

Management of Natural Forest Reserves in Collaboration with Villagers: a case Study of Rawashda and Elain Natural Forests in Sudan

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Abstract: Forest resources in Sudan, excluding the protected area, cover over 25 percent of the total area of the country. These resources are however, not managed sustainably and have been subject to intense deforestation pressure. This situation has resulted, from neglecting community involvement, community basic needs in addition to inadequate funding of the forestry sector. In an effort to manage the forest resources sustainably, involvement of local communities is now being tried in a variety of collaborative forest management approaches. One of these approaches is the rehabilitation and conservation approaches in Rawashda and Elain natural forest reserves respectively, thus empowering the communities. In this paper, village-based forest management is described and case studies are cited. These case studies show that; empowerment of local communities has improved forest management considerably and has dealt effectively with other land use problems. The approaches are cheap and sustainable.

Key words: collaboration, sustainable management, community-based management, forest policy

INTRODUCTION

Natural forests occupy large land areas in Sudan where they often take the form of state-owned forest reserves, or forestlands managed under

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unregistered land acts. The rural economy benefits most directly from forestry, which provides most, needed fuel wood and a number of other products for subsistence use (Abdulla and Holding, 1988).

For decades people in the vicinity of forests have been looked upon as trouble-makers. Some special characteristics of forest resources, such as the long term nature of investment and its macro and micro-level environmental effects, led foresters to believe that forest resources could better be managed by central authoritarian forest services (Wiersum, 1992). The natural forests in Sudan need to be managed on sustainable basis in order to satisfy the needs of the present generations without depleting the resource. Today's world, natural resources are expected to be under sustainable use and management. Unfortunately, this has not been the case for the forest resources in Sudan, which in recent years has been subjected to increasing pressure, due to population increase; agricultural expansion policy and agricultural products export resulting in deforestation and other problems (Robson, 1989).

The forest administration is now involving local communities in arrangements of joint forest management, on a pilot bases, to improve forest management and to deal with other problems. Hence an entirely new concept, termed collaborative forest management, has quickly emerged. This concept has proved to be useful as a tool for sustainable development. The objective of this paper is to describe how the collaborative forest management has been practiced in Sudan as well as its impact on sustainable development.

SUDAN FORESTS: THE RESOURCE

According to the 1970 Act all land in Sudan belong to government. The natural forest area is estimated as covering 40 Percent of the total land area (Abdulla & Holding, 1988). The total percentage of the forest reserve area is 4.6 percent of the country's land area, while the reserved forests under sustainable management represents only 0.2 percent of the total natural forests (Ibrahim, 2000).

In the arid zone, and away from the Nile, the vegetation is very scanty and restricted to depression and almost permanently dry watercourses. Woody

species are practically absent. However, one can find species like *Phoenix dactylifera* and *Acacia albida*. In the semi-arid zone, shrubby *Acacia spp* dominate the vegetation. The low rainfall woodland savanna is perhaps the most important forest region. Generally this zone is characterized by the *Acacia spp.* other species like *Anogeissus leiocarpus*, *Combretum spp.* are found. The high rainfall savanna was the biggest producer of the sawn timber in Sudan. The most important species include; *Khaya senegalensis*, *Khaya grandifoliola*, *Daniellia oliveri*, and *Isobertinia doka* (Harrison & Jackson, 1958). The montane vegetation varies with the location of the mountain ranges. The imatonge and Jebbel Marra are the important ranges in the high rainfall woodland savanna zone. Species like *Cupressus lustanica*, *C. Arizona*, *C. macrocarpa*, *Pinus patula* and *P. radiata* produced encouraging results in these areas (Sulieman, 1995). Sudan has thus a forest resource that represents an enormous development potential and which, if sustainably managed, should be able to contribute sustainably to the wellbeing of the individual citizen.

Forest use

The most important use of wood in Sudan is for fuel. Forests annually provide 16 million m³ of firewood, industrial and sawn timber. The contribution of forestry to national energy supply is estimated to account for 70 % of the total energy consumed in the country (FNC, 1994). About 82% of the firewood consumed in household was freely collected in rural area. In addition natural forests provide 30% of the feed of the national herds (Ibrahim, 2000). The forests and woodlands also provide a wide range of useful non-wood products such as honey, beeswax, medicinal plants, fruits, etc., contributing directly to the subsistence needs of local communities.

Forest policy and legislation

The current forest policy of Sudan dated back to 1930. The aim then, in colonial times, was to create a national forest estate. The major task undertaken by the newly established departments was the protection and reservation of the riveraine *Acacia nilotica* (Sunt) forests growing naturally along the Blue and White Niles (Ibrahim, 2000). Wood was one of the basic necessities needed for construction of railway lines and

fuelling Nile Steamers. The acquisition of land for the preservation of woods and forest was laid down in 1930 as a policy.

The forest legislation of Sudan is the forest Ordinance 1932. This Ordinance gives the government the legal power to carry out the objectives of the forest policy. It also enables the government to decide on fees, revenues and royalty collection.

SUSTAINABLE FOREST MANAGEMENT

Survival conditions in dry tropical zones are often precarious. Over the past few decades, recurrent drought periods, together with population growth have thrown the ecosystems into turmoil. Gathering of fuelwood and extraction of other forest products from the forests have been intensified around large settlements. Traditional resource management systems are no longer able to effectively cope with these new situations. Fallow periods are increasingly being curtailed, soil is becoming ever less fertile, land clearance for agricultural purposes are being stepped up, overgrazing is increasing and fuelwood needs are constantly rising (Bellefontaine *et al.*, 2000).

Wood is the main source of energy used by individuals in most of the developing countries as it accounts in most cases for over 85 percent of their energy sources (Arnold, 1992). However, it is becoming increasingly difficult to acquire, particularly around large towns and therefore it has to be sought further away. Because supplies fail to meet the demand, the resource is becoming increasingly scarce and is being over harvested. Continuation of population growth and current fuelwood consumption trends will lead to a substantial energy deficit. This is already the case in Sudan and Africa, in the Sudano-Sahelian domain where there has been a decline in the consumption of wood products (Sharma *et al.*, 1994). This over harvesting of forests, together with land clearance for agriculture and sometimes, overgrazing resulted in large area deforested and reduced their numerous functions and the services they provided previously. Forests are being threatened not only by deforestation, but also by the reduction of biodiversity, which affects the tree cover formations.

Over the last two decades management solely for wood production has been a cause of steadily growing concern to those affected by the loss of

other benefits. It has led, in an increasing number of areas, to confrontation and even physical conflict between loggers and people living in and around the forest areas being harvested (Murray, 1993; Kobbail, 2005; Glover, 2005). Thus, sustainable development as a concept and a goal has become widely accepted for the management of forests and other natural resources. This acceptance has created support for shift in forest policy from one, which focused on the sustainable harvesting of “dominant products, primarily wood” to one which is concerned with managing the forest as a “complex, valuable natural resource system” (Gilmour, 1995). FAO (1998) and Kobbail (2005) argued that to attain sustainability forest management should be practiced on an operational and not an experimental scale. It should embrace a balance and comprehensive range of management activities; that include working plans, yield prediction and control and other technical requirements in addition to wider political, social and economic criteria.

In Sudan , there are land-use conflicts around forest reserves. The reason is simple; these forests area belong to the state and they contain values that have been cut off from a poor and increasing local population, a conflict situation which results in mounting pressures on these resources, and causes unsustainable use. Similarly, since the protective forest reserves in Sudan were closed to commercial harvesting, these vast areas were no longer able to generate any revenue and sustainable management in the long term becomes impossible (Kobbail, 2005).

For the forest resource to become what most foresters are so proud of, a renewable natural resource, the revenue generated from the forest must be reinvested in the land, or other arrangements made to ensure re-growth. This task has by tradition been left to the government and to government-employed foresters, who in turn have never received adequate funds at the right time through the government system.

PROBLEMS WITH FOREST MANAGEMENT IN SUDAN

Prior to the British colonial era, resource management in Sudan was largely carried out informally through local community leaders. Forest management planning in Sudan started in 1929 in some reverain forest reserves. The assumptions developed were based on multi purposes

national and regional interests, which could best be assured by government organization. Most attention was then centred on management systems for the legally gazetted forestlands, forest and wildlife, which were managed for long-term national interests by public forest services. Although the related needs of the local population should also be met to a reasonable extent, these needs were mostly considered to be subordinated to the national interests. In fact there were no concrete forest management plans for natural forest except for a very small number, which did not consider local communities needs and interests. The forest services often considered rural people as a threat to forest protection.

The forest reserves and the other unregistered land (natural forest or range) are accordingly put under the hands of public administrations which have had a “responsibility” to supply forest products to the population in general. This has resulted in an absence of cost awareness, and at times inappropriate, expensive and unsustainable technologies including central nurseries for production of seedlings to be distributed by lorries as well as fancy and environmentally unfriendly logging equipment. On the other hand, the system used to collect revenue from the forest has not been efficient, with prices for all forest products remaining well below market values, a situation which only invites corruption. Administrative duties and responsibilities have remained somewhat confusing in the sector, with forest officers being employed by central government and state administration as well as by province councils.

The protection measures and the patrolling system within natural reserves were not efficient because, dependent communities continued to extract their ever increasing needs from the available forest resources. However, exploitation of forests for wood products and other goods and services without proper management plans resulted in large scale destruction within the woodland savannah region, causing land degradation, decline of agricultural productivity, diminishing of genetic biodiversity and scarcity of forest products. This in turn, has caused adverse socio-economic impacts. Moreover, the few existing management plans that have not involved local communities have clearly failed to achieve the intended objectives (e.g. sustainable wood production) because they did

not consider the needs and interests of the different users, particularly the local people (Elsiddig , 2004).

The ability of government to enforce sustainable use of resource began to erode as a result of constraints of capacity and local people pressure on resources. The end result has been a forestry sector unable to sustain itself. The working plan revision concluded that there is a need to involve the local people to successfully manage the forest reserves and none reserves in sustainable way. This confirms the needs for clear definition of stakeholders' rights and responsibilities in resource management planning.

There is a growing understanding among government officials that the management of natural forests need to complement the strategies of natural resource development, based on national interests with new strategies focussing on basic needs, equity and popular participation; hence a change in policy statement is necessary to clearly accommodate local communities in its management (Elsiddig, 2003). Governments and local people are becoming aware about the critical situation and its future consequences and the importance of tree conservation and protection. Assisted by good extension work organized by the government institutions and foreign funded projects, people started to show interest in participation and getting involved in the protection and rehabilitation of their immediate environment. This led the relevant government institutions with the assistance of different aid projects to establish extension and research programmes directed towards developing local capacities in relation to environmental management and rehabilitation (Elsiddig , 2004).

People's participation in forest management and protection is one of the most salient statements in the forest policy 1986. This participation as individuals and communities in tree planting, forest ownership and management, is proving to be more forceful and apparently sustainable when it is of income generating nature.

COMMUNITY-BASED FOREST MANAGEMENT

Having evolved out of the many difficulties that go with the management of forest reserves in Sudan, the following experiences seem to offer simple and sustainable solutions to the management problems that the forest administration is facing today.

In Gedaref state (Eastern Sudan), the vast Rawashda natural forest reserve (27290 hectares) has been under heavy pressure for years being heavily logged and under extensive illegal felling. Every year, illegal felling cleared vast areas of this forest, which is dominated by *Acacia seyal*, and again, leaving behind a disturbed forest. Hamlets were emerging in different parts of the forest and it was evident that communities were about to get a foothold in the forest. To save this forest, the government had a long-standing idea of establishing a forest reserve, through traditional gazettement of the area. However, this never materialized, mainly because of lack of resources to put in place the management structure required to manage this vast area, which is vulnerable to incursion from all sides. In addition, there was little local support for a forest reserve, which would prevent access to the forest by the local people (Ibrahim, 2000).

Instead, a different approach was pursued, involving the local communities fully in the management of the forest via rehabilitation and development process of the forest reserve. In a short time this turned Rawashda from a forest under threat into one which today is well protected and sustainably utilized by villagers (Osman, 2000; Kobbail, 2005).

In Kordofan State (western Sudan), the Elain forest (10420 hectares) represents tract of reserved- forest of any significance in an otherwise well-settled and cultivated state. Also here, the Government had a long-standing idea to gazette the area, to reserve the forest of *Acacia mellifera* spp. For long time the policy of reservation meant that any use of the forest had to be approved by its own authorizing officers, a situation which was used by some individuals for their own benefit, with the result that the forest was overexploited. When foresters were placed on the ground to mark the demarcation of the forest reserve, restricting local use

of the forest even more, the local communities lost all confidence in their own administration.

Luckily, at this very point in time, an entirely different process was started to explore how the local communities themselves could conserve and manage the forest. This eventually led to the present situation, where more than eight villages are successfully managing the forest resource (Mohamed, 2000; Kobbail, 2005).

The rural people as a forest manager

Community based natural resources management seeks to provide the legal and economic frameworks for communities and other stakeholders to become co-managers of their resources. Issues of property rights and tenurial empowerment lie at the heart of this (Jennifer & Shawn, 1999). Land and the resources that occur upon it, how are they used, by whom and who own them; are considered as the greatest concerns in Africa today.

In these two cases, it may be seen how in a short time degraded forest resources have been brought under proper control and management. It may also be seen how local communities are able, and have the capacity, to manage a forest resource, that they can organize and mobilize themselves, take decisions and get things done. This has been possible by applying an approach to management that requires the active involvement and decision-making of local people and that builds on the simple fact that the village in Sudan is an independent and democratic unit.

These cases illustrate that local communities work efficiently through village forest management committees and that these are able to make plans, take decisions and implement action, at virtually no cost, with forest officers offering technical advice. Local communities are in the best, often only, position to stop illegal and destructive activities undertaken by outsiders, including some Government officials. Similarly, as transparency and empowerment are introduced to the villages, issues of mismanagement and corruption can be dealt with successfully as the villagers start to exercise control.

Village-Based Forest Management has so far been a success story that in many places has enabled the introduction of change, by going from a bad situation to a better one. The organizational set-up is clear and simple. There are no legal constraints. Still, the concept is not fully developed, and it will never be, as incidents will always come up that will need to be resolved. When that happens, however, the forum to discuss such issues and offer solutions to problems will be in place, in the form of established and operational management committees in the villages, ready to take action enabled.

Approaches of the management

The guiding principle for Village-Based Forest Management is that local communities have the right to co-manage the forest reserves and control and manage natural resources located on their village land. For this to work, it should also be understood that all decisions related to natural resource management can only have authority and effect if they are devised by the members of the communities concerned. This is, therefore, a matter of distribution of power between local people and the state, a situation in which the village forms the institutional framework and technical support is provided by the State administration, making this a joint effort (Ibrahim, 2000).

The Village-Based Forest Management approach as such builds on the unique and favourable situation that exists in Sudan with decentralized Government. The village is a mechanism of local Government and, as a corporate entity, is able to make village by-laws recognized in a court of law, and it can own property in its own right (Billal *et al.*, 2001).

As in Elain Area once a village has been registered and has a title deed, it is in the legal position to issue village bylaws to determine the use of the land. In practice, the village by-law becomes a management plan, which will spell out all the intentions and rules governing land use and management as agreed to by all members of the village (Billal *et al.*, 2001).

Giving the village user rights to the land is not enough to ensure proper management. It has to be regulated through a participatory mechanism of land use and land management planning (Ibrahim, 2000; Billal *et al*, 2001).

Implementation of the management approaches

For a village to embark on Village-Based Forest management it must have the will to undertake management of the forest resource that is situated on village land. Village meetings are required to determine degree of awareness as well as readiness among the villagers, and ability to mobilize support.

The form of management in Rawashda and Elain forest reserves is collaborative management, which seeks to create agreements between local communities or groups of resource users and conservation authorities for negotiated access to natural resources, which are usually under some form of statutory authority.

Since early 1980s international assistance introduced management practices in the natural forest reserves based on project concepts and local people participation with the objective of forest rehabilitation and sustainable management considering people's needs (Elsiddig, 2003). Various organizations were involved e.g. FAO followed by ADES in Rawashda forest reserve involving the local villagers. During the rehabilitation process, the villagers will have access to agricultural land, grazing land and water points. The land use practice adopted was known as "village tungia" which is an agroforestry system involving crops and tree seedlings cultivation on the same piece of land (Elsiddig, 2004). This process was based on mutual benefits between the local community and FAO/ FNC project. The system was found economically sound in establishment of forest crop resulting in the lowest expenses in execution of a reforestation programme (Elsiddig 2003).

ADES/FNC project developed a collaborative system with the local villagers based on a contract between the two partners, for the use of the forestland property. Each individual farmer is granted a piece of land inside the forest such that 75% of it is used for crop cultivation and on the

25% the farmer raises forest crop and obliged to protect the young generation. This continued for a period of 4 years, then another piece of land within the forest reserve is targeted (Ibrahim, 2000)

The SOS/FNC project in Elain natural forest reserve is a forest conservation management system based on local community involvement (Kobbail, 2005). The management system adopted a system of organizing people in the management process in order to prevent destructive illegal felling and at the same time to satisfy people needs from the forest products. Elain forest has been put under forest management plan conducted as joint activities between the forest national corporation (FNC) and the SOS sahelin in collaboration with the local people living in villages around the forest (Kobbail, 2005). The system also played facilitative role in assisting villages' entry to registered community forests and then establish a management plan.

Each village initially reviews and selects land areas where future land use will be for forestry. Objectives of management are decided and a simple zoning system was used to determine how different parts of the forest are to be utilized. This result in a set of rules on how the forest is to be used, what is permitted and what is not, etc. For the implementation of the rules, patrolling is usually required, together with a system for recording offenses, collecting fines, etc. Together with a monitoring system, this results in a forest management plan. For the formulation and implementation of the forest management plan, the village appoints a Village Forest Committee, elected by the full Village Assembly. In many of the technical matters, such as mapping of the forest resource and management planning, technical assistance is sought from appropriate local officers.

What is being created on the ground through these efforts is in fact something which becomes a village forest reserve, although no such concept exists in legal terms, yet.

Not all of these aspects can be planned in great detail. This is therefore a typical development process which needs to be guided over time, which in turn calls for intensive facilitation, making this a joint effort, villagers and Government.

The impact

Apart from the obvious benefits of bringing a particular forest area under sustainable management, Village-Based Forest Management results in a number of other things. From the outset this was not planned or intended, it just so happened. But once local communities were mobilized and were managing natural forests, a foundation was created to go even further and look at other components in land use, including grazing areas which are often limited. In this way, the interest and motivation to plant trees in the villages have increased. This means that the approach paves the way for integrated land management at village level, the only level in Sudan where it can become really meaningful.

This in turn also means that, by relying on and adopting community-Based Forest Management, the wider and more far-reaching objectives of the state Development Programmes, focusing on local management of natural resources, can be fulfilled. These objectives are quite ambitious, including provision of land security, increased productivity, economic growth, empowerment of local people, etc.

Ultimately, Community-Based Forest Management provides a shift in responsibility and management from administration to people, from central and local government to local community. In addition, the approach represents a strategy for natural resource management that is participatory, effective, low-cost and sustainable. It empowers the communities involved and mobilizes them for even bigger undertakings. In consequence, Community-Based Forest Management as a concept qualifies as a strategy to achieve the ultimate goals of the State Development Programmes for Local Management of Natural Resources (Kobbail, 2005).

CONCLUSIONS AND RECOMMENDATIONS

Sudan is a big and fertile country with a sparse population. About 70% of the total land area is classified as arable, and today only 40% of that potential is utilized. The natural resource sector is equally rich, with

minerals, wildlife and a vast forest resource. Sudan therefore has a great and untapped development potential in the land management sector.

Community-Based Forest Management in Sudan today offers a simple, cheap and easily replicable tool as a strategy to bring in sustainable development of natural resources, by relying on the dynamics of the individual villages and their ability to exercise local management.

Forestry can never be practiced in isolation because trees are beautiful to look at. Trees, as a resource, are there to be utilized. Forestry in a country like Sudan should be practiced not only with the sole intention of providing income for the central Government, but to meet demands and desires by the population at large. It will be necessary to determine how the forest is to be utilized and who is to benefit, by setting management objectives that must differ from one forest to another.

Sudan has vast tracts of natural forests where management never can be very intensive and where the Government can no longer afford to manage and offer protection.

The long-term solution to the many problems that affect the overall management of the natural forests of Sudan is not to gazette additional forest reserves, but to involve the communities concerned in the management of their environment. To promote the involvement of local communities in the management of natural resources is now a Government priority.

In Sudan, much interest has been created in the Community-Based Forest Management approach to sustainable forest and land management. To take this concept to new states and areas is more a matter of dedication, hard work and serious commitment than simply funding, as the approach is relatively easy to understand and implement. However, there are no two identical rural communities, and working with local communities is not always easy, something which calls for active technical assistance by experienced facilitators to keep this process of change on track. The challenge is now to take this concept beyond natural reserved forests and woodlands, to forest plantations. To make the industrial forest plantations profitable and sustainable

For the other forest reserves in the country it is expected to follow the same concept in their management similar to what has been developed for Rawasda and Elaind Forest reserves and to all areas of forest where the state governor in concerned has failed to provide sustainable utilization and management of this resource.

Parallel to these efforts, forest policy has been reviewed and updated and followed by, the forest legislation revision. With the above successful and promising activities taking place on the ground, there are now real cases on which realistic and workable policies may be built, thus providing true guidance for the sustainable development of this so important land management sector in Sudan.

REFERENCES

- Abdulla, E. A. and C. Holding (1988). Forestry and the Development of A national Forestry Extension Services: A Sudan Case Study, Social Forestry Net work, Paper 7c odi.
- Arnold, J.E.M. 1992. *Community forestry: tenyears in review*. Community Forestry Note 7. FAO, Rome.
- Bellefontaine, R., Gaston A. and Petrucci, Y. (2000). Management of Natural Forests of Dry Tropical Zones. FAO Consultation Guide 3. FAO, Rome.
- Billal, M., Gaffar, A., Mutawkil, H. (2001). Elain Natural Forest Management Project. End Evaluation Report SOS Sahel, U.K & FNC.
- Elsiddig, E. A. 2003. Management of dryland forest reserves in Sudan based on participatory approach. In: Alsharan, A.A., Wood, W.W., Goudie, A.S., Fowler, A. & Abdellatif, E.A. Desertification in the third millennium. Belkan Publishers, Lisse, The Netherlands. pp. 361-364.
- Elsiddig, E.A. 2004. Community Based Natural Resource Management in Sudan, In: Awimbo, J.; Barrow, E. and Karaba, M. 2004. Community Based Natural Resource Management in the IGAD region. IGAD; IUCN.
- FAO (1998). Guidelines for the management of tropical forests: The production of wood. FAO Forestry Paper No. 135, FAO, Rome.
- FNC, 1994. Forestry products demand study. Department of Forest Management. Annual Report. Khartoum, Sudan.
- Gilmour, D. A. (1995). Conservation and Development: seeking the linkage. In H. Wood, McDaniel & K.Warner (eds.) Community Development and Conservation of forest Biodiversity through

Community Forestry. Proceeding of International Seminar, Bangkok, Thailand, 26-28 October 1994. RECOFTC, Bangkok.

Glover, E. K. (2005). Tropical dry land rehabilitation: Case study on participatory forest management in Gedref , Sudan. Ph.D Thesis. Viikki Tropical Resource Institute, University of Helsinki.

Harrison and Jackson (1958). Ecological Classification of Vegetation. The Sudan Agricultural Publications Committee, Khartoum, Sudan.

Ibrahim, A., Mirghani, (2000). Past, Present and Future Afforestation, Reforestation and Tree Management Models for Farmland in the Sudan. Workshop on Management of trees for Farmland Rehabilitation and Development, 27 October-7 November, Khartoum Sudan.

Jennifer, G., & Shown, J. (1999). Natural Resource Management: A strategy for community Economic Development.

Kobbail, A. A (2005): Towards a Participatory Management of Forest Reserves in Sudan: A case Study of ElRawashda and Elain Natural Forests. PhD Thesis. University of Khartoum.

Mohamed, M. H. (2000). The Role of Community Involvement in the Management of Natural Forest Reserves: Case Elain and Habile Natural Forest Reserves in Kordofan. M.Sc. Thesis, University of Khartoum.

Murray. C. H. (1993). The Challenge of Sustainable Forest Management, What Future for the world's Forest? FAO Forestry Publications.

Osman, A. M. (2000). Joint Management of Natural Forest Reserves in

Sudan: A case Study ELRawashda Natural Forest Reserve. M.Sc. Thesis, University of Khartoum.

Robson, R. A. H. (1989). The willing of Sudanese to participate in the protection and management of the forest reserves: A report to FAO/World Bank. Klockner Stader Hurter. Montreal, Canada.

Sharma, N. P.; Rietbergen, S.; Heimo, C.R.; and PatelL, J. (1994). A strategy for the Forest Sector in Sub-Saharan Africa. World Bank Technical Paper No.251, Africa Technical Department Series, 69 p.

Sulieman, M. S. (1995). Changing Forest Management Strategies in Sudan: A challenge for Forestry Educational Systems. Ph.D. Univ. of Wageningen. The Netherlands.

Wiersum, K.F. (1992). A decade of social and community forestry; Introduction. Lecture material for the course in forestry and rural development 2, Forestry department. Wageningen, the Netherlands, Wageningen Agricultural University.

إدارة الغابات الطبيعية المحجوزة بمشاركة السكان المحليين بالسودان دراسة حالة غابتي الرواشدة والعين

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مستخلص البحث: الموارد الغابية في السودان (ما عدا المحميات) تغطي حوالي 25% من مساحة القطر. لم تدار هذه الموارد بصورة مستدامة مع قلة الدعم المالي لقطاع الغابات مما أدى إلى تدهورها. ولتلافي هذا الوضع تم إشراك المجتمعات المحلية في إدارتها بطرق مختلفة منها إعادة الاستزراع (نموذج الرواشدة) و نظام الحماية (نموذج العين). هذه الورقة تناولت نوع الإدارة المستخدمة لهذين النموذجين. أكدت الدراسة أن إشراك المجتمعات المحلية في نظم الإدارة لهذه الموارد الغابية أدى إلى تحسينها والمحافظة عليها

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