climatic zones. Firstly, the rich savanna in the south with an average rain fall between 400 mm to 800 mm per year; the rainy season extends between 4 to 5 months. Secondly, the poor savanna in the middle of the region, with an average annual rainfall that ranges between 200 to 400 mm and a rainy season ranging between 3to 4 months. Thirdly, is the arid zone which occupies the middle of northern parts of the region [3].

The rainfall in this zone is limited, with high fluctuations and ranges from 100 to 300 mm. The fourth zone is the desert zone and it is characterized by lack of rainfall and high temperatures during the summer.

Topography: Darfur is sandy and qoz soils occupy the major parts and form about sixty-five percent of the northern parts of the region and 10 to 15% of the southern parts. The mountainous and hilly lands perform the middle part and it is represented by Jebel Marra plateau, and in the north it is represented by Meidob Hills. Clay and gardud soils occupy the western and south western parts and some pockets in the north.

Jebel Marra Plateau acts as a watershed division and from which flows most of the seasonal streams and wadis such as Wadi Barei, Wadi Azoom, and these flow to the west and southwest of the region. In turn, Wadi Al Ku, Wadi Taweela, Wadi Kuttum, Wadi AlKaj flow towards the east and south eastern part. Wadi Kas, Wadi Bulbul and others flow towards the south and southeast of South Darfur. Some of these wadis retain water in some areas which helps in utilizing the water of the shallow wells to grow vegetables and horticultural crops (Kabkabiya, Kuttum, Gar-sila etc).The deep water aquifers of Baggara, Sag Anaam, and Umbayada basins are good potential sources of drinking water for the people and animals in

the north eastern and south eastern parts of the region [3].

The rainfalls in autumn and floods as well as shallow wells are the cornerstones for the Darfurian socioeconomic activities for providing food and other forms of livelihood. These economic activities are mainly agriculture and include the raising of livestock. However, since the two activities depend on water and land, competition between the users of these resources is a reality.

Methodology

This study are completely dependent on revising the available literature and to find the links between conflicts and environment using cause-and effect relationship.

Results and Discussion

Main Causes of Conflict in Sudan

In Sudan, four categories of natural resources are particularly linked to conflict as contributing causes:

a. Oil and gas reserves;
b. Nile waters;
c. Hardwood timber; and
d. Rangeland and rain-fed agricultural land (and associated water points).

Potential conflicts over oil, Nile waters and hardwood timber are national-scale issues. Tensions over rangeland and rain-fed agricultural land are primarily local, but have the potential to escalate and exacerbate other sources of conflict to the extent of becoming national-scale issues, as is presently the case in Darfur [4].

Competition over oil and gas reserves: Though the major north-south conflict started well before oil was discovered in central Sudan, competition for ownership and shares in the benefits of the country's oil and gas reserves was a driving force for the conflict and remains a source of political tension today.

Timber and the war economy: While there is no indication that timber has been a major contributing cause of the instigation of conflict in Sudan, there is clear evidence that revenue from hardwood timber sales helped sustain the north-south civil war prior to the separation of Southern Sudan. Timber became part of the war economy, and there are now signs that this process is being repeated with charcoal in Darfur. Overall however, the timber-conflict linkage in Sudan is considered to be mainly an environmental impact issue (rather than a conflict catalyst).

Local conflicts over rangeland and rain-fed agricultural land: Local clashes over rangeland and rain-fed agricultural land have occurred throughout Sudan's recorded history. In the absence of demographic and environmental change, such conflicts would generally be considered a social, political or economic issue and not warrant an assessment purely on environmental grounds. However, environmental issues like desertification, land degradation and climate change are becoming major factors in these conflicts. Water is the most precious natural resource in the drier regions. Goats, cattle and camels all use this crowded water point in Southern Kordofan Low quality degraded rangeland in Northern Darfur. To survive in these regions, pastoralists must travel across agricultural areas to find water and fodder for their herds, which commonly leads to conflict With regard to Environmental linkages to local conflicts over rangeland and rain-fed agricultural land It is important to note that while environmental problems affect rangeland and rain-fed agricultural land across virtually all of Sudan, they are clearly and strongly linked to conflict in a minority of cases and regions only. These linkages do exist, but their significance and geographic scale should not be exaggerated.

That said, there is substantial evidence of a strong link between the recent occurrence of local conflict and environmental degradation of rangeland and rain-fed agricultural land in the drier parts of Sudan [4].

Causes and Effects of Conflicts in Darfur

Expansion of cultivated land over the rangelands: Crop farming is the main economic activity for more than eighty percent of Darfur's population. The cultivation of millet, sorghum and other cash crops (groundnuts, sesame etc) is essential for food and economy of the population. Millet is the staple food for more than seventy-five percent of the population and is cultivated throughout Darfur, especially in the sandy soils and clay soils that could be exploited easily by manual labour. In turn sorghum is the staple food for the population in the west and the south of the region. It is cultivated in the wadi beds, light clay and gardud soils. The cultivation of these crops has continued for hundreds of years in Darfur. The productivity of these crops is dependent on the rainfall and natural land fertility.

Causes of expansion of cultivation

a) The demand for the agricultural crops has increased parallel to the in-crease in the population.
b) For compensation of the declining production, horizontal expansion of farming became an option for the farmers. In turn, the average land holdings per household or person have decreased due to population increase [5].

Impacts of expansion of cultivation (UNEP and [6])

a) Expansion of agriculture was not confined to crop land but ultimately be-came at the expense of the pasture lands, not for the nomads alone, but for the settled farmers themselves. At present, in all Darfur especially on the qoz soils it is 'wall to wall' millet farming without corridors for the small animals to graze along during farming season.
b) The expansion of farming on the qoz soils has not been confined to millet cultivation only, but in regard to other cash crops (groundnut, sesame etc) cultivation has also increased due to the market demand and their importance to the farmers to earn cash. This expansion of farming has not been limited to qoz soils only, but has included the light clay and gardud soils on the wadi beds where there is the possibility of exploitation by hand. Moreover, the new simple and cheap agricultural technologies have facilitated the utilization of most wadi soils either by the utilization of rainfall moisture for winter cropping or irrigation by the use of diesel engine driven water-pumps from the shallow wells. In former years the wadi and clay soils were normally used as dry season grazing areas for the livestock of nomads and settlers [3].
c) From this situation, it is inevitable that competition over land would take place not only between the farmers and nomads, but between the farmers themselves due to lack of grazing lands for their animals.

Extraordinarily increase in livestock number: Livestock raising in Darfur is the second socioeconomic activity for the settled population. However, the livestock economy has continued to gain importance since the seventies, so the government encouraged livestock production. Animal population in Sudan as well as in Darfur, though there are no accurate figures, has increased substantially. This increase is due to:

a) The preventive animal health services provided by the government veterinary authorities, (implementation of animal vaccination campaigns against pandemic diseases, Sheep Pox, etc.) have reduced the loss of the livestock due to outbreaks.
b) The demand for mutton and beef by the Arab and other Gulf countries has encouraged animal breeders to invest in their animals to improve productivity. This investment was mainly in disease control by the use of veterinary drugs and medicines, improvement of performance through selection of good breeds and fattening in some areas [5]
c) The inherited culture that the number of Animals is a source of political power and social prestige [6].
d) Nomadism: herders are in continuous movement by their herds and animals' markets are inaccessible and the poor transportation therefore the sales are always very poor [6].

Impacts: Because the livestock production in Sudan is based on communal grazing, unfortunately no investments have been made by the government or the animal breeders to improve the pasture, especially by the nomads. Nomads have continued to depend on natural grazing. So this increase in the animal population ultimately affected the carrying capacity of the natural grazing lands.

Drought and desertification and its impact on range and pasture: Range and pasture is the backbone of livestock production in the Sudan in general and Darfur in particular. The growth of forage plants and grazing grasses undoubtedly depends on the rainfall. And due to the droughts and shortage of rains in the last thirty years, the productivity of natural pasture has decreased [7].

Impact

a) Decrease of the carrying capacity of range and pasture as a result of the reduction of rainfall associated with the continuous increase in animals number enforces the herders to graze on agricultural lands which may be expanded on rangelands.

In North Darfur, for example, the carrying capacity of pasture in the seventies was forty to fifty animal units per square kilometer in the eastern sandy soils (one animal unit is three hundred- four hundred animal live weight). For comparison, the survey carried out by the Range and Pasture Department conducted in 2001/ 2002 which was an above average rainy season, the result of the carrying capacity was only 9 animal units per year [4].

b) The deterioration was not limited to grasses, but included a decrease in the production of trees in form of pods and leaves which normally add over thirty percent to range carrying capacity. This decrease was due to the death of the trees as the result of the droughts or due to continuous felling of trees for firewood and charcoal which became one of the

important economic activities and source of income for most of the poor rural populations in Darfur, settled people and nomads as well.

c) Regarding the decrease in the pasture lands, some estimates recorded that in the qoz soils, the decrease is over sixty per cent and the in clay and in the wadi lands, the decrease is over that an additional sixty percent.

d) Because of the changing situations and relations between agriculture and livestock raising, severe competition between the two economic activities is undoubtedly inevitable. Therefore friction and conflicts between the stakeholders is the ultimate result. And in the Darfur context, the natural resource base conflicts are aggravated by the political dimension, the existing crisis in Darfur being an example.

e) Due to the deteriorating environmental conditions in the early eighties the cattle movement from south to north has been limited to south of the railway line to Nyala (south of parallel 12:30). Moreover, the grazing areas have been limited by the cultivation of crops, especially groundnut and sesame as sources of cash for the farmers.

Animal routes are seriously affected by the dissolution of the native administration during nemiri regime: Animal routes in Darfur are areas between the farms plots designated for nomads to pass through during their movements from south to north during rainy season and from north to south during the dry season. This arrangement was agreed upon by the local leaders of the nomads and the settled farmers in early 1950s. This arrangement then was fostered by the Government and enforced by all parties. The arrangement continued facilitating effectively the movement of the nomads without serious implications, apart from minor conflicts which were normally resolved by traditional mechanisms until the late 1970s [1].

Generally, the animal routes agreed upon and established in Darfur were eleven passages on the eastern and western parts of Jebel Marra Plateau. For more explanation, the following definitions are known for this arrangement:

- Massar is an animal route or passage between agricultural farms within one hundred meters in width used by the animals to move from area to another without stopping for grazing or watering.
- Seeniya (Roundabout), it is a grazing area between the farms within 4 to 5 Km2 designated for the passing animals to graze and rest for hours or one day before resuming their movement.
- Manzalla, Fariq (Nomad camp). Originally this is a grazing area between, near or around the farms used by moving nomads for grazing within certain periods and then they move to other locations during their trips.

As stated before, eleven animal routes were known since the early fifties. The length of these routes ranged between two hundred and fifty to six hundred kilometers from north to south. The latter animal route is from Wakhsyim in North Darfur to Um Dafog in South Darfur and the former is the route from Kulkul Dam in North Darfur to al-Daein in South Darfur. The total areas for the eleven animal routes are estimated to be thirty-four thousand square kilometers. Some of those routes were for the cattle and others for the camel nomads.

Impacts: a) Some of the camel routes and dry season grazing areas in the dars of some tribes have been used for crop production throughout the year, staple food grains in the rainy season and vegetables and horticultural crops in winter either by rain moisture or irrigation. And the recent conflicts between the camel nomads and the settled farmers were the result of competition over the wadi and clay areas (in Jebel Marra, Garsilla, Kabkabiya and Geneina) and the preset Darfur conflict was initiated from this situation.

Scarce water resources and conflicts: The Darfur region, especially the north, has been considered as an area of general water shortage. However, in spite of declining rainfall, water shortage has not become a cause of severe conflict between the stakeholders. • conflicting with pastoralists access to watering and grazing along the wadis and khors.

- conflicting with small-holder farmers particularly, traditional tobacco or tombak producers.
- conflicting with small farmers who traditionally exploit the residual moisture of the khors for vegetable production.

The status of tenure as regards the lands under water spreading activities is not comparable to other land users' tenure systems. In fact, there is a great deal of confusion within the customary rules when dealing with tenure issues and conflicts of the water spreading land.

Environmental degradation and resource scarcity as an underlying cause of conflict in dry land sudan-including darfur

- Competition for scarce resources has always been a catalyst for conflict between different rural groups

- Increased human and livestock population pressures [5]
- Displacement by mechanized agricultural schemes
- Reduced and unreliable rainfall
- Desertification, soil depletion and soil erosion are ongoing
- General trend for displacement to the south and to the cities and increased frequency of local level clashes

A lack of development and livelihood options: Outside of the main urban areas, Sudan remains very poor and underdeveloped. Rural populations consequently have very few options to solve these agricultural crises, as solutions like agricultural development, improvements in pasture and stock quality, and using working capital to cover short term needs and alternative employment are simply not available [8].

Environmental impact of conflict

Direct impacts: Landmines and explosive remnants of war Landmines and other explosive remnants of war (ERW) are a major problem in Sudan.

Indirect and secondary environmental impacts of conflict: The environmental impacts of population displacement**.** After civilian deaths and injuries, the most significant effect of conflict on the population of Sudan has been displacement – people fleeing conflict zones seeking security. An estimated five million people (7 to 12 percent of the estimated total population of Sudan) have been displaced to date, and less than one million have returned [4].

The number of displaced is rising due to the continuing conflict in Darfur. The great majority of the displaced have come from rural areas and migrated to camps on the outskirts of towns and cities. Over two million have relocated to the capital city, Khartoum.

The severe and complex environmental consequences of displacement include:

- deforestation in camp areas;
- de-vegetation in camps areas;
- unsustainable groundwater extraction in camps;
- water pollution in camp areas;
- uncontrolled urban slum growth;
- the development of a 'relief economy' which can locally exacerbate demand for natural resources;
- fallow area regeneration and invasive weed
- expansion; and
- Return- and recovery-related deforestation.

Not all displacement in Sudan is due to conflict. Drought and economic factors are also major contributing causes [4].

Looting of natural resources - war economy resource extraction: Natural resource looting is defined as the uncontrolled and often illegal extraction of natural resources that commonly occurs during extended conflicts. In this context, natural resources are often badly impacted and also have a role in sustaining the conflict. In Sudan, the resources in question are timber (lumber and charcoal), ivory and bush meat.

Analysis of the Role of Natural Resources as a Contributing Cause of Conflict in Sudan

It is acknowledged that there are many factors that contribute to conflict in Sudan that have little or no link to the environment or natural resources. These include political, religious, ethnic, tribal and clan divisions, economic factors, land tenure deficiencies and historical feuds. In addition, where environment and natural resource management issues are important, they are generally contributing factors only, not the sole cause for tension.

Most of the recorded local conflicts are within and between pastoralists and agriculturalists fighting over access to land and water. The third group, the mechanized farming lobby, is generally not directly involved in conflict, but has played a very strong role in precipitating it in some states, through uncontrolled land take from the other two groups. In the Nuba mountains and in Blue Nile state, combatants reported that the expansion of mechanized agricultural schemes onto their land had precipitated the fighting, which had then escalated and coalesced with the major north south political conflict.

Summary of the Environmental Impacts of Conflict

The findings of UNEP's assessment of the environmental impacts of conflict in Sudan (2007) can be summarized as follows:

Direct impacts are overall minor:

- landmines and explosive remnants of war: significant;
- destroyed target-related impacts: not significant;
- defensive works: not significant; and
- targeted natural resource destruction: significant for Darfur, but currently not quantifiable.
- Indirect and secondary impacts are major:
- environmental impacts related to population displacement: very significant;
- looting of natural resources: significant;

- environmental governance and information vacuum: significant; and
- Funding crises: very significant.

These findings indicate that the way forward on environmental issues in post-conflict Sudan should not focus on the direct legacies of conflict (which are relatively minor). Attention should instead be paid to the indirect and secondary impact-related issues, as well as to chronic problems. This would be best achieved by integrating all of the issues into a holistic recovery programme rather than attempting to separate them on the basis of conflict linkages.

- Competition for scarce resources has always been a catalyst for conflict between different rural groups
- Historical reconciliation mechanisms have broken down and pressures are on the increase
- Increased human and livestock population pressures
- Displacement by mechanized agricultural schemes
- Reduced and unreliable rainfall
- Desertification, soil depletion and soil erosion are ongoing
- General trend for displacement to the south and to the cities and increased frequency of local level clashes [4].

Conclusions and Recommendations

Conclusions

Causes of conflicts in darfur as well as similar areas in sudan: Expansion of Cultivation at the expense of rangelands due to increase in population and the prevailing climatic conditions.

1. Drought and desertification and its impact on range and pasture all resulted in the decrease of the carrying capacity of the remaining rangelands [7].
2. Animal Routes are seriously affected by the dissolution of the native administration during Nemiri Regime.
3. Scarce Water resources and
4. A lack of development and livelihood options outside of the main urban areas.

Impacts of environmental degradation and resource scarcity

Environmental degradation and resource scarcity are an underlying cause of conflict in dry land Sudan-including Darfur and have resulted in the following impacts [5]:

1. Competition for scarce resources has always been a catalyst for conflict between different rural groups.
2. Increased human and livestock population pressures, displacement by mechanized agricultural schemes.
3. reduced and unreliable rainfall, desertification, soil depletion and soil erosion are ongoing and
4. The general trend for displacement to the south and to the cities and increased frequency of local level clashes.

The environmental impacts of conflicts: The environmental impacts of conflicts could be summarized as follows:

Direct impacts: include landmines and explosive remnants. While, Indirect and secondary environmental impacts of conflict as a result of population displacement are The severe and complex environmental consequences of displacement include: deforestation in camp areas; de-vegetation in camps areas; unsustainable groundwater extraction in camps; water pollution in camp areas; uncontrolled urban slum growth; the development of a 'relief economy' which can locally exacerbate demand for natural resources; fallow area regeneration and invasive weed expansion; and return- and recovery-related deforestation. Not all displacement in Sudan is due to conflict. Drought and economic factors are also major contributing causes [4].

Recommendations

The following recommendations can be drawn recommended the following measures:

1. strengthening the local institutions,
2. preparation of land use guiding maps for the whole country,
3. regular maintenance of traditional animals' migratory routes,
4. capacity buildings and involving local population in development,
5. change the local culture which looks to the number of animals as source of prestige and political power.

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