

Area Closure

Best Practice in Sustainable Land Management (SLM)

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1 General

Name of the technology: Area Closure

2 Detailed description

2.1 Definition

Area closure of degraded land is a practice to be applied on degraded land that has lost its vegetative cover and that has extremely low soil fertility.

2.2 Summary description

2.2.1 Criteria for selection

Area closure was selected as a best practice technology based on the criteria stated in the SLM Best Practices Concept & Manual by the consultant (it needs to be confirmed by the Task Force).

Table 1: Criteria for the assessment of SLM best practices example

Criteria	Points	Comments
Acceptance	3	Fundamental, at least 2 points
Effectiveness	3	Fundamental at least 2 points
Efficiency	3	Fundamental
Relevancy	2	
Sustainability	2	Fundamental
Replicability	3	
Total point	16	
Average rate	2.66	

NB

- the criteria is at high degree (3)
- the criteria is at medium degree (2)
- the criteria is at low degree (1)

The cumulative average rate should be at least 2,0 points to qualify for best practice.

2.2.2 Problem addressed

Tremendous efforts have been done in the past to cover large area of the country with different planting materials. However, very limited seedlings have been established, as the result of lack of area closure to protect the planting seedling against human and animal interference. On the contrary, the problem of soil erosion is getting worse from time to time. In order to address problems related to soil erosion, deforestation, degradation, loss of biodiversity, reduction in land productivity, low productivity and decline of soil fertility in a sustainable way, it is important to consider area closure. The technology is applied in areas where land has lost its productive potentials. The goal of the technology is to rehabilitate degraded hillsides and regenerate lost vegetation.

2.2.3 Purpose and detailed description

Degraded land is closed from human and animal interferences for at least 3-5 years in order to enhance rehabilitation of the degraded land. SLM conservation measures such as

terracing, enrichment plantation and over sowing of grass are among the activities to be undertaken along with the area closure technology. These practices enhance growth of natural vegetation and enrich biodiversity. The area to be closed is first demarcated. The local communities are given awareness promotion on the methods and benefits of area enclosures. Development agents in collaboration with community leaders call a general community meeting and discuss the plan and its implementation on degraded land. The area to be closed from the interventions of human and livestock is fenced and guarded. Area closures are mainly of two types:

1. Area closures only closing the area from interferences of human interventions (leaving it to natural regeneration),
2. Area closures that involve both closing the area and applying additional SLM measures to support the rehabilitation processes.

The rate by which closed areas regenerate depends on the degree of degradation, climatic factors and the scale of management it receives. Experience shows that well managed and protected area enclosure rehabilitates very fast compared with those areas which are not protected from external interferences. Physical measures which retain soil moisture are applied in integration with closures.



Adaptation to different agro-ecological and socio-economic conditions

Area closure can be used and is suitable for all areas where land degradation has taken place. The area closure technology is acquired from other countries and mainly new, but closing measures like closing church premises or culturally protected areas are traditionally known.

Indigenous area closure technologies have been used before the introduction and implementation of the 'modern' SLM area closure technology. The traditional practices in area closures are targeting the protection of land and restrict the cutting of trees. Communities and individuals are practicing it widely across the country with various methods and approaches.

At the beginning the practice of area enclosure involved only closing the area from external interference by fencing and by letting natural regeneration take place. Currently, SLM activities such as enriching plantations, over sowing grasses, the establishment of physical structures, harvesting rainwater and improving biomass by planting trees, are included.

The advantage of area closure in comparison to other SLM technologies is that no direct use of the land by human beings or animal will disturb the recovery of the degraded land. If people, in addition to the closure of the area, install other SLM measures, like contour strips, the land will recover quickly.

3 Benefits and costs

3.1 Benefits

Household / village / community level benefits

Area closure directly or indirectly contributes to the increase of crop yields, fodder production and improvement of farm income and improves livelihoods. Its long term benefits can be tremendously, especially in areas where productive land is short. It is expected that land previously useless for productive purpose will produce sustainably again after 3-5 years of area closure. However, if cash crops, trees or fodder bushes can be grown on terraces and benches, farmers will receive income in the short or medium term, depending on the time needed for the first harvest.

Environmental benefits

Area closure in addition with SLM measures will show immediate effects on run-off water:

- Increase of surface roughness;
- Increase of infiltration;
- Increase of water stored in soil;
- Water harvesting;
- Increase in organic matter;
- Increase in soil fertility;
- Control of raindrop splash;
- Control of dispersed runoff (retain/trap);
- Control of dispersed runoff (impede/retard);
- Reduction of slope length.

3.2 Costs

Labor and material cost for closing

In principle, area closure requires locally existing materials plus labor contribution from the local community. Local communities are expected to bring their own hand tools and equipments during the fencing and plantation of area closure. Planting materials for plantation purpose can be prepared at any nursery nearby and/or by an organized group of farmers on temporary nursery sites. It may need a certain amount of money to cover the costs for the guards to ensure that the area is protected from human or animal use.

If area closure is done without any additional supportive SLM measures, there is a need to provide for follow-up costs after the fence is established. Costs of additional SLM measures vary according to the measures chosen to be implemented.

4 Success and challenges

4.1 Success

Area closure can prevent important sediment loads, resulting from high erosion on cropland and rangeland by leaving the catchment or silting up water reservoirs. From both the small-scale effects and the larger landscape scale, it can be concluded that enclosures are an efficient soil conservation measure. Significantly lower runoff coefficients and increased soil moisture availability are demonstrated in area closure sites when comparing to areas of degraded grazing land. Runoff production on steep slopes is related to vegetation cover through an exponential decay function, while slope gradient was found not to matter. This

shows that higher infiltration in enclosures' is creating more favorable conditions for plant growth. On a larger scale, another positive consequence is that highly erosive peak flows from steep slopes with restoring vegetation will be reduced.

4.2 Challenges

There is some resistance from local communities to area closure, where local communities use the area for grazing. Sometimes the challenge may be that those communities do not implement area closure in the demanded manner.

Most of the time, communal lands in Ethiopia are used for livestock grazing. Due to climatic changes and the expansion of cultivation of crops in former grazing areas, hillside areas have been transformed to grazing areas. With continuously increasing livestock shortage of animal feed is a critical problem throughout the country.

5 Sustainability and chances for scaling up

Area closure is critically important to improve the productivity of downstream farmlands and protection against flood damages. It contributes to the reduction of flood damage caused to reservoirs, villages and lives. The productivity of croplands is increased as a result of erosion control, improved soil depths and soil moisture regime.

The area closure management does not only revitalize dried springs and streams but also boosts the volume of the discharge brought through the initiation and promotion of small scale irrigation practices, that in return improves the livelihoods of a large number of families and contributes to the food security efforts in the country. In general, the strategy has boosted the yield of ground water and increased the level of ground water in many catchments, so that communities have better opportunities to access water for domestic use income generation activities.

Therefore, the contribution of area closure management to the creation of a conducive micro-climate for human life as well as for wild and domestic animals, for the increase of agricultural productivity, food security and improvement of livelihoods of the beneficiaries is more than it can be expressed in words.

6 Conclusion and recommendation

Area closure is a very suitable SLM technology for areas that are highly degraded and are not productive any more. Closed land has proven to become productive again after it is left alone for 3-5 years, and even more, if additional SLM measures had been implemented.

Area closure is a technology, however, which should be accompanied by external support because farmers do not see the immediate benefits from area closure and, in most cases, cannot afford the costs for fencing, guarding and for additional SLM measures.

7 Reference

MoA; Community based participatory watershed development – a guideline, 2005, Addis Ababa, Ethiopia

MoA: (Ato Daniel), 2010.