

Sustainable food production among Dalit by establishing micro irrigation system through integrated water resource management (IWRM)



This project to ensure sustainable food production among Dalit by managing local water resources for micro irrigation and clean drinking water project. The project will support regular nutrition supply and increasing socio economic status of Dalit in Okhaldhunga.

This project support Dalit:

- a) to make water collection chamber close to their houses where they can store water from multiple sources;
- b) train farmers for the optimum use of water;
- c) train techniques of micro irrigation system;
- d) establish a base for socio entrepreneurship and micro enterprises.
- e) provide clean drinking water

Background

Irrigating a farm can double the amount of food the farmers have been producing. However, even with that potential, 80 percent of farmland worldwide is not irrigated, says the UN Food and Agriculture Organization (FAO). Part of the problem may be the high cost of irrigation equipment. Also, the prospect of wasteful irrigation techniques raises the specter of environmental damage including water shortages, erosion

and soil salinization. Small-scale watering systems can circumvent those issues: Low-cost, low-tech and efficient irrigation is possible.

Okhaldhunga is a hilly region with 300- 3000-meter high altitude range where agriculture is mostly depended on rainwater. Due to water scarcity, vegetables are grown in limited area only during the monsoons. There are 304 Dalit families in Taluwa, Thulachap and Bhadaure of Okhaldhunga. Most of them are in their family profession such as shoe making, metal works and labor. Though they have land, they cannot grow enough crops and vegetables due to water scarcity. Many areas are affected by drought throughout the year. Most of the people and big percentage of children are under nutrition. During our entrepreneurship skill development sessions, many of the Dalit informed us that they are interested to grow vegetables and start up the vegetable farming businesses.

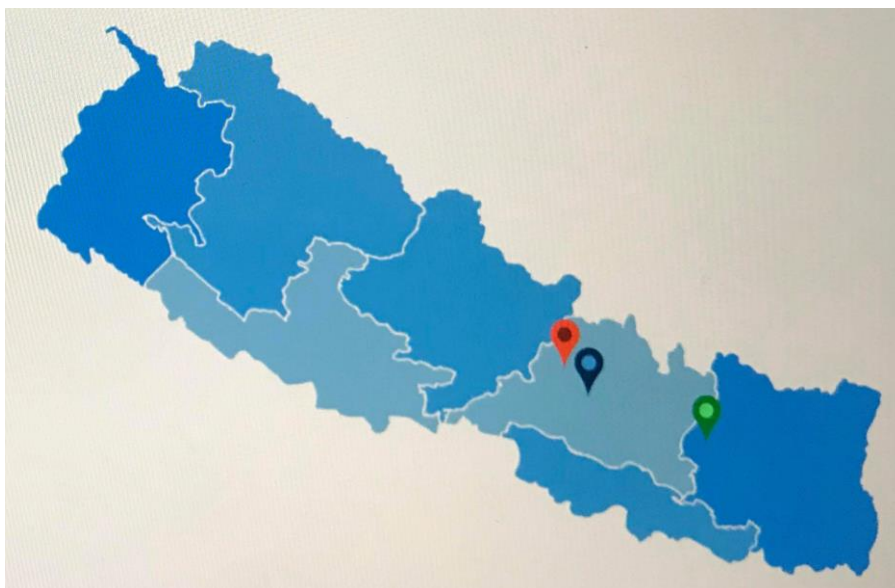
We want to establish water resource management system, support farmers to build small households water storage tank, train them on low irrigation techniques and optimum use of water in farming. The project ensures availability of water throughout the year and supports farmer in growing vegetables, household use and drinking. In addition, the project is linked up with permaculture and agroforestry projects to ensure the sustainable food production.

Objectives

- To ensure sustainable food production by installing micro irrigation system with water resource management in Dalit communities of Okhaldhunga.
- To provide access to clean drinking water

Project site

Since 2007, we have been working in disadvantaged rural areas of Nepal to empower communities. We have implemented integrated community development projects in the northern side of Kathmandu Valley and in remote municipalities of Nuwakot and Okhaldhunga District.



6
Wards

5520
Households



KATHMANDU DISTRICT

Tarakeshwar Municipality Kavresthali and Jitpurphedi



OKHALDHUNGA DISTRICT

Siddhicharan Municipality Taluwa Thulachap

Chisankhu Gadi Rural Municipality Bhadaure



NUWAKOT DISTRICT

Kakani Rural Municipality – Okharpouwa

According to the new Constitution (2015) Nepal is divided into 7 provinces, 77 administrative districts, 6 metropolitan cities and 11 sub-metropolitan cities, 276 municipalities (nagar palika) and 460 rural municipalities (gaon palika). Cities and municipalities are divided in wards: the ward is the smallest administrative division of Nepal. The total number of wards is 6684.

The main project site is the village of Taluwa and Thulachap in the region, which is located about 15/22 km south-east of the Okhaldhunga Bazar and Rumjatar airports. According to the new political division, the project site is located in ward no. 1 and 2 of Siddhicharan municipality and represents province No. 1. It is located about 250 km east of the capital - Kathmandu. The choice of the region is motivated by a low level of regional development, high unemployment rate and identified problems regarding access to educational services.

Target population – 304 Dalit households from Taluwa, Thulachap and Bhadaure of Okhaldhunga

The Dalit community status of this area is not exception to that of Dalits residing in other rural areas of Nepal. They are born into a discriminatory society. In all cases Dalit's rights are subordinate to those of so called superior or upper castes. With little or no education, no or limited land, no permanent income, they are a voiceless section of society, dependent on upper caste for their welfare and bearing the continued weight of cultural and social discrimination and violence against them.

The threat of violence being considered as impure or untouchable caste is a pervasive and unmanaged threat for Dalits is general in Nepali society. They are even restricted to perform certain activities like entering to temples, to have food together with higher caste, enter the house of upper caste, touch the water points and the worst part is that their children get dominated in the schools just being Dalits and economically weak.

Most of them are engaged in subsistence farming and traditional occupation like making household tools, the production and the income is not just enough to meet their daily needs and are thus forced to work as labour mostly for upper caste bearing all the brunt of discrimination and in Gulf countries bearing the significant hardship. Hence they highly suffer from discrimination and disadvantages across all spheres – social, cultural, political, economic, health and religion which affects every aspects of life and denies their human rights in terms of economic, livelihood, educational opportunities and attainments for social and political inclusion.

Simply stated, poverty, illiteracy, lack of awareness, poor health status, and lack of access to resources, employment and livelihood opportunities, discrimination and social injustice are some of the major problems of Dalits in this particular area.

Strategy

Based on three principles of Integrated water resource management, the project is designed as a bottom up approach ensuring participatory management of water resources and supply system.

- 1) **Social equity** - ensuring equal access for all users (particularly dalit) to an adequate quantity and quality of water necessary to sustain human wellbeing. The right of all users to the benefits gained from the use of water also needs to be considered when making water allocations. Benefits may include enjoyment of resources through recreational use or the financial benefits generated from the use of water for economic purposes.
- 2) **Economic Efficiency**- bringing the greatest benefit to the greatest number of users possible with the available financial and water resources. This requires that the most economically efficient option be selected. The economic value is not only about price – it should consider current and future social and environmental costs and benefits.
- 3) **Ecological Sustainability**- aquatic ecosystems are acknowledged as users and that adequate allocation is made to sustain their natural functioning. Achieving this criterion also requires that land uses and developments that negatively impact these systems are avoided or limited.

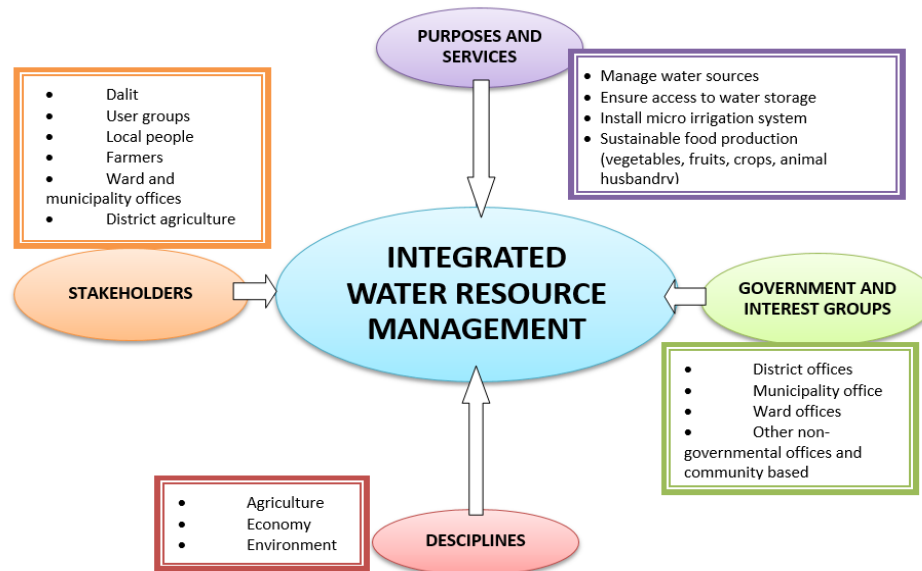
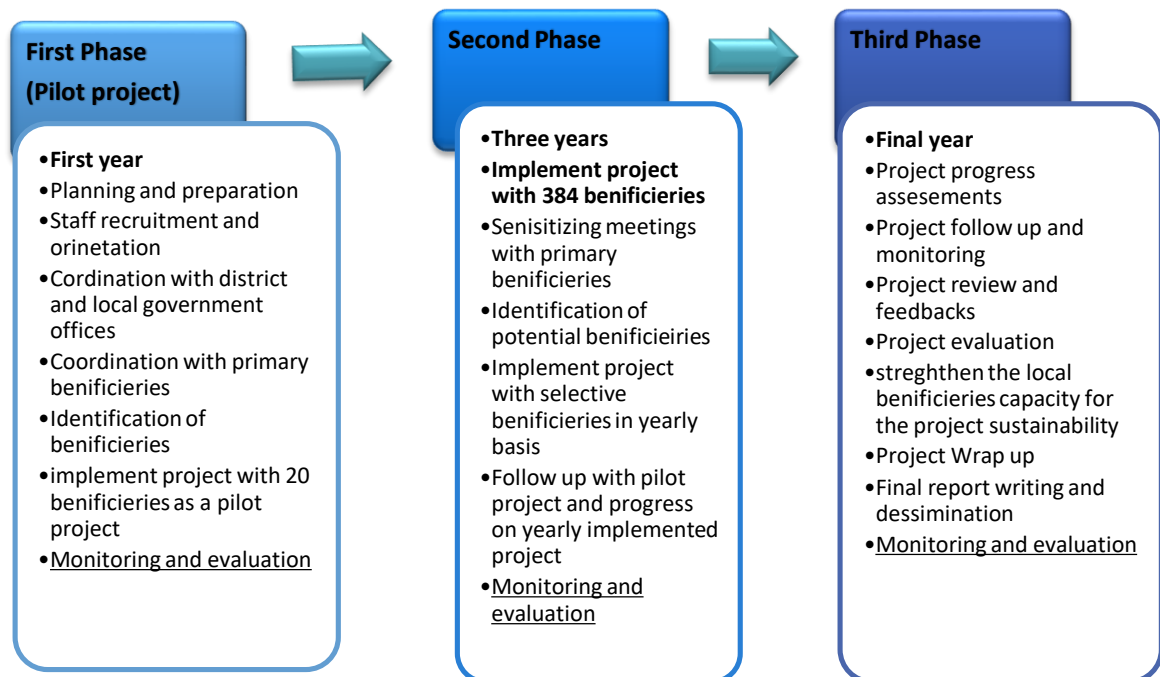


Figure 1 Integrated water resource management project implementation strategy

Our strategy to implement this project is in three phases of four years. In first phase of one year, we do pilot project with 20 beneficiaries. In Second phase of two years, we will extend project to other 285 beneficiaries in yearly basis. In last or third phase we will focus on follow up, monitoring evaluation and strengthen the capacity of local groups for the sustainability of the project.



Implementation plan

This is a plan to implement pilot project with 20 beneficiaries.

Pre construction Phase	Construction Phase	Post construction Phase
<ul style="list-style-type: none"> •Planning and preparation •Staff recruitment and orientation •Coordination with district and local government offices •Coordination with primary beneficiaries •Formation of water user group •Identification of beneficiaries •Construction manpower recruitment •Materials procurement •<u>Monitoring and evaluation</u> 	<ul style="list-style-type: none"> •Land management •Construction of the tank •Connection of pipeline system •<u>Monitoring and evaluation</u> •It is estimated that for 1 skilled and 2 unskilled workers it takes about 10 days to complete the construction 	<ul style="list-style-type: none"> •<u>Trainings on</u> •water resource management, water collection and techniques of optimum use of water •Kitchen garden management and overview of permaculture •micro irrigation techniques •Follow up with progress •Monitoring and evaluation •Project wrap up •report writing and dissemination

Steps of project implementation

- Coordinate the project with local and district stakeholders – project presentation, plan sharing and project approval
- Formation of water user groups (WUGs) and policy making for water consumption
- Project sensitization and planning meeting with beneficiaries
- Develop selection criteria for pilot project and identify 20 primary beneficiaries
- Recruit skilled labor and give orientation for the tank construction.
- Contract bidding for the materials and construction of water tank, filling and supply system
- Installation of Water Filters to each family

- In post construction phase- Tailor made activities such as trainings on water collection, optimum use of water in daily purpose and agriculture, kitchen garden system and orientation on micro irrigation techniques

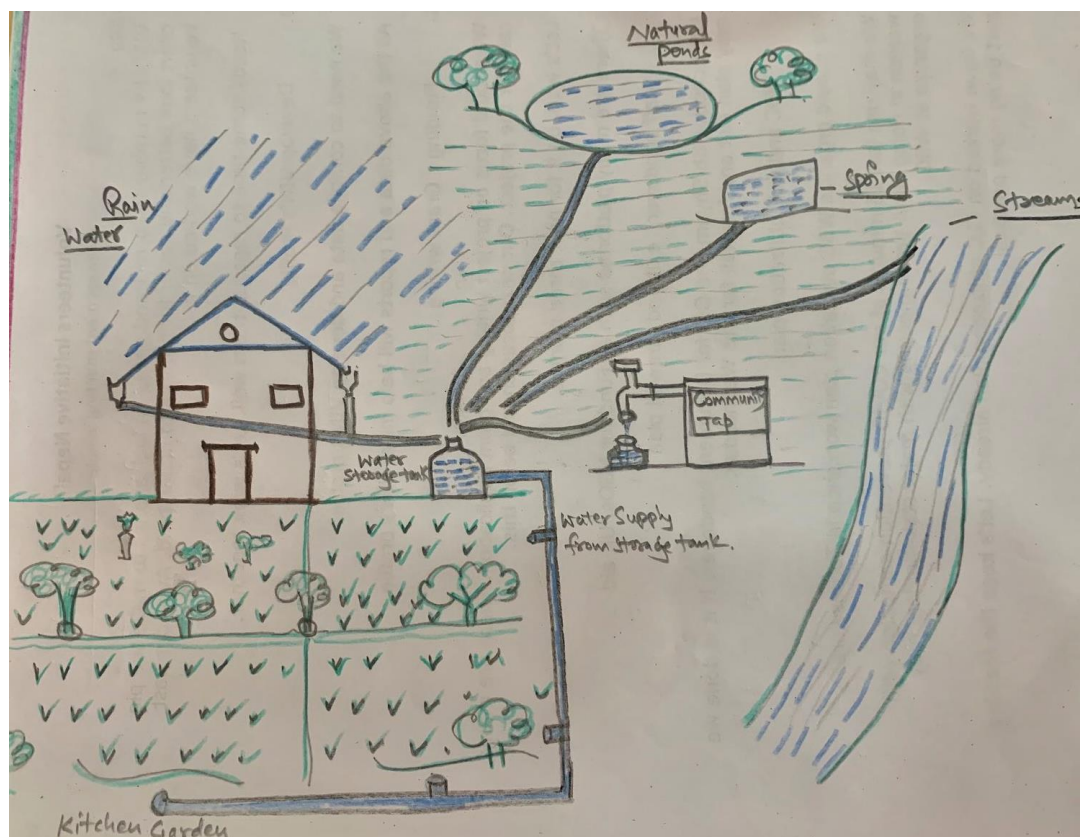


Figure 2 Sketch of the integrated water resource management

In this project, we want to construct a reinforce RCC water storage tank of 3000 liter capacity for the micro irrigation purpose. The tank is filled by the water from different sources such as pond, river, stream, springs and community tap that is available nearby. Also there will be rain water harvesting system in place. In some drought area they can collect only the rain water. The storage tank's outlet is connected to pipeline system link with drip irrigation or sprinkles for the micro irrigation to the kitchen garden or through watering can. This will support farmers to grow vegetables on kitchen garden throughout the year with small quantity of water.

The project will be implemented on multiple phases with tracking on progress.

The project is targeted to 304 Dalit families. We want to do pilot project with first 20 households. The project will be extended with other households in the future.

In first phase, a pilot project, we will focus with small groups of 20 potential Dalit families (10 from Taluwa and 10 from Thulachap) who are highly motivated, reliable and already have some backgrounds on agriculture. They will be oriented on Integrated water

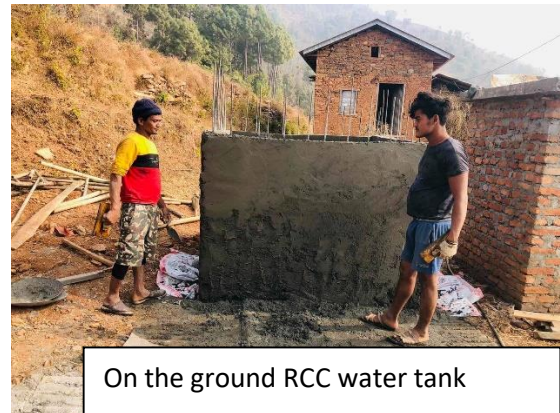
resource management with support on construction of underground RCC reinforced water storage tank of 4000-liter capacity. It will be connected to available water resource from nearby sources or rainwater collected from roof of the house. We will also provide a manual water filter for the access to clean drinking water.

The storage tank will be constructed in partnership with Dalit. We provide materials which are not available locally such as cement, sand and iron rod whereas local will contribute by providing labor support and collecting locally available resources e.g. stone and aggregate. **The project will also provide technical support and skilled manpower.**

In the post construction part, we will train farmers about water collection methods, management of kitchen garden, micro irrigation techniques and entrepreneurship skills development.

The project will be replicated to all Dalit families based on progress from the initial phases.

The details of proposed water tank is presented on Annex-1.



Above presented tanks are the examples of water storage tank we built earlier.

Monitoring and evaluation plan

The project monitoring and evaluation system will be on place from the level of planning. The M&E template based on the project design will be developed. The responsible institutions and groups for the M&E are VIN, User group, ward office, municipality office and district agriculture and water supply and management offices.

There will be a regular staff from VIN to facilitate the process. The project will be monitored in all steps by the internal monitoring system of VIN and Users group. A evaluation committee including representatives from above mentioned organization will be formed to evaluate the project after completion. Social welfare council, who provide us the project approval also monitor the project.

Expected output

20 Dalit families will:

- have access to 4000 liters reinforced RCC water storage tank;
- Water filter for 20 families for drinking water;
- training on micro irrigation system and optimum use of water;
- training on entrepreneurship and micro enterprises development.

Expected Outcome

- Sustainable food production
- Improved nutritional status of family
- Increased family income
- Greeneries surrounding the house
- Better health and quality of life improved.

Impact of the project

- Poverty reduction
- Improve health and happy indicator
- Positive impact on Environment and climate change

Expected timeline

The project duration would be of 11 months for the first phase. We expect to start the project in Feb 2022 depending on the situation of the COVID 19 pandemic.

Timeline										
Activity	Months									
	Jan-Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Coordination with government offices and project approval										
Sensitization meeting with primary beneficiary										
Identification of 20 Dalit										
Bidding of construction materials										
Contract with skilled labor										
Construction of water tank										
Connecting with sources and check for the functions										
Conduct 3 Orientation sessions to farmers										
Monitoring and Evaluation										
Follow up										
Report writing										
Project wrap up										

A. Human resources							
S.N	Position	Person	Time duration	Unit	Unit costs	Amount in NPR	Amount in USD
1	Project coordinator	1	11	months	60000	660000	5840.71
2	Field staff	1	11	months	30000	330000	2920.35
3	Engineer	1	5	Months	70000	350000	3097.35
				Total Amount (A)		1340000	11858.41
B. Coordination and stakeholders meeting							
S.N	Purpose	Items	QTY	Total Unit	Unit costs	Cost in NPR	Cost in USD
1	Meeting with ward offices	Snacks	3	15	150	6750	59.73
2	local stakeholders meeting	Snacks	3	50	150	22500	199.12
				Total Amount (B)		29250	258.85
C. Construction							
S.N	Purpose	Items	QTY	Unit	Unit costs	Amount in NPR	Amount in USD
	Reinforced underground RCC water storage tank with 4000 Ltr capacity and supply system (Materials and skilled labor & 20 Ltr Manual Water Filter)	water tanks	20	NOs.	81901.3	1638026	14495.81
				Total Amount ©		1638026	14495.81
D. Follow up trainings							
S.N	Purpose	Items	QTY	Days	Unit costs	Amount in NPR	Amount in USD
1	2 trainings- water collection methods and microirrigation, enterprenurship skills and micro enterprises	Trainer	1	6	10000	60000	530.97
		Snacks	22	6	150	19800	175.22
		Stationery	1	1	3000	3000	26.55
		Training materials	1	1	50000	50000	442.48
2	Training on kitchen garden and permaculture techniques	Trainer	1	7	10000	70000	619.47
		Snacks	22	7	150	23100	204.42
		Stationery	1	1	3000	3000	26.55
		Training materials	1	1	100000	100000	884.96
				Total Amount (D)		328900	2910.62
E. Total project costs (A+B+C+D)						3336176	29523.68

F. Admin costs (7%)						233532.3	2066.66
Total Amount						3569708	31590.34
contingency (5%)						178485.4	1579.52
Grand Total						3748194	33169.86

Thirty-three thousand one hundred sixty-one USD and eighty-six cents.

Note: 1. Above mentioned costs includes VAT and Tax.

2. The exchange rate is calculated based on maximum possible 7% fluctuations in the current rate during the project duration.