Duryog Nivaran Perspective

Dominant Perspective	Duryog Nivaran Perspective
Disasters/conflicts viewed as an evnt.	Disasters/conflict are part and parcel of the normal process of development.
Linkages with conditions in society during normal times less analysed.	Analyzing linkages with society during normal times is fundamental for understanding disasters/conflicts.
Technical/Law and Order solutions dominate.	Emphasis on solutions that change relationship/structures in society. The objective is to reduce people's Vulnerability and strengthen their Capacity.
Centralised institutions dominate the intervention strategies. Less participation of people.	Participation of people paramount in intervention strategies.
Implementing agencies less accountable and their processes less transparent to people.	Ensuring accountability and transparency emphasized.
Interventions are made after the event occurs.	Mitigation of disasters/conflict the fundamental aim.
The objective of intervention is to return to situation before the event.	Disasters/conflicts viewed as opportunities for social transformation.

Thanks are due to EMAD of DFID.

Food Security Strategies Under drought Hazard:

A Case Study of Milamperumawa

The scale and intensity of food scarcity have been exacerbated in a number of developing countries by disasters caused by nature and by people. Drought is one of the premier causes of the food insecurity among many other disasters. According to Jhon. S (1995) drough was the primary cause of African food insecurity in the early 1970's and the mid 1980s'. What does drought mean? Meterologically drought is the prolonged deficiency of rainfall, specially if any region receives less than 75% of the normal rainfall during a particular cultivation season then that region is said to be affected by drought during the period. (Amaradasa 1997). However, there are many other definitions used in analyzing the drought. Villagers in drought prone areas of Sri Lanka have given a descriptive definition which defines the drought period as and when the reservoirs are depleted and the crops are threatened by lack of water.

Meteorological Department of Sri Lanka has identified Anuradhapura district as high probability area for drought. After analyzing monthly rainfall for 50 years they have shown that Anuradhapura district has a 30% drought probability in Yala season (April to August) and 20% drought probability in Maha season (September to March) (Dharmaratne and Kariyawasam 1990. Farmers in Anuradhapura district are more vulnerable to the drought hazrad when they cultivate under minor irrigation schemes (less than 200 ac.).

Therefore the study is undertaken in Milamperumawa village where farmers cultivate under minor irrigation scheme called Milamperumawa wewa.

The drought situation incurs heavy costs to the affected communities. However, those costs are extremely difficult to quantify and differentiate. nevertheless food insecurity is the most significant visible cost of a drought. What does food insecurity mean ? It is generally defined as lack of access to adequate food for a country or a particular

group of people (FAO). Food insecurity is also discussed at two different levels: (a) chronic food insecurity which is commonly known as continuous inadequate diet caused by the inability to acquire food, and (b) transitory food insecurity which is temporary decline in access to enough food. The drought increases the leavel of chronic food insecurity among the poorest strata of the affected areas and also creates transitory food insecurity among "haves" of the area. When the particular community is already in extereme poverty conditions, threat of chronic food insecurity will be increased due to the prolonging drought. Therefore this study attempts to understand how farmers in Milamperumawa village secure their food under the recent drought and what startegies they have adopted to mitigate the impact.

Settings of Milamperumawa

Milamperumawa village is in Anuradhapura district of North Central Province of Sri lanka. Government administration mechanism links with the village through Milamperumawa Grama Sevaka (Village Service man). His administration division covers three hamlets namely: Milamperumawa, Kanjanam Kulama, and Karukkan Kulama. Milamperumawa Grama Sewaka (GS) Division comes under Kekirawa Divisional Secretariat of the Anuradhapura district.

Milamperumawa village is one of the most resource poor villagers in the Anuradhapura district. The village has exteme climatic conditions. The average annual rainfall is less than 1000 mm, with the average temperature of 28.1° celsius. The soils are mainly reddish brown earth and low humic clay soil. The special feature of the landscaping is flat terrain. On an average village has dry climatic condition and it comes under DL, (dry land) agro-climatic region.

The major occupation of the village community is agriculture where cultivation is completely based on minor irrigation. Milamperumawa has a small irrigation tank which has 16 ac. feet of water capacity. However, this tank does not have a catchment, hence the water flow of the tank is very limited even under favorable rainfall.

Land Use Pattern :

Through the major occupation of the villagers is agriculture, the Milamperumawa has only 18 acres of paddy land and 22 acres of highland. Paddy is cultivated only during the Maha season (September to March) which is the wet season of the year. The single cropping system has been practiced in the village since times immemorial due to the water scaricity.

In the high lands villagers have planted about 100 coconut plants, 25 mango plants and about 20 jack fruit plants as perennial crops, whil the rest of the areas is covered with seasonal food crops including gingely (sesame), Kurakkan, vegetables, and hot chilies.

Livelihood of villagers

Forty six families live in Milamperumawa village with a total population of 151. Women are more than 55% of the total population, while 35% of the total population is less than 15 years old.

Main occupations are agriculture and agricultural labour. Due to the land fragmentation with population increase over time, average land holding size of the village is very small. According to the elderly villagers, cultivation area has not been expanded with the population increase due to limitation of water.

Due to the limitations in alternative sources of income, villagers migrated to Kalawewa which is a major irrigation scheme under Mahaweli irrigation project as agricultural labour during the cultivation and harvesting seasons. In Kalawewa, farmers cultivate paddy during Maha season and mostly chilies during Yala season. Since chilly is a very high labour demanding crop, villagers in Milamperumawa can work in chilly farms in Kalawewa during the Yala season.

During the Maha season village farmers cultivate paddy under Milamperumawa and surrounding other minor tanks such as Kanjanamukulama, Kottalabaddha, and Karukkankulama. Average yield per acre is very low (3 metric tons per hectare). Among the other employments brick making industry is popular during dry season, where bricks are made on the bed of the reservoir. Metal crushing and cutting of fire wood are also reported to provide work.

Average family income is very low for the majority of villagers. There were 34 families whose family income was less than Rs. 400 per month. They live on government social security benefit scheme called "Samrudhi programme". This was introduced by the ruling government to provide financial assistance to the most vulnerable group of the country. Except for these two programs there were no other external agency involvement in village development.

Village infrastructure facilities are in a very poor condition. Villagers have to walk about one km. to get the bus service to go to the nearest town centre. There is no public transport service connected to the village. Only six houses have received the main grid electricity. Nearest schools are Vijithapura Maha Vidyalaya which has advance level education facilities and Mangalapura primary school. These schools are more than 2 km. away from the village. For medical advice villagers have to go to Kalawewa hospital or to Kekirawa hospital: they are more than five km. away from the Milamperumawa village. Domestic water supply is through three private wells, one public well, and a tube well in the village. However, during the drought seasons most of these sources are dry very early on.

The traditional system called "Gamgoda rata" system still remains in the village. This system is characterized by several houses with one court yard among some of the main features. All these families have very closely related social life as most of the families are interconnected or are relatives.

Impact of Structural Adjustment Policy on Milamperumawa Farmers

With the introduction of structural adjustment policy, government of Sri Lanka has removed most of the direct subsidies including food, ration, and fertilizer subsidy (reintroduced in 1994) in agriculture. On the other hand increasing cost of living with new policy regime has increased up the wage rates in agricultural sector. For example nominal wage rates has increased by more than 400% over the last decade in Milamperumawa area. As a result, cost of production of paddy and other field crops have increased tremendously decaying the profit margins of these crops.

The other side of the picture is the low prices of agricultural commodities in the domestic market due to the liberalization of imports. For example due to the importation of large quantities of chilies from India, chilly price had dropped to Rs. 60 per kg from Rs. 110 per kg during the last season. The result was the deterioration of profit margins of the local producer.

Therfore, farmers do not want to cultivate chilies this year. Thus agricultural labour demand for the Kalawewa region had dropped significantly in this season. Hence, landless labourers in Milamperumawa were in difficulty to find employment which causes an increasing level of absolute poverty in the village.

Impact of the recent drought on Milamperumawa village.

Average rainfall in the area had decreased by more than 75% during the 1995 to 1996 Maha season. Hence, Milamperumawa irrigarion tank did not receive sufficient water during the period. The irrigation tank has dried up, all the private and public wells in the village had also been dried up. The domestic water supply in the area were in jeopardy. Villagers have dug wells on the bed of the tank for drinking water. For the bathing villagers traveled to Kalawewa reservoir which is 5 km. away from the village. All the seasonal crops were damaged. Since the impact of the drought had spread to the surrounding villages, finding labour in those areas was difficult. The prolonged drought situation has destroyed all grazing land around the Milamperumawa village, as a result of that cattle go astray for grazing. Due to this reason many of the cattle were lost during that period. Fish in the tank became extinct due to the sever drought. Hence the impact of the drought will last for many years.

On the other hand many epidemics had spread in the Milamperumawa village during the drought period. Malaria, Diarrhiea, Hepatitis and worm diseases were common among many others. Since incomes were very low during the period village did not have sufficient financial resources to get medicine when the goverment hospital did not have free or subsidised drugs.

Food Security under Severe Drought

Drought is genrally primary source of food insecurity among peasant agricultural communities in Sri Lanka. The farmers in minor irrigation schemes like Milamperumawa are the most vulnerable to the droughts.

According to John (1995) among the socio economic groups most at risk of food insecurity in droughts are the landless, small scale, and single crop farmers. As discussed above, majority of farmers in Milaperumawa has less than one acre of irrigated lands, and some of them are landless agricultural labourers. As in any other minor irrigation scheme Milamperumawa farmers cultivate only for maha season, since tank water is not sufficient for double cropping. Since the farmers who cultivate under Milamperumawa tank have very high risk of water throughout the year farmers who cultivate under Milamperumawa tank have very high risk of not having water throughout the cultivation season. They do not apply the full input package. This has been empirically proved in many other locations in Sri Lanka. Therefore, farmers in minor irrigation schemes can not produce a significant marketable surplus in general. For example, Milamperumawa farmers had very low output, the highest yield recorded was only 3 metric tons of paddy per hectare. That was less than 50% of the potential yield of paddy in Anuradhapura district. Since the marketable surplus of agricultire in Milamperumawa is very low, majority of village lives on wage labour. Therefore the impact of the recent drought was the increasing chronic food insecutiry among the Milamperumawa village.

As discussed above, structural adjustment policies further complicated the lives of the Milampermawa village. Agricultural surpluses generated in the village were further reduced by the very high cost of production created due to the new policies. Labour demand in agriculture were undermined by the low price imports. Thus the landless labourers in Milamperumawa could not find work in Kalawewa region. The food security among the village were in jeopardy even in a normal year. Hence, the frequently occurring droughts cause the chronic food insecurity among the villagers.

Another important issue is the unpredictable nature of the weather. It has been admitted even by the agro-meteorologist that the accuracy of weather prediction is relatively at a low level (Ayyar undated). This unpredictable nature of the weather causes heavy losses specially to the Milamperumawa farmers who cultivate under very high risk. These farmers start cultivation activities with the early rains expecting adequate rains in future. However, if the rains are not experienced adequately, all the inputs used in cultivation are lost. That was experienced even in 1996 to 1997 Maha season in the village. Thus the family food security in subsequent period lost grain reserves and money because they used their grain reserves as seeds, and invested the money to purchase other inputs like fertilizer and agrochemicals. Therefore, the unpredictable nature of the drought created extra risk in food security of the Milamperumawa farm families.

Food Security Strategies adopted by Milaperumawa Villagers

Even the poorest farmers in most backward communities do everything in their power to make adjustments to cope drought hazard (Tennakoon 1986). Hence, there is a need to evaluate the course of action available to farmers to cope with food insecurity in drought period in terms of their location, feasibility, and cost involved.

Villagers in Milamperumawa had adopted both agriculture and non agricultural adjustment mechanisms to secure their family food during the drought season. In general the agricultural adjustment mechanisms were pre-sowing and after-sowing cultivation adjustments.

Agricultural Adjustment Mechanisum adopted by Milamperumawa Farmers

Milamperumawa farmers used experience to predict the drought. Accoding to them if limited rains are experienced very early in the season a drought can be expected in subsequent period. The other method of predicting impending drought is the tank water evaporation intensity. The village headmen called "Vidane" observes the measurement daily.

and if the water level goes down very fast, then he informs other villagers of the incoming drought and starts releasing water on a rotational basis for the existing crop. Elderly villagers say that this system was practiced in the village since time immemorial. In the past they used a more scientific method to get the measurement of ecaporation. Under that system they fixed a measuring pole in the middle of the tank and observed the water level daily. However the present water managment system, farmers could manage to reduce the crop damage in 1996 to 1997 maha season.

When the Milamperumawa farmers realize that there is insufficient water in the tank, they cultivated short duration paddy varieties and other crops with the early rains. In the same Maha season gingely was cultivated in higher lands.

This adjustment mechanism helped to decrease the level of risk in food security among the Milamperumawa villagers during last droughts.

Non Agricultural Adjustment Mechanisms

Non agricultural adjustment measures which were used by Milamperumawa villagers could be observed in many ways. They were somewhat similar to Berr's et.al (1971) observation in Tanzania. They were (a) modify the harzad effect, (b) suffering and sharing strategy, and (c) attack the basic causes of the drought.

Modify the Hazard Effect

There were many strategies adopted by Milamperumawa villagers to modify the impact of drought on food security.

(a) Dug wells in tank bed

Since the domestic water supply was a serious problem during the drought period, villagers used to dig wells in the tank bed and used them for the domistec water need. During the recent drought they used tube well for the drinking water and the wells in tank bed for bathing and washing purposes.

(b) Selling and pawning their assets

During the 1995 to1996 Maha drought many villagers sold their cattle for meat to purchase basic grocery items for the family. Specially rice and wheat flour, kerosine oil, mysor dhal and dried fish were the major grocery items. Two families reported that they had pawned jeweleries of the housewives to get medicines for their children.

(c) Migration

Ten familiers were reported that they have left the village permanently and settled down near the main road which is several kilometers away from the village to strat roadside stall to sell bush fruits and vegetables available in the drought to the pilgrims who go to the Anuradhapura temple. They have become street vendors.

Some of the villagers migrated to Colombo or other major cities as labourers in the construction industry. However, very few villagers got this opportunity, because most of them did not have the social or economic contacts to find work in the industry.

(d) Alternative income sources

Few young villagers started bricks making industry on the tank bed, which became a controversial subject in the village. Some villagers believe when the rains come, top soil will erode fast and silt the tank soon due to this industry. Anyhow, these groups of people manage to continue the activity over many months. On the other hand there were two villagers who started selling illegal liquor in the village during this season. According to them that was the only source of income available to them during that period. However, they have discontinued selling liquor after rains were experienced.

(e) Asking for food relief

Government of Sri Lanka had launched a special drought relief program through Department of Social Services for the Anuradhapura district. This program operated in the month of February, March and August of

1996. More than seven million rupees were distributed among farmers in Kekirawa divisional Secretarial area. In the Milamperumawa village 38 families received the drought relief for a three months period. The payments were as follows:

Payment Table

Numebr of members in a family	Rs. per day
1	12
2	22
3	30
4	36
5 and above	45

Source: G.S. Milamerumawa.

The payments were made for 14 days per month. According to the Deparment of Social Services that was not only an adhoc short term relief program to the affected families, it was also a disaster mitigation rehabilitation program. All the beneficairies of that relief program had to work on a voluntary basis for 14 days per month in village development activities like cleaning bunds, roads, and other common properties. Howerver, the main issue rainsed regarding the relief is whether the whole objective of the program is to rehabilitate the affected comminity or not. However, it was not very clear to many.

"Outsiders' view of the poor as improvident, lazy, fatalistic, stupid and responsible for their poverty, are reassuring but wrong. Case studies show that poor rural people are tough hard-working, ingenious and resilient."

Anthony Bect. (1991)

Anthony found that poor rual people were resistant to the impact of natural hazards where they had their own coping strategeis. Hence outside intervention had very little impact on affected communities. Milaperumawa situation was very similar to Anthony's conclusion. Milamerumawa villagers recived the drought reliefs many months after the rain came. Though the surface objective of that relief program was to enhance the affected community in droght prone areas, the hidden objective was different. The politicians of the region wanted to use this opportunity to make themselves popular among the villagers. Hance, distribution of drought relief were rather political campaing than a drought mitigation program at the moment.

Adujusment in the form of sharing and suffering

The resource managers often think that resource users have a very narrow range of adjustments mechanism to drought by way of sharing and suffering (Tennakoon 1986). However, contrary to their expectations it has been found that resouce users (villagers) in Milamperumawa had used many adjusment strategies in the form of sharing and suffering to secure their family food situation during the 1995 to 1996 drought. Some of them are as follows:

a) Use of Previous Reserves

Paddy and many other grains were stored using traditional storage systems in Milamperumawa village for many years. Most significant systems were Autwa systems and the Bissa system. The "Atuwa" is a storage systems made by using special woods which are pest resistant. This Atuwa has several compartments to store different types of grains. Since Milamerumawa farmers cultivate only in Maha season they use this Atuwa to store their surpluses for the consumtion in dry season. When the drought came in last year, owners of Atuwa manage the grain reserves thriftily over the drought.

The "Bissa" systme is large oval grainary made by cane and clay (Singhala vocabulary 1991). Except for the material used to made the Bissa and the shape of it, Bissa has the similar qualities as Atuwa. According to the villagers these storage systems are free from th pest. There are two "Bissa" and one "Attuwa" in Milamerumawa village.

The families who have these storage facilities had used their grain reserves thriftily to secure the family food during the drought season. Some of the villagers who do not have the special storage systmes borrowed grains from the Atuwa and Bissa owners.

There were few villagers who used their seed paddy reserves for the consumtion during the 1995 to 1996 drought season.

In addition to the grain reserves almost all the villagers used their cash savings to maintain the family food security during the drought.

b) Food gathering

As a food security strategy villagers in Milamerumawa had a practice of collecting the bush food from other bush produce for consumption and selling during the drought season. Some of them even had one meal (dinner) per day only.

The low cost food items available in the area were lotus roots, other locally avialable tubers, yams of various types, leaves, and wheat flour base foods.

In addition to those methods of food gathering in Milamerumawa village families had withdrawn children from schools and sent them for employment in developed town centers as a food security strategy and cost reduction mechanism.

Attack the basic causes of the hazard

There were at least three religious cultural ceremonies connect with agriculture which were intended to appease the super natural powers to aviod the occurrence of drought and acquring prosperity for the family in Milamperumawa. They were: (a) vowing to hold ceremonial alms-giving to the temples and watering to "Bo" (ficus) tree for the blessing of the triple gems of the Lord Budda to get adequate rainfall and successful harvest, (b) ceremonial offering to the guardian god "Lord Pulleyar". (After every harvest farmers boil Milk, make-rice to offer the Lord Pulleyar wishing the blessing for the prosperous new season.) and (c) Praying to the God Kataragma for blessing of prosperous and healthy life for all the family members. Those ceremonies were practiced by the village in Milamperumawa since time immemorial according to Tennakoon (1986). However, participation of younger gereration in these religious cultural activities were relatively low.

Conclusion

1. Drought is one of the major reasons for food insecurity and the poverty in Milamperumawa village. Since the existing irrigation system is not enough to provide adequate water to the agricultural crops even in good weather, this village is highly vulnerable to drought.

2. However, agriculture is the main occupation of the villagers. Low output of agriculture and high resistance of villagers were main characteristics.

3. Hardly any infrastructural development programs covered Milamperumawa village. On the other hand except for the seasonal employment opportunities generated in Kalawewa region, no visible positive impact of the government's major development program were obsereved on the villagers. However, the structural adjustment policies had badly affected the living standerds of village people in general and agricultural production of the village in particular.

4. For the food security in a drought period, villagers have their own adjustment mechanism. External intervention has not been very effective in the mitigation of the drought hazards and rehabilitation of affected communities. Execept for the government intervention in social welfare through "Samrudhi" and drought relief programmes, involvement of external agencies are very limited.

5. Howver, very high requirement of deduction of reduction of vulnerablility and strengthening the capacity of villagers in Milamperumawa to mitigate the food insecurity among them in drought can not be ruled out. Even though the goverment has launched disaster mitigation and rehabilitaion activities as a major element of its assistance programmes, villagers had not taken them as such. The major reasons were inconsistency of the existing assistance programmes and long delays in implementing them due to the limitaions of budget allocation. Therefore, educational and rehabilitation programmes are essential to cope the chronic food insecurity problem of drought in a dry zone villa in Sri Lanka.

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for more information or copies of the publication write to :

(1) Ms. Madhavi Malalgoda Ariyabandu
Project Manager
Intermediate Technology
Development Group (ITDG),
5, Lionel Edirisinghe Mawatha, Kiruliapone, Colombo 5, Sri Lanka.
Tel : (00941)-852149
Fax : (00941)-856188

(2) Disaster Mitigation Institute
Sakar V, Suite 411, Fourth Floor, Behind Natraj Theater, Ahmedabad-380 009.
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Reducing vulnerability of a victim or at risk community is now high on the agenda of disaster mitigation efforts, local or regional or international. However, case studies that document local experience are rare, especially from South Asia, a region attracting a widest range of disasters and housing a largest number of victim population in the world. South Asian Series on Vulnerabillity Reduction is jointly launched by Disaster Mitigation Institute (DMI) and Duryog Nivaran (DN) to fill this gap. The focus is on publishing fresh, local and exploratory experience from South Asia. Mihir R. Bhatt of Disaster Mitigation Institute and John Twigg of Intermediate Technology Development Group (ITDG) (UK) are the series editors.

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