

Unseen Corner of the Conservation Efforts: Safeguarding Life and Livelihoods (A Case from Dhanusha District)

Shiva Shankar Neupane¹

Abstract

The major environmental problems in Nepal are caused by land degradation, deforestation and pollution. Poverty is the root cause of environmental degradation. The Mahadev Math, one of the settlements of Hariharpur VDC-1, Dhanusha lies at the western bank of the Jaladh river, has seriously been affected due to annual flash flood from Jaladh river and subsequent soil erosion. About 5.35 hectares of degraded farmlands has been reclaimed in the bank of the Jaladh river with applying bio-engineering methods for flood diversion and gully treatments. It can be concluded that it is possible to reclaim the large area of the degraded and/or eroded land for safeguarding their lives and livelihoods even with the active participation of the local people and their subsequent contributions by way of using small financial support from the other external donors/ organizations.

Key Words: River bank conservation, Land reclamation, Bio-engineering, Safeguarding life and livelihoods

Introduction

The major environmental problems in Nepal are caused by land degradation, deforestation and pollution. Poverty is the root cause of environmental degradation. Land and forest resources are over-exploited because of heavy dependence in the natural resource base, while water and mineral resources are under-utilized owing to lack of financial resources and infrastructure. Soil erosion, fertility decline, sedimentation and floods have degraded and continue to degrade the land.



Sivaliks / Jaladh river- Dhanusha

Deforestation in Nepal is primarily due to the extraction of fuel wood, fodder and timber, overgrazing and frequent fires, encroachment on forest land for agricultural expansion, and poaching and smuggling basically more effectively in terai and Sivaliks. There are different

¹ Manager, Terai Private Forest Development Association (TPFDA), Dhanusha, ssneupane@gmail.com

paradigms of conservation efforts but here this small article has tried to deal with the efforts made for the soil conservation and flood diversion for the land reclamation in the river banks.

Land degradation means the loss in the capacity of a given land to support growth of useful plants on a sustained basis. It is a complex phenomenon-driven strongly by interactions among socio-economic and biophysical factors (Singh 1994) that are quite unique in Nepal. Land degradation has been the greatest challenge facing mankind in recent years, and Nepal is no exception. Natural calamities like landslides in the hills, drought in the most of the areas of the country and flooding in the foothills and the Tarai have frequently occurred. Most of all, flooding has become a major cause of land degradation leading to the poor socio-economic conditions and the deterioration of the natural ecosystems. Apart from the loss of productive top soil, it has further damaged the land and water resources due to siltation of dams and deposition of thick and sandy plains of the Tarai River. Farmlands near river banks are washed away by flooding, crops are ruined and widths of rivers widen every year during monsoon. Nepal's rivers carry around 336 millions tons of soil per year to the main river systems entering India (Brown 1981). The bed level of Tarai rivers is rising by 35-45 cm annually (Dent 1984). The productivity of riverside lands has been seriously affected by silting, flooding and deposition of pebbles.

Annual sediment load in some Nepalese Rivers (Sharma 1988)

Year (AD)	Rivers		Rate of denudation		Area of basin		Average sediment contribution over watershed	
	Human Death	Human Injured	mm/year Families affected	Livestock killed	sq. KM Houses destroyed	Loss of agriculture land (Ha)	Loss of properties (Million Rupees)	
	Saptakoshi	1			59,280			
	Sunkoshi	1.43			18,985	15		
2000	Arun river	100	0.57	15617	822	34,525	5417	
						888.9	7.6	
							932.1	

The natural succession has been inhibited by excessive grazing pressure as well as flash floods during the monsoon. On an average, about 200 people die with millions of financial loss annually from flood and landslide in Nepal. As for example it is suggested to see following table:

Loss and damage from floods, landslides and avalanches in Nepal (2000)

Source: Nepal Government, Ministry of Home

The Case/issues and Conservation Effort Associated with Jaladh River- Dhanusha

The Jaladh river moving through the Dhanusha district is one of the major rivers originated and passing from upstream Siwaliks – Bhabar to down stream terai regions at lower belts. The Mahadev Math, one of the settlements of Hariharpur VDC-1, Dhanusha lies at the western

bank of the Jaladh river has seriously been affected due to annual flash flood from Jaladh river and subsequent soil erosion. Number of gullies are formed and hectares of farmland has washed out and the settlement (the area where the houses are located and the people live) was about to washed out last year due to flood and soil erosion.



Flood affected area

As a pilot program of river bank conservation at the site with the involvement of the local people, the riverbank conservation program has been initiated at the western bank of the Jaladh river.

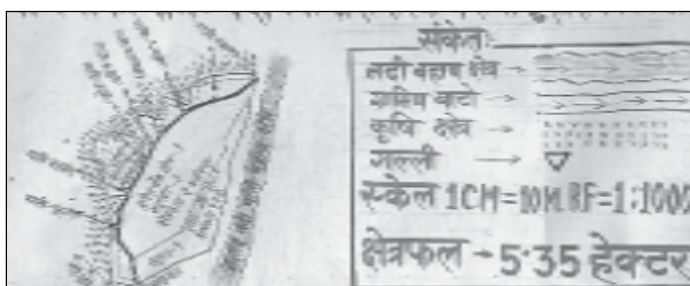
The Kalimai river bank conservation group has been formed and the conservation efforts has also been taken place with active participation and 20% financial contributions from local



Gully formation

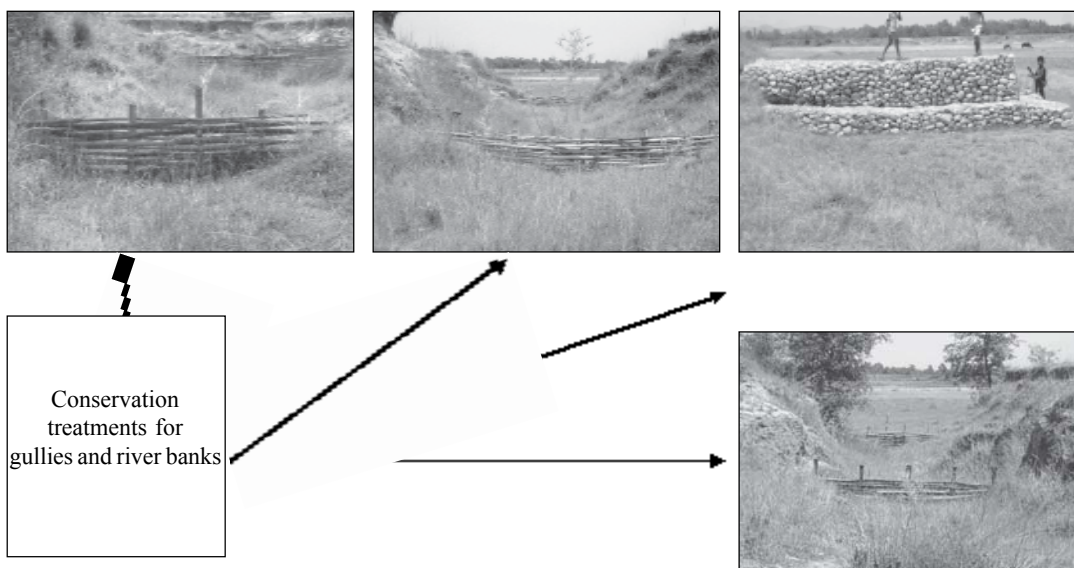
conservation group, remaining 80% financial support from JIWAN/CARE Nepal and technical support from Terai Private Forest Development Association (TPFDA). There are 20 Huseholds involved in Kalimai riverbank conservation group at Hariharpur VDC-1, Dhanusha who have lost their farm land due to flood last year. A total of 5.35 hectares of

degraded/flooded/eroded lands has been reclaimed from these conservation practices. Construction of small structure using stone and gabion wire to check and divert the river flow and other bio-engineering methods are applied to reclaim the land and to minimize the soil erosion. The bio-engineering methods are practically accepted to check the erosion. The bioengineering can be defined as “the field of engineering in which a combination of live and dead plants and plant parts are used as building materials for erosion control and land rehabilitation based on a engineering concept “In contrast to conventional engineering where only dead construction materials are used, bio-engineering utilize both the live and dead plants or plant part to reinforce the civil structures as well as to control sediment movement. However, in practical field work, both are often applied complementarily (Schiechtl, 1980).



Gully formation

In this approach, one diversion dike is constructed with stone and gabion box to divert the river flood flow/currents from the site. Other treatments are hedge plantations at the boarder of the land that to be reclaimed. These are barriers of closely spaced trees or shrubs to protect crops or structures against livestock and human interference. Live fences may be semi-permanent or permanent. Land-use patterns throughout the year should be considered before introducing a live fence. Live fences can be combined with other trees for production



of wood and fruits. Tree and grass plantations with riverine species in different strata and gully treatments with constructing bamboo check dam to check the soil erosion from the gullies as well as planting of different trees, fodder and grasses species has been practiced/adopted in the sites. Finally, it is obvious that about 5.35 hectares of degraded farmlands has been reclaimed.

The grasses, bamboos and tree plantations as demonstration of conservation methods in this treated lands has also been established and the flash floods and the associated soil erosion has been controlled relatively, which ultimately has contributed to reclaim their private farm lands and save people and their livestock's not only that but also whole village from washing out from the flash flood and erosion. The livelihoods, on the other hand, is also indicating to be improved as they are growing grasses and tree fodder from the same land to raise the goats and other livestock, gradually they can use that land to grow cereal and other crops annually to get benefits .

Conclusion

Land degradation means the loss in the capacity of a given land to support growth of useful plants on a sustained basis. It is a complex phenomenon-driven strongly by interactions among socio-economic and biophysical factors" (Singh 1994) that are quite unique in Nepal. Similarly land reclamation is the process by which an area is returned to its original state prior to

degradation of any sort. However, some have argued that it is impossible to restore degraded natural habitats. Gunn (1991) has clearly argued that provided that species have not been made extinct as a result of the degradation, then restoration is possible.

Furthermore, bio-engineering is the low cost technologies in which local materials can be used for conservation purposes with better performances specially in top soil conservation, gulley treatments, riverbank conservation and reclamation of degraded lands indeed. The total of 5.35 hectares of the degraded land has been reclaimed and improved and a total of 20 flood affected HHs are being benefiting from this practices.

Based on the practices made by the people settled in the bank of the Jaladh river in Dhanusha district, It can be concluded that it is possible to reclaim the large area of the degraded and/or eroded land for safeguarding their lives and livelihoods even with the active participation of the local people and their subsequent contributions by way of using small financial support from the other external donors/organizations.

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