



Assessment of Development Indicators in Rural Communities in Forestry Activities (WNS Central Sudan)

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Abstract:

Development in rural areas usually is designed to improve life conditions of the inhabitants. Introduction of projects' activities could probably influence common traditions and beliefs and may be favored or resisted. Participation is very vital for achieving the set developmental objectives and goals. The indicators and assessment measures of a community to evaluate development vary a lot from one place to the other and from one society to another. Forestry projects could be used as a tool or a framework through which development indicators can be measured. In the study area . Five (5) villages were selected to conduct the research. Target groups were randomly chosen within the study area. Primary and secondary data were collected using a questionnaire. Supplementary information was collected from reports of the forests national corporation (FNC) offices, as well as from personal observations and knowledge of elder inhabitants in the area. Statistical analysis was performed on the collected data and results were tabulated. The main finding of this research is the deterioration of the vegetation cover at a remarkably increasing rate in the study area. The reliance on fuel wood for energy is the main factor behind the retrogression of the tree cover in the study area. This is coupled with the frequent drought that strikes the study area every now and then. The tree cover stocking density practice in the study area is artificial regeneration. The attempted artificial regeneration was not successful, as it was done through dispersion of seeds, rather than plantation of seedlings after hardening. Within the notion of relating development to improvement of human life conditions, sources of income were assessed in the study area. They confined to two main activities namely; agriculture and private business. Respondents who rely on forests products to increase their income . However, uncertainty of the rainy season pushed some local inhabitants to shift to other sources for income generation. Reliance on forest products as a source of income is not common in the study area. In general, a considerable proportion of households income is spent on different life needs, of which is the purchase of forest products. Involvement of local people in the programs of tree planting like agro-forestry, farm forestry and wood lots, is expected to contribute to the development of the study area through environment protection and raising standard of living through provision of necessary forest products.

Keywords: Development, Indicators, Rural Communities, Forestry, Assessment.

I. Introduction:

Among the challenges in rural development is the effective participation of inhabitants in the activities of developmental projects. Garforth (1992) stated; activities and out-puts of a project simply do not make any sense to most of the people supposed to participate. Hence participation is one of the objectives that could be achieved for better development. Falconer (1987) mentioned some of the major constraints to participation which include: need for communal wood lots, land and labor availability. Incentives perceived are limited. This is in addition to lack of institutional security and mistrust, the negative legislation against locals, . Last but not least is that the benefits accruing from forests plantations mostly are long term and environmental. Forestry projects regarded by the locals as a new concept and perceived as hard to understand and adopt. Planting trees, afforestation as a new strategy was very confusing to locals, as this issue is very much tied to land tenure (World bank, 1978). There are several indicators, which are used and supposed to describe the level of development in a society. For instance, the number of illiterate people in a country indicates the level of basic education . williterate people have less possibility for social participation and therefore their living condition remain poor. Another socio-economic development indicator is the average life expectancy. Village dwellers, especially farmers will not participate in forestry activities within forestry projects, unless they feel secure that they will receive the benefits of their work or other forms of inputs, as a reward expected and ensured as a value of their participation. Therefore true participation is looked at as a real challenge to any successful development in rural areas. Forestry projects could provide a framework for measuring development indicators. Below are the problems facing the success of forestry projects:

- Less tree planting on private property.
- Less participation in activities to stock communal or state land by trees.
- Less adoption of community forests within rural societies.

Measuring development indicators in the While Nile State (WNS) is not a simple process. WNS in Sudan is considered the first line threatened by desertification and desert creep. Hence, forestry activities aimed at development throughout WNS need to be assessed through adoption of development indicators' measures. Such indicators include forests density in the area, willingness of locals to participate in afforestation programs and other forms of activities. It is also important to measure illiteracy amongst villagers and their living standards and opportunities of earning and/or increasing household income. Nevertheless, building the capacity of farmers to afforest their own land is also important. With respect to the stocking density of trees, the outlook and objectives of local people are often regarded as being purely short-term, as they are seen as lacking the skills and knowledge required for the complex tasks of scientifically-based long-term wood-land management (Kerkhof, 1999).

In Africa and Asia agriculture is the main source of income to the dwellers, (Papastavrou, 1984). Participation of locals in developmental projects' activities remains a challenge in rural areas. Chamber, 1986; remarked that participation indeed calls for a great deal of time, patience and stamina of all actors involved, as well as a clear inter-relation of its exact features. Participation always deals with levels of degrees ranging from contribution of labor to full resources control (Care, 1987). While Shepherd, 1990, strongly emphasized that many people use the word participation almost as brain washing

e.g. to convince farmers against their economic priorities that they should plant trees. A considerable ample time is required to properly formulate a participatory forestry projects. The necessity for involving local people at the identification and formulation stage is extremely important and useful. Kerkhof, 1999, stated, working together, the various village groups, can provide the full range of capacities required for effective woodland management. COW consult, 1993, in northern Sudan found that rural people rarely have common interests to participate in activities related to forestry. The socio-economic and physical village structure affects the basis of community participation. Falconer (1987) mentioned some of the major constraints to participation, which include: first, participants do not feel a pressing need for communal wood lots. Second, land availability. Land is not always available for forest plantations. Third, different incentives and perception of limitation of communal forest area. Forth, lack of institutional security over the right of access to tree products. Forests authorities and services accrued a history of negative legislations, inequalities within the local social structure or mistrusts of local government services. It is also known that the benefits accruing from forest plantations are long term benefits and mostly environmental. Labor availability remain an existing factor for low participation at all times. Forestry projects regarded by the locals as a new concept, hard to understand and adopt. Planting trees, afforestation as a new strategy was very confusing to locals as this issue is very much tied to land tenure (World bank, 1978).

II: Materials and methods:

Five (5) villages tackling issues related to the environment were chosen for the study. These villages are: (1) Ja-Alyeen (2) Al-Halba, (3) Wad Jabur,(4) At-Tajammu, and (5) As-Sayal. A questionnaire was carried out. Data was collected from different target groups that exist in the area. Reports were also reviewed to compile the necessary historical information. The area covered by this study is almost a circle of one hundred kilometer in diameter. Two types of data were collected: primary and secondary data. The primary data was collected using a questionnaire that investigated the willingness of adoption of community forestry through extension efforts, and the level of perception of forestry activities by the local population. Secondary information was collected from reports of the Forests National Corporation (FNC) offices, as well as from personal observations and knowledge of elder inhabitants in the area. Statistical analysis was commenced through exploratory manipulations of the data obtained in the study area. This process was accomplished by critical examination of the data using simple analysis techniques. The main tools used were the construction of simple tables and selected cross-tabulation which provides tentative answers for many of the questions being asked in the survey.

III: Results and Discussion:

A: Factors behind the deterioration of the vegetation cover in the study area:

Deterioration of the vegetation cover in the study area is remarkably increasing. WNS is said to be extremely fragile and adjacent to desert, subjected to heavy deterioration, and experienced frequent drought which all accelerate the rate of desertification and loss of natural resources. Table (1) below shows clear that fuel wood crisis negatively impacted the study area where a considerable percentage of the respondents (44%) believe that drought is the major factor behind the retrogression of the tree cover. The second ranked factor as perceived by the respondents (30%) is grazing which sometimes intensifies by the seasonal visit of herds (livestock) to the study area in summer and every now and then

(overgrazing). It is also clear that the locals think that fuel wood collection is of vital importance, since (20%) of the respondents indicated that they rely on local forests as the main source of fuel wood.

Table 1. Causes of deterioration of the tree cover.

Village	N	Causes of deterioration of the tree cover			
		Drought	Grazing	Fuel wood	Agric expansion
1	21	8	7	5	1
2	32	14	10	6	2
3	16	8	5	3	0
4	14	6	3	3	2
5	17	8	5	3	1
Total	100	44	30	20	6

N: Number of respondents.

Some respondents (6%) related the deterioration of the vegetation cover to the expansion of agriculture particularly shifting cultivation. Being marginal and fragile, the study area is susceptible to erosion. Accordingly, the chance of sustaining productive agricultural land is slim. This is the very reason why farmers tend to practice shifting cultivation. Although some trees are retained in the fields, their removal is still likely to offer a vacant lot for growing crops. This may confirm the fact that there are only three to four dominant tree species in the study area.

B: Stocking Density of Trees in the Study Area:

The study focused on whether the restoration of vegetation cover was due to the natural process or through artificial regeneration. Further, it researched the adopted practice of artificial regeneration. Table (2) shows that some respondents (18%) believe that artificial regeneration was practiced in the study area to restore the vegetation cover. The majority of the respondents (67%) stated that the artificial regeneration was practiced through dispersion of seeds, while the rest (33%) indicated that it was done through seedlings obtained from the FNC and NGOs projects working or worked in the study area.

Table 2. Stocking density of trees in the study area.

Village	N	Regeneration%		Regeneration means%	
		Natural	Artificial	Seeds	Seedlings
1	21	20	1	15	6
2	32	29	3	20	12
3	16	12	4	10	6
4	14	9	5	9	5
5	17	12	5	13	4
Total	100	82	18	67	33

N: number of respondents.

The respondents are of the opinion that successful regeneration can only be guaranteed through seedlings after hardening, rather than through seeds. Based on the above findings, it is clear that previous projects in the study area did not put special emphasis on the afforestation and reforestation activities. Moreover, the majority of the seedlings used for regeneration were obtained from the FNC.

C: Source of income in the study area:

Through-out the study area sources of income are confined to two main activities namely, agriculture and private business. There are some other minor activities that are supplementary to the above mentioned sources of income generation. FNC (1998) stated

that respondents rely on forests products to increase their income, while few rely on local markets. Table (3) below shows clear that 70% of the respondents rely on agriculture in its different forms for their income generation. Although agriculture in the study area depends on rainfall (rain-fed agriculture) that fluctuates and differs from one season to another with long periods of episodes. Despite that agriculture is still the main land use pattern in the study area. The justification for this is the fact that there are no competitive alternatives and the farmers expect the next rainy season to be better and shall enable them to harvest satisfactory yield of agricultural crops. Uncertainty of the rainy season pushed some local inhabitants to shift to other sources for income generation.

Table 3. Source of income in the study area:

Village	N	Source of income				Relation with forest products
		Agric.	Animal rearing	Private	Others	Sell forests products
1	21	16	2	7	5	2
2	32	22	2	18	4	4
3	16	12	2	4	3	0
4	14	10	0	5	0	1
5	17	10	1	6	3	3
Total	100	70	7	40	15	10

N: Number of respondents.

The second ranked source of income is the private business (trading, constructional activities, etc.) as stated by 40% of the respondents. Animal rearing is not the professional job for the local inhabitants, where only 7% of the respondents stated that they rely on animal resources for income generation. None of the respondents of village (1) relies on animal rearing as a source of income. This is due to the nature of the area surrounding village (1), which is semi-arid with fluctuating rainfall and gardud (hard compacted surface) soil. This led to the characterization of village (1) area by high surface water run-off, low penetration, and limited forage for animals. Even in years of good rainfall, herbs and ephemerals would not have the chance to germinate satisfactorily. It seems that the historically severe drought in 1984, which struck a considerable part of Sudan, had impacted the study area. As a result the livestock wealth of the area had been dramatically declined. Reliance on forest products as a source of income is not common in the study area, where only 10% of the respondents stated that they gain income from selling forest products. None of the respondents of village (3) relies on sales of forest products. This finding could be related to the fact that the study area has very poor vegetation cover. The existing tree cover is not encouraging for investment in this field. Consequently, the study area relies on other sites for the provision of forest products as stated by 61% of the respondents showing that they pay for forest products. It is clear from these findings that the natural vegetation is very poor and the possibility of fuel wood collection is low. Accordingly, a considerable proportion of households income is fragmented towards different life needs, of which is the purchase of forest products. Involvement of local people in the programs of tree planting like agro-forestry, farm forestry and wood lots, will contribute to the development of the study area. Involvement of the locals in such activities shall provide good opportunities for environmental protection and raising the standard of living through provision of necessary forest products. This above discussion emphasizes the importance of launching forestry programs, particularly through government intervention and collaboration with



donor agencies, international organizations and NGOs concerned about environmental conservation; and for strengthening awareness and adoption of innovations among the rural inhabitants . It is worth mentioning the fact that many families in the study area rely on expatriates to sustain their livings. Most of the expatriates are youth who could have significantly contributed to the development of the area. Their departure/migration to other countries continued to deprive the study area from the most critical component of development.

D: Factors behind low participation in afforestation programs in the study area:

The vulnerability of WNS to desert encroachment and the continued deterioration of its natural resources is the main reason why FINNIDA (Finnish International Development Agency) and the Government designed a strategy to rehabilitate rangelands and forests for production and protection purposes through participation of local people in the establishment of forests.. Moreover, it is extremely important that such projects be flexible and of long term to warrant sustainability and provide opportunities for active intensive research.

IV: Recommendations:

- Sustainable existence of an effective extension unit as fruitful achievements in the study area is a top priority.
- Urgent extension services to raise the awareness of local people towards environmental issues.
- Projects could offer attractive economic rates of return and improve the long term productivity of land.
- High priority should be given to application of concept of incentives, subsidies and credit accessibility for the locals that are reluctant to participate in any activity that may contradict with agriculture.
- Water micro-catchment techniques should be addressed in tree planting programs in the study area.



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