

Drylands Programme

THE ISSUES ENVELOPE

DISASTER PREVENTION IN DRY LANDS

An overview of national efforts
in Ethiopia and case studies of
the Ethiopian Red Cross Society

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- I. INTRODUCTION:- This paper is a result of an attempt to summarize the national scenario in disaster prevention work of government, multilateral, bilateral & NGO cooperation and efforts aimed at creating an environment of survival, with increasingly deteriorating agro-ecological realities and changing climatic conditions in Ethiopia. The country has faced 32 major drought triggered disasters in recorded history (Taffesse 1985) and 3 disasterous famines during the last fifteen years.

Major efforts are concentrated in the area of soil and water conservation and forestry programmes aimed at watershed management and a massive infrastructure development with the objective of increasing household incomes and, therefore, the reduction of peoples vulnerability to famine. The disaster relief - rehabilitation - disaster prevention (development) strategy has been adopted by almost all humanitarian agencies that had started out in relief work.

In 1973 over a quarter of a million people died due to famine. In 1984 - 85, Ethiopia had faced a nightmare where close to ten million people needed emergency assistance (fig. 4). The International community generously responded in relief aid, in what has been one of the largest peacetime logistics mobilization in history. It is against this background that organizations have tried to tackle the questions of survival using different approaches; some on ad hoc basis, others with a longer term perspective of the problem of environmental degradation. In addition to this, the Government took a much more radical step in resettling population to the richer areas of the country.

The main thrust of this paper is to define the problem, present the general planned and ongoing activities to fight drought by all agencies and analyse Red Cross case studies to identify strength, weakness, opportunities and threats in the field of disaster prevention.

II. THE PROBLEM

I find it appropriate to present some telling figures behind the causes of the expanding 'desert spots' created in Ethiopia before we go into the overview of national efforts to combat the problem, which has led international aid agencies to supply 1.5 million tons of food in 1985.



Figure 1. Area - 5500 sq. km
 Population - 400,000
 Agroecological zones - 5
 Slope class ≥ 60
 35 - 60
 12 - 35
 5 - 12
 0 - 5



Figure 2. Rainfall data UNCG-BPP
 1965, 1973, 1984 low seasons
 triggering disaster



Figure 3



Figure 3. NCD distribution†



Figure 4. Drought affected

Figure 5. Highlands of Ethiopia



Over 40 NGOs are involved in the supply of these inputs and the government has a credit system of distribution to farmers on an annual basis. In 1986 over 100 million USD was spent on rehabilitation in the country. The primary objective in rehabilitation is to avail necessary inputs when early warning systems indicate that coming rains will be good enough.

2. Disaster Prevention - Although this term has been coined recently to differentiate it from rural development, it has the same components except that the starting point is different. It is development that is undertaken in places that have gone into critical conditions due to certain factors (eg. disaster). Relief agencies are now increasingly involved in disaster prevention due to the concern and frustration that has grown out of the need for permanent relief action, broken only by some good years of rainfall.

Among the serious measures that are being taken by Government, UN, bilateral aid, multilateral aid and NGOs are

- 2.1 Land use management: Efforts at catchment rehabilitation and reclamation have continued for the past fifteen years in soil/water conservation and forestry programmes, especially concentrated in the drought prone regions Eritrea, Tigray, Gondar, H'allo, Hararghe and Northern Shoa. This is gradually expanding to other regions of the country, with the growing awareness that large parts of the southern part of the country would be rendered worse than useless if timely action is not taken. The soil conservation structures being constructed include hillside bench terraces, check structures, soil and stone bunds, microbasins, fanya-Juu terraces, gully protection, cut-off drains and artificial water ways for the effective management of erosion, runoff and flood. Intensive research is also conducted at the best ways and means of conservation work.

Community forestry is also increasingly becoming a priority in the country. In 1986, half a billion seedlings were planted among which 30% are species for reforestation in arid lands and another 30% planted on farm terraces to stabilize and enrich soils. Area closures for natural regeneration

of indigenous plants have also proved to be a quick and sustainable method of revegetation as it requires less capital and recurrent inputs.

- 2.2 Community Water Resources Development: Water projects in this category include earth dams for small scale irrigation and water supply, spring capping for clean drinking water, ponds for water storage, hand dug wells and river diversion structures. Water storage has been given a priority, especially in dry lands as it provides continuous water supply in the absence of rains and the long dry seasons.

The Ethiopian Red Cross and the Swedish International Development Agency have also financed sub-surface sand storage dams in several regions of the country. (see ERCS Case Study No. 1)

- 2.3 Improved Crop Production - The introduction of drought and pest resistant varieties is another major activity in most rural development project. Development agencies are trying hard to implement research findings on arid zone agriculture. Improved agricultural practices are also part of the training given to farmers to create a sustainable agricultural system. In addition training in marketing and cash saving are given to Service and Producers Cooperatives. The development of food and feed storage facilities are also part of the package.

- 2.4 Primary Health Care and Home Economics: The proper utilization of produced food, preventing communicable diseases, personal hygiene and environmental sanitation, immunization, MCH and the availability of clean drinking water are major components to decrease the vulnerability of people to the whims of nature. There is a growing interest among NGOs to support such programmes.

- 2.5 Training: Awareness generation and training in disaster preparedness and prevention are also dimensions that all agencies of relief and development are looking into seriously. There is a growing concern in agencies to direct their projects towards more participatory exercises where beneficiaries will make decisions on their development.

IV. ERCS Case Study No. 1

Sand Storage dam

Site: Melka Jebdu sub surface dam

Location: Sand river bed of Melka Jebdu river

1. The Problem: In the Melka Jebdu area the river dries up during the ten months when it is not raining. A population of 4,000 people and an orchard of 100 hectares have to be supplied with water during this long period with a daily need of 500 cu mt.
2. Planning: The catchment was part of study in "Remote Sensing for Water Resources Development" where the terrain inventory has been carried out using visual inspection of LANDSAT false colour transparencies from both wet and dry seasons. These images have been mapped directly to a base map. Terrain features identified were dynamic elements (drainage, ground cover and vegetation, land use) and static elements (drainage patterns, lineaments and geomorphology). This assisted narrowing the survey area to specific plots where air photos and field checks helped finally to decide the project area.
3. Activities: After site identification construction started to block completely all subsurface flow in the river by building a masonry structure from the bottom rock to the surface of the river bed. Filter pipes were installed leading to a piped outlet.

A sand storage subsurface dam came with the following advantages.

1. It provided clean water as the water is naturally filtered through the sand
2. The rate of evaporation was very low compared to open storage dams.

The dam supplies all the water needed through out the year.

1. Soil erosion

Annual sediment loss measured in rivers has been estimated to be one billion tons every year and stands at a mean figure of 20 tons per hectare (Journier, 1962). However measured soil erosion rates on slopes have shown that up to 72 tons per hectare in selected studies undertaken in the highlands (Hurni 1984).

2. Deforestation

The country's original forest cover (40%) has been reduced to a mere 3% today with an annual cutting of an estimated 200,000 hectares of forests. Reforestation activities have met with several problems that will be discussed later on.

3. Population

An annual increase of 2.9% population has also increased the pressure on the land. The effect of population increase compounded with previous agricultural products marketing policies and civil strife had stagnated food production at levels that could only feed a little over 50% of the population. The radical transformation of the productive forces and production relations, aimed at a more equitable distribution of the benefits of growth, had also created a slow down in production.

III. OVERVIEW OF NATIONAL EFFORTS TOWARDS SURVIVAL IN

DRYLANDS: The main Government organization entrusted with the task of tackling the problems of desertification is the Ministry of Agriculture with bilateral and multilateral support from UN agencies and governments. NGO's play a major role through the Relief & Rehabilitation Commission and the Ministry of Health. Today all NGO's have multilateral agreements with all government development agencies giving them a much wider institutional frame work and area coverage. (Fig. 3)

The main areas of work are:

1. Rehabilitation - the distribution of agricultural inputs - improved drought resistant varieties of seeds, fertilizers, pesticides and plant protection equipment, animal draught power and small hand tools.

V. ERCS Case Study No. 2

Pastoralist Rehabilitation and Development

1. Background: The Afar semi-nomadic pastoralists in the eastern lowlands of the country have been assisted in vital food, medical and shelter assistance during the drought of 1984 - 86 by ERCS. 150,000 pastoralists had lost all their herds and stayed in the shelter permanently for two years. The 'nomads started looking to the land for cultivation on their own and their first efforts paid.
2. The Problem - Agencies of development rightly assume that nomads and semi-nomads will not undertake sedentary agricultural life. One case here has proved us wrong, atleast for now.

Like nomads everywhere the Afar way of life is a candidate for extinction due to increased ^{Competition for} their grazing land.
3. Planning: Detailed studies were undertaken by ERCS in land use, migration patterns, attitudinal surveys, traditional methods of preparedness, tribe /clan structure, social cultural and political makeup. The Afars decided to have "two legs to stand on" pastoralism on the one hand and irrigated (agriculture/grazing) on the other.
4. Data: Participants of the project 400 families, area 400 hectares
5. Activities: The first experience of cultivation has brought the Afars technology which has taken a century for other farmers to get one pumps, siphons, tools and camel farming. Today the average yield of maize is 4.5 tons per hectare. The project is taking wider dimension in health and education as the years progress.
6. Evaluation: With expanded programmes underway the project will be evaluated towards the end of the year.

VI. ERCS Case Study No. 3

The Upper Milla & Cheleka Catchments Disaster Prevention Program (UMCC-DPP) (fig. 1)

1. Background: The UMCC DPP has its roots like our previous case study in the drought triggered disaster of 1985. This project is sort of a flag ship for the Red Cross world wide in trying out the Relief Rehabilitation -Prevention (Development) strategy.

References

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2. The Problem: The Core Problem identified in the UMCC DPP documents is "DROUGHT TRIGGERED DISASTER" which has three direct causes:- large scale food deficits, lack of water and lack of a preventive health care system. Land misuse is the main factor leading to lack of ground water and food.

The carrying capacity of the land has also been exceeded by over 100%. Under this condition low levels of rainfall trigger disaster of high magnitude (fig 2).

3. Institutional Framework: All agencies in development in the country have to work through the established government and mass organization. At the grass roots level the structure of the Ethiopian peasantry is organized as follows.

- 3.1 The Peasant Association (PA) this covers an area of 800 hectares of land and a population of 200-2000 families. In the UMCC DPP the average is 1800 families per PA. The PA is administered by elected members and is responsible for the economic & social life of its members including judicial mandates. It has several associations looking after the interests of its members.

- 3.2 The Producers Cooperative(PC) there could be one or more PC in a PA. Members work together and share benefits according to their inputs determined in hours of work.

- 3.3 The service cooperative (SC) This is the marketing arm of the peasant usually encompassing 4 - 5 PAs.

4. Design The UMCC DPP is designed to address drought related problems through twelve components of integrated rural development project and a food for work component to top up village/community food deficits until, atleast, subsistence levels of production is reached. Landuse management and water projects take the major part of the capital and recurrent inputs

5. Achievements: Intensive work in all the components of the project show encouraging results both in the natural resources development and human resources development sectors. The rapid absorption of the ideals and technical details of the project has enabled to create 12 surplus producing communities out of 56 in less than two years. It is difficult to evaluate the full impact of the project now as we will yet have to see the sustainability of the system and if the change was a result of the intervention.

VII. Constraints in the fight against desertification:

1. The lack of awareness at all levels for conservation and development activities is the major cause for the deteriorating agroecosystem. The Ethiopian society has been a 'Top down' society since history started recording it. This fact remains at large even today. The participation of people in monitoring and evaluating development has been scanty. Land tenure has also contributed to the deterioration, as all land was owned by absentee land lords until recently, and tenants never cared for soil conservation. The present land tenure by PAs has yet to be evaluated.
2. Agricultural production and marketing policies had had significant impact in production. A recent improvement in this policy is expected to boost production. Lack of resources for rural development demanding foreign exchange have significantly contributed to structural food deficits as much needed water projects in dry areas imply prohibitive costs.
3. The community forest policy of the country stops short of establishing the mechanism for tree tenure. This has led the rural peasantry to believe that tree planting is not only an added labour, but loss of lands, as planted areas are closed for local people. A study has been commissioned to come up with new policy recently.
4. The stagnation of the manufacturing sector due to shortage of foreign exchange has also increased the pressure in the agriculture sector in terms of labour, triggering shortage of commodities at the same time. As a result over 90% of the population is still employed in agriculture.
5. Civil strife in the northern parts of the country has also aggravated the situation, as people cannot produce and much needed scarce resources are spent on financing it.