Forestry and Woodfuel Project

Concept Note for a Joint Project by The Forests National Corporation and UNEP

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1. The Forest Sector in North Sudan

The wide range of forests, woodlands and related vegetation in North Sudan is primarily characterised by the North-South rainfall gradient. The most important vegetation types are, from North to South:

- desert and semi-desert trees and shrubs, particularly in areas with run-on
- riverine areas and floodplains
- low rainfall woodlands (e.g. in North Darfur)
- high rainfall woodlands (e.g. in southern parts of Darfur)
- montane forests, such as those found on Jebel Marra
- gallery and floodplain forests in higher rainfall areas
- plantations, including gum Arabic plantations

This list should be completed with vegetation types outside the forest, such as A. Senegal in cropland, and fruit and shade trees found on compounds or in farm plots. Their importance generally increases as the natural forests recede.

The forest cover is decreasing persistently in Sudan, at a rate of approximately 0.8% per year, to about 25% of total land cover, down from 38.5% in 1975\(^1\). However, these statistics include South Sudan and need to be reviewed in light of the impacts of secession. Estimates indicate that the rate of deforestation in the Republic of Sudan may be as high as 2.2%. Currently North Sudan accounts for about ¾ of the population and ¼ of the forest cover.

Forest utilisation in North Sudan includes some timber and a significant amount of traditional construction material. But the most important goods produced from forest in volumetric terms are firewood and charcoal, which account to over 90% in metric terms. They are an important driver of deforestation, although the main driver may well be agricultural expansion, with woodfuel as a by-product. There are numerous non-wood products and services provided by forests and trees outside the forest. Gum Arabic is among the most important non-wood products, with one estimate of 45,000 tonnes per year, but the production rate is in actual fact quite variable.

\(^1\) FAO estimate quoted from UNEP’s PCEA document, 2007.
The Forest National Corporation (FNC) is North Sudan’s forest service which was provided with the status of a Corporation in 1989. It is now under the Ministry of the Environment, Forestry and Physical Development. Various other GoS institutions have a bearing on the forest sector such as the Ministry of Agriculture (with respect to agricultural expansion) and the Ministry of Petroleum (with respect to energy alternatives). Many non government organisations are active in a range of forest sector activities.

The forest sector policies and legal framework is in the process of reform, much of which is concerned with the creation of a North Sudan specific framework. Reform is also undertaken to take properly take emerging sector issues into account: for instance, climate change and carbon credits, woodfuel substitution by LPG, and the much greater emphasis on conflict resolution.

2. Some Forest Sector Lessons Learned

*The FAO/Netherlands Gum Arabic Project*

This project is from the early 1990s, implemented in Sudan’s Gum Belt. It consisted of massive tree seedling production and distribution of *Acacia Senegalensis*; food was also provided as a part of the project strategy. The results were not entirely satisfactory because the survival rate of planted trees was often low. Food as an incentive for Gum Arabic farmer plantations sometimes lead to perverse behaviour. At the time, inefficient, government regulated Gum Arabic market mechanisms have probably also contributed to unsatisfactory results. The Gum Arabic market system has since been restructured.

*Forest Plantations in Jebel Marra*

The early forest plantation work was done in 1957, more than 500 ha plantations of Cupressus lusitanica in the Golod area. In 1974 this was swept by fire. In 1980 the area was replanted by Jebel Marra Integrated Rural Development Project with EC funding, some 500 ha again. Four year later (1984) it was swept by fire and destroyed. In 1989 after the severe drought of 1984/85, a bilateral development project was initiated between the government of Sudan represented by Forest National Corporation (FNC) and the Federal Republic of Germany represented by the German Agency for Technical Cooperation (Deutsche Gesellschaft für Technische Zusammenarbeit ‘GTZ’).

The project phases were:
1. Lower Saxonian phase from 1987-1989
2. Orientation Phase from 1989-1992
3. First implementation phase from 1992-1995

In 1990, GTZ funded replanting of the entire area, mostly *C. Lusitanica*, some eucalyptus. In 1994, four year later, it burned down again, and has not been replanted since (maybe in Golol but the plantation continued in Beldong).

At this time, the decision was taken to support community forestry, mostly of eucalyptus, because this interested local people and it is relatively speaking fire resistant. There was good uptake, but local people were less interested in community forestry than in farm (or private) forestry, i.e. eucalyptus woodlots individually planted, managed and harvested. The farmers established a Union in order to 1. Access to resources which may have been presented as a community proposal but which was really an organisation of private initiatives 2. Organise marketing in some cases (at a later stage) 3. Obtain official recognition of private forestry and thus exemption of taxes levied on forest products by FNC.

This is a viable strategy, given that some 300 registered farmers continue this initiative and various farmers outside Jebel Marra have begun planting their woodlots.

*El Ain Community Forestry Project*

This project of the 1990s supported conventional forestry activities in El Ain Forest Reserve and community forestry in the surrounding areas. The community forest reserves were in most cases gazetted, which was a very lengthy process. The essential part of the procedure involved the community, neighbouring villages and the local leadership (Sheikh, Nazir, Umda). Once agreement
was reached, communities made simple forest plans and did simple inventories. Forest management commenced about 15 years ago and is still on-going, long after the project terminated, which proves the high level of sustainability. Pastoralists were little involved, which is a potential weakness.

**The Darfur Natural Resource Management Project**

The Darfur Natural Resources Management Project, funded by USAID through UNEP, started in 2007 and is completed in 2010. In terms of tree planting, immediate support to FNC tree nurseries was provided, so that 800,000 seedlings were ready for planting in 2007. During the 2nd and 3rd year, 1.8 million trees have been produced, with a total of 2.6 million trees for the project.

It is evident from observation that many of the IDP compounds now have some trees growing, but new camps have hardly any trees planted, and much remains to be done in many of the older camps. One of the lessons learned from the project is, that transport from the central nurseries to the customers can be a major constraint; in the future, decentralised production will have to be pursued vigorously. Another lesson is that monitoring and evaluation will need to be reinforced. There is very little information on the tree seedlings once they have left the nurseries.

The first activity in fuel efficiency was a study on the existing, numerous but little coordinated fuel saving stove projects. The project then supported a certain model of fuelwood efficient stove. In all, about 150,000 of these stoves were produced and they appear to be used. The third component, forest resource inventory, has produced Darfur forest cover maps of 2000 and 2009.

**The SOLSES Project in Eastern Sudan**

Environmental rehabilitation activities including reforestation, landscape restoration, awareness raising with full community participation were started in 1985 by (UNHCR) in collaboration with (COR). From 1985 to 1996, environmental activities were entirely implemented by ENSO and since 1997 up to date Forests National Corporation (FNC) has been implementing the activities on behalf of UNHCR.

This project has concentrated on improving the environment of the refugee camps near the Eritrean and Ethiopian border. It has mostly been implemented by FNC staff seconded to the project. The experience shows that community environmental planning is an important tool to develop sustainable forest sector initiatives. It also demonstrates that a whole range of approaches and tools can be used, more or less successfully, to better involve peripheral communities and individual farmers in forest establishment and management: taungya and other agroforestry systems, irrigated community forests and gardens, farmer plantations and shelterbelts, etc. The project shows that a better understanding of the natural resource management economics concerned is important for scaling up.

**Experience from the Central and Western Sahel**

The overall lessons from forestry in the West African Sahel show that large scale plantation forestry has been scaled down, but natural forest management has taken off widely. Whilst there is not much large scale plantation establishment, there has been massive tree planting on a small scale: in particular in settlements (amenity and wood production for traditional construction), fruit trees, dune fixation, and in gardens or other small plots. Natural regeneration and active, sustainable exploitation are the essential tools to increase forest productivity for household energy. Improved land and resource tenure are underlying elements of success.

Another characteristic of forestry in the West African Sahel since the 1990s is woodfuel catchment planning for major urban centres with a differential tax system to provide incentives.

**UNSO Afforestation and Reforestation Project in Northern Region of the Sudan**

The activities covered by the project included: control of the sand encroachment through establishment of shelterbelts, windbreaks and land management activities with a very high degree of participation from the local communities. The project started in 1986 and was working in 22 villages and with 100 individual farmers in the Letti Basin, the project terminated in 1995. Cowi Consult a Danish company involved in agriculture and rural development has provided the technical work.
3. Institutional Analysis

The Forest National Corporation was established in 1989 as a self financing parastatal organisation, a national forest service which depends on revenue collection from the forest sector to pay recurrent expenditure and investment. It may receive additional finance from the national budget, e.g. for projects where national counterpart funding is required. FNC is expected to supervise technically all forests of the country, and tree products from outside reserves are taxed. Reserves may be national (FNC), local government, community or private. Transportation of forest produce is also taxed, and deterrent penalties established, incl. confiscation.

While gazettement used to be a lengthy procedure and few forests were gazetted until 1994. From 1994 onwards, the gazettement procedure was changed and great numbers of forests, covering large areas, were gazetted, with the aim to cover 20% (later 25%) of the country. In North Darfur, very few forests are gazetted, both before and after 1994. In South and West Darfur, however, fairly large areas have been gazetted from 1994, but the number of forests effectively under control of FNC is limited due to security issues, particularly in the West.

FNC has between 100 and 200 staff in each State (45 staff in South Darfur), mostly graduates (42 graduates for South Darfur), some technical staff and quite a large number of labourers. North Kordofan State finances an additional 23 graduate staff, on top of the regular 8 graduates. This raises questions of efficiency, if staff numbers increase without similar increases in operational expenditure. The regular FNC staff has generally received training from headquarters on forestry topics such as seed, nursery production and forest management. There has been little training on broader development issues (climate change, integrated resource management, conflict resolution, etc.), depending on whether an agent has been attached to an externally funded project.

Modern GIS and mapping facilities are generally not available. Monitoring systems could most probably be improved. A certain investment will be required to bring information management capacity to a higher standard.

In the present situation, an important part of Darfur is not accessible to FNC staff, but certain areas inaccessible to FNC can be reached by national NGO’s. A partnership of FNC and NGO’s appears therefore an important option for outreach in rural areas. This will probably require strengthening national NGO’s. FNC has proven capacity in contractual arrangements with national NGO’s.

4. Forest Sector Dynamics in the Darfur Region

The Darfur Region forest cover has probably evolved in patterns similar to other parts of North Sudan, with significant overall deforestation estimated at 30% since independence. But the conflict related dynamics of the last 5-8 years may well have complicated the patterns of supply and demand for wood products. The conflict dynamics have had major consequences:

Overall population numbers may have changed due to the conflict, including migration outside the region. An enormous urbanisation rate has reversed the rural urban ratio from 80:20 before the crisis, to 20:80 at present. The combined effects of displacement and urbanisation have had a major impact on the demand of wood for construction, although the surge of demand may have diminished more recently. The construction sector has also impacted on the wood energy demands given that urban construction has required a great deal of wood fired bricks.

Secondly, the huge urbanisation rate (including camps) has had the classic impact of woodfuel exploitation from nearby forest resources. This has been aggravated by insecurity in more distant areas. Conversely, more remote areas have been probably been little affected by exploitation for woodfuel.

Finally, agriculture has ceased to exist in large areas and forest cover may have recovered significantly as a result.

The wood fuel commodity chain actors have changed in the process. Whilst pastoralists were little involved in wood fuel production and transport previously, they have become key actors today.
5. Strategy and Programme Context

National Comprehensive 25 years Strategy
Sudan's National Comprehensive 25 years Strategy on agricultural development and food security aims, amongst others, at:

- Expanding forest plantation areas in rainfed and irrigated sectors
- Increasing forest reservation and applying criteria and indicators of sustainable forest management
- Biodiversity conservation
- Combat desertification

The Executive Programme for Agricultural Revival (Green Revival)
This national programme, under the Vice President’s Office, highlights some specific elements of the forest sector strategy, in addition to those mentioned in the 25 years Strategy:

- Development of forests, range and pastures and restoration of the vegetative cover.
- Development of gum arabic belt.
- Facilitate the use of natural gas as a substitute for wood on a large scale in the rural areas.

Agricultural Revitalization Program
The government has launched the Agricultural Revitalization Program in March 2008. It highlights forestry issues in various ways, including ecosystem productivity (by establishing windbreaks and shelterbelts), provision of alternative energy sources and economic use of biomass energy.

Forest Policy 1986
In response to the drastic decline of the forest, the Minister of Agriculture and Natural Resources in 1986 approved the Statement of Forest Policy. This statement recognises new forms of forest tenure including private, community, and institutional forests. It targets 20% of Sudan's land area as forest reserves. It created the obligation on a lessee in mechanized and irrigated farming to establish and maintain green belts.

Forest Policy 2006
The proposed national Forest Policy document of 2006 has not yet been approved. Sections particularly relevant to the Darfur Region and the project proposal include:

- Protection, enrichment and sustainable management of the existing forest reserves
- To establish a land tenure system conducive to increasing long term investment in the forestry sector
- Transform Non Wood Forest Products current free access system into an organized production
- Assess the state of forests and evaluate the production capacity and evolve towards competitive forest production sustainably managed forests

UNEP's overarching programme goal in Sudan
The overall objective of UNEP in Sudan is as follows “To assist the people of Sudan to achieve peace, recovery and development on an environmentally sustainable basis”. The purpose of the programme is: “To improve sustainable and equitable governance, management and productive use of environmental resources”

Specific objectives of the Darfur Forestry and Woodfuel Project
The specific objectives of project outlined below fully respect the general forest sector objectives and strategies of the Government of Sudan, as well as the overall objective of UNEP in Sudan. Many of the policy aims mentioned above are transcribed in the specific project objectives. It should be noted that some policy objectives are addressed by other, closely related projects, supported by UNEP in Darfur (energy, pastoralism, environmental action planning).

The specific objectives of the Forestry and Woodfuel project are, for Darfur:
1. Improve the urban environment including IDP camps through tree planting in public and private areas.
2. Improve the rural environment through inclusive environmental planning, improved land and resource tenure, and conflict resolution.
3. Sustainable woodfuel supply options are developed for the Region and an overall plan is drawn up, with specific supply options in the south of Darfur.
4. Improved woodfuel energy efficiency in urban areas, including camps.

The following objective has a Northern Sudan focus:

5. Capacity building to support both government and UN on forestry programming.

6. **Project Objectives**

**Impact evaluation of on-going experience**

Institutional learning in a development context is notoriously difficult. Projects are often reinvented without assessment of previous projects, which had positive and negative outcomes. For better impact, new projects should be informed about previous experience. The Darfur Forestry and Woodfuel Project will, right at the start, study some of the previously executed projects. The outcome will not only help to refine project strategy, but also help forge a joint vision for government and non-government organisations, and international agencies incl. UN.

**Specific Objective 1: Improved urban environment**

A much wider network of tree nurseries, decentralised as much as possible, will help to improve tree cover in urban areas for amenity, microclimate improvement, fruit production, construction materials, fodder and some firewood. Entrepreneurs will play an increasingly important role.

Tree nursery support to private individuals and communities will be provided, access to credit will be facilitated (water supplies, fenced off nursery shopping area), and supply of minor inputs (seed, plastic bags) will be assured. However, this kind of support will have to be adjusted to water resource and supply issues.

Support to central FNC nurseries will also be provided. Central nurseries will play an important role in training start-up entrepreneurs and members of community nurseries. Central nurseries also continue to play a role in seedling production for FNC forest reserve rehabilitation and provision of seedlings to areas where there is a clear production deficit. Provision of seedlings to areas of deficit will also be done, and increasingly so, through purchase from the private sector.

**Specific Objective 2: Improved rural environment**

In rural areas, inclusive community natural resource management is the expected output of the work to be undertaken. Resource tenure issues will be addressed, which also touches on broad land tenure. The approach in the tenure work to be undertaken is incremental, i.e. moving forwards on the basis and to the extent that all partners are ready to engage with the programme. In the end (outside the scope of the present project) it will help to inform policy and legal changes. The project will involve all relevant institutions to develop best practice in tenure, including the Darfur Land Commission, local and State authorities, pastoral organisations and FNC. Links will also be made with on-going watershed catchment management work. The community natural resources management process will roughly follow these steps:

- General information and awareness in selected areas
- Exchange to allow for learning from areas with successful traditional NRM
- Community Environmental Action Planning (CEAP) in selected communities
- Support an inclusive delineation process for land and certain land uses including GIS mapping
- Work with local government authorities and specialised authorities (Land Commission) in order to begin formalisation
- Support local nursery production, simple forest and range management tools, direct sowing of A. senegal, etc. depending on local priorities identified in the CEAP process. Natural resource management plans owned by communities yet recognised by authorities are a key tool
- Develop organisational capacity of producer organisations
Natural resources under two different tenure arrangements will be included: land gazetted as reserved forest, and land which has not been gazetted. The outcome will be monitored and help to inform policy at a later stage.

**Specific Objective 3: Sustainable woodfuel supplies options developed**
Sustainable woodfuel supply to urban areas is an important environmental objective in the Sahel, which requires addressing in the Darfur Region. The project will carry out household energy demand surveys for 3 major towns in the Region. Depending on the outcome, it may then concentrate on the woodfuel commodity chain in the southern parts of Darfur. A master plan for sustainable woodfuel supplies in one woodfuel catchment will be designed in year two of the project. This will inform the policy choice between energy substitution and sustainable woodfuel supply.

**Specific Objective 4: Capacity building**
General environmental awareness campaigns will be aimed at all major groups, including policy makers. This will include forestry, water, energy, pollution and habitat issues. This will be undertaken in Darfur and in other locations across Sudan in support of UN projects where there is a forestry component.

Capacity building of FNC and other relevant government agencies such as Land Commissions, as well as national NGO’s, is a major task. Present capacity will be assessed and a capacity building plan will be prepared, on the basis of what is required to achieve development objectives (Forestry/Energy and Water catchment/NRM projects). Enhanced monitoring appropriated by Sudanese institutions will be central to this, but some specific project monitoring may also be required.

**Specific objective 5: Improved energy efficiency**
Charcoal is probably the major fuel type in most urban areas. It is generally produced in an artisanal fashion, using traditional kilns. The use of improved kilns will enhance energy efficiency by about 35%. The project will work with a number of local producers, provide training and propose testing new techniques, whilst a limited number of kilns will be provided. A number of local producers will adopt the new techniques, and a better understanding of the economics of traditional and improved charcoal production will be acquired. More significant adoption requires an improved regulatory frame, to which specific objective 3 will contribute.

Energy efficient stoves will be promoted in urban areas. This component will be coordinated with an additional energy project currently under development with energy sector stakeholders.

**7. Project Outputs**
The following outputs are expected from the project:

**Concerning specific objective 1: Improved urban environment**
- Increased private and community nursery production, complemented by improved central nursery production, and increased capacity of entrepreneurs
- Increased tree growing on compounds in towns and IDP camps

**Concerning specific objective 2: Improved rural environment**
- 20 villages have demarcated and planned their natural resources, incl. GIS maps, with some degree of formal recognition; feedback to policy level
- 10 villages have forest and range management plans in operation
- Communication and negotiation between settled and pastoralist communities increased
- Environmental investments made in communities concerned
- 3 FNC Forest Reserves (one per State) are rehabilitated, managed through joint forest management mechanisms, and monitored

**Concerning specific objective 3: Sustainable woodfuel supplies options developed**
• Studies for woodfuel planning in selected catchments have been undertaken and a master plan is available for Darfur

This output will help to reform the regulatory framework of the household energy sector in Sudan. It will also increase capacity in FNC and the relevant sections in the Ministry of Petroleum.

**Concerning specific objective 4: Capacity building**

• Support to FNC and UN for national tree planting day and overall environmental awareness
• Technical support to FNC and UN on forestry and woodfuel issues

In terms of capacity building, increased environmental awareness among all groups will be achieved. The improved effectiveness and efficiency of FNC and certain NGO’s in 3 Darfur States will also be a capacity building output.

**Concerning specific objective 5: Improved energy efficiency**

• Economic analysis of traditional and improved charcoal production under Darfur conditions is available
• Efficient charcoal kilns are adopted in selected areas
• Fuel efficient stoves adopted

8. Project Organisation

The project will be jointly managed by FNC and UNEP. National NGO’s and private operators will be contracted for the realisation of specific project components.

A Project Steering Committee will be established in Darfur Region with participation of national and international organisations, to monitor the project and provide overall guidance. The Steering Committee will help to ensure proper coordination with other, yet related development projects (water, micro-credit, pastoral development, etc.).

9. Budget

Project budget:
The indicative budget is 5 million USD for a first phase of 2 years.