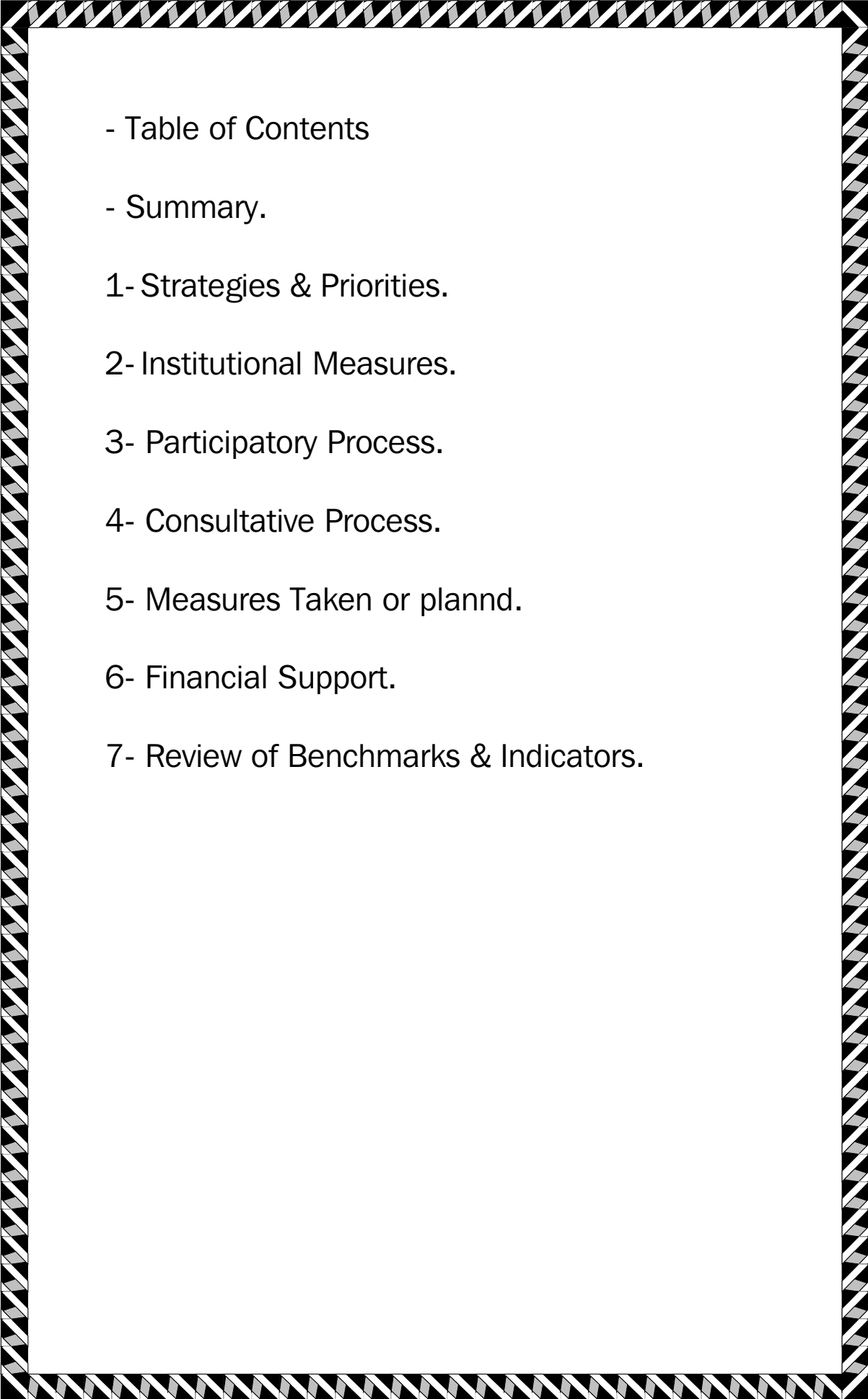




The Republic of Sudan

The Second National Report On the UNCCD
Implementation for Sudan

April 2002



- Table of Contents

- Summary.

1- Strategies & Priorities.

2- Institutional Measures.

3- Participatory Process.

4- Consultative Process.

5- Measures Taken or plannd.

6- Financial Support.

7- Review of Benchmarks & Indicators.

Summary

Sudan's economy is based on agriculture the main land use practices are cultivation, natural grazing and wood cutting for energy and furniture. Heavy usage of the renewable natural resources has led to soil degradation and desertification the latest official statistics indicated that about two thirds of the populations live in rural areas. If not serious measures will be taken the natural resources future will be at stake and ultimately the future of the rural poor. The two main practices which threaten the natural resources base are mechanized rain-fed agriculture and the traditional communal grazing.

There are some attempts in the area of improving traditional cultivation but for the traditional was of livestock raising this is along journey to go.

Oil production may speed up the process of transformation of the rural communities and therefore lessen the pressure on the natural resources. Another dimension which may lay a foundation for the process of transformation is a 25 – year strategy (2003 – 2027) which is under preparation. The main objective of this strategy is the attainment of sustainable development and the prosperity and welfare of the society.

In this strategy combating desertification has been linked to food security, poverty alleviation and conservation of the environment.

The anticipated challenges that face combating desertification are :

- Horizontal expansion of rain fed mechanized farming.
- Traditional rain – fed cultivation on fragile sandy soils.
- Pastoralism.
- Dependence of households on fuel wood energy.
- The position of the focal point.
- The civil war in the South and drough.

A model is found in the report showing the future prospects of dealing with these threats.

Some presidential and ministerial decrees have been issued in favour of the conservation of the environment and improving the livelihoods of the rural poor. The most striking ones are:

- Prevention of tree cutting for a period of two years;
- Rendering free of charge veterinary services vaccination of animals against contagious diseases, and
- Protection of some natural grazing areas against wild fires.

The national NGOs have contributed to the awareness raising programme and some of them established nurseries and shelter belts in some rural areas.

The constraints that may hinder the efforts of combating desertification is the sectoral planning and poor coordination among those who are concerned.

It is quite hopeful that the 25 – year strategy will overcome this main obstacle.

The NAP report has put the research and technology communities high on the agenda and a clear guidelines for coordination of efforts have been stated.

Also the NAP stresses the importance of formulation of a council and steering committee to act as mechanisms for conducting the process and bringing it to its successful destination.

On the participatory side all affected states have raised their proposals. The NAP report is the product of all the stakeholders who participated in the national forum (Oct, 1998).

Nothing has been done with the consultation process. This can be attributed to the fact that without having the NAP the negotiation with the other partners will be incomplete. Now after the finalization of the NAP the process will go ahead.

The lessons drawn from past experiences can be illustrated as follows:

- Top - down approach will lead to failure of projects.
- Dependence on foreign financial support will end into collapse of projects as soon as the support comes to an end.
- The above factor leads to lack of sustainability.

The capacity building is one of the main priorities that support from the international community should concentrate on.

The financial support strategy depends on the domestic resources and treats support from outside as a supplementary one.

The NAP report has given detailed information on the indicators for the measurement of drought and desertification conditions. Six groups of indicators have been identified and these can be illustrated in the following table.

Nature of Indicators	Details and Description
1: Socio-economic Indicators	<ul style="list-style-type: none"> - State of poverty in rural areas - Population pressure - Migration - State of nourishment - Availability of Educational Services - Availability of health Services - Farmers to land ratio.
2: Other Climatic Indicators	<ul style="list-style-type: none"> - Amount and distribution of rainfall - Period and extent of drought - Temperature records.
3: Biomass Indicators	<ul style="list-style-type: none"> - Low productivity of biomass - Poor plant coverage. - A change in plant morphology. - Change in constitution of plant species - Number of endangered and extinct plant species in comparison to existing number of species. - Deforestation. - Ratio of usage of fuel wood energy to other usages of alternative energy.
4: Indicators related to other natural resources	<ul style="list-style-type: none"> - Land degradation, its causes and extent. - Soil erosion, salinity, sodicity, pollution, compaction, low infiltration and low organic

	<p>matter content.</p> <ul style="list-style-type: none"> - Quantity and quality of available water. - Quantity of surface runoff and its content of solid matter. - Content of ground water and its quality. - Density of wildlife, endangered and extinct species. - Depletion of biodiversity.
5: Agricultural Development Indicators	<ul style="list-style-type: none"> - Ratio of cultivated land to arable land. - Number of animal population in relation to pastoral land. - Area of irrigated cropland. - Number of agricultural machineries in relation to cultivated land. - Crop and livestock productivity.
6: Response Indicators	<ul style="list-style-type: none"> - Acquired Development loans and grants - Stages reached in the implementation of NAP. - State if a natural program for the environment has been formulated and the stages of its implementation

1: Strategies and Priorities

1-1: Introduction

Sudan's economy is based on agriculture. The main land use practices are cultivation, natural grazing and woodcutting for energy and furniture. Heavy usage of the renewable natural resources has led to soil degradation and desertification. Latest official statistics have indicated that the rural population constitutes 66.7% of the country's total population of thirty millions. Unless serious measures for conserving the natural resources and diversifying the rural population income have been taken, the state of desertification will progressively proceed.

The two main practices endangering the natural resource base are the rain fed mechanized farming and traditional communal grazing. Land is being swallowed by the case of traditional grazing, the range land in some areas are seriously degraded as a result of high concentration of livestock that exceed its carrying capacity.

Oil production in the long run is expected to partially transform the economic base to relieve pressure on the agricultural resources.

Attempts to improve traditional agriculture by vertical expansion are under whereas traditional animal raising is still dominating in a large scale.

Currently a 25 – year (2003 – 2027) strategy is under preparation. Its main objective is sustainable development for the community welfare.

1:2 Future Projection for Combating Desertification:

The 25 – year strategy has already indicated the strong relation among all measures for combating desertification, reduction poverty, protection of the environment and food security. In the absence of diversified income generation activities in rural areas, poverty will lead to heavy mining of the agricultural resource base. The ultimate result is desertification and mass migration of people to towns.

The strategy for poverty reduction (2003 – 2027), has regarded the states of N. Darfur, N. Kordofan and the Red Sea as the most poverty stricken States. This

fact coincides with the country's national evaluation of the status of desertification in these states. Desertification means loss of the biological productivity of land with the ultimate result of insecurity of food. It is a state of devastation of the environment.

To sum up, desertification control is a means for poverty alleviation, food security and environmental protection.

For strategic planning to conserve the natural resources, desertification control should be conducted in the following manner:

- The national action programme (NAP) should be incorporated in the country's comprehensive development strategy.
- The government contribution should form the base for implementing the national action programme, with the foreign contribution as a supplementary source.
- Strong emphasis should be put on capacity building because it is the key factor for the implementation NAP.
- There must be a clear commitment for participation of the local affected communities and the voluntary organizations through out the process of implementation of the national programme in order to guarantee maximum and rational use of the mobilized resources.

The following schedule illustrated the strategy implementation phases:

- Implementation of the national action. Programme in the first ten years.
- Following up, monitoring and evaluation during the next five years.
- The ten succeeding years will be left for necessary solutions and rectifications.

1:3 Anticipated Challenges and Proposed Solutions:

It is expected that implementation of the national action programme will encounter some challenges that need to be addressed in order to attain a sustainable use and management of the agricultural resource. Such challenges and measures to be taken are illustrated in table (1).

Table No. (1) Challenges, Treatments and Expected results

Challenge	Expected impact if Conditions Persist	Proposed Treatment	Direct Impact of Treatment	Long-Term Impact of Treatment
1: Horizontal Expansion of rain fed mechanized forming	(x) Successive low productivity (x) Need for more agricultural land (x) land shortage for future generations.	(x) 50% reduction in the currently annual cultivated land for a period of 15 years. (x) To increase the area assigned for sorghum production in the irrigated sector (x) To introduce and intensify extension services and modern technologies to increase productivity vertically.	(x) Negative impact on large – scale former. (x) Need for importation of sorghum until are improved stable condition in sustained. (x) Increase in the sorghum production area will be at the expense of areas assigned for other cash crops such as cotton.	(a) Improvement of the biomass cover and an increase in the range land. (b) Creation of favorable environment for restocking of wildlife. (c) Will imprint the concept of feasible modern agriculture (d) Secure more arable land for future generations.
2: Traditional rain – fed cultivation on fragile sandy soils	(a) Soil erosion and degradation (b) Mass migration of people in search for other of living.	(x) Government intervention for improvement and	(x) Land reallocation and registration might not be in favour of some	(a) Settlement of the rural population in their home land.

3: Pastoralism	<p>(a) Degradation of the range land</p> <p>(b) Poor livestock production in quality and quantity</p> <p>(c) Low export earnings</p> <p>(d) Low revenues for livestock owners</p>	<p>sustainability of the traditional agriculture.</p> <p>(a) Government intervention for the welfare of livestock owners, based on acceptable principles</p> <p>(b) Continuous in-depth studies on Pastoralism communities to attain the required transformation with minimum negative social impact.</p>	<p>users.</p> <p>(x) Reduction in farmer's income prior to the positive effect resulting from government intervention</p> <p>(a) Transformation from the existing mode of life to another will have a negative effect on the present generation. The next generation however will be more adjusted to accept the change and realizes its advantages</p>	<p>(b) Improved farmer's income</p> <p>(c) A stable condition for sustainable land use reached.</p> <p>(a) Recovery of the range – land</p> <p>(b) Prosperity of the rural and national economies</p>
----------------	---	---	---	---

<p>4: Dependence on fuel wood energy</p>	<p>(x) Serious of the natural forests (x) Soil erosion and devastation. (x) Poor wildlife population</p>	<p>(x) Use of alternative energy sources eg. fossil fuel by product. (x) Extensive research for feasible use of solar energy (x) Extensive awareness campaigns to attain the transformation objectives</p>	<p>(x) Negative impacts on those who are trading in fuel wood energy. (x) Short- term negative effect on some households in their transformation to the initially high-cost alternative energy sources.</p>	<p>(x) Regaining new productive arable land. (x) Establishing a favourable environment for restocking of wildlife species (x) Increase of natural grazing land.</p>
<p>5: The Federal government system</p>	<p>(x) Some states are expected to continue their dependence on the sale of land and forests product as main sources of revenue. (x) Lack of surplus national lands in these states. (x) Budget deficit in these states</p>	<p>(x) Formulation and implementation of a national last use plan. (x) Unification of rules and regulations governing use and conservation of the renewable natural</p>	<p>(x) Occurrence of budgetary deficit in some states.</p>	<p>Reservation of national land for future generation.</p>

	in case of shortage in land and forests products.	resources.		
6: The Institutional set-up of the national co-ordination unit for desertification control	(x) It failed to fulfill its objectives set up in the UN convention for combating desertification	Establish a national body to be responsible for management of the agricultural natural resources	(x) Appearance of restriction and objection from some sectors to the proposed treatment	(x) Effective contribution to resolve the challenge. (x) The best co-ordination will be reached among all parties involved in the process of desertification control and conservation of natural resource. Thus a sustainable development will be attained
7: The civil war in the South	(x) Inability of the livestock owners to cross Bahr El arab to reach the summer grazing land in the South. (x) Heavy pressure on the alternative range land in the north.	Sustainability of peace	(x) Range and soil improvement in the alternative grazing lands. (x) Non-existence of conflicts between farmers and	(x) If the proposed political reconciliation is recognized and supported by all parties, a sustainable peace that allows for recurring of the past favourable conditions, will dominate.

	<p>(x) Occurrence of conflicts between farmers and livestock owners.</p>		<p>pastoralists (x) Realization of peace</p>	
<p>8: Drought</p>	<p>(x) Due to recurrent drought, land in the fragile ecosystem will lose its productivity (x) Low range carrying capacity means loss of livestock (x) Failure of the agricultural season will lead to famine (x) Wind erosion will severely damage the soil (x) Mass migration of people to other areas.</p>	<p>(x) More research is needed to make the best use of land in the fragile areas under the existing environmental conditions. (x) Participation of the local people of these areas in managing their land resources.</p>		<p>(x) Food security in these areas will be maintained. (x) Utilization of land according to its capability will strengthen the country's economic base and safeguard sustainable use of the resources.</p>

1:4 Measures Adopted to Combat Desertification and reduce Poverty:

Prior to the formulation of the national action Programme, measures for combating desertification and reduction of poverty were practiced but on a sectoral basis. Nevertheless they served the convention objectives. They were adopted as it follows:

(a): Agriculture and Animal Wealth:

- A ministerial resolution prohibiting tree cutting for two successive years was issued in 2002.
- 100,000 butagas cylinders and ovens were sold to the people at a reduced cost in order to relieve the pressure on wood energy.
- All traditional bakeries owners who use wood energy were notified to shift, by the end of year 2002, to other sources of energy, otherwise their business will be closed.
- Reseeding of the natural range land was conducted in an area of 152107 hectares.
- Range protection fire - lines of 48240 kilometers length were cleared.
- For implementation of the presidential directive effective from this year all livestock population will be vaccinated, free of charge, against contagious and transboundary diseases.

(b): Irrigation

- Design of water harvesting techniques for agriculture have been carried out in 9 sites in the states of North Darfur, the Nile, North Kordofan and West Kordofan.

(c): Commerce

- A comparative advantage has been assigned to projects which are executed in the less undeveloped areas, for their contribution to food security and rural development.

(d): Education and Scientific Research:

- School Curricula have already incorporated the issue of environmental awareness and management to safeguard a healthy environment.
- Research programme in the feasibility of usage of solar energy are now being conducted.

(e): Welfare and Social Development:

- Productive family programmes are being implemented with limited funds. They will be evaluated and replicated if they prove to be successful.

(f): Voluntary Organizations:

A number of activities in the area of rural development has been conducted by the existing voluntary organizations networks some of the projects are:

- Drilling of 153 wells – Establishment of nourishment centers – provision of environmental sanitation services – provision of veterinary services – Productive family projects.

The participating networks are:-

The Sudanese network for the control of HIV-

The N.G.Os network for women development –

The N.G.Os network for infants care –

The N.G.Os network for desertification control

Some organizations have unilaterally executed their programmes. They are namely:-

- The Sudanese Environment Conservation society which shouldered the responsibility of establishing nurseries, a forestation and execution of workshops on environmental sanitation.
- The Sudanese society for social forestry conducted five programmes on a forestation and shelterbelts around villages.
- The environmentalists society beside conducting workshops, is now involved, on behalf of the civil society, with preparation of the report on sustainable development which associated with Rio + 10. All other organizations have rendered assistance for preparation of that report.

1:5 Constraints and Solutions:

The difficulties encountering implementation of the plans are:

- Failure to transform the existing programme which are sectoral to a consolidated and comprehensive strategy.
- Poor financial support has a serious negative impact on planner, executers and beneficiaries. Project failure due to shortage of finance leads to loss of faith of the rural population on the implementing institution.
- Weak implementing capacities due to lack of expertise in the absence of work incentives.
- This particularly true in anticipation that such work is carried out in rural areas of very harsh and hostile environment.
- Lack of a strong political voice for those affected by drought and desertification. Further more, projects related to conservation of the natural resources are politically less attractive compared to other projects. Thus they are set at the bottom of the priority list

For resolving the above situation the following is suggested:

- Incorporation of the national action programme in the country's national development strategy.
- To recognize the proposals set in the 25 years strategy as a base for combating desertification.

1:6 Linkage of the technical and Research Institutions with Desertification

Control

It is fortunate that the time of preparation of the national action programme (April 2002) of this report coincided with the formulation of this report. The NAP report was prepared by Arab Organization for Agricultural Development (AOAD).

The programme has revealed the necessity for formulation of a comprehensive research plan for combating desertification.

This plan is to be implemented and supervised by relevant institutional bodies.

They are suggested as follow:

- An executive board or a steering committee for planning, evaluation and approval of programme and budgets and mobilization of resources.
- Assignment of relevant institution for research and development of technology. Suggested institutions are the universities, the agricultural research corporation and projects' research centers.
- A coordinating office for following up implementation of the executive board or steering committee decisions and implementation of the research programme.

In addition, the office is to be responsible for:

- Collection of former research and trials with the aim of evaluation, extraction and application of successful techniques.
- Collection of proposals and preparation of comprehensive plan to be presented to the steering committee for setting and approval of priority programmes.
- Co-ordination of the research institutions' effort.
- Preparation of an annual progress report reflecting degree of development and constraints.
- To issue periodicals and to conduct information and awareness programmes for the public sector and producers.
- To acquire, in coordination with UNCCD secretariat, information and research programmes applied in similar countries.
- To collaborate with research institutions for monitoring and implementation of the plan and its impacts.

The basic components related to research programme support and technology transfer are to be considered: This is essential for the programme in order to reflect properly the results of the related activities and to solve limitations and

safeguard needs of the local community. The main components to be considered are:-

- Special effort is to be directed to research work which is linked with the social and economic factors in relation to natural resource management and land degradation.
- Formulation and implementation of research programmes that takes into consideration the nature of the natural resources and the common factors which are affecting their use and conservation.
- The research is to be executed by a an integrated team which carries out its field work in harmony and collaboration with the producers and local people similar to western Sudan Research Programme Approach.
- To emphasize on water spreading and soil moisture retention techniques in the mechanized and traditional rain fed areas.
- Application of agro forestry that incorporates trees of multiple use.
- Selection of quick growing indigenous trees and to encourage establishment of wind breaks and shelter belts. In the rain fed and irrigated areas and around towns and villages.
- To adopt and encourage application of organic manure and crop residue for improving soil properties and raising its productivity.
- Trials are to be extended for reclamation of saline and sodic soils and for their usage for forage and trees production.

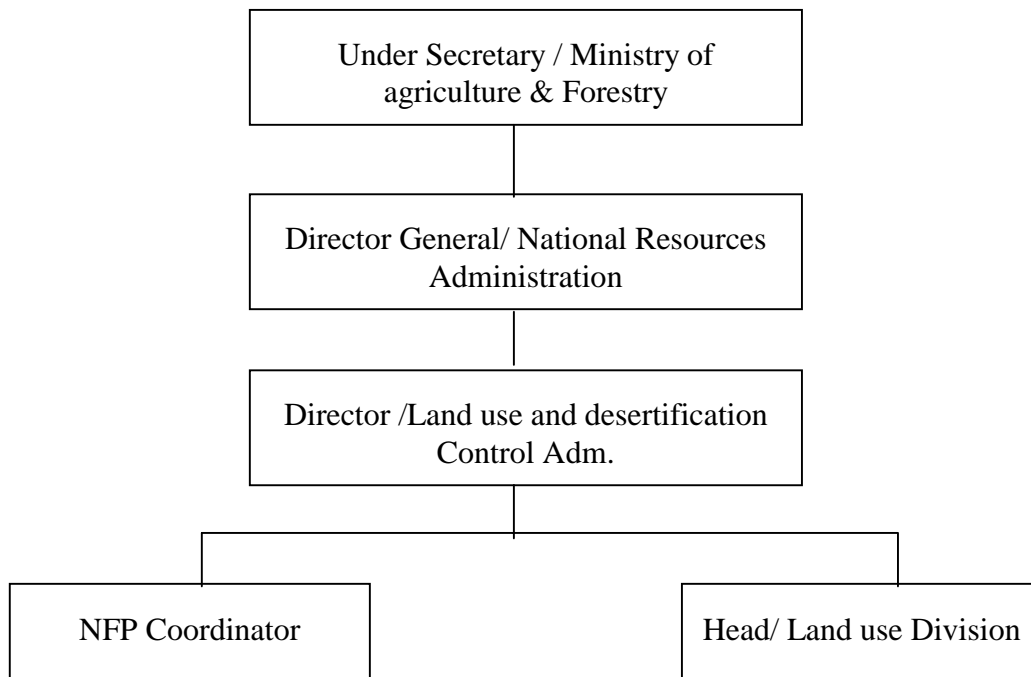
2: Institutional Measures

A proposal has already been made for formation of national co-ordination council to supervise implementation of the UNCCD and the national focal point (NFP) is to be its executive secretariat.

The proposed entities for membership are : the relevant institutions, the civil society and the affected community based organizations

The present position of the focal point is a low level in the ministry of agriculture organizational set up. This situation hinders it from direct link with the decision making circles at the top of the system. Reference is made to Fig (1) below:-

Fig (1)
Position of the Focal Point



A national Center for coordination has been suggested to be directly responsible to the president's adviser for environmental affair, a post which is currently not existing but proposed in the NAP document.

Prior to the preparation of the national action program, a proposal from the national focal point was raised to the Minister of agriculture to upgrade the unit and link it directly with the Minister's office. The proposal will be subject to discussion on negotiation of the NAP document by the concerned authorities.

The national action programme will derive a strong power and be recognizable if it is treated as an integral part of the strategy for reduction of poverty, environmental protection and food security. In other words it will remain an important element for sustainable agricultural land use.

Because of the delay in the preparation of the NAP, no initiative was taken to participate in the preparation of regional or sub regional programmes. Since last year the Nile Initiative incorporating the Nile basin countries, has emerged. Sudan is ready to collaborate with both Ethiopia and Eritrea in initiating sub regional project pertaining to the development of water for the welfare of

population of the three countries. Furthermore, Sudan has been assigned to house the environmental arrangement center of the Nile basin countries.

In March 2001 the environmental law was passed. The law states that environmental feasibility study is a condition for approval of any investment project. In addition, environmental magistrates to resolve environmental disputes, have been established. The environmental law is a break through for protection of the environment. But it takes some time before its impacts are thoroughly evaluated.

With respect to procedures for mobilizing the local communities and states' authorities to participate in decision making, reference is made to the results of the workshops conducted by the states which are mentioned in the 1ST report (issued in May 1999). That was a beginning in awareness raising among the targeted participants in order to contribute effectively in identifying priorities and formulating projects with respect to desertification control.

A proposal for representation of the pastoralists and farmers communities in the committees which are concern with identifying priorities, has been raised at the states, level. Training of leaders of these communities in addition to attending workshops, will enhance their capacity and provide them with more confidence for participation in the rational management of their resources.

3: The Participatory Process

The information contained in the national action programme was a joint contribution of most of the stakeholders who participated in the states' workshops, seminars and the national forum. The states' proposals are presented in table ()

Table (2)
Project Proposals Submitted by Affected States

States	Proposals
1: Red Sea	Development of traditional cultivation, pasture and forestry.
2: Kassala	Water harvesting – Improvement of pastoral land – Reclamation of forests.
3: The North	Improvement of irrigation systems – Reduction of poverty among women – goat raising – poultry keeping – establishment of green belts.
4: The Nile	Women Communal forests – development of surface and ground water sources – rehabilitation of pastoral land – settlement of pastoralists.
5: Khartoum	Water harvesting schemes – rehabilitation of pastoral lands and forests.
6: Sinnar	Soil reclamation – improvement of pastoral land – rehabilitation of forestry.
7: White Nile	Rehabilitation of pastoral land – introduction of intermediate technology in agriculture – sand dunes fixation.
8: North Kordofan	Rational use of fuel wood energy – improvement of pastoral land – Establishment of an early warning systems.
9: West Kordofan	Rehabilitation of Gum Arabic belt – Improvement of water resources – protection of wildlife.
10: North Darfur	Rehabilitation of the gum belt – water harvesting schemes – improvement of drinking water sources.
11: West Darfur	Water harvesting schemes – improvement of rain fed agriculture – combating animal diseases – provision of drinking water centers.
12: Gezira	A comprehensive programme for treating low productivity phenomenon.
13: Gedaref	No report has been received yet.

To support the concept of participation so as to be effective at all levels, the following is recommended:

- A high representation, in the localities' and provinces' committees, is to be allowed for members of the affected communities.
- Formulation of a network from national and international voluntary organizations in each of the affected states.
- To put more emphasis on conducting workshops for the affected communities.
- To imprint in the minds of those who are involved with combating desertification, the concept of bottom – top planning.
- Traditional knowledge which and its relation to environmental factors used as early warning indicators, is not to be ignored.
- Information and extension packages have not yet been formulated. In the process of forming these packages traditional knowledge is to be incorporated as a key factor for communicating the objectives of these programmes to the targeted communities.

4: The Consultative Process

It is beyond doubt that consultation with the regional and international organizations, the co-operating bilateral agencies, donors and others that are concerned with drought, is essential for implementing the NAP. This calls for formulation of a co-ordinating mechanism. Such a mechanism has been proposed in the NAP document. Its membership was suggested to be as follows: -

- UN organizations.
- The relevant regional organizations.
- Granting and Financing banks and funds.
- The European Union.
- Bilateral agencies
- The International voluntary Organizations.

- Ministry of Finance and economics
- Ministry of Agriculture and forestry
- Ministry of International Co-operation

The mechanism on committee is to be mended with the following responsibilities:

- To formulate and develop means of co-ordinating and integrating donors and technical support programs.
- Specify and approve financial requirements in the form of programmes and projects.
- Formulate a strategy for mobilization and usage of financial resources.
- Establish methods for follow up, monitoring and evaluation.
- Assign a working group or groups to carry out specific task in accordance with the committee's mandate. The delay in the NAP preparation hindered any contacts with the above parties to from the consultative committee. Since the NAP document is now ready, such proposal for forming the committee can now be negotiated for approval. This is very important for fulfilling the UNCCD objectives.

5: Measures Taken or Planned:

The lessons drawn from past experiences were as follows:

- Planning and execution were from top to bottom.
- The projects were sectoral and lacked the integrated approach. Thus they did not respond thoroughly to the need of the local target groups. This was the main reason for their failure.
- Foreign aid supported projects lose sustainability as soon as the financial support terminated. This situation calls for serious steps to review criteria adopted and assumptions made in formulating such projects.

The principles for sustainability of desertification control projects, upon termination of foreign aid, have been clearly defined in the NAP document.

These principles are:-

- The projects are to be incorporated within the country's national plan.

- Participation of the affected communities in the processes of planning and implementation of the beneficiaries to implementation of the project.

With respect to training, four of the technical staff from the land use and desertification control administration have joined desertification studies and desert cultivation center for post graduate studies (M.Sc.). Establishment of this center was based on initiatives from the faculty of Agriculture – University of Khartoum. It remains an enormous contribution for the implementation of the UNCCD as it has been mentioned in the first report (May 1999).

It is relevant to mention here that the NAP expresses number of views, on sub regional projects on range and water resources that can assist in formulation of joint projects.

6: The Financial Support

Financial aid provided by the World Bank to Global Mechanism. It was utilized in preparing a document under the name (Road Map) the document was presented, for discussion, in the Kampala workshop (10 – 14 December 2001).

The national desertification fund is looked upon as the principal source of finance. An independent administration unit for this fund has been proposed in the NAP document. The following sources of finance have been proposed in the document:

- The federal government (specifically funds from the development budget and export earning.
- The states' budgets (i.e charges on grazing, agriculture, forestry products and water use – to be called environment cost)
- The local community participation.
- The endowment organization.
- The private sector.
- Zakat fund.
- The states' supporting fund.
- The charity Organizations.

- Tourism

Foreign contribution is expected to be provided by the following sources:-

- Bilateral organizations.
- UN organizations.
- International and regional banks and funds.
- Voluntary organizations.
- The global mechanism by mobilization of additional resources.

Capacity building on states' level and community awareness are fundamental for implementation of the convention. At this stage, the main requirements among others are:

Provision of computers with accessories to the affected states and establishment, within the focal point, of a well – equipped unit for follow up, monitoring and evaluation. The unit is to be provided with necessary tools for remote sensing and G.I.S.

Training is required in the area of combating desertification, related environmental issues, monitoring and evaluation.

7: Review of Benchmarks and Indicators

Academic trials for measurement of land degradation, have been conducted. Some of these have concentrated on movement of sand dunes, caused by irrational grazing and wood culturing, as an indicator for land degradation other trials consider loss of soil fertility as a basic indicator.

Practically the Range and Pastures Administration resorted to the measurement of the range carrying capacity to describe the range condition as an indicator for land degradation. By intuition, if there is shortage or erratic distribution of rain, or an increase in the animal population, these will be a heavy pressure on the rangeland i.e. a state of land degradation.

The forestry National Corporation uses the state of forest depletion as an indicator for land degradation.

Presently the Sudan uses records on annual rainfall and rainfall distribution as early warning indicators for prediction of drought. The NAP document has

incorporated six basic groups of indicators for measuring the state of drought and desertification. Reference is made to table (3) for these indicators.

Table (3)
Indicators for Measurement of Drought
and Desertification Conditions

Nature of Indicators	Details and Description
1: Socio-economic Indicators	<ul style="list-style-type: none"> - State of poverty in rural areas - Population pressure - Migration - State of nourishment - Availability of Educational Services - Availability of health Services - Farmers to land ratio.
2: Other Climatic Indicators	<ul style="list-style-type: none"> - Amount and distribution of rainfall - Period and extent of drought - Temperature records.
3: Biomass Indicators	<ul style="list-style-type: none"> - Low productivity of biomass - Poor plant coverage. - A change in plant morphology. - Change in constitution of plant species - Number of endangered and extinct plant species in comparison to existing number of species. - Deforestation. - Ratio of usage of fuel wood energy to other usages of alternative energy.
4: Indicators related to other natural resources	<ul style="list-style-type: none"> - Land degradation, its causes and extent. - Soil erosion, salinity, sodicity, pollution, compaction, low infiltration and low organic matter content.

	<ul style="list-style-type: none"> - Quantity and quality of available water. - Quantity of surface runoff and its content of solid matter. - Content of ground water and its quality. - Density of wildlife, endangered and extinct species. - Depletion of biodiversity.
5: Agricultural Development Indicators	<ul style="list-style-type: none"> - Ratio of cultivated land to arable land. - Number of animal population in relation to pastoral land. - Area of irrigated cropland. - Number of agricultural machineries in relation to cultivated land. - Crop and livestock productivity.
6: Response Indicators	<ul style="list-style-type: none"> - Acquired Development loans and grants - Stages reached in the implementation of NAP. - State if a natural program for the environment has been formulated and the stages of its implementation

Source: The National Action Programme Document (Year 2002).