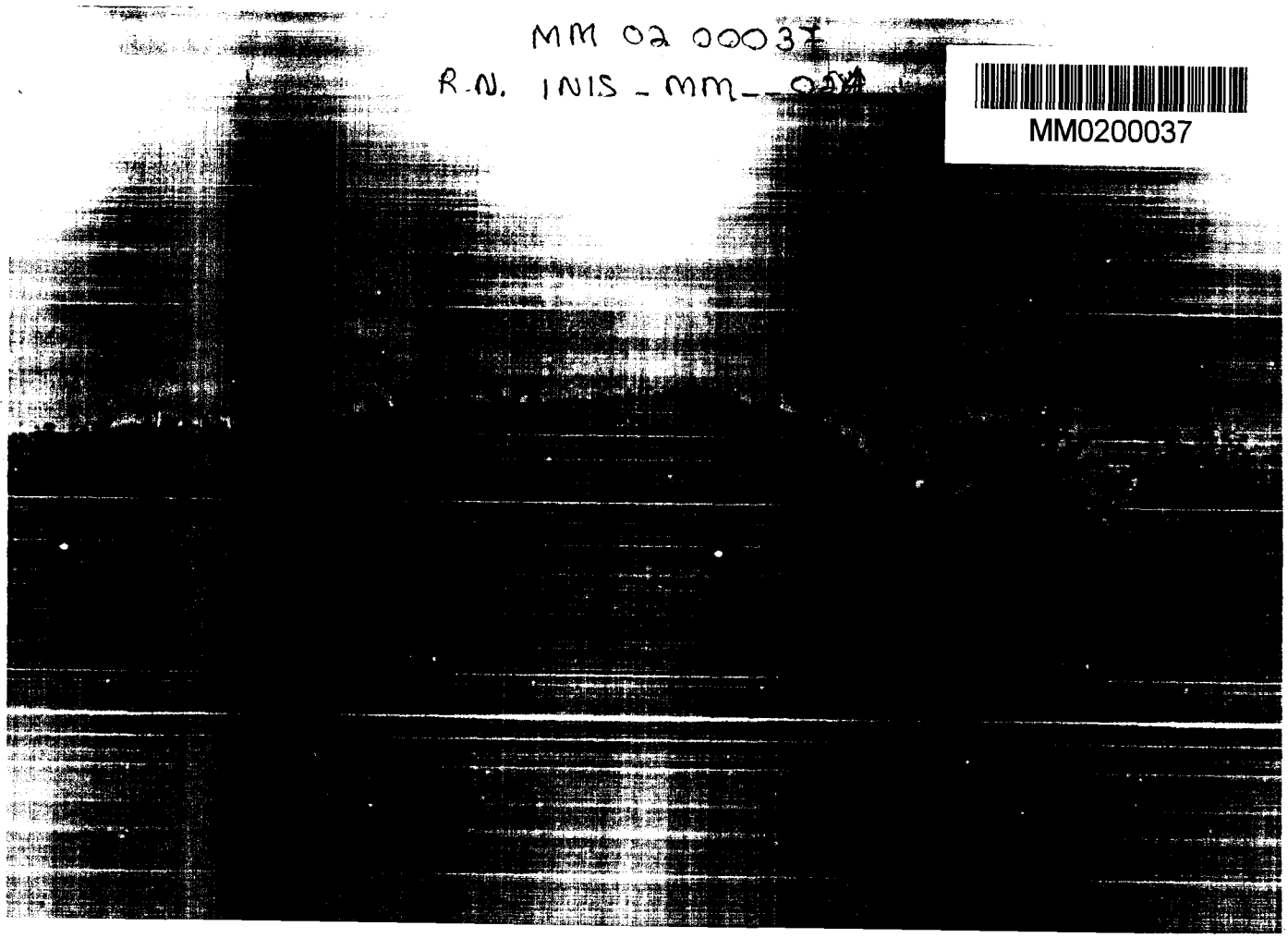


Combat desertification, arrest deforestation

By
Tin Latt & Soe Win Hlaing

INTRODUCTION

Land degradation and desertification are the main environmental problems particularly in the Dry Zone Area of central part of Myanmar. Desertification is the conversion of productive fertile lands into worthless desert-like condition. The desertification is caused directly by four main types of poor landuse: deforestation, overcultivation, overgrazing and poor irrigation practices. Deforestation is the first step along the road to desertification. Deforestation both degrades the vegetation cover and makes the soil more vulnerable to erosion by subsequent overcultivation or overgrazing. Forestry can play a major role in helping to combat every type of land degradation including deforestation / desertification. Trees play a crucial protective role in the dry lands because they prevent the soil from being carried away by wind and water.

Myanmar is one of the countries which are identified as countries affected by desertification. Due to the increase in population, widespread deforestation and desert-like formation has become a common feature in the Dry Zone of Central Myanmar. The Forest Department (F.D) followed by Dry Zone Greening Department (DZGD) under the guidance of the Ministry of Forestry, has initiated a number of approaches towards combating desertification and arresting deforestation.

This artlcle will present major progress on the actions of FD and DZGD to arrest deforestation and to combat desertification in the Dry Zone of Central Myanmar. Finally some recommendations are prioritized for future considerations.

Officials of DZGD with the cooperation of local people seek means to develop forest plantations.

BACKGROUND

Description of the Dry Zone Areas of Central Myanmar

Myanmar is recognized as a country affected by desertification and drought. About 10 % of the total area of the country is identified as the Dry Zone, where natural vegetation is degraded and extensive occurrence of denuded land is not uncommon.

The Dry Zone in Myanmar has one-third of the total population of the country where 11.3 million people or 81% of the population are rural. It is one the most important agricultural areas in the country, producing the major cash crops, as well as, supporting half the national cattle population. Agricultural land productivity is adversely affected by population pressure, cropping on inherently poor and fragile soils, low input use and environmental deterioration due to deforestation for fuelwood and wood supplies.

Deforestation, Land Degradation and Desertification

Forest resources have been and are being degraded and depleted world-wide as a result of increasing human needs, agricultural expansion and environmentally harmful mismanagement. Myanmar is one of a few countries where half of the total land area is covered with forest stands. Although forest cover is high, the distributional pattern is uneven with the Central Dry zone almost bare of forest. The assessment of the change of forest conducted in 1990 revealed that the actual forest area had decreased at an annual rate of 220,000 ha or 0.64% of the actual forested area during a period of 14 years from 1975 to 1989.

The decline in the extent of forest cover area particular in the Dry Zone of Central Myanmar is attributable to excessive cutting of fuelwood due to population growth, inadequate supply and high cost of non-wood energy sources, inefficient utilization of woodfuel.

Presently, there is only 19.7% of area under closed forest which is too low to meet the environmental as well as socioeconomic needs of the dry zone. Deforestation in the dry zone area is at an alarming rate. According to FD data, annual deforestation rate in Magway Division is about 4.07%, 1.48% in Mandalay Division and 0.68% in Sagaing Division.

Due to deforestation, soil degradation is now taking place particularly in the dry zone of central Myanmar. Productivity of agricultural land declines as a result of soil degradation. Therefore, the development activities in the dry zone area should include a forestry component. This component should not be seen separately but must be integrated with agriculture and livestock breeding to optimize land use.

Socioeconomic Condition

In Myanmar the foremost fuelwood deficit areas are located in the Central Dry Zone. This situation will worsen at the end of the present decade. Fuelwood consumption in the dry zone in the year 2000 is predicted to reach beyond its capacity and land degradation will cause widespread environmental deterioration. Fuelwood is used almost exclusively for household cooking in the rural areas, supplemented with a limited amount of agricultural residues.

A major human concern is the acute shortage of fuelwood, a basic and essential commodity compounded by environmental deterioration in critical areas in the central arid zone. The Dry Zone faced a sharp decline in fuelwood supply, underground water supply, healthy farm environment, and stagnating agricultural production over the last decade. Dry season water resource is declining due to the decrease in ground water recharge and increased surface runoff from the degraded lands. Uncontrolled water run-off leads to low moisture retention in the subsoil and soil erosion. Devoid of tree cover and shelter-belts, croplands are exposed to desiccating southerly winds during the summer resulting in the loss of top soil. The acute imbalance between forage/fodder supply on the one hand and livestock population on other also exerts strong environmental pressures.

THE ROLE OF FORESTRY TO COMBAT DESERTIFICATION AND TO ARREST DEFORESTATION

The Role of Forestry

Forestry can play a major role in helping to combat every type of soil degradation including desertification.

First of all in the dry zone where the linkage between forestry and food security is most evident, wood plants help maintain the soil and water base that makes agricultural production possible through protective f[illegible] and windbreaks, and particularly in the case

trogen-fixing trees that help [illegible] fertility.

With regard to another aspect [illegible] contribution to food production, forest species can [illegible] stock production through silvo-pastoral systems [illegible] increasing production from the herbaceous plant layer, protecting livestock and accumulating fodder and food woody plants.

Forest vegetation is also suitable for production of fuel wood, vegetable, charcol and other wood products such as fencing posts and other elements for agricultural constructions. In the dry zones, non-wood forest production is also important to produce mushrooms, fruits, barks, honey, roots or leaves.

Another important aspect is job-creation based on small-scale industrialization and marketing of commodities based on wild life or wild plant use, and the development of tourism-related services by showing visitors the beauty of natural spaces and the types of flora and fauna found there.

The introduction of forestry as part of a new sustainable development paradigm for the dry zones is an urgent task and also a difficult one to implement.

National Forest Policy

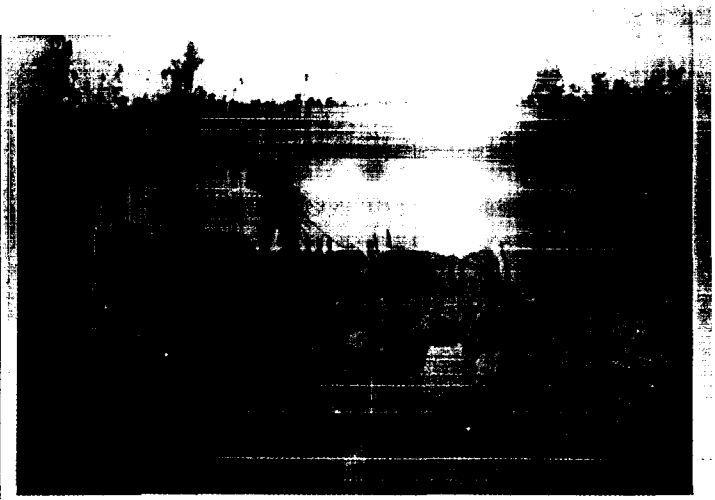
The Government of Myanmar promulgated the new National Forest Policy in 1995. It has identified six imperatives which the Government must give the highest priority in order to achieve broader national goals and objectives. They are:

i. Protection of soil, water, wild life, biodiversity and environment;
ii. Sustainability of forest resources to ensure perpetual supply of both tangible and intangible benefits accrued from the forests for the present and future generations;
iii. Basic needs of the people for fuel, shelter, food and recreation;
iv. Efficiency to harness, in the socio-environmentally friendly manner, the full economic potential of the forest resources;
v. Participation of the people in the conservation and utilization of the forests;
vi. Public awareness on the vital role of the forests for the well-being and socioeconomic development of the nation.

Measures Undertaken by the Government

As early as 1954, a project was initiated to raise local-supply of fuelwood plantations in the Arid Zone. By 1975. nearly 1,215 acres of demonstration woodlots had been planted and over 8,000 acres of plantations were established by villagers themselves.

Since 1960, the Forest Department has established 766,000 acres of plantations, of which 27% are designated for fuelwood supply all over the country. However, due to poor management, lack of people's participation and protection, most of these plantations were overcut and depleted.



A man-made water body in Minbu District.

The most important element to be borne in mind is that the full incorporation of forestry into combating desertification is not a technical problem. It is essentially a political and social issue.

Apart from regular plantation establishment of about 80,000 acres, the Forest Department has been distributing as many as 11 million seedlings free of charge to local communities and governmental organizations in an attempt to raise woodlots and for road-side planting annually.

As Myanmar is a signatory to the Combat Des[illegible] Convention (CCD), combating desertification act[illegible] been undertaken effectively and the Government has launched a national project known as " The Greening Project for the Nine Critical Districts of the Dry Zone of Central Myanmar". The Ministry of Forestry, with the support of the Government, is authorized to undertake this project. And it will now be reviewed to harmonize with the requirements of CCD. Currently, the Ministry of Forestry has established a new department to take the task of the environmental rehabilitation of the arid zone of the Central Myanmar.

FORMATION OF DRY ZONE GREENING DEPARTMENT

In order to focus entirely on and speed up environmental restoration processes, the Chairman of the State Peace and Development Council instructed MOF to form a sepa-

rate department in addition to the Forest Department (FD) which was originally responsible for all forestry activities in the country. As a result, the Dry Zone Greening Department (DZGD) was created on 22 July 1997.

Under DZGD the administrative area was expanded from ten districts to 13 districts covering 57 townships extending over 21.6 million areas (about 8.7 mil.ha).

The total area of 21,557,459 acres (8,724,184 ha) under DZGD is distributed by land use categories as shown in Table A.

Table A. Land use categories in the administrative area of DZGD.

Forest Category	Area	% of Total Area
Closed forests	4,250,596 acres (10,503,223 ha)	19.7 %
Degraded forests	1,815,842 acres (734,861 ha)	8.4 %
Forests affected by S/C*	2,804,174 acres (1,134,834 ha)	13.0 %
Agriculture	11,962,396 acres (4,841,115 ha)	55.5 %
Others	422,273 acres (170,892 ha)	2.0 %
Water	302,178 acres (122,290 ha)	1,4 %
Total	21,557,459 acres (8,724,184 ha)	100 %

* *Shifting Cultivation*

Main Tasks of DZGD

The main tasks of the DZGD have been set as follows:

(i) Establishment of forest plantations;
(ii) Protection and rehabilitation of existing degraded natural forests;
(iii) Development of woodfuel substitutes; and
(iv) Development of water resources.

Establishment of forest plantations;

Forest plantations are established on deforested areas to restore forest cover and rehabilitate the environment.

Up to 1997-98, a total of 72,210 acres (29,233 ha) have been planted under the Nine-District Greening Project.

In 1998-99, DZGD planted a total of 35,287 acres (14,280 ha) comprising 18,280 acres (7,398 ha) of village forests, 8,920 acres (3,610 ha) of watershed plantations, 2,900 acres (1,174 ha) to green mountains, 137 acres (55 ha) for research and 5,050 acres (2,044 ha) of woodlots.

In 1999-2000 and 2000-2001, about 35,000 acres (14,164 ha) of deforsted land will be planted annually.

It has been scheduled to plant 800,000 acres (324,000 ha) during the 30-year period from 2001-02 to 2030-31 of the Dry Zone Master Plan. Moreover, 250,000 acres (101,200 ha) are to be replanted as replacement in areas of old plantations, which would have lost their coppicing power. Therefore, the total plantation area would be 1,050,000 acres (425,200 ha) over the 30 years of the Master Plan.

Protection and Rehabilitation of the Remnant Natural Forests

About 1.82 million acres (0.73 mil.ha) of degraded forests and about 2.80 million acres (1.31 mil.ha) of forest affected by shifting cultivation have been identified as existing in the Dry Zone.

Protection against human, cattle and fire has been found to be very effective in improving degraded forests. Degraded forests considered to be capable of improving naturally are, therefore, identified, demarcated and protected. Constant patrols are also being made by forest guards permanently stationed along the borders. Silvicultural treatments such as weeding, cleaning, climber cutting, thinning and coppicing are provided, where necessary, in order to accelerate natural growth while fire lines and inspection paths are constructed for efficient fire prevention.

From 1997-98 to 1998-99, a total of about 190,000 acres (76,892 ha) of degraded forests have been put under intensive conservation programme.

It has been scheduled to further rehabilitate 420,000 acres (169,972 ha) of degraded and taungya-infested forests in the last two years of the first 4-year plan,i.e. in 1999-2000 and 2000-2001.

In addition, approximately 1.8 million acres of degraded forests have been envisaged for conversion to closed forests by natural means during the 30 years of the Master plan.

The area closure involves a protection system to improve land facing degraded conditions, limited vegetation, low fertility and severe erosion through natural vegetation. No livestock is allowed to graze and no human interference is tolerated for 3-5 years. The utilization of these areas has to be planned and initiated as soon as a satisfactory state of recovery has been reached.

Fuelwood Substitution

Fuelwood consumption is one of the main causes of deforestation, and excessive cutting of trees for firewood before they are fully grown, leads to the loss of the potential growth of the forest stands. In most developing nations more than 80% of wood extracted are being used for fuel. Therefore, FD has launched the fuelwood substitution programme to reduce pressure on the utilization of wood for fuel. The DZGD since its creation in 1997 has distributed some 100,000 efficient cooking stoves and 9.2 million briquettes (7.4 million kg), and the use of 45,000 metric tons of agricultural residues by villagers in the dry zone was also recorded over the same period. Distribution of efficient cooking stoves and briquettes and the use of agricultural residues in place of fuelwood were found to have surpassed the targets adopted by DZGD for the years 1997-98 and 1998-99.

The DZGD will carry out its energy sources according to the following.

- To reduce the consumption of wood through rational utilization of alternative energy and conservation of other energy sources.
- Development of alternative energy, particularly solar energy, windmill, hydropower, biomass and bricketing technologies.
- Development of energy saving equipment.
- Protection and utilization of renewable energy.

According to the FD and the DZGD past experiences, with limited funds available, the highest and the lowest considerations should be in the following order.

- To promote education on energy efficient fuelwood use.
- To increase the use of improved stoves.
- To increase setting up of fuelwood plantations.
- To increase the use of agricultural crop residues.
- To increase the use of honeycomb briquettes.

Development of water resources

Soil and water conservation is the essential and foremost important factors capable of reducing pressure on scarce land resources, increasing productivity, stimulating employment and preventing environmental degradation. They should be seen as the backbone of all efforts aiming to develop dry zone rural lands.

Availability of safe and adequate water for domestic use by villagers and their cattle and for forest nurseries is of prime importance in efforts to improve social conditions and to green the environment of the dry zone. The activities undertaken in developing water resources include construction of small dams and ponds, digging of artisan wells and pumping of water from rivers and creeks at the village level. DZGD has constructed about 200 small dams and ponds, and has dug more than 10 artisan wells during its two year's period of establishment. Concerning with water resource management, the DZGD activities are mainly based on the followings.

- Water saving technology in desertified areas.
- Collection of surface run-off.
- Watershed management for agriculture depending on rainfall.
- Anti-salinization for irrigation agriculture

Future Programmes for DZGD

The DZGD will carry out its programmes according to integrated plan which covers a period from 2001-2002 to 2030-2031. The intergrated plan for DZGD includes eleven volumes.

Future Tree Planting Strategies

Trees are being planted in a wide variety of ways. In early projects, the Forest Department established large-scale fuelwood plantations, usually on land in government forest reserves to counter the growing scarcity of fuelwood, the major source of energy in the dry lands.

It is logically impossible for the government plantations to be established on a scale large enough to ensure future fuelwood requirements in dry lands. Directed social forestry, community forestry and farm forestry, planting will continue and the benefit from such projects will give local people confidence in applying for self help schemes.

Community forestry projects are likely to become gradually more successful in the future, but only after social foresters become more skilled in their jobs. Projects are designed to take more into account the needs of local people.

Community Forestry Instructions: In December 1995, Forest Departemnt issued Community Forestry Instructions (COFI)

The salient points of COFI are:

i. Land is given freely to the users' group for the establishment of community forest for an initial period of 30 years.
ii. Users' group can exploit the forest products of the community forest in accordance with the prescriptions of the management plan.
iii. No tax shall be levied on the users' group or members of the users' group concerning the forest products exploited from the community forest;
iv. Surplus forest products can be sold to non-members of the village at reasonable prices. Taxation shall be exempted from the sale of these products;
v. The users' group can market the surplus forest products to areas outside the village.
vi. The users' group can utilize forest products of the community forest and surplus cash to develop business enterprises that produce high quality products.

Political support by government leaders is of vital importance for success in community forestry.

However, there might be some limitations even in community forestry development. The most successful kind of social forestry to be considered is farm forestry, i.e. the establishment of plantations on private farmlands for profits. Farm forestry is one of a number of agroforestry techniques which involve agriculture and forestry to make dry lands more productive and less vulnerable to degradation.

Limitations of Success

Conflict over land: Lack of available land is often a constraint on community forestry programmes.

Long period of production: Even if a social forestry project can yield a desirable mixture of products, the delay before harvesting them might be too long to satisfy the need of local people.

Wood versus Food: Professional foresters also find it difficult to conceive of any adequate models for intervention to suit needs of the people affected by desertification. Forestry tradition is geared to wood production and in some cases to provide habitats for game animals, places of recreation, and co[illegible]re a regular flow of water f[illegible]ds. But none of these purposes is rele[illegible]nt to the rural population in dry z[illegible]es, whose main concern is to produce food for their own subsistence and that of their household.

The rural population living in areas prone to desertification, generally view forestation as an activity imposed on them from outside in order to meet their food and fodder requirements. In other words, they do not perceive it as a solution, but as yet one more problem.

The most important element to be borne in mind is that the full incorporation of forestry into combating desertification is not a technical problem. It is essentially a political and social issue.

CONCLUSION

Myanmar has emphasised on environmental degradation. The basic fact that environmental degradation is the result of deforestation had been overlooked in the past. The multiple functions and roles of forests and the benefits accrued from them were neglected.

Myanmar strongly supported the adoption of Agenda 21, the Rio Declaration and the Forest Principle as early as 1992 at Rio. Our commitment was cemented by our ratification of the above agreements in 1994.

Myanmar has managed its environment and forest very much in line with the ideals set fourth in Agenda 21 and the Forest principles: having addressed problems of deforestation out of our own awareness. Although Myanmar does not face with severe environmental degradation problems, it has a dry zone in the central part of the country which was home to many successive kingdoms and dynasties that existed over a period of many centuries. As a result that area has the highest concentration of people even today. It cannot be denied that population pressure and hundreds of years of irresponsible human activities played a major part in bringing about the present situation. Thus, this problem cannot be solved in a short time. We need extra efforts in handling this problem on a long-term basis.

To stop desertification from spreading and to arrest deforestation, landuse pattern must be made environmentally sound, socially acceptable, fair and economically feasible. From the forest point of view one of the major tools to fight against desertification and deforestation is the planting of trees, other plants that retain water, maintain soil quality and micro climate. Forest plantation can also be harvested for such products, as fuel, timber, fodder and food.

Myanmar will carry out its commitments to reduce land degradation and combat desritification / deforestation as a fulfilment of the Forest principles and Agenda 21 as laid down by UNCED and as the obligations of environmental related Conventions viz: Biodiversity, Climate Change and Desertification, so that the local community in the dry zone may, in the shortest possible time, overcome, the chaotic state of affairs that we are facing.

In closing, we would like to quote some excerpts from Agenda 21.

"We can act to improve the living of those who are in need. We can better manage and protect the ecosystem and bring about a more prosperous future for us all. No nation can achieve this on its own. Together, we can in a global partnership for sustainable development."

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