

Riverbed water extraction and utilization of Rural Communities Kavre, Nepal

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Abstract: *“Agricultural field needs a proper amount of water, fertilizers, sunlight, temperature, and soil components. Irrigation and its different means are applied for the water supply in crops. During rainy season people use rainwater whereas in dry season explore a different alternative method to extract water. This case study Jhikhu river watershed assesses the measures adopted by local people in the dry season, for the purpose of collecting and pumping water in the agricultural land. 150 households through structured questionnaire collected primary data. From a socio-economic analysis, these alternative methods provide a framer option for increasing their productivity and income. One approach is taken for developing the Livelihood Vulnerability Index (LVI): the first approach the LVI was calculated as a composite index comprised of seven major components. It would be the framework for implementing sustainability programs and policies”.*

Keywords: Irrigation, Water, Riverbed, Extraction, Rural communities, Agriculture.

1. Introduction

Water is an essential natural resource for sustaining life and environment. It is one of the major components for agricultural development. Agriculture is major occupation of Nepal. More than 80% people are directly and indirectly involved in agriculture. The share of agriculture in total Gross Domestic Product is 27.04 percent (MoAC, 2017). About 17% of land area of Nepal is agricultural land, most of other land is marginal and rugged (MoF, 2011). Water is needed for crop, as rainy season are few months in Nepal. In order to cope with the dry seasons and demand of water for production, people have adopted different measures such as rainwater harvesting tank and ponds. Similarly, digging of wells and extraction of water from riverbed. This research work focuses on the assessment of the measures adopted by local people extraction of water from Jhikhu riverbed for irrigation.

Water is important component for higher productivity of agricultural crops and use of modern agricultural inputs- Chemical fertilizers, improved variety of crops (Evenson et al., 2011). Such benefits cannot be achieved in situation of increased scarcity of water. People can use different strategies to cope with the situation (Iglesias, et al., 2007). However, those strategies and practices can be useful only for a short time (Molden, et al., 2003). In the long run, this may arise environmental and economic issues. Water may not available in the long run (Repetto, 1987). Therefore this study has been conducted to provide a scientific way to find the alternatives for farmers during dry seasons.

The present study has attempted to show the status of the household around the Jhikhu riverbed. It gather information about the water scarcity and its direct consequence to the livelihood, which would be the framework for further study, also useful for different stakeholders for decision makings and formulating plan and policies. It could provide useful information for implementing irrigation project for the benefits of these rural communities. Similarly develops a well define policies for environment protection and climate change issues

2. Study Area

Jhikhu River lies in the middle part of agricultural land and settlement area. At the time of the 2011 Nepal census this river water beneficial population was around 35340 and 8948 houses.

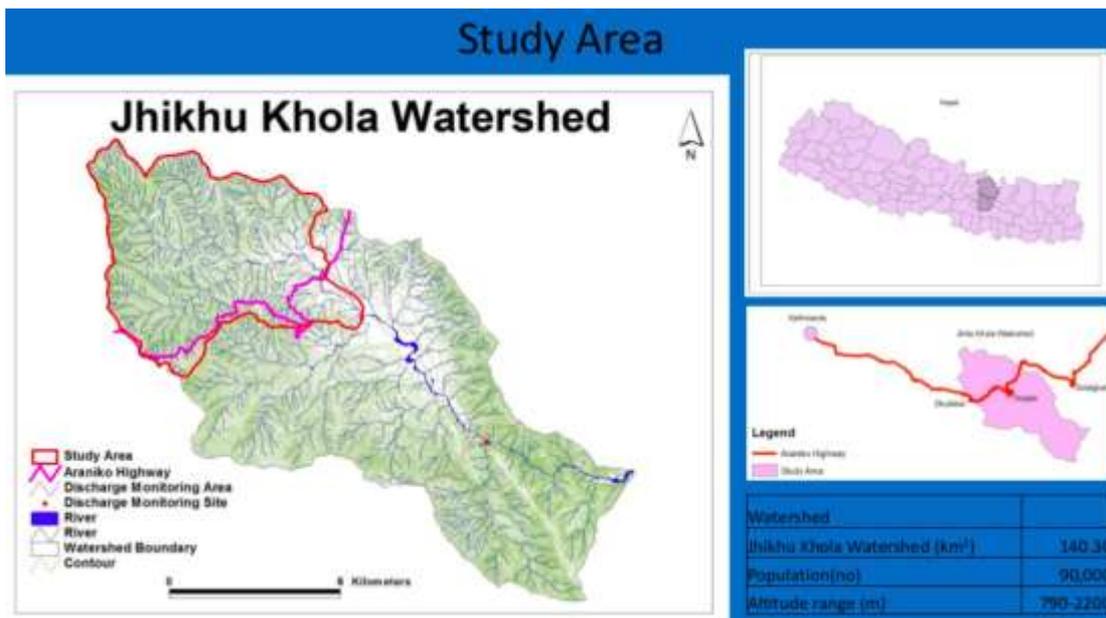


Figure 1: Map of Nepal showing three study districts in three different colors.

Source: Khanal. R. N., et al., 2009

3. Methodology

The study is based on the primary data collection by using structured questionnaire. 150 households were selected for the data collection through field survey. With these collected information about ditch making and socio-economic status. The present condition of people who live on this riverbed is determined by this case study. The following process was used to collect the research findings.

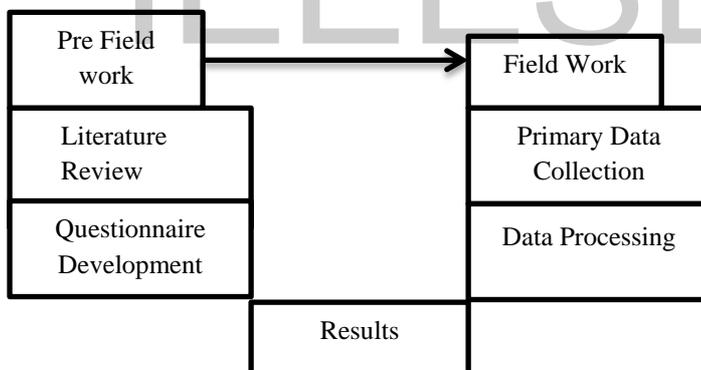


Figure 2: Research design for collecting household survey data and results.

Different spatial data is collected by Global Positioning System (GPS), whereas the interviewing participants by the questionnaire collect attribute data.

4. Results and Discussion

This research finds dependent of water is increasing rapidly as population and settlement is rapidly increasing on this particular area. Similarly numbers of ditch are increasing since 2012. As the depth of the ditch also increased, people already extract tremendous amount of water.

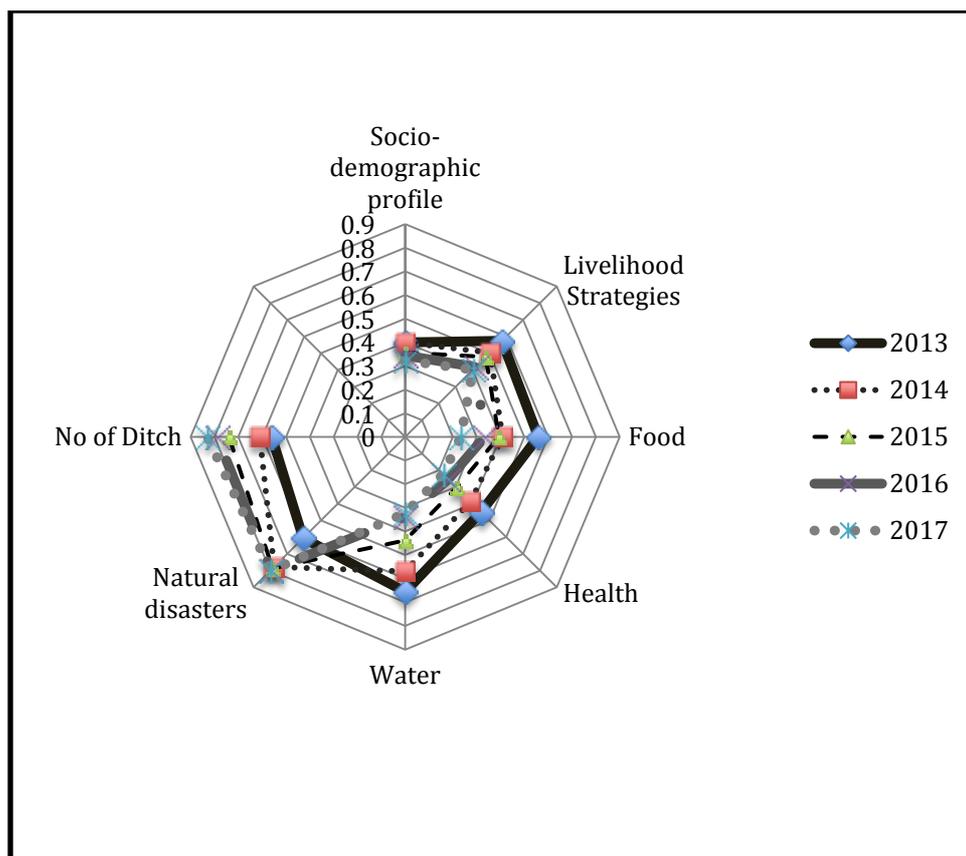


Figure 3: Vulnerability spider diagram for the major components of the livelihood vulnerability index (LVI) for people around Jhikhu last 5 years.

The overall, 2013 had a higher LVI than 2016 and 2017 year indicating relatively greater vulnerability of socio-demographics, livelihood strategies, health, food, water, natural disasters and number of ditches around the Jhikhu riverbed residents. The results for major components are presented in a spider diagram (Figure 3). Numbers of ditch were increased than 2013 to 2017, which directly affects other major components. That make vulnerable in the food, natural disasters (such as flood, landslide), socio-demographic profile, livelihood strategies and water. Therefore, this study concludes that water plays significant role for people's livelihood vulnerability index showed on the above Figure 3.

The demand of water was high in the month of Chaitra and Baisakh as compared to Ashad and Sharwan that have low. This increases the costing of irrigation system for production. Due to this situation people starting to leave farming which harm the land as well as nation economy.

5. Conclusion

From the analysis of the gathered primary data, it is found that people are dependent on the ditch irrigation on the Jhikhu riverbed. Participants also stated that this extraction help to increase the productivity of their agricultural products during dry seasons. Above show Figure 3 illustrates benefits with using ditch process since 2013-2017. Recently the water is decreasing in such ditch, now people have to ditch significant deep to get little amount of water.

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