# Rainwater harvesting as the only option for livelihood enhancement for the Manung VDC

(A case of Tanahun district of west Nepal)

## Introduction:

The Himalayan country of Nepal most often faces problems of water stresses at various parts of the country though s considered to be one of the richest countries in the world in terms of water resources. The steep high hill slopes of the country of which more than 76.9% of the total landmass is covered by mountains and hills that make up the home for more than 52% (about 12 million) of the total population face most severe water related stress due to scarcity where as the 23% of the Terai belt face problems of flooding (CBS2001).

Of the total amount of precipitation, more than 80% of the rainfall occurs in Monsoon (June - September) in Nepal. In this way Nepal observes too much water in four months during monsoon and too little water in rest of the months in a year. More than 80% of the total population depend upon agriculture for their livelihood.( MOPE 2003). On an average 65% of the total cultivated land is rain fed. About 0.95 million Ha of the land mass received irrigation facility and it accounts for about 24% of the land having access to irrigation in 2001(MOPE 2001).

About 97% of the total area of the country is covered by land. Out of the total hill area (61345 Sq.Km.) only about one-tenth is considered suitable for cultivation while the Terai area is fertile and is food bowl of the country. Virtually, 23% of the land mass in Terai districts has to feed more than half of the total population of the country. As per the data on land use, 2.97 million ha (20.2%) of the land is cultivated agricultural, 0.99 million ha (6.7%) is non-cultivated agricultural land and the grass land covers 1.7 million ha (12%) of the land (MOPE2001).

Again only 3% of the total area is covered by water bodies and is the country's largest natural resources. Among the 6000 rivers in Nepal, 1000 are longer than 11 KM and 100 are longer than 160Km. The 74% of the annual runoff(4700Cu.m/s) is accounted by the three major snow fed rivers- Koshi, Gandaki and Karnali. The mountain regions of Nepal enjoy surface and rainfall water only as there are no ground water resources excepting springs and lakes in some parts of the country. Running water is not sources of water for the hilly areas and the only sources of water for those districts is rainwater and the natural springs, lake near by their settlement.

**Problem:**

The livestock rearing in the pastures of the hilly areas is a costlier case in terms of unavailability of water resources. Animals razing young grasses, fodder crops that may contain 90% of water may need their demand of water for the whole day but for milking animals for maintenance, animals require 4 to 5 Liters of water per day for each Kg of milk they produce. They produce more milk where they have good source of water. Cattle and buffalos require 27L of water per day in average feeding condition. On the whole the total requirement of drinking water for livestock is 335 million liters per day to feed its 17,935,232 heads of livestock all over the country. More than 90% of the people living in Manung VDC practice subsistence agriculture for their livelihood. They rear livestock as a way to enhance their economic status. Almost every house among more than 200 households in the area of the VDC has livestock that demand such a huge amount of water.

Besides, the steep slopes are left for rainwater for irrigating the field. They plant crops only once a year for the lack of water to irrigate their fields. In that also they plant maize crops in the rainy season which is considered to be one of the worst crops in term of soil conservation practice.

**Water Stress:**

The water stresses n the Manung VDC could be summarized as follows:
I. Too little water for 8 months in a year.
II. Too much water in four months in a year during monsoon season.
III. Lack of water management institutions or bodies.
IV. Lack of awareness and supporting NGOs in the area.
V. Inefficient use of water when available.

**Sources of Water Resources in Manung VDC:**

The major and the only sources of water in Manung VDC are;
a. Rainwater
b. Natural springs at some localities,
c. Small ponds for livestock fed by rainwater (a traditional model of rainwater harvesting)

Among these, rainwater is the only most potentially viable source of water in this VDC which still remain unexplored and uncaught. The rainwater is left to erode its steep slopes carrying most invaluable nutrients with the flood. In this way the water resource is not conserved and left to degrade land in this VDC.

**Water Resource Management:**

The management strategies of water resources in the Manung VDC could be summarized in the following points:

I. Storage tank management i.e., for storing rainwater and using that for livestock feeding and in fields for irrigation.
II. Management of watershed i.e., for increasing the quantity of water in the area.
III. Management of distribution i.e., water distribution should be managed so as not to create water related conflicts among the user groups in the VDC.
IV. Management of crops i.e., to plant crops that best suits the place requiring less water and maintaining rotational irrigation system.
V. Management of Drainage i.e., to conserve the water used for irrigation guaranteeing the minimum wastage.

**Benefits:**
The huge number of cattle could be fed with sufficient water to increase milk production there by enhancing the livelihood of the people in the hilly region of Nepal.
Besides Manung VDC, the rainwater harvesting method could be a good potential substitute to the irrigating fields that could provide systematic irrigation system to 20.2% of the cultivated land, 6.7% of the non-cultivated land could be cultivated by sufficient water and the potential cultivable land i.e., 12% grass land to fight against the food scarcity in Nepalese hilly district could be turned into cultivable land.

**Water Harvesting:**

The average annual rainfall in Nepal is 1516mm that is theoretically enough for major crops. The technologies available for the rainwater harvest could be counter building, contour wall, counter trenching, providing check dams and making ponds etc. Since long, farmers have developed their own system of collecting rainwater for irrigation. The water harvesting technology is definitely not a new in Nepal. The traditional practices vary depending upon the topography, sol, specific sites and seasons etc. The government has failed to recognize the traditionally rich water harvesting knowledge of the peoples of the locality. The only ting is the realization of rainwater as a good potential source for the hilly districts of Nepal which most often face water stresses in various forms. There are no such targeted policies of the government of Nepal for rainwater harvesting in Nepal.

**Conclusion and Recommendation:**

Hence Manung VDC in Tanahun district of Nepal together with other more than 35 districts out of 75 districts of Nepal have been facing water related stresses in Nepal. Rainwater is one of the best alternative sources of water which will significantly contribute to minimize the poverty of the marginalized people of Nepalese hilly districts. Besides, the demand of water for their crops and livestock will be met which will in turn enhance their livelihood by generating income. For the betterment of the water availability, following could be recommended:

a. Development of policy to address rainwater,
b. Research on the potentiality of rainwater harvesting to meet the existing demand,
c. Creating manpower to work as an expert in rainwater harvesting so as o train the villagers all over the country,
d. Trainings on the rainwater harvesting methods to esp. hilly district dwellers.

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