TOWARDS SUSTAINABLE DEVELOPMENT OF AGRO-PASTORAL SYSTEMS IN KORDOFAN REGION, SUDAN

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Abstract

The main resource-use pattern in Kordofan region of Sudan could be considered as a typical agro-pastoral system of Saharo-Sahelian zone. Northern part of the region is dominated by camels and desert sheep herders, while cattle herders traverse from the southern part – where there are savannah vegetations – to the Sahelian environment in the north during the rainy season. As consequences of drought episodes and some changes in land-use systems in the area, agro-pastoral communities facing multitude of challenges that necessitate the development of some strategies to cope with their environmental and socio-economic impacts. This study is designed to scrutinize strategies developed by local communities to enhance resilience in addition to evaluate the previous interventions put by some actors to enhance local mechanisms for conflict mitigation. A conceptual framework was developed to explain the interrelation of factors and attributes of sustainable development of agro-pastoral communities in the area. Political ecology and analytical approaches were followed. A key informant's questionnaire was designed and subsequently completed by interviewing 200 respondents. In addition to focus discussion that was conducted with some tribal leaders. Results indicated that the main challenges facing pastoralists were climate variability and its impacts on natural resources, conflicts/security and lack of basic services like health and education. Strategies developed by pastoralists to meet some challenges were herd mobility in searching for water and pasture, keeping drought tolerant animals, diversifying livestock species in favor of resilience to drought and herds splitting among their relatives. These strategies may enhance resilience of pastoral communities if coupled with the provision of a multidisciplinary approach that regulate access to water and range pastures via demarcation of the livestock corridors, revision of land tenure, provision of services and minimizing ethno-political polarization. Provision of such a multidisciplinary approach may pave the way for sustainable development in the region.

Keywords: resilience of pastoral communities, sustainable development, Kordofan, conflict over resources.

Résumé

Le modèle dominant d'utilisation des ressources dans la région du Kordofan, au Soudan, peut être défini comme un système agro-pastoral typique de la zone saharo-sahélienne. La partie nord de la région est exploitée par les éleveurs de chameaux et de moutons du désert tandis que des éleveurs bovins transhument des savanes du sud à l'environnement sahélien du nord du Kordofan au cours de la saison des pluies. En conséquence des épisodes de sécheresse et des changements dans les systèmes de gestion foncière dans la région, les communautés agro-pastorales font face à de multiples défis qui nécessitent le développement de certaines stratégies pour en atténuer les impacts environnementaux et socio-économique. Cette étude vise à examiner les stratégies développées par les communautés locales pour renforcer la résilience et à évaluer les interventions précédentes de certains acteurs visant à renforcer les mécanismes locaux de gestion des conflits. Un cadre conceptuel a été élaboré pour modéliser l'interrelation entre les facteurs et les attributs du développement durable des communautés agro-pastorales dans la région. L'étude s'appuie sur une approche analytique et sur les développements théoriques de l'écologie politique. Un questionnaire pour les personnes ressources clés a été

conçu et soumis à 200 personnes. De plus, des entretiens individuels, orientés et libres, ont été menés avec 15 chefs traditionnels. Les résultats indiquent que les principaux défis auxquels sont confrontés les éleveurs sont la variabilité du climat et ses impacts sur les ressources naturelles, les conflits / la sécurité et le manque d'accès aux services de base comme la santé et l'éducation. Les stratégies développées par les éleveurs pour répondre à certains défis sont la mobilité des troupeaux pour la recherche d'eau et de pâturages, la possession d'animaux tolérants à la sécheresse, la diversification des espèces d'élevage en faveur de la résistance à la sécheresse, et le confiage d'une partie du cheptel à des parents. Ces stratégies peuvent renforcer la résilience des communautés pastorales si elles sont couplées à une approche transversale pour la gestion de l'accès à l'eau et aux pâturages par la délimitation des couloirs de passage, la révision du régime foncier, la fourniture de services et l'atténuation de la polarisation ethno-politique. Une telle approche multidisciplinaire pourrait ouvrir la voie à un développement durable dans la région

Mots-clés : résilience des sociétés pastorales, développement durable, Kordofan, conflits liés à l'accès aux ressources.

Background

Sudan is a vast country in the Sahel with around five agro-ecological zones (Fig. 1) as illustrated in FAO and IIASA. (2000). It has the second largest livestock population in Africa, estimated at over 133 million heads (FAO, 2009). In Sudan, livestock raise under traditional pastoral system of transhumant nature which involves extensive seasonal migration in search for water and pastures. Kordofan region is located in west Sudan between latitudes 9.50° and 16.40° N and longitudes 27-32° E, with a total area of about 380.000 km^2, (El-Hag et al, 2011). Animal production in the region is almost traditional with varying degrees of dependency on rangelands and crop residues. Therefore, the agro-pastoral system, which is a set of practices that join pastoral livelihoods with that of crops production, is the typical resource-use pattern in Kordofan. Within this system, Millet and Sorghum are cultivated as the main staple food crops, interrupting the vast open grazing pasture where desert sheep, camels and cattle herders traverse.

Due to the drought episodes that hit the African Sahel, the natural-resource based in Kordofan experienced severe degradation which leads to the so-called conflict over resources as the main challenge that face agro-pastoral communities. Hassab El Resoul and Khatir (2011) summarized the main causes of conflict over resources in Kordofan in: scarcity of grazing resources coupled with growing number of animal population, high competition over land resources under unclear land tenure system, cultivation of crops at the expense of grazing resources, poor natural resource management (NRM) and absence of policies and legislation organizing the use of Natural Resources (NR). Elias (2008) stated that unfair agricultural policies and imbalanced organizing laws for agriculture and pastoralism have fueled the feelings of marginalization among pastoral communities. However, conflicts over resources may be due to the rigorous ethno-political polarization. As a result of such conflicts, pastoral communities are the most vulnerable entity that face multitudes of security and developmental challenges.

Land tenure system in Kordofan region followed a pattern where particular ethnic groups were given a right over a particular piece of land locally known as "*Dar*". Since pastoralists bestride boundaries, this traditional land tenure creates conflicts over the land. These conflicts undermine both environmental stability and food security. For pastoralists, communal right has become well embedded in their culture and daily life (Shanmugaratnam, 2008). El-Hag et al (2011) revealed that in Kordofan, the cattle owning tribes Baggara used to follow specific seasonal routes linking summer grazing areas with wet grazing ones crossing their homeland *Dar*, while camel owning tribes Aballa drive their herds wherever there is plenty of forage and water. During this endless mobility, pastoralists are sharing grazing resources with settlers in an equitable way. But after the famous drought of 1984 pastoral tenure issue was raised as a

major cause of conflict between pastoralists and farmers. Livestock routes in Kordofan together with areas where pastoral communities spend summer time, *Massayif*, and areas where they spend rainy season, *Makharif*, are illustrated in map 2 (ARC 2007, RPA 2003). This study is designed to scrutinize strategies modified by pastoralists and to develop a model for management of local communities with the aim of toning-down conflicts.

Methodology

This study was conducted in Kordofan region during the period from April to August 2012. Political and analytical approaches were followed to explain the different interactions in the agro-pastoral system. Data were collected using a questionnaire targeting 200 transhumant respondents; moreover, 15 tribal leaders were interviewed for their experience with challenges faced by pastoral communities and for the strategies developed by pastoralists to mitigate the man-made and the environmental unfavorable conditions. A conceptual framework to explain the path for sustainable development was used (Fig. 3). Data were analyzed using Statistical Package for the Social Sciences (SPSS version 12).

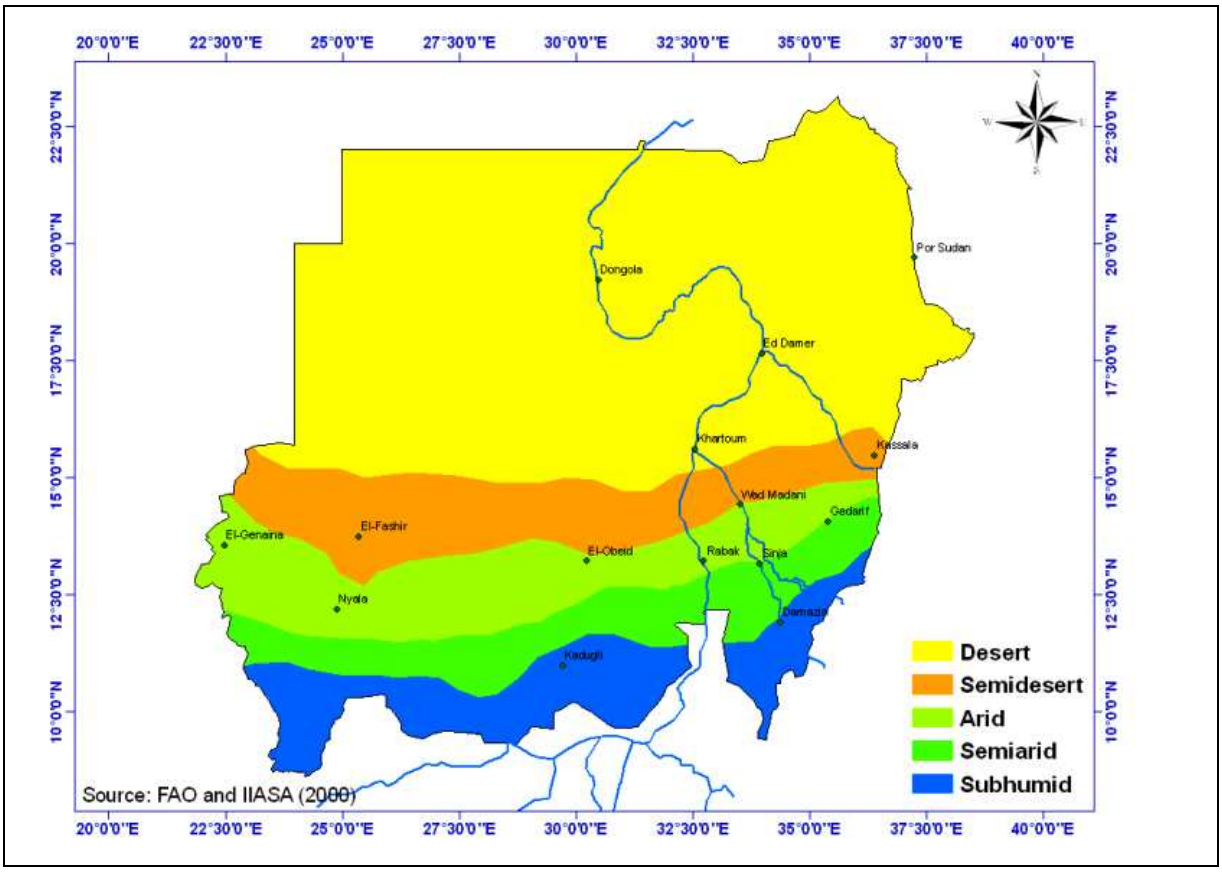

Fig.1: Sudan agro-ecological zones

Challenges faced by agro-pastoral communities

Results revealed that three main determinants behind the deterioration and disturbance in the agro-pastoral systems were of environmental nature like climate variability factors (46%), conflicts and security (28%) and finally lack of basic services (26%).

Strategies developed by pastoral communities to enhance resilience

Pastoralists have developed some strategies to overcome those challenges. These strategies are herd mobility, livestock species diversification, herd splitting with help of their relatives, renting of pasture land, selling some of their animals and looking for alternative income.

Previous interventions

Kordofan region, being the main agro-pastoral region in Sudan, experienced many challenges as far as conflicts over resources are concerned. The resource-based conflicts in Kordofan may be aggravated by the fact that Kordofan is geopolitically neighboring some areas of turbulence like South Sudan and Darfur region. The latter may be influenced by the trans-border unrest in addition to the internal conflict.

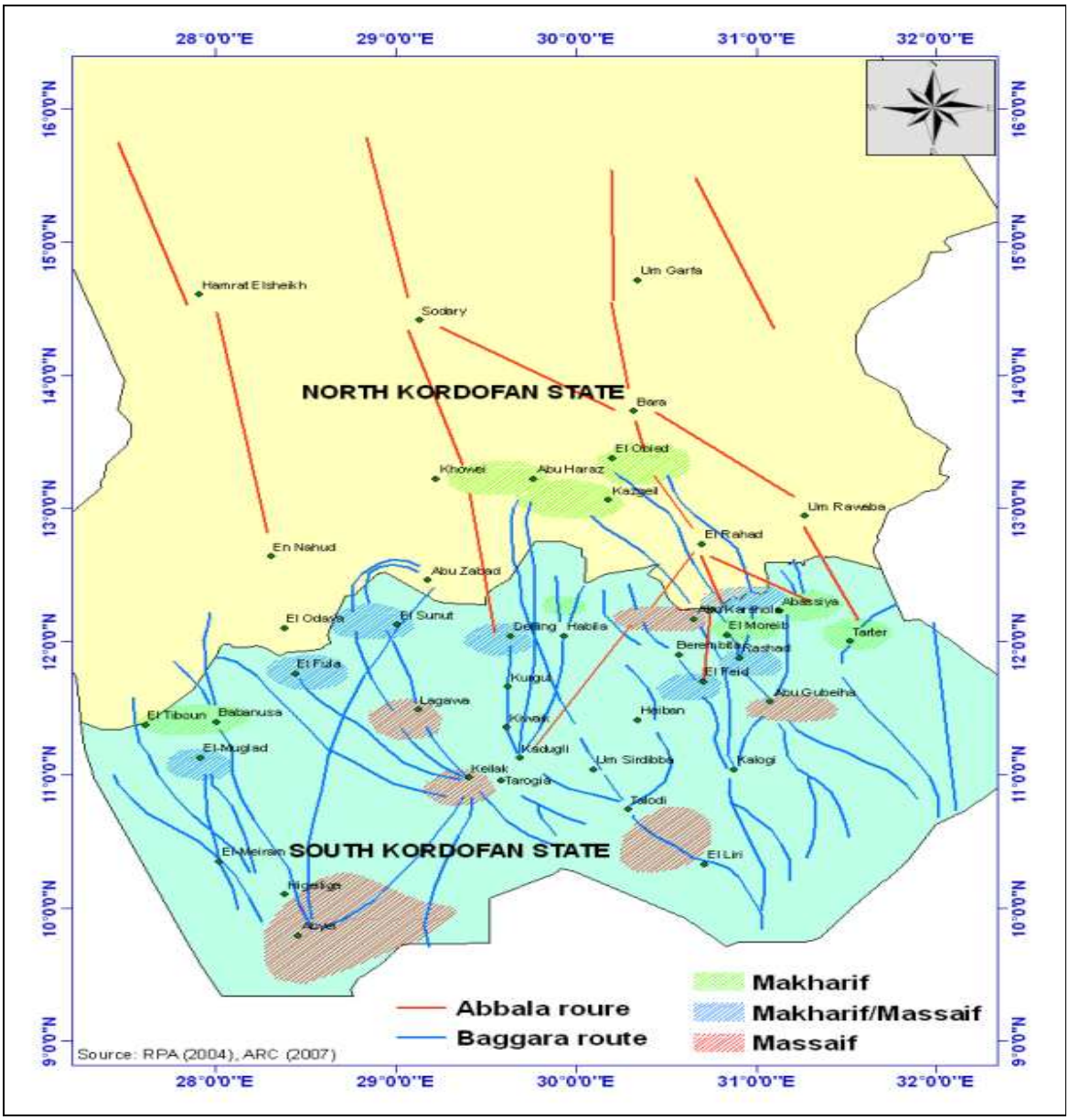

Fig. 2: Livestock routes in Kordofan

Therefore, Kordofan attracted a plethora of local national, governmental and non-governmental interventions to mitigate resource-based conflicts. The most important intervention models were implemented by the IFAD/ Government of Sudan and UNDP/SOS Sahel. These models achieved some success in mitigation of conflict over resources by enhancing local mechanisms for conflict mitigation and resolution in addition to policies rectification and law enforcement. The first model had the merit of developing NRM system considering the contribution of different stakeholders. The two models may unequivocally pave the way for any further and future intervention in the realm of conflict resolution. In addition to the previous two models, there are two "Peace and development centers" for instance, one in the University of Kordofan in Elobeid city, the other in Dilling Unversity, South Kordfan. The two centers make some contribution. However, the activities of these institutes may be handicapped or constrained by the meager budget and limited resources, despite the huge number of resource-full persons in the area. Some centers mandated to conflict resolution were created in the region to tackle the issue of conflicts within the region and among it and the neighboring regions.

Conceptual framework of factors and attributes that lead to sustainable development

Interrelationship among different factors and attributes that lead to sustainable development is conceptualized in Fig. 3. The figure indicates that: the process of sustainable development passes through many stages of natural resource management, factors and attributes. The figure also reflects that institutions, norms and culture are the most important factors that govern the co-existence of Nomads and Settlers.

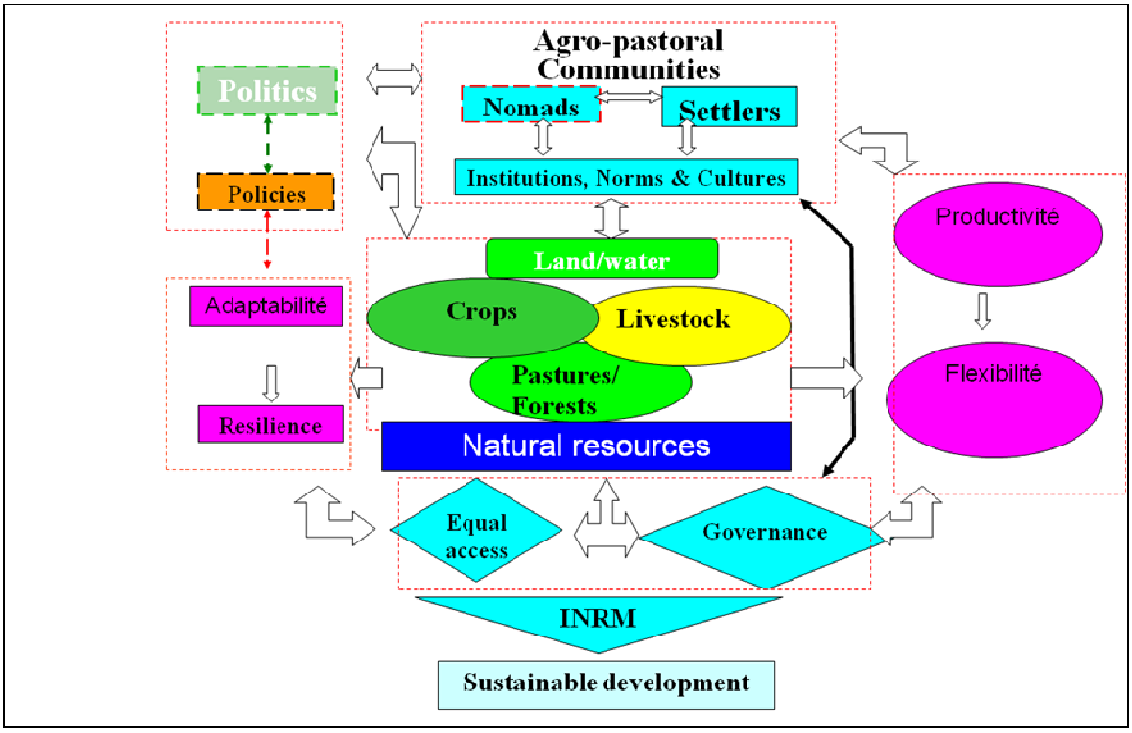

Fig. 3: Factors and attributes of sustainable development in agro-pastoral systems

Conclusion

To realize sustainable security and development of agro-pastoral communities, the existing land tenure system should be revised, complemented and updated to absorb the impacts of climate variability, changes in land use and socioeconomic transformation in the area. Different attributes of the system sustainability should be discussed and well thought-out before intervening. Moreover, the ethno-political polarization should be tuned down through law enforcement, good norms and community-based

organizations (CBO). Therefore, the following points should be considered as prerequisites for resilience of local communities and for sustainable development of the agro-pastoral systems in Kordofan Region.

1. Provision of a multidisciplinary approach for natural resources management; research capabilities / capacity-building; exchange of ideas, experiences; services (education, extension, health); effective peace and/or conflicts resolution institutes; banning of farming activities within the livestock corridors; demarcation of corridors; and empowerment of the mediation and arbitration system based on Joodia System and good norms.
2. Provision of a prescribed decision-making framework in case of: conflicts over resources; pests and diseases outbreak; natural disasters; economic crisis; administrative restructuration.
3. Giving priority to research and extension projects in: camel/desert sheep production in North Kordofan; cattle production in South Kordofan and Acacia agro-ecosystems as a more dynamic system (socioeconomically and environmentally) in addition to land and water management studies.

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